1140-1150

Station	Main Studio	Freq	Power	Date
CBI	Sydney, NS	1140	10 kW/DA-N	2/28/62
CKTR	Three Rivers, QU	1140	10 kW/DA-2	11/29/68
CKXL	Calgary, AB	1140	50 kW/DA-2	8/25/81
CKXL	Calgary, AB	1140	10/50 kW/DA-2	2/22/65
CKXL	Calgary, AB	1140	10 kW/DA-N	5/28/59
NEW	Conroe, TX	1140	0.25 kW/DA-2	10/19/79
KCMJ	Palm Springs, CA	1140	5 kW/DA-N	12/4/80
KGEM	Boise, ID	1140	10 kW/DA-1	3/15/49
KLUC	North Las Vegas, NV	1140	2.5/10 kW/DA-N	9/21/77
KRAK	Sacramento, CA	1140	50 kW/DA-1	2/22/71
KRAK	Sacramento, CA	1140	50 kW/DA-2	3/3/58
KSOO	Sioux Falls, SD	1140	10 ND/5 kW/DA-N	3/19/52
NEW	Kentwood, MI	1140	5 kW/DA-D	10/20/76
WBZY	New Castle, PA	1140	5 kW/DA-D	4/29/70
WCJW	Warsaw, NY	1140	1 kW/DA-D	11/29/66
WCLW	Warsaw, NY	1140	0.25 kW/DA-D	3/28/69
WQBA	Miami, FL	1140	5/10 kW/DA-2	10/19/79
WQBA	Miami, FL	1140	10 kW/DA-2	9/21/48
WQBA	Miami, FL	1140	10 kW/DA-N	3/10/47
WQBA	Miami, FL	1140	5 kW/DA-N	3/10/47
WQBA	Miami, FL	1140	5 kW/DA-2	9/21/48
WQII	San Juan, PR	1140	10 kW/DA-1	1/25/78
WQIL	San Juan, PR	1140	10 kW/DA-1	1/28/65
WRVA	Richmond, VA	1140	50 kW/DA-1	2/7/57
XEMR	Monterrey, NL	1140	10 kW/DA-N	4/9/71
XEMR	Monterrey, NL	1140	50 kW/DA-N	8/3/77
NEW	Bay St. Louis, MS	1140	0.25 kW/DA-D	7/29/68

1140-1150

Station	Main Studio	Freq	Power	Date
NEW	Lexington, NC	1140	1 kW/DA-D	12/29/66
NEW	Gaspe, QU	1150	5 kW/DA-1	7/7/76
CJRC	Ottawa, ON	1150	5/10 kW/DA-1	8/24/62
CHSJ	St. John, NB	1150	5/10 kW/DA-2	5/28/59
CKIQ	Kelowna, BC	1150	10 kW/DA-N	4/7/78
CKOC	Hamilton, ON	1150	50 kW/DA-2	5/10/77
CKOC	Hamilton, ON	1150	10 kW/DA-2	8/26/66
CKTR	Three Rivers, QU	1150	1/10 kW/DA-2	5/27/60
CKTR	Three Rivers, QU	1150	1/5 kW/DA-2	7/8/58
CKX	Brandon, MB	1150	50/10 kW/DA-2	4/1/76
CKX	Brandon, MB	1150	10 kW/DA-N	2/22/71
KAGO	Klamath Falls, OR	1150	1/5 kW/DA-N	7/1/48
KAYO	Seattle, WA	1150	5 kW/DA-N	9/12/80
KBAI	Morro Bay, CA	1150	5 kW/DA-N	11/16/79
KCCT	Corpus Christi, TX	1150	1 kW/DA-D	2/22/71
KCKY	Coolidge, AZ	1150	1 kW/DA-N	2/26/63
KDEF	Albuquerque, NM	1150	0.5/1 kW/DA-N	9/25/58
KIIS	Los Angeles, CA	1150	5 kW/DA-N	10/19/79
KKEY	Portland, OR	1150	5 kW/DA-D	1/28/69
KKUZ	Burlington, IA	1150	0.5 kW/DA-D	9/13/60
KNED	McAlester, OK	1150	0.5/1 kW/DA-N	12/20/51
KPLS	Santa Rosa, CA	1150	0.5/5 kW/DA-2	5/17/57
KQAM	San Antonio, TX	1150	1 kW/DA-D	11/24/70
KSAL	Dallas, TX	1150	5 kW/DA-N	3/10/47
KSEN	Shelby, MT	1150	5 kW/DA-2	11/13/74
KSUZ	Port Neches, TX	1150	0.5 kW/DA-D	6/24/76
KVIL	Highland Park, TX	1150	1 kW/DA-D	12/21/59

1140-1150

Station	Main Studio	Freq	Power	Date
KWBZ	Englewood, CO	1150	1/5 kW/DA-N	10/19/79
KWBZ	Englewood, CO	1150	0.5/1 kW/DA-N	11/78
KWBZ	Englewood, CO	1150	5 kW/DA-2	9/12/80
KWKY	Des Moines, IA	1150	1 kW/DA-2	8/26/70
KXLR	North Little Rock, AR	1150	1/5 kW/DA-N	5/3/48
WCEN	Mt. Pleasant, MI	1150	0.5/1 kW/DA-N	6/27/69
WCOP	Boston, MA	1150	5 kW/DA-2	1/29/64
WCRK	Morristown, TN	1150	1/0.5 kW/DA-N	6/20/56
WCUE	Akron, OH	1150	1 kW/DA-D	2/23/49
WCUE	Akron, OH	1150	0.5/1 kW/DA-2	8/27/65
WDEL	Wilmington, DE	1150	5 kW/DA-2	8/9/48
WDEl	Wilmington, DE	1150	5 kW/DA-N	3/29/49
WDIX	Orangeburg, SC	1150	0.5/5 kW/DA-2	6/11/52
WGBR	Goldsboro, NC	1150	1/5 kW/DA-2	1/13/55
WGGH	Marion, IL	1150	5 kW/DA-D	7/18/55
WGOW	Chattanooga, TN	1150	1/5 kW/DA-N	3/27/70
WHMC	Gaithersburg, MD	1150	0.5/1 kW/DA-2	1/29/57
WIMA	Lima, OH	1150	1 kW/DA-N	3/24/71
WJBO	Baton Rouge, LA	1150	5 kW/DA-1	10/59
WJRD	Tuscaloosa, AL	1150	1/5 kW/DA-N	1/23/50
WJRL	Rockford, IL	1150	0.5 kW/DA-D	12/18/56
WKPA	New Kensington, PA	1150	1 kW/DA-D	5/27/66
WNDB	Daytona Beach, FL	1150	1 kW/DA-N	3/19/52
WRUN	Utica-Rome, NY	1150	1/5 kW/DA-2	4/14/47
WTAW	College Station, TX	1150	0.5/1kW/DA-N	10/13/77
WTMP	Temple Terrace, FL	1150	2.5/5 kW/DA-2	10/19/79
WTMP	Temple Terrace, FL	1150	5 kW/DA-D	12/18/56

1140-1150

Station	Main Studio	Freq	Power	Date
WYFE	Rockford, IL	1150	1 kW/DA-D	12/27/68
WYNE	Kimberly, WI	1150	5 kW/DA-2	11/16/79
WYNE	Kimberly, WI	1150	1 kW/DA-D	10/26/70
WYNS	Lehighton, PA	1150	1 kW/DA-D	7/8/59
NEW	Indianapolis, IN	1150	1 kW/DA-D	4/22/60
XEAD	Guadalajara, Jal.	1150	20 kW/DA-D	3/8/78
XEGE	Mexicali, Baja, CA	1150	0.5 kW/DA-N	8/27/65
XEJP	Mexico, DF	1150	10 kW/DA-N	8/23/63

166

Description Sheet
(2-28-62ct)

Station CBI
Sydney, Nova Scotia

10kw,DA-N,U,Class II
1140 kc

CANADIAN BROADCASTING CORPORATION
ENGINEERING DIVISION MONTREAL
TITLE Engineering Brief for Station CBI Sydney, N.S.

DWG. No.
DATE Nov. 20/61
ENG. J.H.S. APP. R.E.S.

DESCRIPTION OF ANTENNA ARRAY

Station: CBI Main Studio: Sydney, Nova Scotia

Frequency: 1140 kc/s Power: 10 kw Class: II

Geographical Location of centre of antenna system: Lat.: 46° 8' 12" N.
Long: 60° 16' 15" W.

Notification List No. 166 Date: January 5, 1962

ANTENNA CHARACTERISTICS

Day and Night Operation: (DA-N)

Number of Elements: 2

Type of Elements: Series excited, uniform cross-section, guyed, vertical steel towers.

Towers:	East	West
Height Above Insulators	200' (87.5°)	200' (87.5°)
Overall Height Above Ground	206'	206'
Night Phasing	0°	90° (Lead)
Night Field Ratio	0.93 (0.93 /-90°)	1.0 (1.0 /0°)

Spacing and Orientation: Elements are spaced 216' (90°) apart and lie on a line bearing 75°T.

Ground System: 120 radials per tower maximum length 345 ft. (0.4 λ). Radials joined along a line between towers.

Antenna Efficiency: 585 mv/m at 1 mile for 10 kw

185 mv/m at 1 mile for 1 kw

Transmission & Development Department

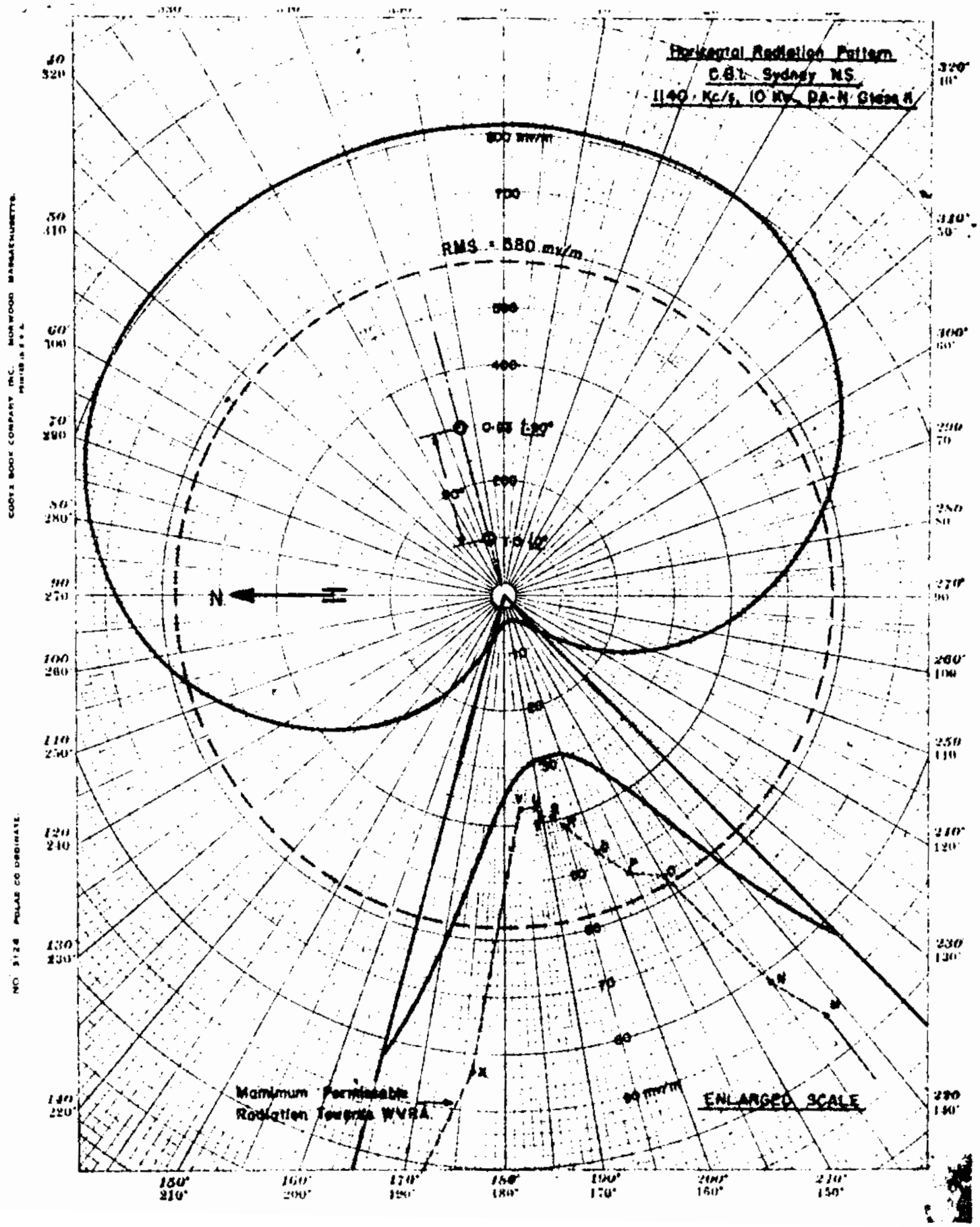
#166

CBI

Proposed Night
(2-28-62ct)

Station CBI
Sydney, Nova Scotia

10kw,DA-N,U,Class II
1140 kc



CKTR

Description Sheet
(11-29-68ct)

Station CKTR
Three Rivers, Quebec

10kw,DA-2,U,Class II
1140 kc

SUMMARY SHEET

STATION: CKTR

MAIN STUDIO: Three Rivers, Quebec

POWER: 10 KW

FREQUENCY: 1140 kHz

CLASS: II

NOTIFICATION LIST NO: 248

DATE: October 29, 1968.

GEOGRAPHICAL LOCATION:

North latitude 46° 14' 09"
West longitude 72° 33' 23"

Antenna Characteristics

MODE OF OPERATION: DA-2

NUMBER OF ELEMENTS: 6

TYPE OF ELEMENTS: Uniform Cross-Section, guyed steel towers, base insulated, for series feed.

TOWER:	#1N	#2	#3	#4	#5	#6S
HEIGHT ABOVE INSULATORS:	220'(91.8°)	220'	220'	220'	220'	220'
OVERALL HEIGHT ABOVE GROUND:	225'	225'	225'	225'	225'	225'
FIELD RATIO: DAY		0.333		1.000		
NIGHT	1.000	4.025	7.264	7.264	4.025	1.000
PHASING: DAY	-	0	-	+86°	-	-
NIGHT	-45°	108.2°	-98.0°	52.9°	-153.2°	0.0
SPACING:	285°	189.9°	95°	Ref.	95°	190°
ORIENTATION:	350.8°	351.3°	352.5°	Ref.	170.0°	170.0°

GROUND SYSTEM: 120 equally spaced radials of #10B and S bare copper wires per tower, buried approximately 8" length 346' (0.4 wavelength). 120 additional radials extend 50' from each tower. Each tower base to be connected by 2" wide copper strap.

PREDICTED EFFECTIVE FIELD:

DAY: 600 mv/m (10 Kw) or 191 mv/m Kw
NIGHT: 650 mv/m (10 Kw) or 207 mv/m/Kw

RCA VICTOR COMPANY, LTD.
MONTREAL, QUEBEC

PROJECT 2840-H

CKTR

Proposed Day
(11-29-68ct)

Station CKTR
Three Rivers, Quebec

10kw, DA-2, U, Class II
1140 kc

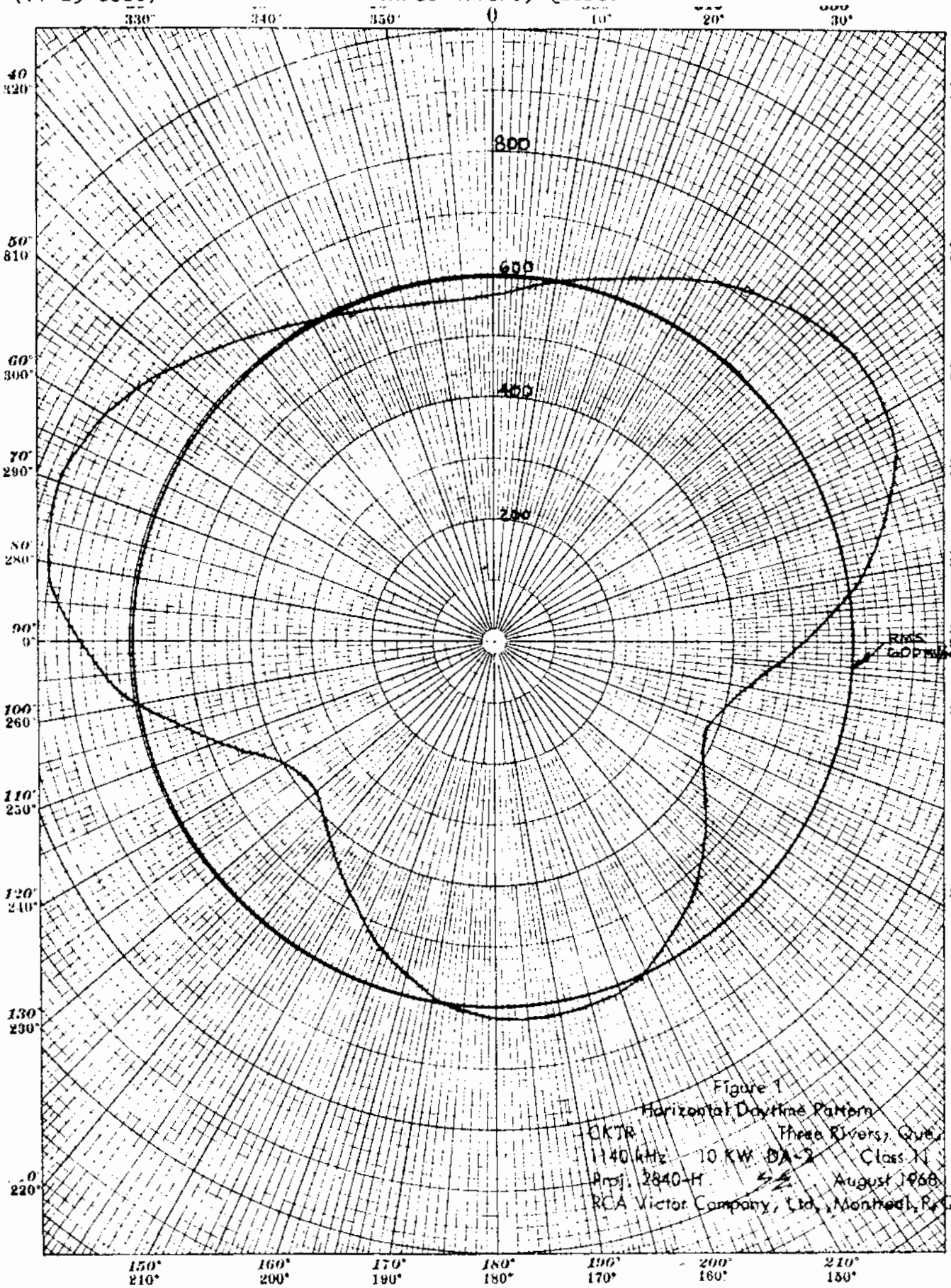


Figure 1
Horizontal Daytime Pattern
CKTR Three Rivers, Que.
1140 kHz 10 KW DA-2 Class II
Proj. 2840-H August 1968
RCA Victor Company, Ltd., Montreal, P.Q.

CKTR

Proposed Night
(11-29-68ct)

Station CKTR
Three Rivers, Quebec

10kw, DA-2, U, Class II
1140 kc

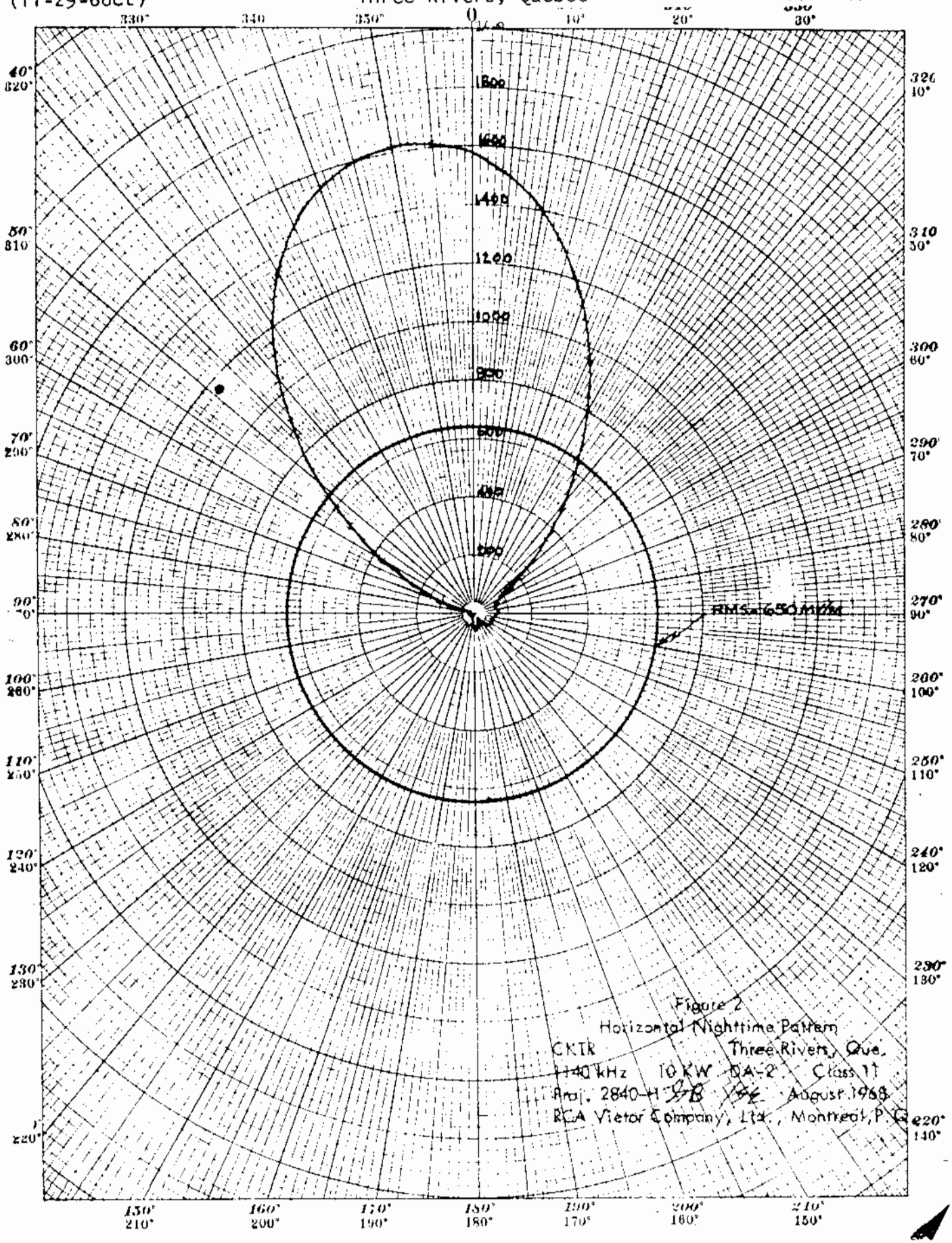


Figure 2
Horizontal Nighttime Pattern
CKTR Three Rivers, Que.
1140 kHz 10 KW DA-2 Class II
Proj. 2840-H SB August 1968
RCA Victor Company, Ltd., Montreal, P.Q.

CKTR

Proposed Night Nulls
(11-29-68ct)

Station CKTR
Three Rivers, Quebec

10kw,DA-2,U,Class II
1140 kc

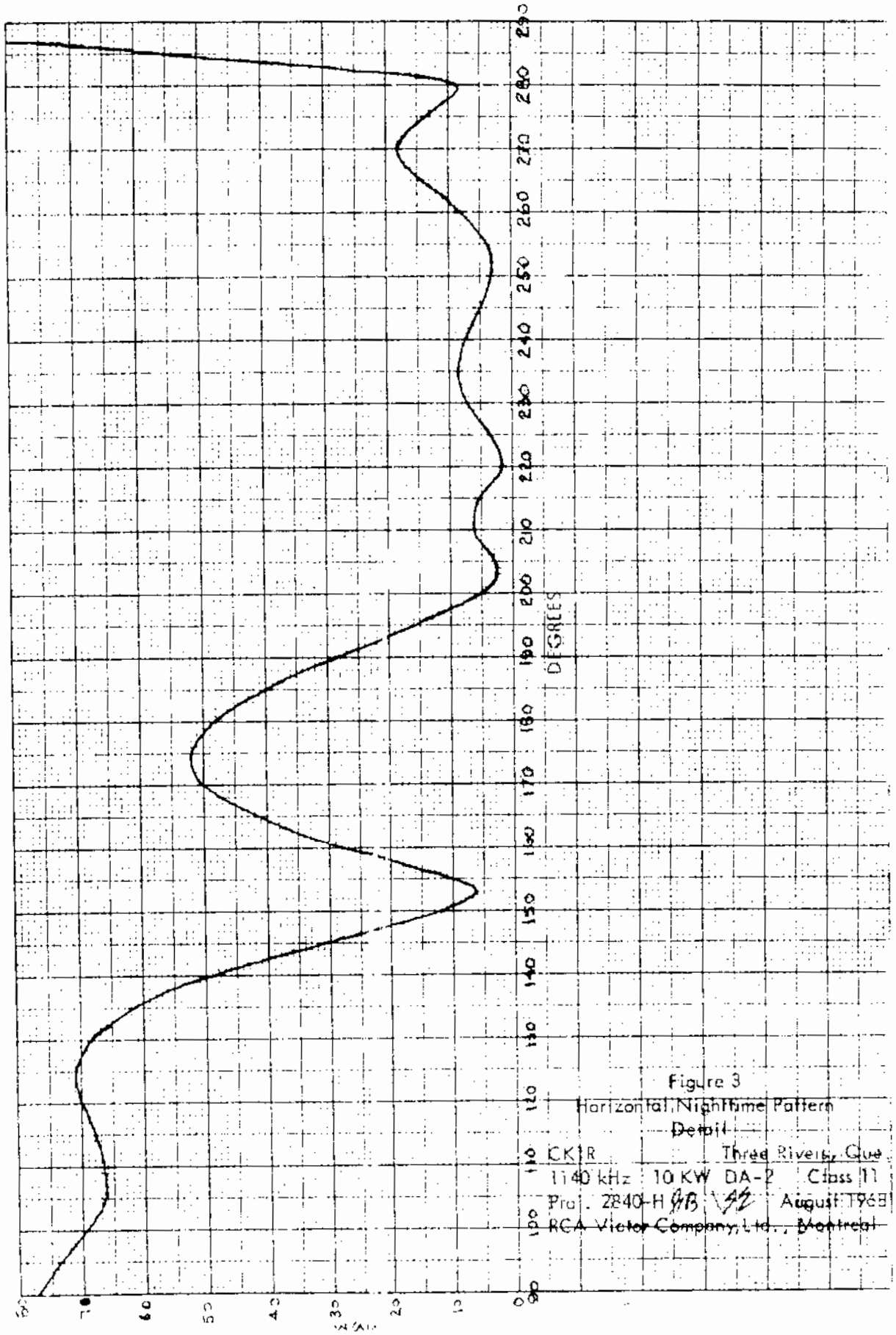


Figure 3
Horizontal Nighttime Pattern
Detail

CKTR Three Rivers, Que.
1140 kHz 10 KW DA-2 Class II
Proj. 2840-H GB VS August 1968
RCA Victor Company, Ltd., Montreal

1140KHz

PROJECT #623

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CKXL

MAIN STUDIO: Calgary, Alberta

FREQUENCY: 1140 kHz

POWER: 50,000 Watts CLASS: II

NOTIFICATION LIST: 407

DATE: August 25, 1981

GEOGRAPHICAL LOCATION:

Latitude 50° 55' 25" North
Longitude 113° 49' 58" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-2
Number of Elements: 4 (Four)
Type of Elements: Guyed steel towers, uniform cross-section, base insulated for series feed

TOWERS:	#1 (W)	#2 (N)	#3 (E)	#4 (S)
Height above Base Insulators:	216'(90°)	216'(90°)	216'(90°)	216'(90°)
Overall Height:	220'	220'	220'	220'
Orientation:	Ref.	30°	82.2°	118.5°
Spacing:	Ref.	90°	151.87°	120°
Day Phasing:	Ref.	-30°	- -	45°
Night Phasing:	Ref.	-91.4°	-24.1°	67.3°
Day Field Ratio:	1.0	0.25	- -	0.2
Night Field Ratio:	1.0	0.87	0.896	1.03

GROUND SYSTEM:

120 equally spaced radials of #10 bare soft copper wire extending 345' (0.4 wavelength) from the base of each tower with the exception of those joined along the common chords.

PREDICTED EFFECTIVE FIELD:

Night

1250 mV/m at 1 mile for 50 kW
177 mV/m at 1 mile for 1 kW

Day

1273 mV/m at 1 mile for 50 kW
180 mV/m at 1 mile for 1 kW

December 19, 1980
Revised August 5, 1981

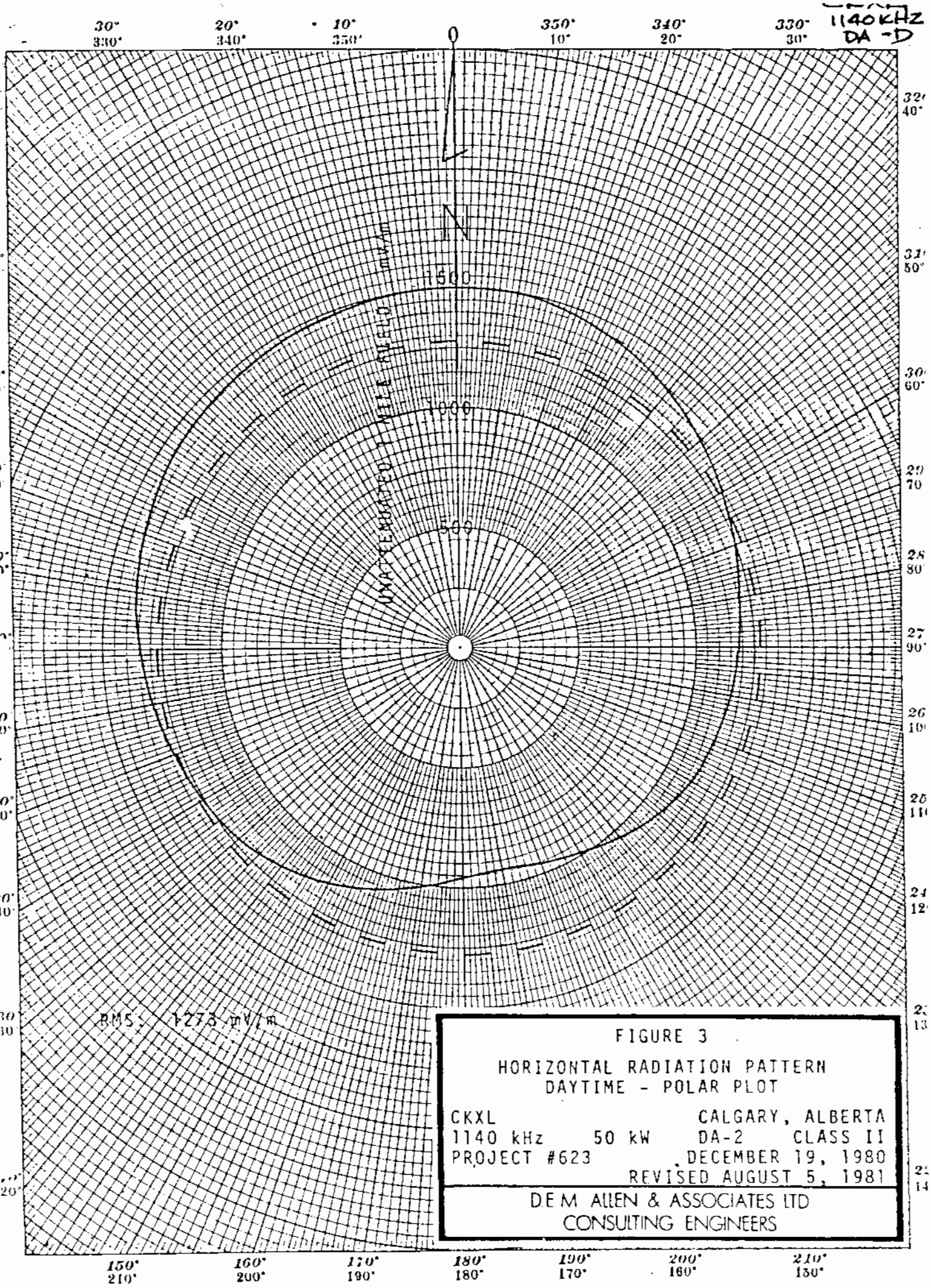


FIGURE 3

HORIZONTAL RADIATION PATTERN
DAYTIME - POLAR PLOT

CKXL CALGARY, ALBERTA
1140 kHz 50 kW DA-2 CLASS II
PROJECT #623 DECEMBER 19, 1980
REVISED AUGUST 5, 1981

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

Description Sheet
(11-29-68ct)

Station CKXL
Calgary, Alberta
CORRECTED
DESCRIPTION SHEET

10kw,50kw-LS,DA-2,U,Class II
1140 kc

STATION: CKXL

MAIN STUDIO: Calgary, Alberta.

POWER: 50 KW D, 10 KW N

FREQUENCY: 1140 Kc/s CLASS: II

NOTIFICATION LIST NO. 195

DATE: February 22, 1965

GEOGRAPHICAL LOCATION:

North Latitude: 50° 52' 36"
West Longitude: 114° 02' 30"

ANTENNA CHARACTERISTICS

MODE OF OPERATION: DA-2

NUMBER OF ELEMENTS: Three (3)

TYPE OF ELEMENTS: Guyed Steel Towers, uniform cross section, base insulated for series Feed.

TOWER:	North #1	Center #2	South #3
HEIGHT ABOVE INSULATORS:	215' (90°)	215' (90°)	215' (90°)
OVERALL HEIGHT:	230'	230'	230'
FIELD RATIO -Night	.588	1.0	.588
PHASING - Night	+210.3°	0°	-210.3°
FIELD RATIO - Day	1.0	1.1	.45
PHASING - Day	0°	+125°	+45°

GROUND SYSTEM: 120 equally spaced radials per tower of No. 10 B & S gauge bare copper wire, buried approximately 8". Length of radials 345' (0.4 wavelength) with the exception of those joined along the common chords.

SPACING AND ORIENTATION:
The towers are on a line bearing 11° East of North and adjacent towers are spaced 191' (80°) apart.

PREDICTED EFFECTIVE FIELD:

Daytime: 1330 mv/m at 1 mile for 50 KW
188 mv/m at 1 mile for 1 KW

Nighttime: 575 mv/m at 1 mile for 10 KW
181.5 mv/m at 1 mile for 1 KW

NOTE: Please attach the nighttime pattern notified for CKXL in Canadian Change List No. 122, dated May 27, 1968 to this revised description sheet and daytime pattern. This only concerns a change in daytime operation.

F.95

CKXL

Proposed Day
(3-26-65ct)

Station CKXL
Calgary, Alberta

10kw,50kw-LS,DA-2,U,Class II
1140 kc

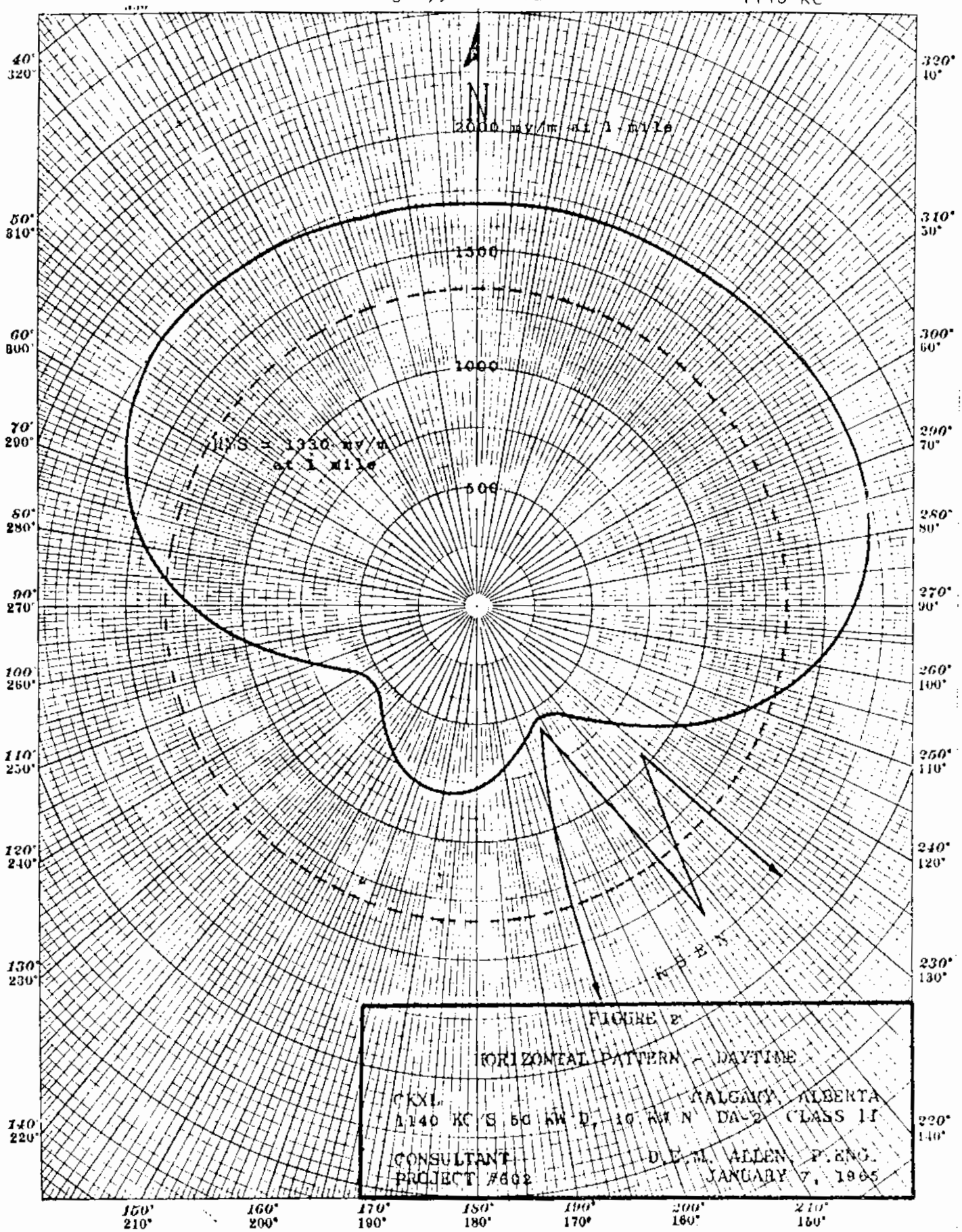


FIGURE 2

HORIZONTAL PATTERN - DAYTIME

CKXL CALGARY, ALBERTA
1140 KC S 50 KW D, 10 KW N DA-2 CLASS II

CONSULTANT D.E.M. ALLEN, P.ENG.
PROJECT #602 JANUARY 7, 1965

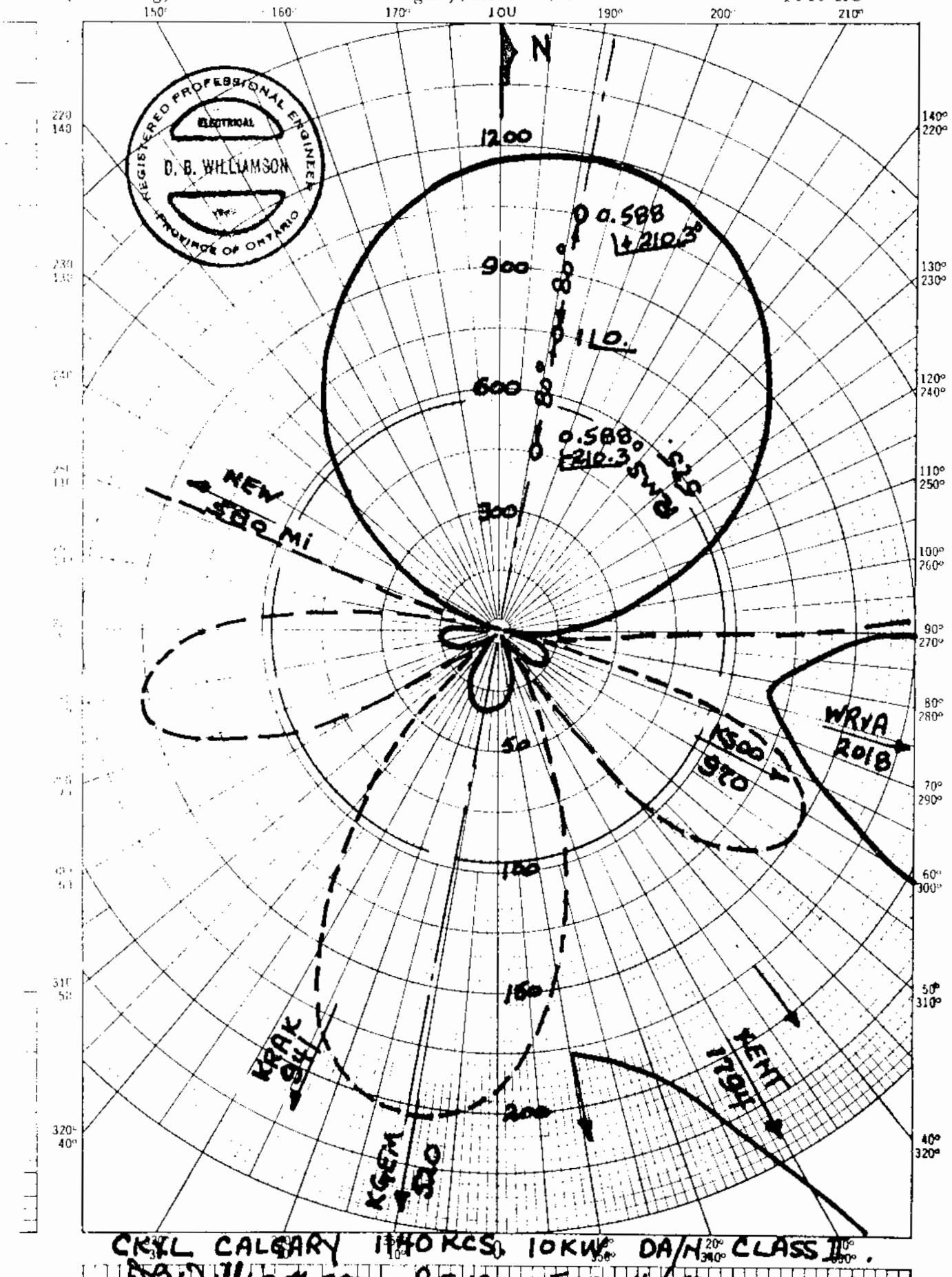
#122

CKXL

PROPOSED NIGHT
(5-28-59g)

Station CKXL
Calgary, Alberta, Canada

10kw, DA-N,U, Class II
1140 KC



CKXL CALGARY 1140 KCS, 10KW, DA/N, CLASS II.
D.B. Williamson P.ENG. FEB. 4/59 ISSUE 2

LIST 122

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : NEW Main Studio: Conroe, Texas

Frequency : 1140 KHz Power : _____ Night .25 kW Day ___

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

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	30	20	40
West Longitude:	95	27	32

ANTENNA CHARACTERISTICS

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

TOWER :	W(#1)	E(#2)				
HEIGHT ABOVE INSULATORS :	192'	192'	(80.1°)			
DAY PHASING :	0°	-75°				
DAY FIELD RATIO :	1	1				

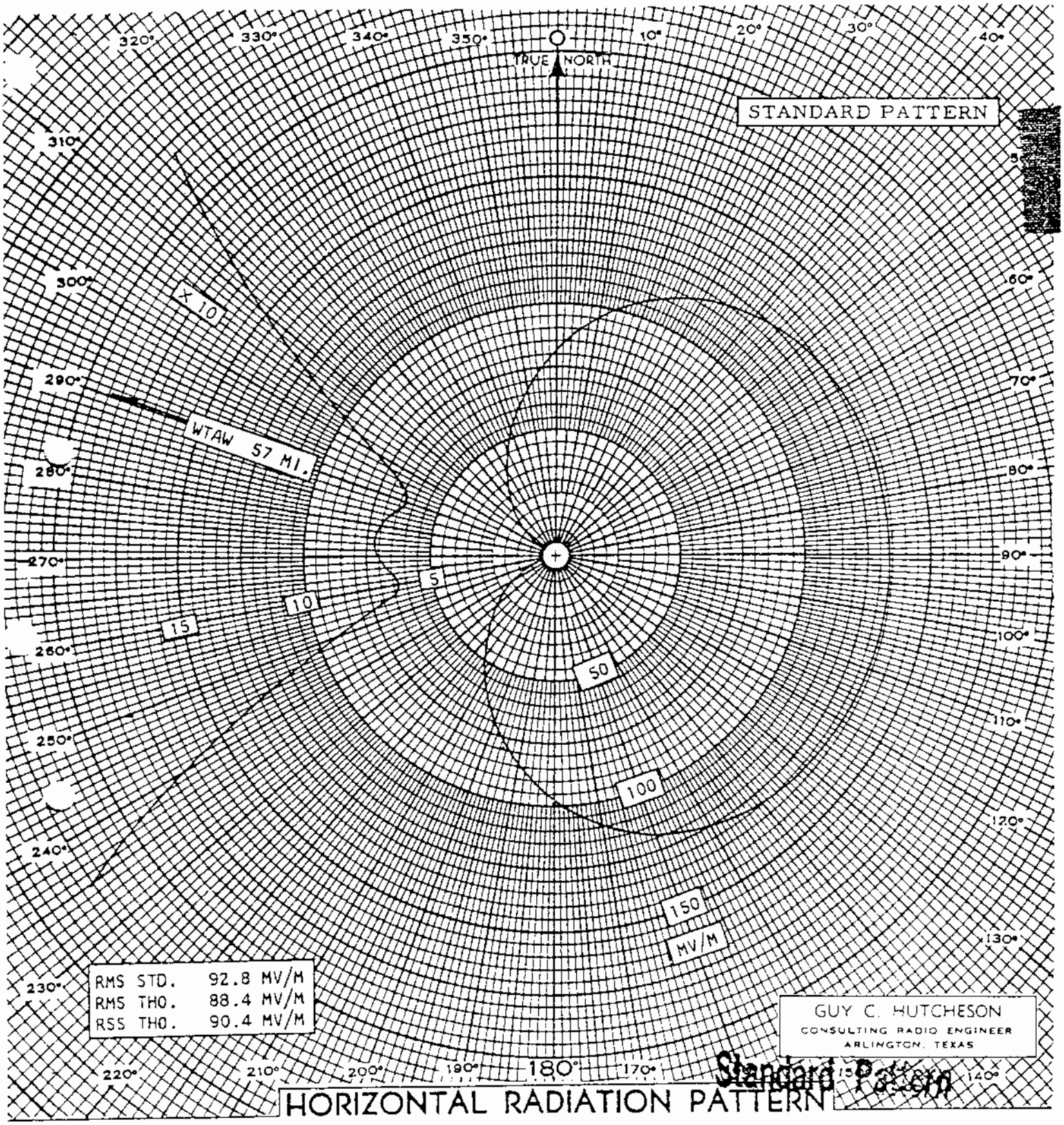
SPACING AND ORIENTATION : The towers in a row are spaced 211' (88°) on a line bearing 96° True.

GROUND SYSTEM : 120 - 215' to _____' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	88.4 mv/m	90.4 mv/m	92.8 mv/m
Night	_____ mv/m	_____ mv.m	_____ mv/m

Note:



HORIZONTAL RADIATION PATTERN

N. 96° E.

88°

1 ∠0° #1 W.

1 ∠-95° #2 E.

(NEW) CONROE, TEXAS
Station

1140 KHZ. 0.25 KW,DA-D
Frequency Power

G1 = G2 = 192 FT. = 80.9
Height of Antennas

Location
N. LAT. 30° 20' 40"
W. LNG. 95° 27' 32"

KCMJ
1140kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KCMJ

Main Studio: Palm Springs, California

Frequency: 1140 kHz

Power: 5kw Night 10kw Day

Notification List No. 1790

Date: December 4, 1980 Class: II

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

DAYTIME		NIGHTTIME	
North Latitude:	33° 51' 41"	North Latitude:	33° 49' 43"
West Longitude:	116° 31' 44"	West Longitude:	116° 26' 16"

NIGHTTIME ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 5
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	SW(#1)	SWC(#2)	C(#3)	NEC(#4)	NE(#5)
HEIGHT ABOVE INSULATORS:	216'	216'	216'	216'	216' (90.12°)
NIGHT PHASING:	0°	+151.15°	-57.89°	+93.07°	-115.78°
NIGHT FIELD RATIO:	1.0	3.206	4.468	3.260	1.0

SPACING AND ORIENTATION: Towers in a row are spaced 118.8° on a line bearing 53.3° true.

GROUND SYSTEM: 120 - 216' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

DAYTIME ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (ND-D)
Number of elements: 1
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.
* Includes top loading.

HEIGHT ABOVE INSULATORS: 150' (77.2°) *

GROUND SYSTEM: 120 - 180' to 262' equally spaced copper radials about each tower.

KCMJ
1140KHz

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	585 mv/m		
Night	392 mv/m	530 mv/m	412 mv/m

KCMJ
1140kHz

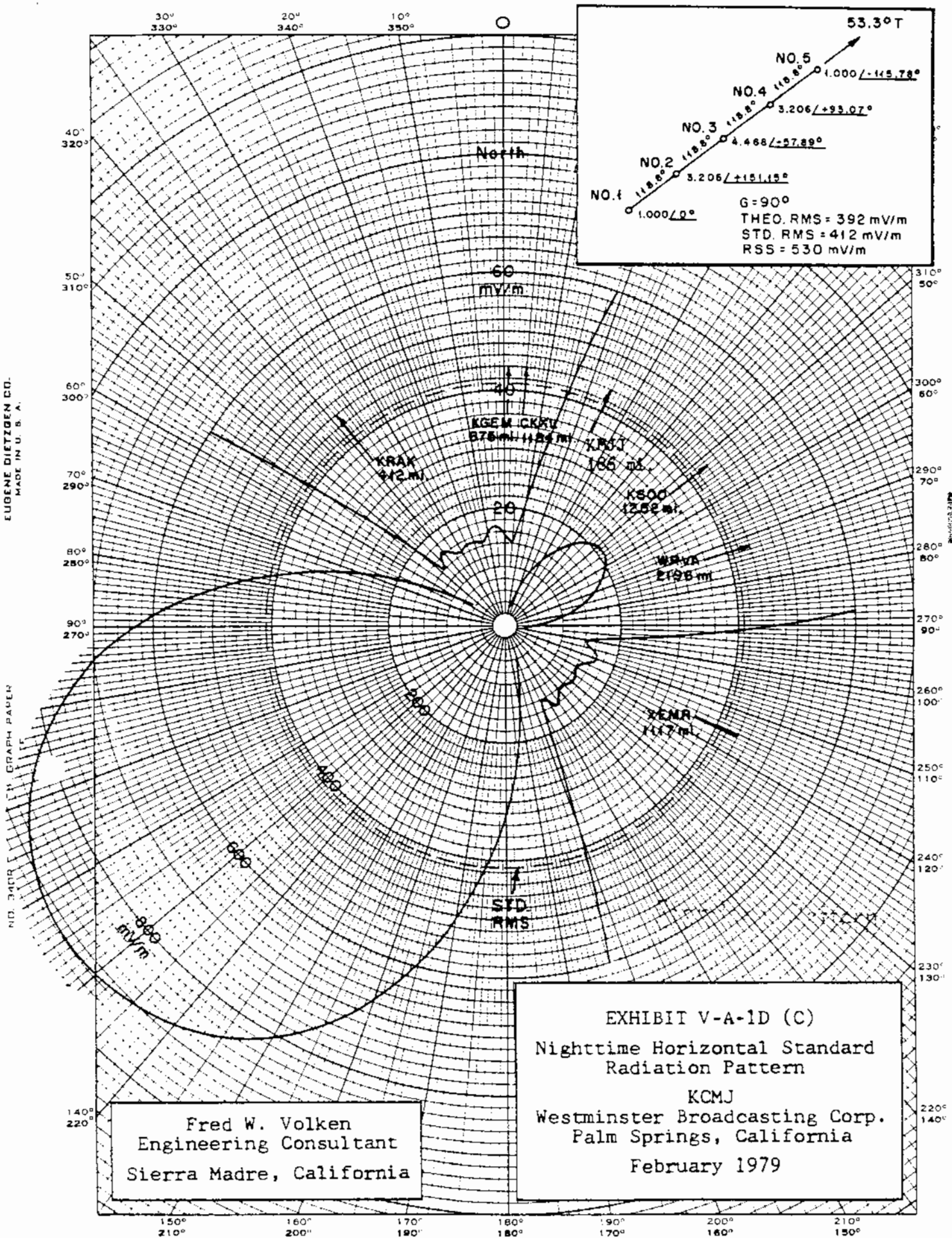


EXHIBIT V-A-1D (C)

Nighttime Horizontal Standard Radiation Pattern

KCMJ
Westminster Broadcasting Corp.
Palm Springs, California

February 1979

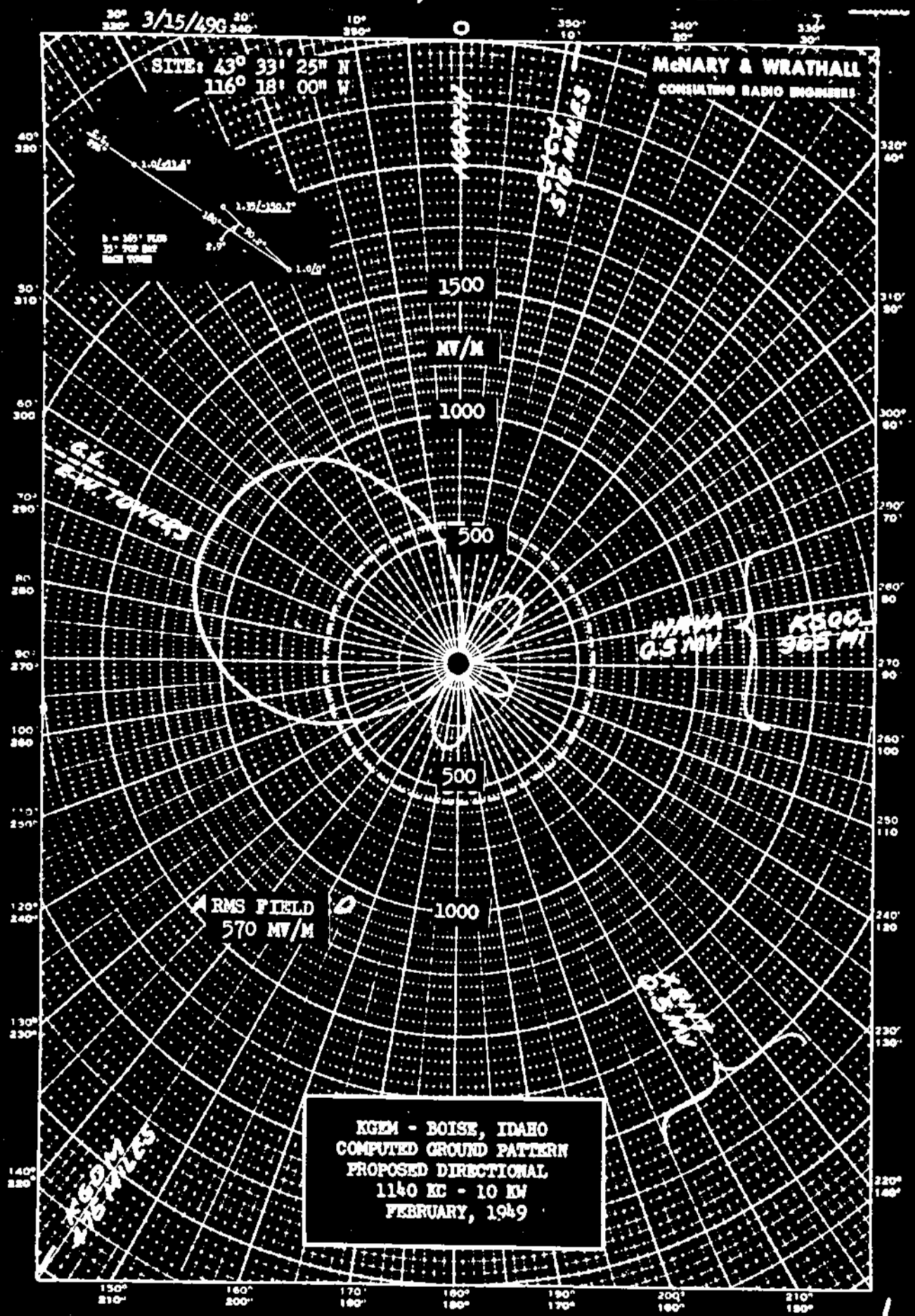
Fred W. Volken
Engineering Consultant

Sierra Madre, California

PROPOSED NIGHT & DAY

Station KGEM
Boise, Idaho

10kw, DA-1,U
1140 KC



AMENDMENT RECD 3-11-49

KGEM, BOISE, IDAHO 1140 kc

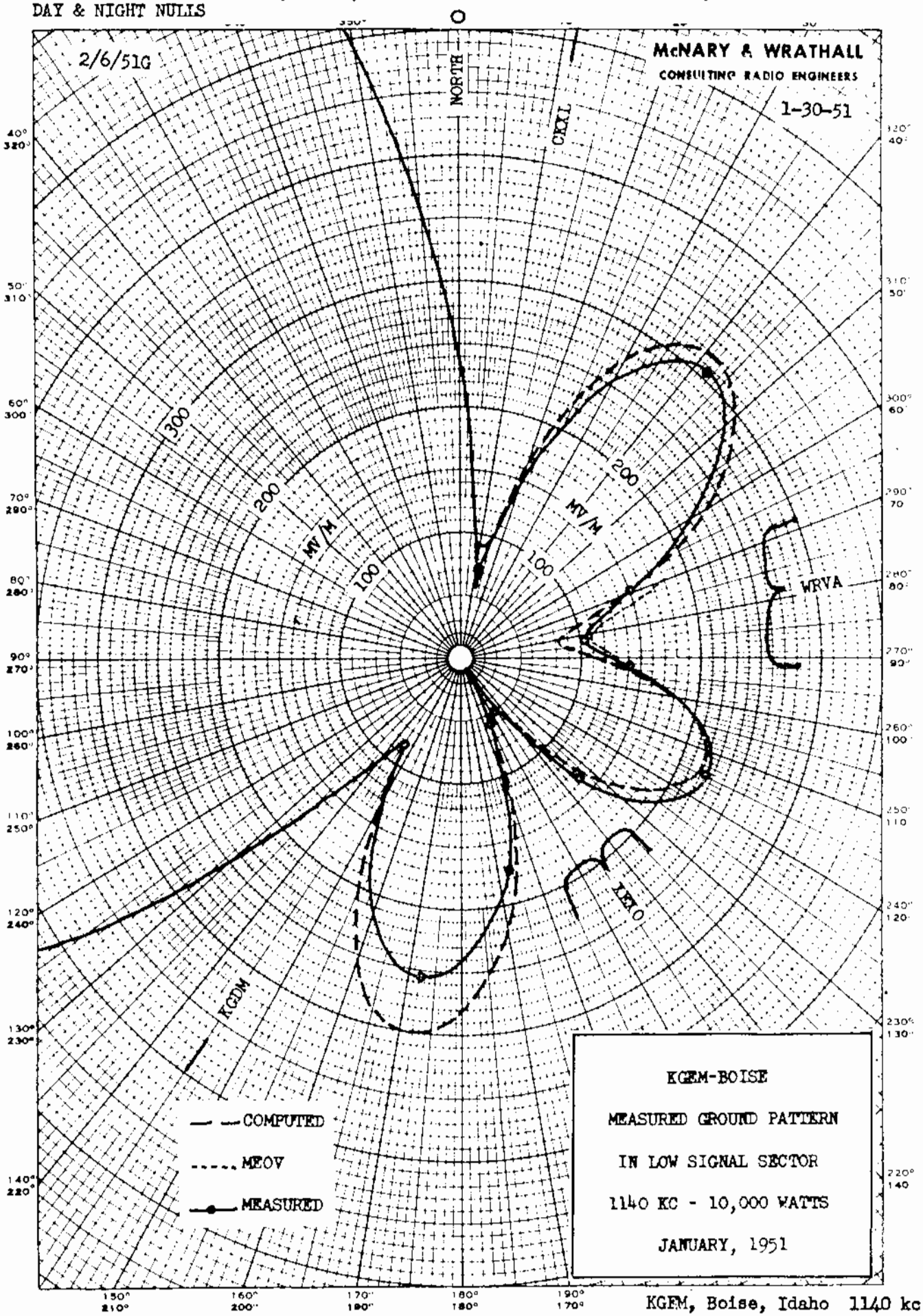
KGEM

MEASURED
DAY & NIGHT NULLS

KGEM, BOISE, IDAHO

10kw, DA-1

1140 kc

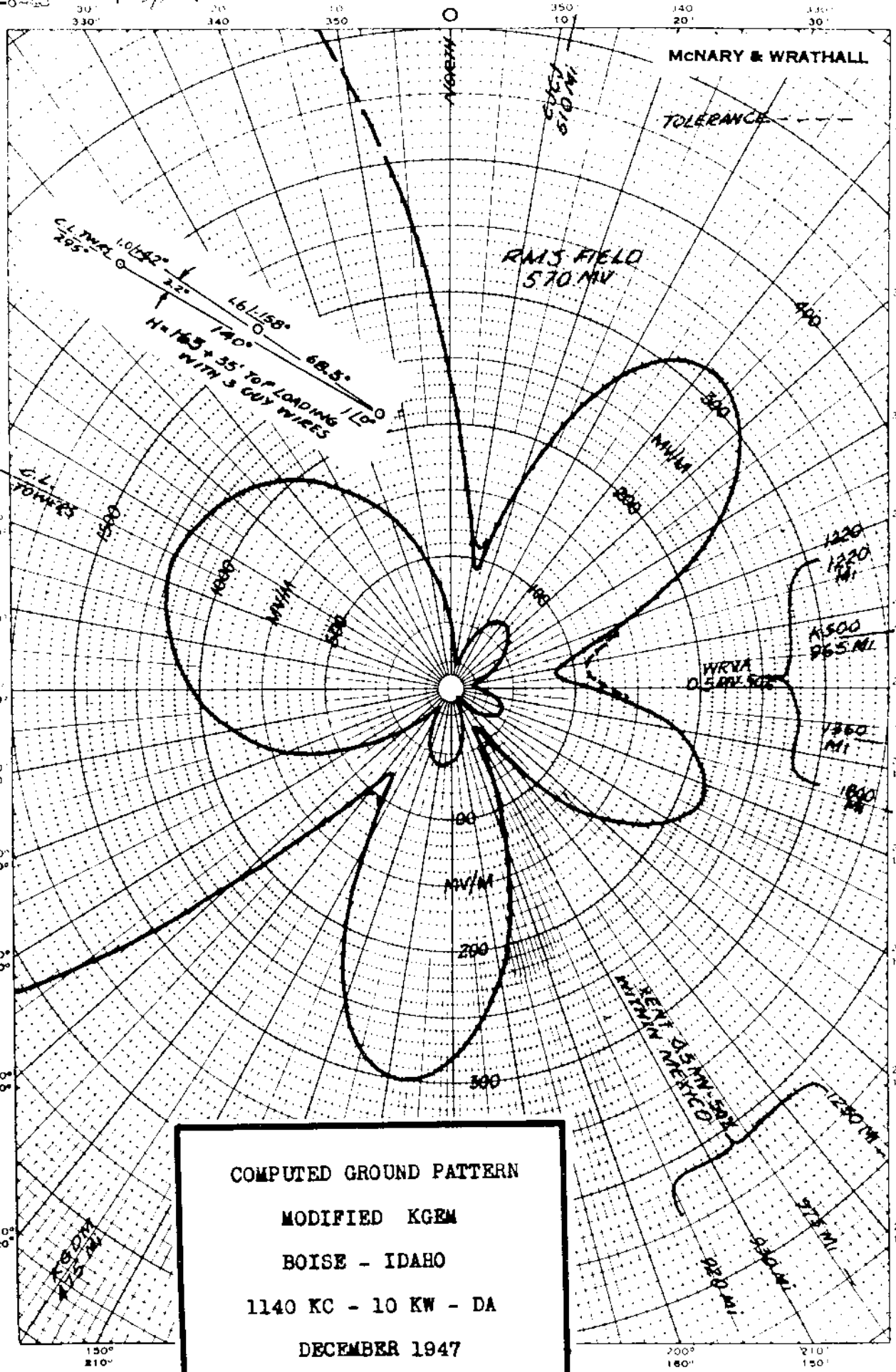


KGEM, Boise, Idaho 1140 kc

Recd'd 1-6-48 Prop. Day & Night

KGEM

114



COMPUTED GROUND PATTERN

MODIFIED KGEM

BOISE - IDAHO

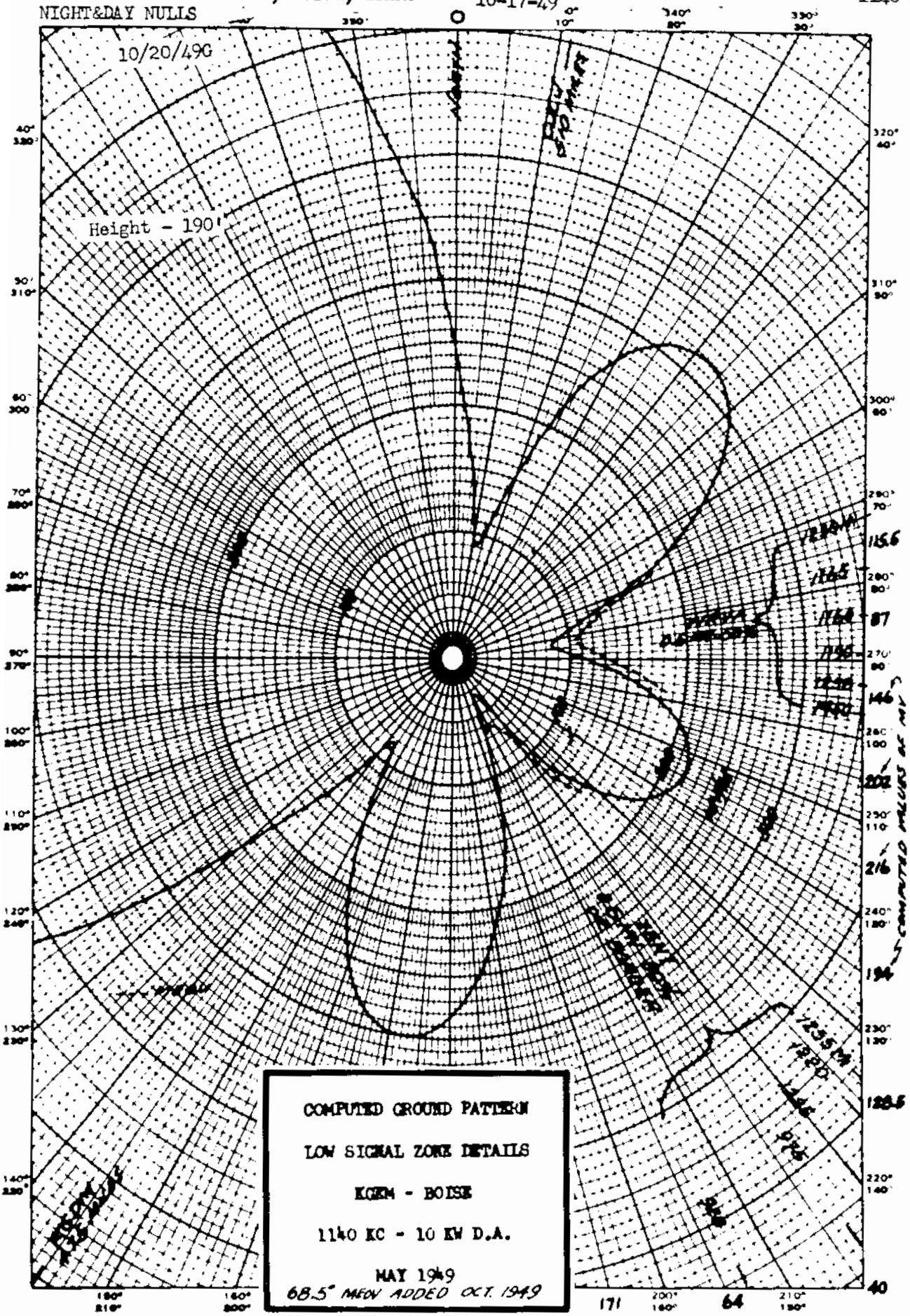
1140 KC - 10 KW - DA

DECEMBER 1947

KGEM

PROPOSED KGEM, BOISE, IDAHO 10-17-49 10kw, DA-1 1140 kc

NIGHT&DAY NULLS



EXH. 1

KGEM, Boise, Idaho 1140 kc

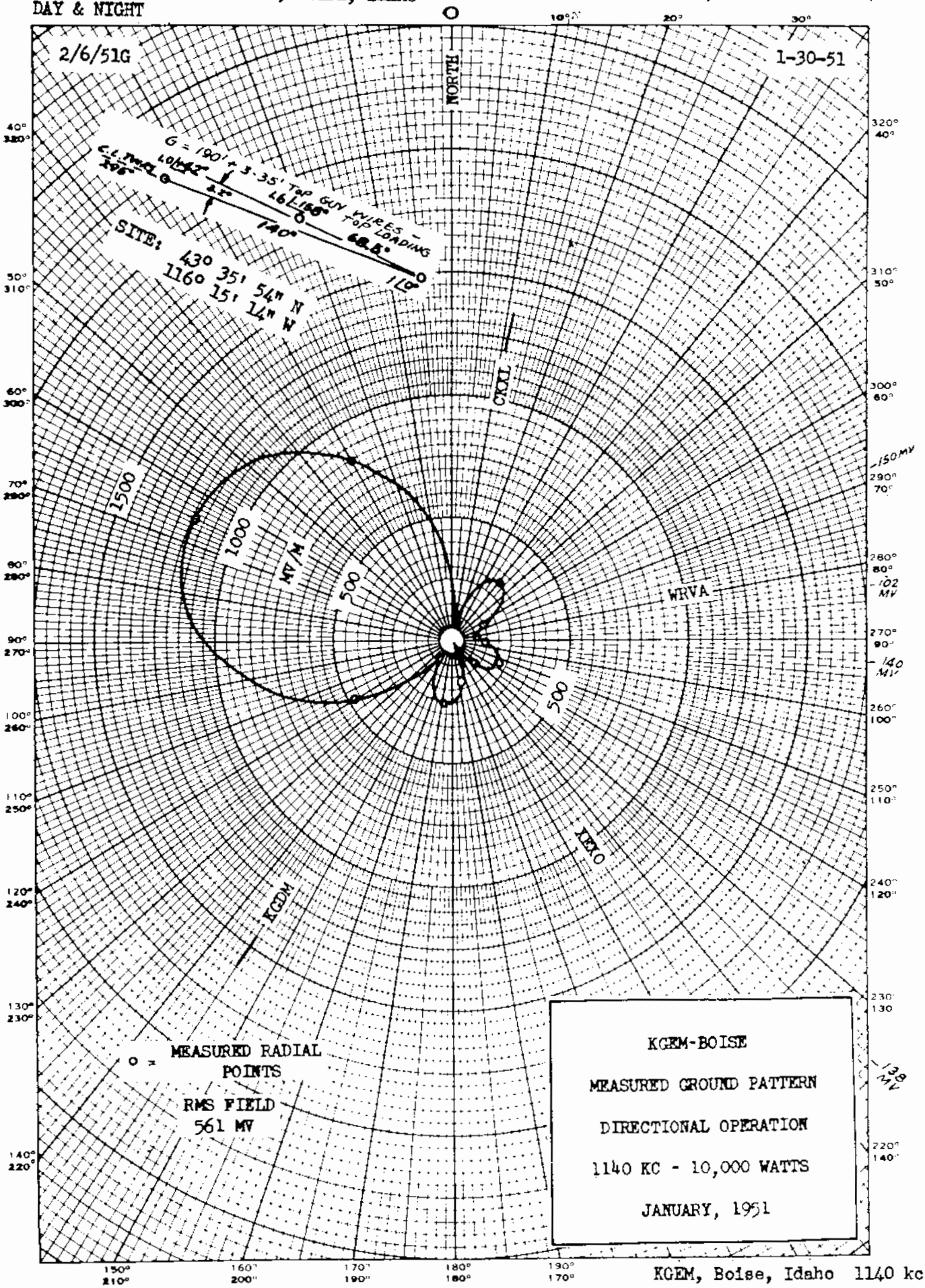
KGEM

MEASURED
DAY & NIGHT

KGEM, BOISE, IDAHO

10kw, DA-1

1140 kc



KGEM, Boise, Idaho 1140 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station	: KLUC	Main Studio:	North Las Vegas, Nevada
Frequency	: 1140 kHz	Power	: 2.5kw Night 10kw Day
Notification List No.:	1750	Date	: September 21, 1977 Class: II

GEORGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	36°	16'	03"
West Longitude:	115°	02'	41"

ANTENNA CHARACTERISTICS

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

TOWER :	NW (#1)	CW(#2)	CE(#3)	SE(#4)	
HEIGHT ABOVE INSULATORS :	240'	240'	240'	240'	(100.1°)
PHASING :	0°	+38.6°	+80.9°	+117.6°	
FIELD RATIO :	1	2.2	2.16	0.95	

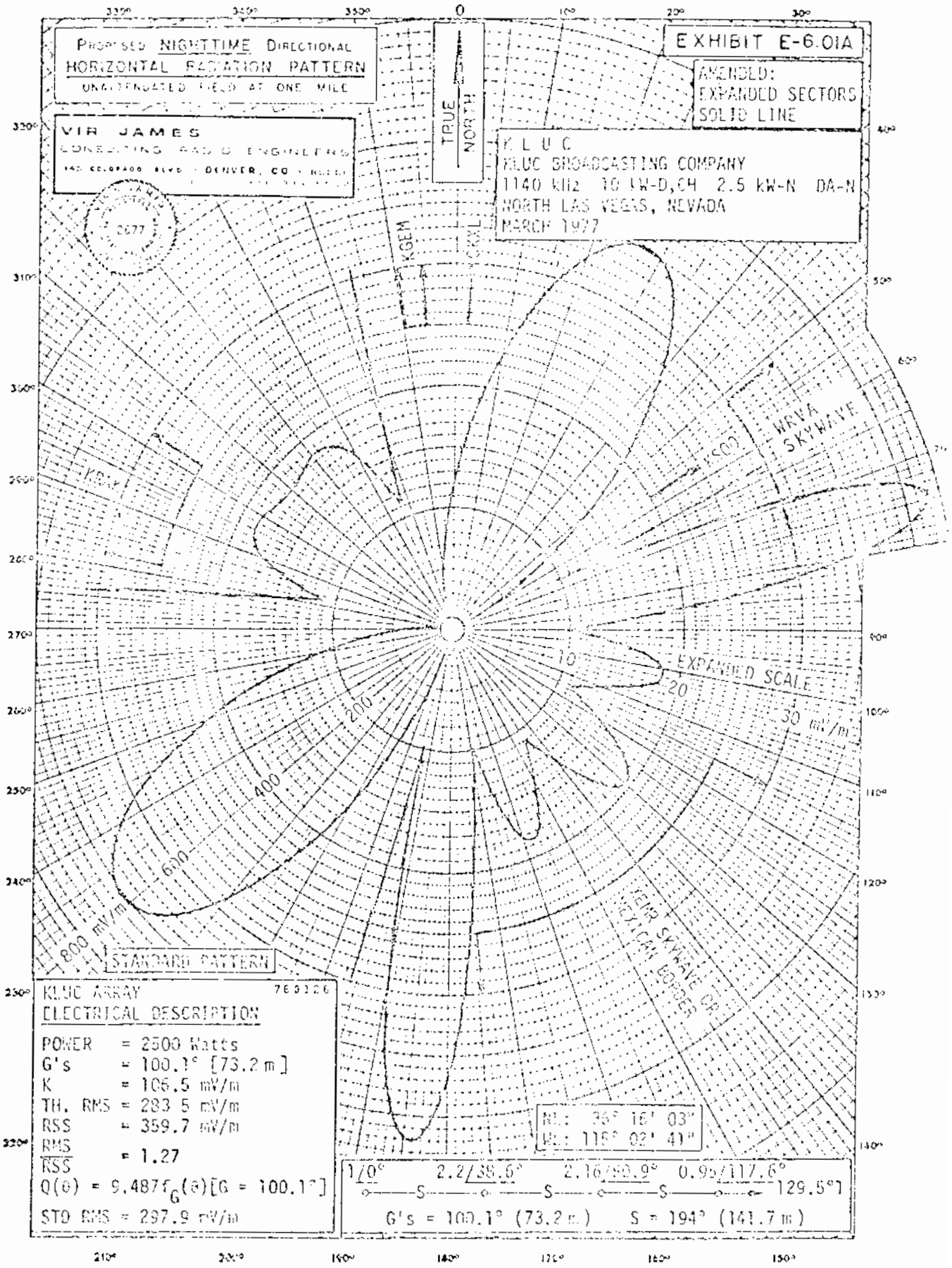
SPACING AND ORIENTATION: Adjacent towers in a row are spaced 465' (19.°) on a line bearing 129.5° true.

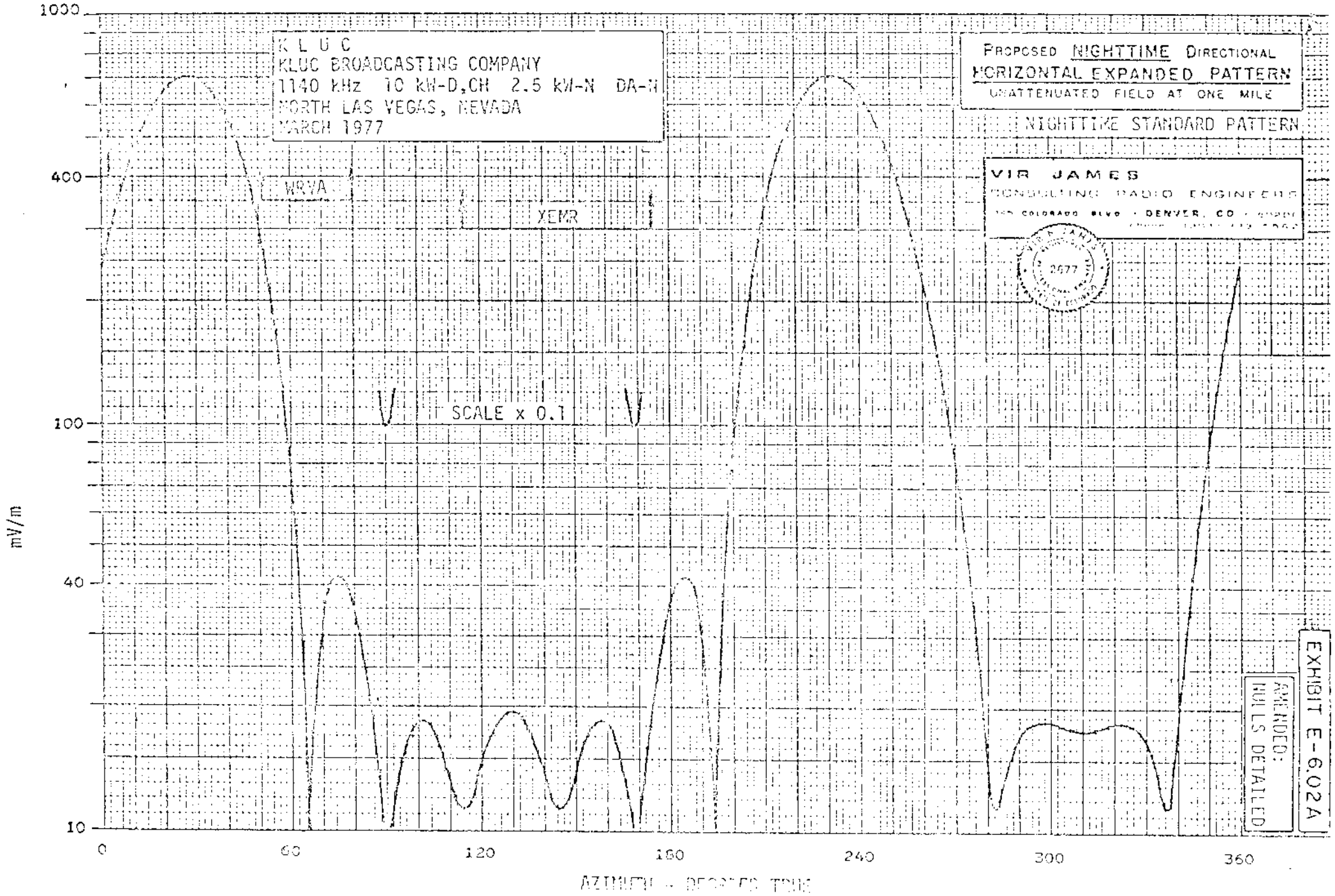
GROUND SYSTEM: 120 - 216' equally spaced copper radials plus 120 - 50' interspaced radials/ about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	613.5 mv/m		
Night	283.5 mv/m	359.7 mv/m	297.9 mv/m

Note: This notification concerns changes in the Daytime and Nighttime operation of the station.


PROPOSED NIGHTTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
EXHIBIT E-6.01A
AMENDED:
EXPANDED SECTORS
SOLID LINE
VIR JAMES
CONSULTING RADIO ENGINEERS
DENVER, CO
TRUE NORTH
K L U C
KLUC BROADCASTING COMPANY
1140 KHz 10 kW-D,CH 2.5 kW-N DA-N
NORTH LAS VEGAS, NEVADA
MARCH 1977
KGEM
KOIL
KGNW
KRVA
SKYWAVE
EXPANDED SCALE
10
20
30 mV/m
200
400
600
800 mV/m
STANDARD PATTERN
KEIM SKYWAVE
VERTICAL POWER
KLUC ARRAY 760326
ELECTRICAL DESCRIPTION
POWER = 2500 Watts
G's = 100.1° [73.2 m]
K = 106.5 mV/m
TH. RMS = 283.5 mV/m
RSS = 359.7 mV/m
RMS/RSS = 1.27
Q(θ) = 9.487f_G(θ)[G = 100.1°]
STD RMS = 297.9 mV/m
NL: 36° 16' 03"
WL: 115° 02' 41"
1/0° 2.2/38.6° 2.16/60.9° 0.95/117.6° 129.5°]
G's = 100.1° (73.2 m) S = 194° (141.7 m)

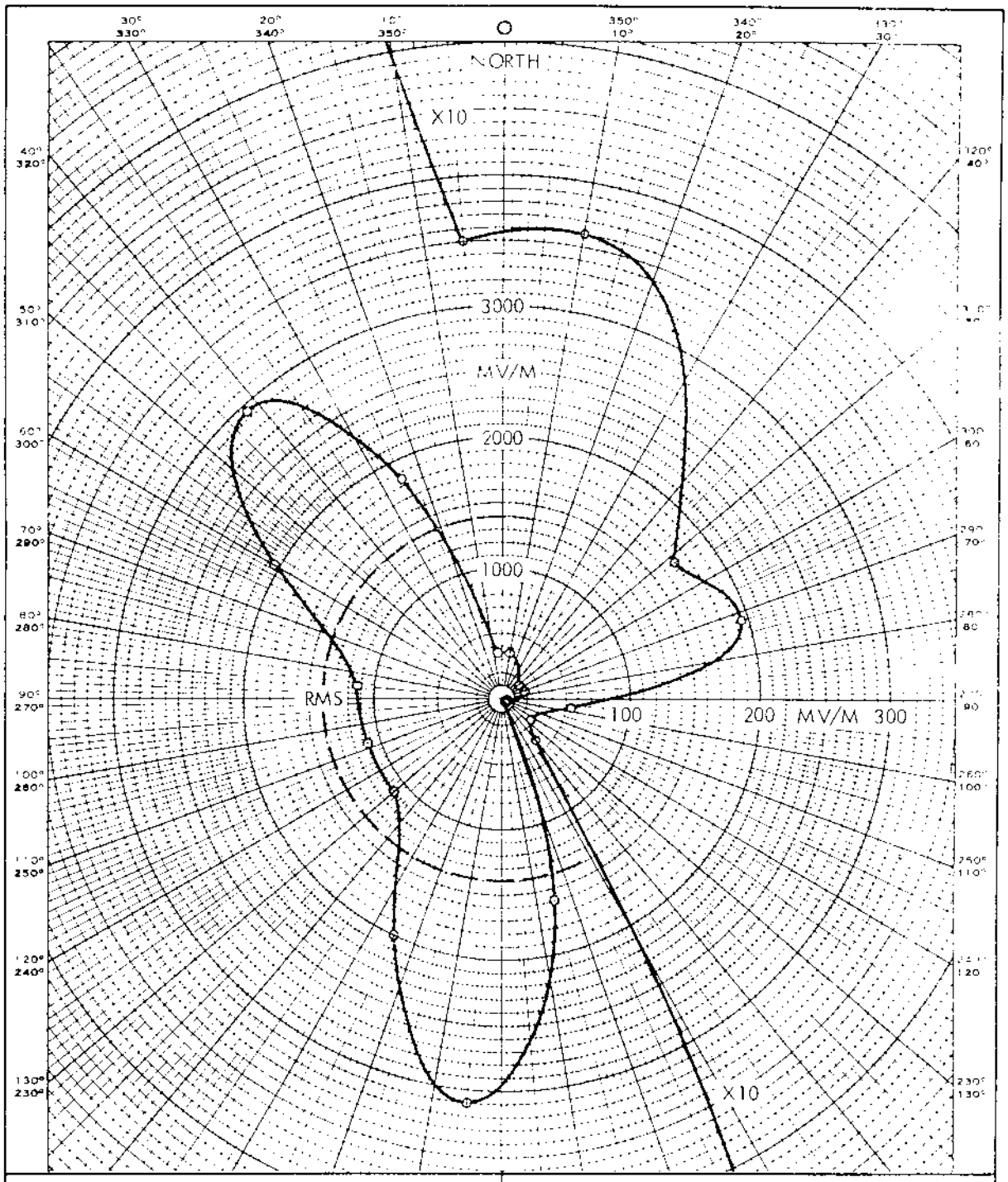

K L U C
KLUC BROADCASTING COMPANY
1140 kHz 10 kW-D,CH 2.5 kW-N DA-N
NORTH LAS VEGAS, NEVADA
MARCH 1977
PROPOSED NIGHTTIME DIRECTIONAL
HORIZONTAL EXPANDED PATTERN
UNATTENUATED FIELD AT ONE MILE
NIGHTTIME STANDARD PATTERN
VIR JAMES
CONSULTING RADIO ENGINEERS
DENVER, CO
2677
WRVA
XEMR
SCALE x 0.1
1000
400
100
40
10
mV/m
0
60
120
180
240
300
360
AZIMUTH - DEGREES TRUE
EXHIBIT E-6.02A
AMENDED:
NULLS DETAILED

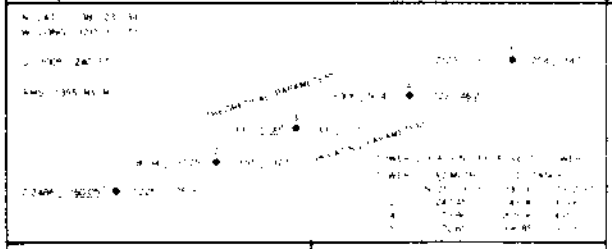
KRAK

Measured Day & Night
(2-22-71ct)

Station KRAK
Sacramento, California

50kw,DA-1,U
1140 kc





MEASURED
HORIZONTAL RADIATION PATTERN
DIRECTIONAL

UNATTENUATED FIELD INTENSITY
AT ONE MILE

HAMMETT & EDISON
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KRAK
1140 KHZ. 50 KW DA-1
SACRAMENTO, CALIFORNIA

700601

FIGURE 10B

FCC File No.BL-12859
Accepted 2-8-71

Station KRAK
Sacramento, California

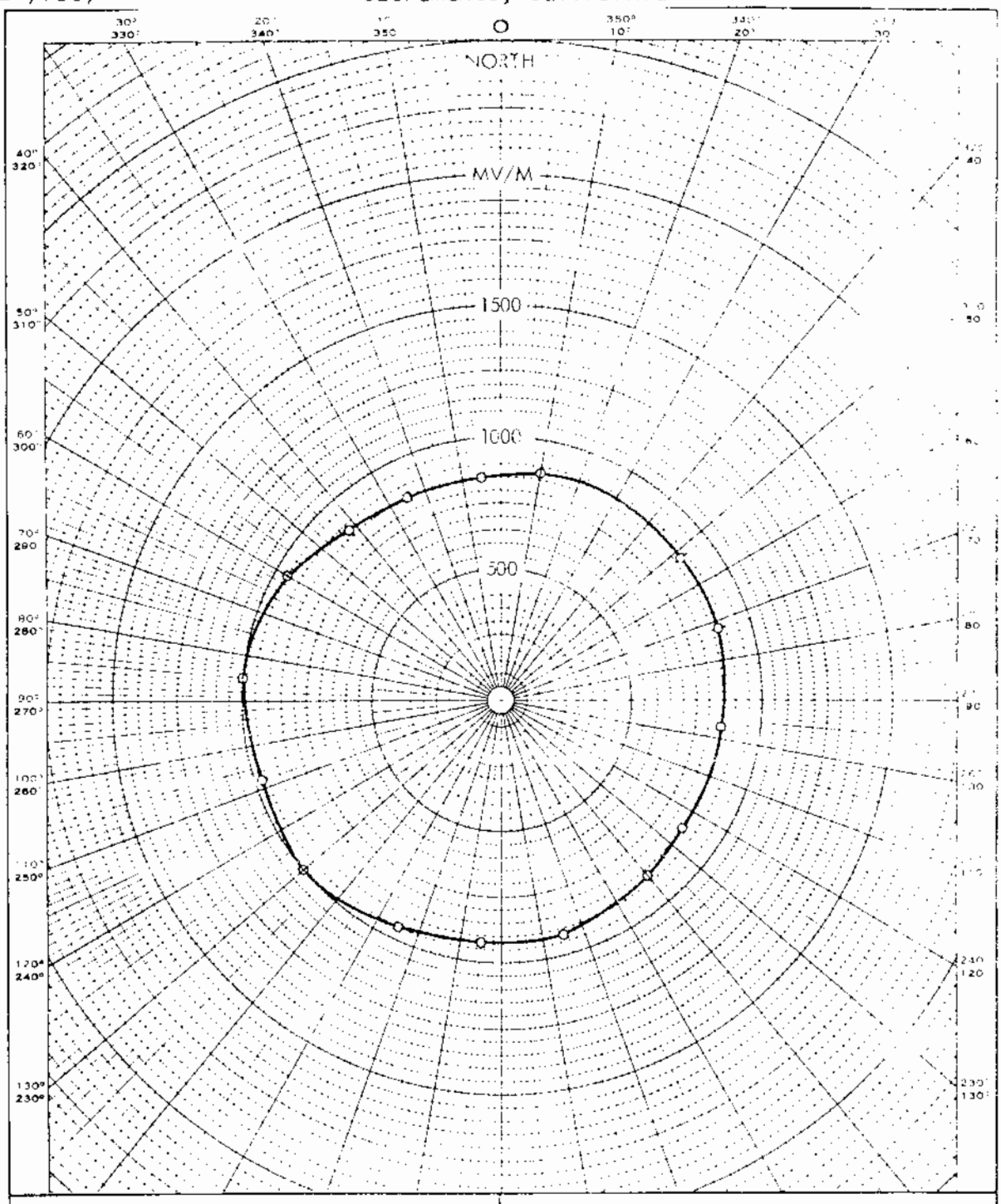
1140 kc

KRAK

Measured Non-DA
(2-22-71ct)

Station KRAK
Sacramento, California

50kw, DA-1, U
1140 kc



N. LAT 38 23' 34"
W. LONG 121 11' 51"
G 100° 240 FT
RMS 903 MV/M

TOWER 2 EXCITED
TOWERS 1 3 4 & 5 FLOATING

HAMMETT & EDISON
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KRAK
1140 KHZ 50 KW DA 1
SACRAMENTO CALIFORNIA

700501

MEASURED
HORIZONTAL RADIATION PATTERN
NON-DIRECTIONAL

UNATTENUATED FIELD INTENSITY
AT ONE MILE

FIGURE 10A

FCC File No. BL-12859
Accepted 2-8-71

Station KRAK
Sacramento, California

1140 kc

KRAK

Proposed Day & Night Nulls
(5-27-69ct)

Station KRAK
Sacramento, California

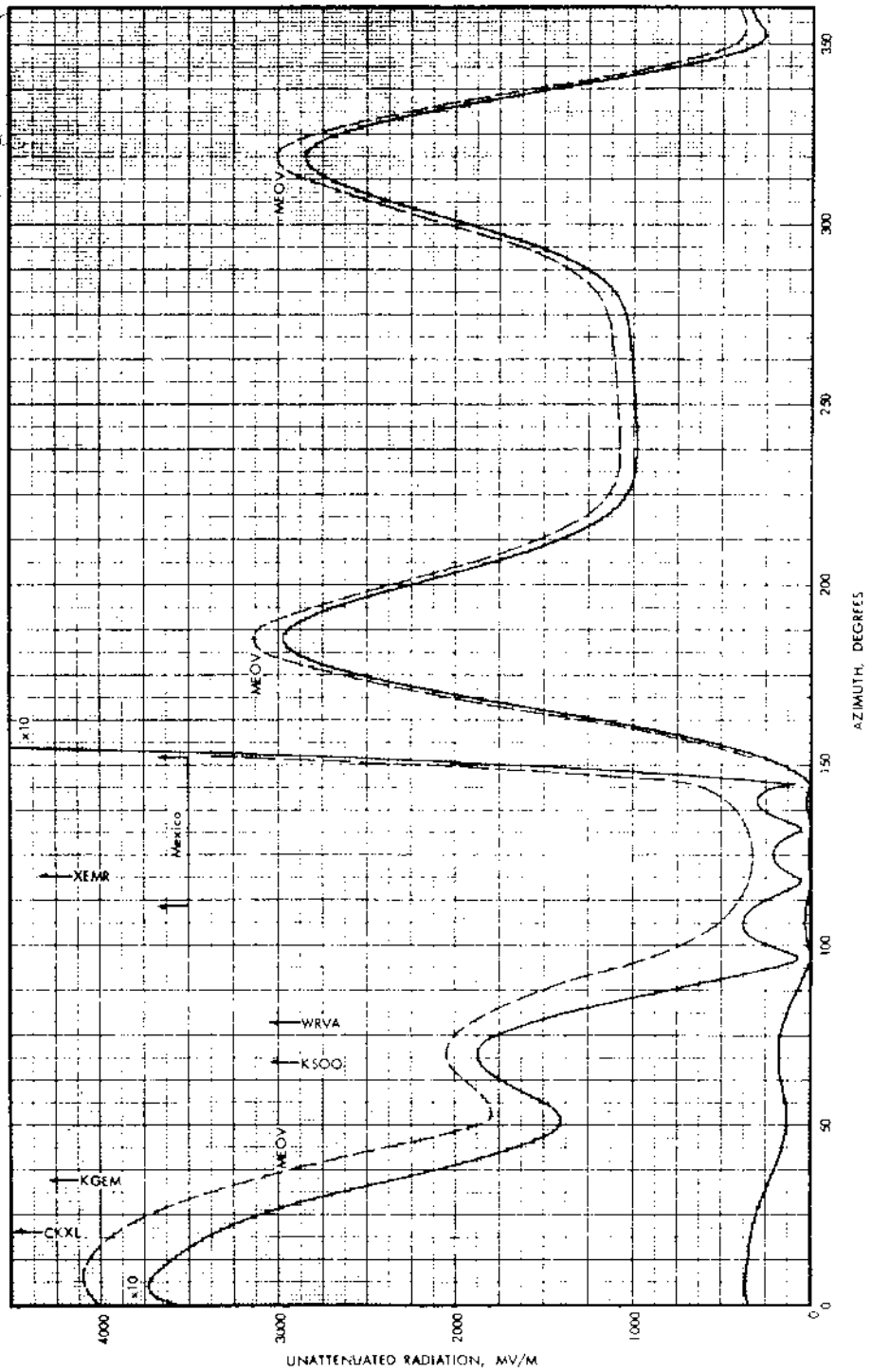
50kw, DA-1, U
1140 kc

RADIO STATION KRAK

CALCULATED RADIATION

ELEVATION ANGLE 0°

BP-18564 Granted 5-27-69 CP to change transmitter location & make changes in directional antenna pattern



681202.1

HAMMETT & EDISON
CONSULTING ENGINEERS

FIGURE 6C

FCC File No. BP-18564
Accepted 5-26-69

Station KRAK
Sacramento, California

1140 kc

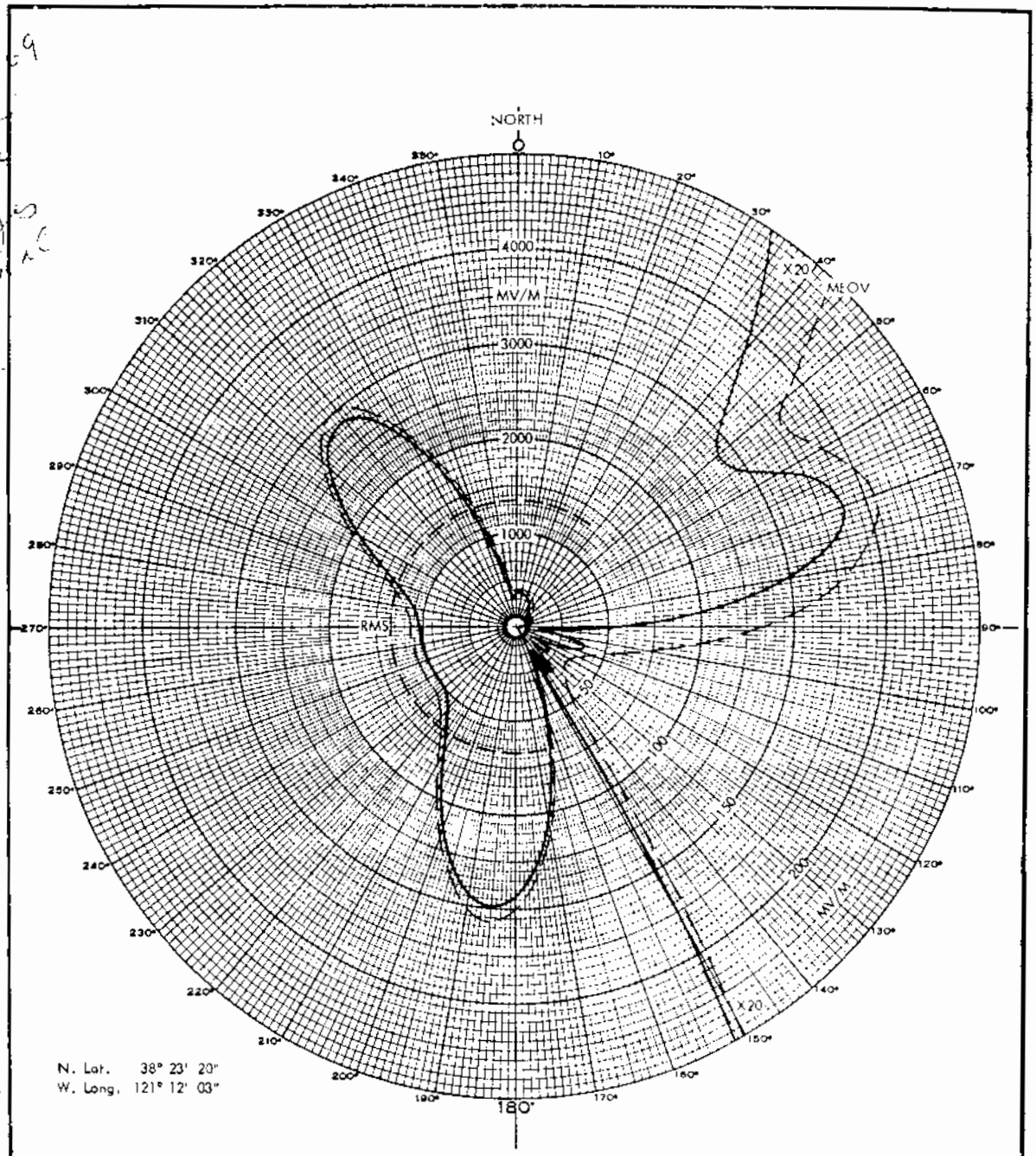
KRAK

Proposed Day & Night
(5-27-69ct)

Station KRAK
Sacramento, California

50kw, DA-1, U
1140 kc

Issued 5/27/69
Effective date of change
Transmitter location
Antenna



RMS = 1340 MV/M
G = 100° - 240 FT

0.2123 | 116.97° ● 5

0.6306 | 50.41° ● 4

1.0000 | 0° ● 3

0.8094 | -97.25° ● 2

● 1

0.2486 | -160.05°

TOWER LOCATIONS RELATIVE TO TOWER 3

TOWER	AZIMUTH	DISTANCE
1	N 251.19° E	330.00° 791.2 FT
2	247.45°	149.96° 359.6
4	73.86°	205.06° 491.7
5	72.85°	396.85° 951.5

HAMMETT & EDISON
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KRAK
1140 KHZ, 50 KW, DA-1
SACRAMENTO, CALIFORNIA

PROPOSED
HORIZONTAL RADIATION

UNATTENUATED FIELD INTENSITY
AT ONE MILE

681202.1

FIGURE 6B

FCC File No.BP-18564
Accepted 5-26-69

Station KRAK
Sacramento, California

1140 kc

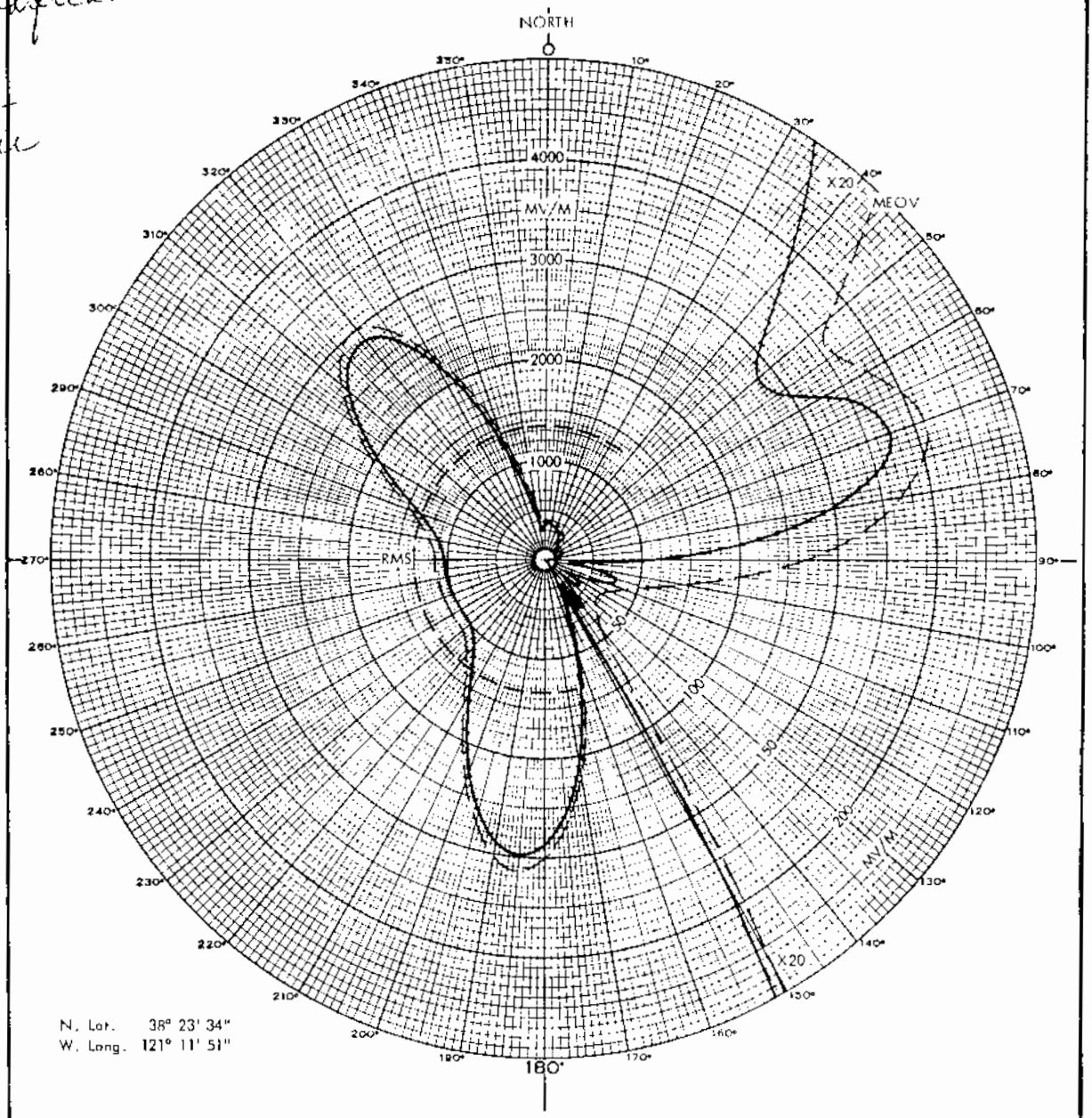
KRAK

Proposed Day & Night
(9-26-69ct)

Station KRAK
Sacramento, California

50kw, DA-1, U
1140 kc

BMP-12764 Granted 9-5-69 Modification of CP to change antenna transmitter location



RMS = 1340 MV/M
G = 100° - 240 FT

0.2123/116.97° ●5

0.6306/50.4°° ●4

1.0000/0° ●3

0.8094/-97.25° ●2

●1
0.2486/-160.05°

TOWER LOCATIONS RELATIVE TO TOWER 3

TOWER	AZIMUTH	DISTANCE
1	N 251.19° E	330.00° 791.2 FT
2	247.45°	149.96° 359.6
4	73.86°	205.06° 491.7
5	72.85°	396.85° 951.5

HAMMETT & EDISON
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KRAK
1140 KHZ 50 KW. DA-1
SACRAMENTO, CALIFORNIA

690609

PROPOSED HORIZONTAL RADIATION

UNATTENUATED FIELD INTENSITY
AT ONE MILE

FIGURE 3

FCC File No. BMP-12764
Accepted 8-26-69

Station KRAK
Sacramento, California

1140 kc

KRAK

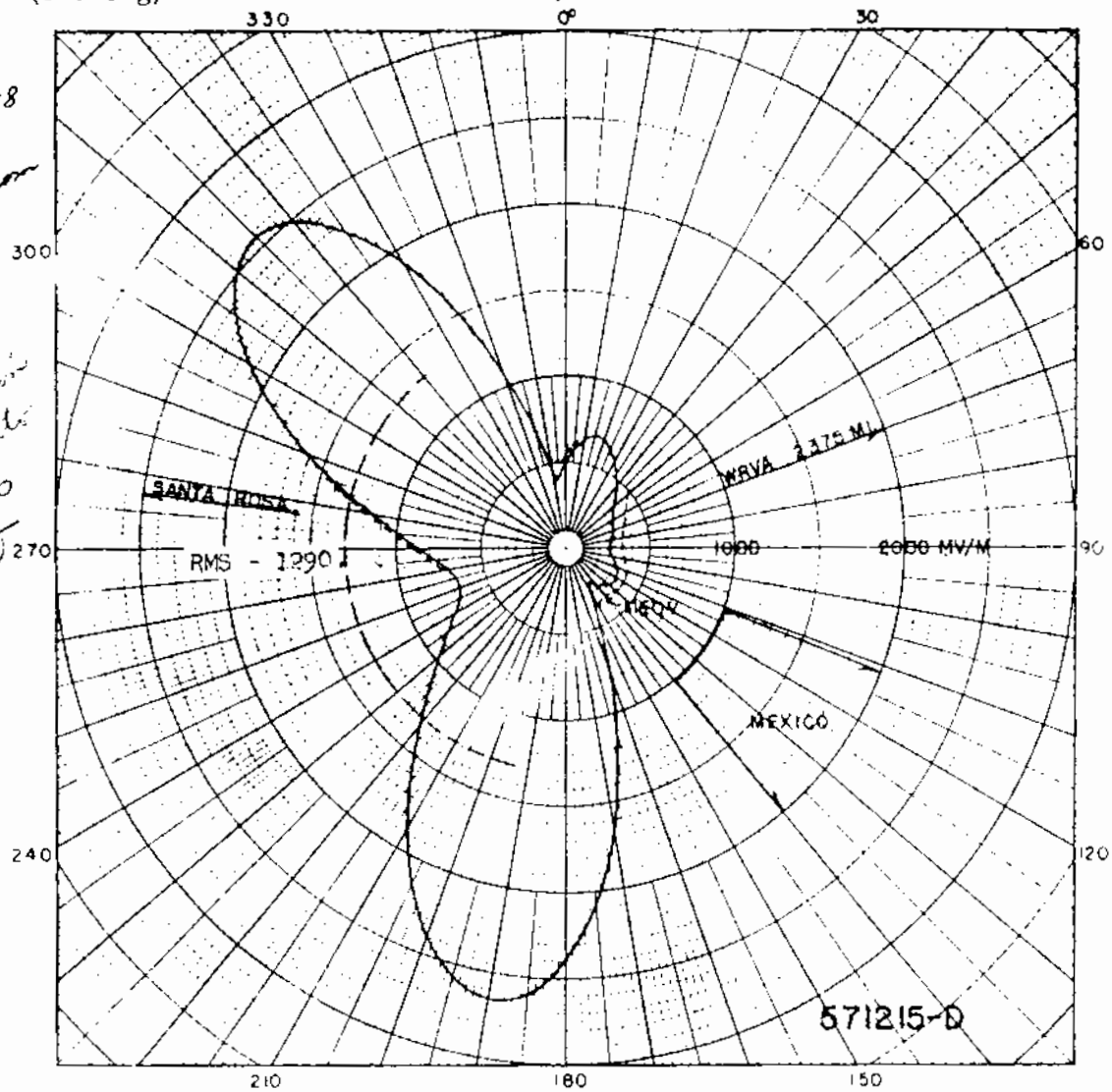
Sacramento

PROPOSED DAY
(3-3-58g)

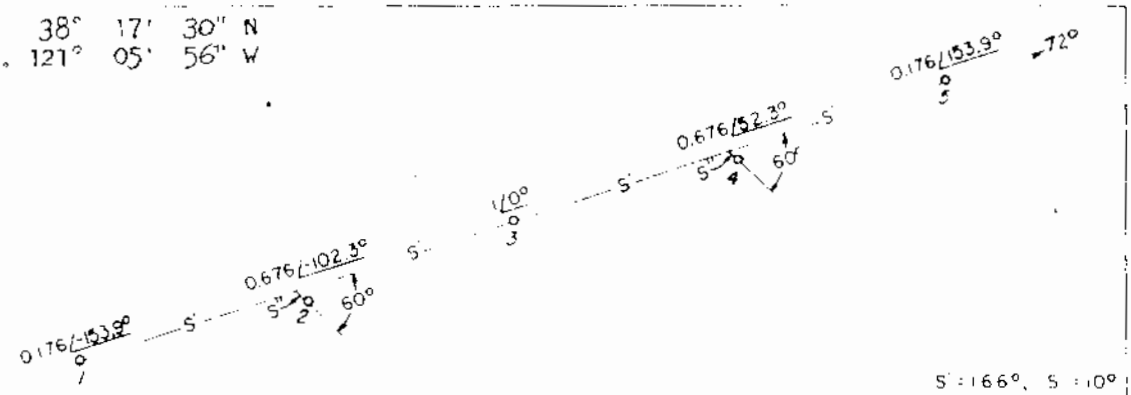
Station KRAK
~~Stockton~~, California

50kw, DA-2,U
1140 KC

Granted CP 7/9/58 for increase in power & change from DA-N to DA-2
Granted license 7-28-60
Studio location to Sacramento 7-27-60
[illegible] granted of [illegible] DA-1 operation



LAT. 38° 17' 30" N
LONG. 121° 05' 56" W



PROPOSED KRAK	DA1	EXHIBIT
1140 KC-50 KW-U-DA2	HORIZONTAL	NO. E1-A(D)
STOCKTON, CALIF.	PLANE PATTERN	

FCC File No. BP-10,676 (15,234)
Accepted 10-1-57 (Amended)

KRAK
Stockton, California

1140 KC

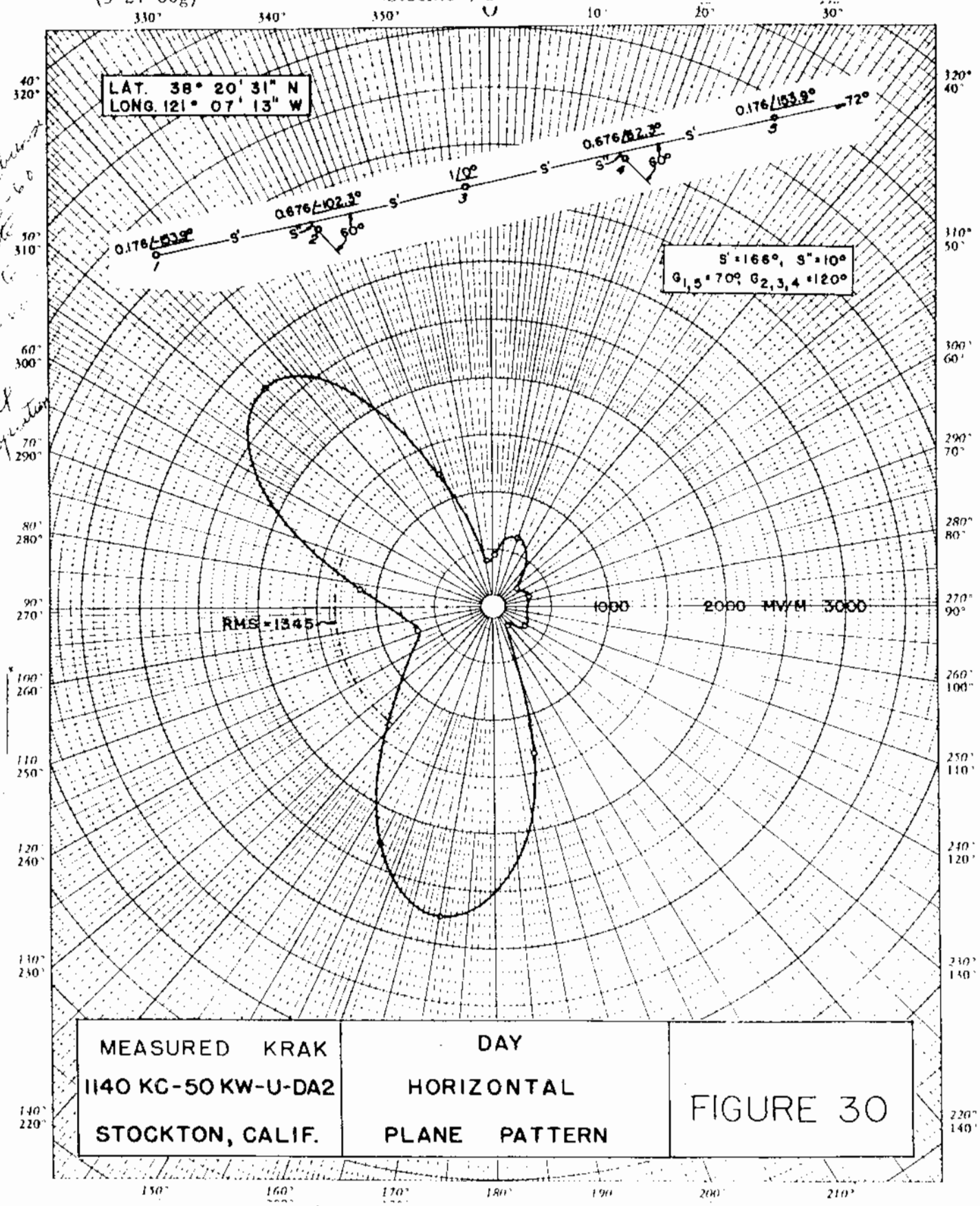
KRAK

Sacramento

MEASURED DAY
(5-27-60g)

Station KRAK
~~Stock~~ton, California

50kw, DA-2,U
1140 KC



MEASURED KRAK	DAY	FIGURE 30
1140 KC-50 KW-U-DA2	HORIZONTAL	
STOCKTON, CALIF.	PLANE PATTERN	

FCC File No. BL-7886
Accepted 4-21-60

KRAK
Stockton, California

1140 KC

KRAK

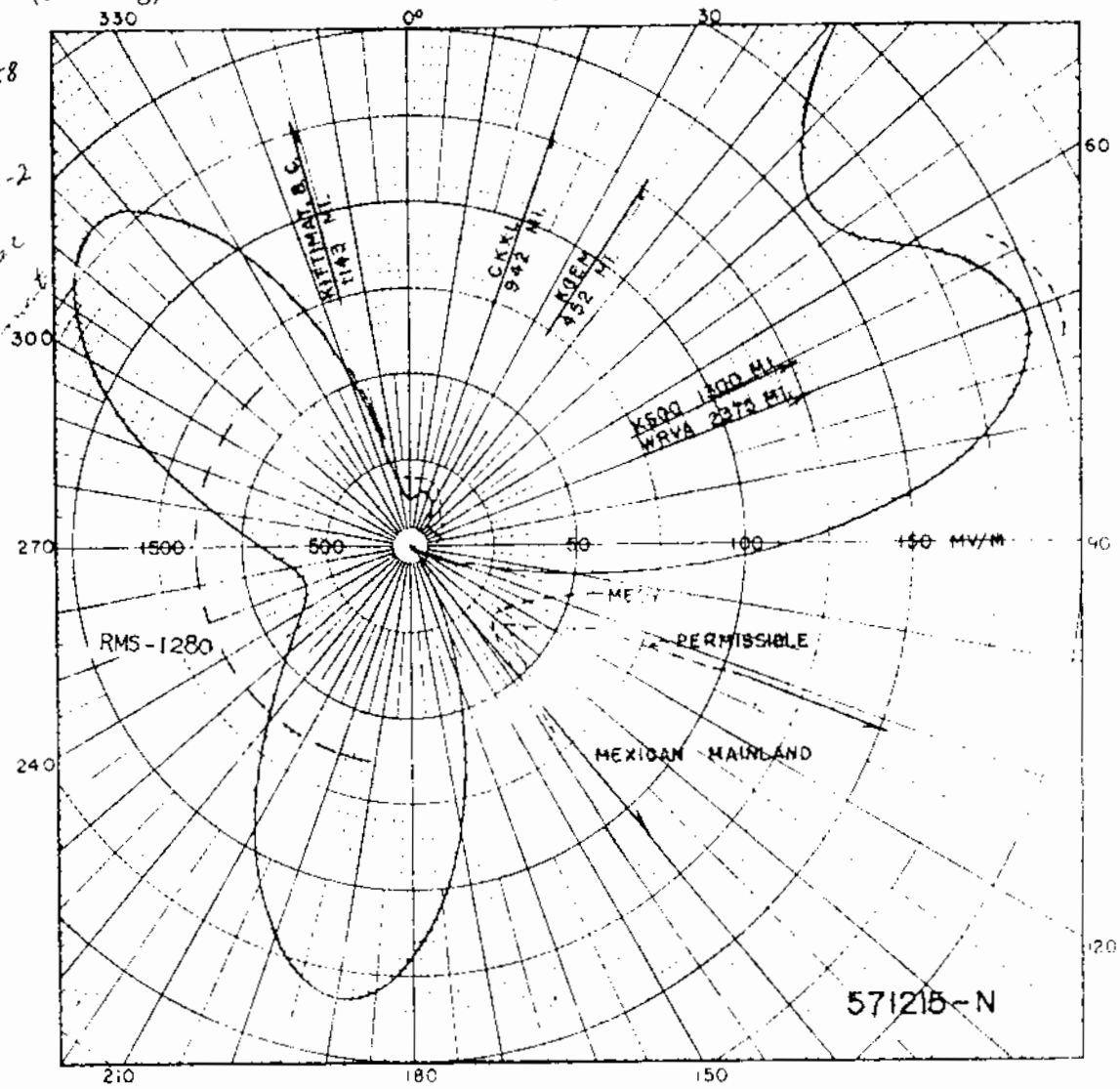
Sacramento

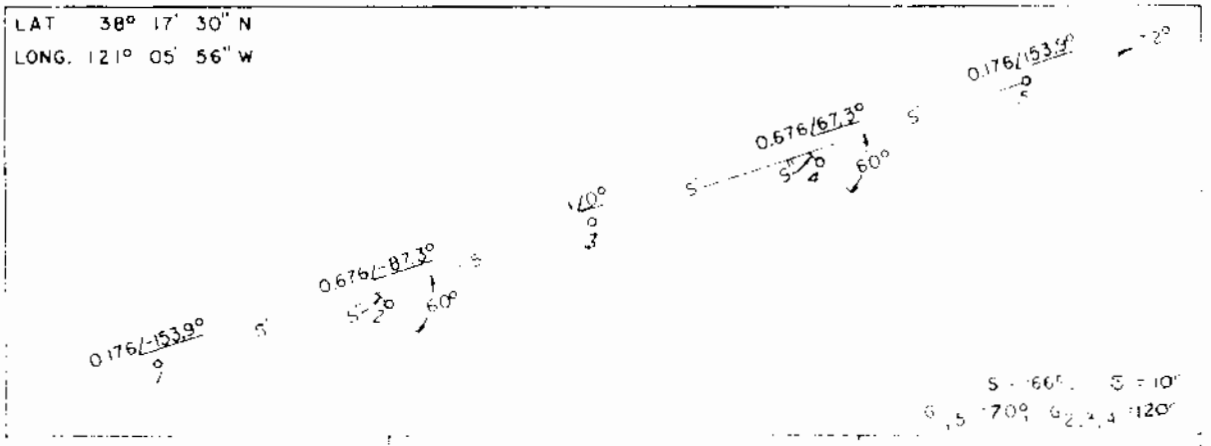
PROPOSED NIGHT
(3-3-58g)

Station KRAK
~~Stockton~~, California

50kw, DA-2,U
1140 KC

Granted CP 7/9/58 for increase in power & change from DA-N to DA-2
Granted license 7-3-60
Stockton to Sacramento 7-27-60





PROPOSED KRAK	NIGHT	EXHIBIT
1140 KC-50 KW-U-DA2	HORIZONTAL	NO. E1-A(N)
STOCKTON, CALIF.	PLANE PATTERN	

FCC File No. BP-10,676
Accepted 10-1-57 (Amended)

KRAK
Stockton, California

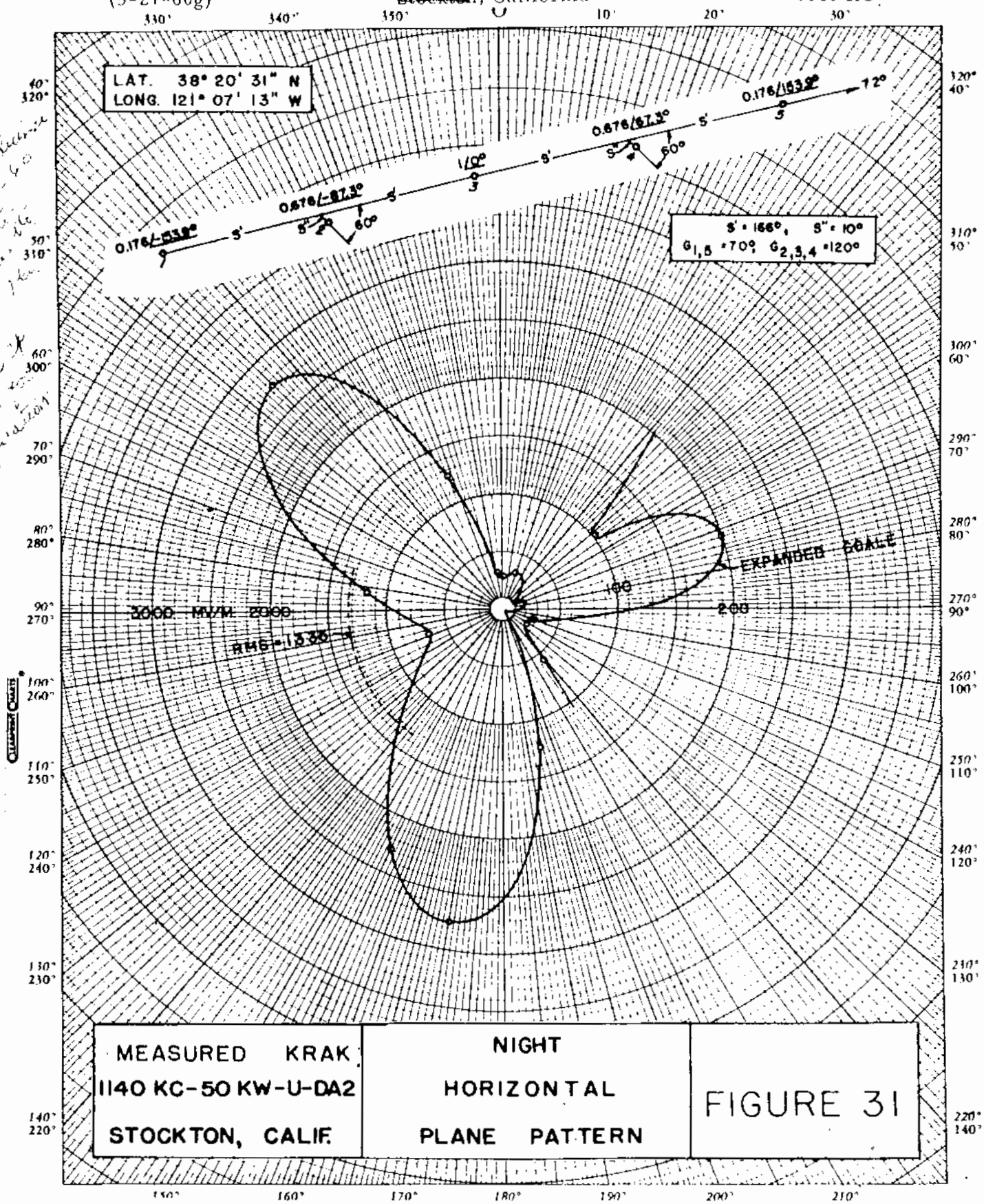
1140 KC

KRAK

MEASURED NIGHT
(5-27-60g)

Sacramento
Station KRAK
~~Stockton~~, California

50kw, DA-2,U
1140 KC



MEASURED KRAK 1140 KC-50 KW-U-DA2 STOCKTON, CALIF.	NIGHT HORIZONTAL PLANE PATTERN	FIGURE 31

FCC File No. BL-7886
Accepted 4-21-60

KRAK
Stockton, California

1140 KC

KRAK

MEASURED NON-DA
(5-27-60g)

Sacramento
Station KRAK
~~Stockton~~, California

50kw, DA-2,U
1140 KC

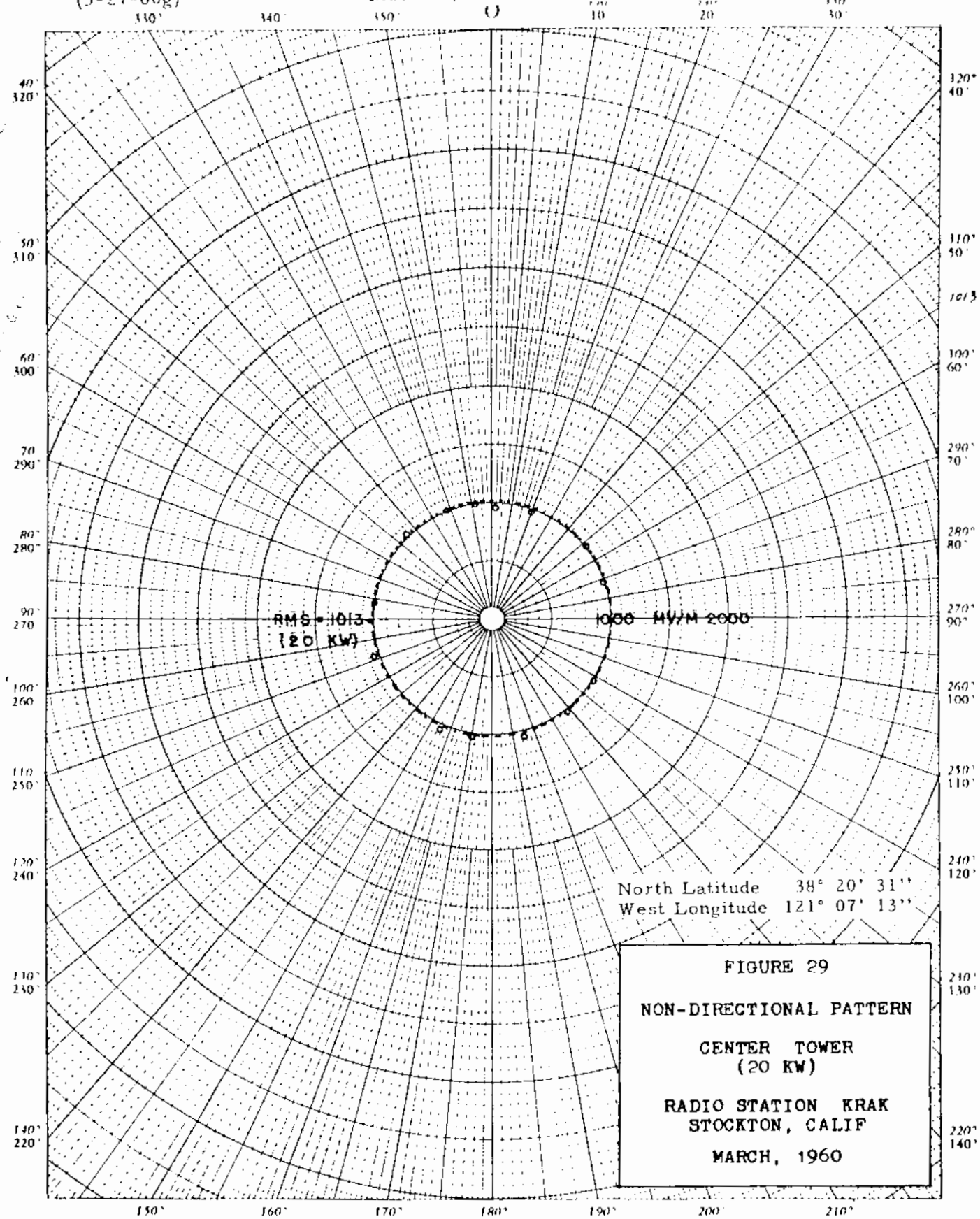


FIGURE 29

NON-DIRECTIONAL PATTERN

CENTER TOWER
(20 KW)

RADIO STATION KRAK
STOCKTON, CALIF

MARCH, 1960

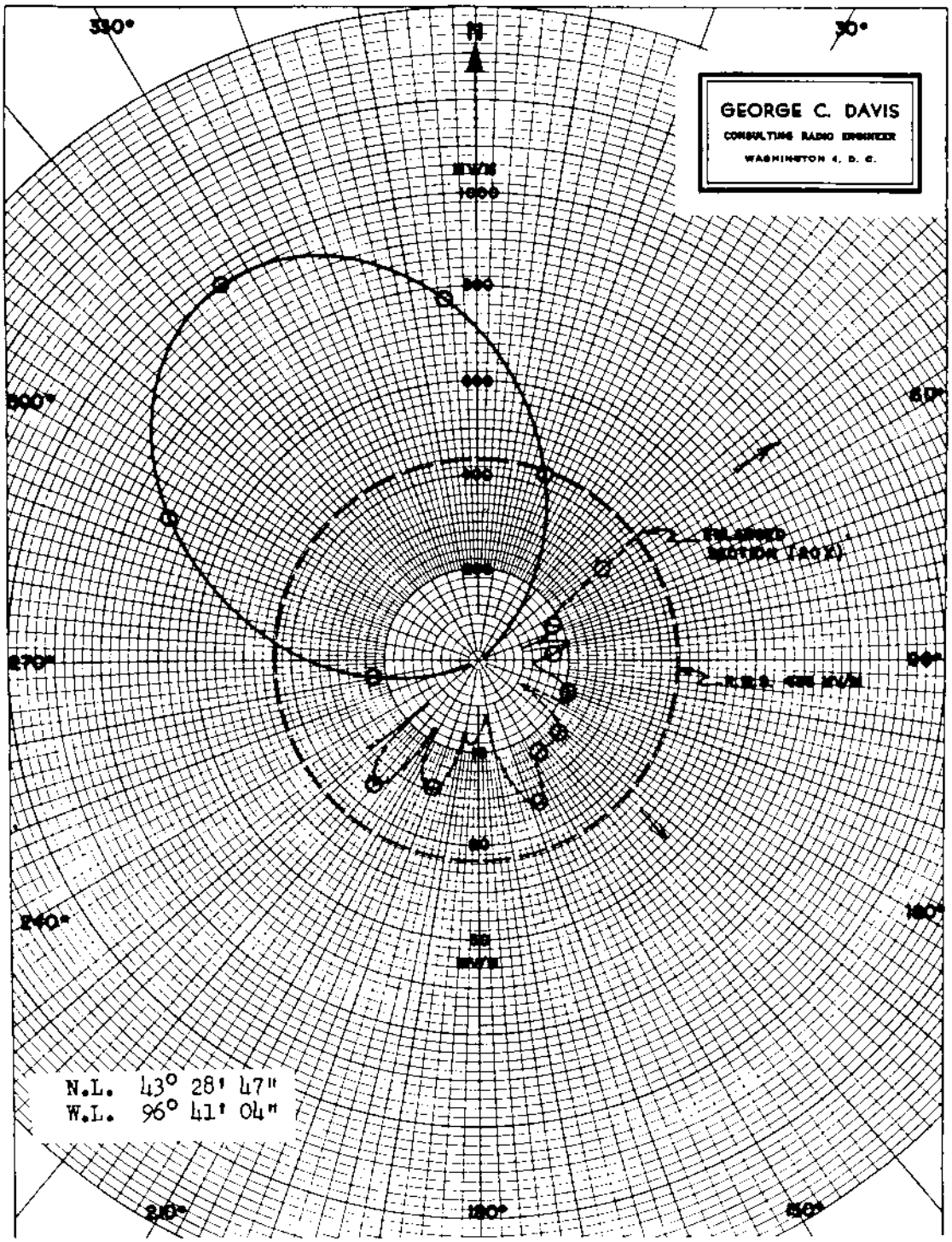
FCC File No. BL-7886
Accepted 4-21-60

KRAK
Stockton, California

1140 KC

KSOO

MEASURED KSOO, SIOUX FALLS, S. DAK. 5 KW, 10KW-LS, U, DA-N 1140 KC
NIGHT 3/19/52G



MEASURED HORIZONTAL PLANE
RADIATION PATTERN OF KSOO,
SIOUX FALLS, SOUTH DAKOTA
1140 KC; 10 KW-ND-DAY; 5 KW-DA-NIGHT
FEBRUARY, 1952

O INDICATES RADIAL MEASUREMENTS

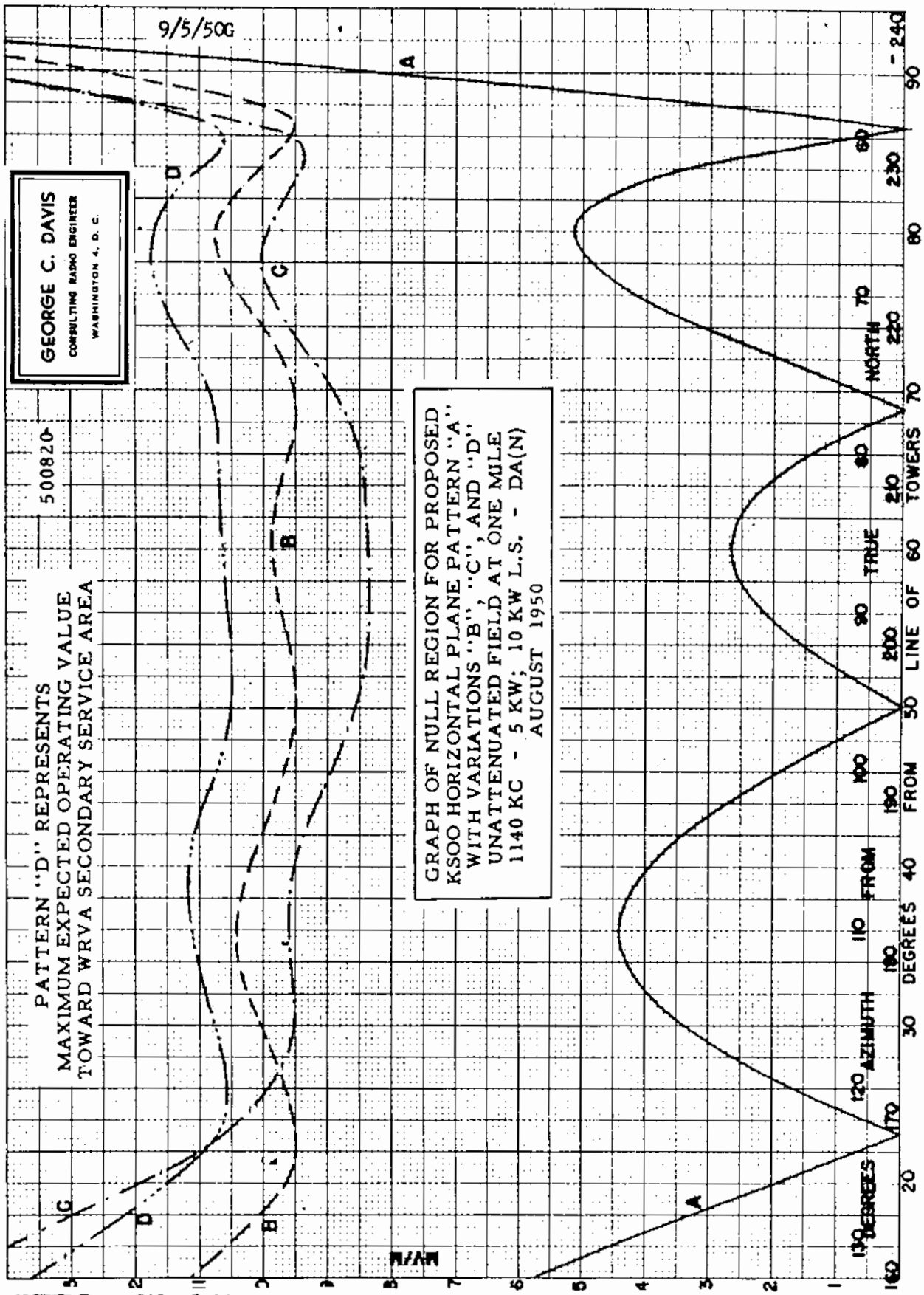
APPL RECD 2/15/52 ACC 3/14/52 BL-4676 KSOO, SIOUX FALLS, S. DAK. 1140 KC

KSOO

PROPOSED
NIGHT NULLS

KSOO, SIOUX FALLS, S. D.

5kw, 10kw-LS, DA-N 1140 kc



AMENDMENT RECD. 8-24-50 ACC. 9-1-50 BP-7501

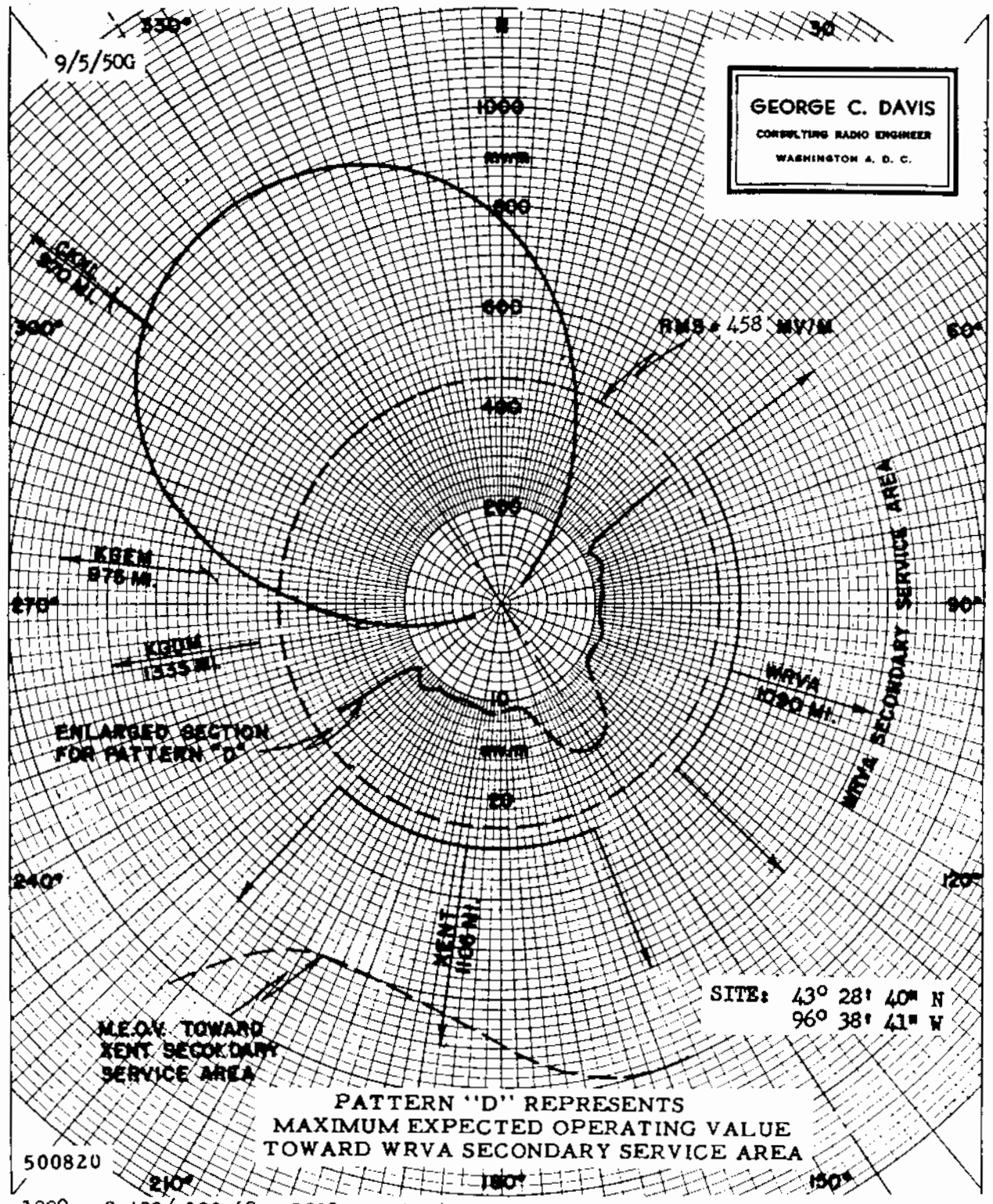
KSOO, Sioux Falls, S. D. 1140 kc

KSOO

PROPOSED NIGHT

KSOO, SIOUX FALLS, S. D.

5kw, 10kw-LS, DA-N 1140 kc



1/99° - 100° - 3.403/-130.6° - 100° - 4.837/0° - 100° - 3.403/130.6° - 100° - 1/-99° — 146°T

Height - 92° - 220' (240')

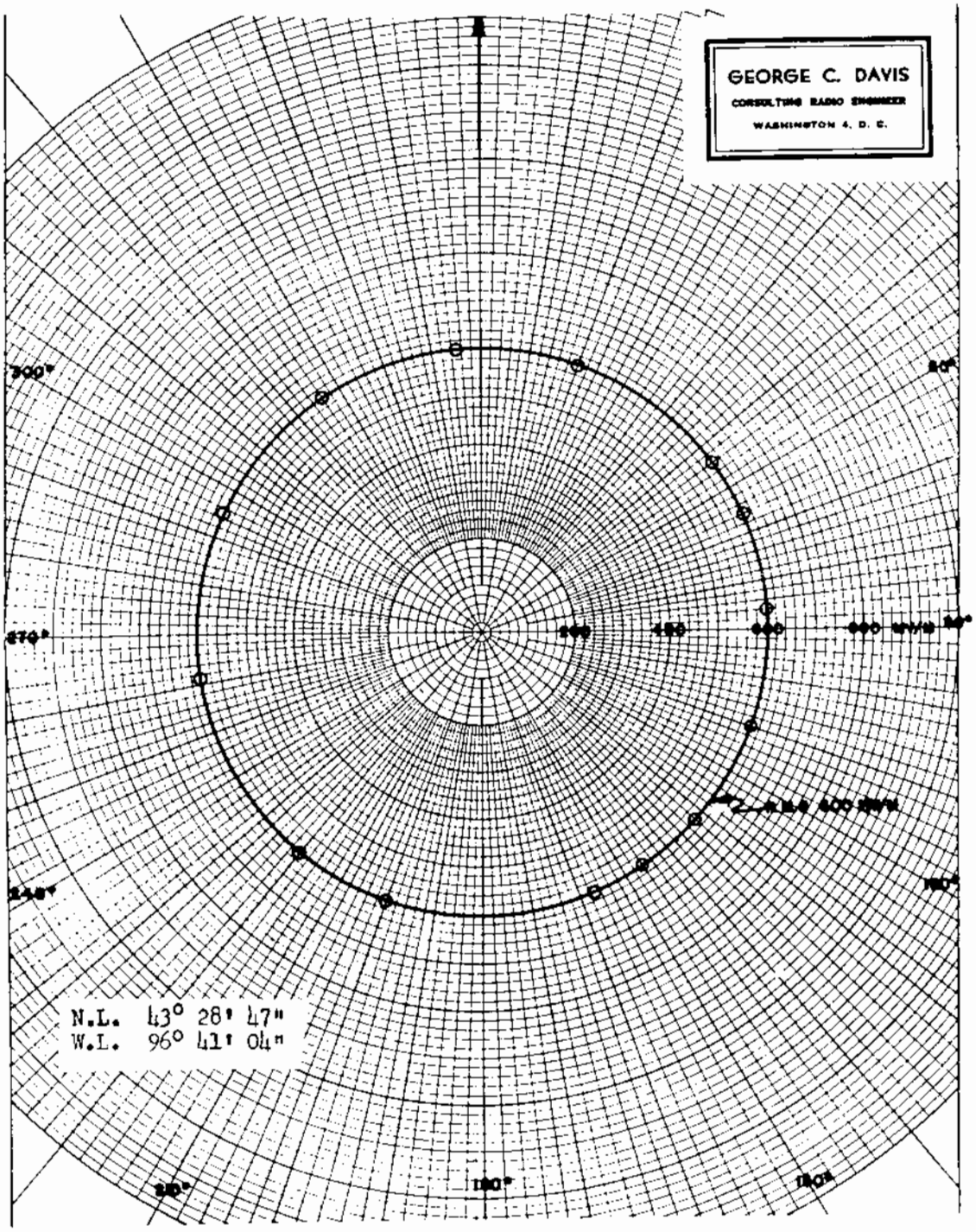
GRAPH OF HORIZONTAL PLANE PATTERN
FOR PROPOSED DIRECTIVE NIGHTTIME OPERATION
OF STATION KSOO, SIOUX FALLS, SOUTH DAKOTA
1140 KC - 5 KW; 10 KW L.S. - DA(N)
UNATTENUATED FIELD AT ONE MILE
AUGUST 1950

AMENDMENT RECD. 8-24-50 ACC. 9-1-50 BP-7501

KSOO, Sioux Falls, S. D. 1140 kc

KSOO

MEASURED KSOO, SIOUX FALLS, S. DAK. 5 KW, 10KW-LS, U, DA-N 1140 KC
NON-DA (Day) 3/19/52G



MEASURED NON-DIRECTIONAL 10 KW
RADIATION FIELD PATTERN FOR KSOO,
SIOUX FALLS, SOUTH DAKOTA
1140 KC; 10 KW-ND-DAY; 5 KW-DA-NIGHT
FEBRUARY, 1952

○ INDICATES RADIAL MEASUREMENTS

APPL RECD 2/15/52 ACC 3/14/52 BL-4676 KSOO, SIOUX FALLS, S. DAK. 1140 KC

NEW

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (New)

Main Studio: Kentwood, Michigan

Frequency: 1140 kHz

Power: 5 kW

Notification List No. 1706

Date: October 20, 1976

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 42° 56' 13"
West Longitude: 85° 27' 20"

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:	W(#3)	C(#2)	E(#1)	
HEIGHT ABOVE INSULATORS:	216'	216'	216'	(90°)
PHASING:	+70.46°	+215.23	0°	
FIELD RATIO:	1.000	1.863	1.000	

SPACING AND ORIENTATION: Adjacent towers in a row are spaced 192' (80°) on a line bearing 280° true.

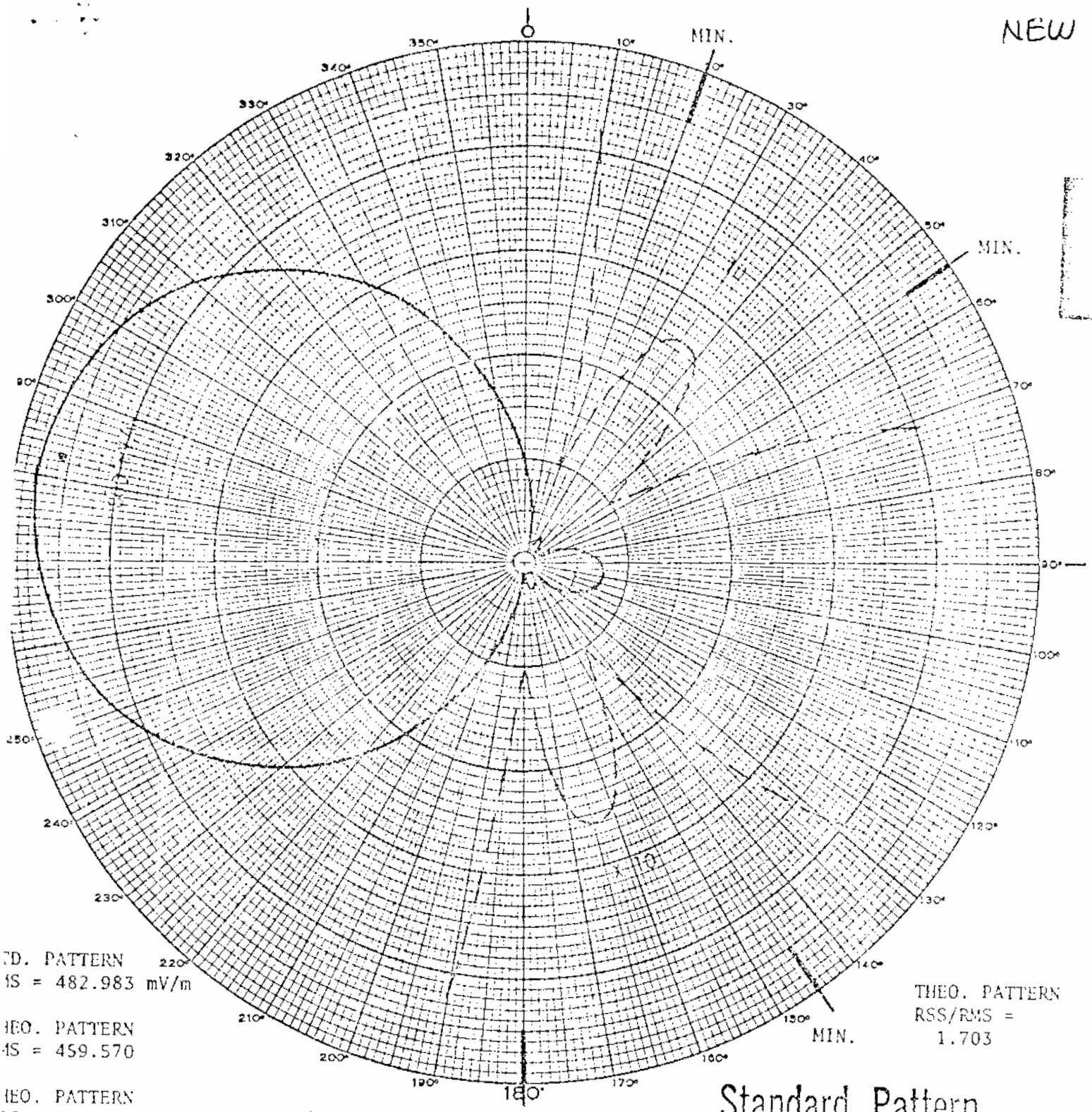
GROUND SYSTEM: 120-216' equally spaced copper radials plus 120-50' inter-spaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day 1/	459.57 mv/m	782.65 mv/m	482.98 mv/m

1/ By adjustment of input power.

NEW



:D. PATTERN
IS = 482.983 mV/m

IEO. PATTERN
IS = 459.570

IEO. PATTERN
SS = 782.648

THEO. PATTERN
RSS/RMS =
1.703

Standard Pattern

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 2	STATION DATA
G=90° S=80° 280° T. #3 S #2 S #1	TOWER No	ELECTRICAL HEIGHT G°	SPACING S°	PHASING ψ°	FIELD RATIO F	STANDARD HORIZONTAL PLANE PATTERN	CALL NEW FREQ 1140 kHz POWER 5 Kw TYPE DA TIME DAY LAT. N42-56-13 LONG. W85-27-20
	1			0	1.		
	2			215.23	1.803		
	3			70.46	1.		
	4						
	5						
	6						
	DAYTIME OPERATION ☑ NIGHTTIME OPERATION ☐					θ°	E.H.MUNN, JR. RADIO ENGINEER COLDWATER, MICH.

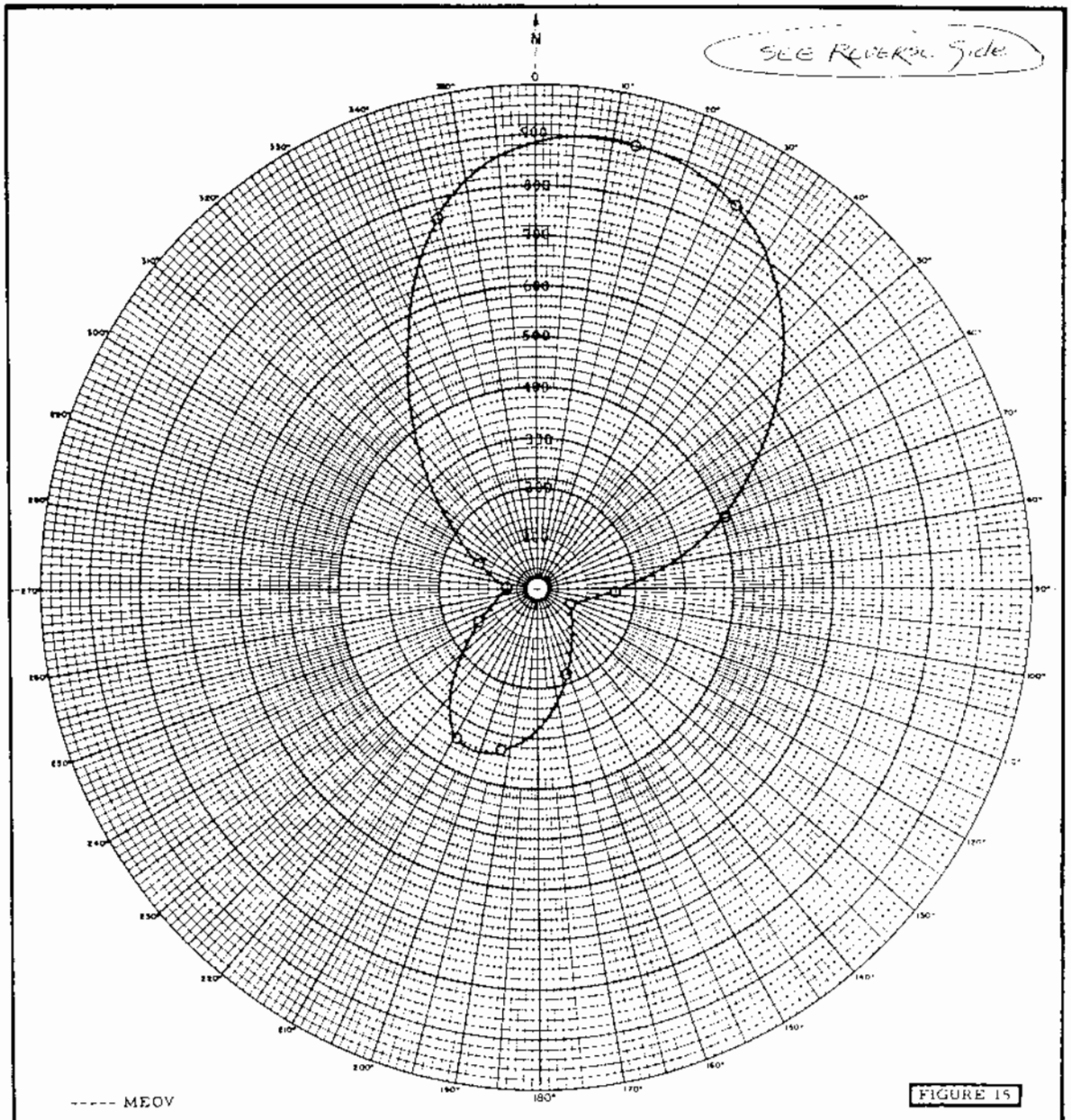
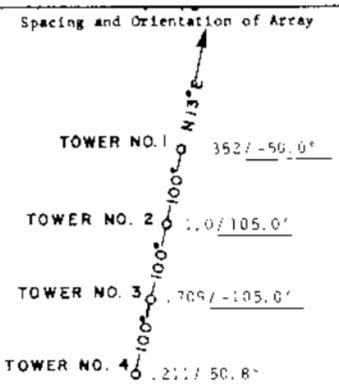


FIGURE 15

HORIZONTAL RADIATION PATTERN

Spacing and Orientation of Array



G - 82°

APPLICANT	Lawrence County Broadcasting Corp.
LOCATION	New Castle, Pennsylvania
FREQUENCY	1140 KC/S
POWER	5.0Kw
LATITUDE	40 DEG 56 MIN 23 SEC
LONGITUDE	80 DEG 23 MIN 35 SEC
WHEN USED	Daytime
R.M.S. FIELD	440 MV/M
DATE	December 1969

ROBERT L. PURCELL

WASHINGTON, D.C.

WBZY

Measured Non-DA
(4-29-70ct)

Station WBZY
New Castle, Pennsylvania

5kw,DA-D,D
1140 kc

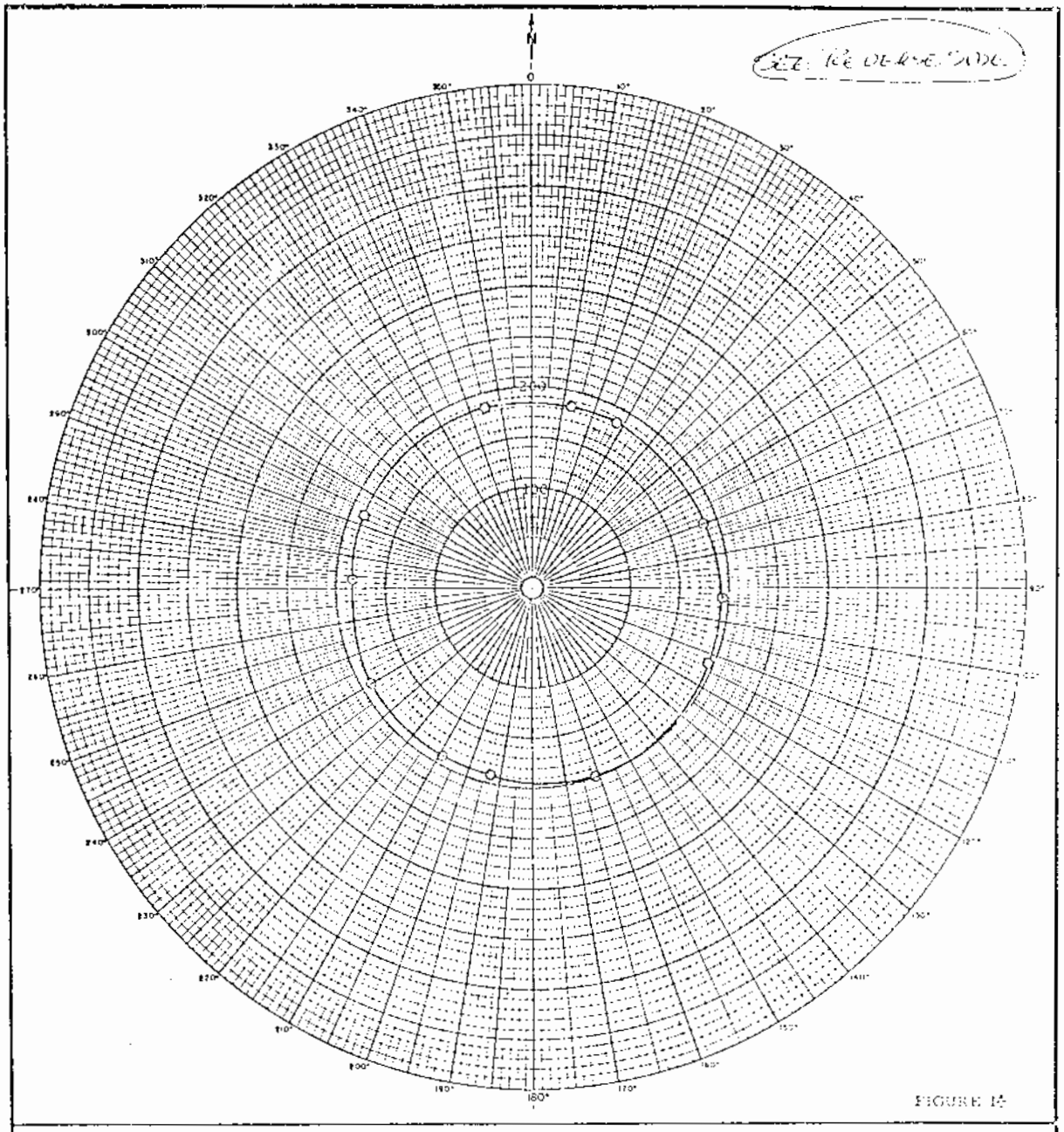


FIGURE 14

NON-DIRECTIONAL FIELD SURVEY

ROBERT J. PURCELL
WASHINGTON D.C.

FCC File No.BL-12587
Accepted 4-9-70

Station WBZY
New Castle, Pennsylvania

1140 kc

WBZY

Proposed Day
(10-28-69ct)

Station WBZY
New Castle, Pennsylvania

5kw,DA-D,D.
1140 kc

BP-18648
Granted
10-7-69
CP to relax
MEOV's

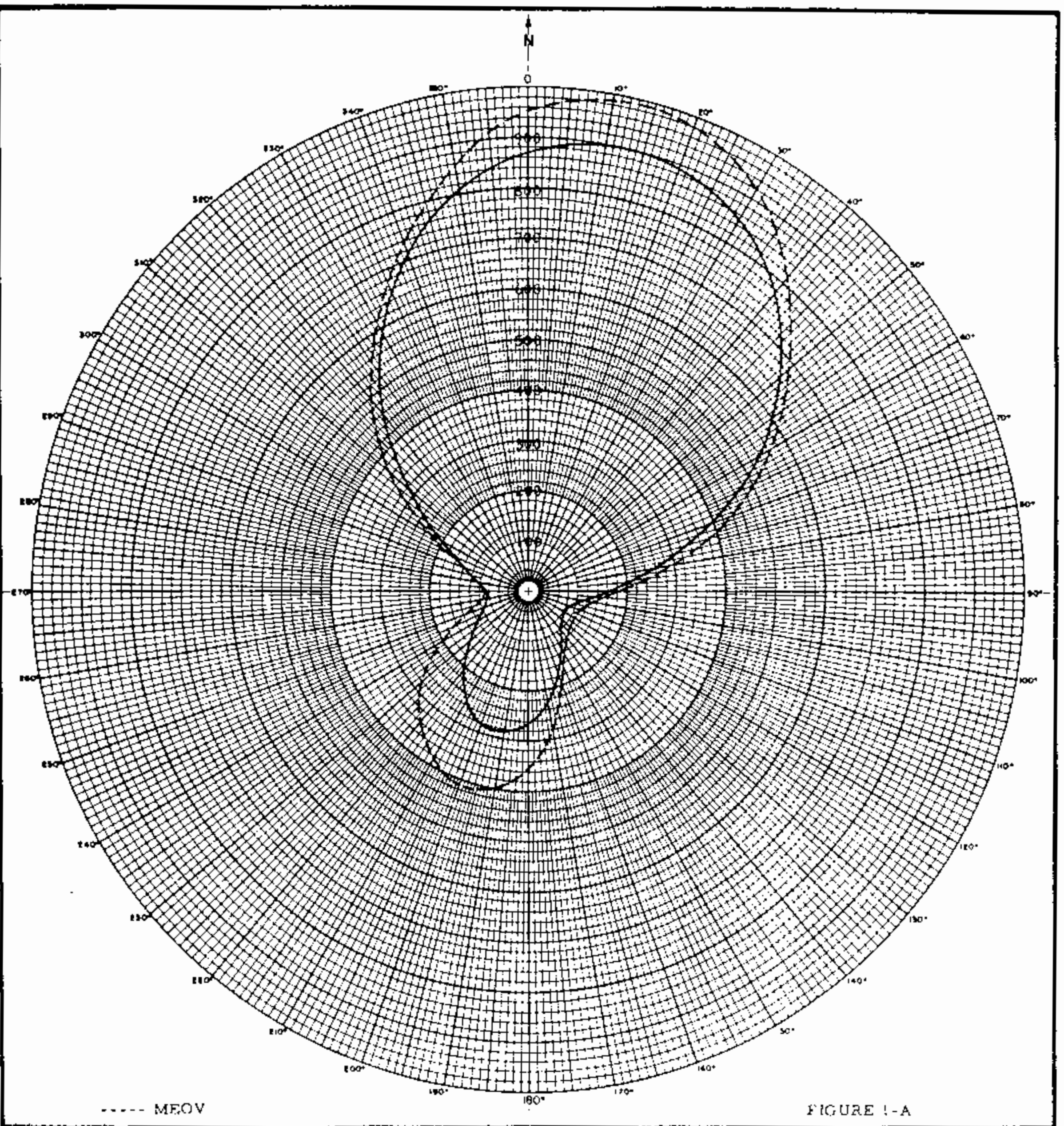
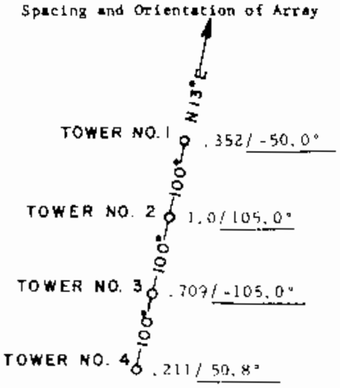


FIGURE 1-A

HORIZONTAL RADIATION PATTERN

Spacing and Orientation of Array



G - 82°

APPLICANT	Lawrence County Broadcasting Corp.
LOCATION	New Castle, Pennsylvania
FREQUENCY	1140 KC/S
POWER	5.0Kw
LATITUDE	40 DEG 56 MIN 23 SEC
LONGITUDE	80 DEG 23 MIN 38 SEC
WHEN USED	Daytime
R.M.S. FIELD	443 mv/m
DATE	July 1969

ROBERT L. PURCELL

WASHINGTON, D. C

FCC File No.BP-18648
Accepted 10-2-69

Station WBZY
New Castle, Pennsylvania

1140 kc

WBZY

Proposed Day Nulls
(10-28-69ct)

Station WBZY
New Castle, Pennsylvania

5kw, DA-D, D
1140 kc

BP-18648
Granted
10-7-69
Up to relay
MEOV's.

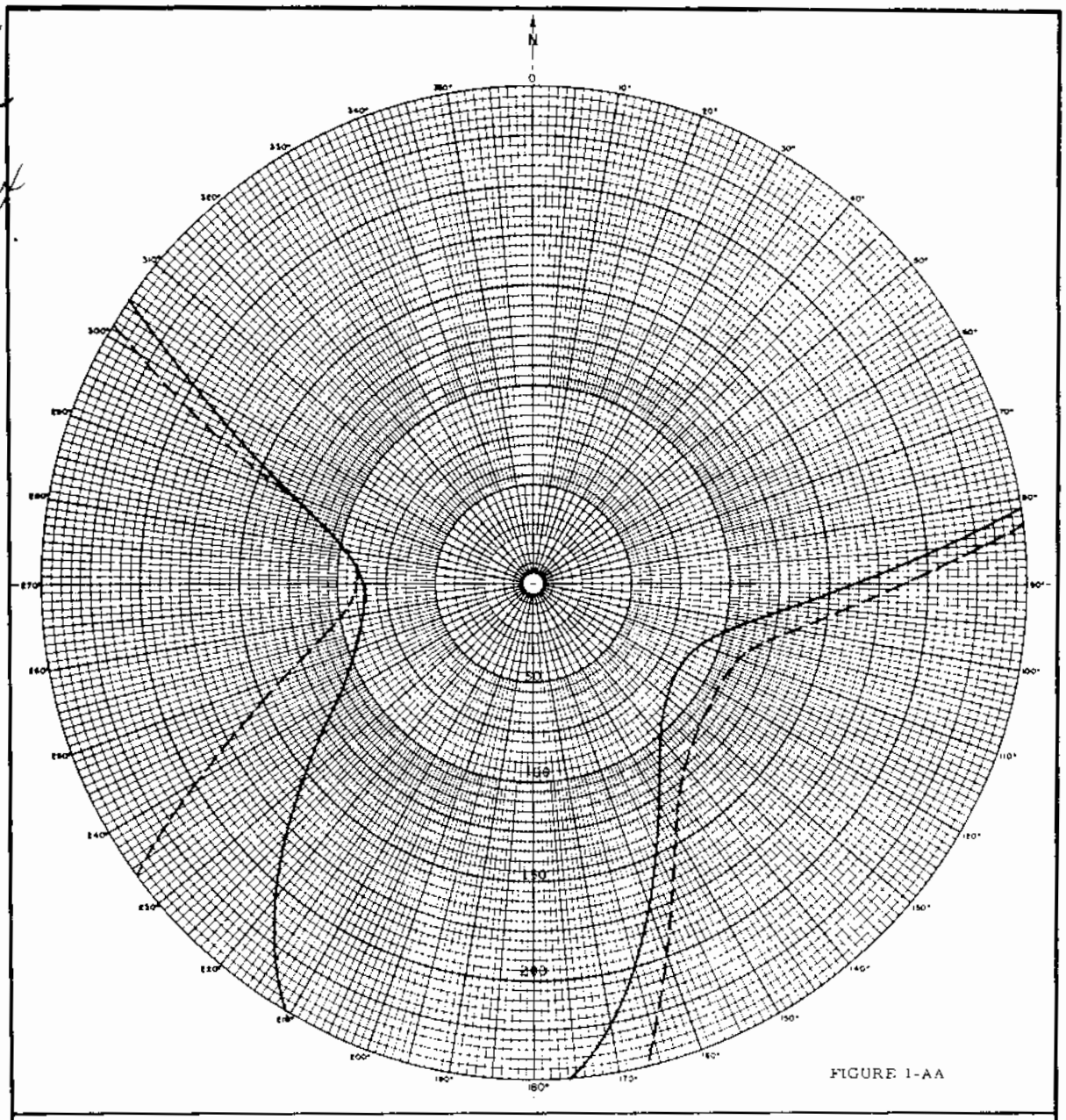


FIGURE 1-AA

EXPANDED VIEW

ROBERT L. PURCELL
WASHINGTON D.C.

FCC File No.BP-18648
Accepted 10-2-69

Station WBZY
New Castle, Pennsylvania

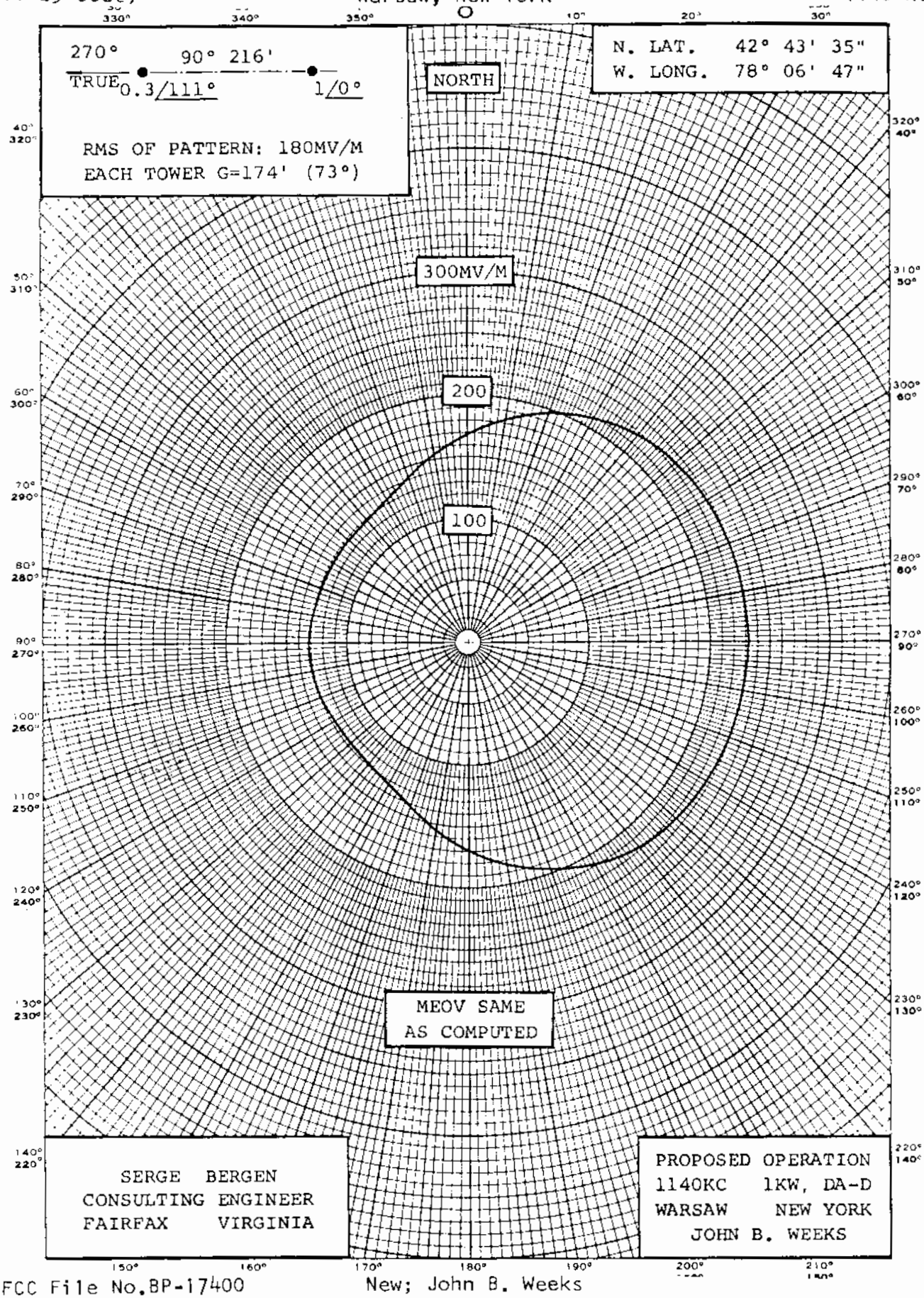
1140 kc

WCJW

Proposed Day
(11-29-66ct)

New; John B. Weeks
Warsaw, New York

1kw,DA-D,D
1140 kc



FCC File No.BP-17400
Accepted 11-2-66

New; John B. Weeks
Warsaw, New York

1140 kc

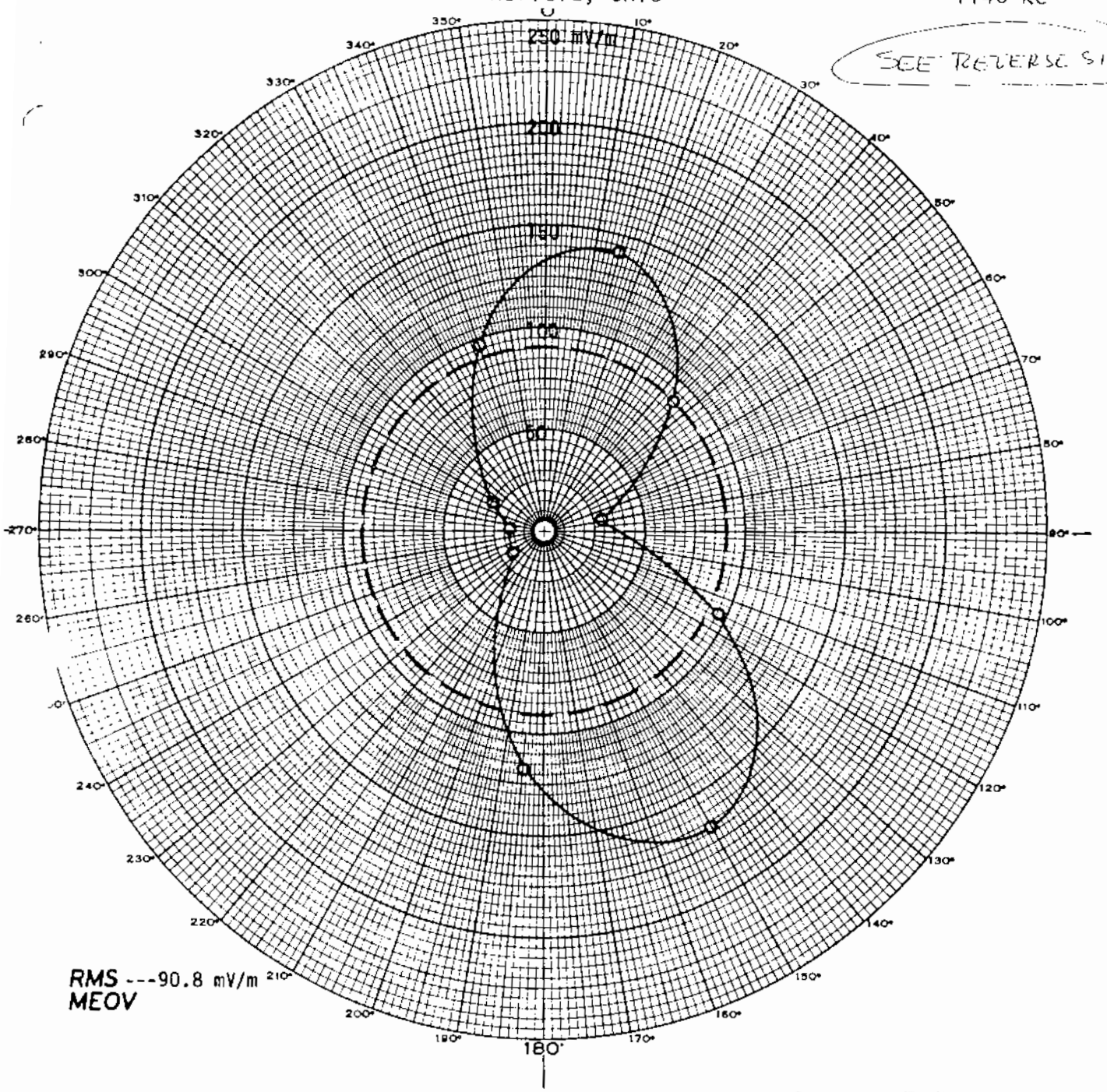
WCLW

Measured Day
(3-28-69ct)

Station WCLW
Mansfield, Ohio

250w,DA-D,D
1140 kc

SEE REVERSE SIDE



RMS ---90.8 mV/m
MEOV

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 4	STATION DATA
(Measured) 2 → 80.25°T /0° 120° 0.532/-56.8° 125° 0.378/+123.5° 75° 3 → 110.25°T 4 0.840/-165° 168.75°T G's=90°	TOWER No. / ELECTRICAL HEIGHT G° / SPACING S° / PHASING V° / FIELD RATIO F 1 2 3 4 5 6 7 8 9 10 DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐	MEASURED DIRECTIONAL PATTERN JANUARY 1969 θ° = 0	CALL WCLW FREQ 1140 kHz POWER 0.25 kW TYPE DA-D TIME DAYTIME LAT. 40-46-09 LONG. 82-32-23 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BL-12297
Accepted 3-18-69

Station WCLW
Mansfield, Ohio

1140 kc

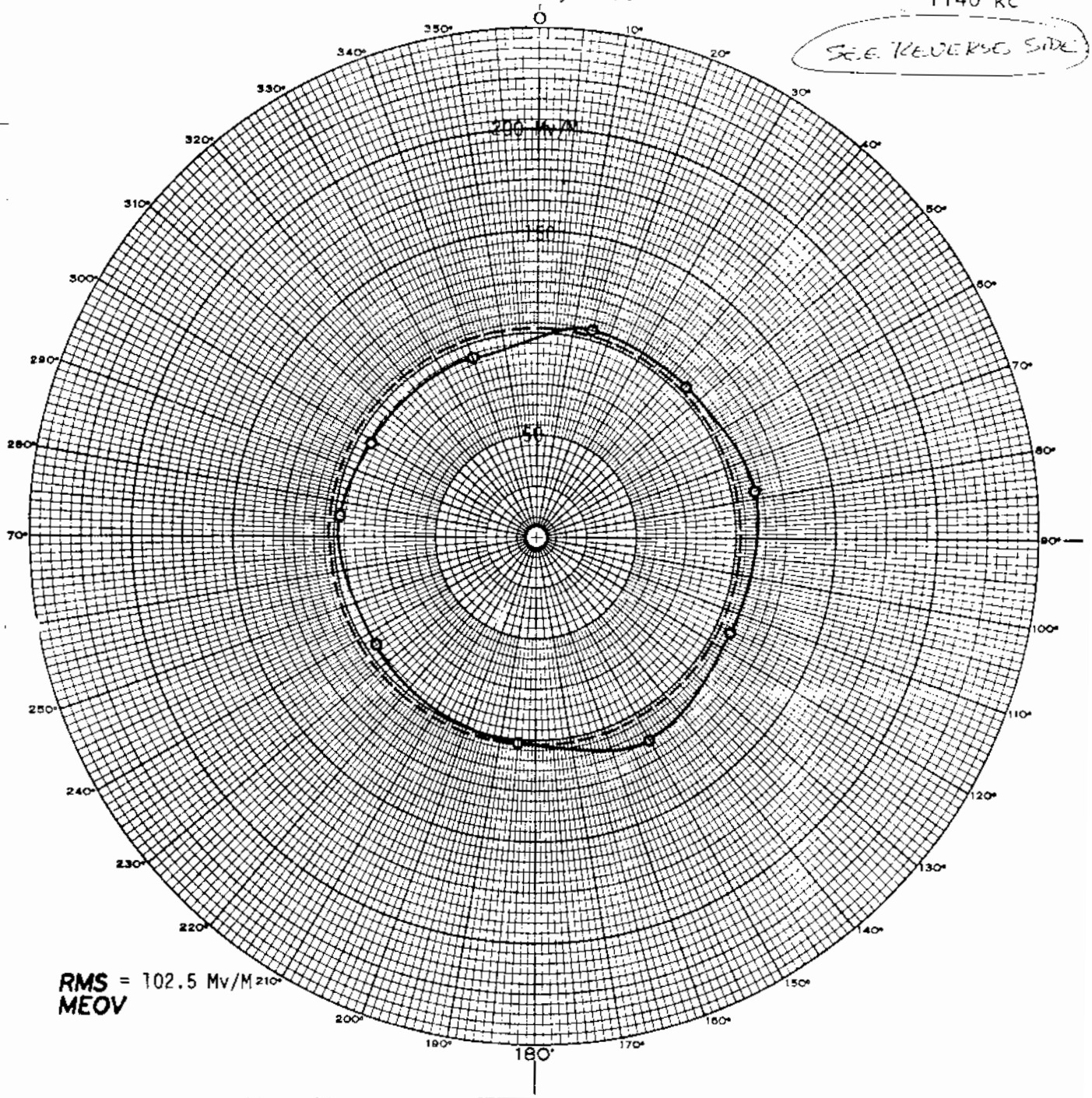
WCLW

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

Station WCLW
Mansfield, Ohio

250w,DA-D,D
1140 kc

SEE REVERSE SIDE



RMS = 102.5 Mv/M
MEOV

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 5	STATION DATA
1-NU 120° → 2 → 80.25° T NDA 125° → 3-NU → 110.25° T. 75° → 4-NU → 168.75° T. G's=90°	TOWER No. / ELECTRICAL HEIGHT G° / SPACING S° / PHASING ψ° / FIELD RATIO F 1 2 3 4 5 6 7 8 9 10 DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☐	MEASURED NON-DIRECTIONAL PATTERN ********** WCLW MANSFIELD, OHIO θ° = 0°	CALL WCLW FREQ 1140 KHz. POWER 0.25 Kw TYPE DA-D TIME DAYTIME LAT. 40-46-09 LONG. 82-32-23 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BL-12297
Accepted 3-18-69

Station WCLW
Mansfield, Ohio

1140 kc

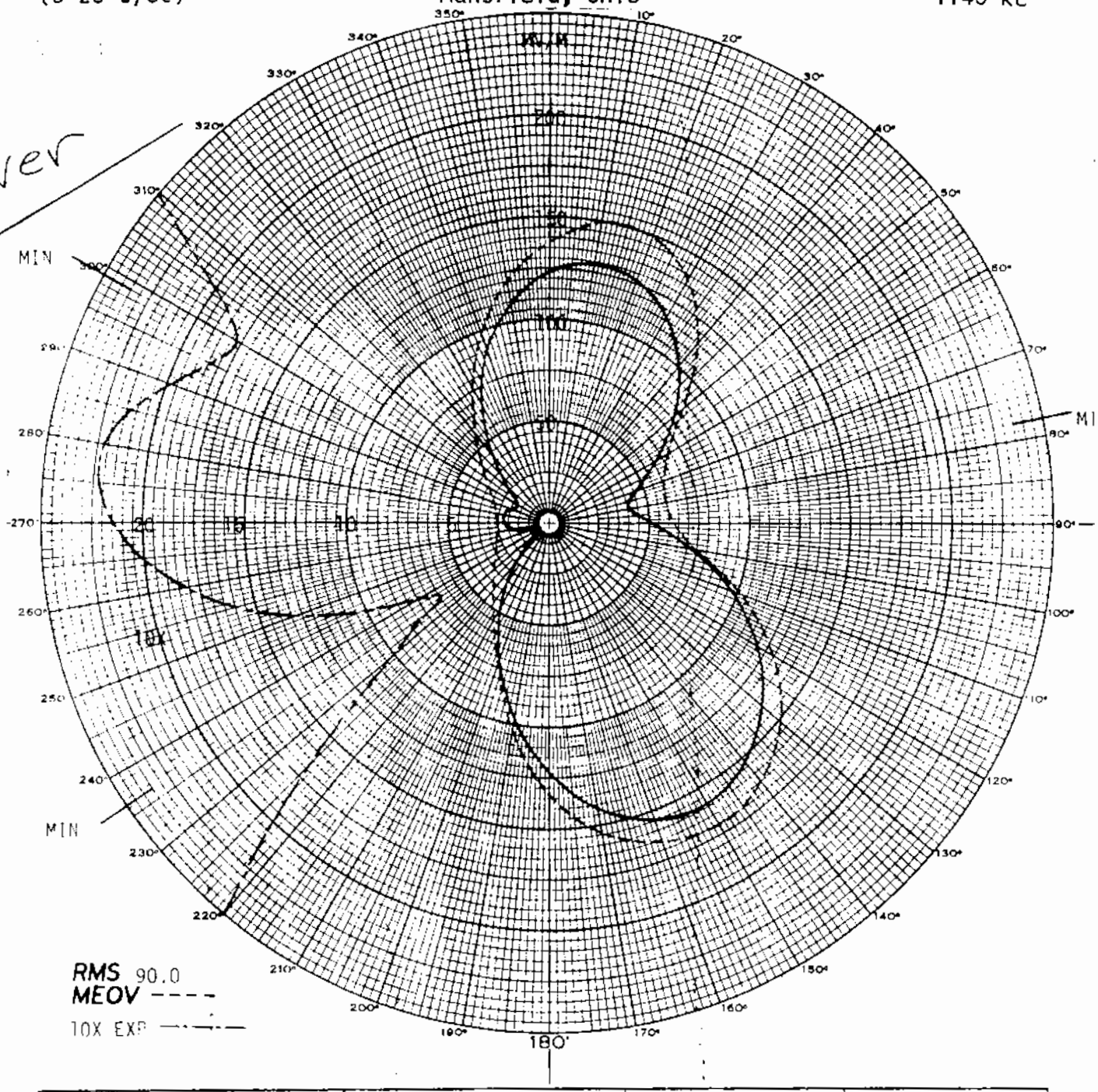
Proposed Day
(8-28-67ct)

Station WCLW
Mansfield, Ohio

250w, DA-D, D
1140 kc

VVCLW

over



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 4	STATION DATA
G's = 90° 1/0° 120° 2 → 80.25°T 0.96/-74° 125° 3 → 110.25°T 0.63/115.5 75° 4 0.74/189° 168.75°T	TOWER / ELECTRICAL HEIGHT / SPACING / PHASING / FIELD RATIO DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐	PROPOSED DAYTIME DIRECTIONAL PATTERN *** WCLW MANSFIELD, OHIO *** JUNE 1967 θ° =0	CALL WCLW FREQ 1140 KHz POWER 0.25 KW TYPE DA-D TIME DAY LAT. N-40-46-09 LONG. W-82-32-23 E.H.MUNN, JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No. BMP-12146
Accepted 8-25-67

Station WCLW
Mansfield, Ohio

1140 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WCLW | Main Studio: Mansfield, Ohio

Frequency: 1140 kHz | Power: 0.25 kw

Notification List No. 1755 | Date: November 2, 1977 | Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 40° 46' 09"
West Longitude: 82° 32' 23"

ANTENNA CHARACTERISTICS

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

TOWER:	NW(#1)	SW(#4)	NE(#2)	SE(#3)	
HEIGHT ABOVE INSULATORS:	216'	216'	216'	216'	(90°)
PHASING:	0°	+189°	-74°	+115.5°	
FIELD RATIO:	1.00	0.74	0.96	0.63	

SPACING AND ORIENTATION: From reference tower #1, tower #4 is spaced 179.7' (75°) on a line bearing 168.75° true, tower #2 is spaced 287.5' (120°) on a line bearing 80.25° true, and tower #3 is on a line bearing 110.25° true.

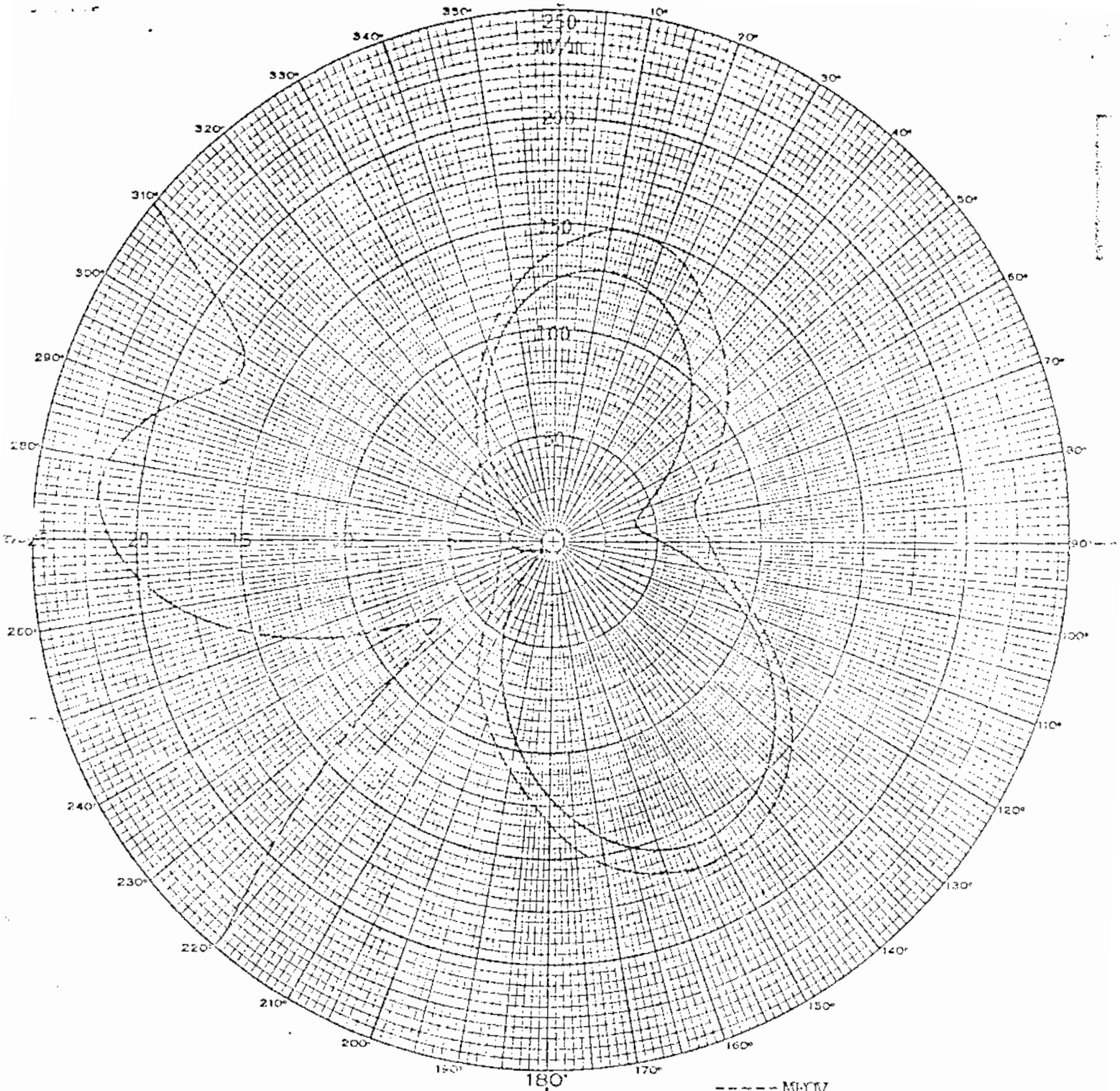
GROUND SYSTEM: 120-155' to 300' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:
THEORETICAL

	RMS
Day	90 mv/m

This notification concerns only minor changes in m.e.o.v.s of radiation in the directional antenna pattern.

DAYTIME OPERATION ☑ NIGHTTIME OPERATION ☐ $\theta^{\circ} = 0$ & ASSOCIATES, INC. COLDWATER, MICH.



RMS_{Theo}=90 mV/m

-----MEOV

——·——10X THEO. PATTERN EXPANSION

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 3	STATION DATA
	TOWER	ELECTRICAL HEIGHT	SPACING	PHASING	FIELD RATIO		
	A°	C°	S°	P°	F		
#1 — 120° — #2 → 80.25° T.; #1 — 125° — #3 → 110.25° T.; #1 — 75° — #4 → 168.75° T.	1	90°		0°	1.00	PROPOSED DAYTIME DIRECTIONAL PATTERN **** WCLN MANSFIELD, OHIO ****	CALL WCLN FREQ 1140 kHz. POWER 0.25 kW TYPE DA-D TIME DAYTIME LAT. N 40°46'09" LONG. W 82°32'23"
	2	90°		-74°	0.96		
	3	90°		115.5°	0.63		
	4	90°		189°	0.74		
	5						
	6						
	DAYTIME OPERATION (X)			NIGHTTIME OPERATION ( )		$\theta^\circ = 0$	E. HAROLD MUNN, JR. & ASSOCIATES, INC. COLDWATER, MICH.

WQBA

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : WQBA Main Studio: Miami, Florida

Frequency : 1140 KHz Power : 5 kW Night 10 kW Day ___

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

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	25	42	31
West Longitude:	80	22	41

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 5
Type of elements : Series excited, uniform cross-section, guyed, Shunt excited, Self-supporting, tapered, vertical steel towers.

TOWER :	NW(1)	NWC)2)	C(3)	SEC(4)	SE(5)	
HEIGHT ABOVE INSULATORS :	220'	220'	220'	220'	220'	(91.8°)
NIGHT PHASIING :	162°	80.8°	0°	-80.8°	-162°	
NIGHT FIELD RATIO:	0.2304	0.7212	1.0	0.7212	0.2304	
DAY PHASING :	---	---	0°	-150°	---	
DAY FIELD RATIO :	---	---	1.0	0.60	---	

SPACING AND ORIENTATION : The towers in a row are spaced 446' (186°) on a line bearing 305° true.

GROUND SYSTEM : 120 - 215' equally spaced copper radials plus under a 48' square ground each tower. Also an inverted copper box on each tower pier is bonded to the ground system.

WQBA

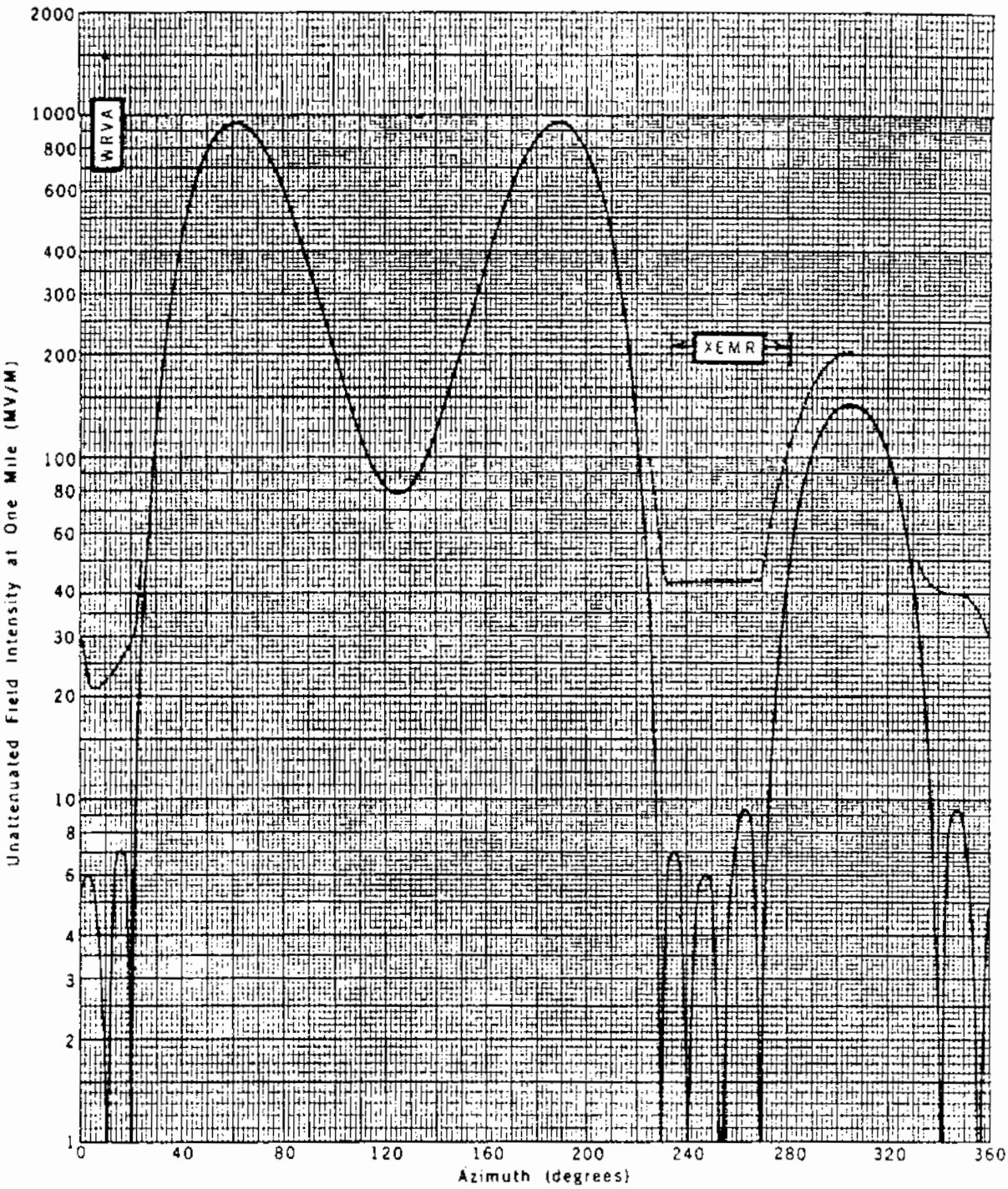
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	600 mv/m	_____ mv/m	630 mv/m
Night	410 mv/m	_____ mv.m	430.50 mv/m

Note: Please retain the Daytime directional antenna radiation pattern notified for Station WHIE (now WQBA) in United States Change Lists Numbers 265 and 235 dated February 20, 1948 and July 10, 1947 and attach to this Revised Description Sheet Nighttime pattern. This notification concerns only a change in the Nighttime operation of the station with Daytime operation continued as previously notified.

CTR NO

APRIL 1978

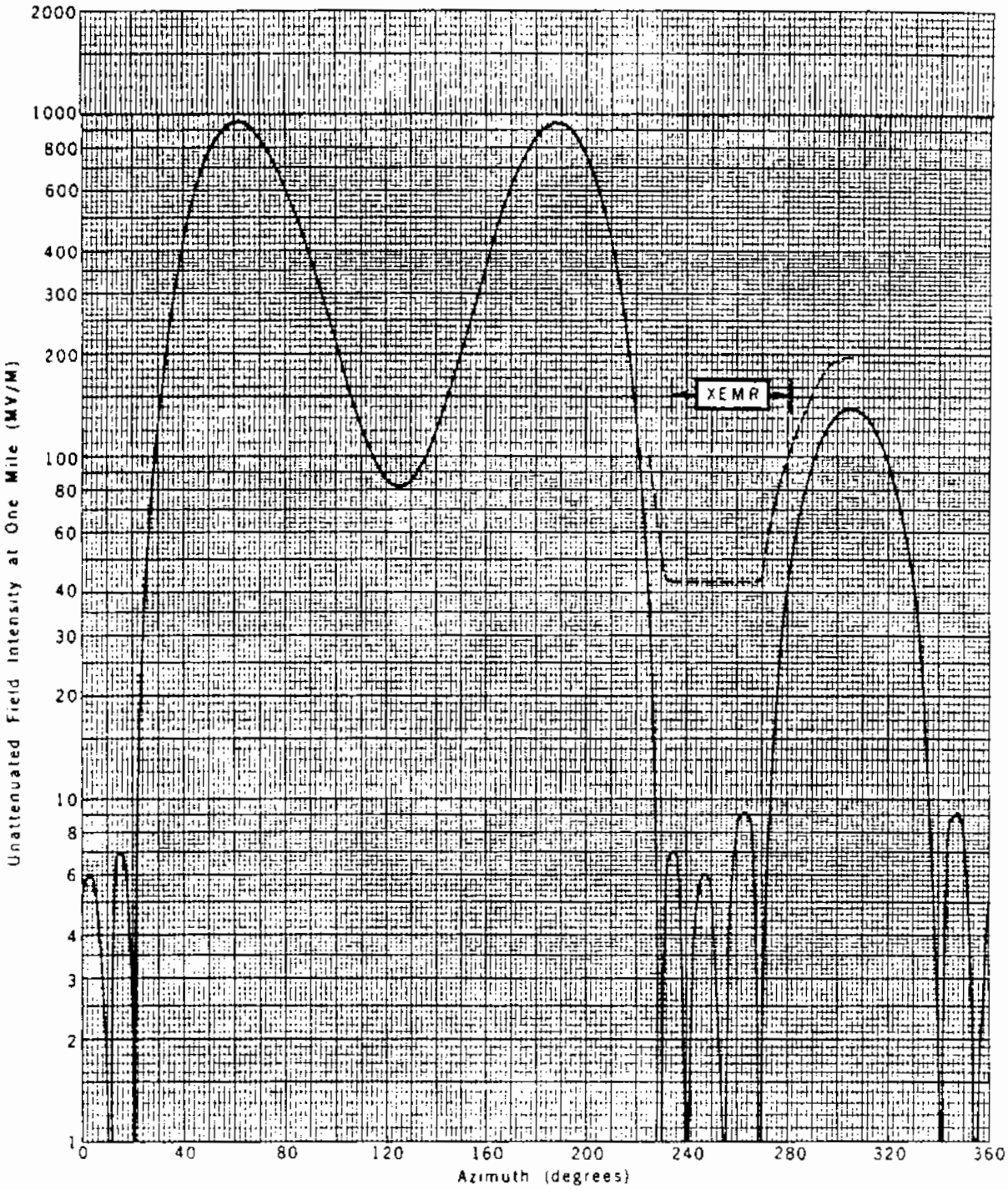


PROPOSED NIGHTTIME RADIATION PATTERN
IN HORIZONTAL PLANE

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 5 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

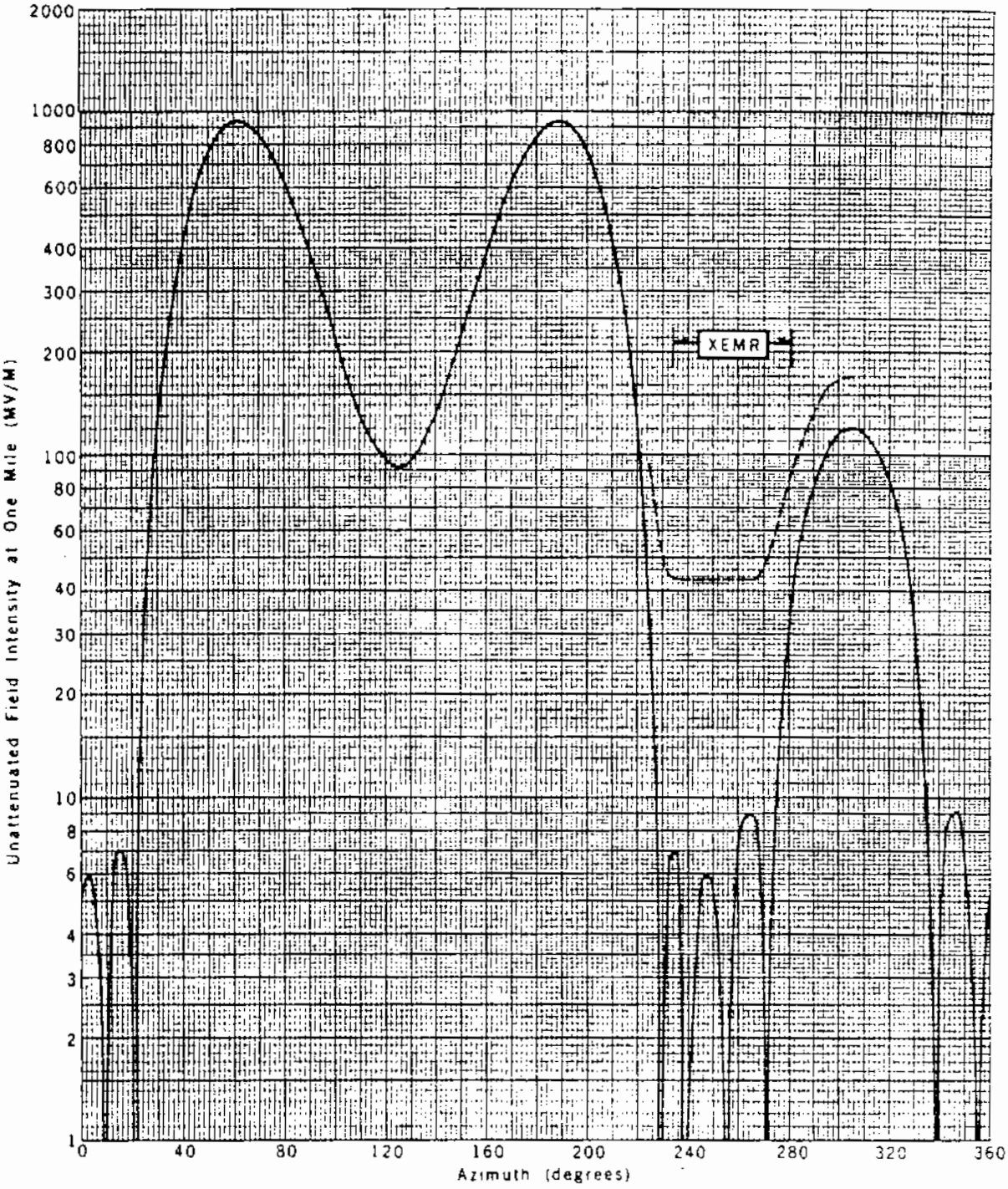
Jules Cohen & Associates Consulting Electronics Engineers

WQBA

Figure 1

Sheet 4A of 14

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN

AT VERTICAL ANGLE OF 10 DEGREES

SUSQUEHANNA BROADCASTING COMPANY

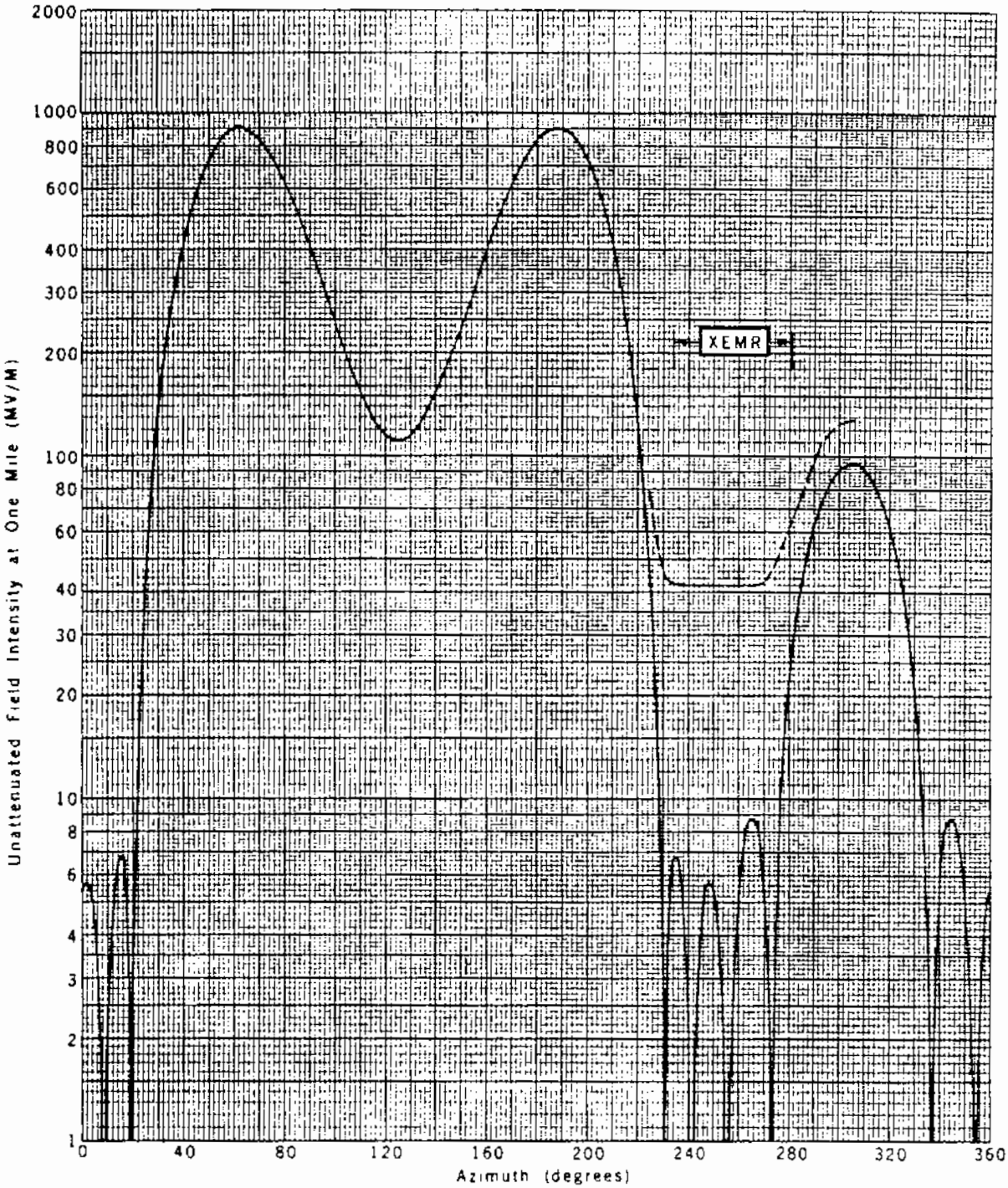
STATION WQBA MIAMI, FLORIDA

1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

APRIL 1978



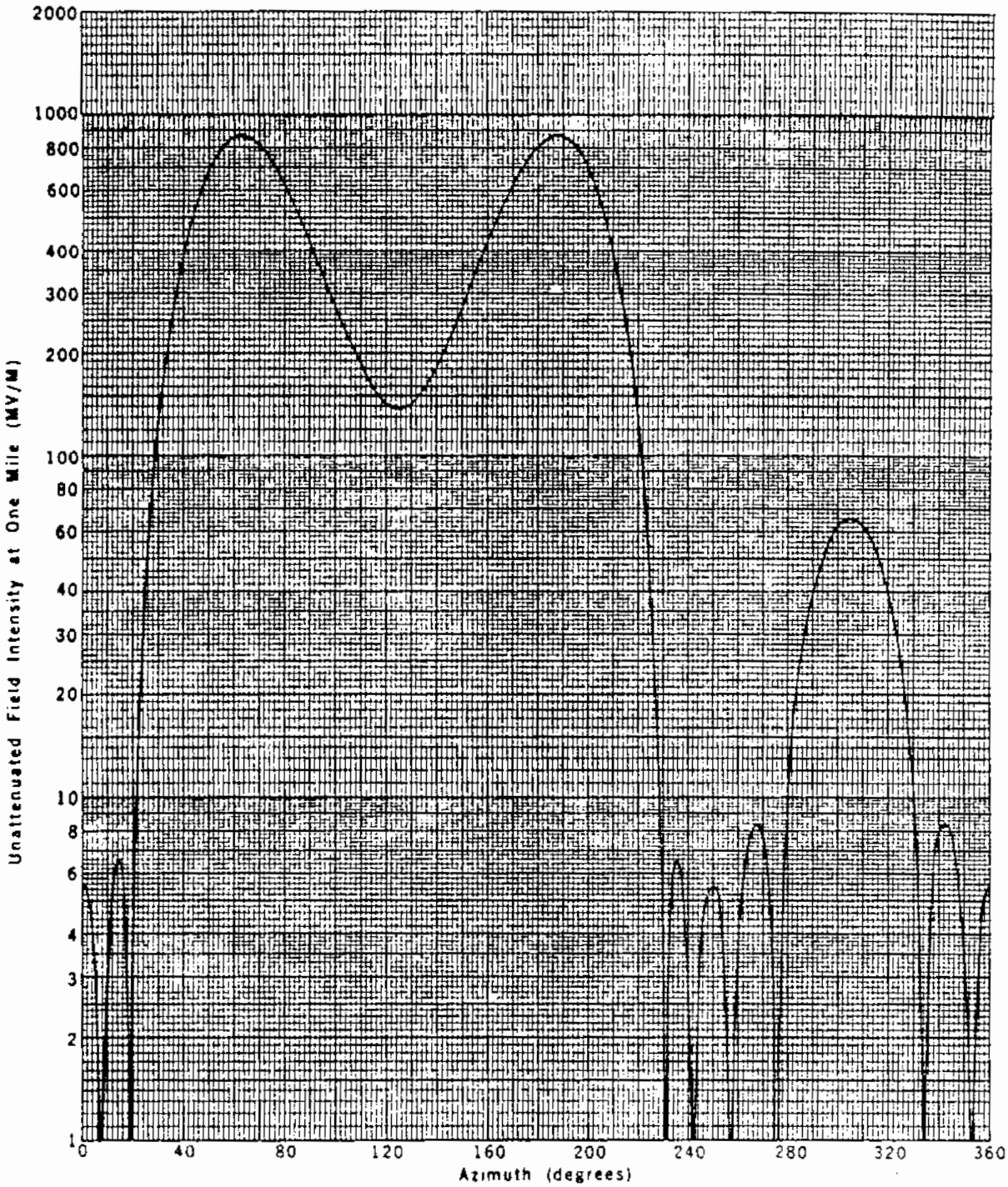
PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 15 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

APRIL 1978



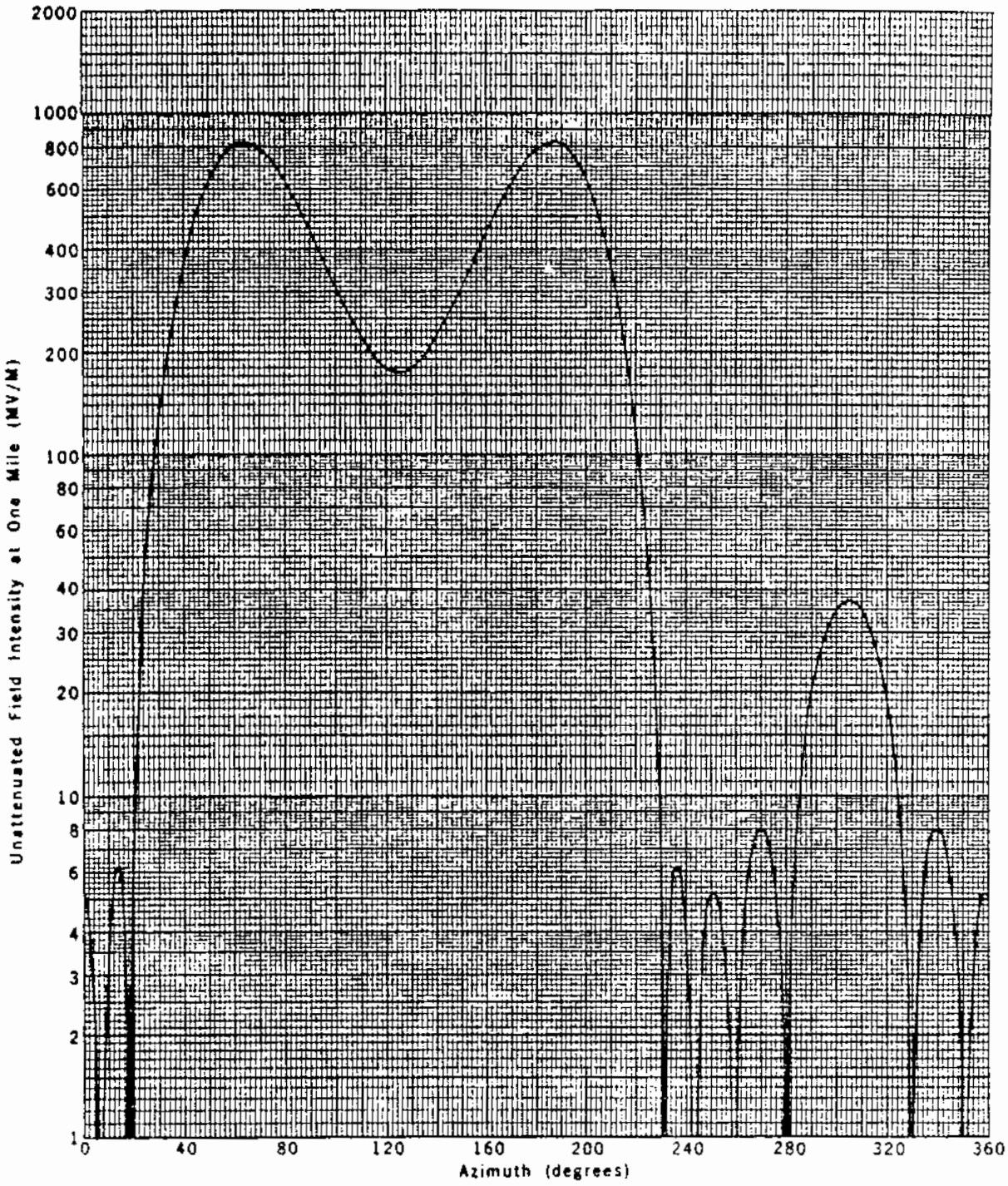
PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 20 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 25 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

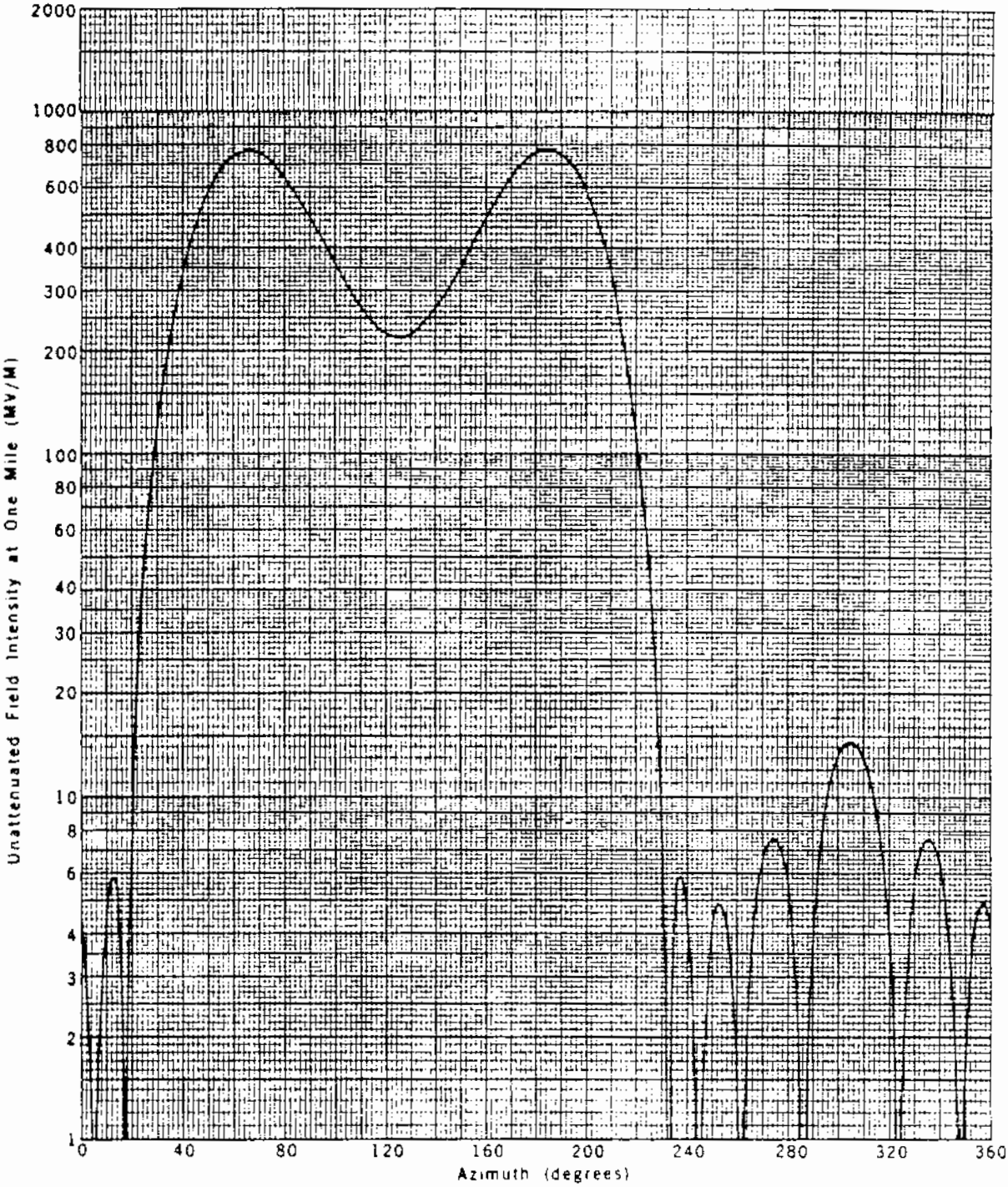
Jules Cohen & Associates Consulting Electronics Engineers

WQBA

Figure 1

Sheet 8 of 14

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN

AT VERTICAL ANGLE OF 30 DEGREES

SUSQUEHANNA BROADCASTING COMPANY

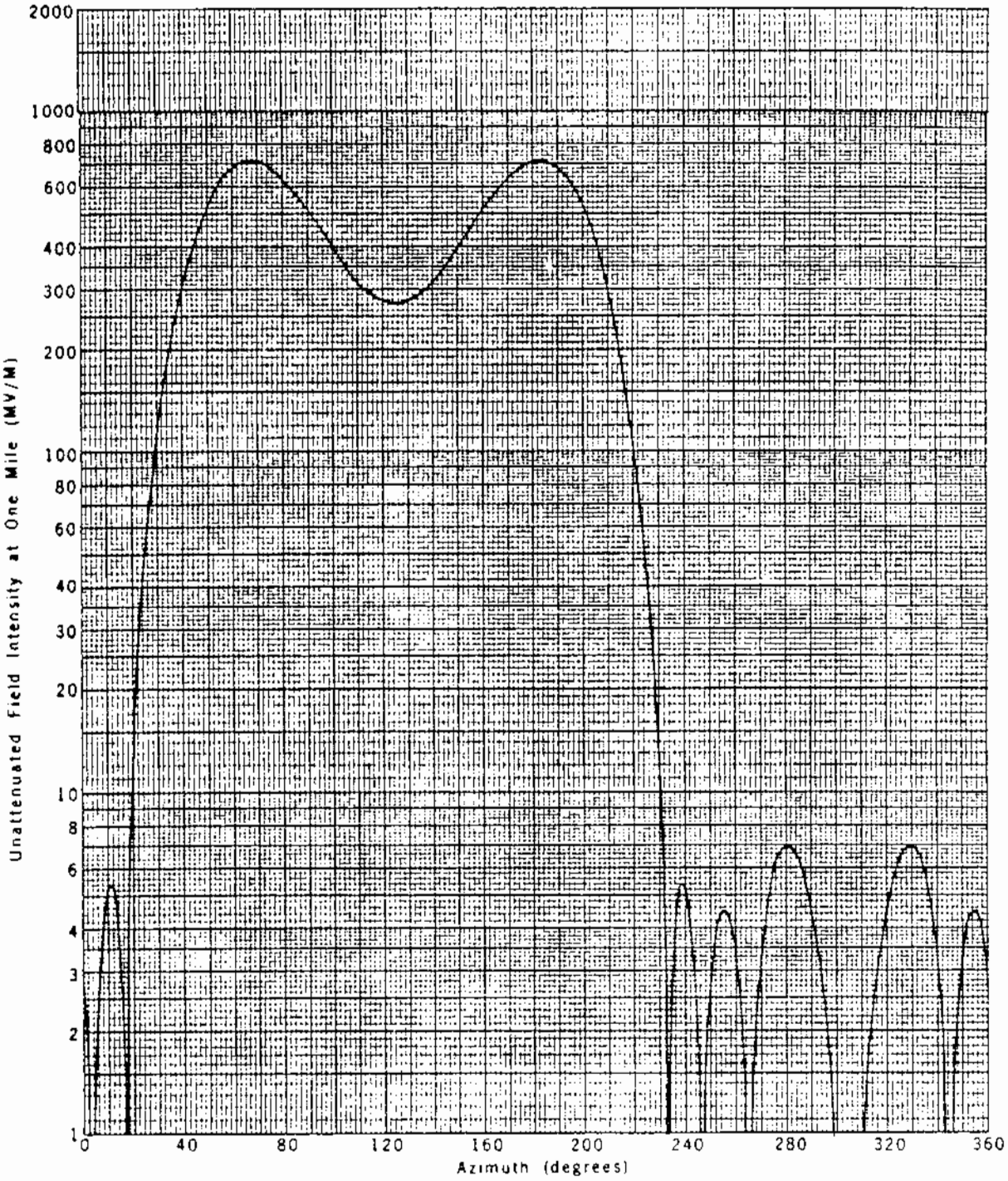
STATION WQBA MIAMI, FLORIDA

1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 35 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW. 10 KW-LS U DA-2

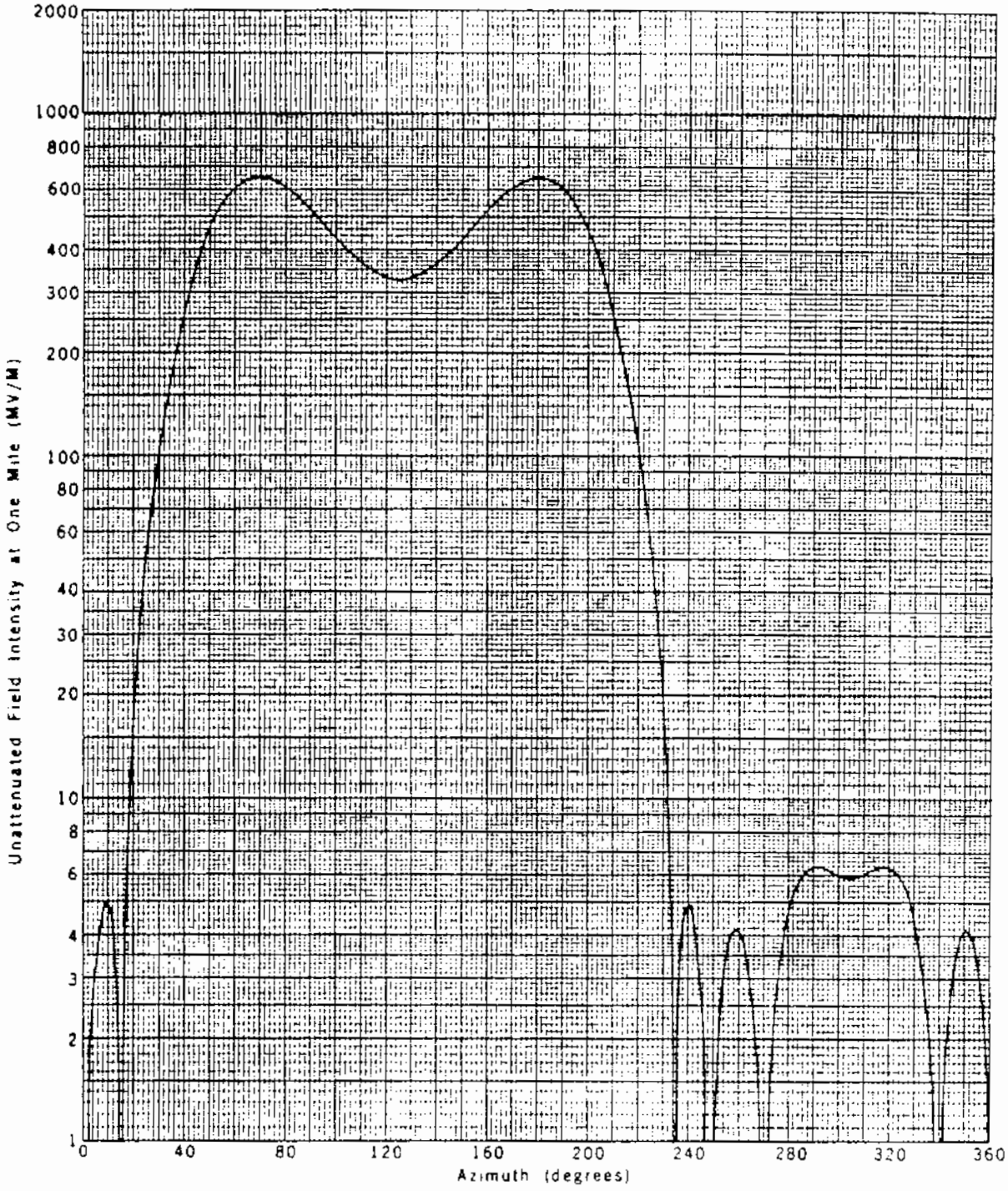
Jules Cohen & Associates Consulting Electronics Engineers

WQBA

Figure 1

Sheet 10 of 14

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN

AT VERTICAL ANGLE OF 40 DEGREES

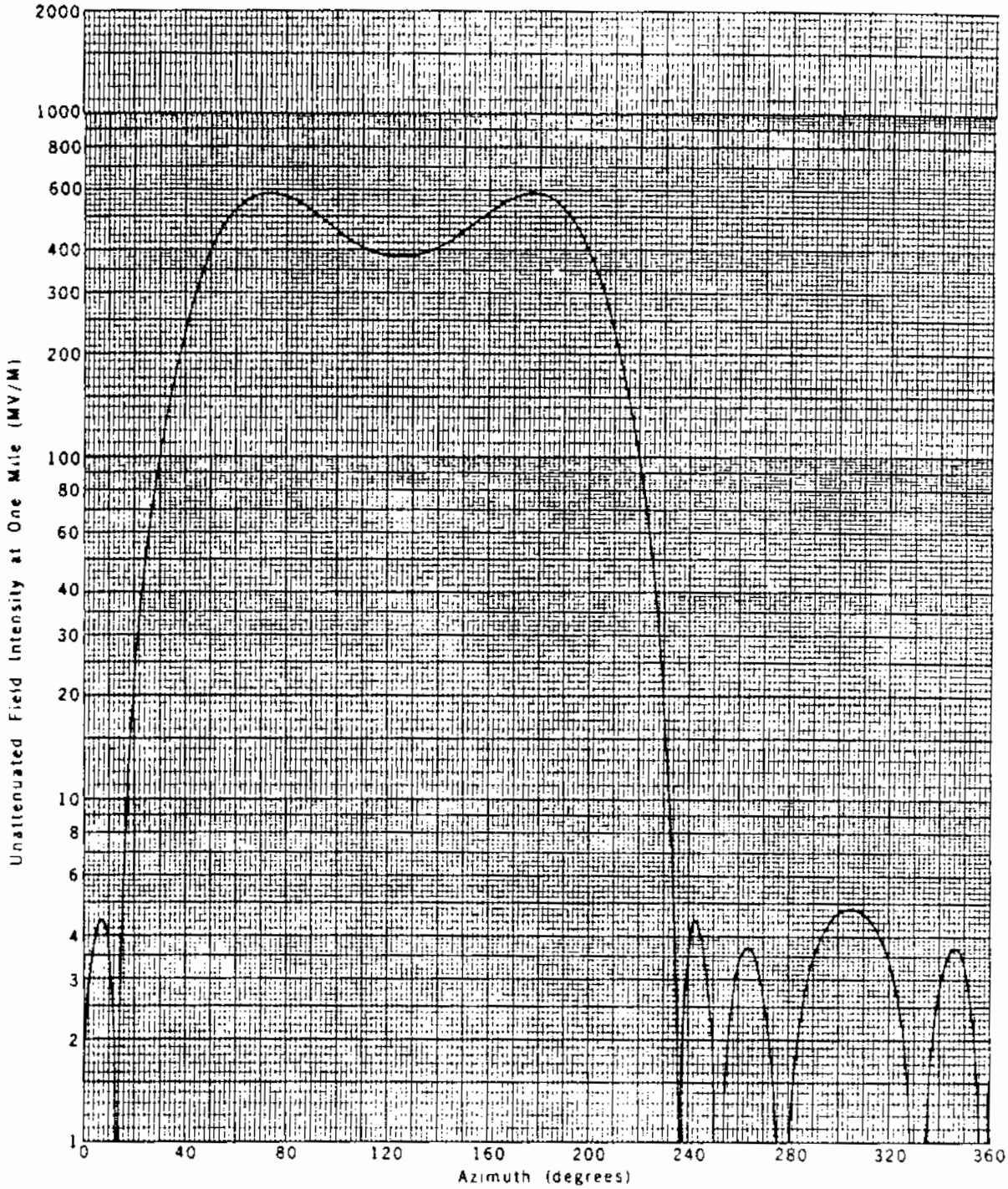
SUSQUEHANNA BROADCASTING COMPANY

STATION WQBA MIAMI, FLORIDA

1140 KHZ 5 KW, 10 KW-LS U DA 2

Jules Cohen & Associates Consulting Electronics Engineers

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 45 DEGREES

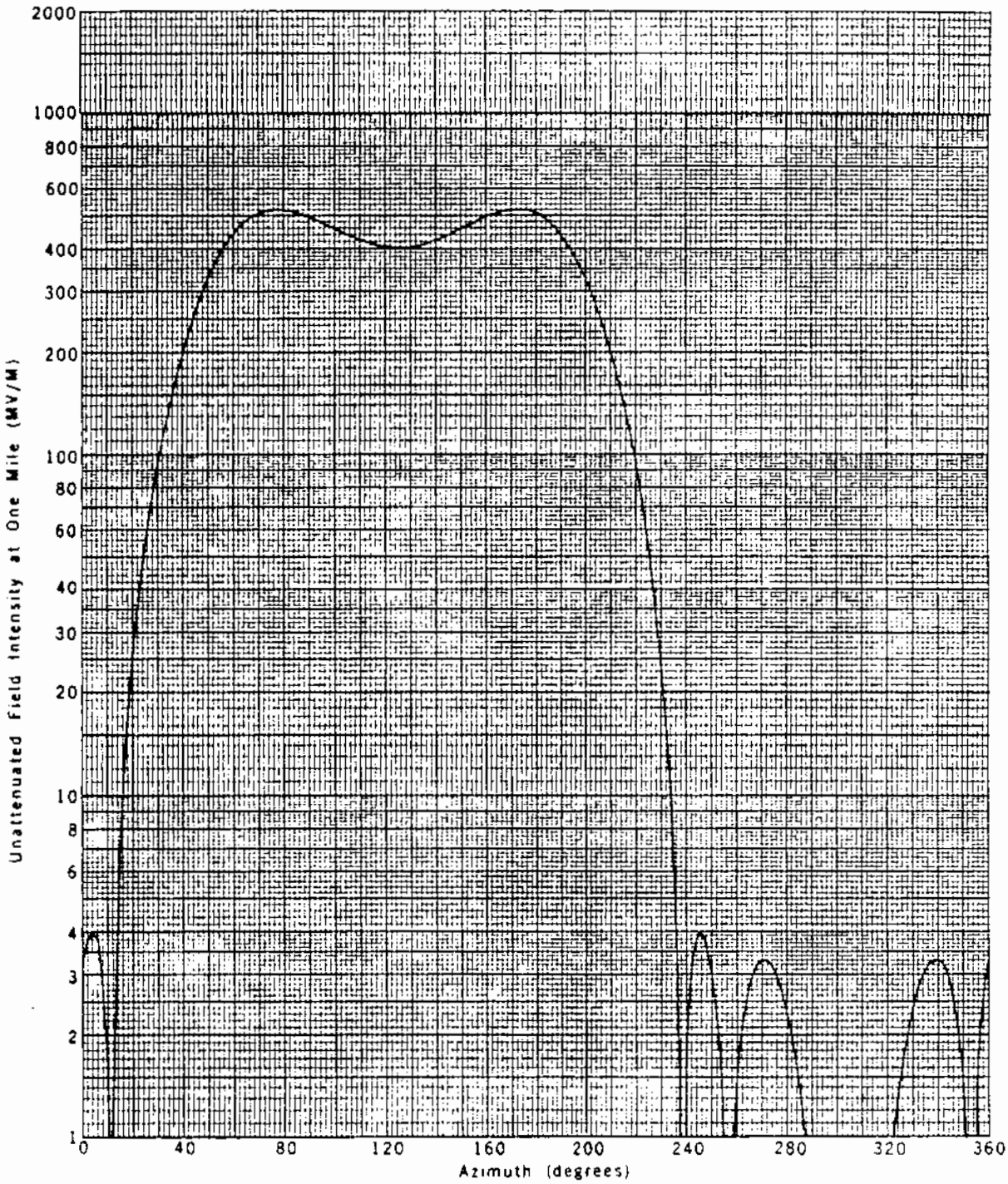
SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

Figure 1
Sheet 12 of 14

APRIL 1978



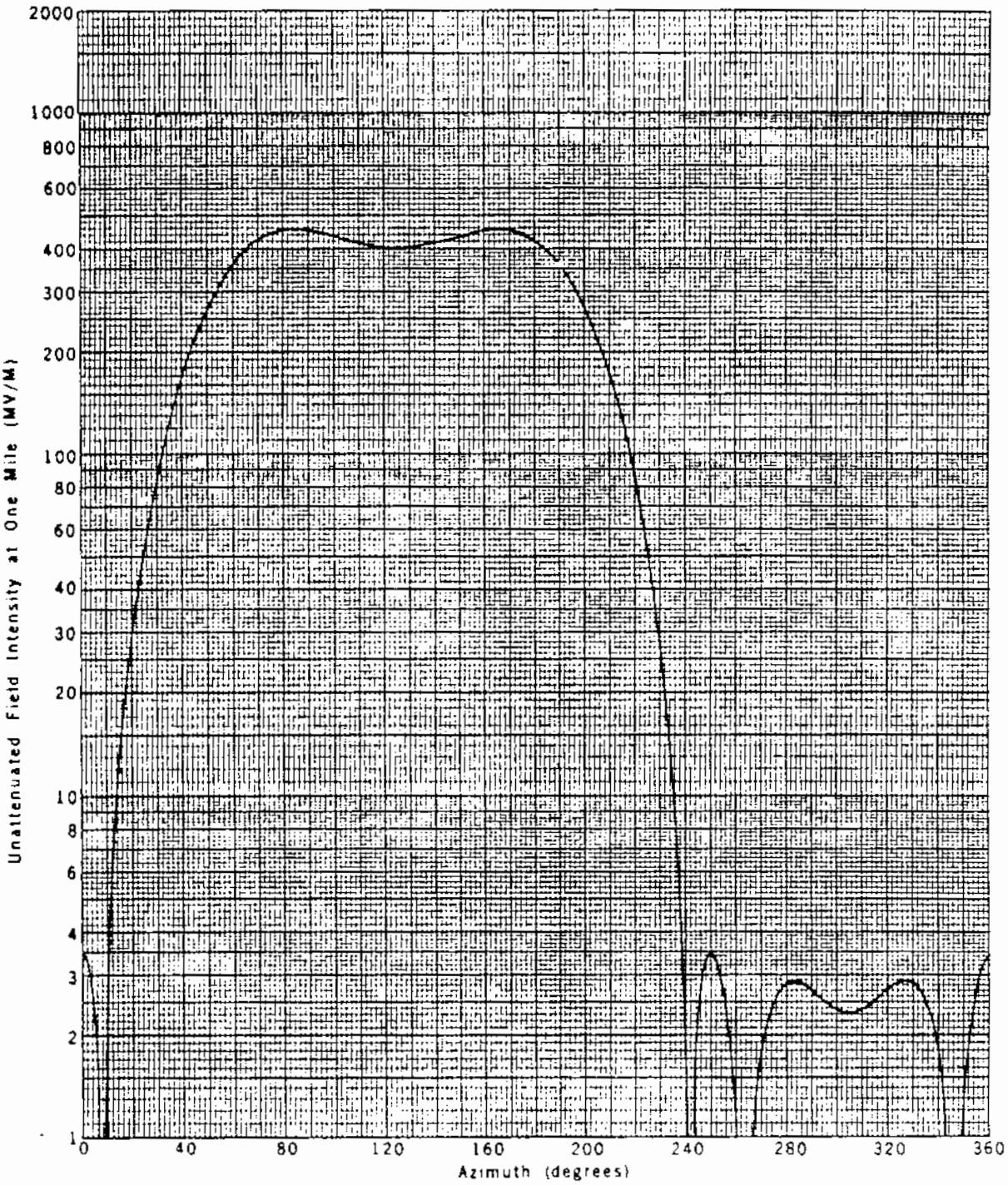
PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 50 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 55 DEGREES

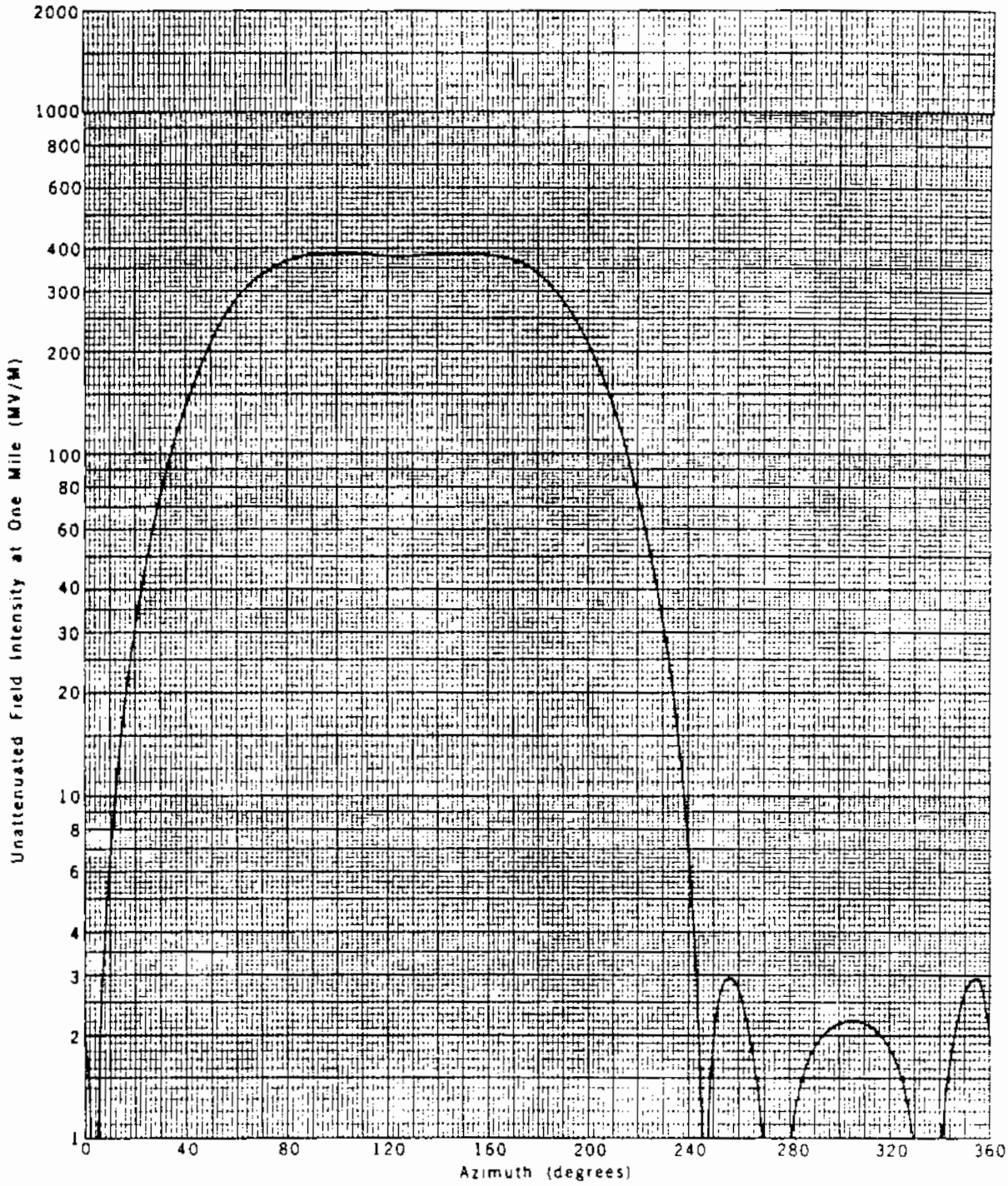
SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

Figure 1
Sheet 14 of 14

APRIL 1978



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 60 DEGREES

SUSQUEHANNA BROADCASTING COMPANY
STATION WQBA MIAMI, FLORIDA
1140 KHZ 5 KW, 10 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

WQBA

SUPPLEMENTAL DIRECTIONAL ANTENNA
DESCRIPTION SHEET

Station: WQBA

Main Studio: Miami, Florida

Frequency: 1140 kHz

Power: 5 kW Night 10 kW Day

Notification List No. 1659

Date: November 17, 1975 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

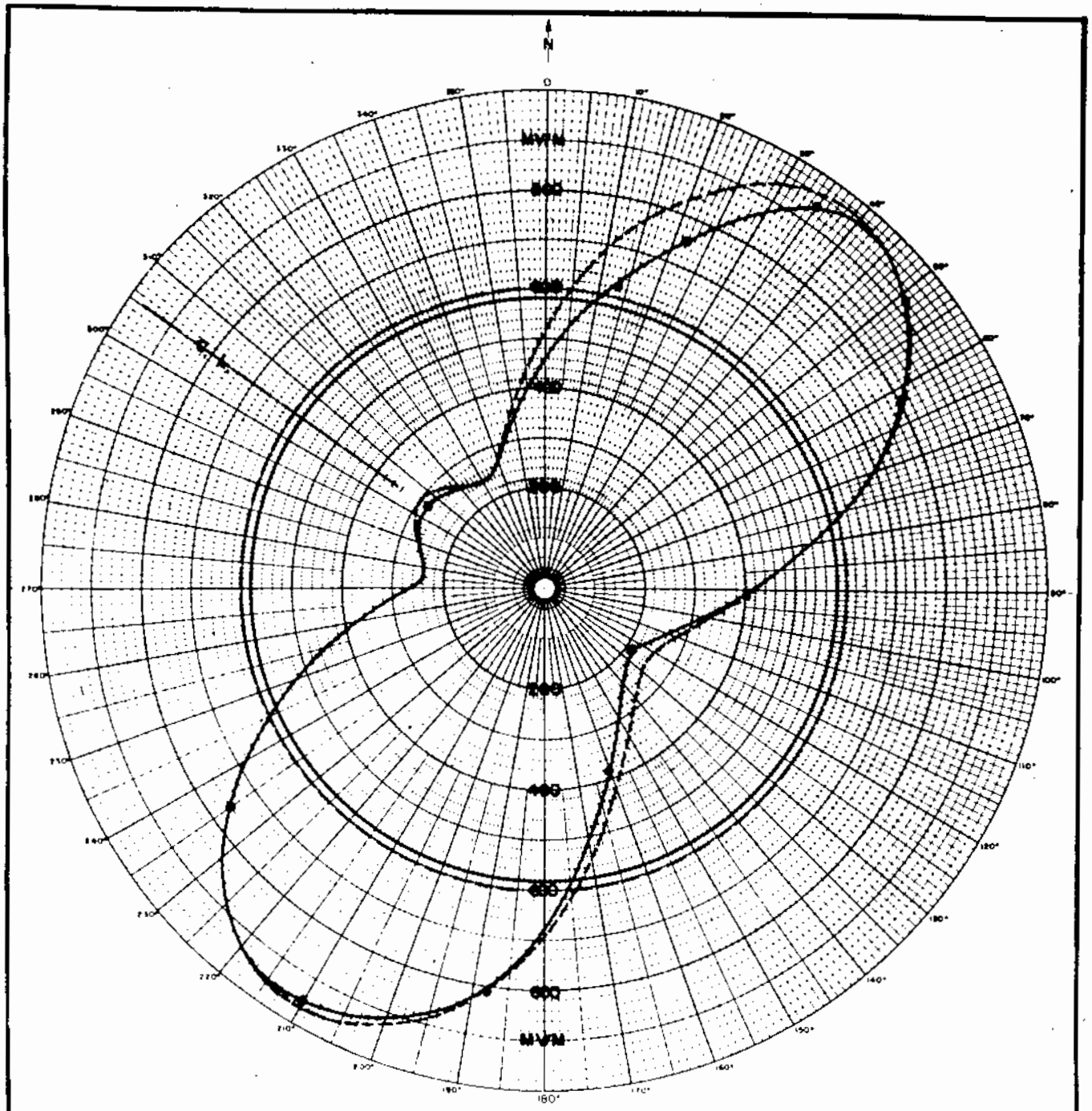
North Latitude:	25°	42'	31"
West Longitude:	80°	22'	41"

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

Note: Please retain the description sheet and directional antenna radiation patterns notified for station WHIE (now WQBA) in United States Change Lists Numbers 265 and 235, dated February 20, 1948 and July 10, 1947 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.

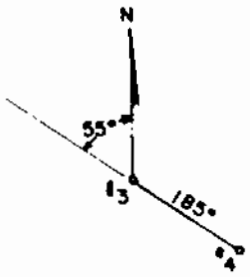
CTR NO 30869A4

September 15, 1948 9/21/48G WQBA ~~WMIE~~ 1140



RMS MEASURED —— 582 MVM

RMS THEORETICAL ------ 600 MV/M



HORIZONTAL RADIATION PATTERN
DAY TIME

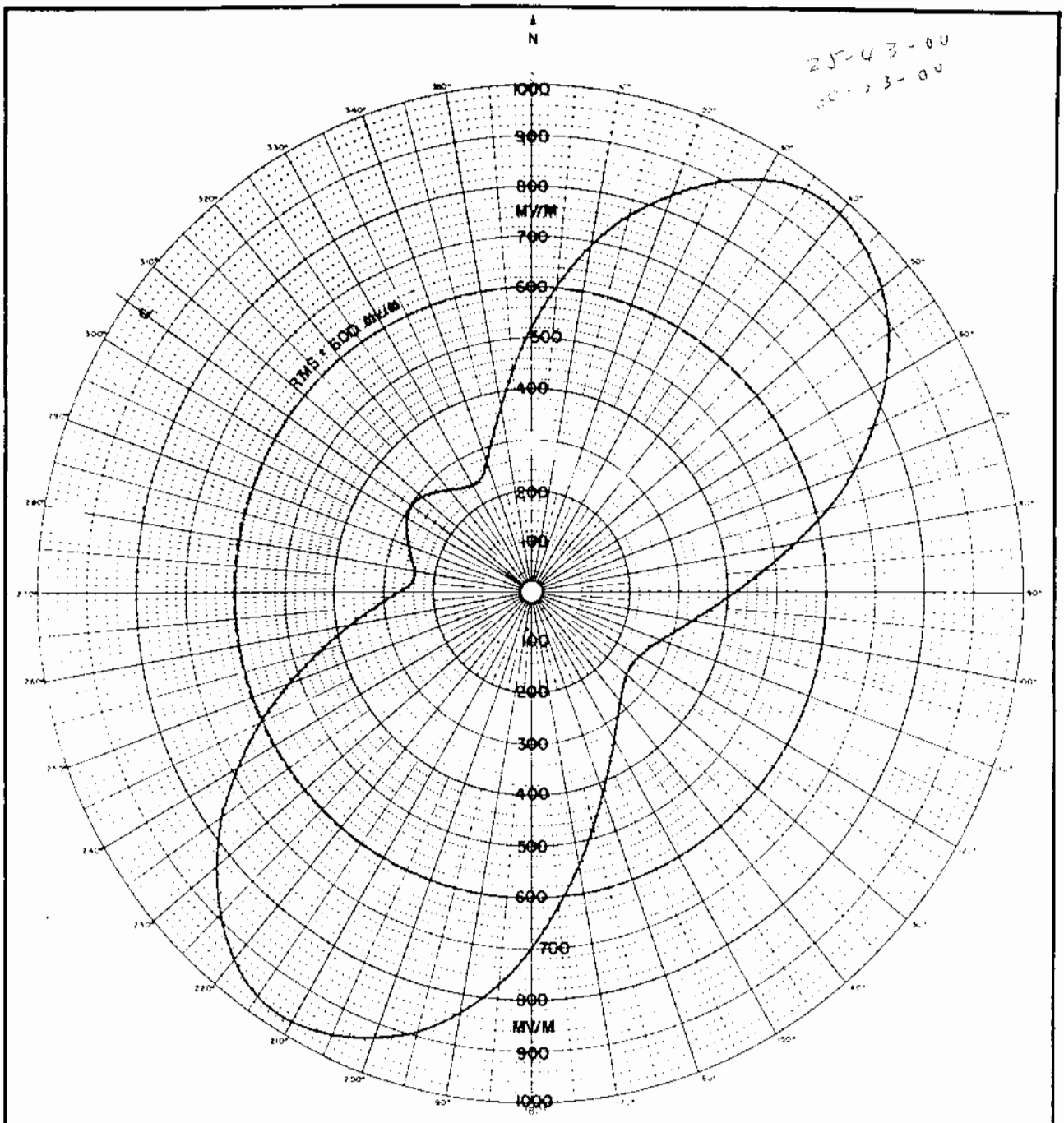
ANT	α DEG. S	DEG	σ DEG	FIELD K	F GND	H DEG
3				1.0		95
4	180°	185	-15	.6		95

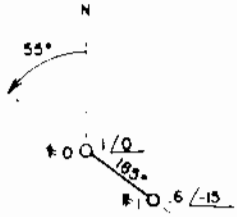
WMIE
MIAMI, FLORIDA
10 KW. DA-2 1140 KC.

GLENN D. GILLETT AND ASSOCIATES
CONSULTING RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON 4, D. C.

PATTERN NO 480913
SUPERSEDES
APP 4 A

WVQ LA ~~WMIE~~ MIAMI, FLA. 1140





HORIZONTAL RADIATION PATTERN
DAY TIME

10 KW DAN. 1140 KC.

ANT	α-DEG	S-DEG	σ DEG	FIELD	K	F-GND	H-DEG
0			0	1.0	600	95	
1	180	185	-15	0.6	600	95	

LINCOLN OPERATING CO.,
MIAMI, FLA

GLENN D GILLETT AND ASSOCIATES
CONSULTING RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON 4, D C

PATTERN NO 410127
SUPERSEDES
APP 3c

~~WMIE~~
WQBA

Measured Night
(8-23-63ct)

Station WMIE
Miami, Florida

5kw,10kw-LS,DA-2,U
1140 kc

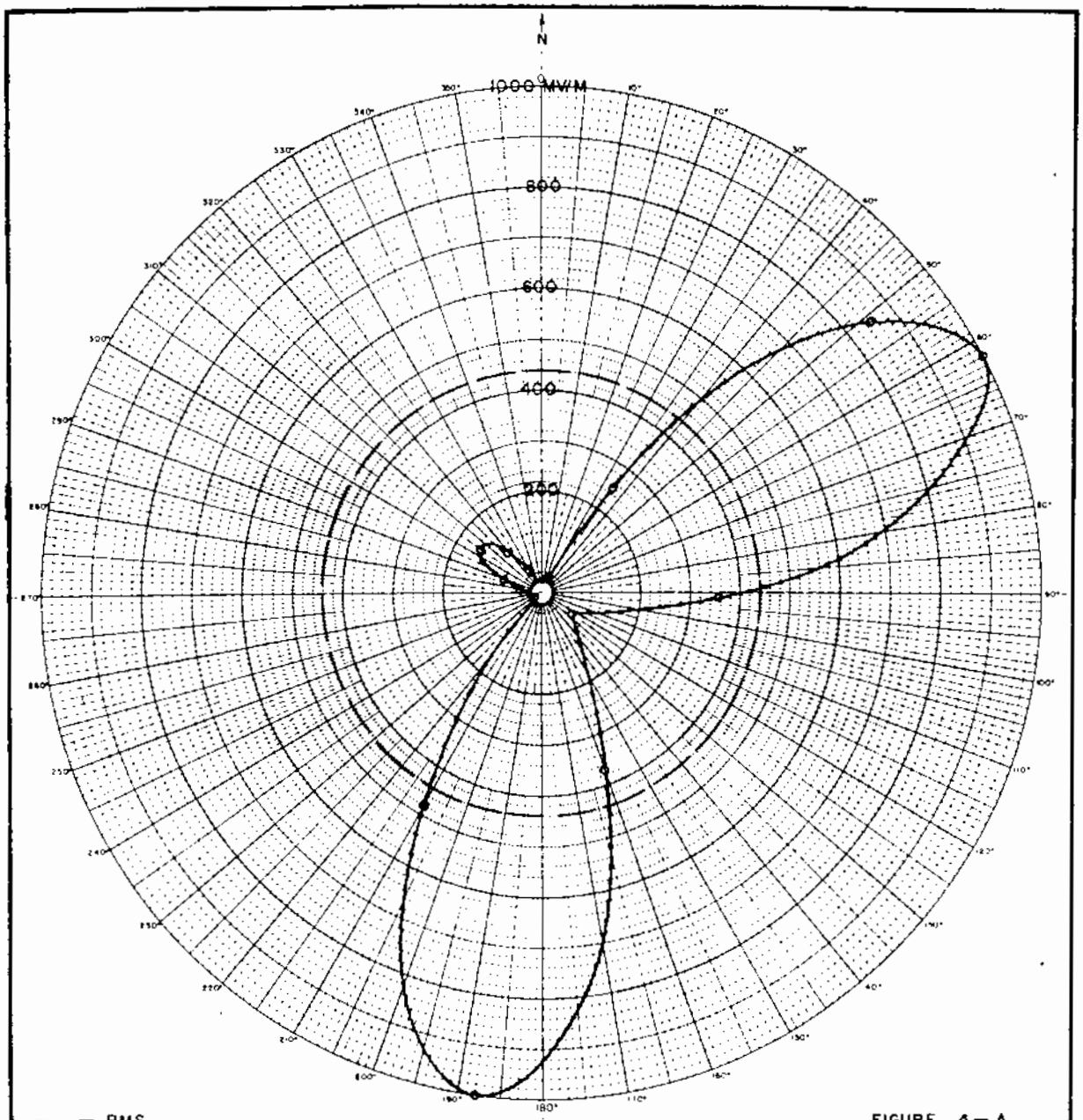
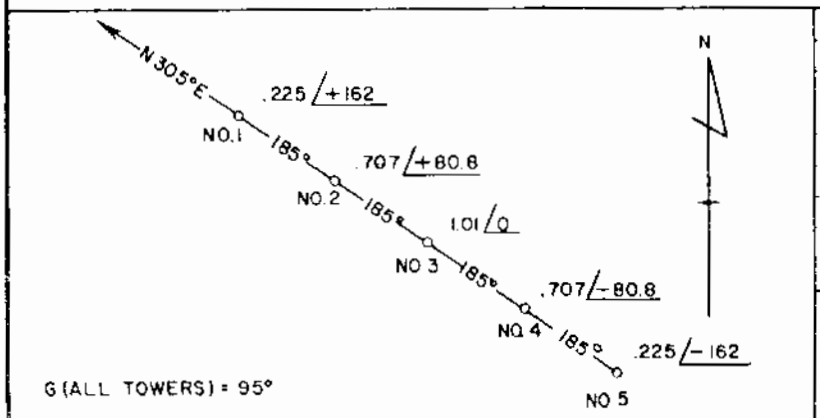


FIGURE 4—A

HORIZONTAL RADIATION PATTERN



APPLICANT	WMIE
LOCATION	MIAMI, FLORIDA
FREQUENCY	1140 KC/S
POWER	10 KW—LS, 5 KW—N, DA-2
LATITUDE	25 DEG 43 MIN 00 SEC
LONGITUDE	80 DEG 23 MIN 00 SEC
WHEN USED	NIGHT
RMS FIELD	440 MV/M
DATE	JANUARY 1963

RAYMOND E. ROHRER & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

FCC File No.BZ-5013
Accepted 8-12-63

Station WMIE
Miami, Florida

1140 kc

~~WMIE~~
WQBA

Measured Night Nulls
(8-23-63ct)

Station WMIE
Miami, Florida

5kw,10kw-LS,DA-2,U
1140 kc

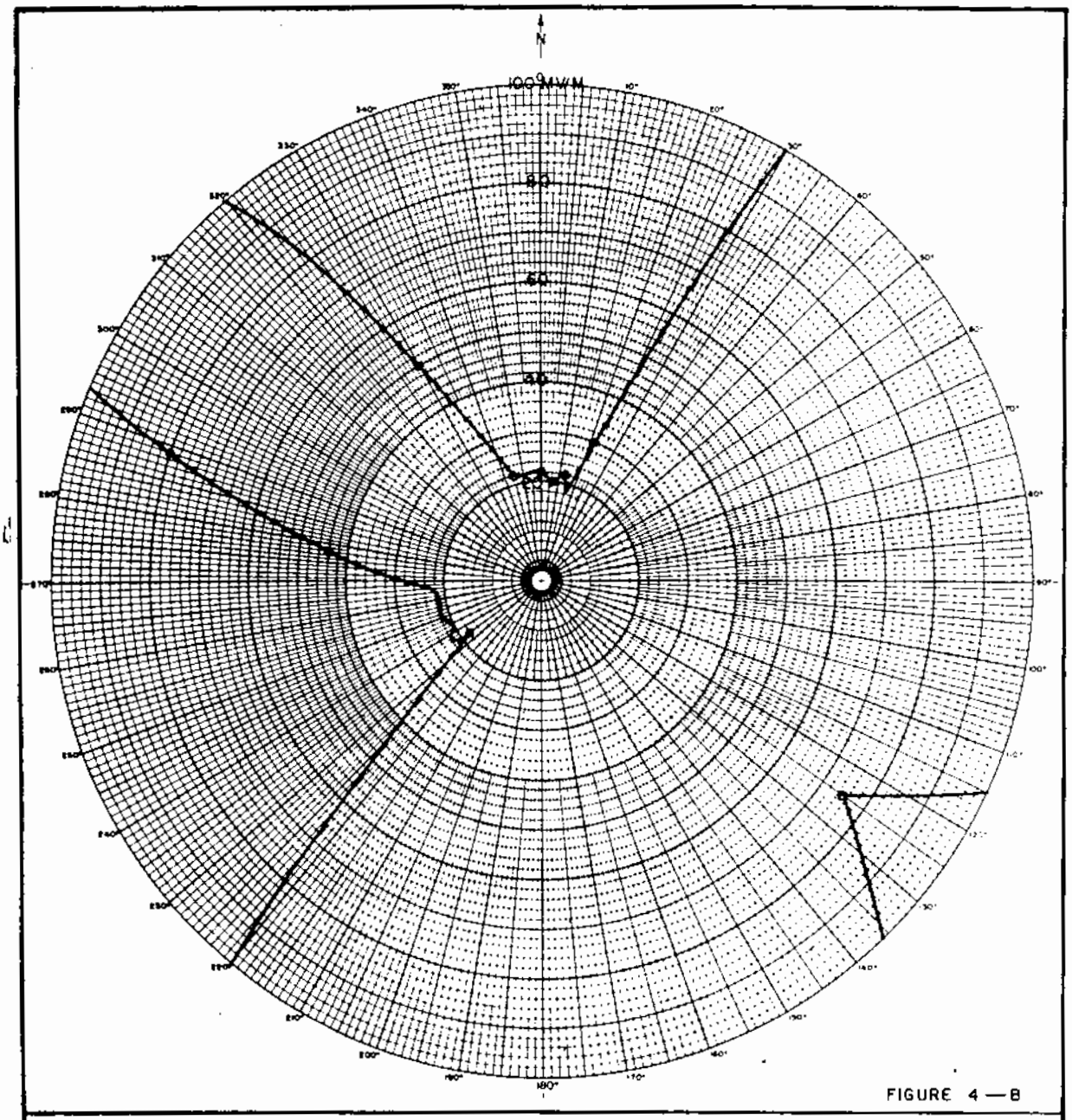


FIGURE 4 — B

EXPANDED VIEW

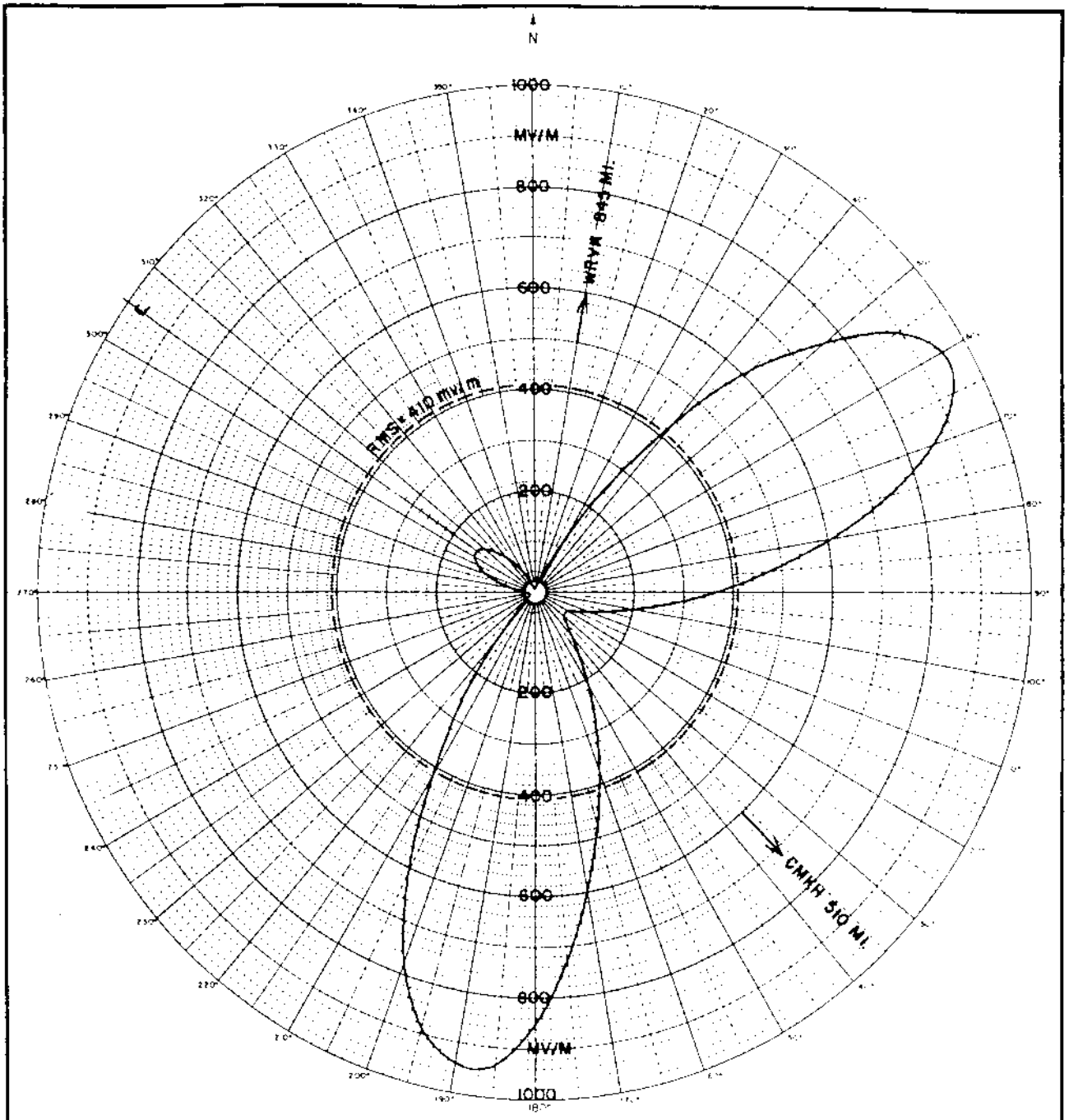
RAYMOND E. ROHRER & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON D C

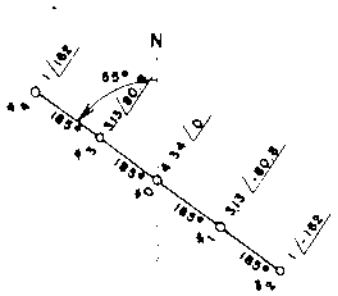
FCC File No.BZ-5013
Accepted 8-12-63

Station WMIE
Miami, Florida

1140 kc

WWDA
~~WMIE~~ MIAMI, FLA.
1140





HORIZONTAL RADIATION PATTERN
NIGHT TIME
5 KW. DAN. 1140 KC.

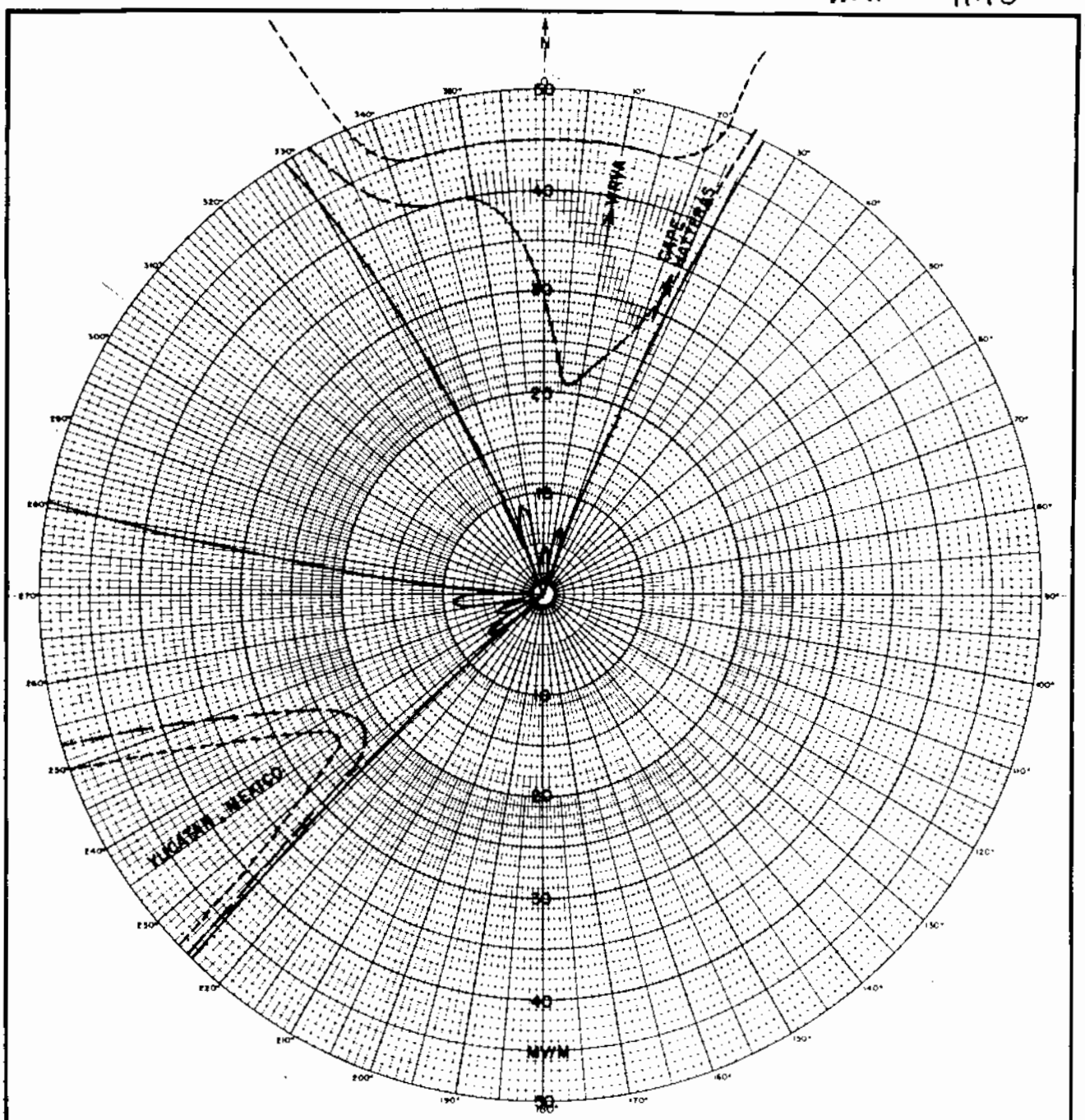
ANT	α DEG. S	DEG	σ-DEG	FIELD K	F-GNC	H-DEG
4	0	370	+162	1.0	410	95°
3	0	185	+80.8	3.13	410	95°
0			0	4.34	410	95°
1	180	185	-80.8	3.13	410	95°
2	180	370	-162	1.0	410	95°

LINCOLN OPERATING CO.,
MIAMI, FLA

GLENN D GILLETT AND ASSOCIATES
CONSULTING RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON 4, D. C.

PATTERN NO. 410127
SUPERSEDES
APP. 3 A

WQBA
~~WMIE~~ MIAMI
1140



HORIZONTAL RADIATION PATTERN
NIGHTTIME – NULL DETAIL
5 KW. DAN. 1140 KC.

ANT	α-DEG	S-DEG	σ-DEG	FIELD-K	F-GND	H-DEG

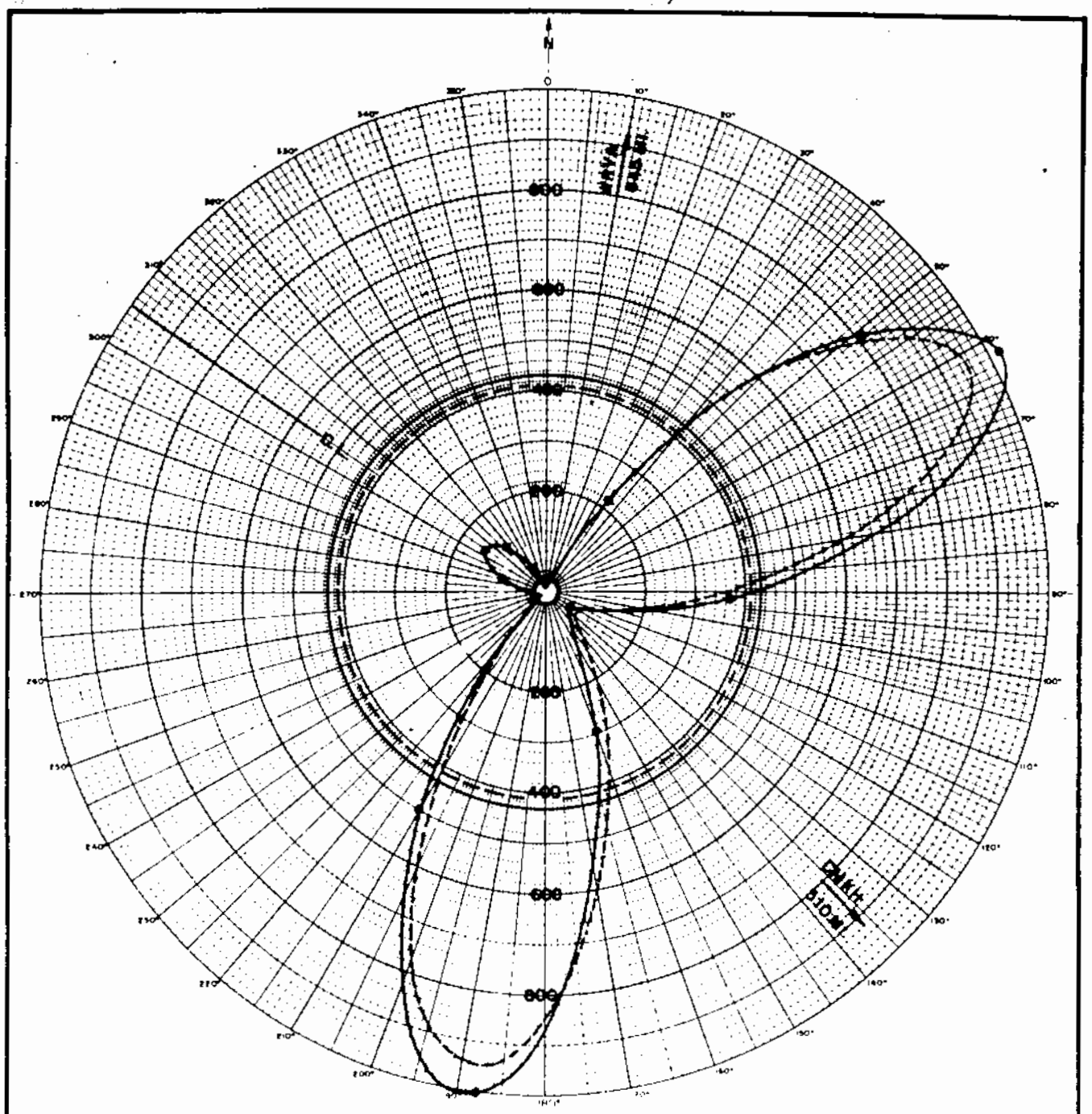
LINCOLN OPERATING CO.,
MIAMI, FLA.

GLENN D GILLETT AND ASSOCIATES
CONSULTING RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON 4, D C

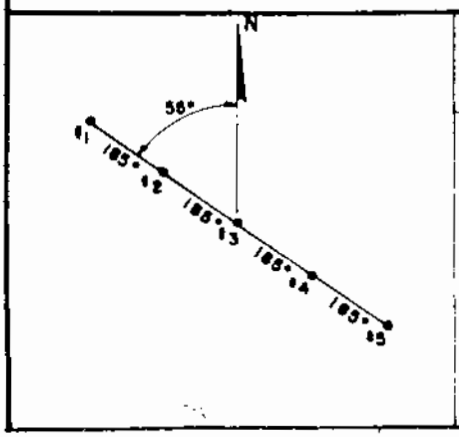
PATTERN NO 470611
SUPERSEDES 410127
APP 3 b 1a

WQBA ~~WMIE~~

September 15, 1948 9/21/48G 1140



RMS MEASURED —— 432 MV/M
RMS THEORETICAL ----410 MV/M



MEASURED
HORIZONTAL RADIATION PATTERN
NIGHT TIME

ANT	α DEG S	α DEG	α DEG	I	GND H DEG
1	0	370	162	1.0	95°
2	0	185	80.8	3.14	95°
3				4.44	95°
4	180	185	-80.8	3.14	95°
5	180	370	-162	1.0	95°

WMIE
MIAMI, FLORIDA

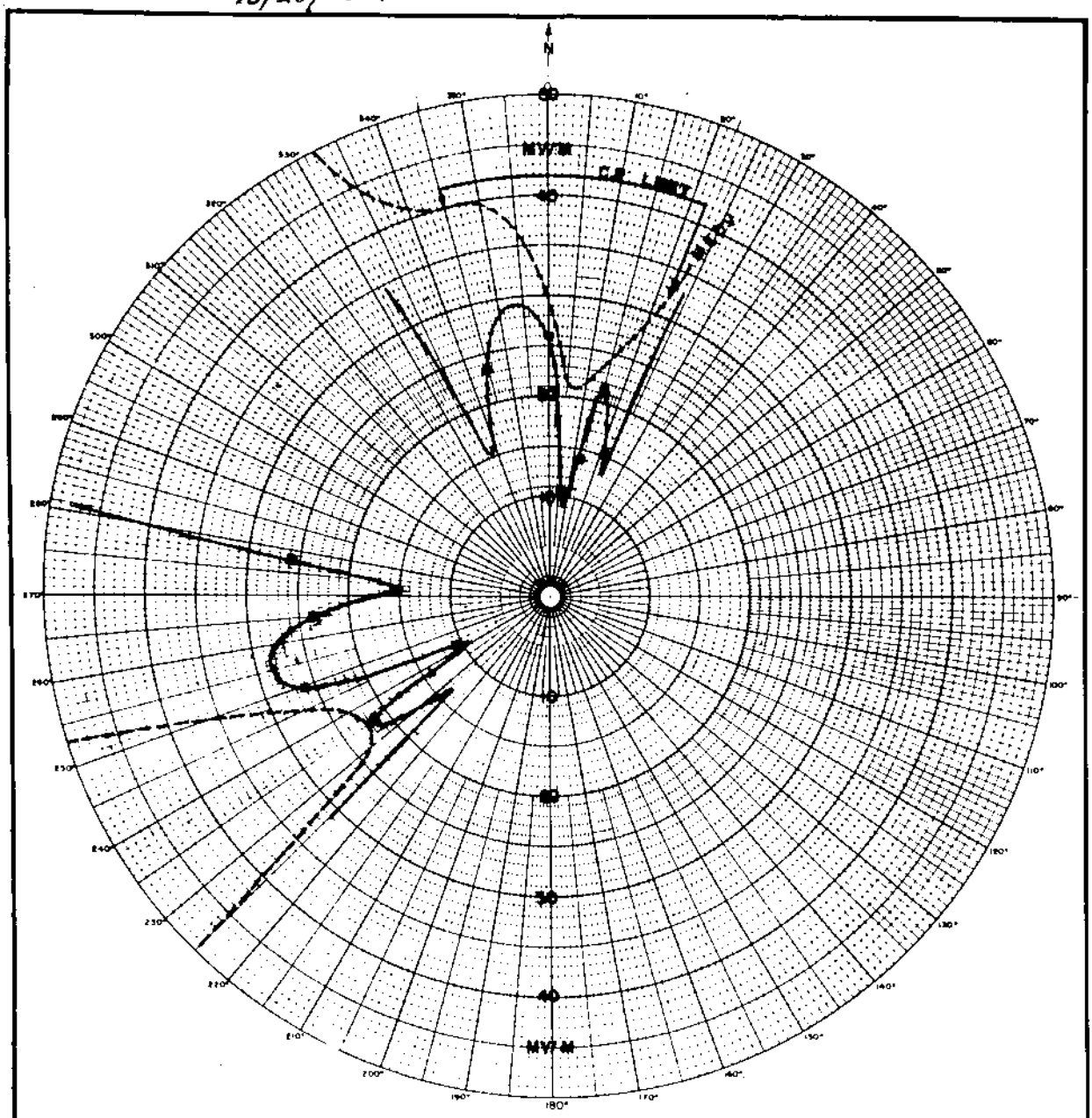
5 KW. DA-2 1140 KC.

GLENN D GILLETT AND ASSOCIATES
CONSULTING RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON 4, D C

PATTERN NO 480913
SUPERSEDES
APP 3A

WQBA ~~WMIE~~
1140

WMIE L-3373 10/28/48G



o MEASURED

x SYMMETRICAL COUNTERPOINTS ON OPPOSITE SIDE OF AXIS

	MEASURED HORIZONTAL RADIATION PATTERN NIGHT TIME EXPANDED	WMIE MIAMI, FLORIDA 5 KW. DA-II 1140 KC.
	ANT α-DEG. S-DEG. σ DEG FIELD K F-GND H DEG	GLENN D GILLETT AND ASSOCIATES CONSULTING RADIO ENGINEERS NATIONAL PRESS BUILDING WASHINGTON 4, D C
		PATTERN NO 480913 SUPERSEDES APP 3 8

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WQII

Main Studio: San Juan, Puerto Rico

Frequency: 1140 kHz

Power: 10kw

Notification List No. 1767

Date: January 26, 1978

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 18° 21' 30"
West Longitude: 66° 08' 05"

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:	W(#3)	N(#4)	S(#2)	E(#1)
HEIGHT ABOVE INSULATORS:	200'	200'	200'	200' (83.5°)
PHASING:	+234°	+72°	+162°	0°
FIELD RATIO:	0.33	0.71	0.47	1

SPACING AND ORIENTATION: The towers are located at the vertices of a parallelogram the long sides of which are 287.5' (120°) in length on a line bearing 300° true. The short sides are 215.5' (90°) in length on a line bearing 220° true.

GROUND SYSTEM: 120 - 215' equally spaced copper radials plus a 40' square ground screen interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

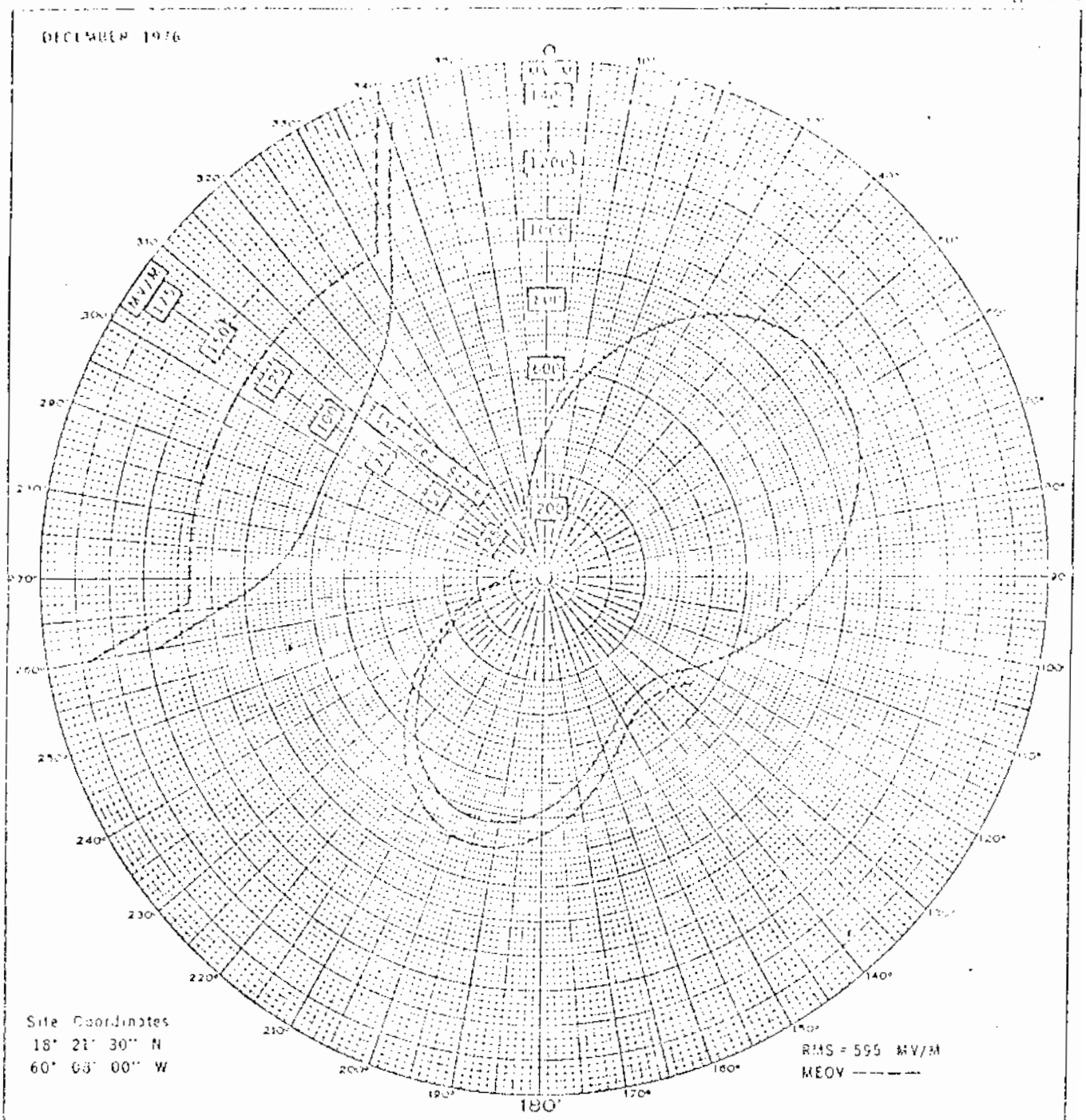
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL

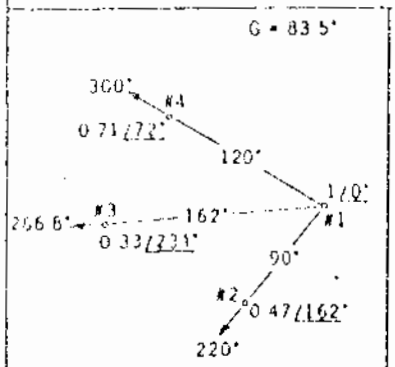
RMS

595 mv/m

Note: Please retain the directional antenna radiation patterns notified for Station WITA in United States Change List Number 1110 dated May 5, 1965 and attach to this Revised Description Sheet and pattern. This notification concerns only changes to add m.e.o.v.'s of radiation to the directional antenna patterns.



PROPOSED HORIZONTAL PLANE RADIATION PATTERN



METRO BROADCASTING COMPANY, INC.

SAN JUAN, PUERTO RICO

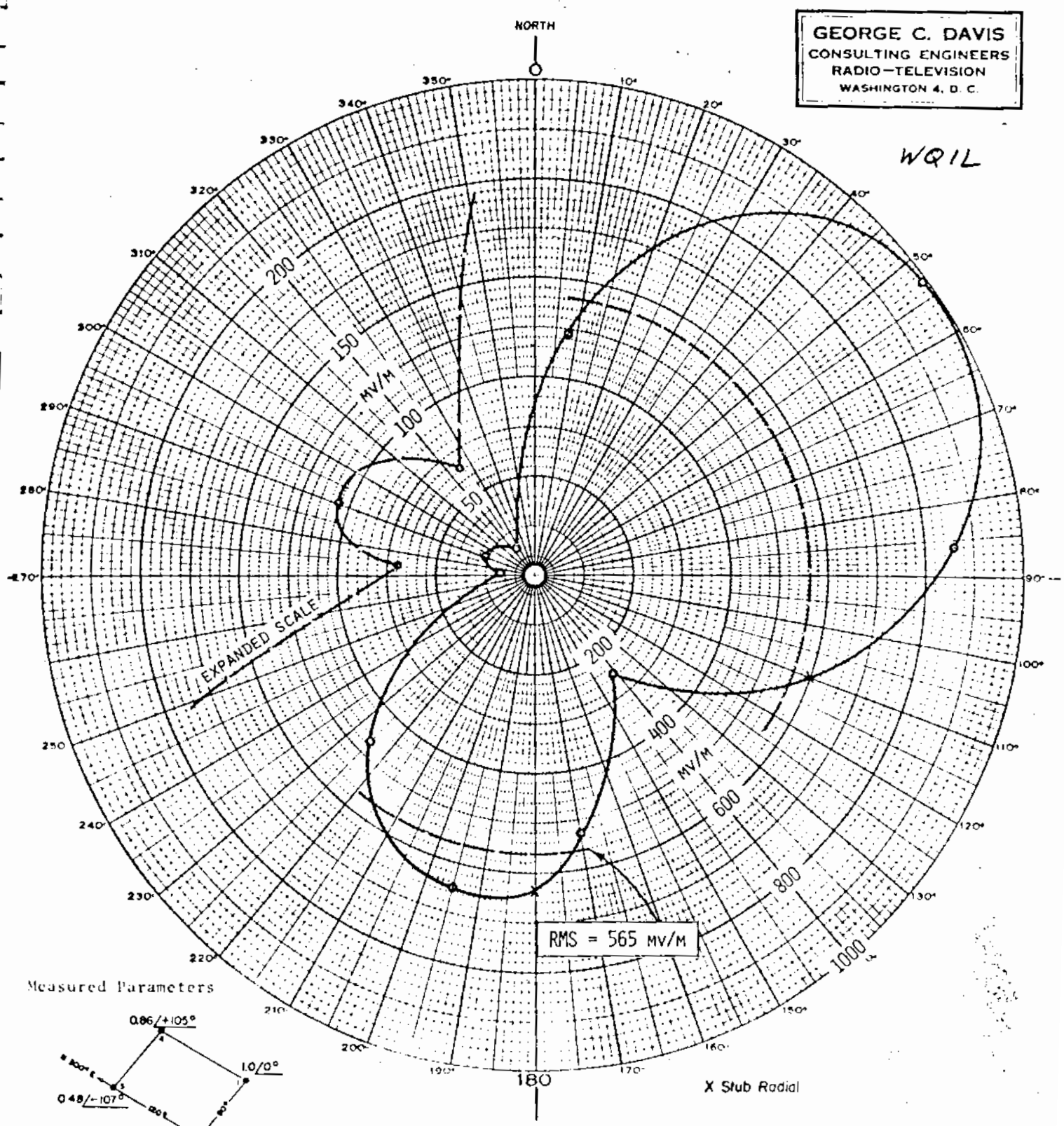
Jules Cohen & Associates

Consulting Electronics Engineers

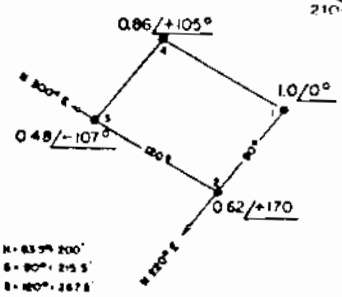
STATION WQII

1140 KHZ

10 KW, DA 1, U



Measured Parameters

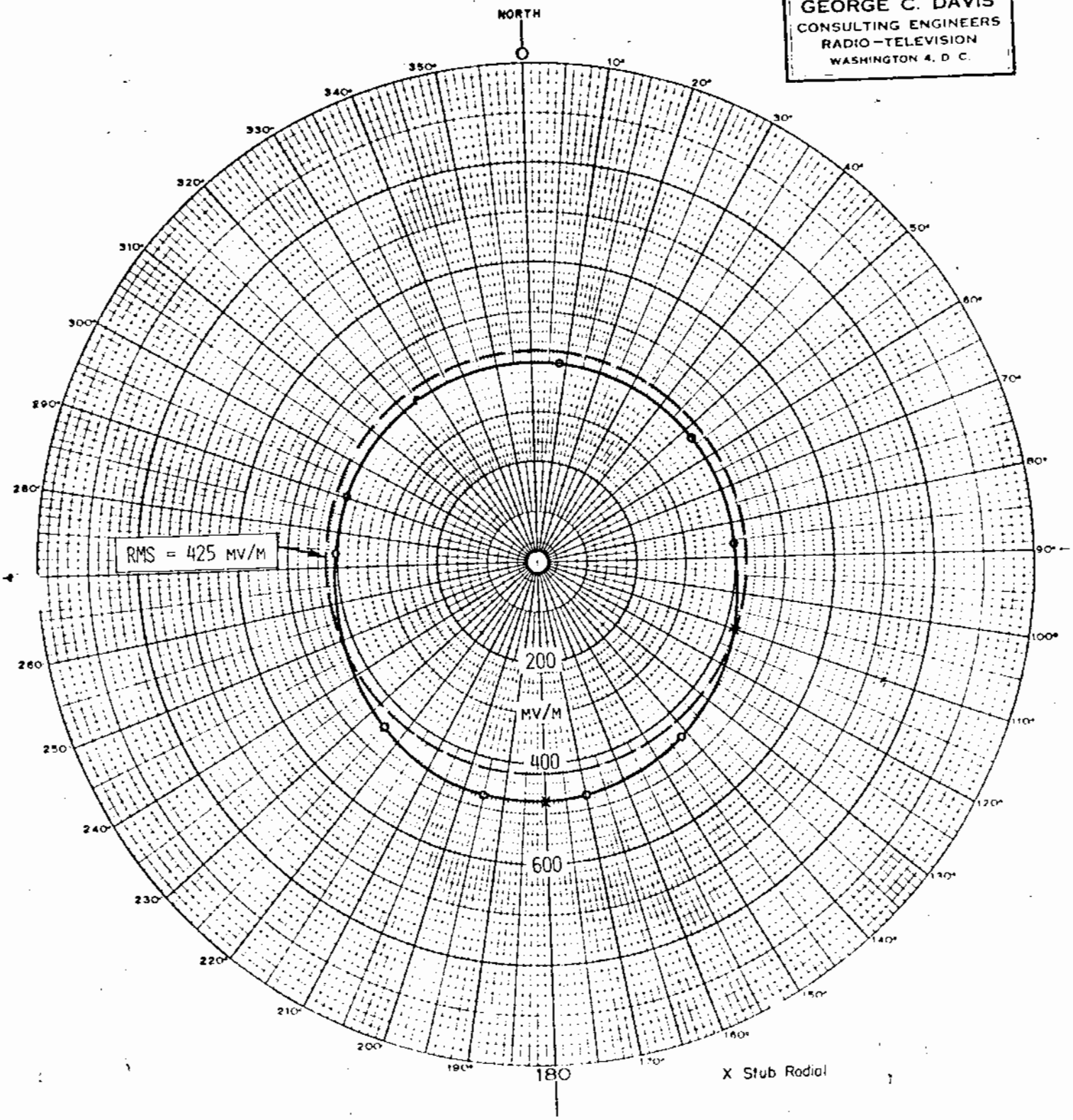


North Latitude 18° 21' 30"
West Longitude 66° 08' 05"

MEASURED HORIZONTAL PLANE RADIATION PATTERN
FOR DIRECTIVE OPERATION OF
WIIA, SAN JUAN, PUERTO RICO
1140 KHz, 10 KW, DA-1, U
NOVEMBER 1969

WQIL

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



MEASURED NON-DIRECTIONAL UNATTENUATED
FIELD INTENSITY AT ONE MILE FOR
WITA, SAN JUAN, PUERTO RICO
1140 KHz, 10 KW, DA-1, U
NOVEMBER 1969

WQIL

Proposed Day & Night
(1-28-65ct)

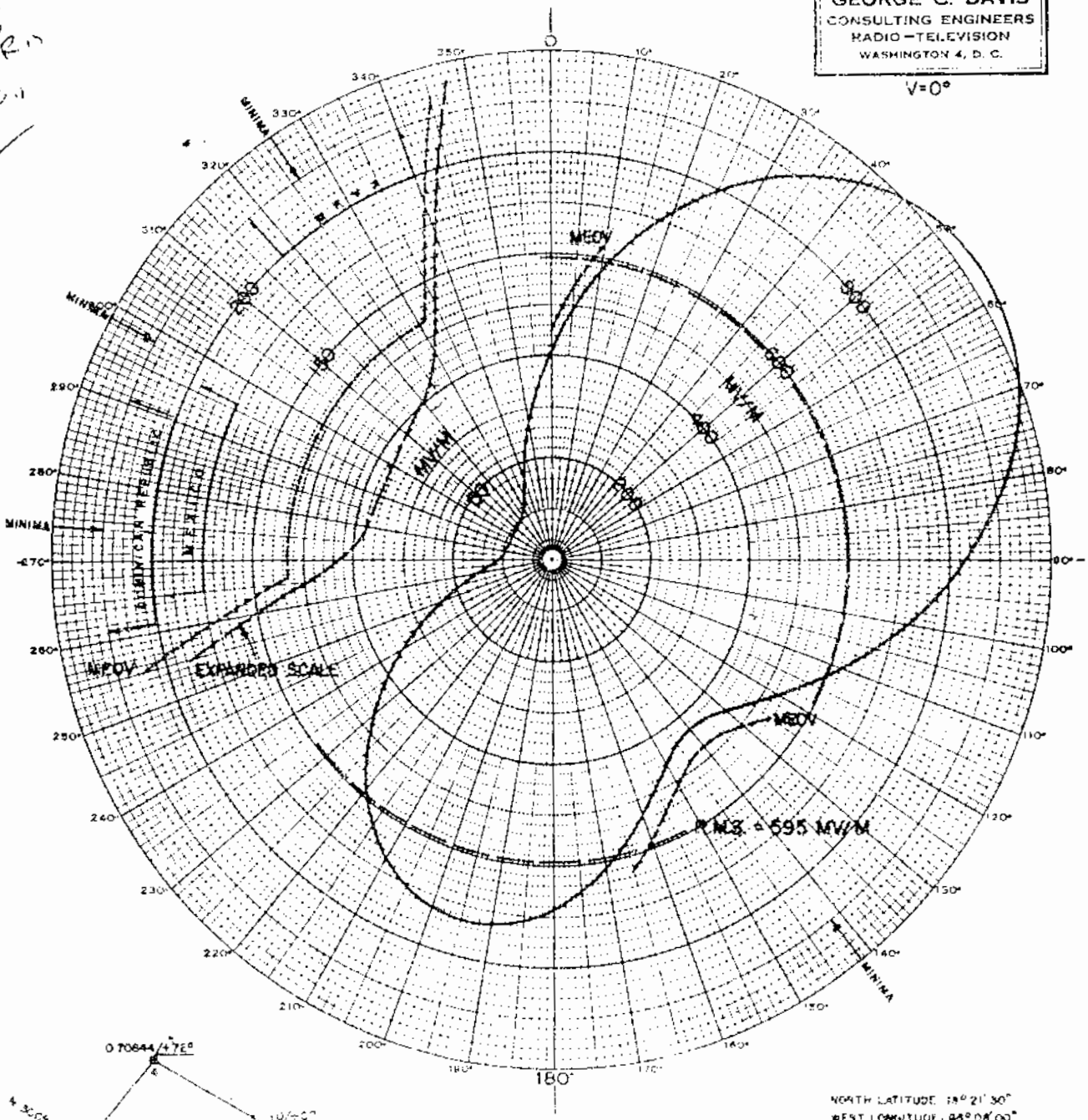
Station WITA
San Juan, Puerto Rico

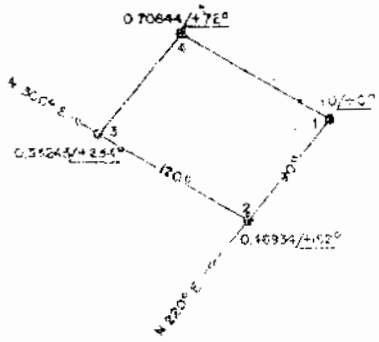
10kw,DA-1,U
1140 kc

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

V=0°

app
1-28-65
INCR. PWR.
CHG. LOC.
DA-1





NORTH LATITUDE 18° 21' 30"
WEST LONGITUDE 66° 08' 00"
H = 83.5% 203'
S = 90° = 215.5'
S = 120° = 267.5'

COMPUTED HORIZONTAL PLANE RADIATION PATTERN FOR PROPOSED OPERATION OF WITA, SAN JUAN, PUERTO RICO 1140 KC - 10 KW - DA-1 SEPTEMBER 1964

FCC File No. BP-16408
Accepted 12-21-64 New Number

Station WITA
San Juan, Puerto Rico

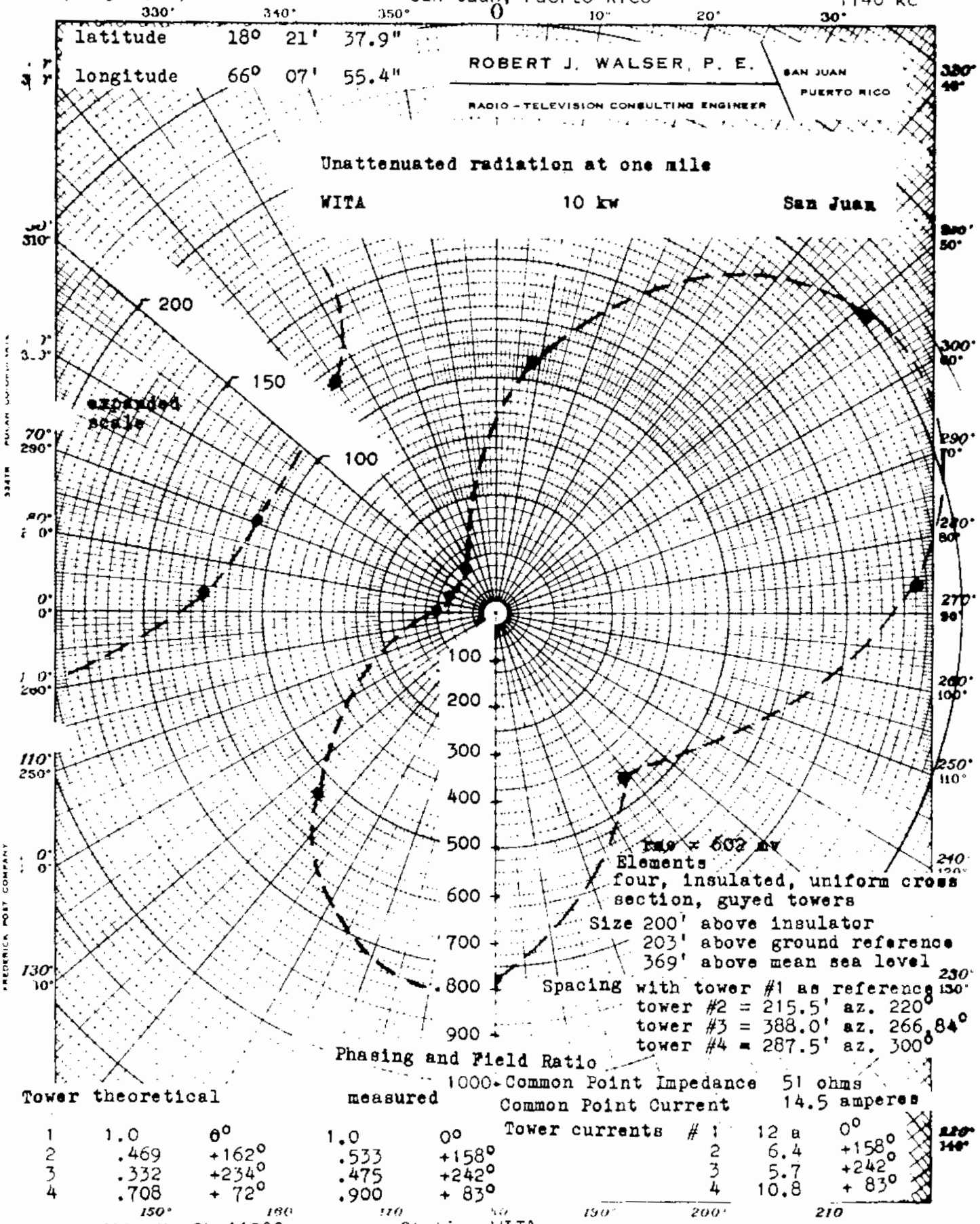
1140 kc

WQIL

Measured Day & Night
(4-29-68ct)

Station WITA
San Juan, Puerto Rico

10kw, DA-1, U
1140 kc



Tower	theoretical		measured	
1	1.0	0°	1.0	0°
2	.469	+162°	.533	+158°
3	.332	+234°	.475	+242°
4	.708	+ 72°	.900	+ 83°

FCC File No. BL-11922
Accepted 4-10-68

Station WITA
San Juan, Puerto Rico

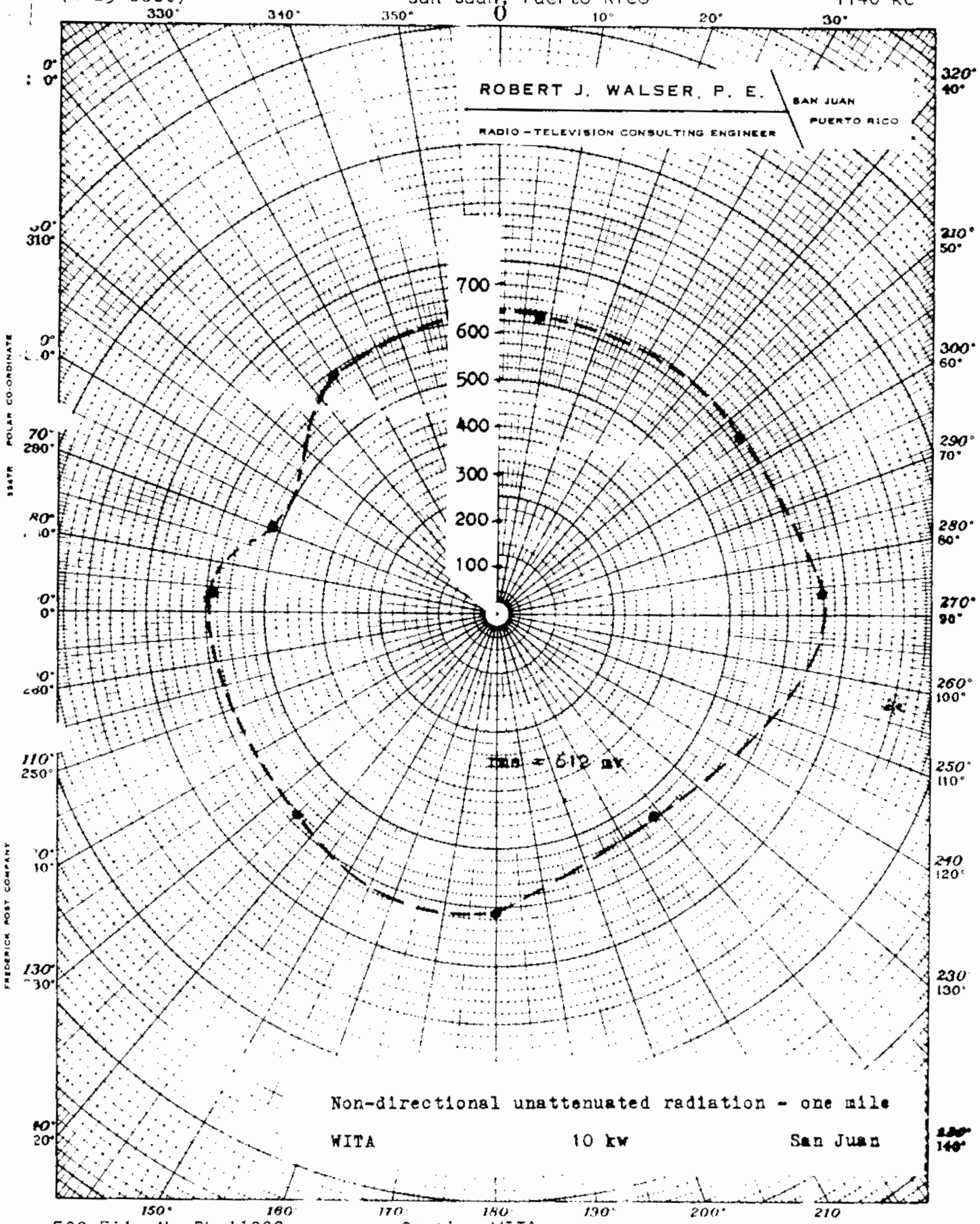
1140 kc

WQIL

Measured Non-DA
(4-29-68ct)

Station WITA
San Juan, Puerto Rico

10kw, DA-1, U
1140 kc



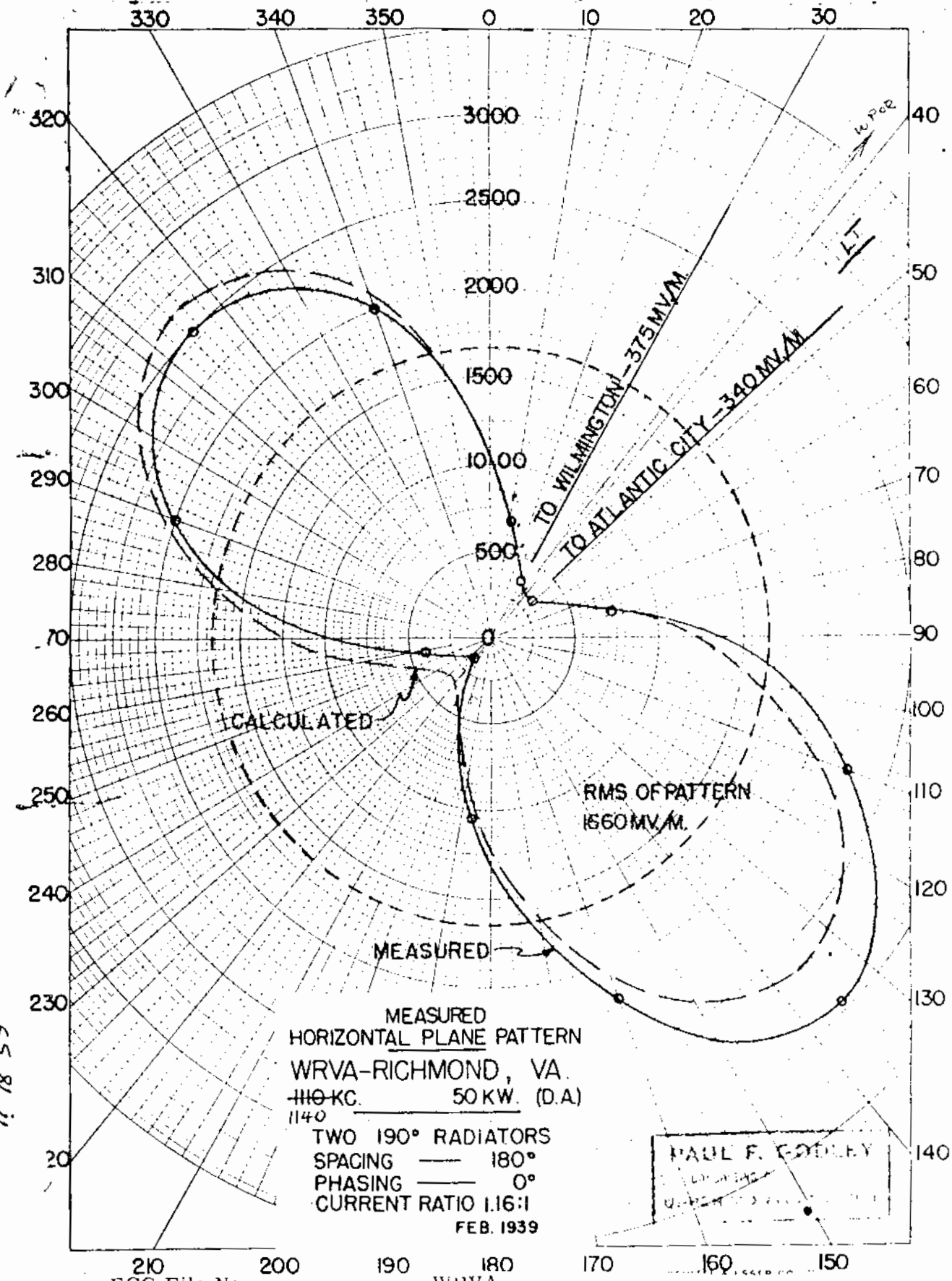
FCC File No. BL-11922
Accepted 4-10-68

Station WITA
San Juan, Puerto Rico

1140 kc

WRVA

PROPOSED NIGHT & DAY (2/7/57g) | Station WRVA Richmond, Virginia | 50 KW, DA-1,U 1140 KC



37°24'13"
77°18'59"

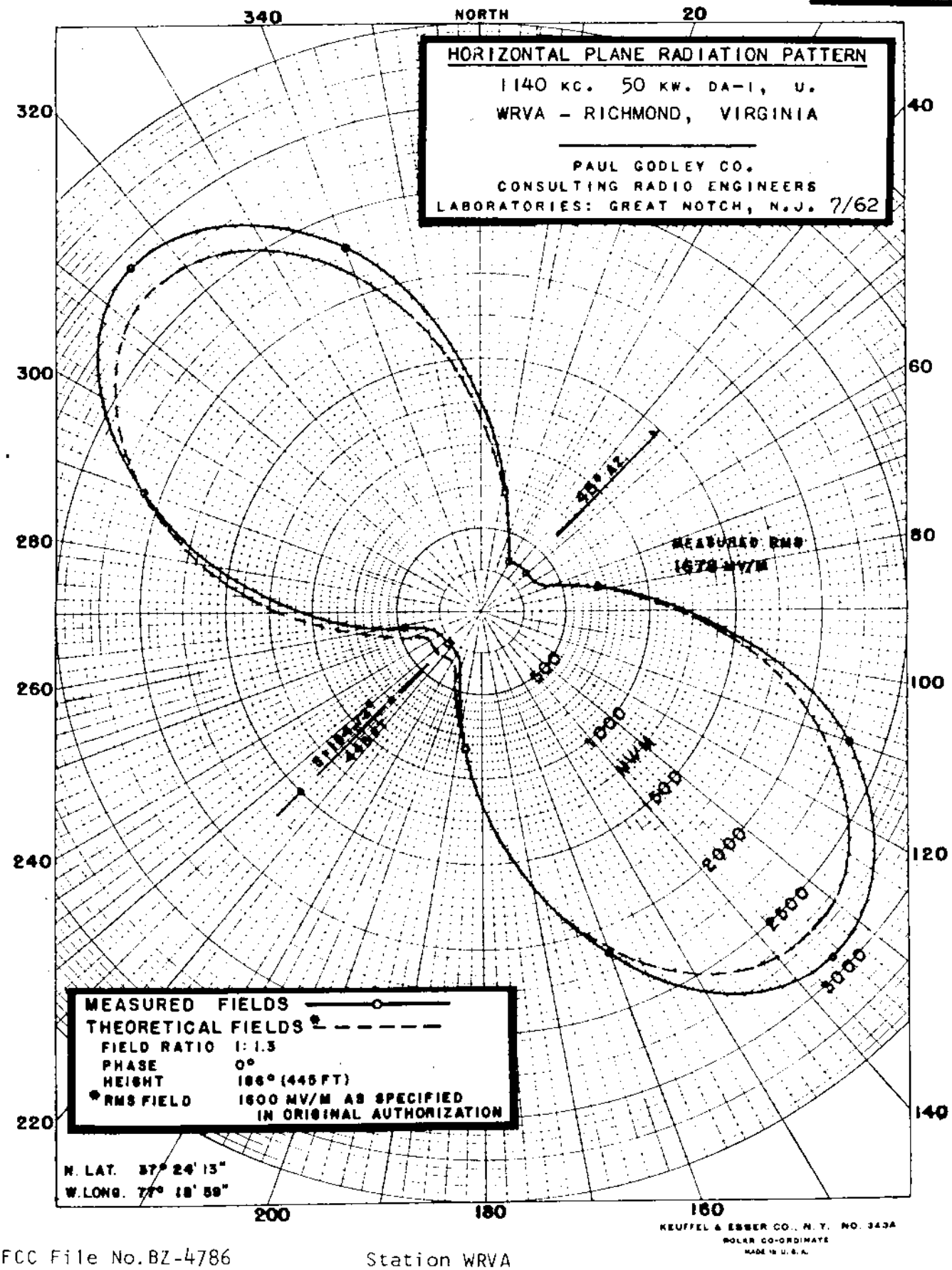
FCC File No. BL-916 | WRVA Richmond, Virginia | 1140KC

WRVA

Measured Day & Night
(12-28-62ct)

Station WRVA
Richmond, Virginia

50kw,DA-1,U
1140 kc

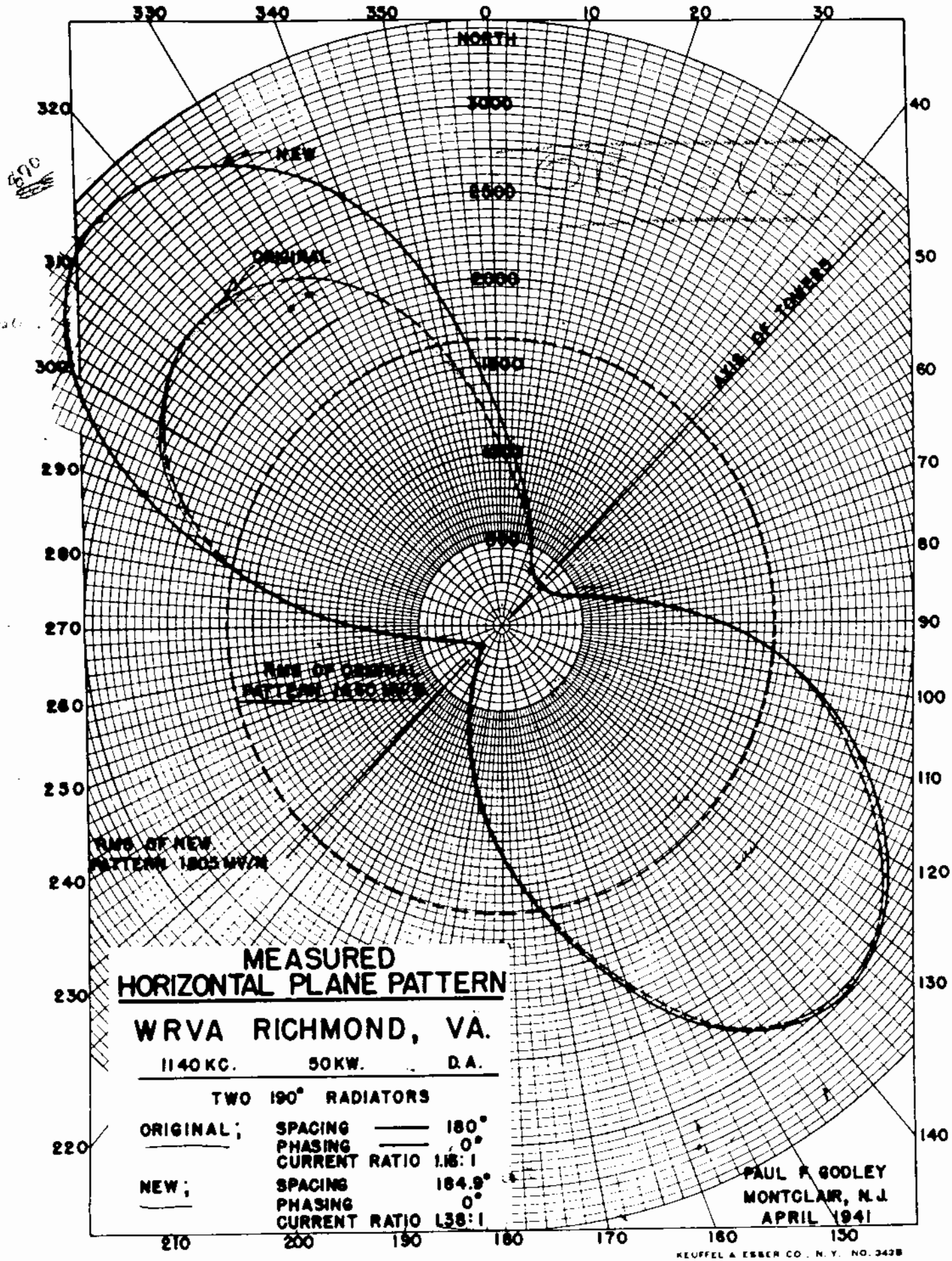


FCC File No.BZ-4786
Accepted 12-3-62

Station WRVA
Richmond, Virginia

1140 kc

Rec'd 4-12-41 37-23-45 77-19-10 (Marbo) WRVA 1140



DIRECTIONAL ANTENNA DESCRIPTION SHEET
(Issued April 9, 1971)

Station: XEMR

Main Studio: Monterrey, Nuevo Leon

Frequency: 1140 kHz

Power: 10 kw Night

Notification List No. (*)

Date: (*)

Class: 1-B

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 25° 40' 11"
West Longitude: 100° 18' 26"

ANTENNA CHARACTERISTICS

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

TOWER:	SW(#1)	NE(#2)	
HEIGHT ABOVE INSULATORS:	395'	395'	(164.78°)
NIGHT PHASING:	0°	+75°	
NIGHT FIELD RATIO:	1	1	

SPACING AND ORIENTATION: Elements are spaced 287.6' (120°) on a line bearing 64° true.

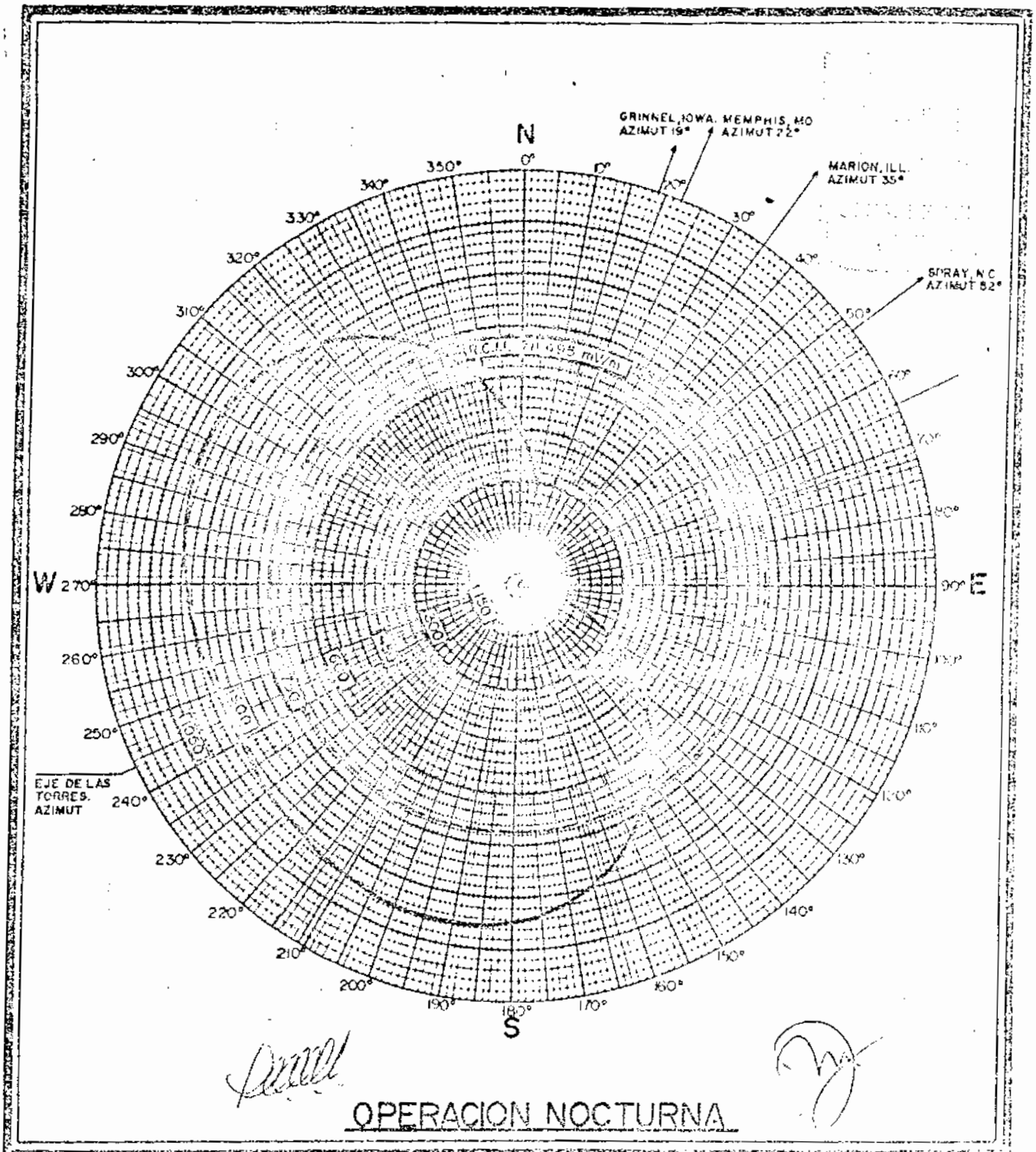
GROUND SYSTEM: 120 - 215.6 equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

Predicted effective Night Field: 711.495 mv/m at rated power.

FCC Note: Notification of basic information for this change in a Notification List has not been received as of this issue date. Supplementary information was transmitted by letter of March 17, 1971 in accordance with provisional procedures for exchange of notifications established in a Memorandum of Understanding between Delegations of the United States and Mexico signed in Washington on November 27, 1968.

CTR NO 20429A3

XEMR

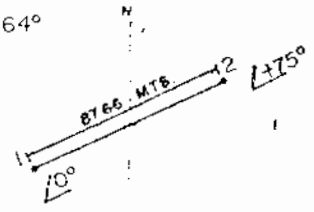


OPERACION NOCTURNA

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

ESQUEMA DE LAS TORRES ORIENTADAS CON RESPECTO AL NORTE GEOGRAFICO

AZIMUT 64°



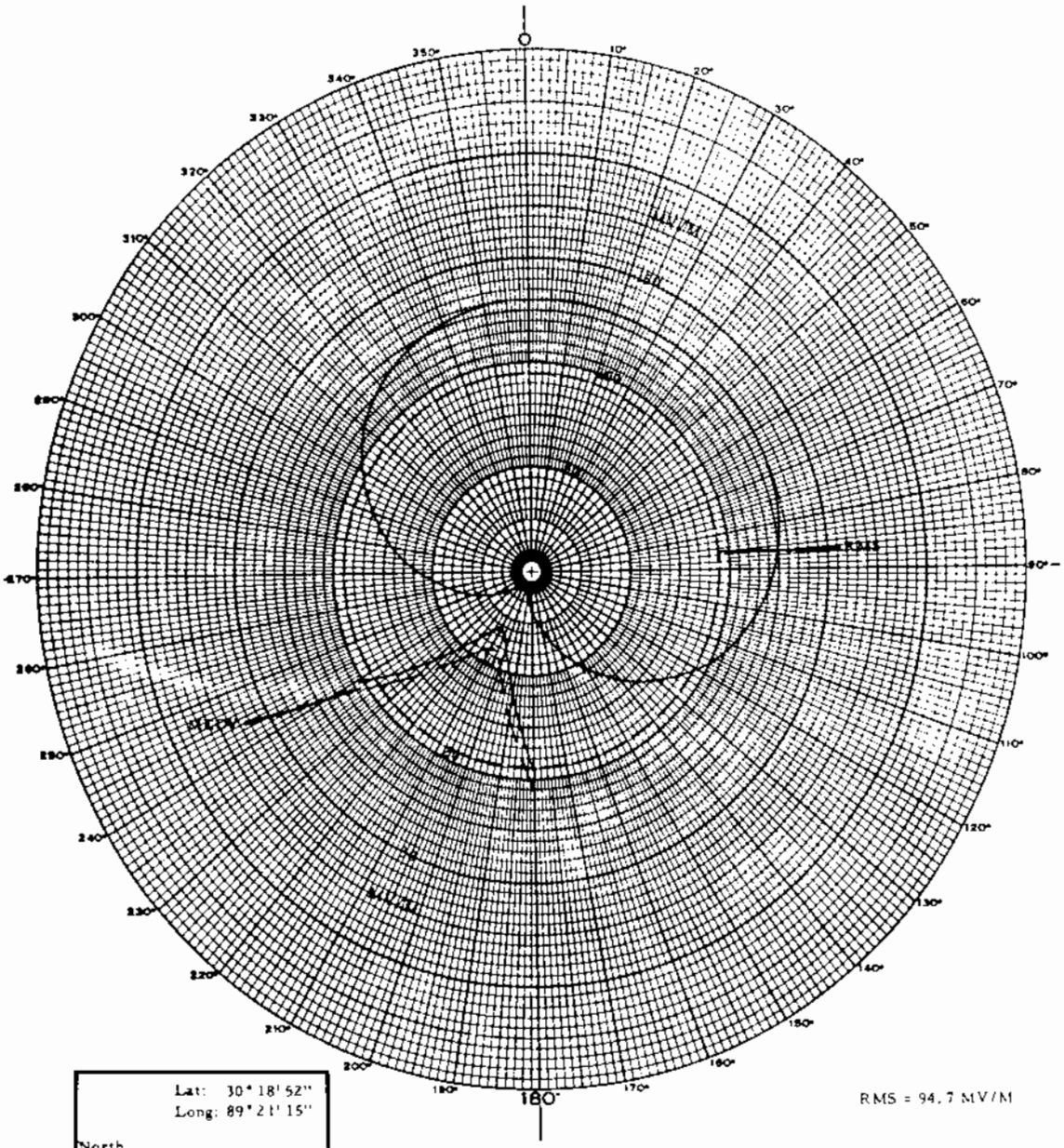
XEMR

MONTERREY, N.L.

1140 KHZ.

REPRESENTACIONES ELECTRONICAS S. A.

L.E.O.



RMS = 94.7 MV/M

Lat: 30° 18' 52"
Long: 89° 21' 15"

North

#2 @ 1/0°

90°
210'

#1 @ 1/84.4°

N 209° E

G = 90°

WILLIS C. BEECHER
CONSULTING ENGINEER
WASHINGTON D.C.

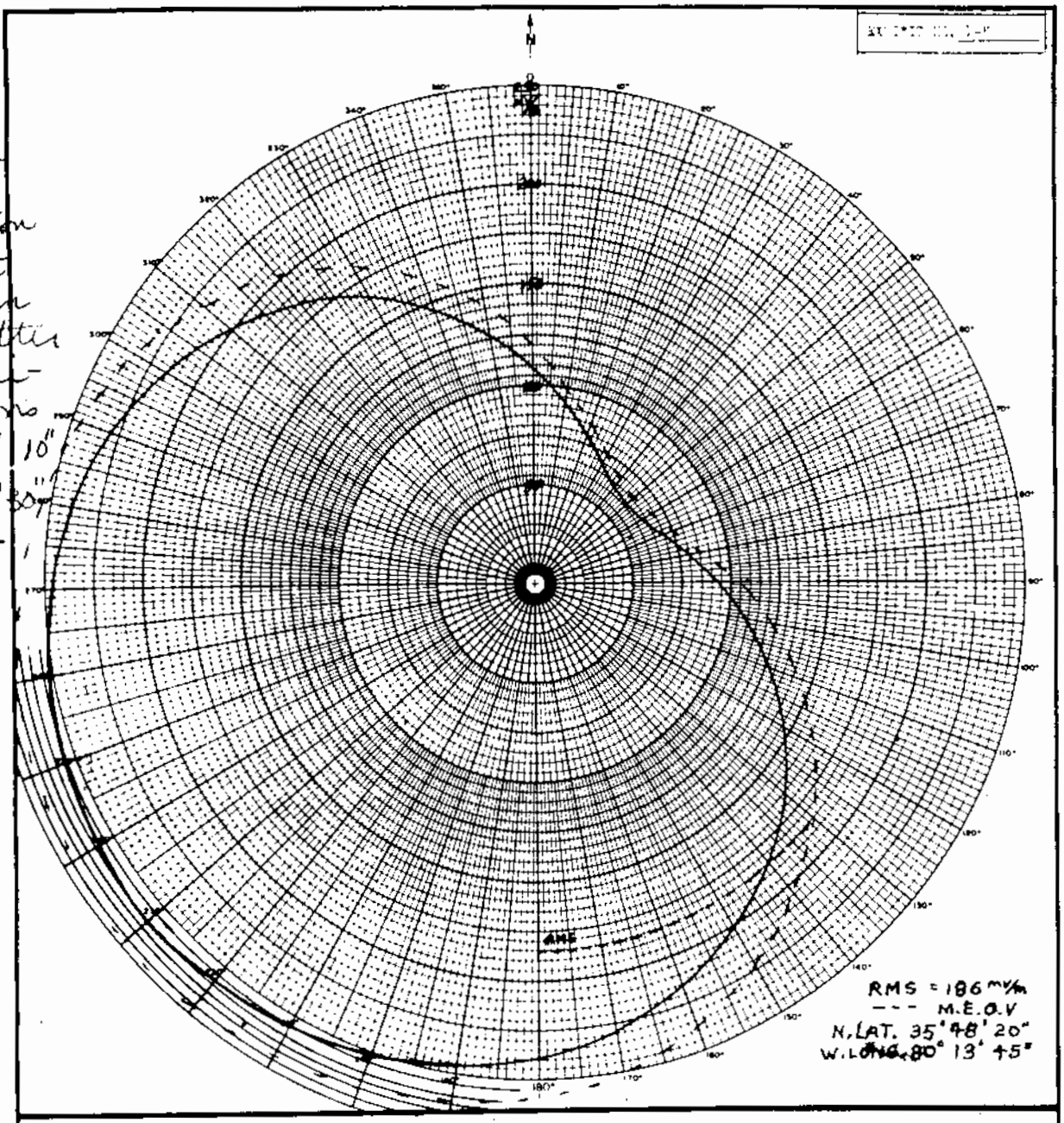
Figure 6
Calculated Horizontal Plane Pattern
Michael D. Haas
Bay Saint Louis, Mississippi
1140Kc 0.25Kw D, DA-D
March 1968

Proposed Day
(12-29-66ct)

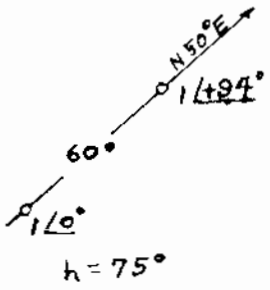
New;Harry D. & Robert E. Stephenson
Lexington, North Carolina

1kw,DA-D,D
1140 kc

BP 17021
Amended
3-17-68
application
to correct
error in
transmitter
site. Specifications
Lat. 35° 48' 10"
Long. 80° 13' 50"



HORIZONTAL RADIATION PATTERN
LEXINGTON, N. C.



PROPOSED FOR LEXINGTON, N.C.
1140 KC 1.0 KW DA-DAY
APPLICANTS: HARRY D. STEPHENSON
ROBERT E. STEPHENSON
P.O.BOX 251, CARY, N. CAROLINA
Engineer: Robert W. Emerson
3/19/65 Mt. Airy, N.C.

PATTERN NO
SUPERSEDES
APP

FCC File No.BP-17021 New; Harry D. & Robert E. Stephenson
Accepted 11-9-66 Lexington, North Carolina 1140 kc

XEMR

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: XEMR

Main Studio: Monterrey, N.L.

Frequency: 1140 kHz

Power: 50 kW

Notification List No. (*)

Date: (*)

Class: I-B

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 25° 40' 11"
West Longitude: 100° 18' 26"

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(SW)	#2(NE)
HEIGHT ABOVE INSULATORS:	392.9'	392.9' (163.8°)
PHASING:	0°	+86°
FIELD RATIO:	1	1

SPACING AND ORIENTATION: The towers are spaced 215.8' (90°) on a line bearing 32° true.

GROUND SYSTEM: 120-215.8' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL

	RMS
Night	1591 mv/m

---

*(FCC Note: This supplementary data was not received in connection with a notification list.)

CTR NO 20429A4

XEMR

DESCRIPCION DEL SISTEMA DIRECCIONAL DE RADIACION DISEÑADO.

OPERACION NOCTURNA

ESTACION: XEMR

UBICACION: MONTERREY, N.L.

FRECUENCIA: 1140 KHZ.

POTENCIA: 50 KW.

LISTA DE NOTIFICACIONES:

CLASE: I-B.

LOCALIZACION GEOGRAFICA DEL SISTEMA RADIADOR:

LATITUD NORTE: 25° 40' 11"

LONGITUD OESTE: 100° 18' 26"

CARACTERISTICAS DEL SISTEMA

AUTORIZADO PARA OPERACION: AD-N.

NUMERO DE ELEMENTOS RADIADORES: DOS.

TIPO DE ELEMENTOS RADIADORES: TORRES VERTICALES.

TORRES: DOS TORRES CON RETENIDAS.

		NORESTE	SUROESTE
ALTURA SOBRE LOS AISLADORES:	119.74 M.	119.74 M.	119.74 M.
ALTURA EN GRADOS ELECTRICOS:	163.80°	163.80°	163.80°

SEPARACION ENTRE TORRES: 90°

MAGNITUDES RELATIVAS DE CORRIENTES: 1 : 1

	TORRE 2	TORRE 1
DEFASAMIENTO:	+ 86°	0°

AZIMUT DEL EJE DE LAS TORRES: 32°

RAIZ CUADRATICA MEDIA TEORICA: 1591 mV/m.

INTENSIDAD DE CAMPO R.C.M. NO ATENUADO A 1609M. POR KW. DE POTENCIA: 225 mV/m.

REVISO

APROBO

PATENTE DE PERITO EN TELECOMUNICACIONES NUM. 97

ING. CARLOS A. CABALLERO
Cédula Profesional No. 26855

XEmR

XEMR 50 KW.

MONTERREY, N.L.

1140 KHZ.

PATENTE DE PERITO EN TELECOMUNICACIONES NUM. 97

ING. CARLOS A. C-BALLERO
Cédula Profesional No. 20555

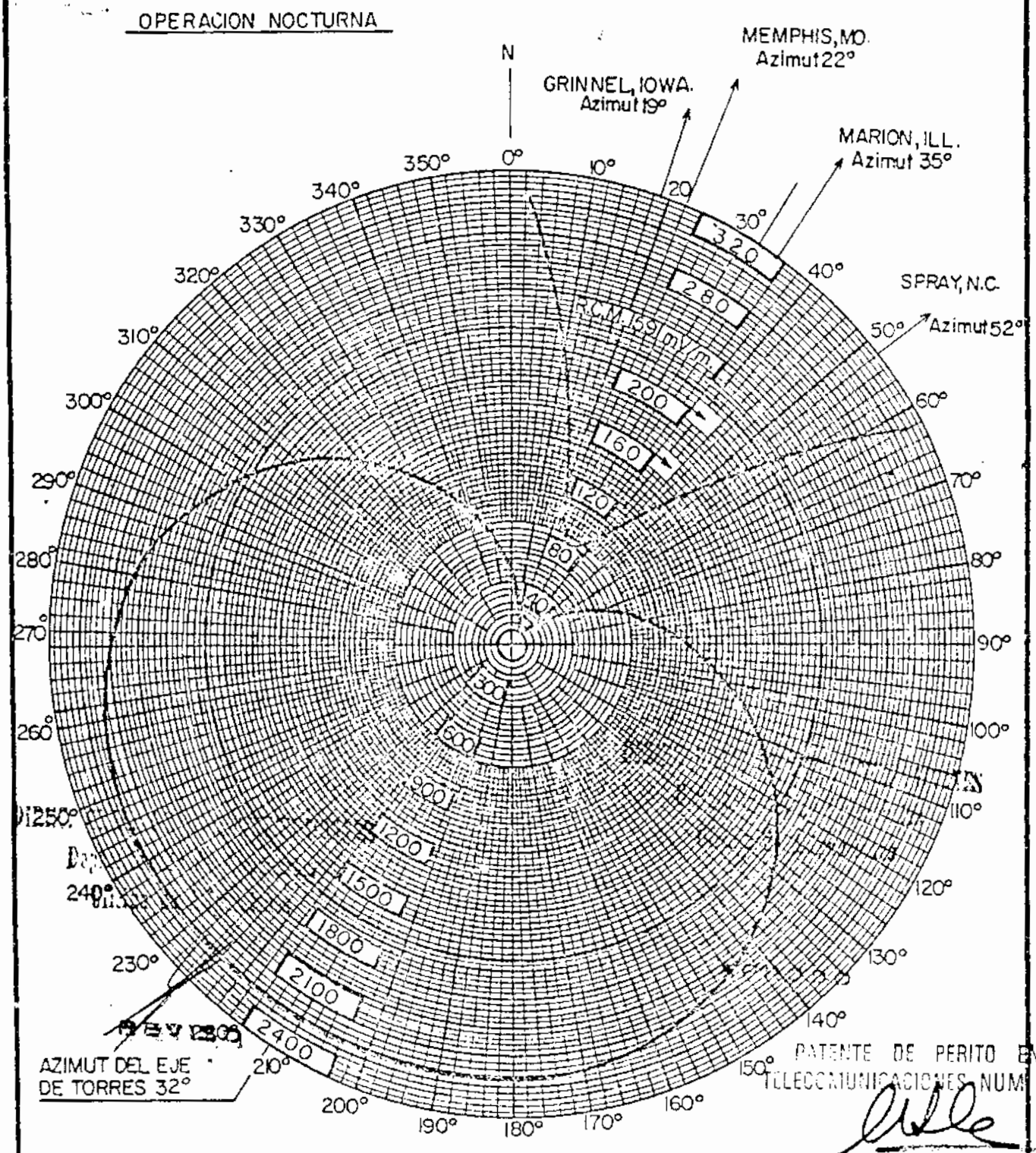
PATRON DE RADIACION HORIZONTAL TABULADO

$E_h = 2209.72 \cos.(45° \cos.\varphi + 43°)$

			A	B	E_h mV/m.
AZIMUT		φ	45°Cos.φ	Cos (A+43°)	2209.72B
32°	32°	0°	45.000000	0.034900	77.12
29°	35°	3°	44.938350	0.035975	79.49
22°	42°	10°	44.316360	0.046822	103.46
19°	45°	13°	43.846650	0.055009	121.55
12°	52°	20°	42.286185	0.082179	181.59
02°	62°	30°	38.971170	0.139672	308.64
352°	72°	40°	34.472025	0.216916	479.32
342°	82°	50°	28.925460	0.310254	685.57
332°	92°	60°	22.500000	0.414694	916.36
322°	102°	70°	15.390945	0.524121	1158.16
312°	112°	80°	7.814160	0.631838	1396.18
302°	122°	90°	0.000000	0.731354	1616.09
292°	132°	100°	-7.814160	0.817288	1805.98
282°	142°	110°	-15.390945	0.886130	1958.10
272°	152°	120°	-22.500000	0.936672	2069.78
262°	162°	130°	-28.925460	0.969980	2143.38
252°	172°	140°	-34.472025	0.988944	2185.29
242°	182°	150°	-38.971170	0.997529	2204.26
232°	192°	160°	-42.286185	0.999922	2209.55
222°	202°	170°	-44.316360	0.999736	2209.14
212°	212°	180°	-45.000000	0.999391	2208.37

XEMR

OPERACION NOCTURNA

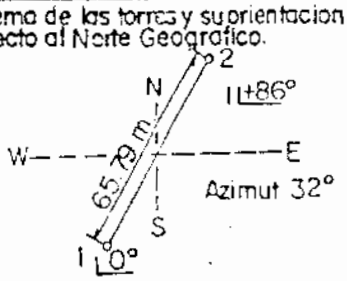


PATENTE DE PERITO EN TELECOMUNICACIONES NUM. 9

ING. CARLOS A. CABALLERO

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

Esquema de las torres y su orientacion con respecto al Norte Geografico.



RADIODIFUSORA:

XEMR

MONTERREY, N.L.

FRECUENCIA:

1140 KHZ.

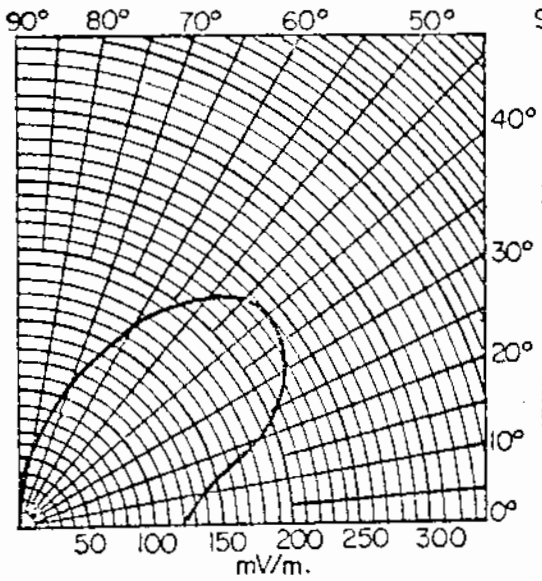
DISEÑO:

DIBUJO:

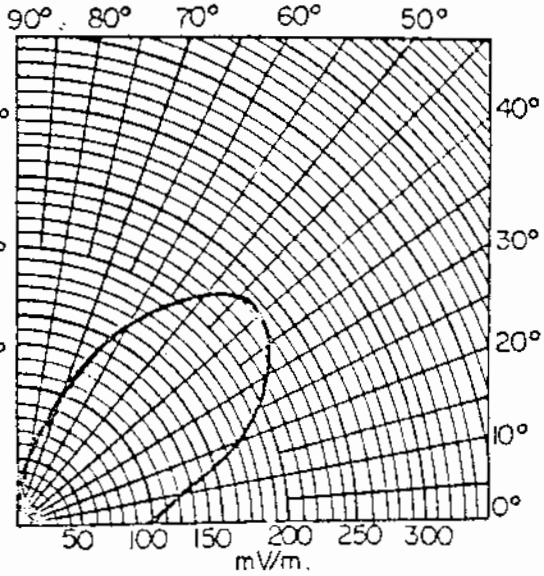
A.R.T.

XEMR

GRINNEL, IOWA. AZIMUT 19°



MEMPHIS, MO. AZIMUT 22°



$$E_V = 2209.72 \cos.(45° \cos.\varphi \cos.\theta + 43°)$$

Valores Tabulados.

θ	E mV/m.
0°	121.55
10°	140.26
20°	184.08
30°	224.91
40°	237.76
50°	214.88
60°	166.11
70°	111.12
80°	53.63
90°	0.00

Valores Tabulados.

θ	E mV/m
0°	103.46
10°	123.30
20°	170.11
30°	214.85
40°	231.44
50°	211.55
60°	164.66
70°	107.98
80°	53.53
90°	0.00

DIREC. GRAL. DE COMUNICACIONES
Dependencia de Frecuencias
Oficina de Asignaciones

APROBO

PATENTE DE PERITO EN TELECOMUNICACIONES NUM. 97

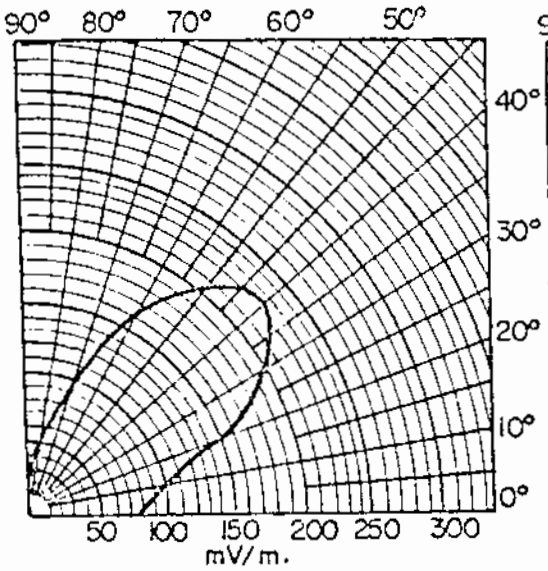
REVISO

ING. CARLOS A. CABALLERO
Cédula Profesional No. 26855

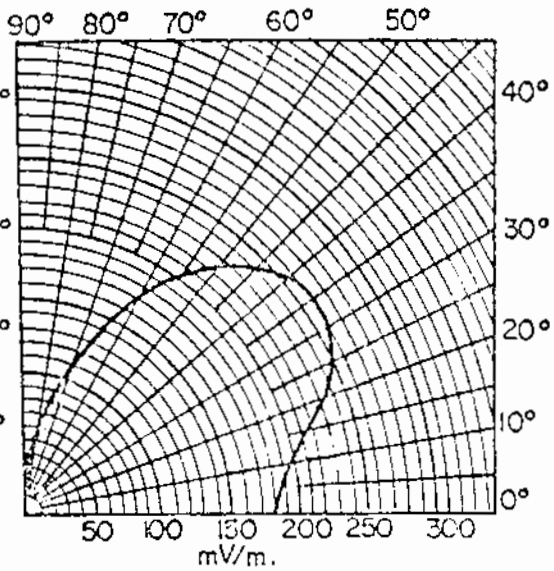
PATRONES DE RADIACION EN EL PLANO VERTICAL

FRECUENCIA:	RADIODIFUSORA:	DISEÑO:
1140 KHZ.	XEMR MONTERREY, N.L.	

MARION, ILL. AZIMUT 35°



SPRAY, N.C. AZIMUT 52°



$$E_V = 2209.72 \cos.(45° \cos \varphi \cos. \theta + 43°)$$

Valores Tabulados.

θ	E mV/m.
0°	79.49
10°	100.82
20°	151.60
30°	201.52
40°	223.18
50°	207.14
60°	162.72
70°	107.34
80°	53.41
90°	0.00

Valores Tabulados.

θ	E mV/m.
0°	181.59
10°	196.56
20°	230.42
30°	258.23
40°	258.51
50°	225.88
60°	170.93
70°	110.08
80°	53.93
90°	0.00

PATENTE DE PERITO EN TELECOMUNICACIONES NUM. 97

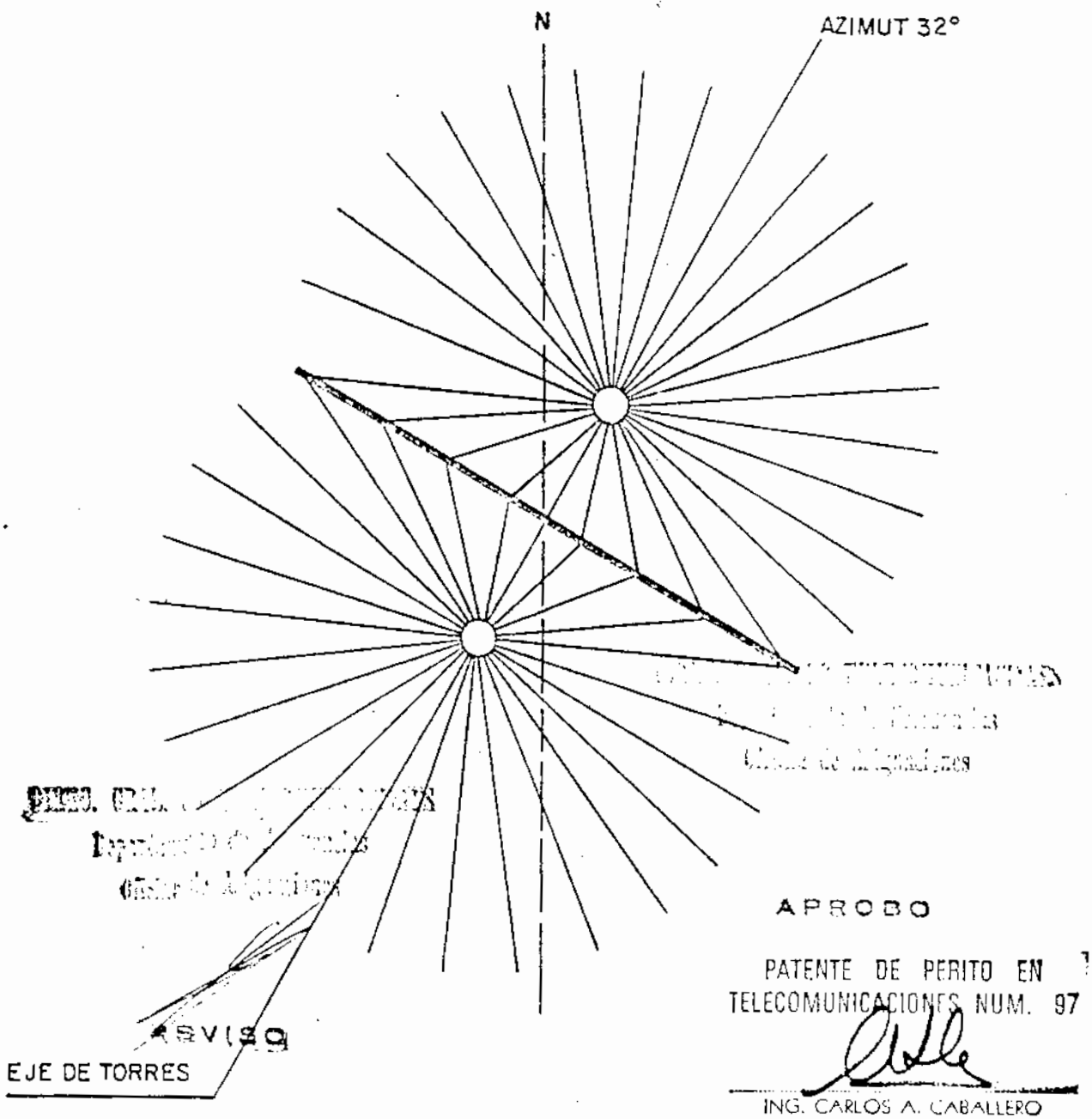
ING. CARLOS A. CABALLERO
Cédula Profesional No. [illegible]

REVISO

PATRONES DE RADIACION EN EL PLANO VERTICAL

FRECUENCIA:	RADIODIFUSORA:	DISEÑO:
1140 KHZ.	XEMR MONTERREY, N.L.	

XEMR



APROBO

PATENTE DE PERITO EN TELECOMUNICACIONES NUM. 97

ING. CARLOS A. CABALLERO
Cédula Profesional No. 20855

SISTEMA DE TIERRA.

LOS RADIALES SON DE ALAMBRE DE COBRE No.8, 120 EN CADA TORRE, DE 65.79 M., UNIDOS AL CENTRO COMO LO INDICA LA FIGURA, POR ALAMBRE DE COBRE DEL No. 00, TODO EL SISTEMA ENTERRADO A 30 CM.
LA SEPARACION DE TORRES ES DE 65.79 M. (90°).

RADIODIFUSORA:

XEMR

MONTERREY, N. L.

FRECUENCIA: 1140 KHZ.

DISEÑO:

DIBUJO: A.R.T.

CHMG

DIRECTIONAL ANTENNA DESCRIPTION SHEET
(Revised August 23/76)

STATION:	New - Gaspe	POWER:	5 kW
MAIN STUDIO:	Gaspe, Quebec	CLASS:	III
FREQUENCY:	1150 kHz	SITE LOCATION:	48° 49' 00" N. 64° 24' 12" W.
NOTIFICATION LIST NO. :	359	DATE:	October 4, 1976

ANTENNA ARRAY.

Number of Elements: 3
Type of Elements: Uniform cross sectional steel, guyed vertical, series fed. No top loading.

Tower No. :	1 (60°)	2 (60°)	3 (60°)
Height above Insulator:	142.6	142.6	142.6
Overall Height:	146.0	146.0	146.0
Spacing:	REF.	70°	140°
Orientation:	REF.	0°	0°
Phase:	REF.	-126.27°	-254.07°
Field Ratio:	1.0	1.658	0.720

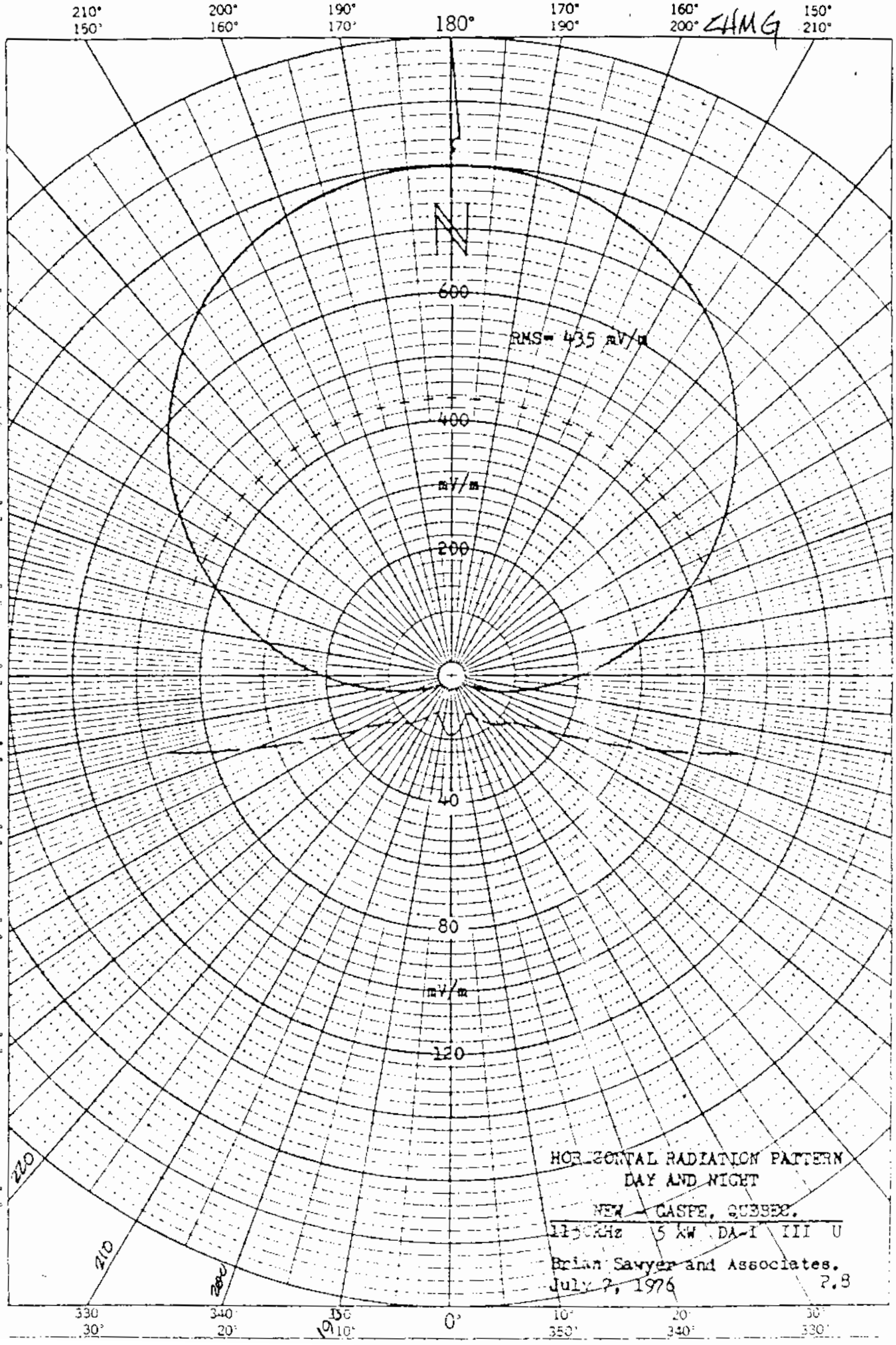
Ground System.

Effective area of 120 radials, 0.4 wavelengths long, No. 10 AWG soft drawn copper wire, buried 8 inches below ground surface.

Predicted Effective Field.

435 mV/m at 1 mile for 5 kW

194.54 mV/m at 1 mile for 1 kW



46 4410

K+E POLAR CO-ORDINATE
KEUFFEL & ESSER CO.

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION: New

MAIN STUDIO: Ottawa, Ontario,

FREQUENCY: 1150 KC

POWER: 10KW D 5 KW N

CLASS: III

NOTIFICATION LIST NO. 172

DATE: July 9, 1962

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM:

North Latitude: 45° 15' 29"

West Longitude: 75° 38' 51"

ANTENNA CHARACTERISTICS

Mode of Operation: 10 d/5 N (DA-1)

Number of elements: Four (4)

Type of elements: Uniform cross-section, guyed steel towers, base insulated for series feed.

TOWER	No.1 (N)	No.1 (NC)	No.2 (SC)	No.3 (S)
HEIGHT ABOVE INSULATORS	200'(84.1°)	200'(84.1°)	200'(84.1°)	200'(84.1°
OVERALL HEIGHT	205'	205'	205'	205'
SPACING	80°	80°	80°	
PHASING	0°	154.2°	-49.2°	110.5°
FIELD RATIO	.85	1.9	1.75	.68

ORIENTATION: Towers on line bearing 162°

GROUND SYSTEM: 120 equiangularly spaces radials extend from the base of each tower to a distance of 352 feet (0.4 wavelength) with the exception of those redials joined along a common chord. The ground wires consist of solid copper wire No. 10 B & S gauge and are buried to a depth of approximately 8 inches.

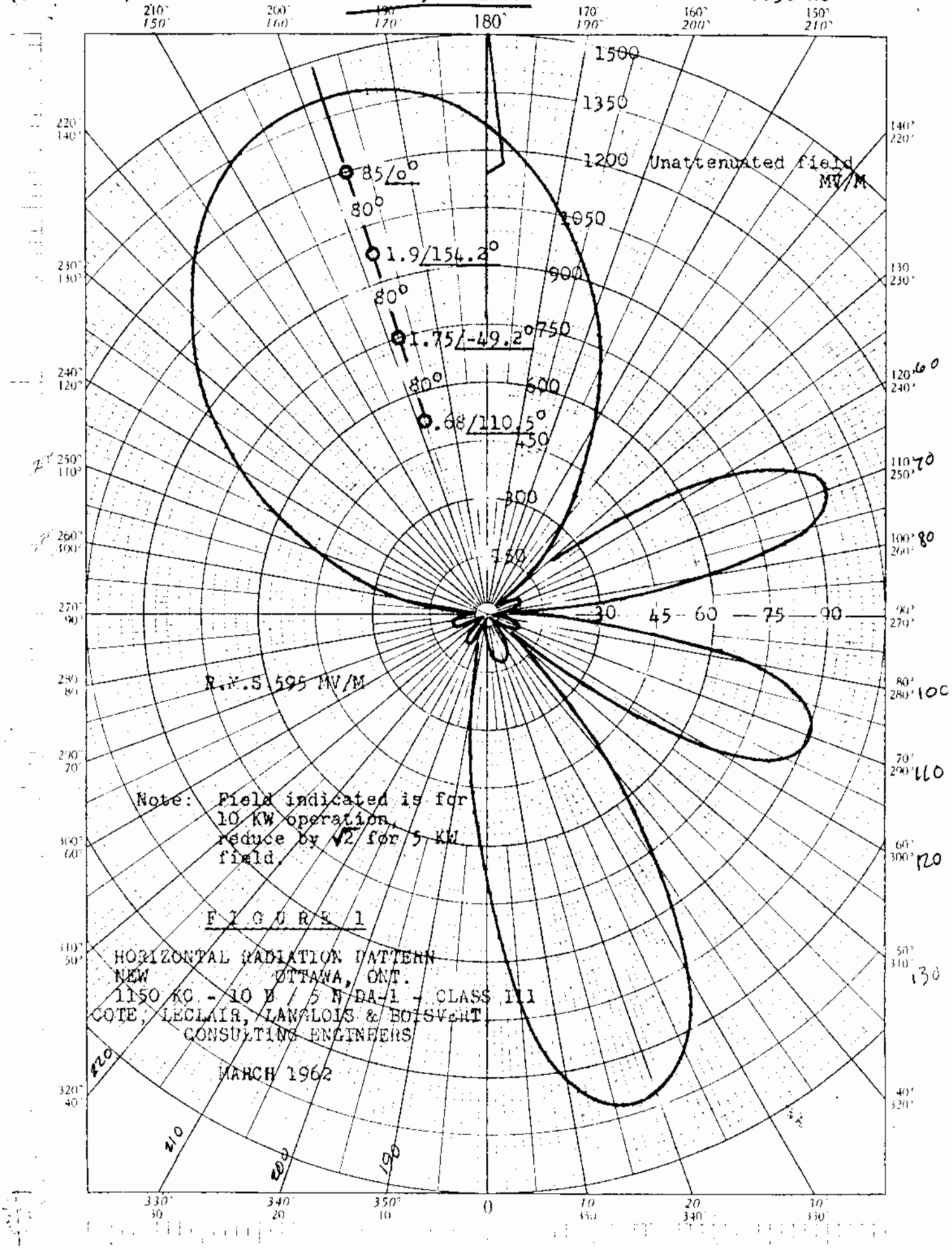
PREDICTED EFFECTIVE FIELD:
595 MV/M at 1 mile for 10KW
420 MV/M at 1 mile for 5 KW
188 MV/M at 1 mile for 1 KW

CJKC

Proposed Day & Night
(8-24-62ct)

New Station
Ottawa, Ontario

5kw,10kw-LS,DA-1,U,Class III
1150 kc

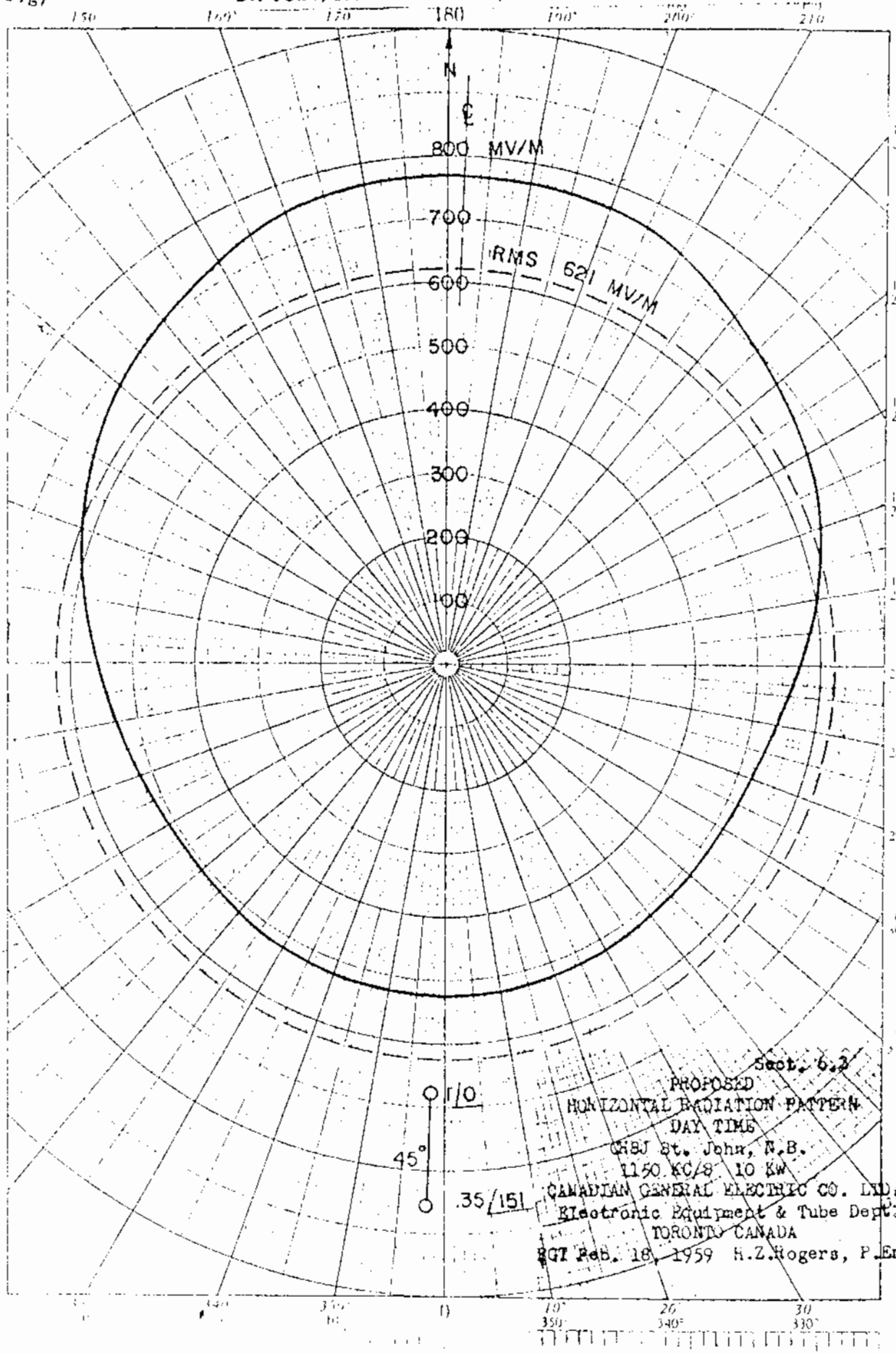


CHSJ

'ROPOSED DAY
5-28-59g)

Station CHSJ
St. John, New Brunswick, Canada

5kw, 10kw-LS, DA-2,U, Class III
1150 KC



CHSJ
1150

Station CHSJ Main Studio St. John, N.B.

Power 5 Kw. Frequency 1150 Kc.

Location: North Latitude 45° 18' 40"
West Longitude 66° 01' 40"

Antenna:

Authorized for NIGHT operation
2 elements, South; Self supporting, insulated, tapered, no top loading
North; Guyed, uniform cross-section, insulated no top loading

Tower:	South	North
Height above insulators:	225'	445'
Spacing:	107'	45°
Phasing:	156°	0
Field Ratio:	0.82	1.0

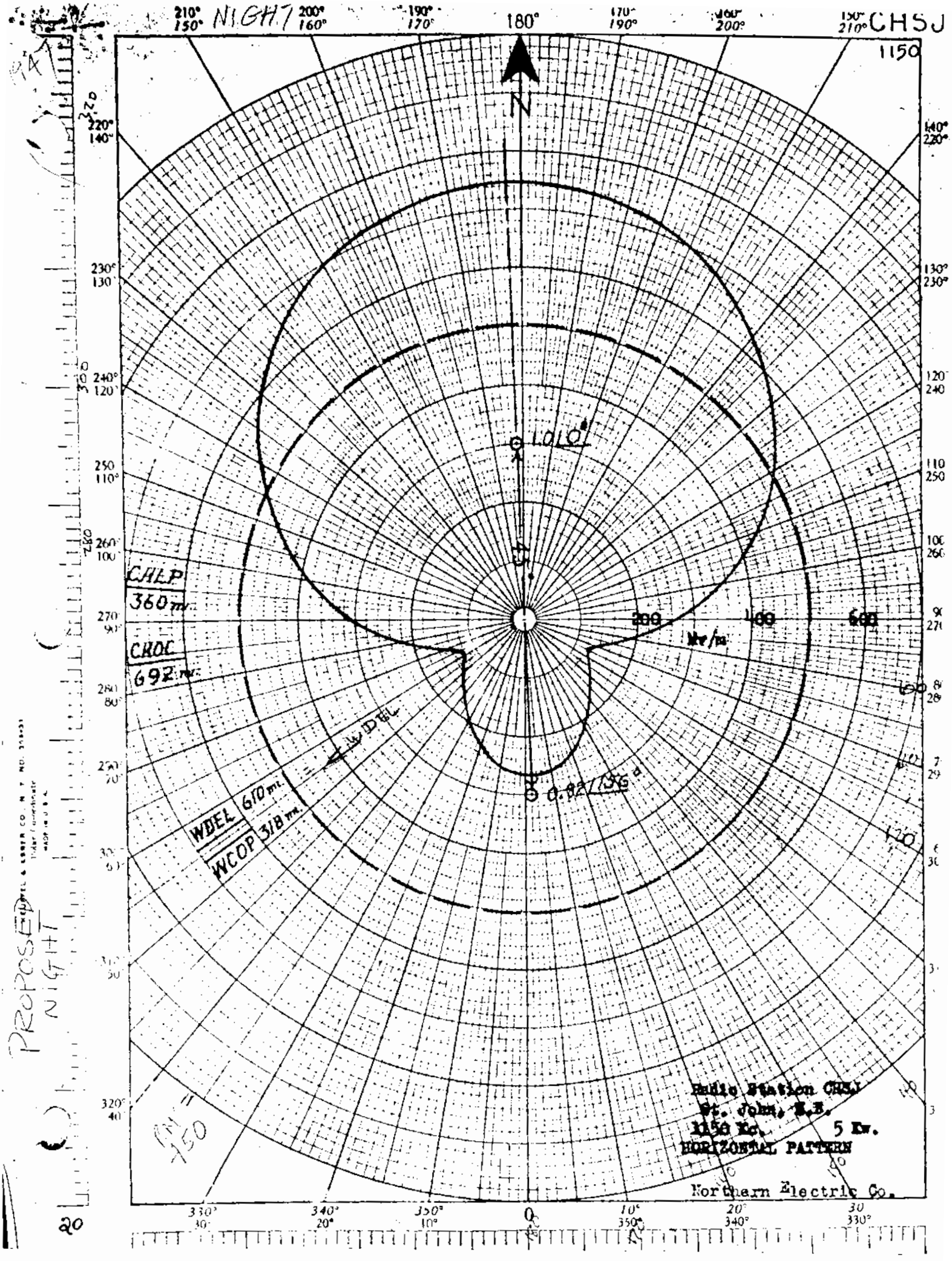
Ground System: South tower, 120 equally spaced radials, .4 (343') long except at intersections.
North tower, 120 equally spaced radials, .5 (428') long except at intersections.
For each tower: 120 radials 34' long interspaced.

Orientation: On a line bearing 358° true.

Predicted effective field 503 mv)m (225 for 1 kw)

Corrected 4/9/59

For Information Only


NIGHT
CHSJ
1150
N
180°
CALP
360 mi.
CKOC
692 mi.
WDEL
610 mi.
WCOP
318 mi.
200
400
600
Mv/m
Radio Station CHSJ
St. John, N.B.
1150 Kc. 5 Kw.
HORIZONTAL PATTERN
Northern Electric Co.
PROPOSED
NIGHT

1,2

CHSJ

DESCRIPTION SHEET (10-2-59g)

Station CHSJ 5kw, 10kw-LS, DA-2,U, Class III
Saint John, New Brunswick, Canada 1150 KC

CORRECTED

2.4 - DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: CHSJ

Main Studio: Saint John, N.B.

Frequency: 1150 Kc

Power: 10 Kw D Class: III
5 Kw N

Notification List No.: 132

Date: April 9, 1959.

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM:

North Latitude: 45° 18' 40"

West Longitude: 66° 01' 40"

ANTENNA CHARACTERISTICS

Mode of Operation: DA-2
Number of Elements: Two
Type of elements: North Tower - Blaw Knox, uniform cross-section, insulated, guyed. South Tower - Blaw Knox self-supporting, square tapered, insulated.

		North	South
TOWER:			
HEIGHT ABOVE INSULATORS:		444' (188°)	225' (95°)
OVERALL HEIGHT:		447'	229'
SPACING:		0	107' (45°)
PHASING:	Night	0	+156
	Day	0	+ 151
FIELD RATIO:	Night	1	.82
	Day	1	.35

ORIENTATION: Towers on a line bearing 2° east of north.

GROUND SYSTEM: North Tower - 120 equally spaced radials, 428' long except at intersections.
South Tower - 120 equally spaced radials, 343' long except at intersections.

Predicted effective field 621 mv/m (197 mv/m for 1Kw)

Measured Effective Night Field: 456 mv/m (204 mv/m for 1 Kw)

NOTE: The night field pattern has not been changed. This revised sheet will correct the night field ratio of the South tower from .833 to .82, the original previously notified value.

CKIQ

PROJECT #11007

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CKIQ

LOCATION: Kelowna, B. C.

FREQUENCY: 1150 kHz

POWER: 10 kW CLASS III

NOTIFICATION LIST NO. 372

DATE: April 7, 1978

GEOGRAPHICAL LOCATION:

Latitude 49° 50' 52" North
Longitude 119° 27' 54" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-N
Number of Elements: 3 (Three)
Type of Elements: Guyed steel towers, uniform cross-section, base insulated for series feed

Tower	#1 (S)	#2 (C)	#3 (N)
Height above base insulator:	215'(90.4°)	215'(90.4°)	215'(90.4°)
Overall Height:	220'	220'	220'
Field Ratio Nighttime:	.5	1.0	.5
Phasing Nighttime:	0°	-143°	+80°
Spacing:	Reference	90°(214')	180°(428')
Orientation:	Reference	335°	338°

GROUND SYSTEM: 120 equally spaced radials of No. 10 bare copper wire extend from each tower base, buried approximately 8 inches. The ground system radials have been adjusted so as to have an effective radial length of 0.4 wavelength. The minimum length of any radial, with the exception of those joined along the common chord, is 222'(94°).

PREDICTED EFFECTIVE FIELDS:

Nighttime: 638 mV/m at 1 mile for 10 kW
202 mV/m at 1 mile for 1 kW

Daytime: 600 mV/m at 1 mile for 10 kW
190 mV/m at 1 mile for 1 kW

September 19, 1975

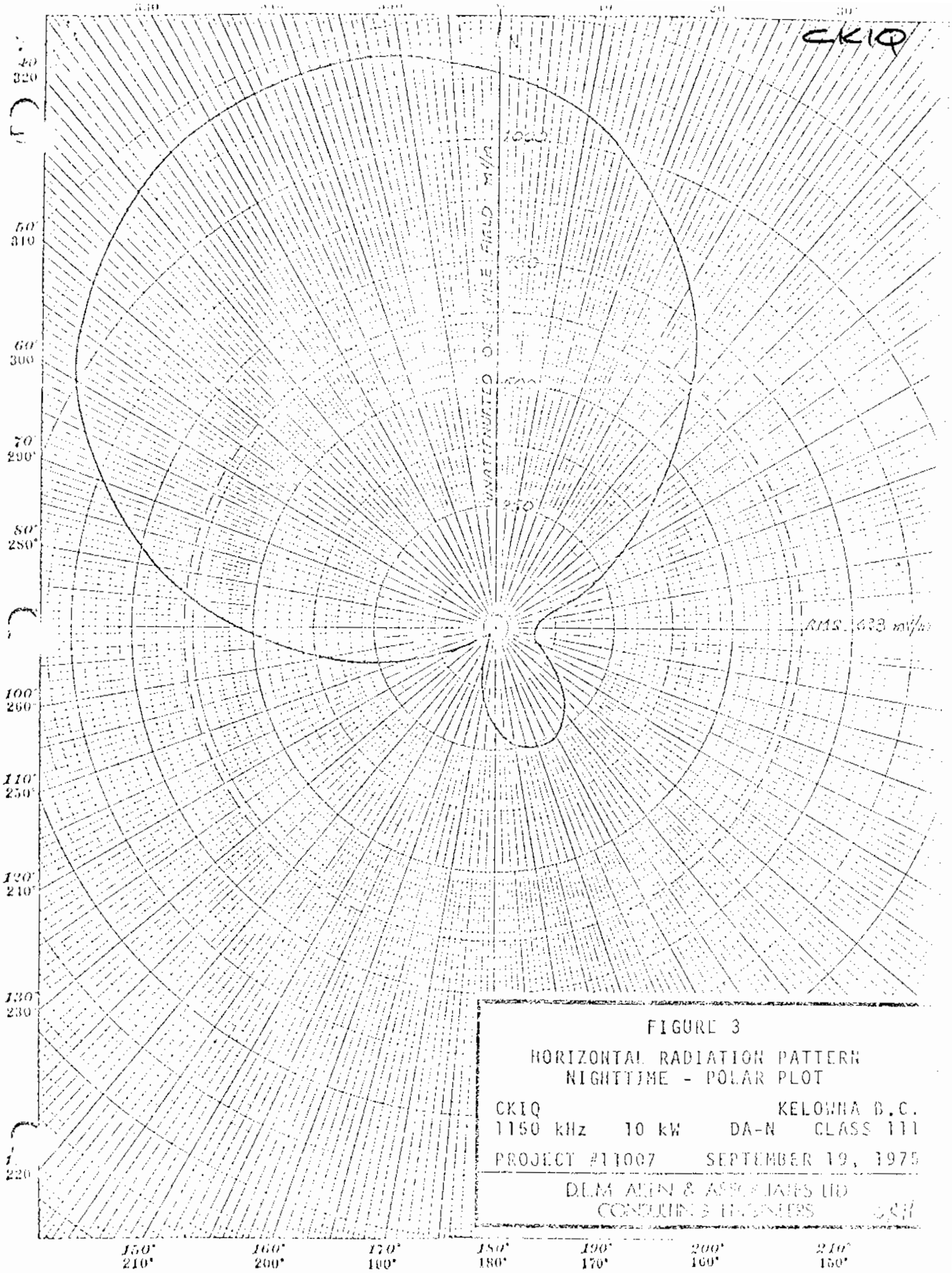


FIGURE 3

HORIZONTAL RADIATION PATTERN
NIGHTTIME - POLAR PLOT

CKIQ KELOWNA B.C.
1150 kHz 10 kW DA-N CLASS III

PROJECT #11007 SEPTEMBER 19, 1975

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

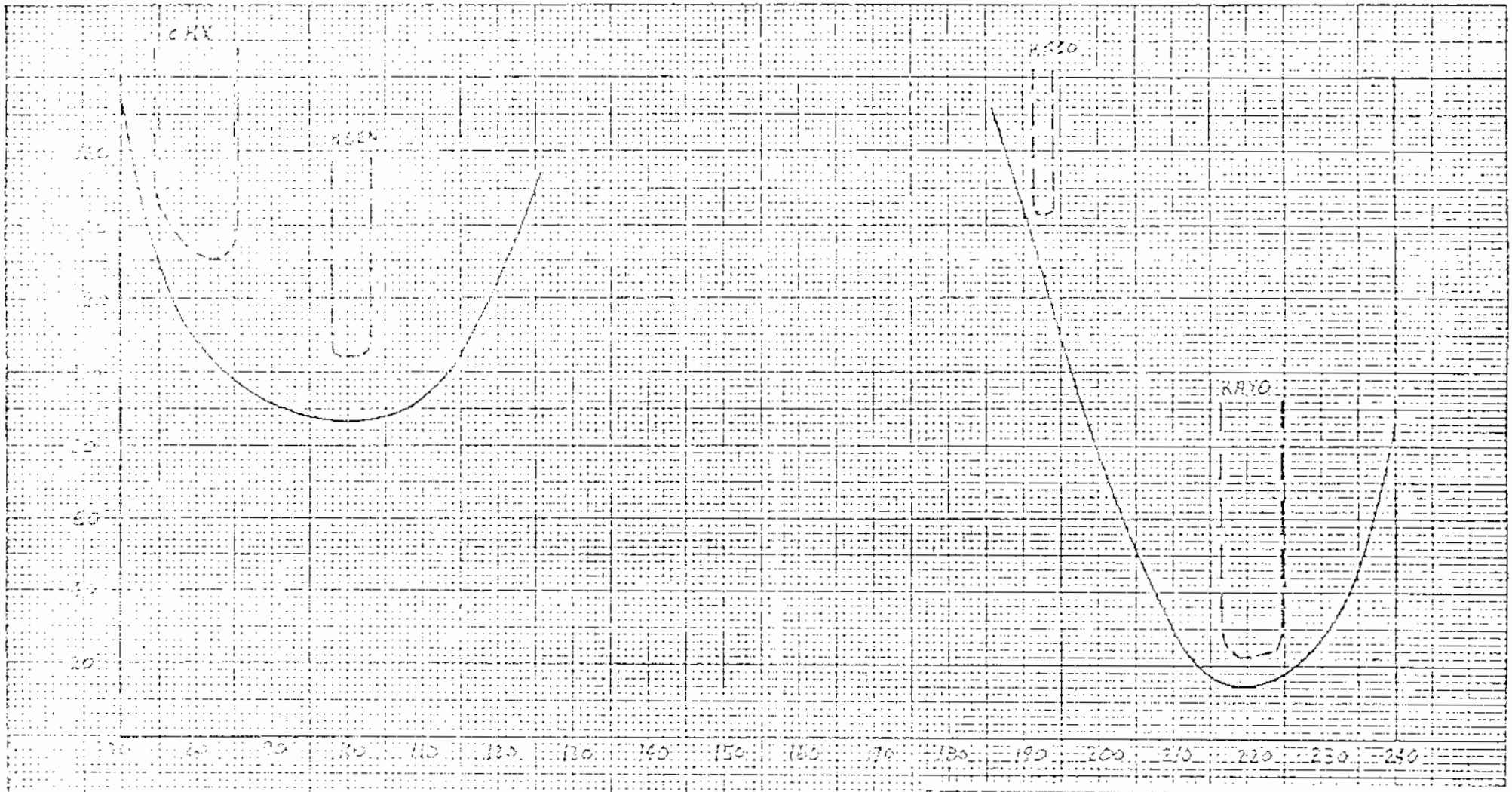


FIGURE 4

HORIZONTAL RADIATION PATTERN
NIGHTTIME - EXPANDED PLOT

CKIQ KELOWNA B.C.
1150 kHz 10 kW DA-N CLASS III

PROJECT #11007 SEPTEMBER 19, 1975

D.E.M. ALLEN & ASSOCIATES LTD

CKIQ

PROJECT #14502

CKOC

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CKOC

LOCATION: Hamilton, Ontario

FREQUENCY: 1150 kHz

POWER: 50 kW CLASS III

NOTIFICATION LIST NO. 363

DATE: May 10, 1977

GEOGRAPHICAL LOCATION:

Latitude 43° 03' 04" North
Longitude 79° 48' 42" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-2
Number of Elements: 10 (Ten)
Type of Elements: Guyed steel towers, uniform cross-section, base insulated for series feed

TOWER HEIGHTS:

All tower heights are of equal height above base insulator 290 ft. (122°).
Overall height 295 ft.

Tower No.	Orientation	Spacing	Daytime Field Ratio	Daytime Phasing	Nighttime Field Ratio	Nighttime Phasing
1	Ref.	Ref.	.28	0°	.204°	0°
2	343°	190.2' (80°)	.85	-145.4°	.703	-155.9°
3	343°	380.4' (160°)	1.0	+69°	1.0	+46.1°
4	343°	570.6' (240°)	.61	-74.7°	.703	-111.3°
5	343°	760.8' (320°)	.2	+146.6°	.2	+92.9°
6	120°	475.5' (200°)	Unused		.203	+20°
7	99.1°	359' (151°)	Unused		.703	-135.3°
8	67.4°	320.9' (135°)	Unused		1.0	+67°
9	38.5°	387.5' (163°)	Unused		.701	-90.7°
10	20.5°	518.3' (218°)	Unused		.203	+113.5°

GROUND SYSTEM:

120 equally spaced radials of No. 10 bare copper wire extend from each tower base. Radial length is 342.3' (144°), with the exception of those joined along the common chords; an additional 120 100-ft. radials are at the base of each tower. Radials are buried approximately 8 inches.

PREDICTED EFFECTIVE FIELDS:

Nighttime	Daytime
1573 mV/m at 1 mile for 50 kW	1614 mV/m at 1 mile for 50 kW
222 mV/m at 1 mile for 1 kW	228 mV/m at 1 mile for 1 kW

August 27, 1976

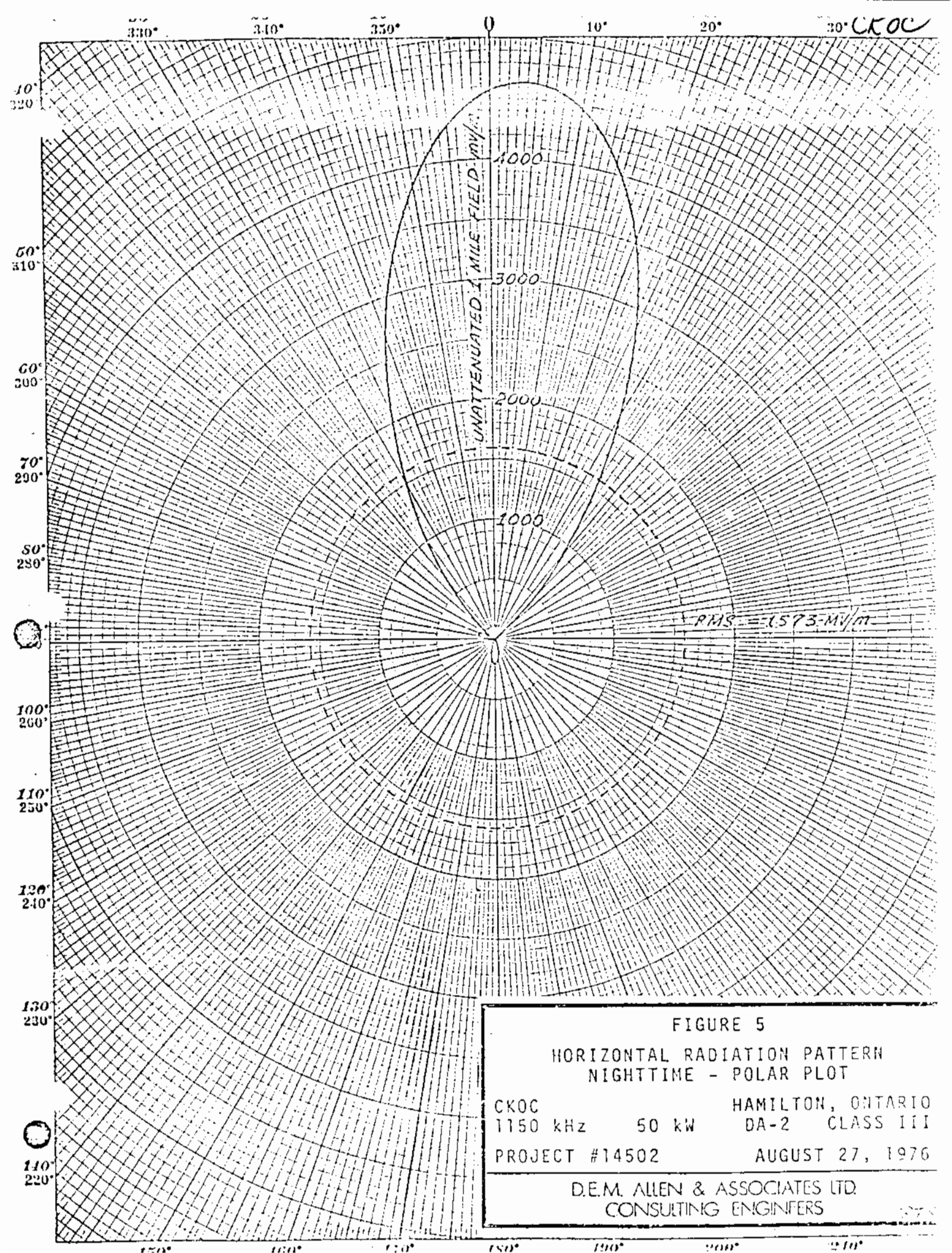


FIGURE 5

HORIZONTAL RADIATION PATTERN
NIGHTTIME - POLAR PLOT

CKOC — HAMILTON, ONTARIO
1150 kHz — 50 kW — DA-2 — CLASS III

PROJECT #14502 — AUGUST 27, 1976

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

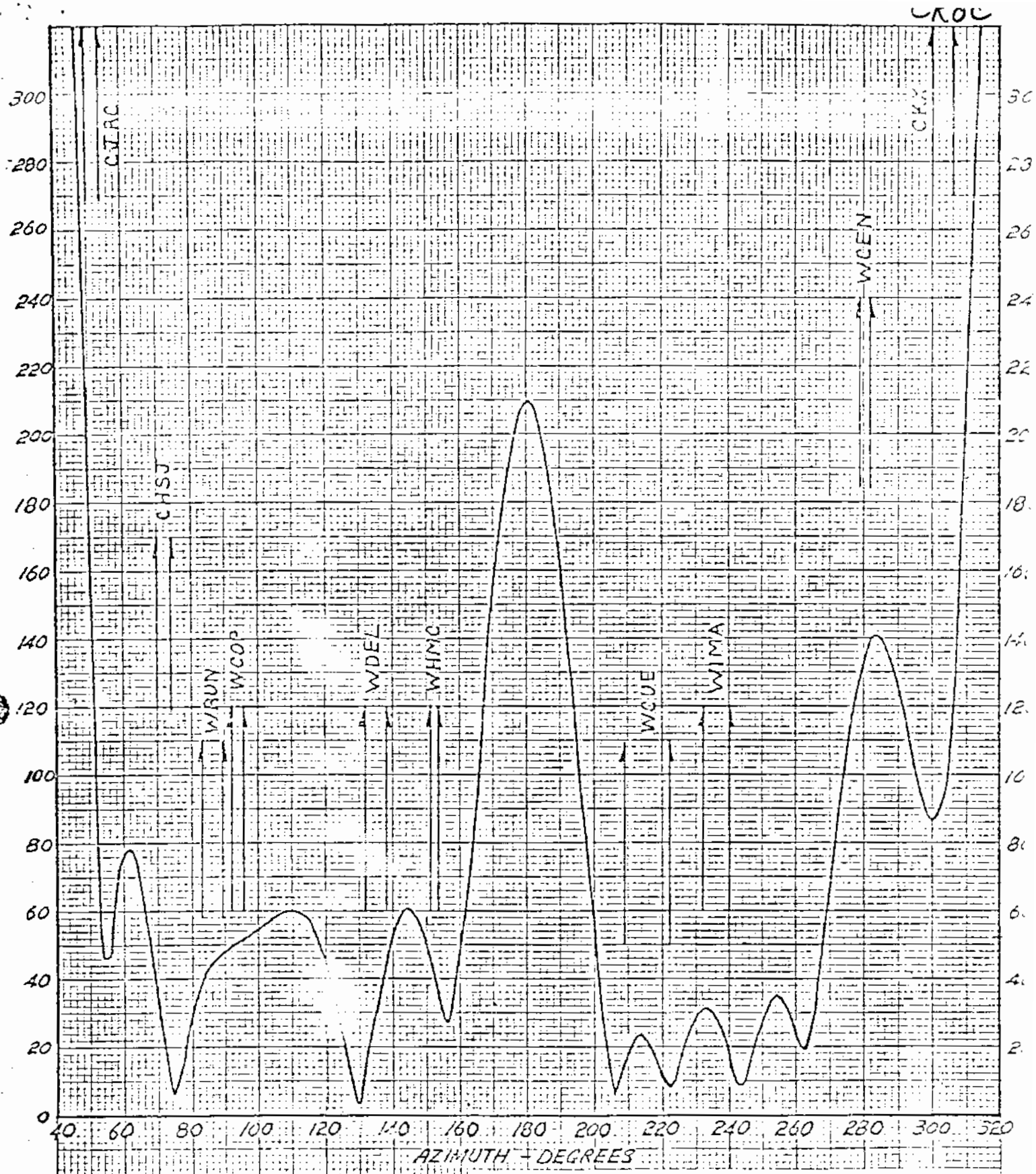


FIGURE 6

HORIZONTAL RADIATION PATTERN
NIGHTTIME - EXPANDED PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III

PROJECT #14502 AUGUST 27, 1976

D.E.M. ALLEN & ASSOCIATES LTD

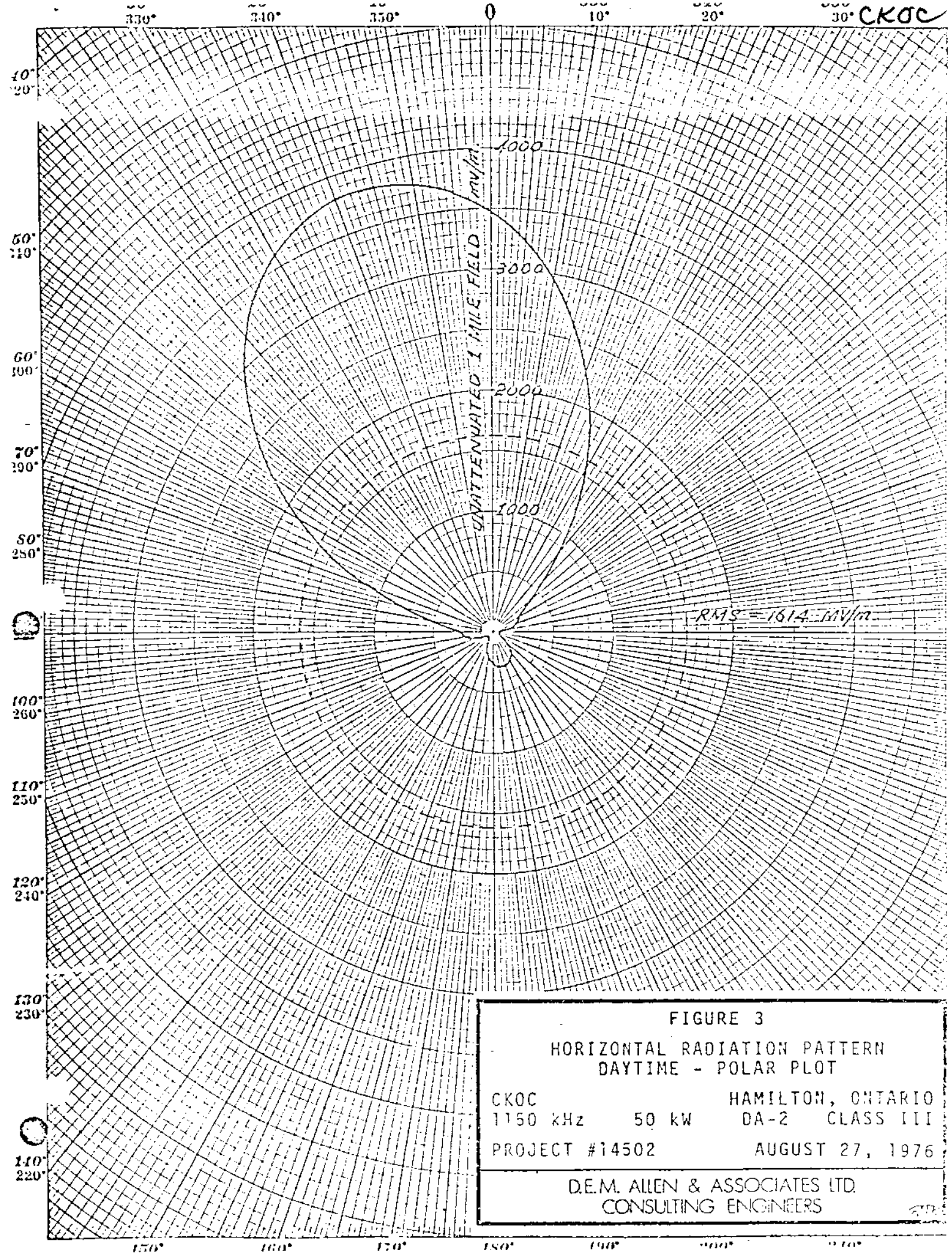


FIGURE 3

HORIZONTAL RADIATION PATTERN
DAYTIME - POLAR PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III

PROJECT #14502 AUGUST 27, 1976

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

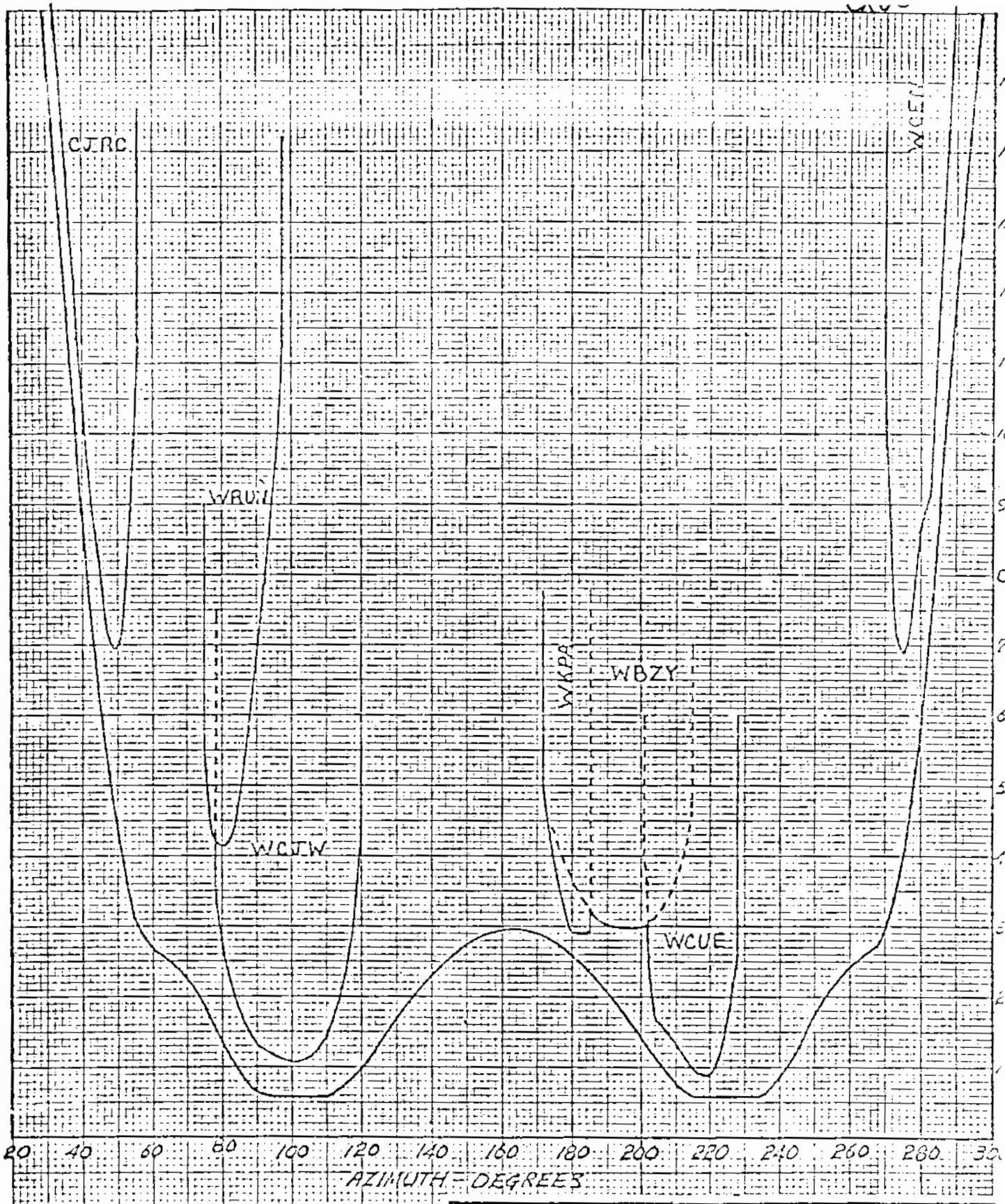


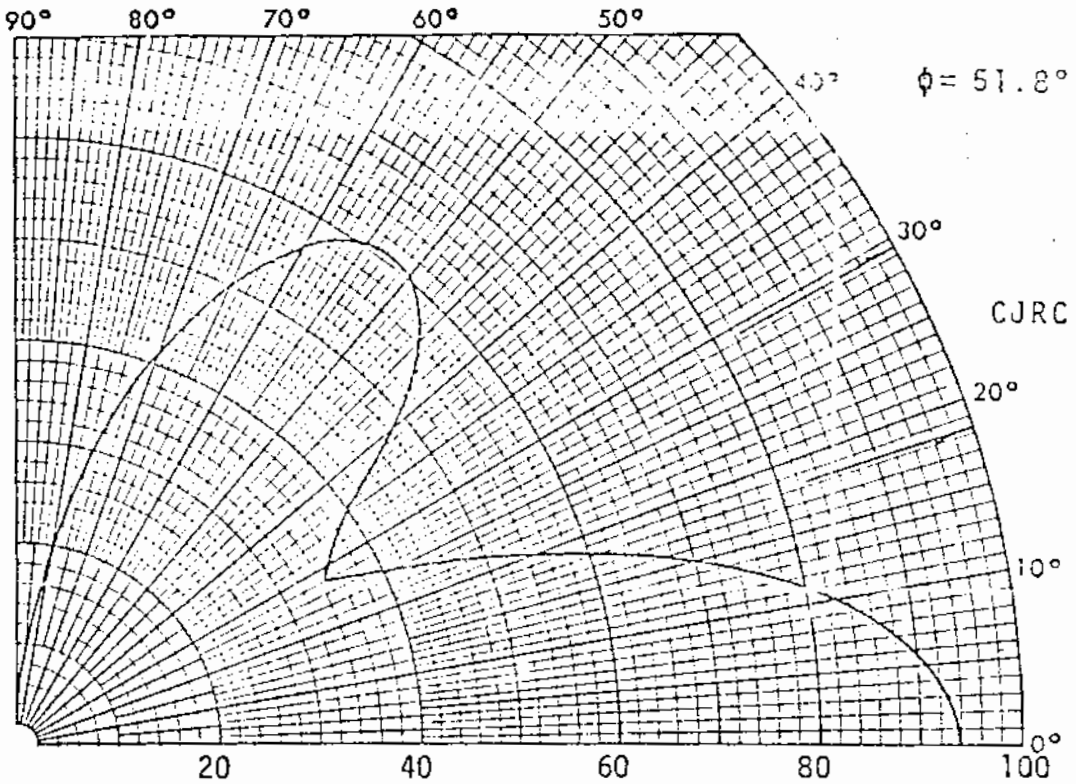
FIGURE 4

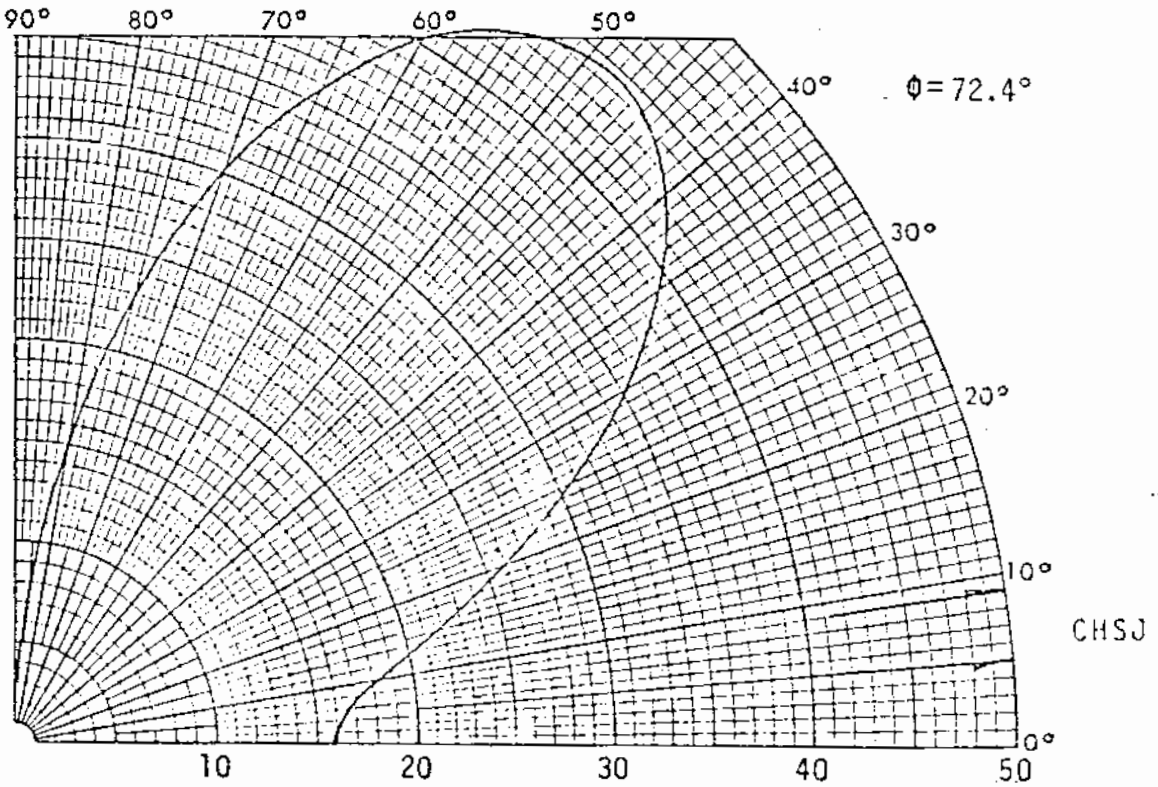
HORIZONTAL RADIATION PATTERN
DAYTIME - EXPANDED PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III

PROJECT #14502 AUGUST 27, 1976

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





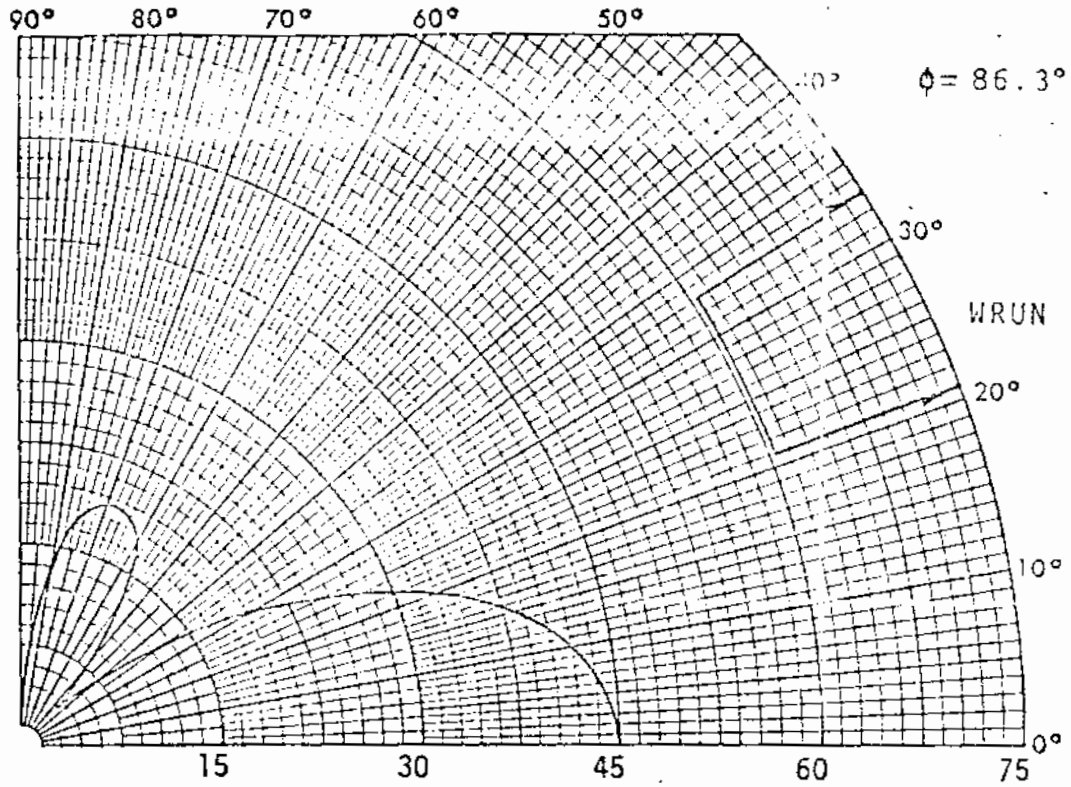
VERTICAL RADIATION PATTERNS

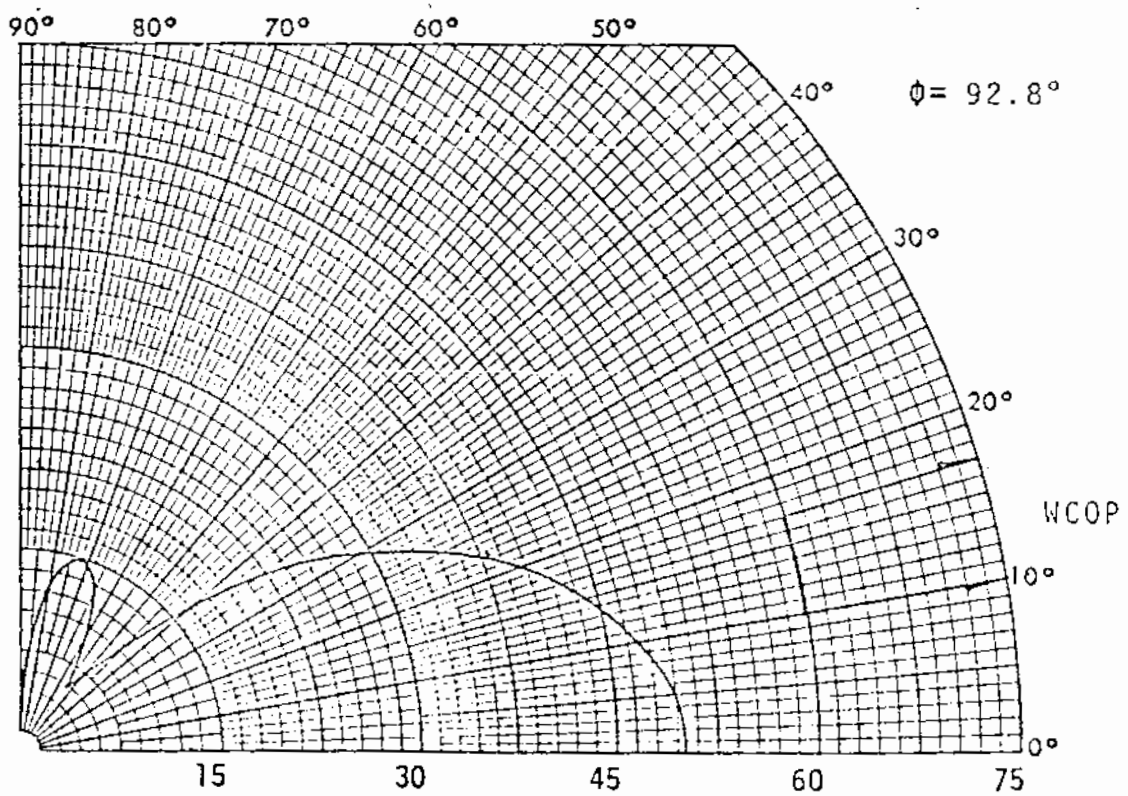
FIGURE 7

CKOC
1150 kHz 50 kW DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
AUGUST 27, 1976

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





VERTICAL RADIATION PATTERNS

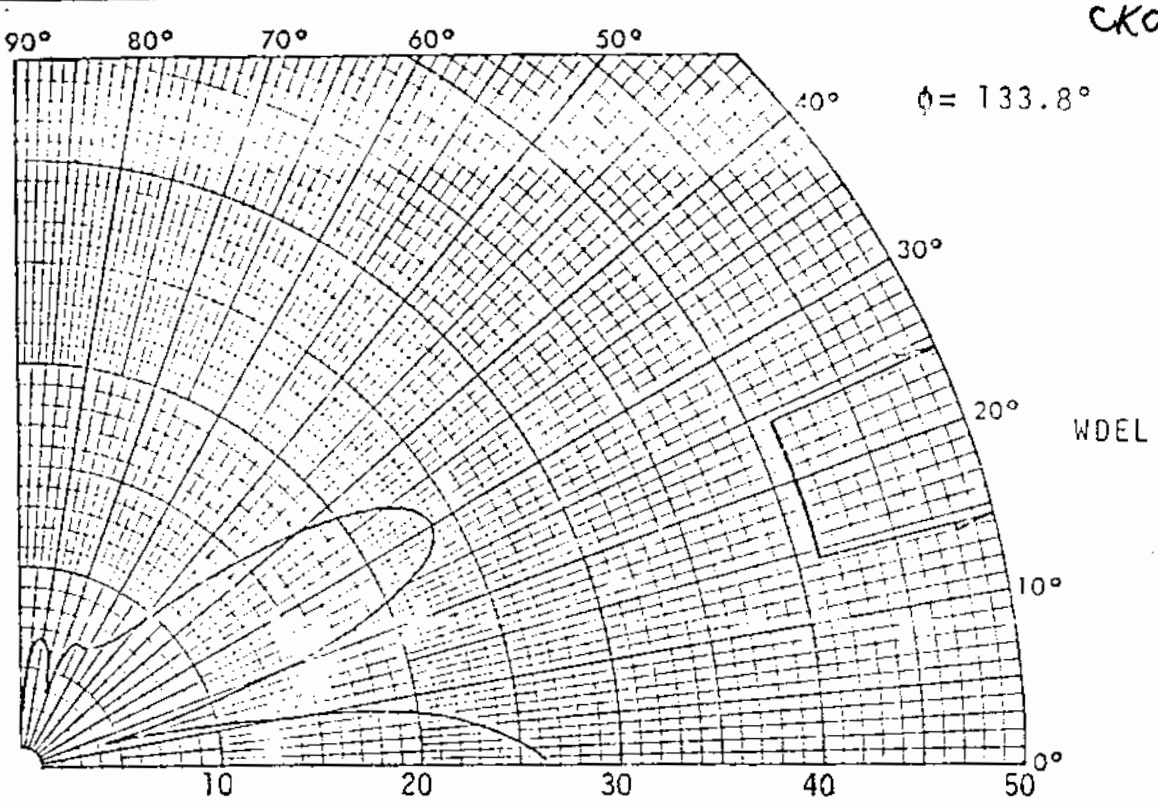
FIGURE 8

CKOC
1150 kHz 50 kW DA-2
PROJECT #14502

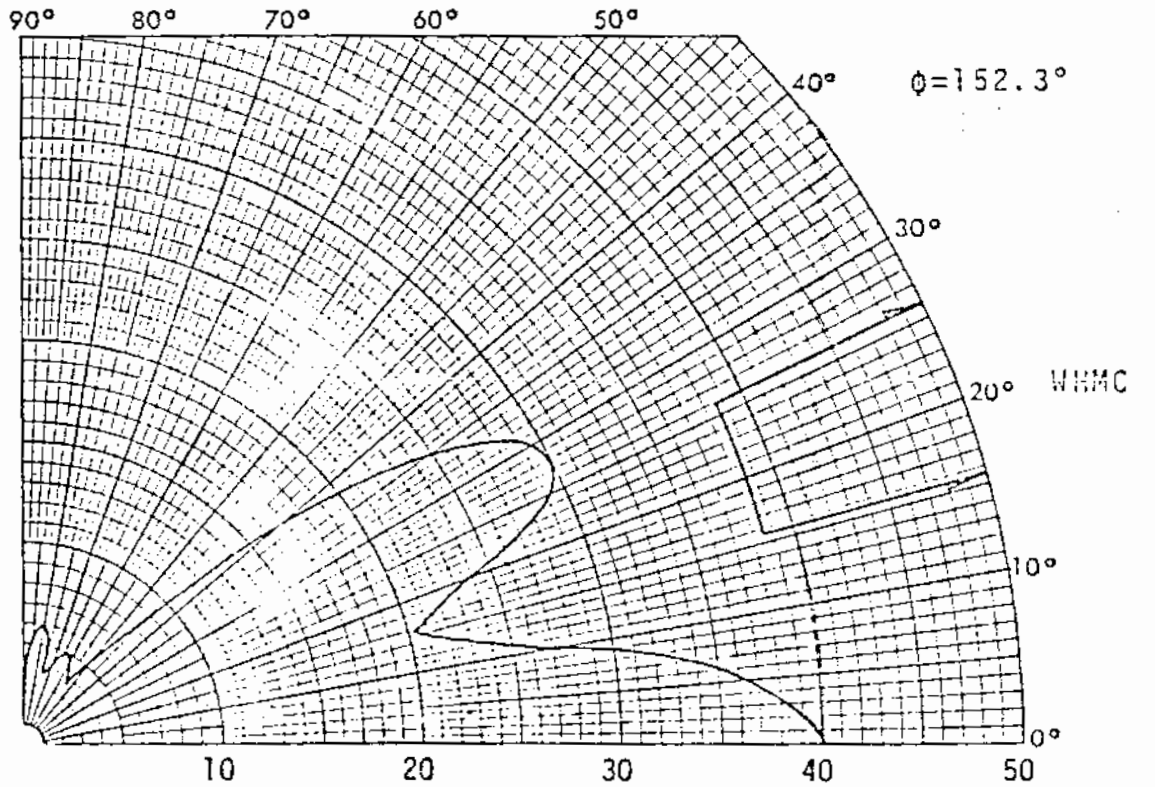
HAMILTON, ONTARIO
CLASS III
AUGUST 27, 1976

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

CKOC



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

VERTICAL RADIATION PATTERNS

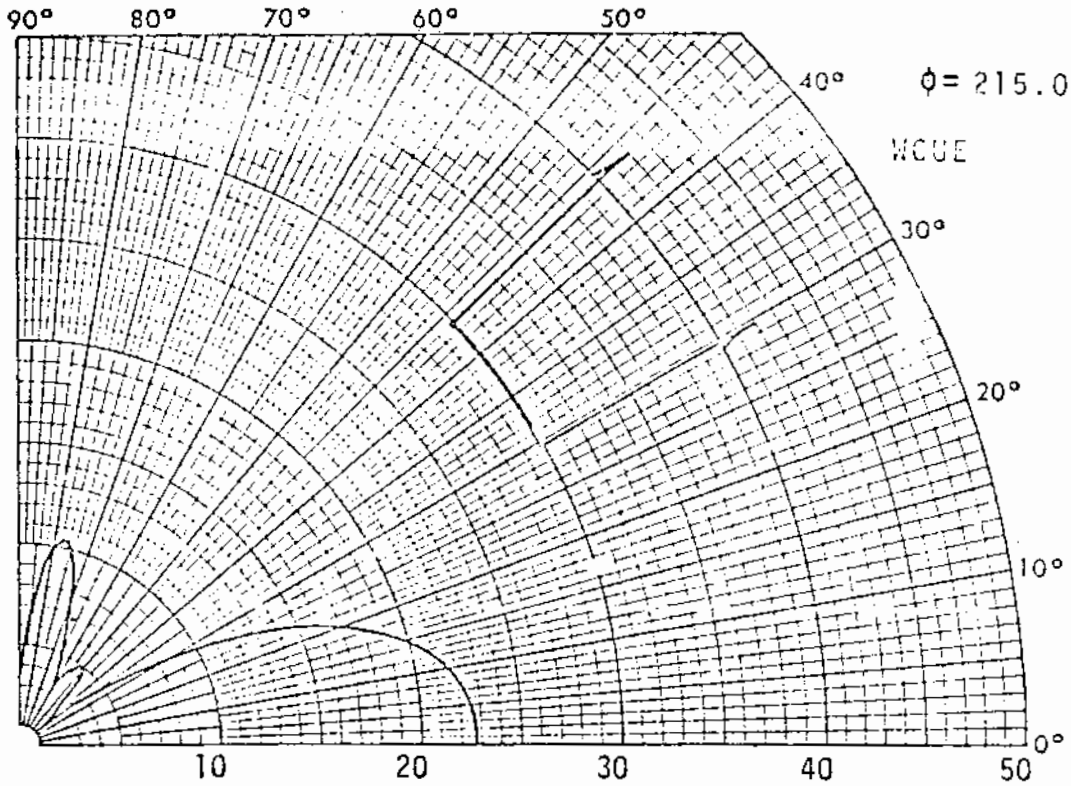
FIGURE 9

CKOC
1150 kHz 50 kW DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
AUGUST 27, 1976

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

CKOC



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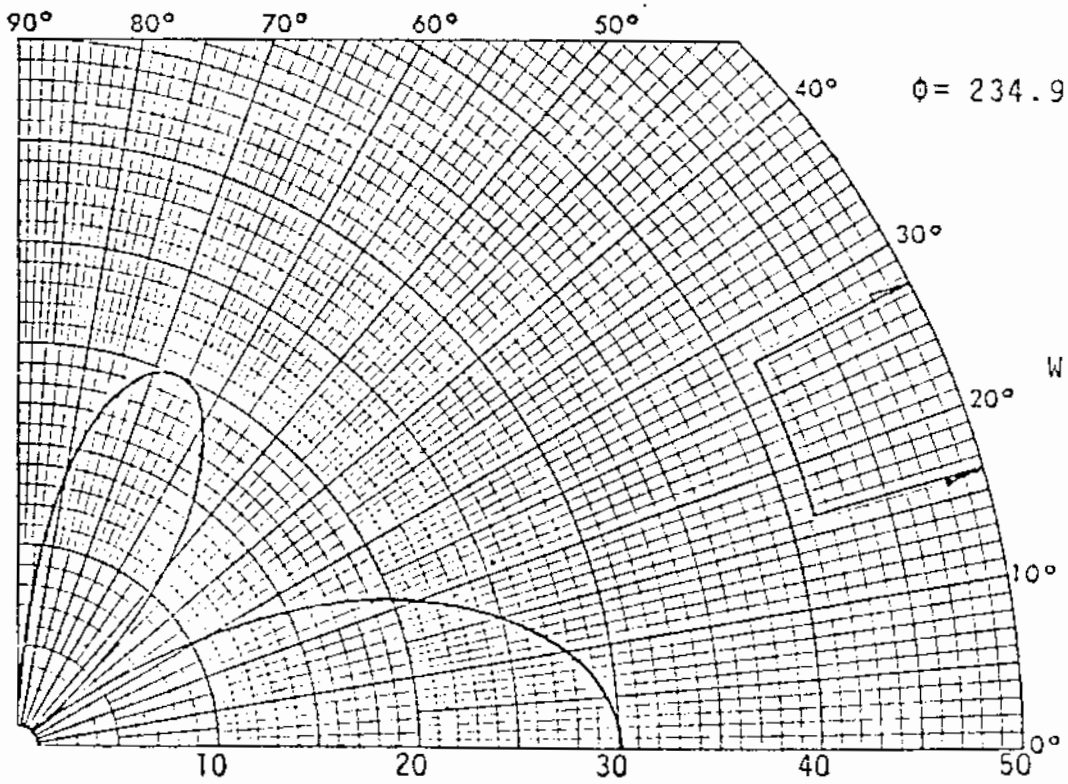


UNATTENUATED (MV/M) 1 MILE FIELD

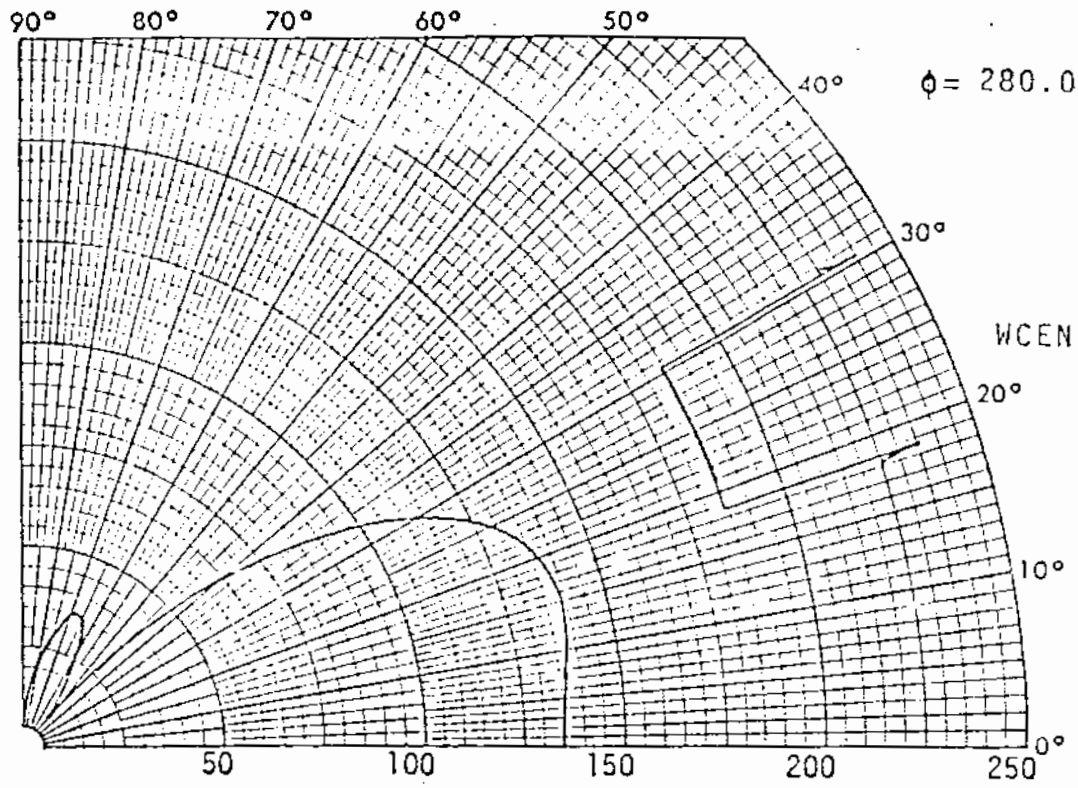
VERTICAL RADIATION PATTERNS

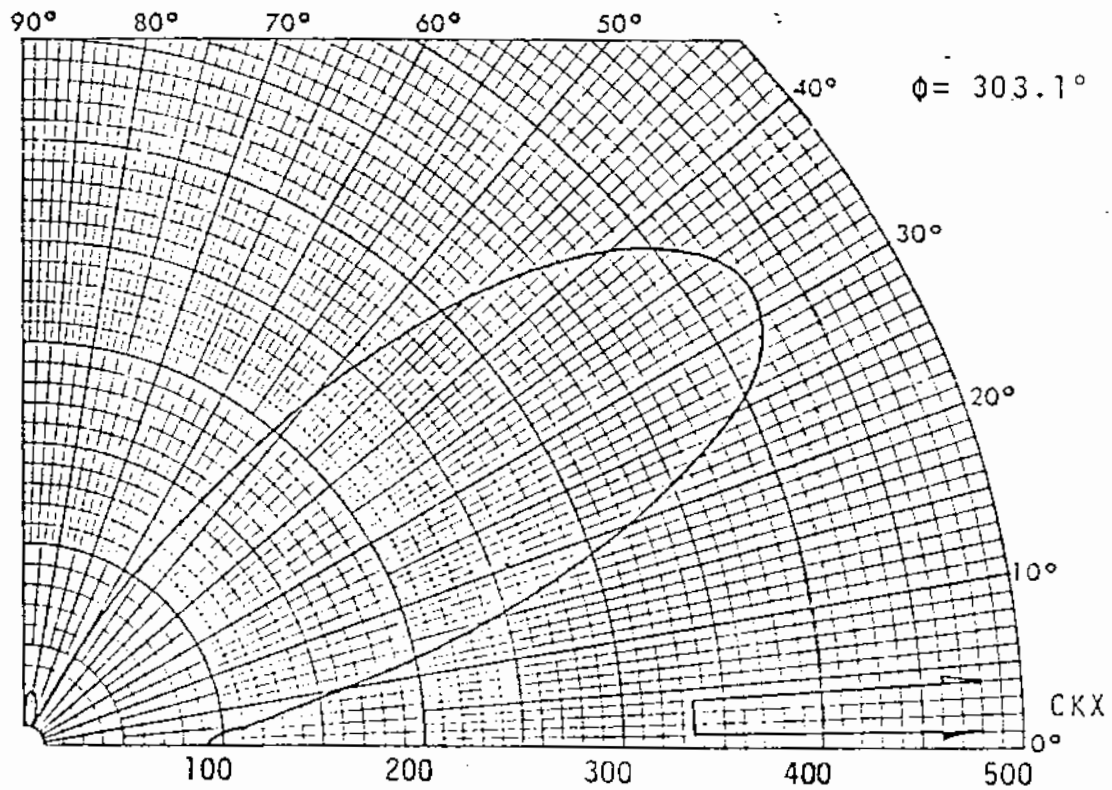
FIGURE 10

CKOC
1150 kHz 50 kW DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
AUGUST 27, 1976

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





VERTICAL RADIATION PATTERNS

FIGURE 11

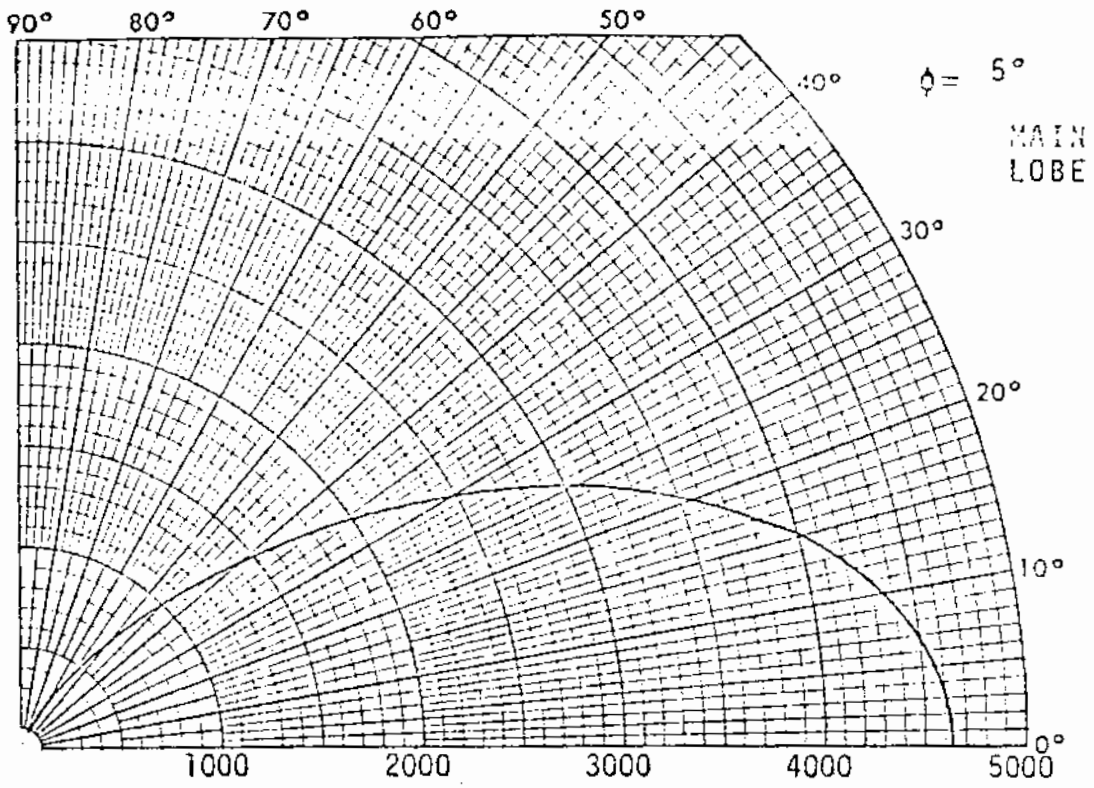
CKOC
1150 kHz 50 kHz DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
AUGUST 27, 1976

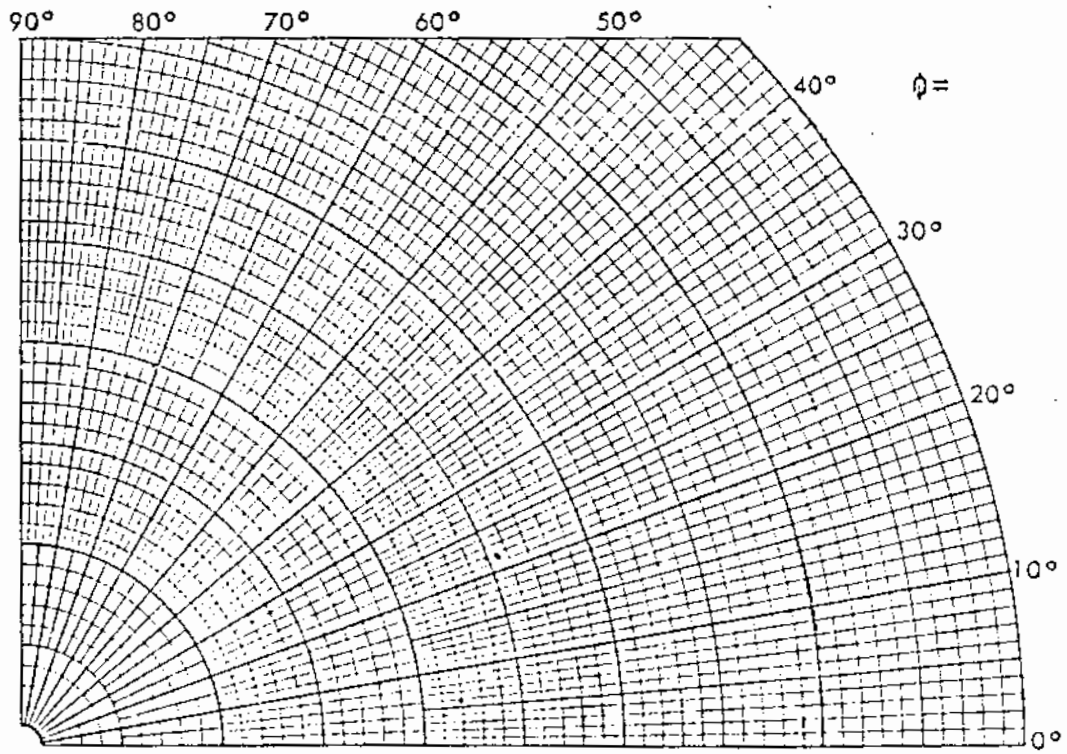
D.E.M. ALLEN & ASSOCIATES LTD., CONSULTING ENGINEERS

RJK

CKOC



UNATTENUATED (MV/M) 1 MILE FIELD



MV/M

VERTICAL RADIATION PATTERNS

FIGURE 12

CKOC
1150 kHz 50 kHz DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
AUGUST 27, 1976

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

216

Description Sheet
(8-26-66ct)

Station CKOC
Hamilton, Ontario

CKOC
10kw,DA-2,U,Class III
1150 kc

Directional Antenna Description Sheet

Station : CKOC Main Studio : Hamilton, Ontario

Frequency : 1150 kc Power : 10 kw Class : III

Notification List No. : 216 Date : July 26, 1966

Geographical Location
of Antenna System : N. Lat. 43° 10' 40" , W. Lng. 79° 47' 00"

Antenna Characteristics : Mode of Operation : DA-2
Number of Elements : 6
Type of Element : guyed, uniform cross-section, no top loading.

Tower	#1 (SW)	#2 (SE)	#3 (EC)	#4 (WC)	#5 (NW)	#6 (NE)
Height above insul'r	200'	200'	200'	200'	200'	200'
Overall Height	205'	205'	205'	205'	205'	205'
Spacing	See Orientation below					
Night Phasing	+116°	+110°	0°	+6°	-104°	-110°
Night Field Ratio	0.8	1.0	1.94	1.552	0.8	1.0
Day Phasing	-	+140°	+10.7°	-	-	-140°
Day Field Ratio	-	1.0	1.7	-	-	1.0

Orientation : 4 towers are at corners of a square, 476' x 476', (200° x 200°) whose sides lie in Azimuths 352° and 82°. The other two towers are at the centres of the sides which lie in Azimuth 352°.

Ground System : Around each tower base, 120 radials, 342' long, spaced 3°.

Predicted
Effective Field : Night - 574 mv/m at 1 mile (181 per kw)
Day - 584 mv/m at 1 mile (185 per kw)

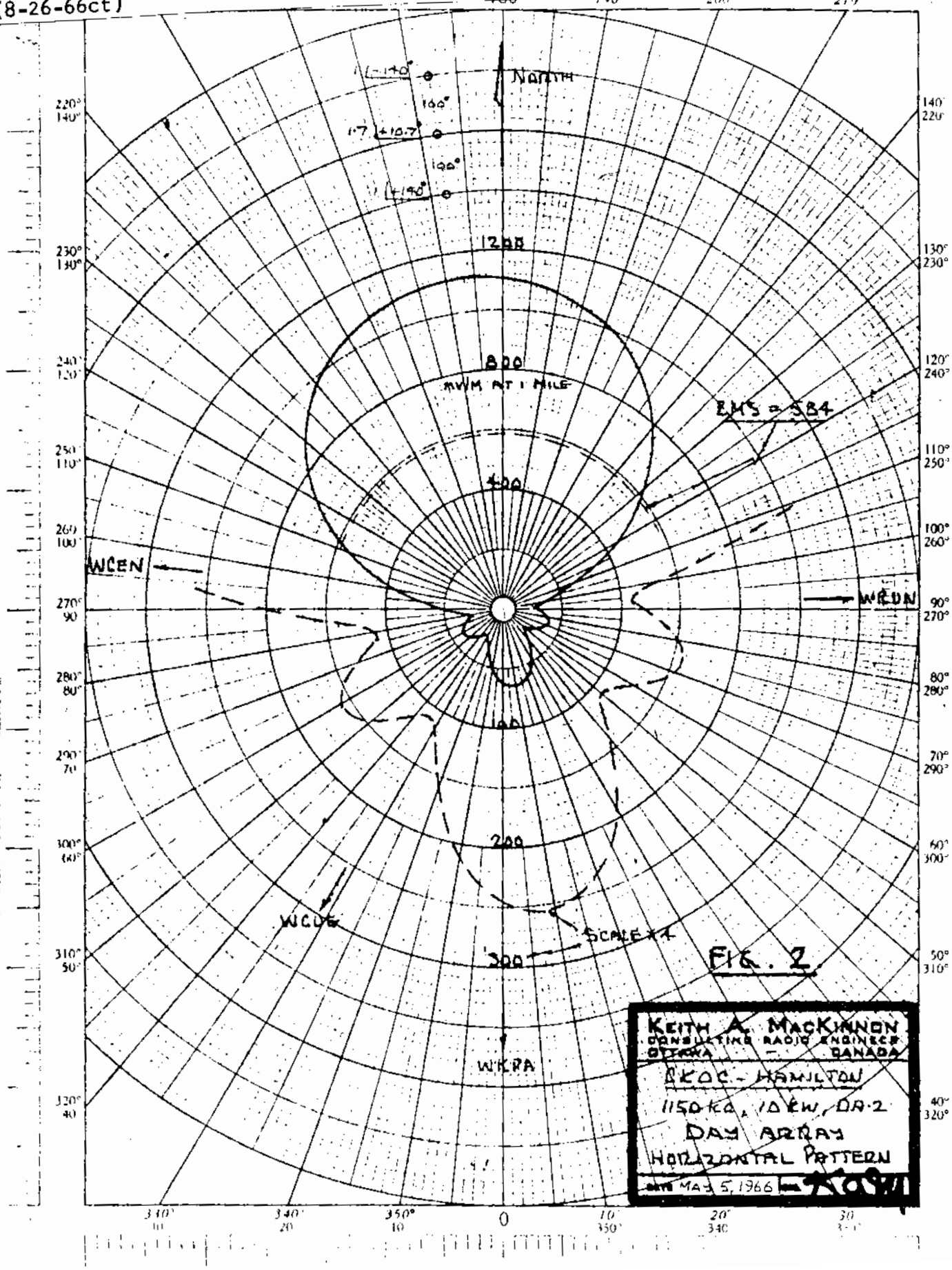
oooooooooooooooooooooooo

216

Proposed Day
(8-26-66ct)

Station CKOC
Hamilton, Ontario

CKOC
10kw, DA-2, U, Class III
1150 kc



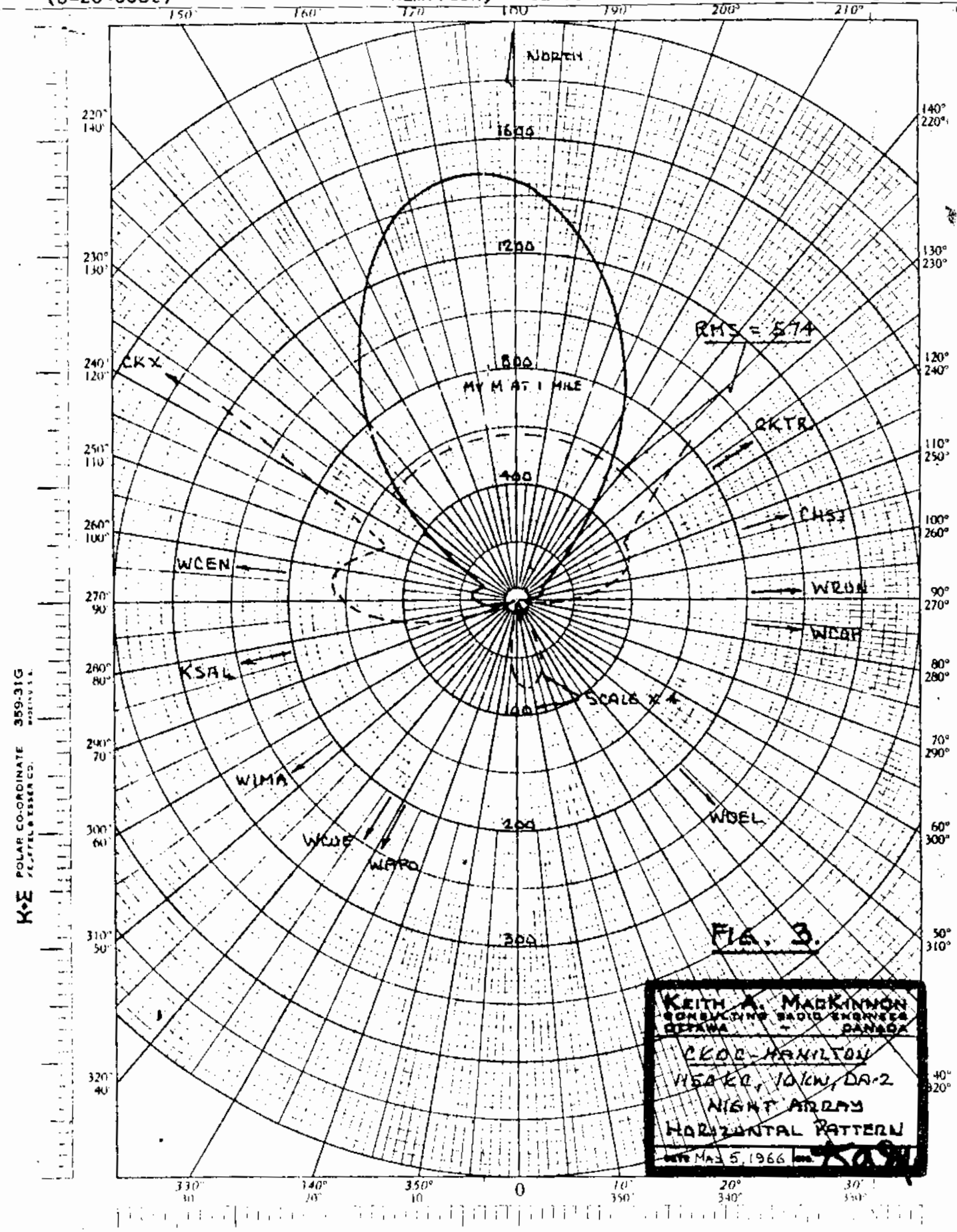
216

CKOC

Proposed Night
(8-26-66ct)

Station CKOC
Hamilton, Ontario

10kw, DA-2, U, Class III
1150 kc



K+E POLAR CO-ORDINATE 359-31G
KEUFFEL & ESSER CO.

CKOC

PROJECT #14502

DESCRIPTION SHEET -- DIRECTIONAL ANTENNA

STATION: CKOC LOCATION: Hamilton, Ontario

FREQUENCY: 1150 kHz POWER: 50 kW CLASS III

NOTIFICATION LIST NO.: 382 DATE: March 8, 1979

GEOGRAPHICAL LOCATION: Latitude 43° 03' 04" North
Longitude 79° 48' 42" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-2
Number of Elements: 10 (Ten)
Type of Elements: Guyed steel towers, uniform cross-section, base insulated for series feed

TOWER HEIGHTS: All tower heights are of equal height above base insulator 215 ft. (90.4°).
Overall height 220 ft.

Tower No.	Orientation	Spacing	Daytime Field Ratio	Daytime Phasing	Nighttime Field Ratio	Nighttime Phasing
1	Ref.	Ref.	.2	0°	.204	0°
2	343°	190.2' (80°)	.61	-138.7°	.703	-155.9°
3	343°	380.4' (160°)	1.0	+77.6°	1.0	+46.1°
4	343°	570.6' (240°)	.85	-68°	.703	-111.3°
5	343°	760.8' (320°)	.28	+146.6°	.2	+92.9°
6	120°	475.5' (200°)	Unused		.203	+20°
7	99.1°	359' (151°)	Unused		.703	-135.3°
8	67.4°	320.9' (135°)	Unused		1.0	+67°
9	38.5°	387.5' (163°)	Unused		.701	-90.7°
10	20.5°	518.3' (218°)	Unused		.203	+113.5°

GROUND SYSTEM: 120 equally spaced radials of No. 10 bare copper wire extend from each tower base. Radial length is 342.3' (144°), with the exception of those joined along the common chords; an additional 120 100-ft. radials are at the base of each tower. Radials are buried approximately 8 inches.

PREDICTED EFFECTIVE FIELDS:

Nighttime	Daytime
1375 mV/m at 1 mile for 50 kW	1411 mV/m at 1 mile for 50 kW
194 mV/m at 1 mile for 1 kW	199 mV/m at 1 mile for 1 kW

Revised January 5, 1979

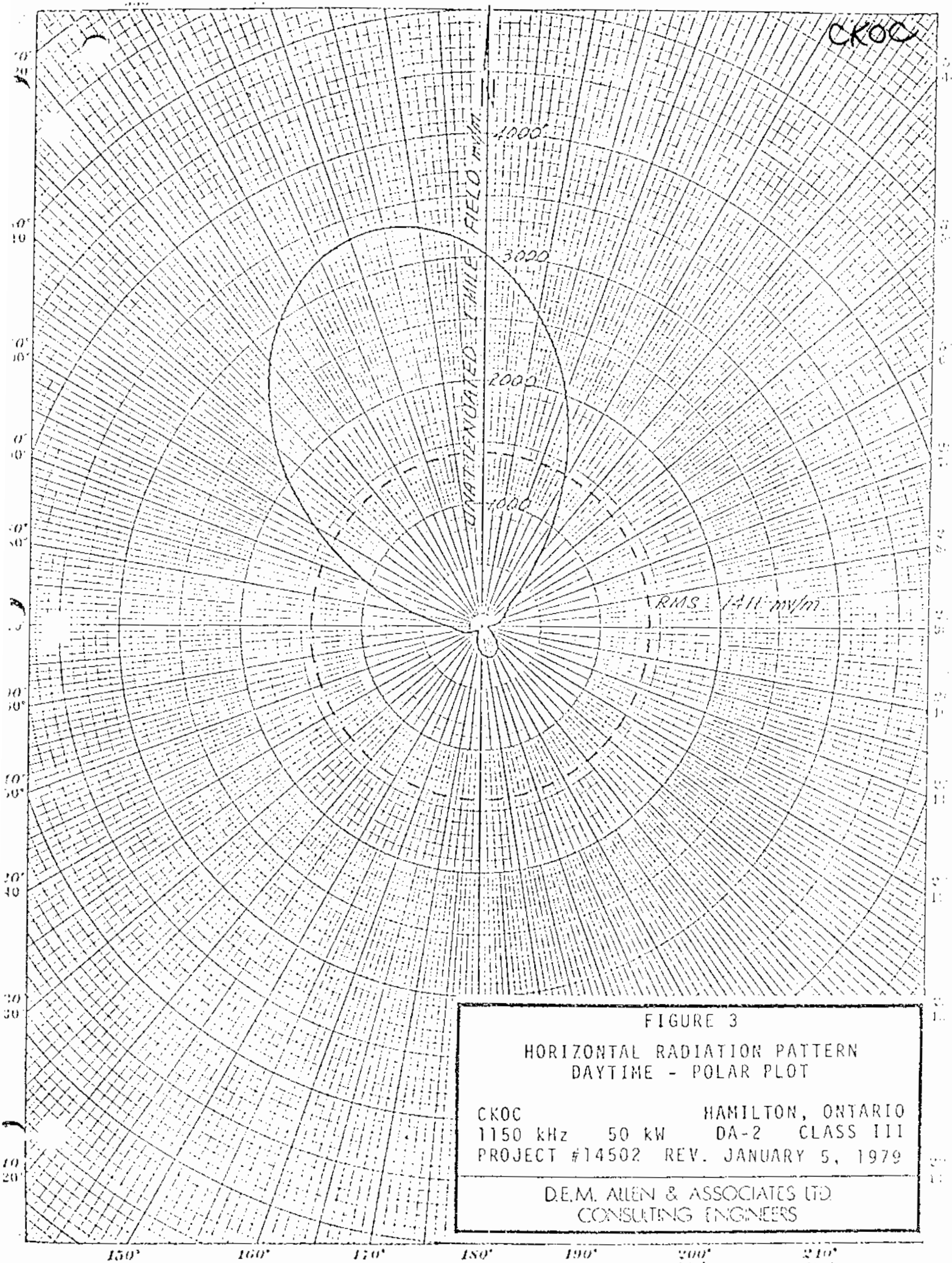


FIGURE 3

HORIZONTAL RADIATION PATTERN
DAYTIME - POLAR PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III
PROJECT #14502 REV. JANUARY 5, 1979

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

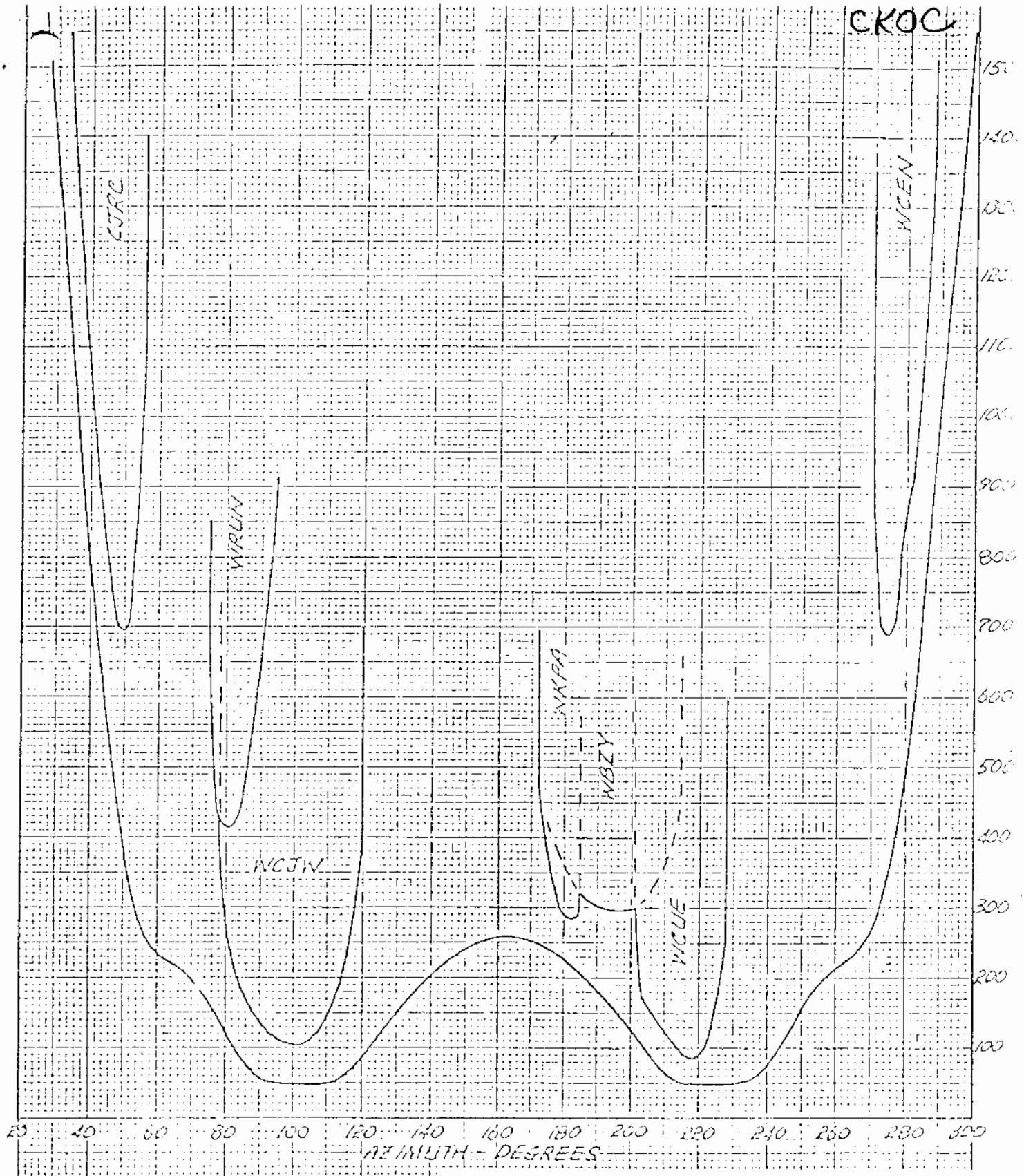


FIGURE 4

HORIZONTAL RADIATION PATTERN
DAYTIME - EXPANDED PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III
PROJECT #14502 REV. JANUARY 5, 1979

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

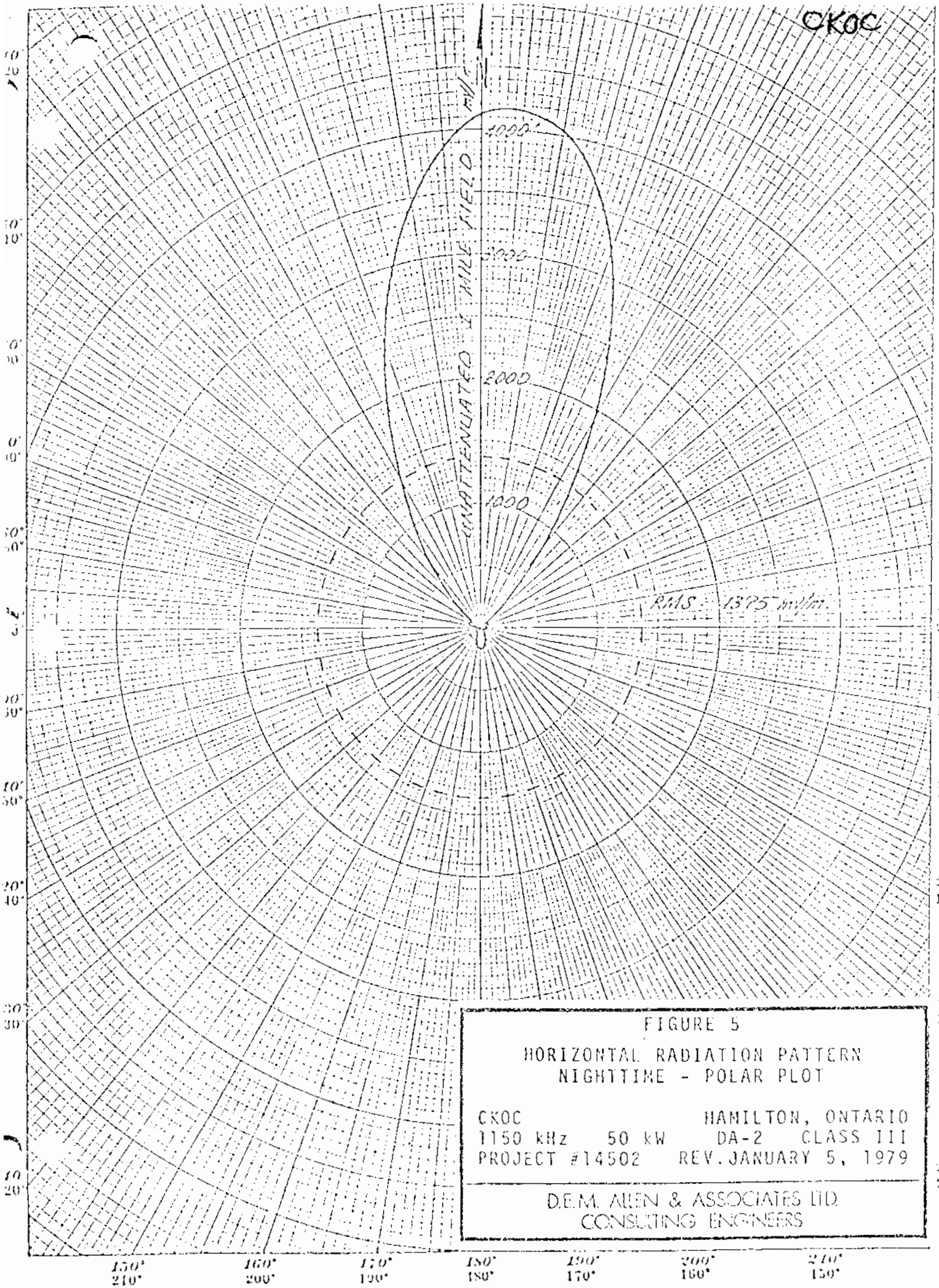


FIGURE 5

HORIZONTAL RADIATION PATTERN
NIGHTTIME - POLAR PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III
PROJECT #14502 REV. JANUARY 5, 1979

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

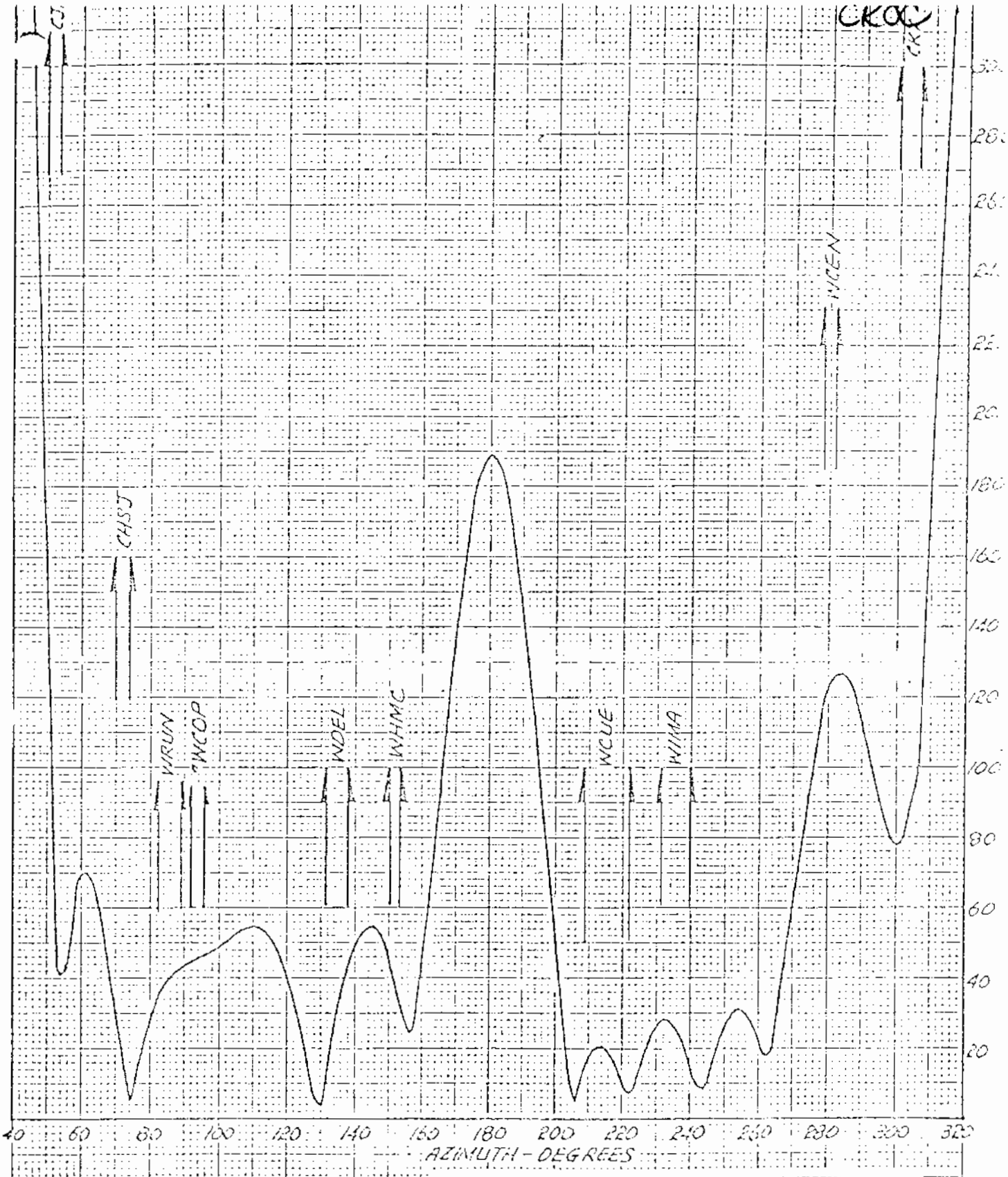
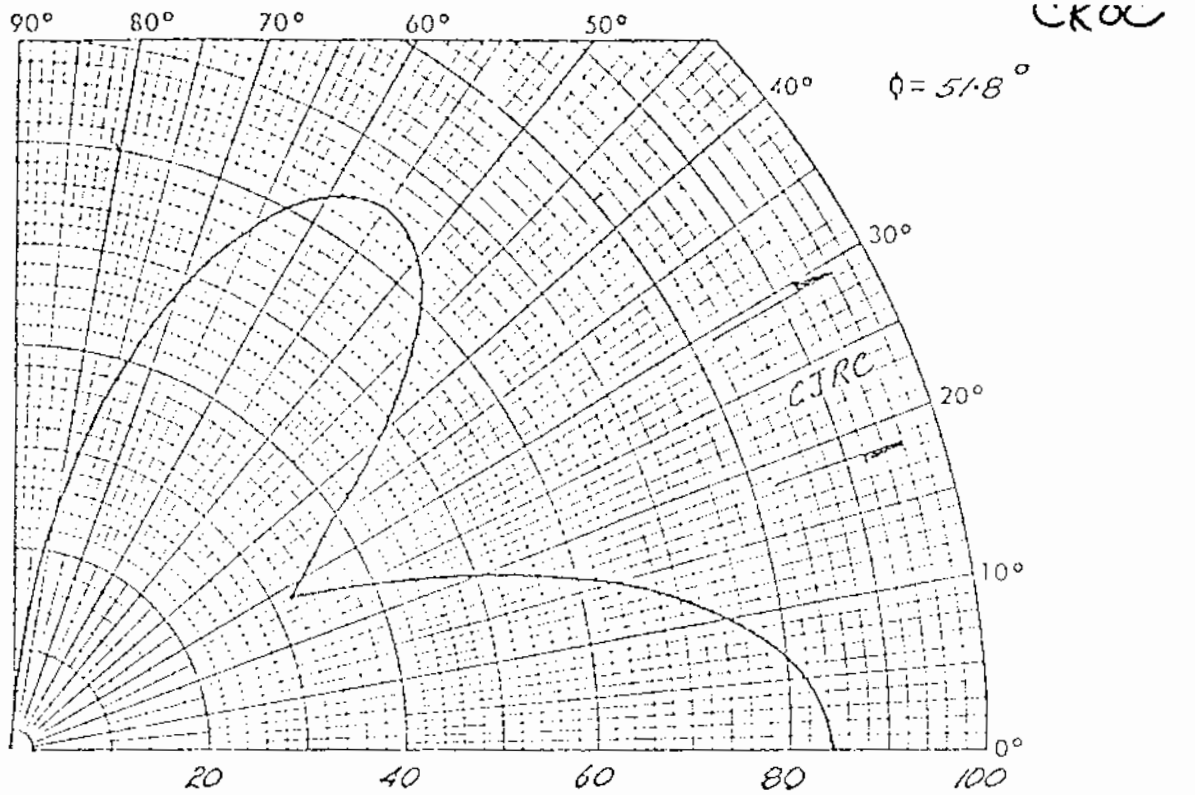


FIGURE 6

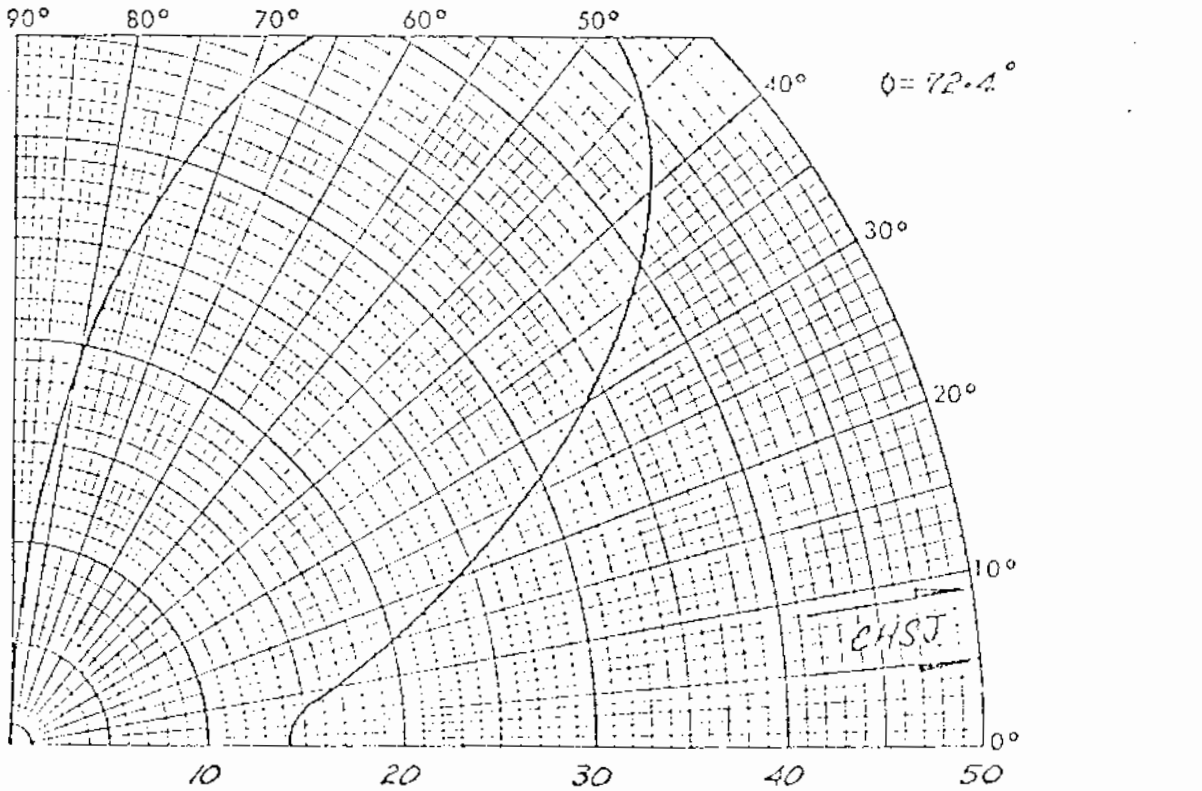
HORIZONTAL RADIATION PATTERN
NIGHTTIME - EXPANDED PLOT

CKOC HAMILTON, ONTARIO
1150 kHz 50 kW DA-2 CLASS III
PROJECT #14502 REV. JANUARY 5, 1979

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



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

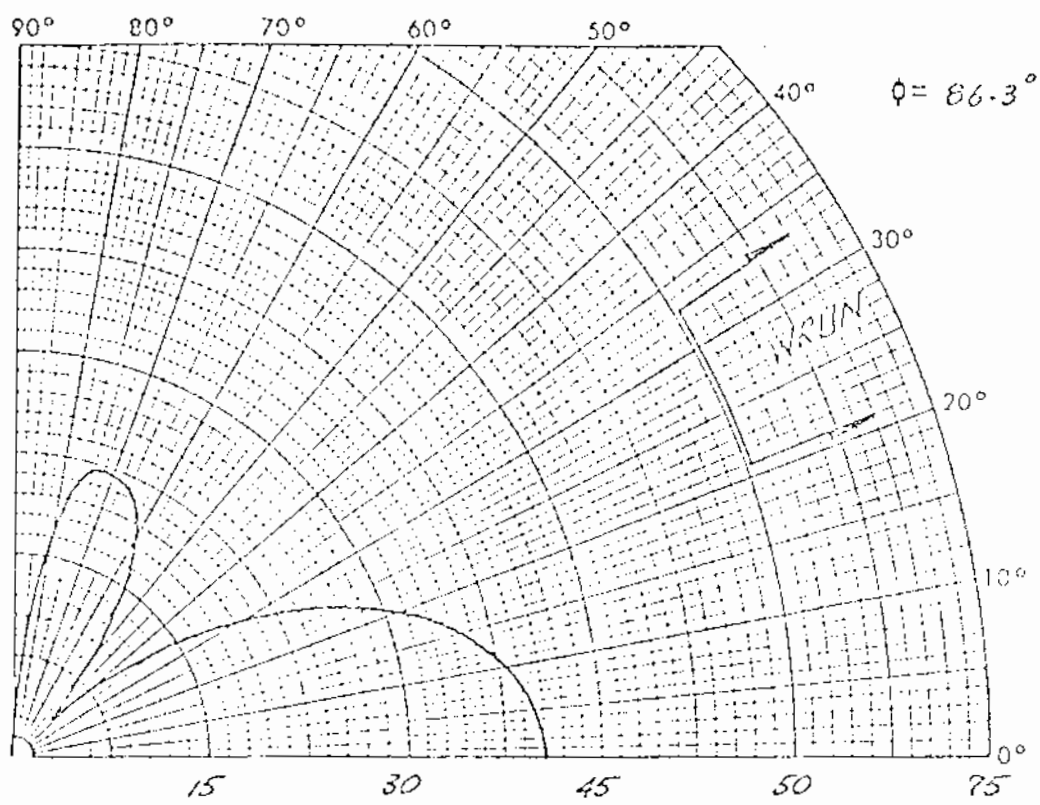
VERTICAL RADIATION PATTERNS

FIGURE 7

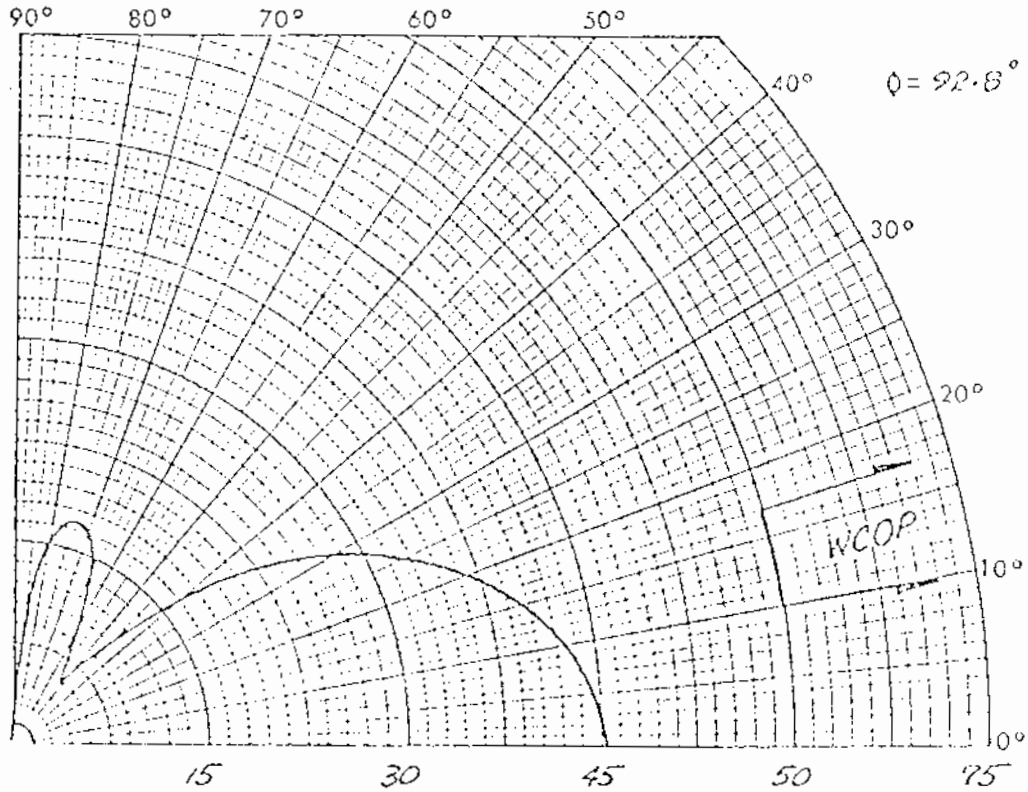
CKOC
1150 kHz 50 kW DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
REV. JANUARY 5, 1979

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



UNATTENUATED (MV/M) 1 MILE FIELD



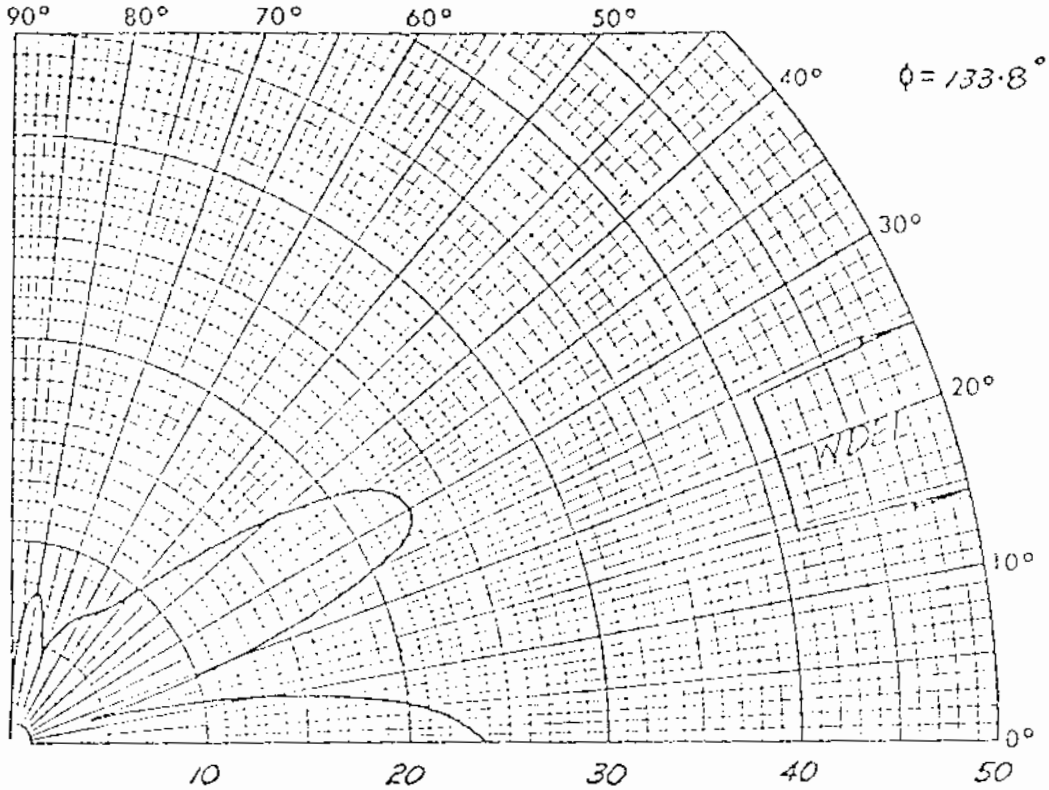
UNATTENUATED (MV/M) 1 MILE FIELD

VERTICAL RADIATION PATTERNS

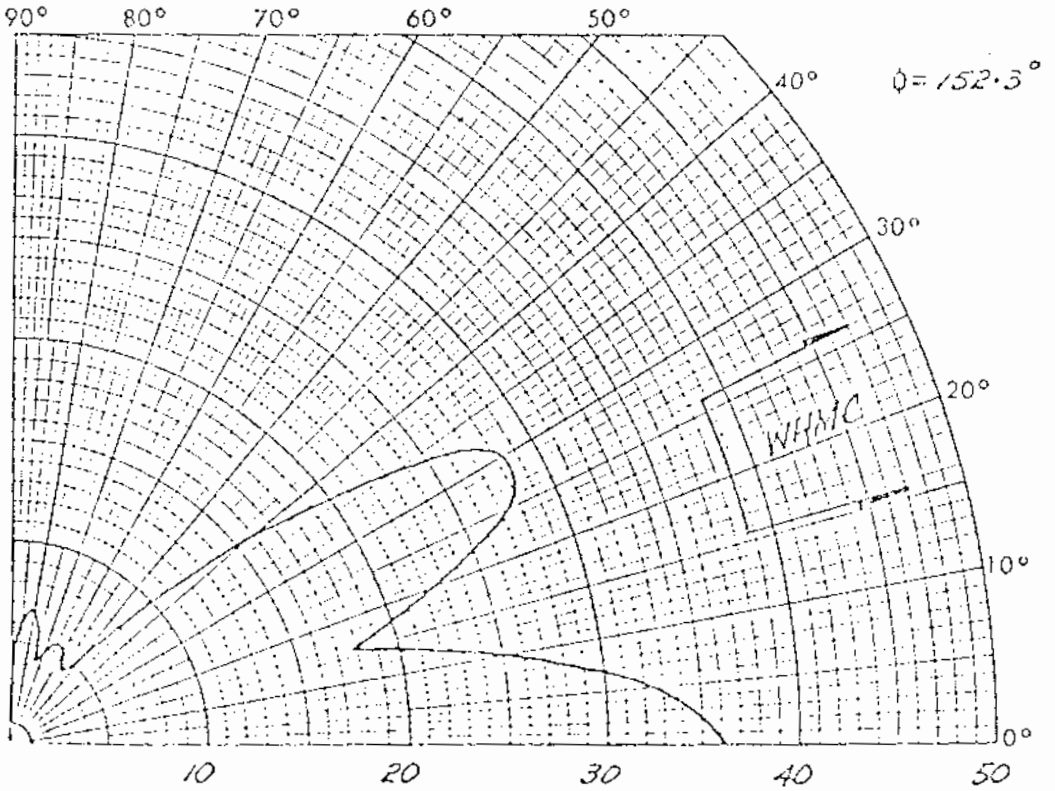
FIGURE 8

CKOC — HAMILTON, ONTARIO
1150 kHz — 50 kW — DA-2 — CLASS III
PROJECT #14502 — REV. JANUARY 5, 1979

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

CKOC — HAMILTON, ONTARIO
1150 kHz — 50 kW — DA-2 — CLASS III
PROJECT #14502 — REV. JANUARY 5, 1979

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

CKX

PROJECT #6515

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CKX

STATION LOCATION: BRANDON, MAN.

FREQUENCY: 1150 kHz

POWER: 50 kW Day, 10 kW Night

NOTIFICATION LIST: 353

DATE: April 1, 1976

GEOGRAPHICAL LOCATION:

Latitude: 49° 50' 28" North
Longitude: 100° 03' 19" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-2
Number of Elements: 4 (Four)
Type of Elements: Guyed steel towers, uniform cross-section, base insulated for series feed.

Tower	#1(N)	#2(EC)	#3(W)	#4(S)
Height above base insulator:	190'(80°)	220'(92.5°)	220'(92.5°)	220'(92.5°)
Overall Height:	195'	225'	225'	225'
Night Field Ratio:	1.0	1.0	.175	--
Night Phasing:	0°	-200°	-315°	--
Day Field Ratio:	1.0	--	--	1.0
Day Phasing:	0°	--	--	30°
Orientation:	Ref.	205°	250°	180°
Spacing:	Ref.	107'(45°)	321'(135°)	214'(90°)

GROUND SYSTEM: 120 equally spaced radials of #10 bare soft copper wire extend from the base of each tower for a distance of 342 feet (0.4 wavelength) with the exception of those joined along the common chords. The radials are buried approximately 8 inches.

PREDICTED EFFECTIVE FIELDS:

DAY	NIGHT
1273 mV/m at 1 mile for 50 kW	613 mV/m at 1 mile for 10 kW
180 mV/m at 1 mile for 1 kW	194 mV/m at 1 mile for 1 kW

June 30, 1975

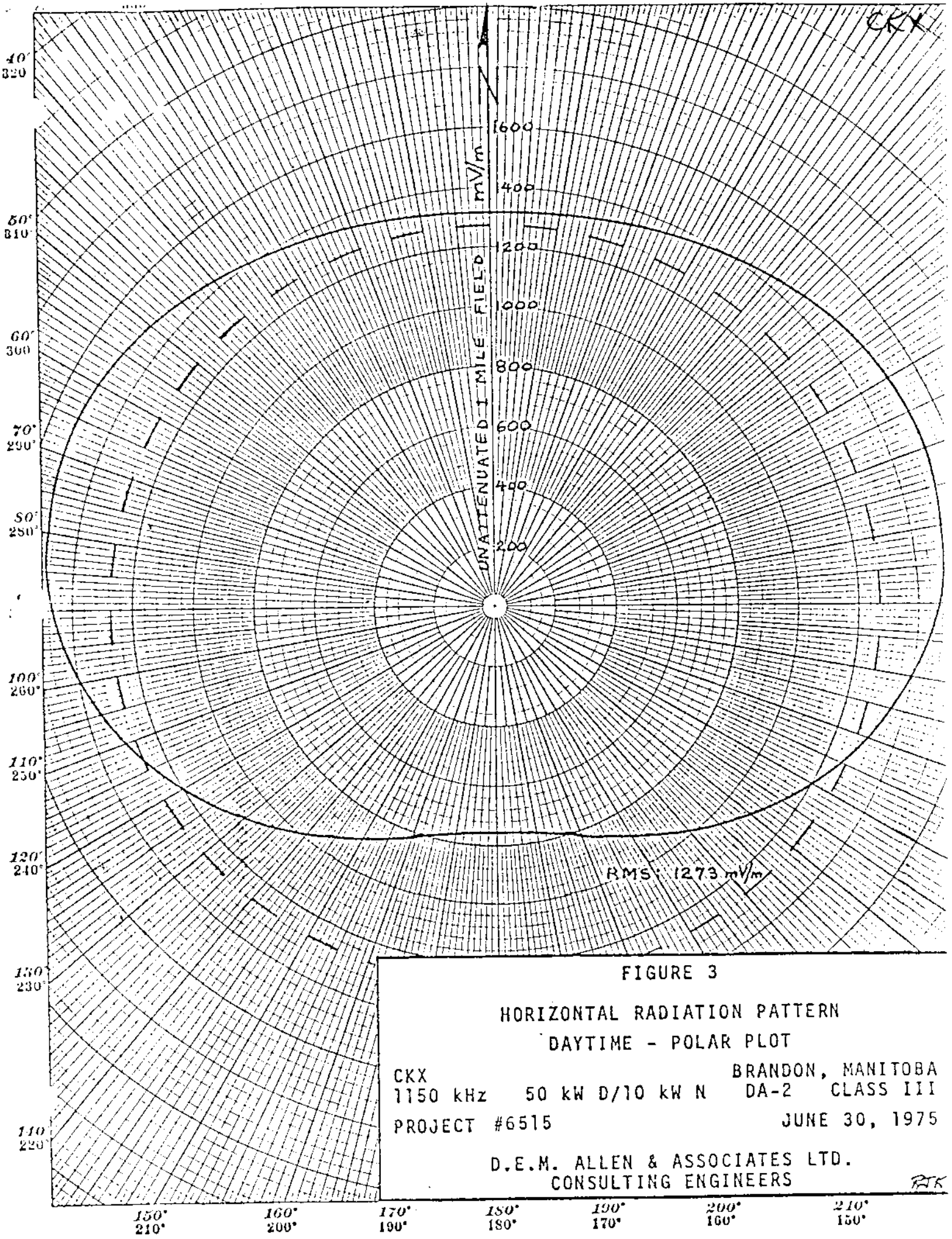


FIGURE 3

HORIZONTAL RADIATION PATTERN

DAYTIME - POLAR PLOT

CKX BRANDON, MANITOBA

1150 kHz 50 kW D/10 kW N DA-2 CLASS III

PROJECT #6515 JUNE 30, 1975

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

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CKX

MAIN STUDIO: Brandon, Manitoba

FREQUENCY: 1150 kHz

POWER: 10 kW

CLASS: III

NOTIFICATION LIST NO: 276

DATE: January 29,1971.

GEOGRAPHICAL LOCATION:

Latitude: 49° 50' 28" North

Longitude: 100° 03' 19" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-N

Number of Elements: Three (3)

Type of Elements: Square uniform cross-section, guyed, base insulated for series feed

TOWER:	#1(N)	#2(S)	#3(SW)
HEIGHT ABOVE BASE INSULATOR:	190' (80°)	220' (92.5°)	220' (92.5°)
OVERALL HEIGHT:	195'	225'	225'
FIELD RATIO:	1.0	1.0	.175
PHASING:	0°	-200°	-315°

GROUND SYSTEM: 120 equally spaced radials of No. 10 B & S gauge bare soft copper wire extend from the base of each tower for a distance of 342 feet (0.4 wavelength) with the exception of those joined along the common chords. The radials are buried approximately 8 inches.

SPACING AND ORIENTATION OF TOWERS:

Tower #2 is spaced 45° (107') on a bearing of 205° from Tower #1.

Tower #3 is spaced 135° (321') on a bearing of 250° from Tower #1.

PREDICTED EFFECTIVE NIGHT FIELD:

613 mV/m at 1 mile for 10 kW

194 mV/m at 1 mile for 1 kW

PREDICTED EFFECTIVE DAY FIELD (Omnidirectional):

592 mV/m at 1 mile for 10 kW

187 mV/m at 1 mile for 1 kW

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

CKX

Proposed Night
(2-22-71ct)

Station CKX
Brandon, Manitoba

10kw,DA-N,U,Class III
1150 kc

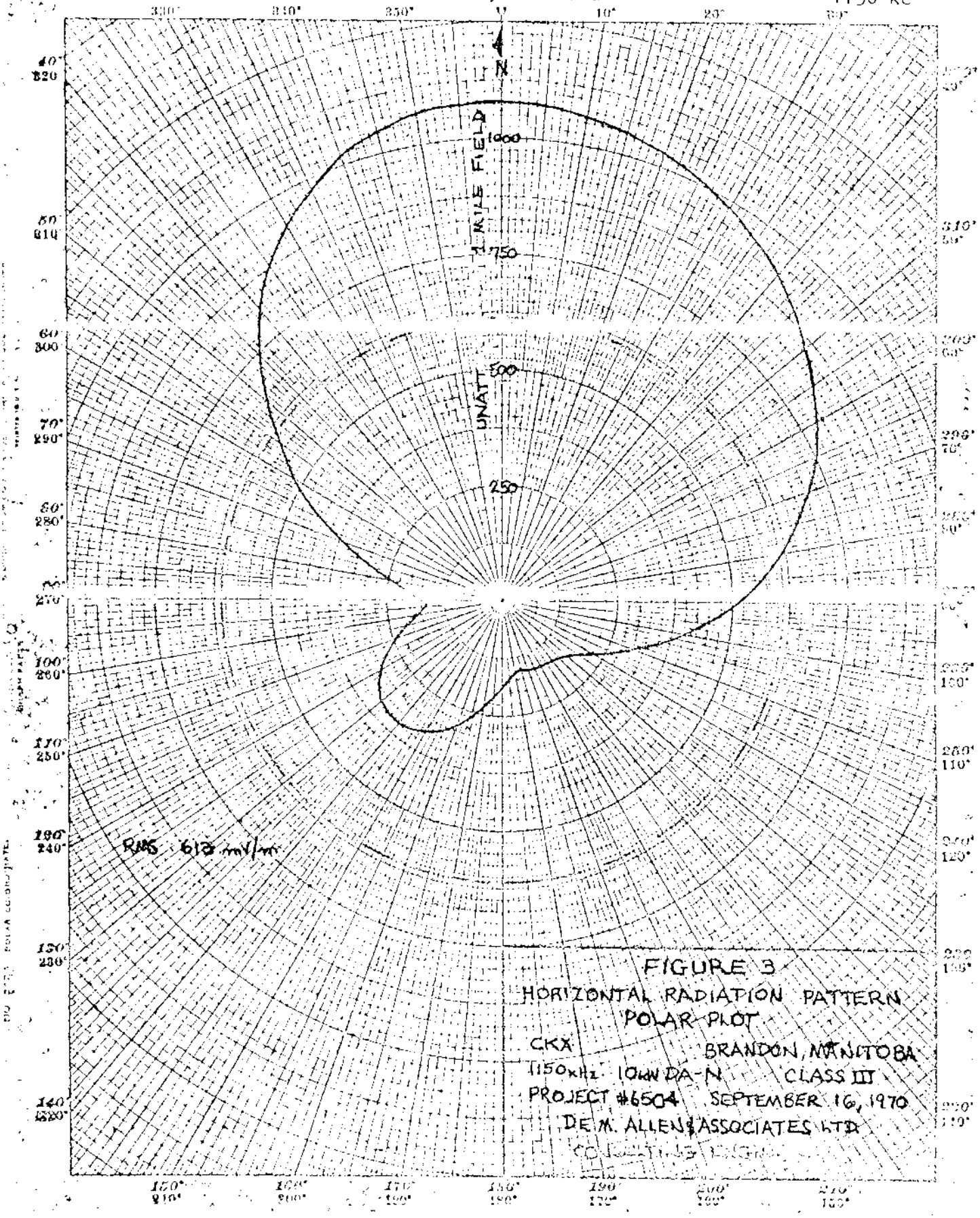
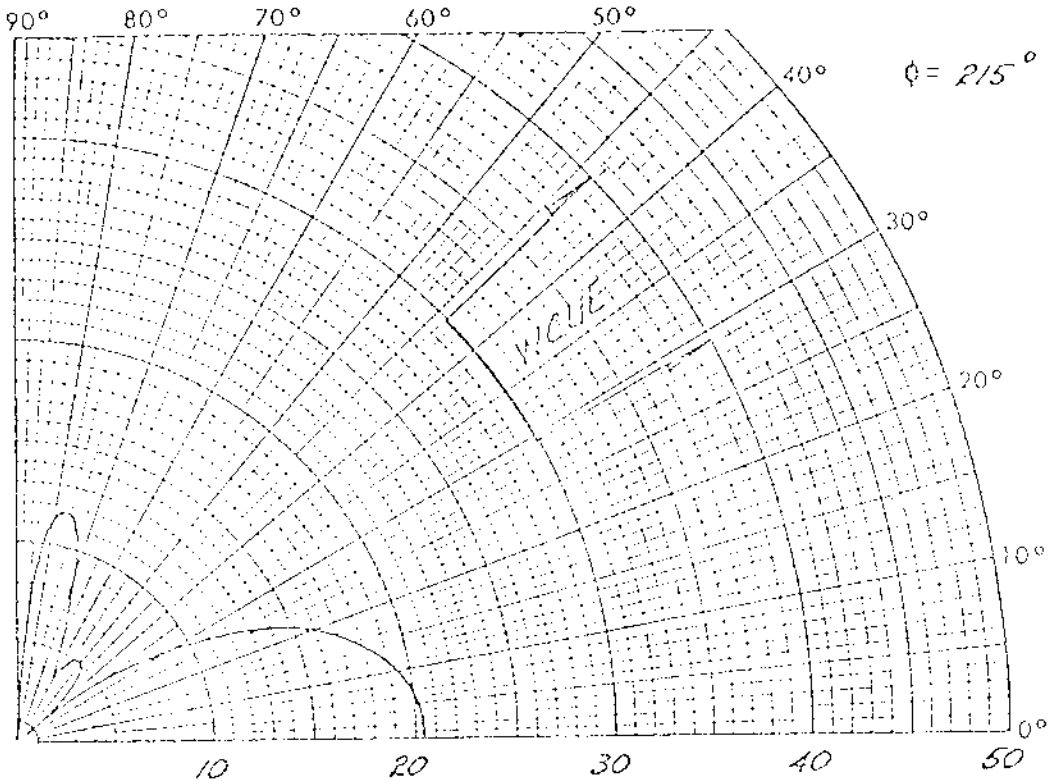


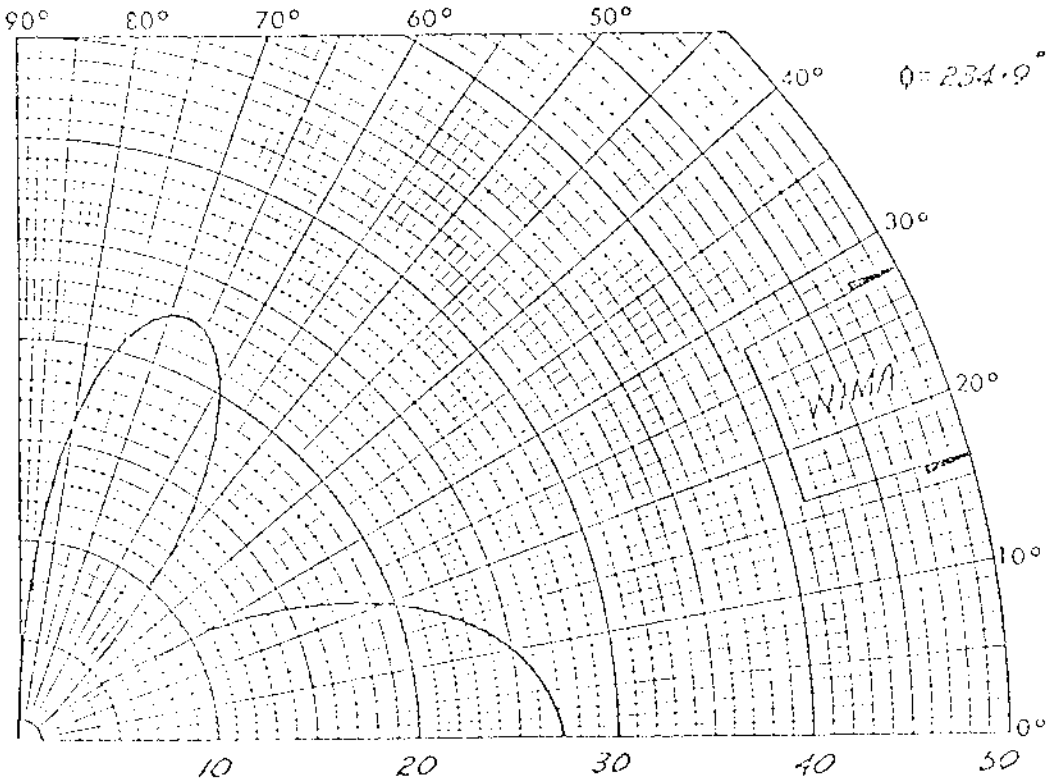
FIGURE 3
HORIZONTAL RADIATION PATTERN
POLAR PLOT

CKX BRANDON, MANITOBA
1150 KHz 10KW DA-N CLASS III
PROJECT #6504 SEPTEMBER 16, 1970
D.E.M. ALLEN & ASSOCIATES LTD
CONSULTING ENGINEERS

CKOC



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

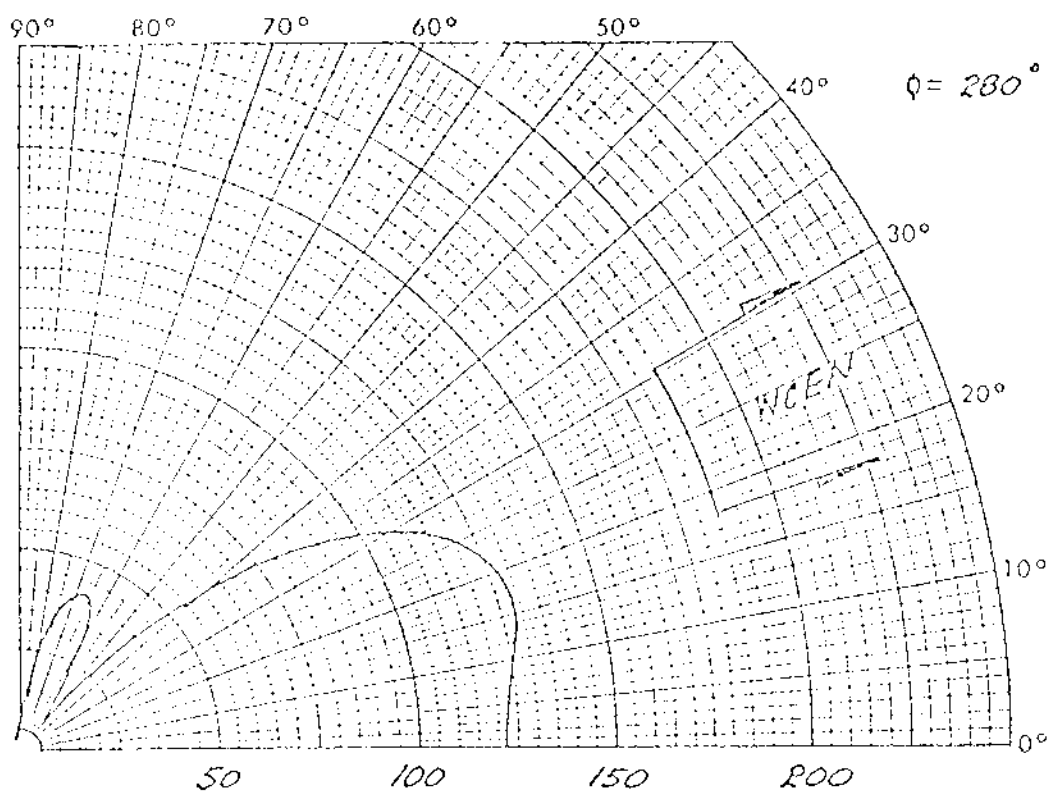
VERTICAL RADIATION PATTERNS

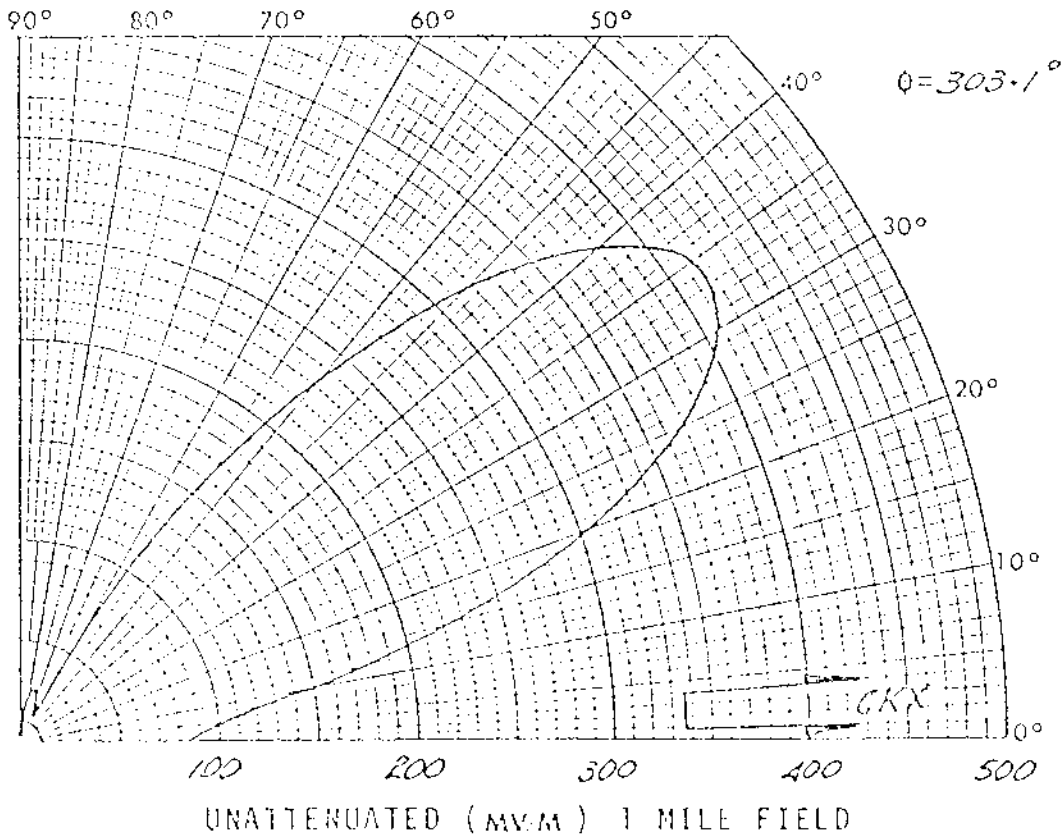
FIGURE 10

CKOC
1150 kHz 50 kW DA-2
PROJECT #14502

HAMILTON, ONTARIO
CLASS III
REV. JANUARY 5, 1979

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





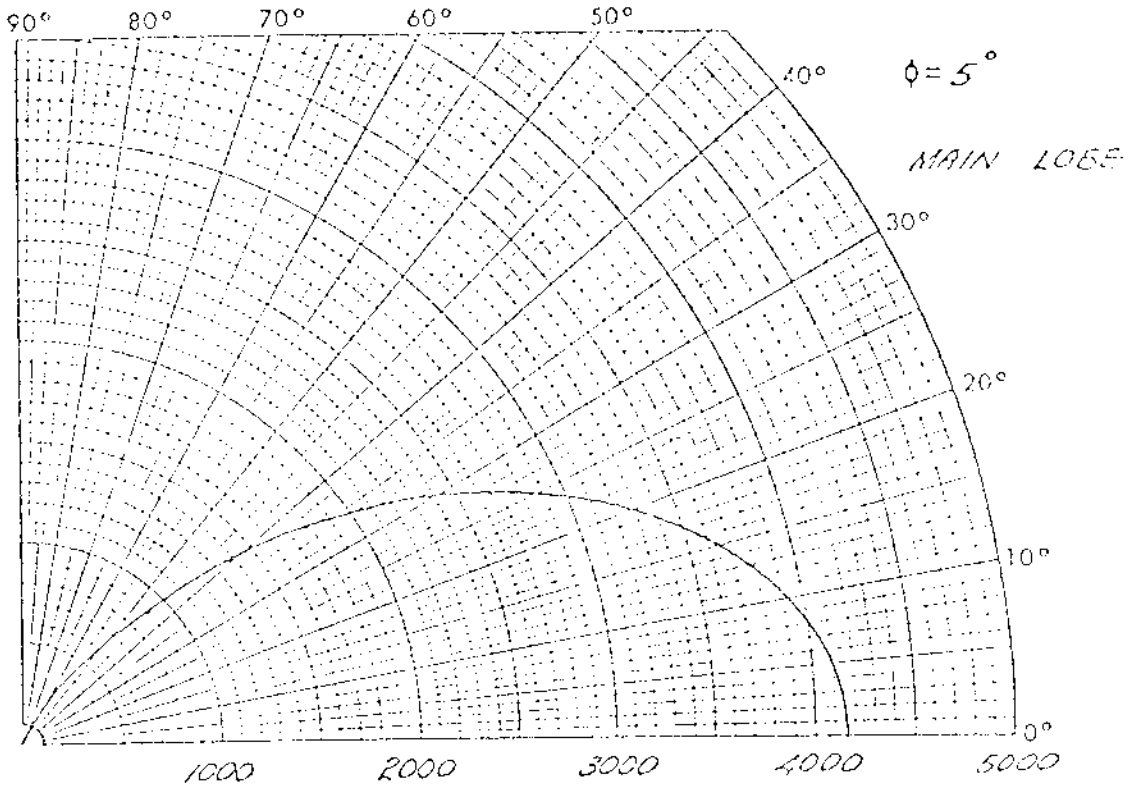
VERTICAL RADIATION PATTERNS

FIGURE 11

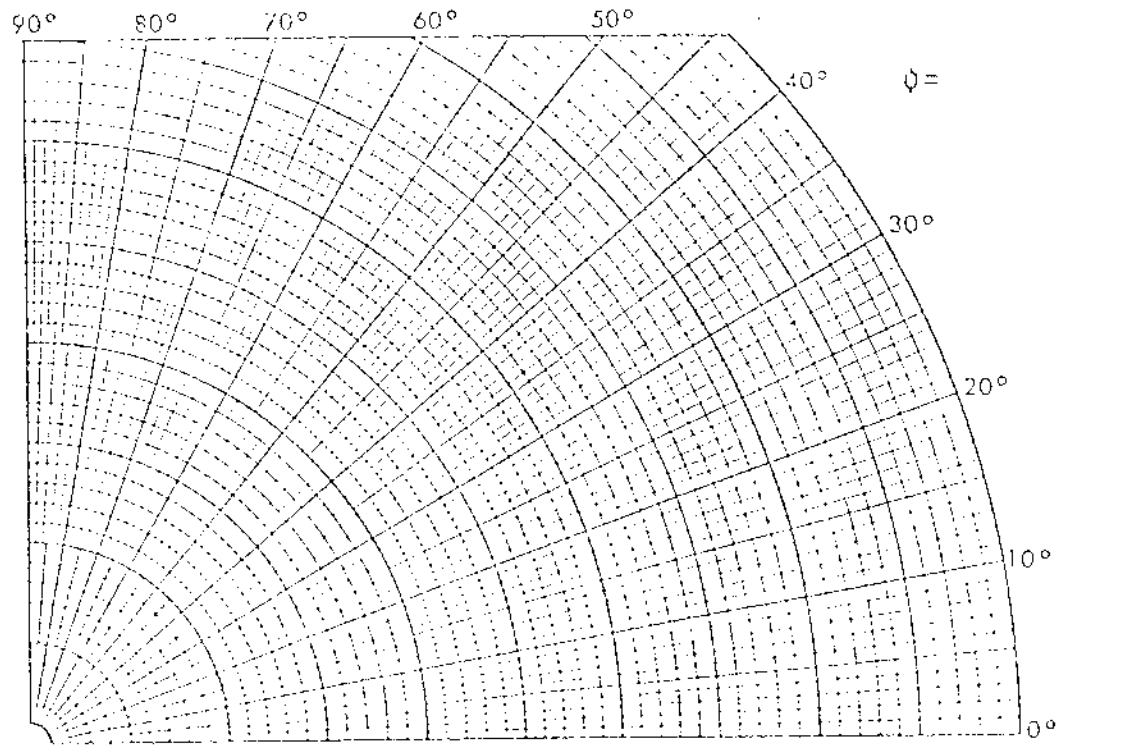
CKOC — HAMILTON, ONTARIO
1150 kHz — 50 kW — DA-2 — CLASS III
PROJECT #14502 — REV. JANUARY 5, 1979

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

CKOC



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

VERTICAL RADIATION PATTERNS

FIGURE 12

CKOC — HAMILTON, ONTARIO
1150 kHz — 50 kW — DA-2 — CLASS IB
PROJECT #14502 — REV. JANUARY 5, 1979

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

CKTR

DESCRIPTION SHEET
(5-27-60g)

Station CKTR 1kw,10kw-LS,DA-2,U,Class III
Three Rivers, Quebec, Canada 1150 KC

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-2

STATION CALL:	CKTR
MAIN STUDIO:	Three Rivers, Quebec.
FREQUENCY:	1150 kc/s
POWER:	Day -10,000 W, 1000 W Night.
CLASS:	III
TIME:	Unlimited
NOTIFICATION REFERENCE:	145 Date April 8, 1960
GEOGRAPHICAL LOCATION:	N.Lat. 46°18'50" W.Lon. 72°31'55"
ANTENNA CHARACTERISTICS:	Three elements, guyed, uniform cross section, base insulated, series feed. (Elements top loaded to effect an estimated electrical height of 72 degrees.

ELEMENT	SOUTH	CENTRE	NORTH
HEIGHT	143.0'*	143.0'*	143.0'*
SPACING	ref.	182.5' 76.6°	395' 166°
DAY RATIO	1.0		0.6
PHASING	0°		-42°
NIGHT RATIO	1.0	1.8	1.0
PHASING	116°	0°	-114°
BEARING	ref	340°	340°

GROUND SYSTEM	120 radials per tower, #10 AWG bare soft copper wire, uniformly spaced, depth approximately 8 inches. Radials bonded to soft copper strap at tower bases. Maximum radial length 343 feet.
TOP LOADING	Each element top loaded with three wires each 40.5 feet long at 45° to vertical.
PREDICTED R.M.S.	180 mv/m at 1 mile for 1 kw Night 575 mv/m at 1 mile for 10 kw Day

GM 21/2/58 #5

F145

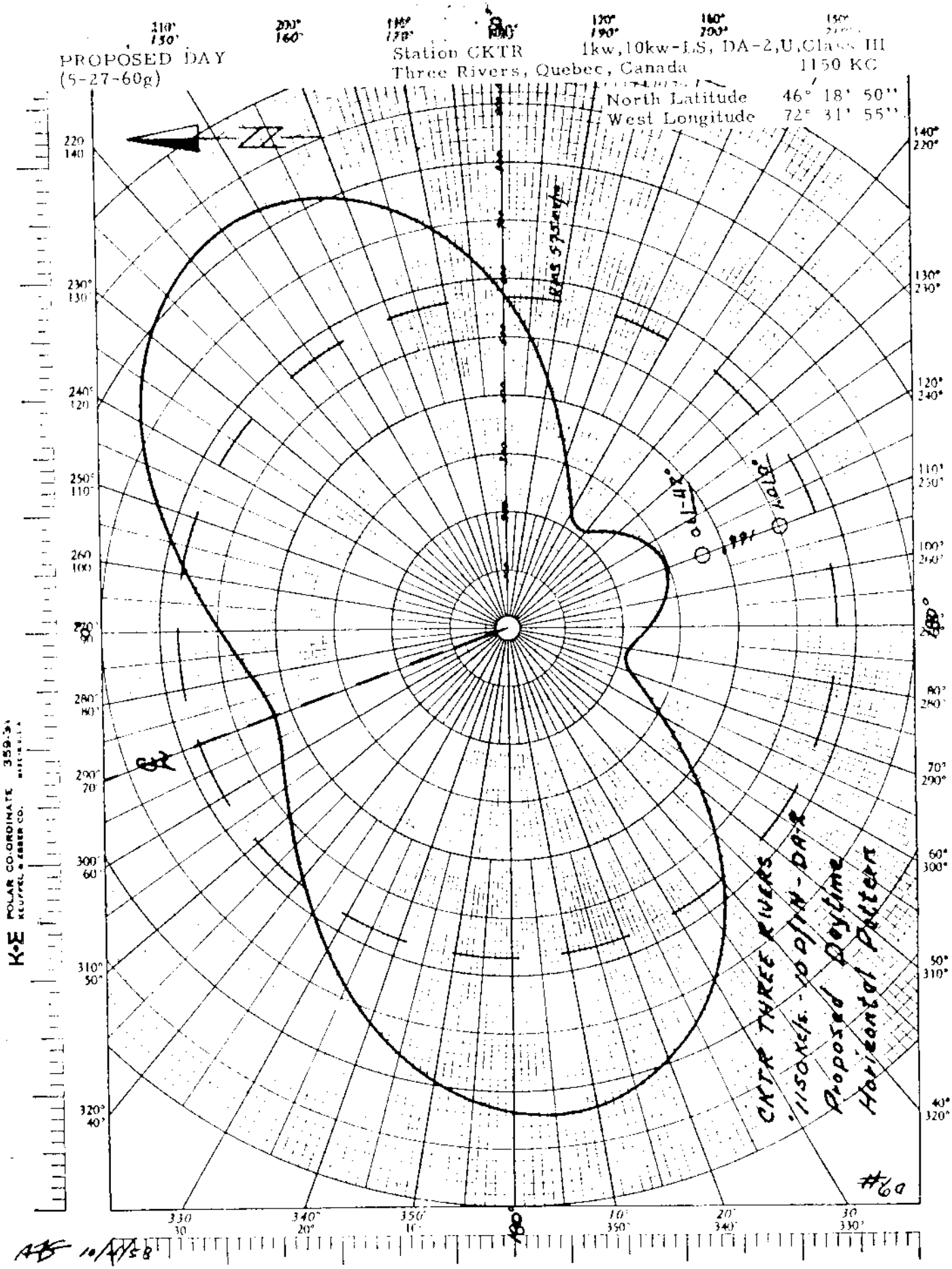
CKTR

PROPOSED DAY
(5-27-60g)

Station CKTR
Three Rivers, Quebec, Canada

1kw,10kw-LS, DA-2,U,Class III
1150 KC

North Latitude 46° 18' 50"
West Longitude 72° 31' 55"



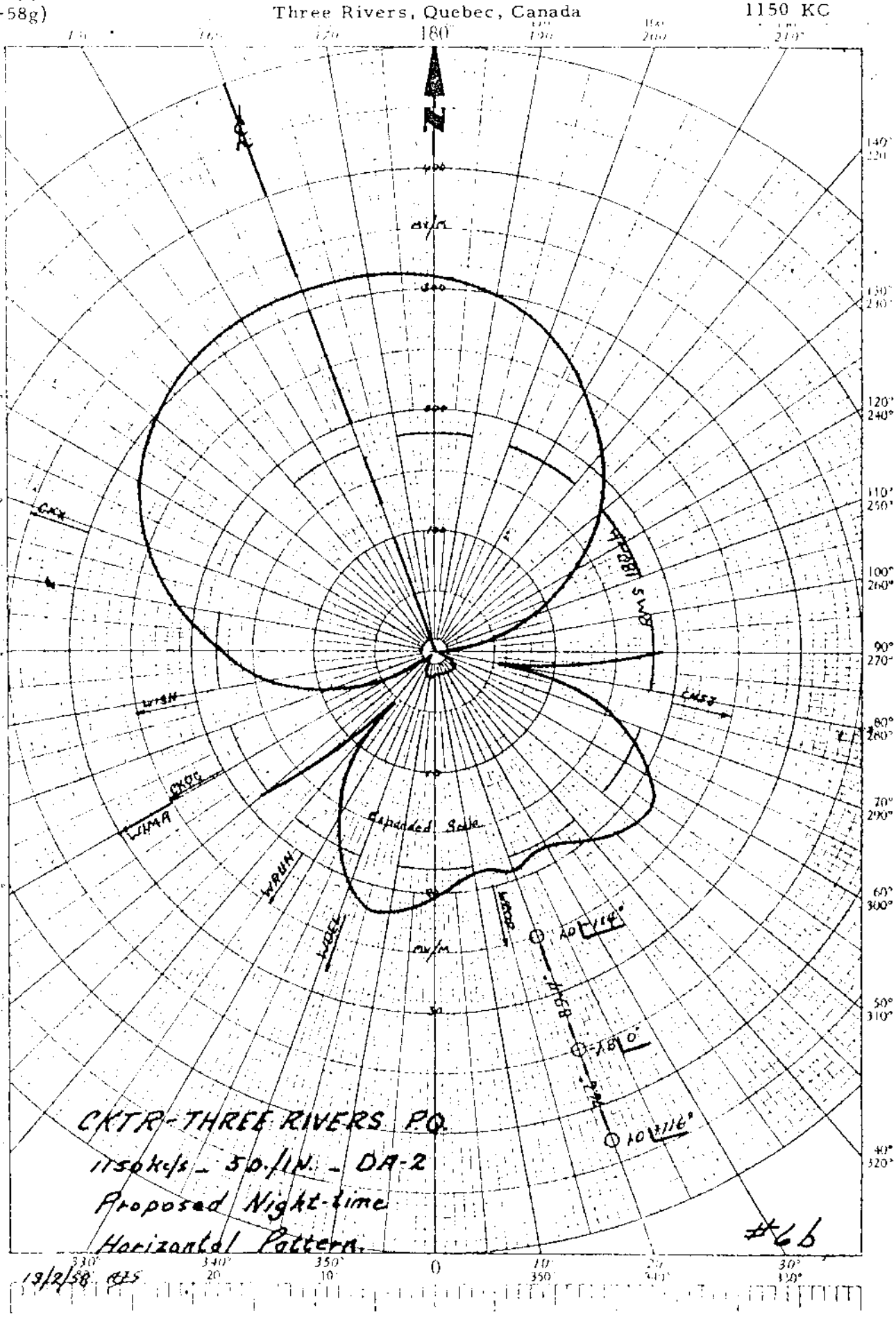
AB 10/21/58

CKTR

PROPOSED NIGHT
(7-8-58g)

Station CKTR
Three Rivers, Quebec, Canada

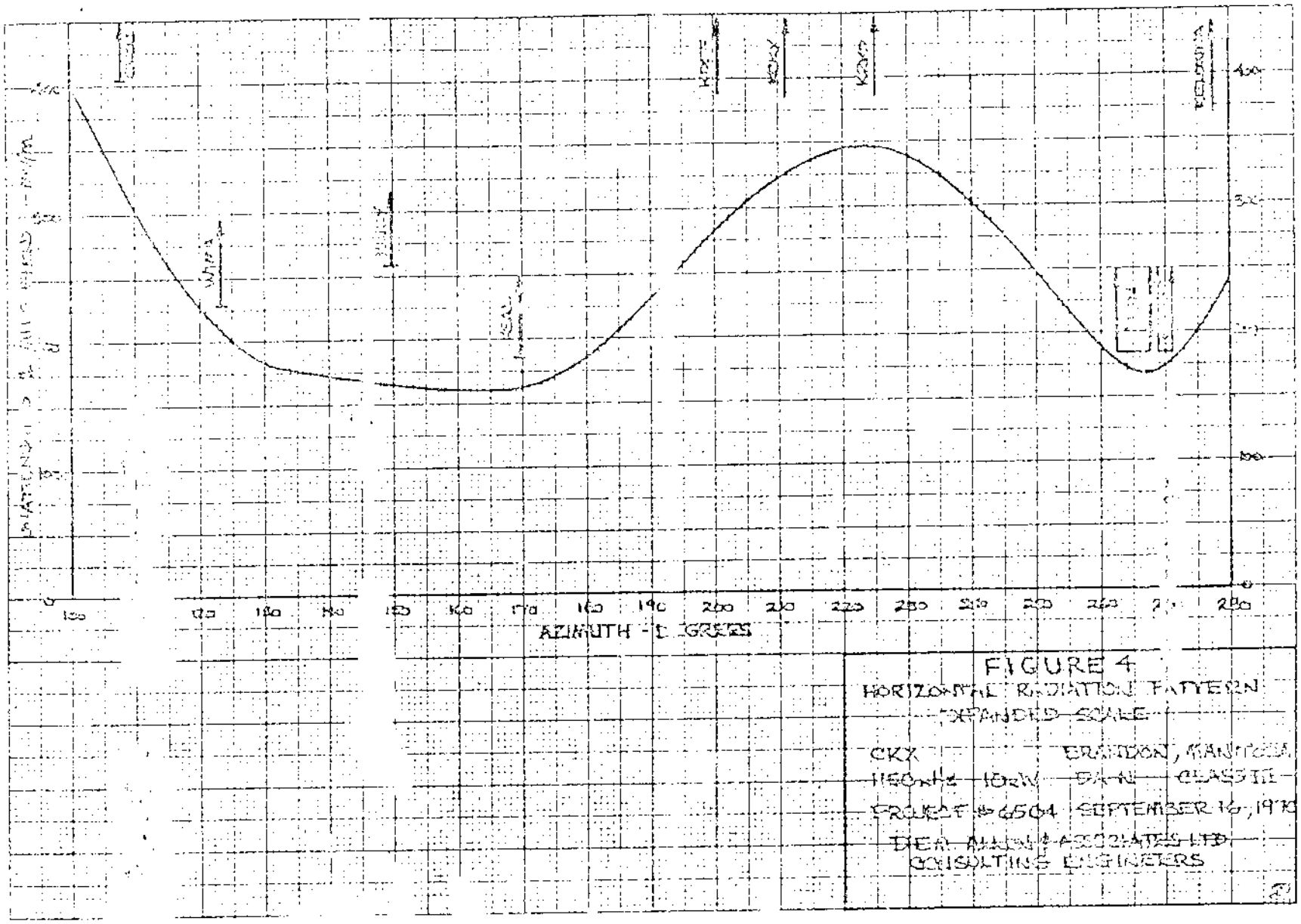
1kw,5kw, DA-2,U, Class III
1150 KC



Proposed Night Nulls
(2-22-71ct)

Station X
Brandon, Manitoba

10kw,DA-N,U,Class III
1150 kc



CKX

CKX

DESCRIPTION SHEET
(1-29-60g)

Station CFX 10/1kw, U, Class III
Brandon, Manitoba, Canada 1150 KC

3

ANTENNA DESCRIPTION SHEET

OMNI-DIRECTIONAL

STATION CALL:	CKX
PLACE:	Brandon, Manitoba.
FREQUENCY:	1150 kc/s
POWER:	Day 10000 Watts - 1000 Watts Night
CLASS:	III
Tube:	Unlimited
MODIFICATION REQUEST:	#141 DATE...December 4, 1959

TOWER LOCATION:

N. LAT. 49°50'28"
W. LONG. 100°03'19"

TOWER DESCRIPTION:

One element, guyed, uniform cross section, base insulated, series feed.

HEIGHT:

190 feet (60°)

GROUND SYSTEM:

120 radials, .10 AWG bare soft copper wire, uniformly spaced, depth approximately 6 inches. Radials bonded to a soft copper strap at tower base. Maximum radial length 342 feet.

FIELD STRENGTH:

167 mv/m at 1 mile for 1 kw.
502 mv/m at 1 mile for 10 kw.

OPERATION:

One element

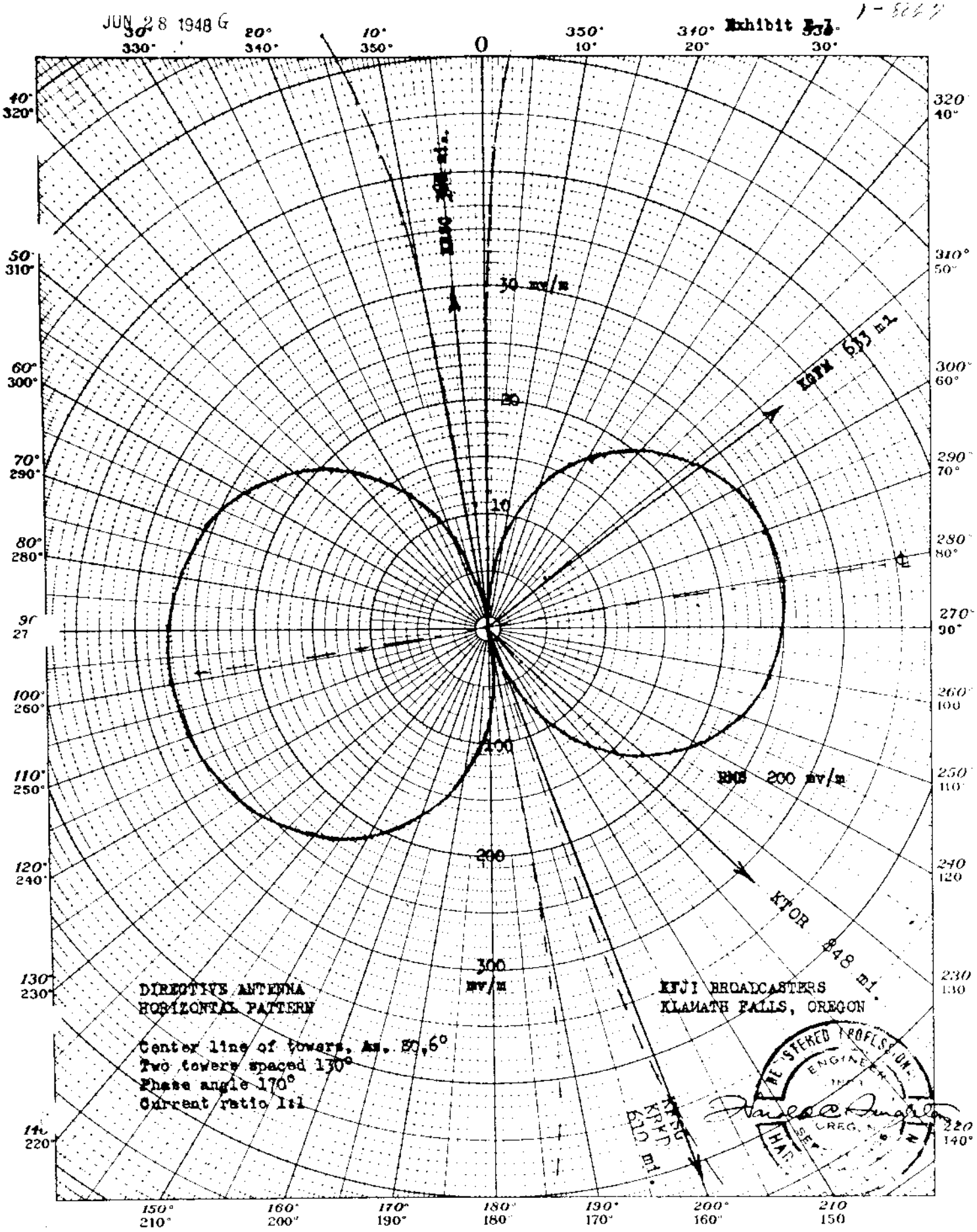
1-29-60

KAGO

1-5669

JUN 28 1948 G

Exhibit E-1



PRINTED IN U. S. A.

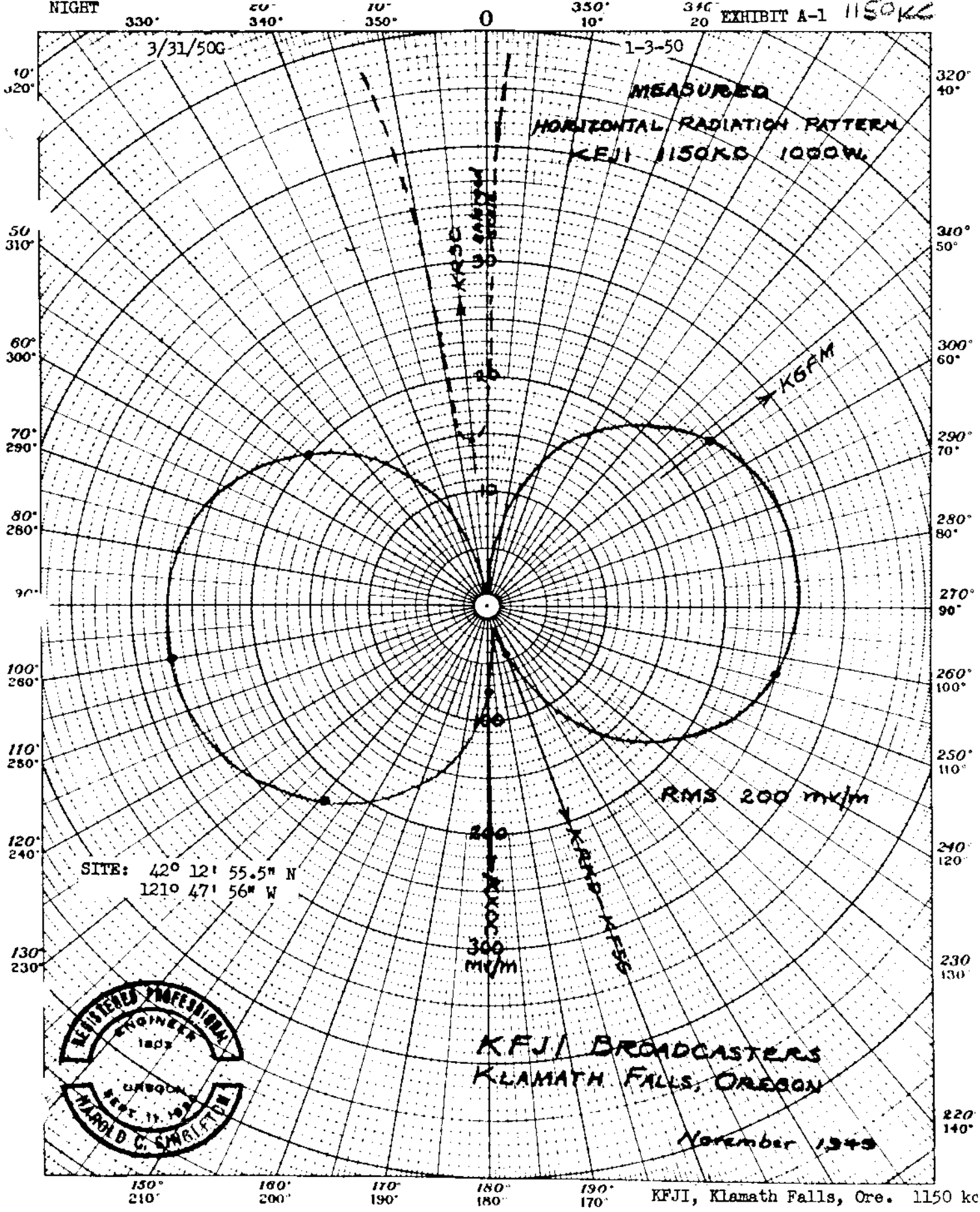
KAGO

MEASURED
NIGHT

KFJI, KLAMATH FALLS, OREGON

1kw, 5kw

EXHIBIT A-1 1150 KC



KFJI, Klamath Falls, Ore. 1150 kc

KAGO

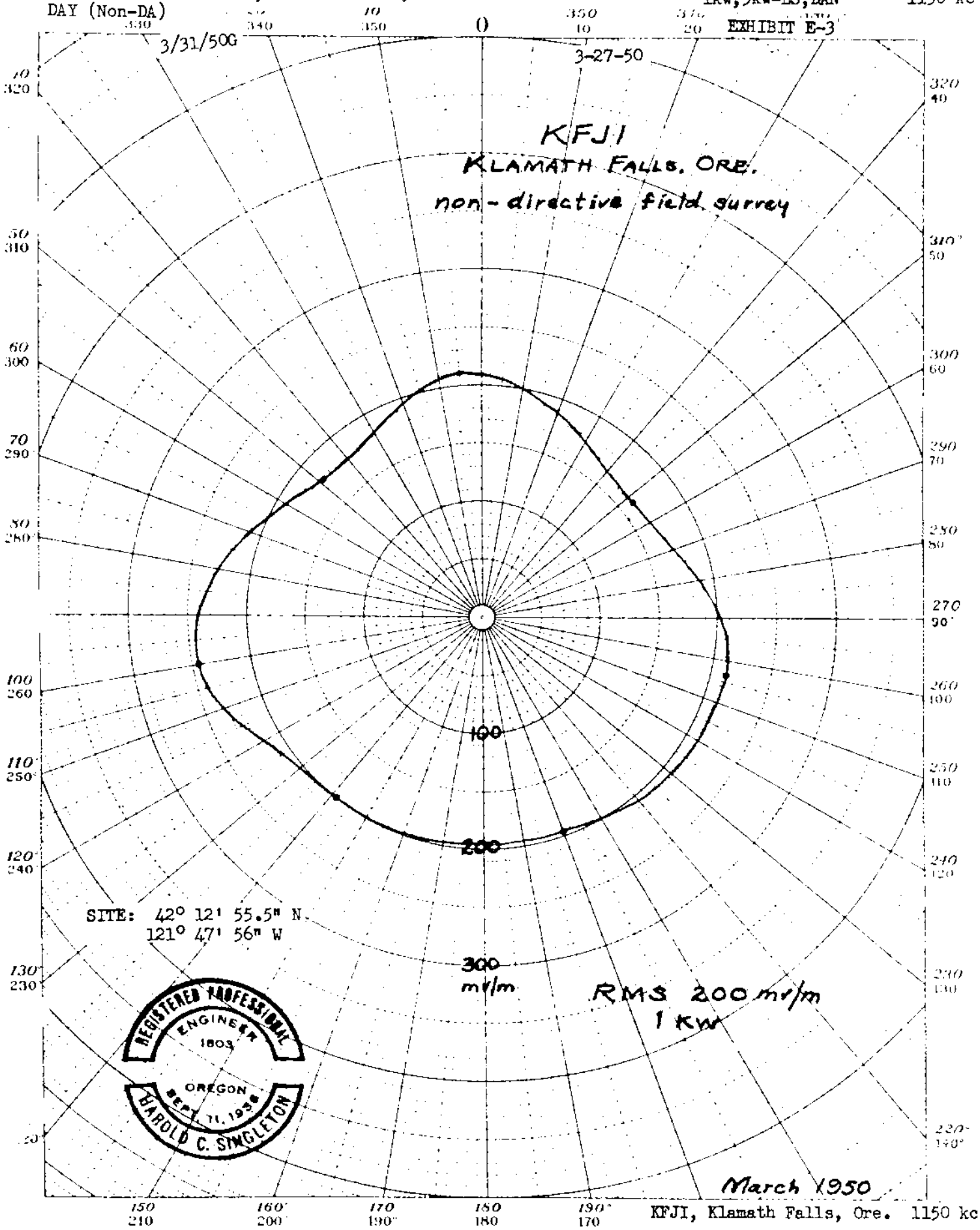
MEASURED
DAY (Non-DA)

KFJI, KLAMATH FALLS, OREGON

1kw,5kw-LS,DAN

1150 kc

EXHIBIT E-3



KFJI, Klamath Falls, Ore. 1150 kc

KAGO

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KAGO

Main Studio: Kkamath Falls, Oregon

Frequency: 1150 kHz

Power: 1 kW Night 5 kW Day

Notification List No: 1701

Date: September 8, 1976

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 42° 12' 56"
West Longitude: 121° 47' 56"

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:	W(#2)	E(#1)	
HEIGHT ABOVE INSULATORS:	230'	230'	(96.77°)
PHASING:	-170°	0°	
FIELD RATIO:	0.75	1.0	

SPACING AND ORIENTATION: Towers are spaced 310' (130.4°) on a line bearing 260.6° true.

GROUND SYSTEM: 120-340' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS
Day	431.6 mv/m
Night	193.7 mv/m

(Over)

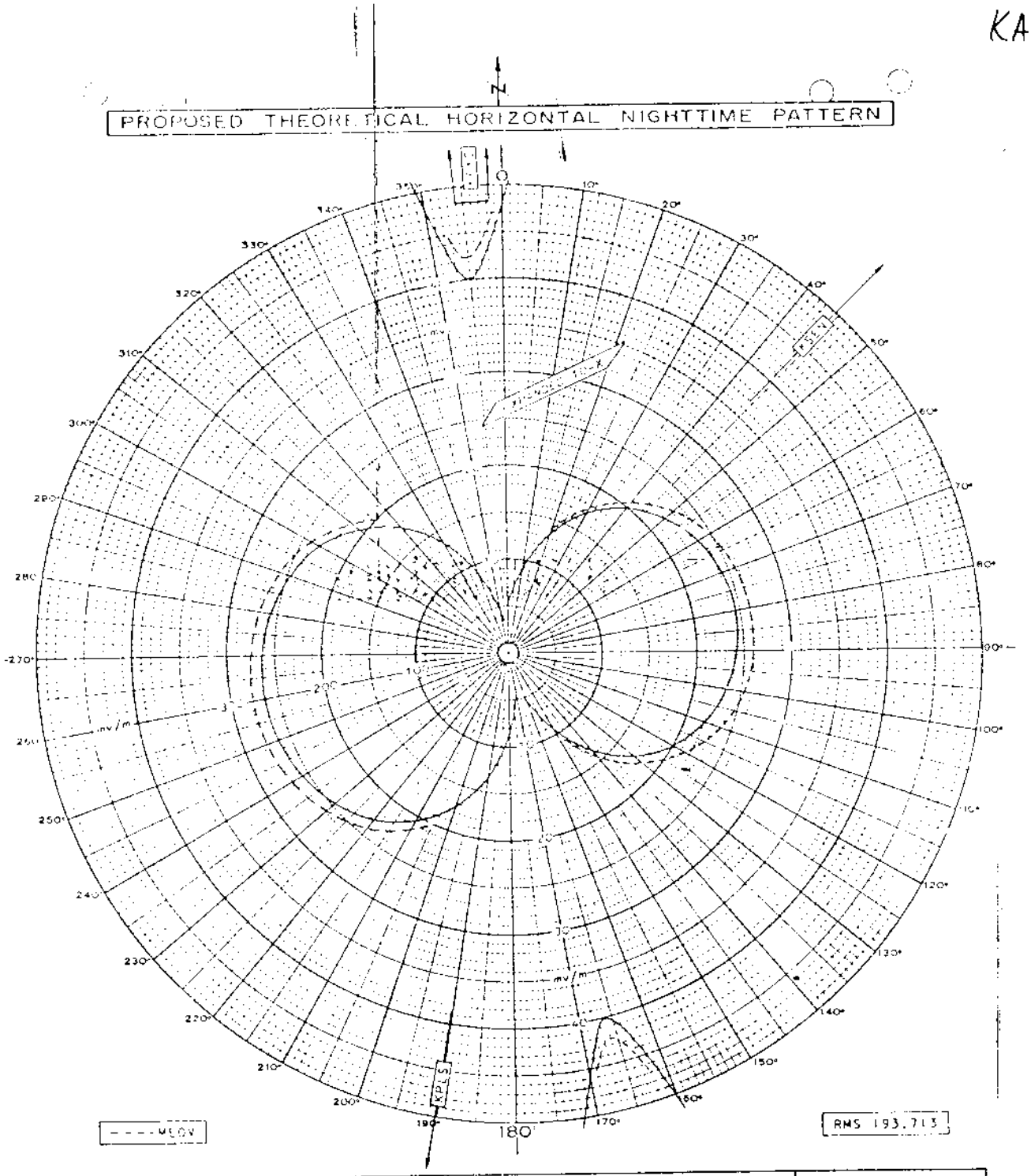
KAGO

This notification concerns only minor changes in the Nighttime operation of the station with Daytime operation continued as previously notified. Note that the antenna height shown as 97.5 degrees on the attached horizontal radiation pattern is in error.

CTR NO: 30885A4

KAGO

PROPOSED THEORETICAL HORIZONTAL NIGHTTIME PATTERN



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS								STATION DATA
	TOWER No	ELECTRICAL HEIGHT	TRUE TOWER ORIENTATION	SPACING	PHASING	HORIZONTAL FIELD	FIELD RATIO	ELEV ANGLE	ELEVATION RMS FIELD
		G°	θ°	S°	ψ°	ε°	F	θ°	E_θ
	1	97.5	0	0	0		1.0	0	
	2	97.5	260.6	130	-170		0.75	0	
	3							20	
	4							30	
	5							40	
	6							50	
	7							60	
	8							70	
	9							80	
	10							E_d*	mv/m
G = 230'	DAYTIME OPERATION ☐			NIGHTTIME OPERATION ■				P_d*	kw

CALL KAGO
FREQUENCY 1150 kc
POWER 1.0 kw
TIME OF OPERATION NIGHT
TYPE OF OPERATION DA
DAYTIME TOWERS
NIGHTTIME TOWERS 2
No RADIALS PER TOWER
LENGTH OF RADIALS ft
GROUND SCREEN DIMENSION
LAT 42° 12' 56"
LONG 121° 47' 55"
SUPERSEDES
PATTERN No

GEORGE LYNCH, CONSULTING ENGINEER
MODESTO, CALIFORNIA

RADIO STATION KAGO
KLAMATH FALLS, OREGON

FIGURE B

REVISED 5/76

APPLICATION TO MODIFY DA-N PATTERN ~ 1150 KHZ, 1 KW/5 KW LS DA-N ~ MAY 1976

KAYO
1150KHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KAYO

Main Studio: Seattle, Washington

Frequency: 1150 kHz

Power 5kw Night 5 kw Day

Notification List No. 1789

Date: September 12, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 47° 35' 33"
West Longitude: 122° 11' 31"

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:	C(#1)	NE(#2)	SW(#3)
HEIGHT ABOVE INSULATORS:	240'	240'	240' (101°)
NIGHT PHASING:	0°	169.3°	-152.2°
NIGHT FIELD RATIO:	1.0	0.7	1.18

SPACING AND ORIENTATION: With Tower #1 as reference, Tower #2 is spaced 199.6' (84°) on a line bearing 50° true and Tower #3 is spaced 199.6' (84°) on a line bearing 249.5° true.

GROUND SYSTEM: 120 - 215' or to property edge equally spaced copper radials about each tower.

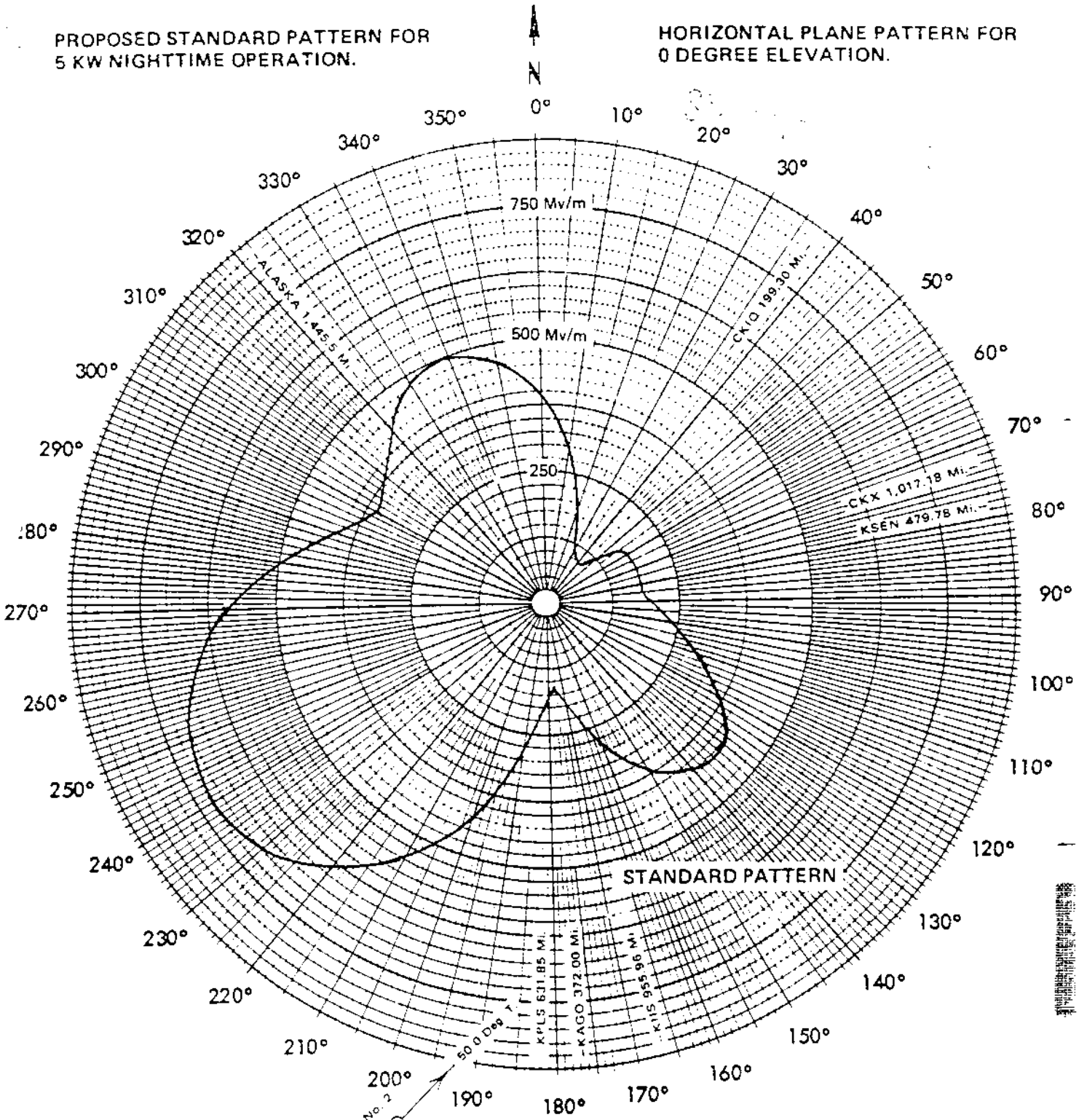
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

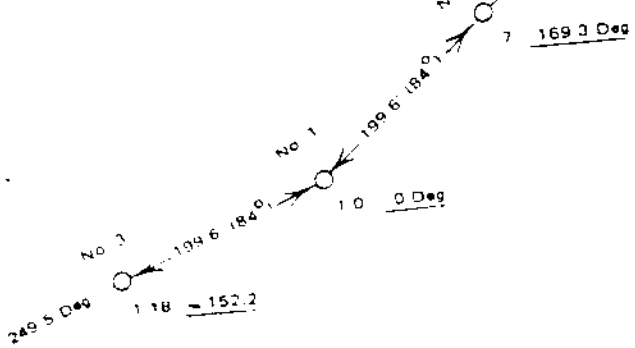
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Night	394 mv/m	767.56 mv/m	413.70 mv/m

KAYO
1150KHZ

PROPOSED STANDARD PATTERN FOR
5 KW NIGHTTIME OPERATION.

HORIZONTAL PLANE PATTERN FOR
0 DEGREE ELEVATION.





TOWER HEIGHT G = 240 feet (101.00 Degrees)
RMS (Theo.) = 394.00 Mv/m
RMS (Standard) = 413.70 Mv/m
RSS = 767.56 Mv/m

CONSULTING ENGINEER ■ KENNETH WILLIAMS, Jr. PE

321 SOUTH 11Th. St. • TACOMA, WASHINGTON 98402

KAYO 1150 Khz.
Seattle, Washington

(Amended February 18, 1980)

KBAI
1150 kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KBAI

Main Studio: Morro Bay, California

Frequency: 1150 kHz

Power: 5kw Night 5kw Day

Notification List No. 1785

Date: November 16, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 21' 34"
West Longitude: 120° 49' 29"

ANTENNA CHARACTERISTICS

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

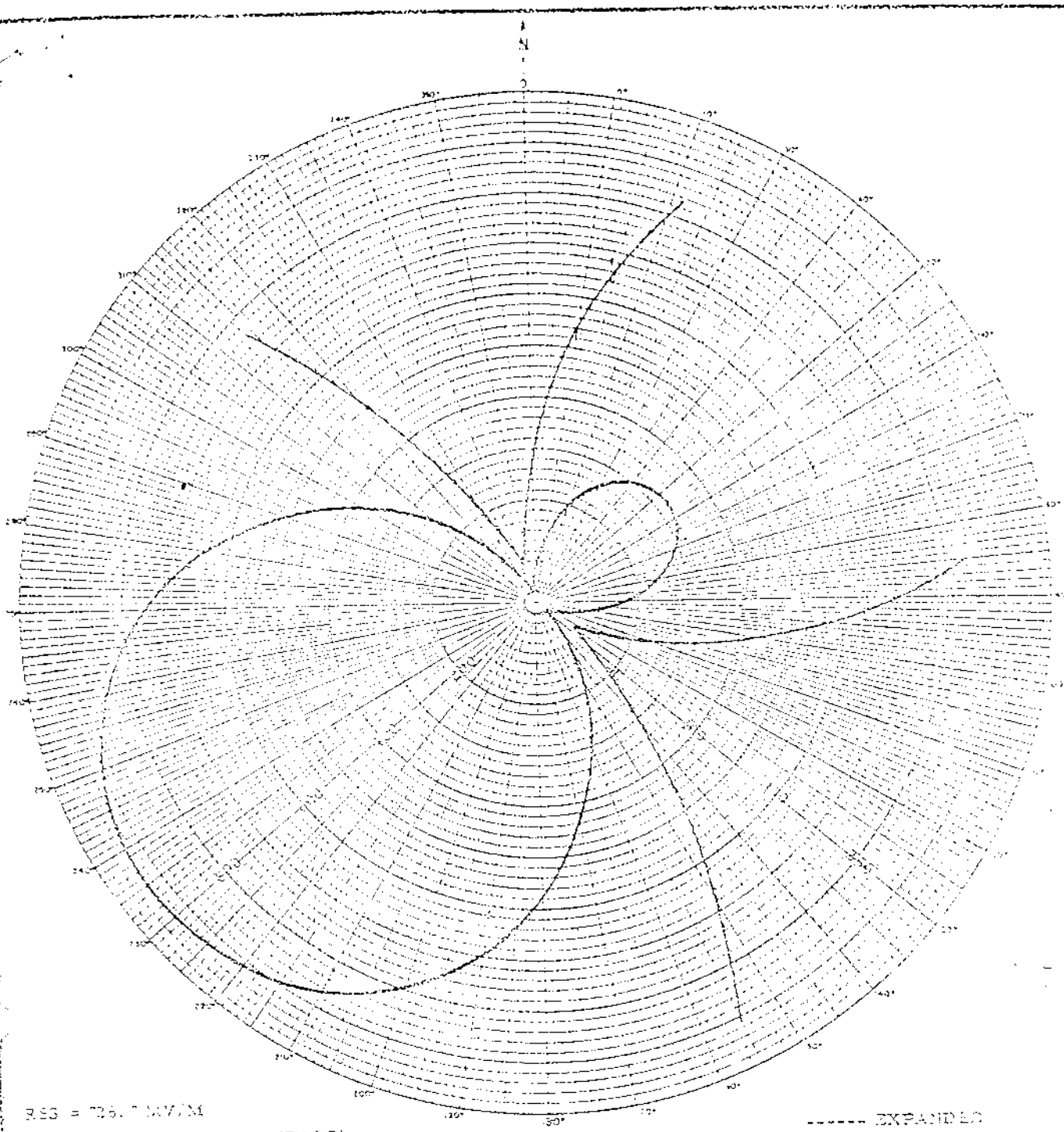
TOWER:	SW(#1)	C(#2)	NE(#3)
HEIGHT ABOVE INSULATORS:	220'	220'	220' (92.6°)
PHASING:	0°	+150°	-60.1°
FIELD RATIO:	1.0	1.58	0.62
SPACING AND ORIENTATION:	Towers are spaced 213.8' (90°) on a line bearing 53° true.		

GROUND SYSTEM: 120-214' equally spaced copper radials plus 120-50' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

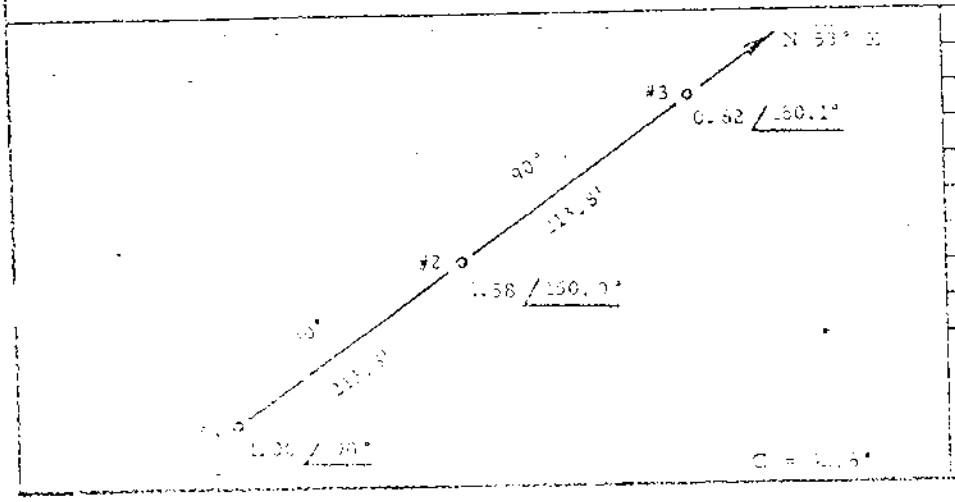
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	427.1 mv/m		
Night	466.7 mv/m	726.7 mv/m	490.43 mv/m

KBA-1
1150kHz
DA-N



HORIZONTAL RADIATION PATTERN

FIGURE 1-A



APPLICANT	Radio Station [illegible]
LOCATION	Morro Bay, California
FREQUENCY	1150 KC/S
POWER	5 KW
LATITUDE	35 DEG 21 MIN [illegible]
LONGITUDE	120 DEG 19 MIN [illegible]
WHEN USED	DAYTIME ONLY
R.M.S. FIELD	448.7 MV/M at 1 Meter
DATE	March 20, [illegible]

Robert L. Pierson

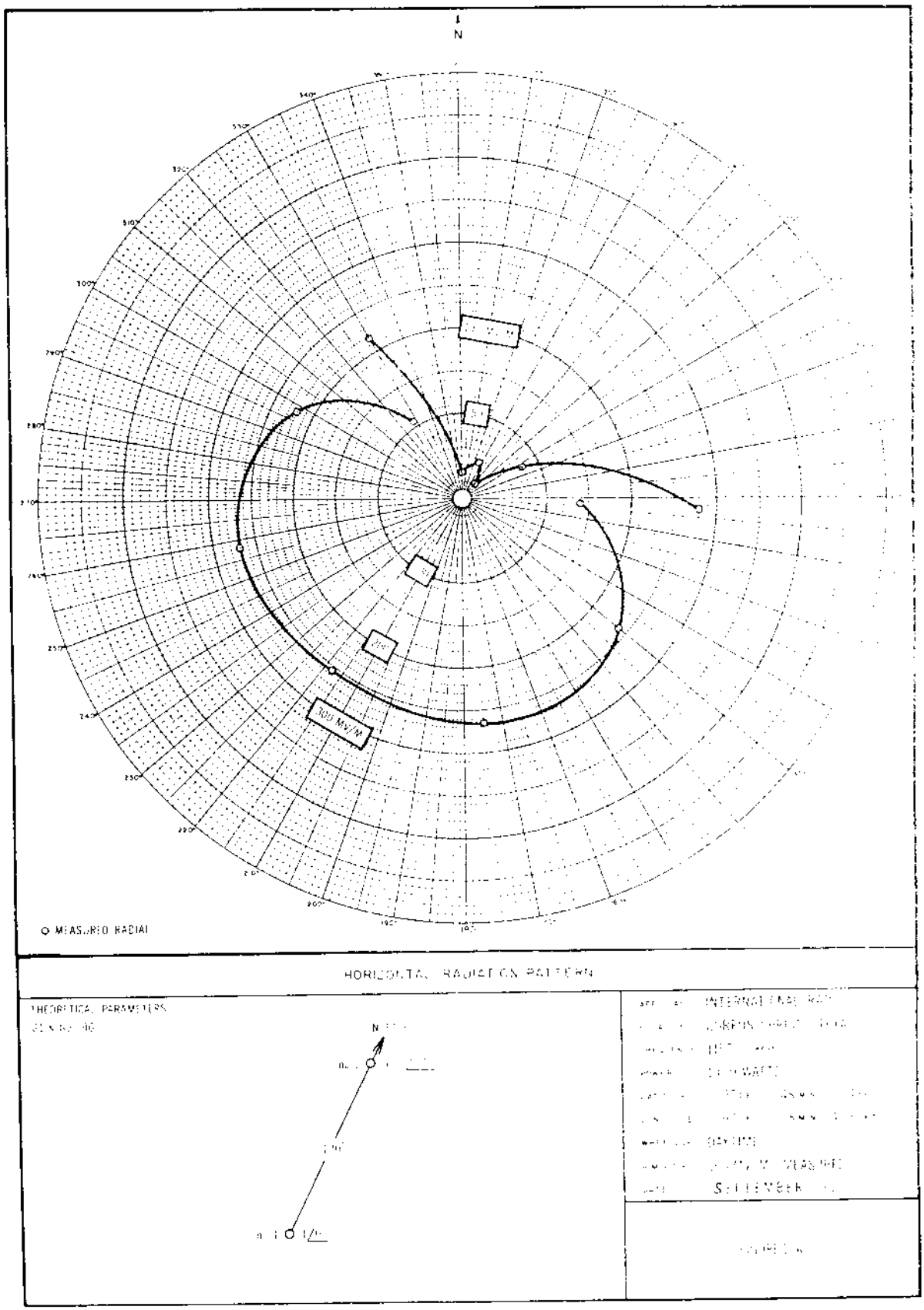
Washington, D.C.

KCCT

Measured Day
(2-22-71ct)

Station KCCT
Corpus Christi, Texas

1kw,DA-D,D
1150 kc



FCC File No.BL-12781
Accepted 2-11-71

Station KCCT
Corpus Christi, Texas

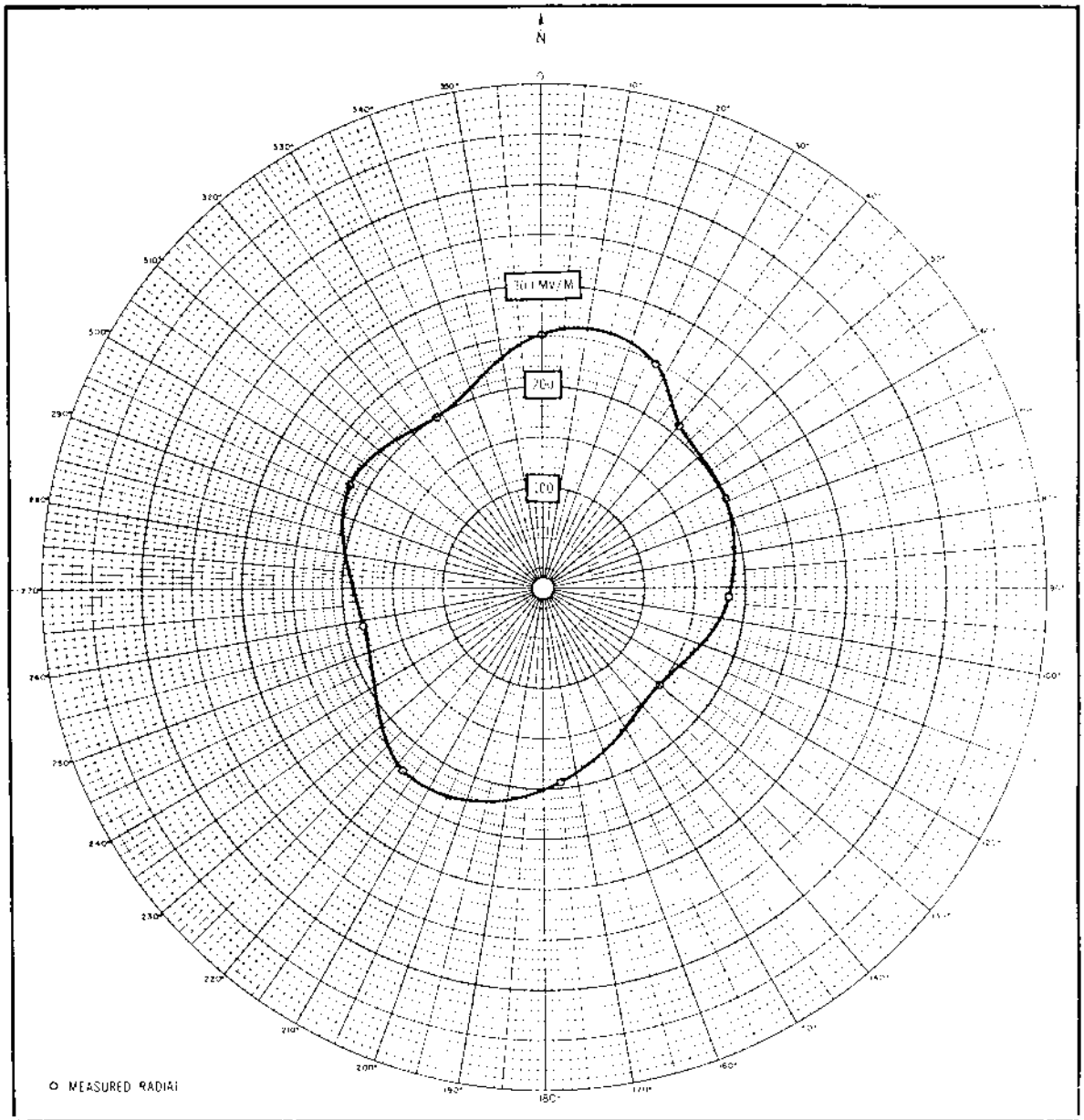
1150 kc

KCCT

Measured Non-DA
(2-22-71ct)

Station KCCT
Corpus Christi, Texas

1kw,DA-D,D
1150 kc



HORIZONTAL RADIATION PATTERN

NON-DIRECTIONAL SURVEY

APPLICANT INTERNATIONAL RADIO CO
LOCATION CORPUS CHRISTI TEXAS
FREQUENCY 1150 KCS
POWER 1000 WATTS
LATITUDE 27 DEG 44 MIN 14 SEC
LONGITUDE 97 DEG 28 MIN 43.8 SEC
WHEN USED NON DIRECTIONAL SURVEY
AVG FIELD 203 MV/M (MEASURED)
DATE SEPTEMBER 1970

FIGURE 1-B

FCC File No.BL-12781
Accepted 2-11-71

Station KCCT
Corpus Christy, Texas

1150 kc

NCC 1
2

93866

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (New)

Main Studio: Corpus Christi, Texas

Frequency: 1150 kc

Power: 1 kw

Notification List No. 518

Date: August 5, 1953 Class III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 27° 52' 49"

West Longitude: 97° 27' 06"

ANTENNA CHARACTERISTICS

Authorized for daytime operation.
Number of elements: two
Type of elements: Series-fed, uniform cross-section, guyed vertical steel towers.

TOWER:	S.W.(#1)	N.E.(#2)
HEIGHT ABOVE INSULATORS:	90°	90°
PHASING:	0°	93.1°
FIELD RATIO:	1.0	0.8

SPACING AND ORIENTATION: Elements spaced 90° on a line bearing 40° True.

GROUND SYSTEM: 120 - 214' equally spaced radials plus 120 - 50' interspaced radials about each tower base. Radials are shortened and bonded to a transverse strap along intersections between towers.

Predicted effective Field: 190 mv/m (at rated power)

KCCT

Proposed Day
(12-27-68ct)

Station KCCT
Corpus Christi, Texas

1kw,DA-D,D
1150 kc

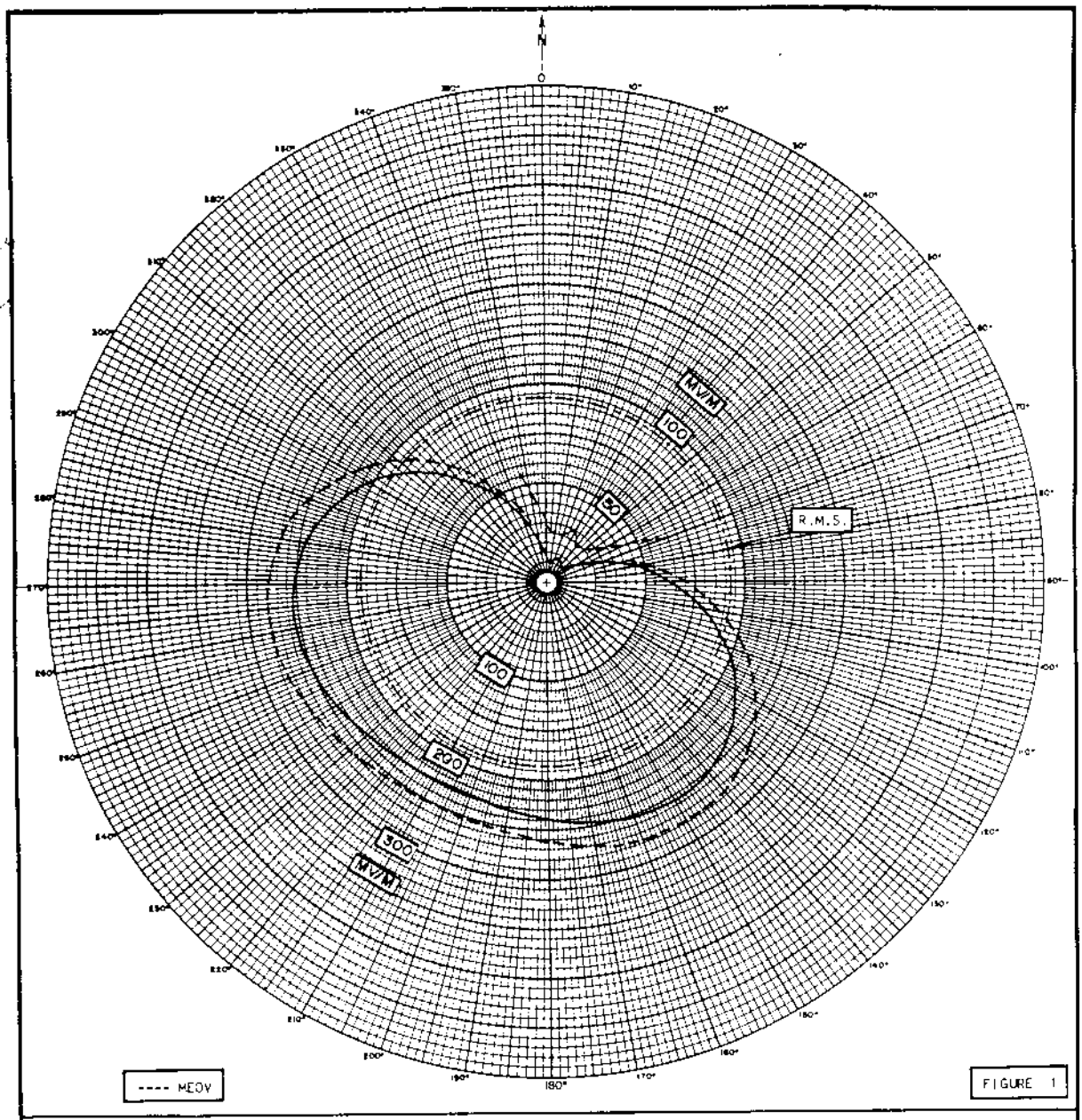
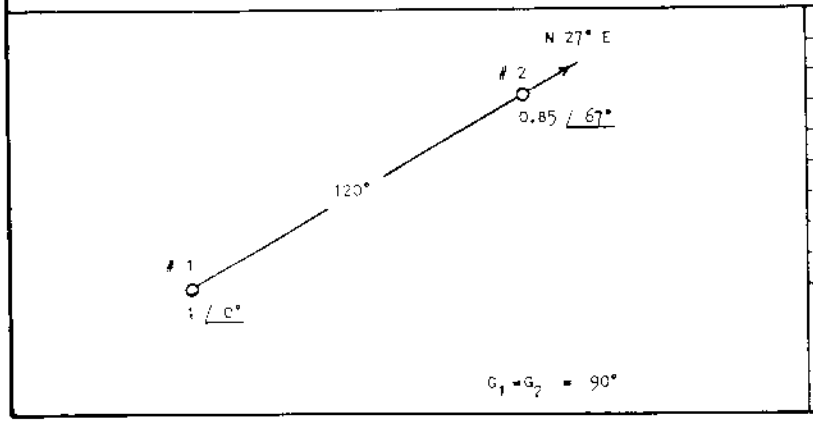


FIGURE 1

HORIZONTAL RADIATION PATTERN



APPLICANT	KCCT
LOCATION	CORPUS CHRISTI, TEXAS
FREQUENCY	1150 KC/S
POWER	1000 WATTS
LATITUDE	27 DEG 48 MIN 1.4 SEC.
LONGITUDE	97 DEG 28 MIN. 43.8 SEC
WHEN USED	DAYTIME
R.M.S. FIELD	186.3
DATE	OCTOBER 1968

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

FCC File No.BP-18415
Accepted 12-19-68

Station KCCT
Corpus Christi, Texas

1150 kc

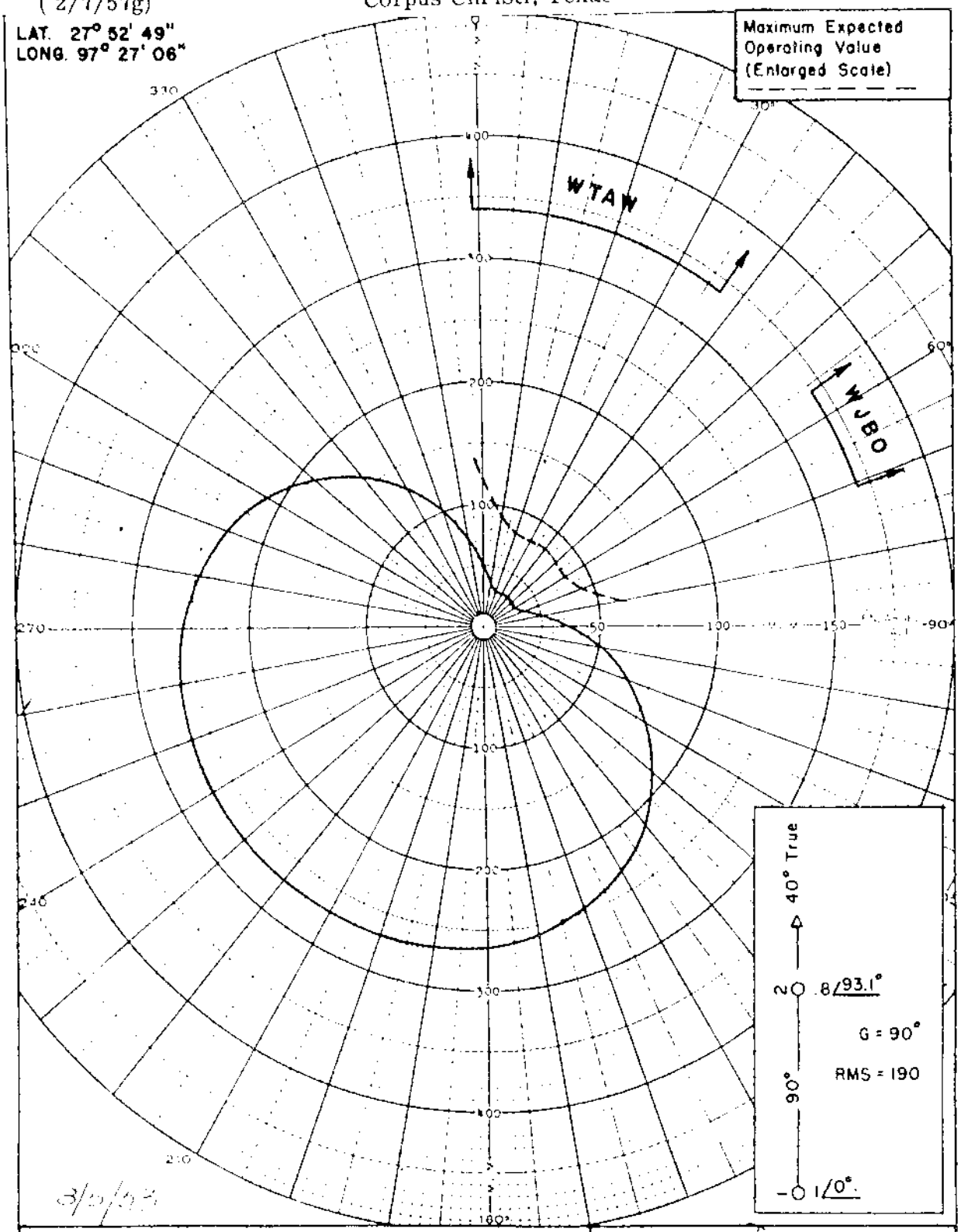
KCCT

PROPOSED DAY
(2/7/57g)

LAT. 27° 52' 49"
LONG. 97° 27' 06"

Station KCCT
Corpus Christi, Texas

1KW, DA-D,D
1150 KC



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

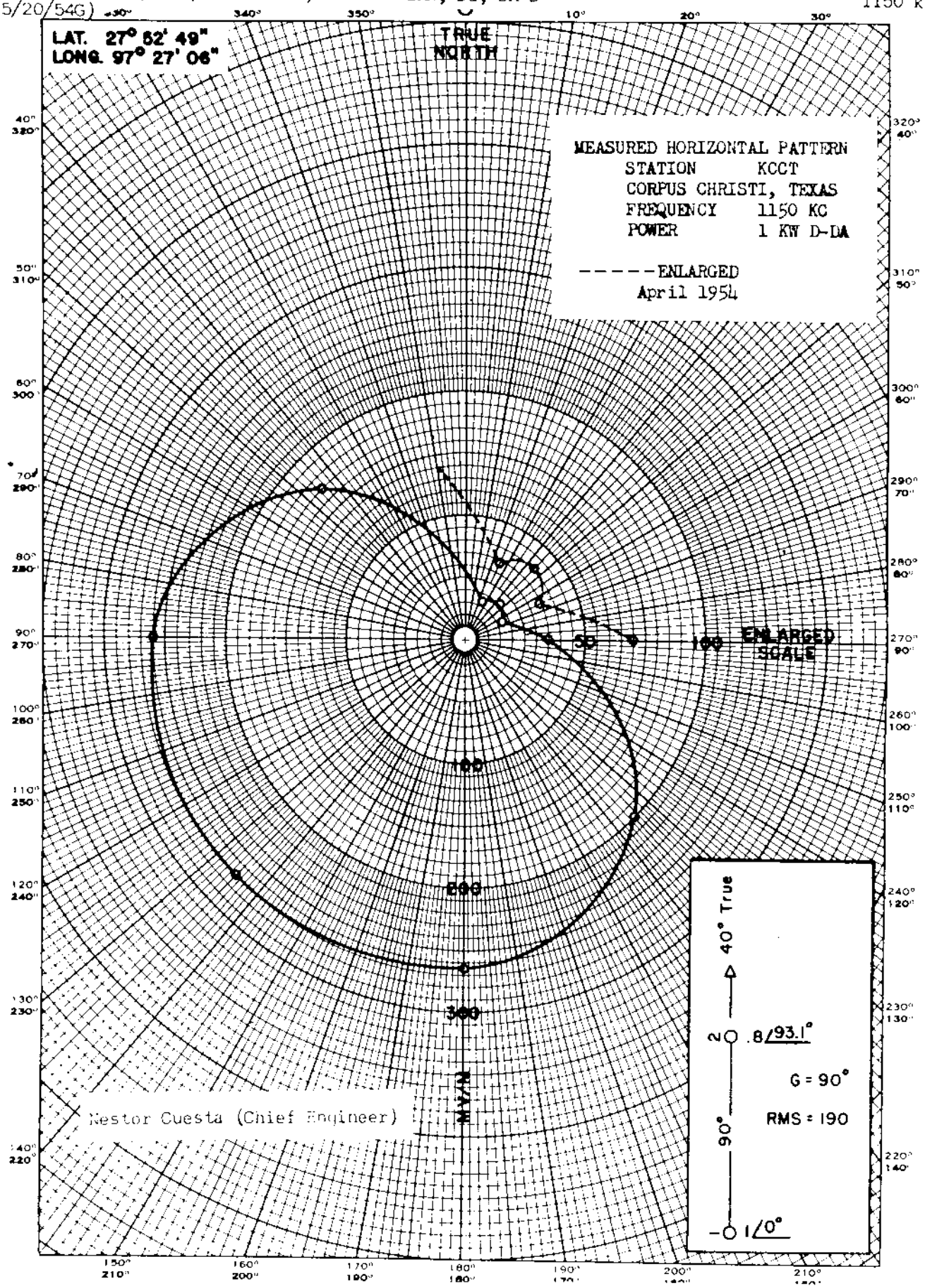
Daytime
NEW, Corpus Christi, Texas
1000 W 1150 KC

KCCT
Corpus Christi, Texas

1150 KC

KCCT

MEASURED KCCT, Corpus Christi, Texas 1KW, Da, DA-D 1150 kc
DAY (5/20/54G)



Nestor Cuesta (Chief Engineer)

FCC File No. BL-5305 Accepted 5/15/54 KCCT, Corpus Chrisiti, Texas 1150; kc

KCKY

Proposed Night
(2-26-63ct)

New; Coolidge Broadcasting Co.
Coolidge, Arizona

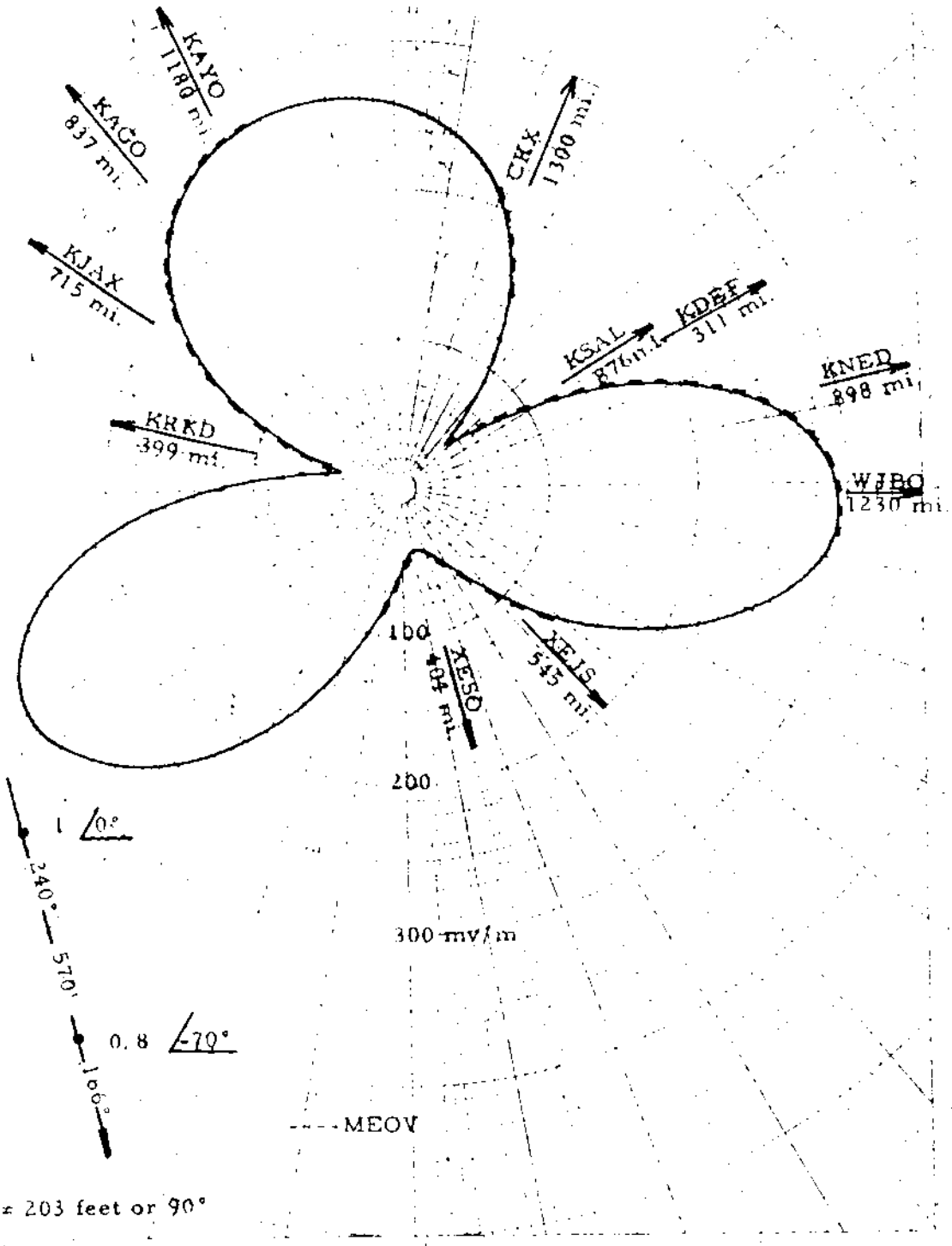
1kw,DA-N,U
1150 kc

6/24/64 granted CP on new station

Horizonal Radiation Pattern

NIGHTTIME PATTERN 0° Level.

Craig E. Davids, Kathleen E. Davids, and Paul Dean Ford d. b. a. Coolidge Broadcasting Company, Application for 1150 kc. 1000W, DA-N, U, Coolidge, Arizona. This Exhibit Prepared January 7, 1963 by Paul Dean Ford, Engineer.



H = 203 feet or 90°

FCC File No.BP-15838
Accepted 2-18-63

New; Coolidge Broadcasting Co.
Coolidge, Arizona

1150 kc

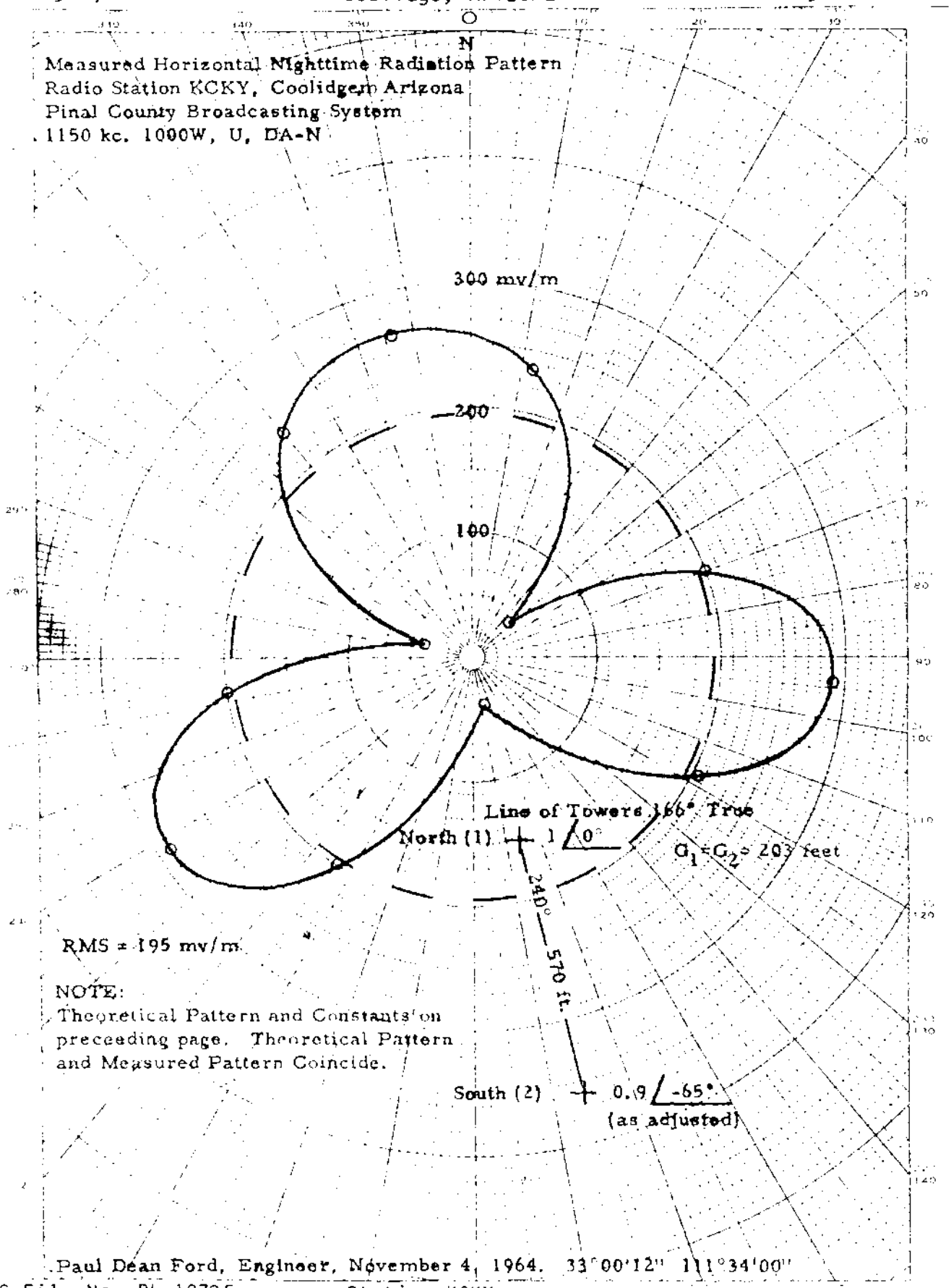
KCKY

Measured Night
(3-26-65ct)

Station KCKY
Coolidge, Arizona

1kw,DA-N,U
1150 kc

JC 10-8-65



Paul Dean Ford, Engineer, November 4, 1964. 33°00'12" 111°34'00"

FCC File No. BL-10795
Accepted 3-10-65

Station KCKY
Coolidge, Arizona

1150 kc

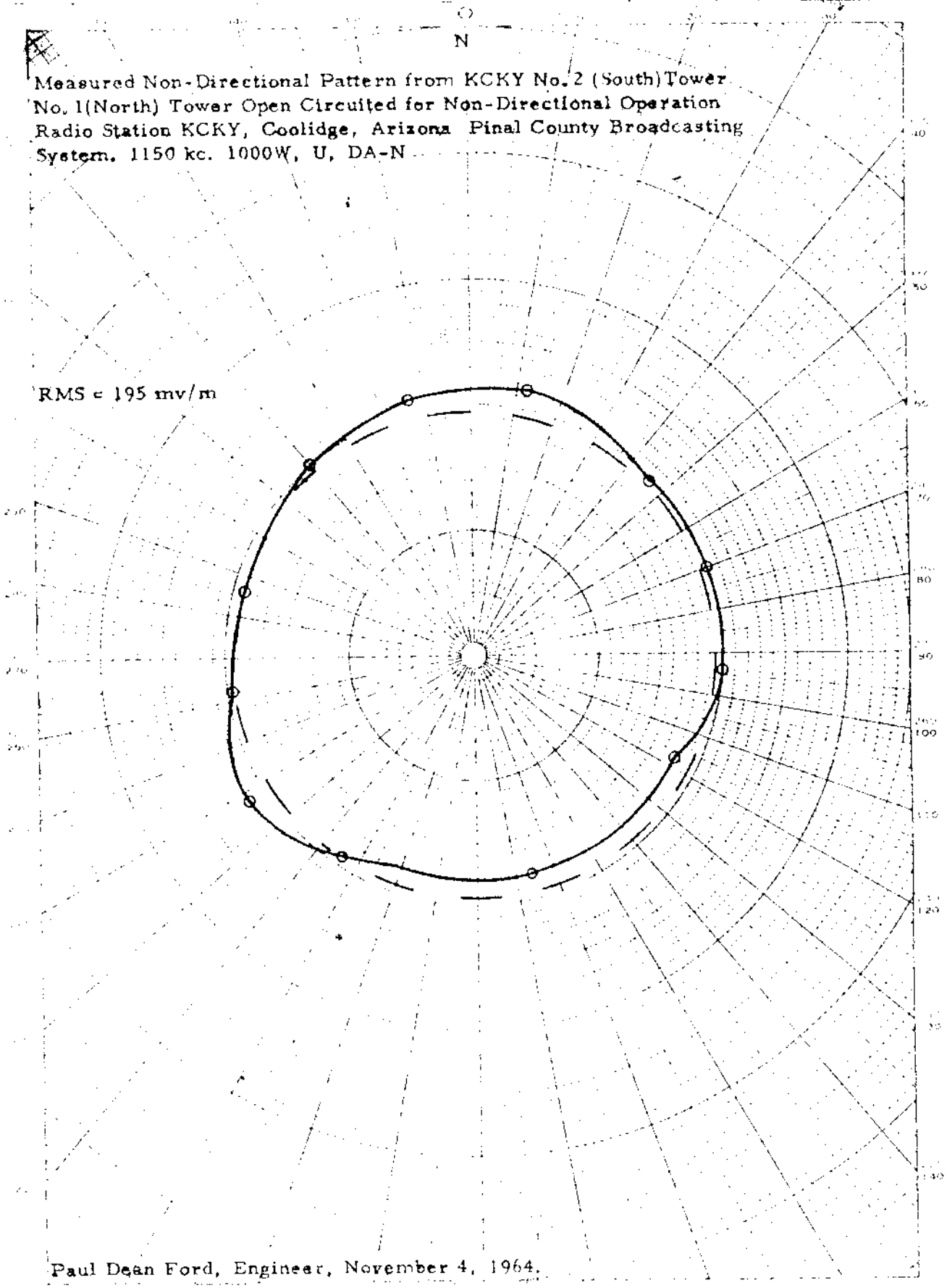
KCKY

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

Station KCKY
Coolidge, Arizona

1kw,DA-N,U
1150 kc

-10 10-8-65



Paul Dean Ford, Engineer, November 4, 1964.

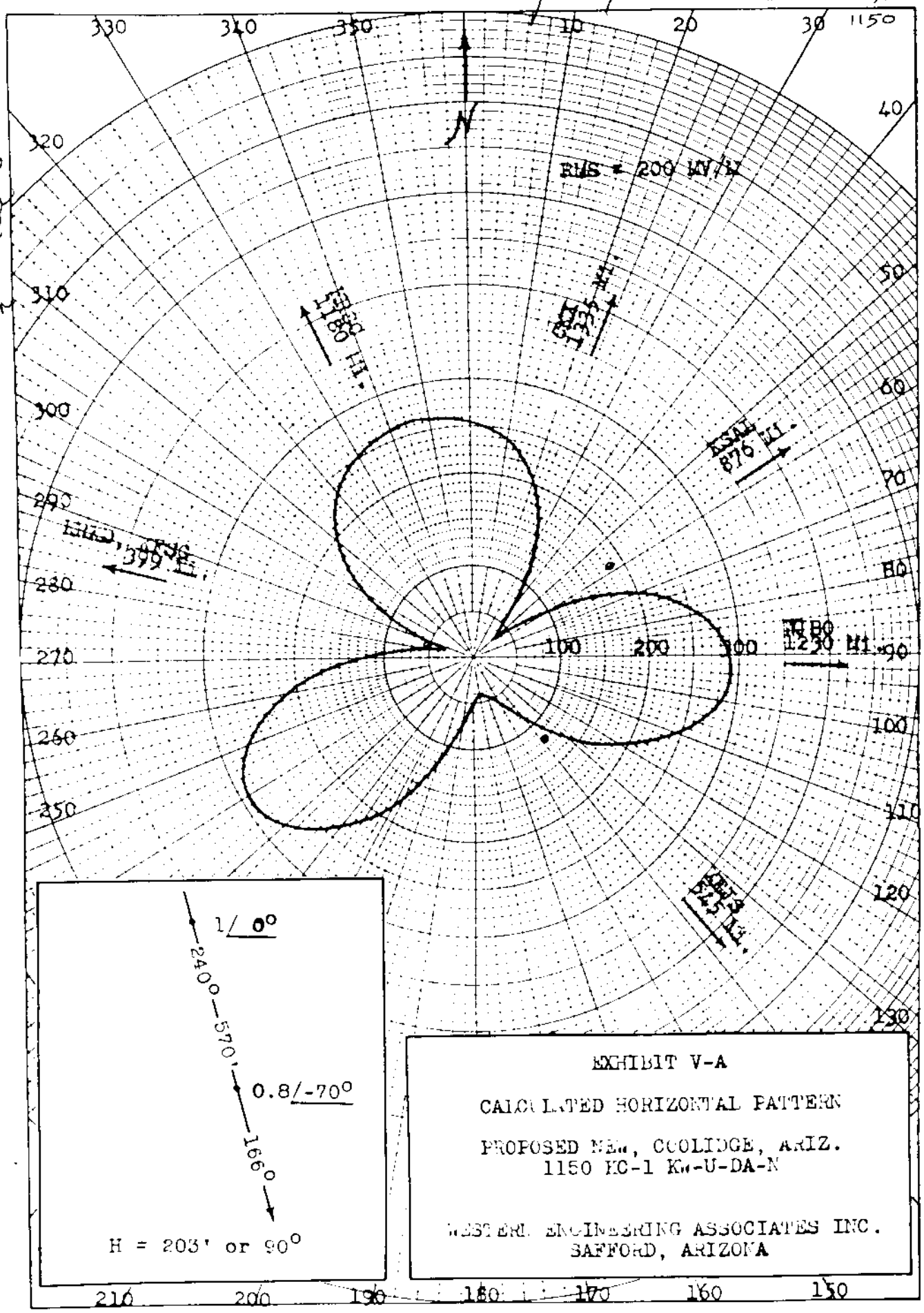
FCC File No. BL-10795
Accepted 3-10-65

Station KCKY
Coolidge, Arizona

1150 kc

P-4677 KCKY COOLIDGE, ARIZ.

5/15/64 Letter Memo to Coolidge Licensee application to new site station



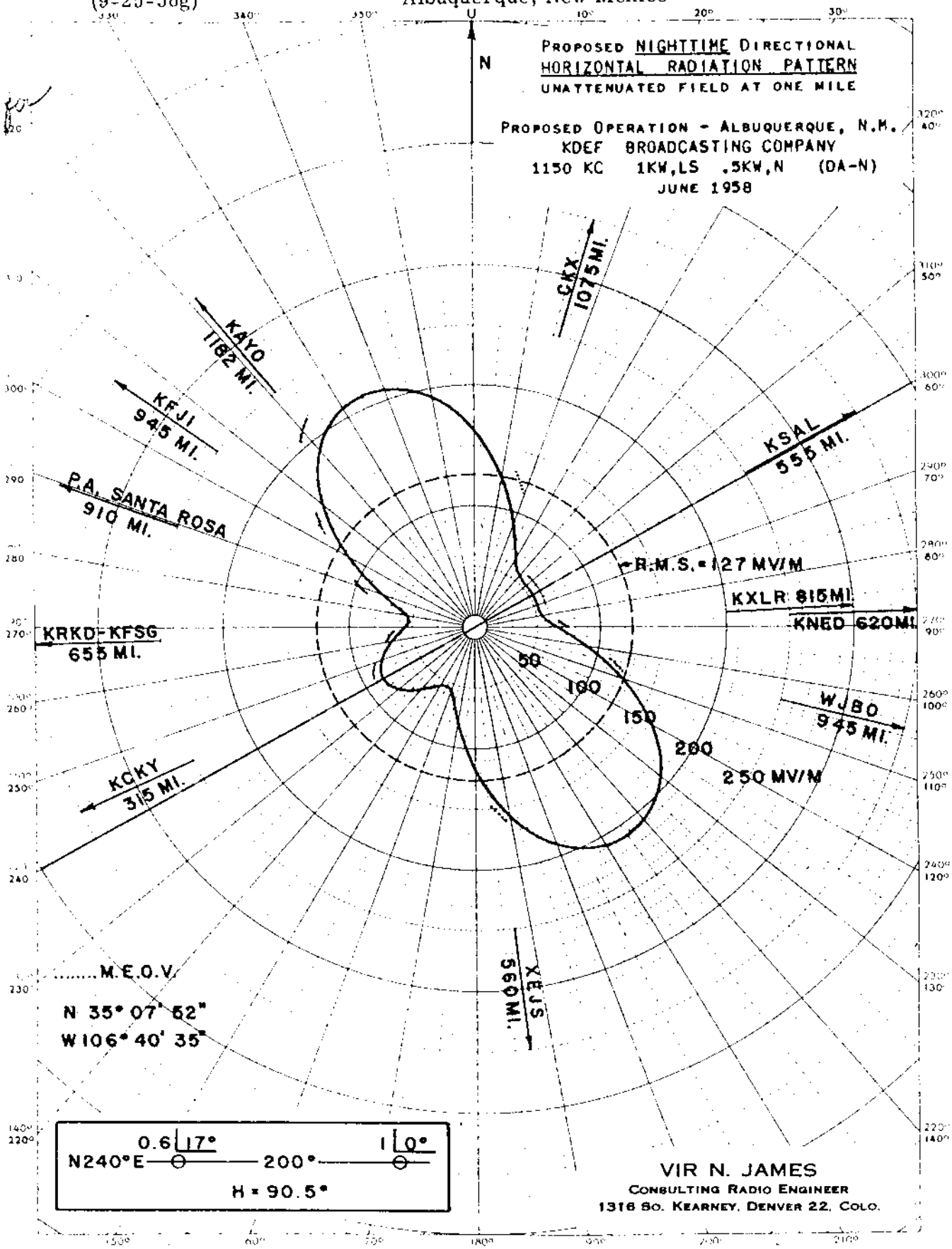
KEUFFEL & ESSER CO., N.Y. NO. 343A
POLAR CO-ORDINATE

KDEF

PROPOSED NIGHT
(9-25-58g)

Station KDEF 5/1 500w, DA-N,U
Albuquerque, New Mexico 1150 KC

+12-61 cancel up for D-N.



FCC File No. BP-12,293
Accepted 9-23-58

KDEF
Albuquerque, New Mexico 1150 KC

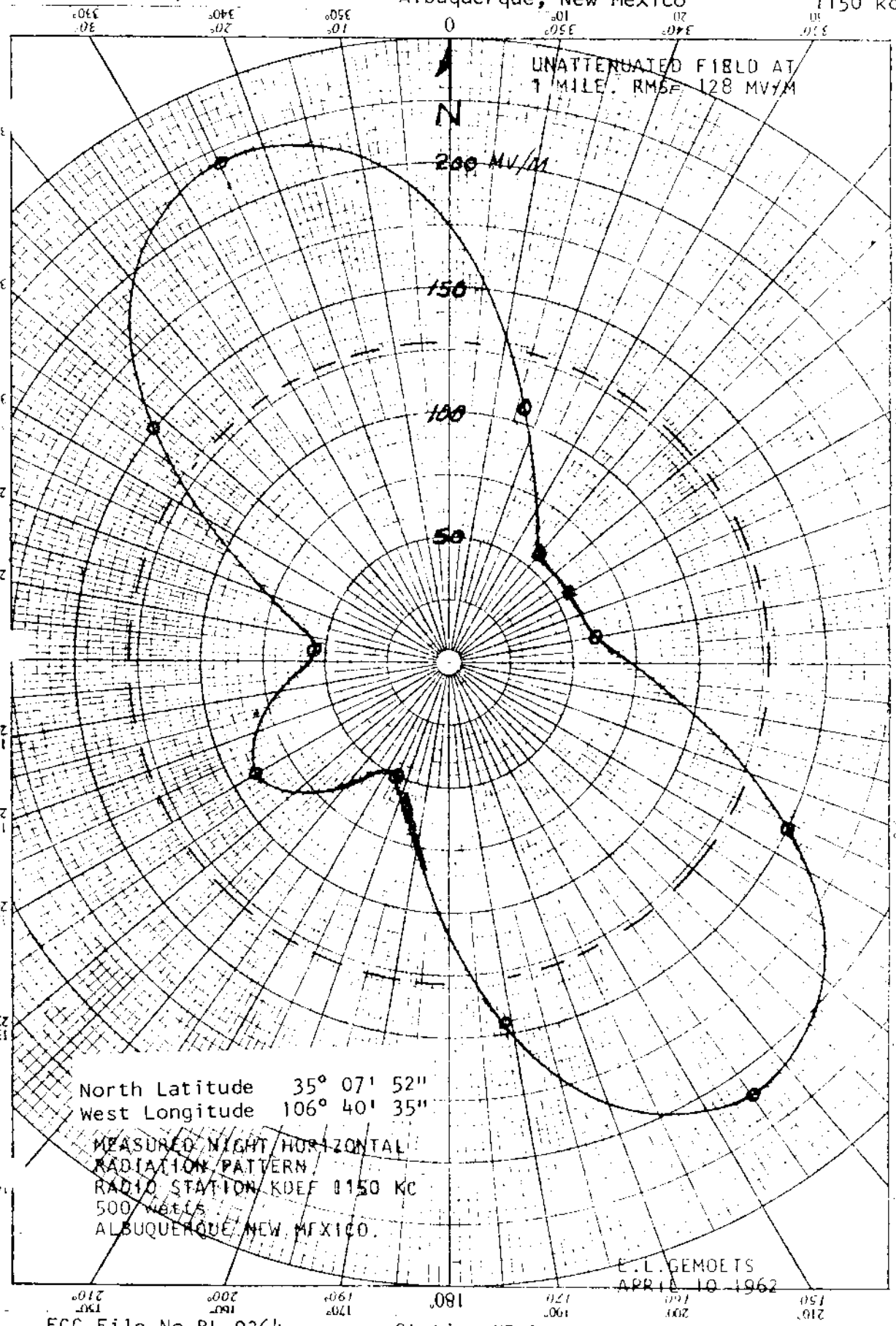
KDEF

Measured Night
(6-22-62ct)

Station KDEF
Albuquerque, New Mexico

500w,DA-N,U
1150 kc

8-10-62
granted L for
DA-N (change in
hours of operation)
CP 1-19-66



FCC File No.BL-9364
Accepted 6-15-62

Station KDEF
Albuquerque, New Mexico

1150 kc

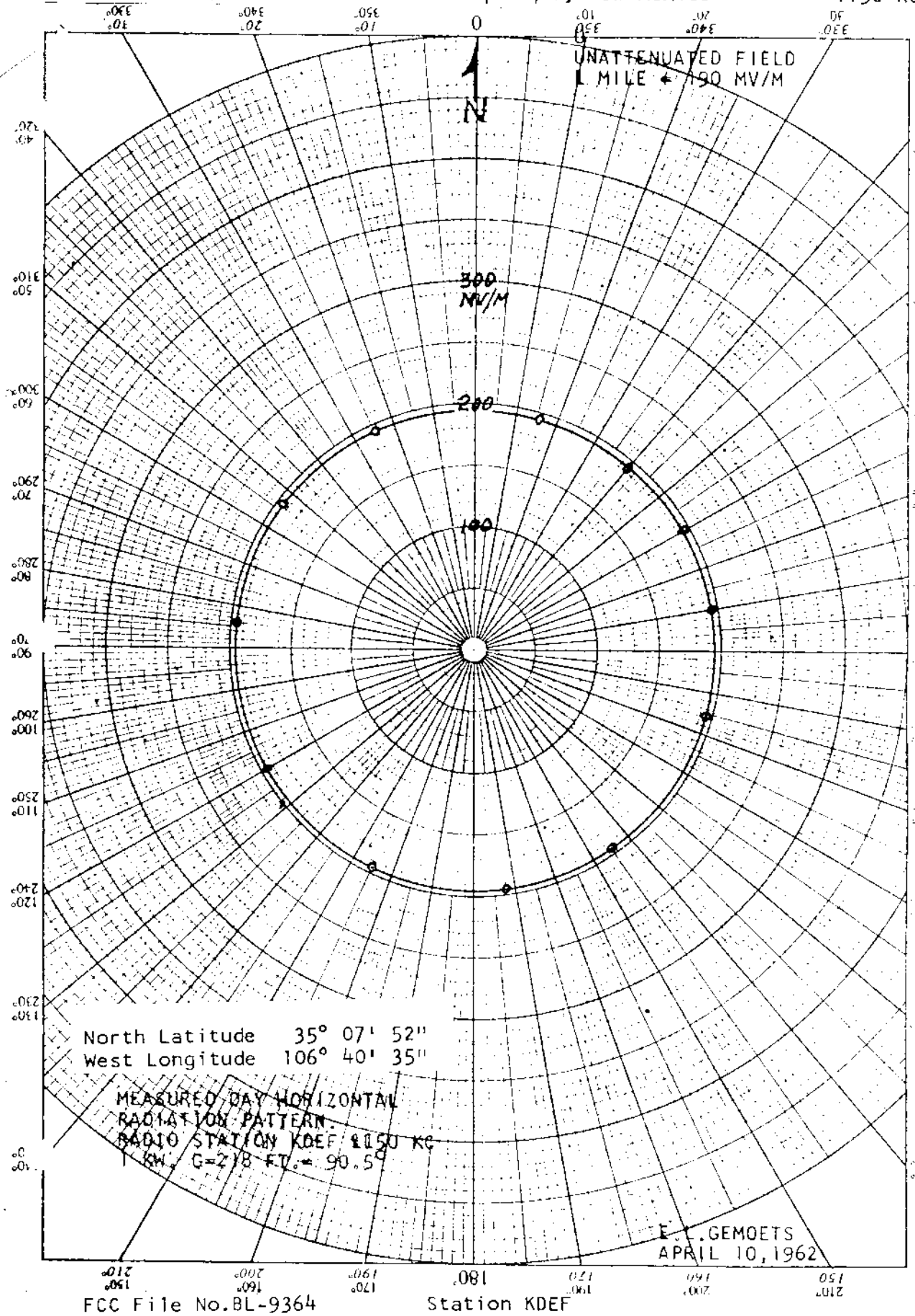
KDEF

Measured Non-DA
(6-22-62ct)

Station KDEF
Albuquerque, New Mexico

500w,DA-N,U
1150 kc

P 1-19-66



FCC File No.BL-9364
Accepted 6-15-62

Station KDEF
Albuquerque, New Mexico

1150 kc

KIIS

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : KIIS Main Studio: Los Angeles, California

Frequency : 1150 KHz Power : 5 kW Night 5 kW Day

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

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	34	05	05
West Longitude:	118	12	10

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation.(DA-N)
Number of elements: 3
Type of elements : Three vertical, series excited raditors. End towers (#1 and #3) guyed, center tower (#2) self-supporting.

TOWER :	#1(NE)	#2(c)	#3(SW)			
HEIGHT ABOVE INSULATORS :	214'(90°)	216'(909°)	214'(90°)			
NIGHT PHASING :	151.3°	0°	-105.9°			
NIGHT FIELD RATIO:	0.542	1.000	1.510			

SPACING AND ORIENTATION : The towers in a row are spaced 225.8' (95°) on a line bearing 44.9 ° true.

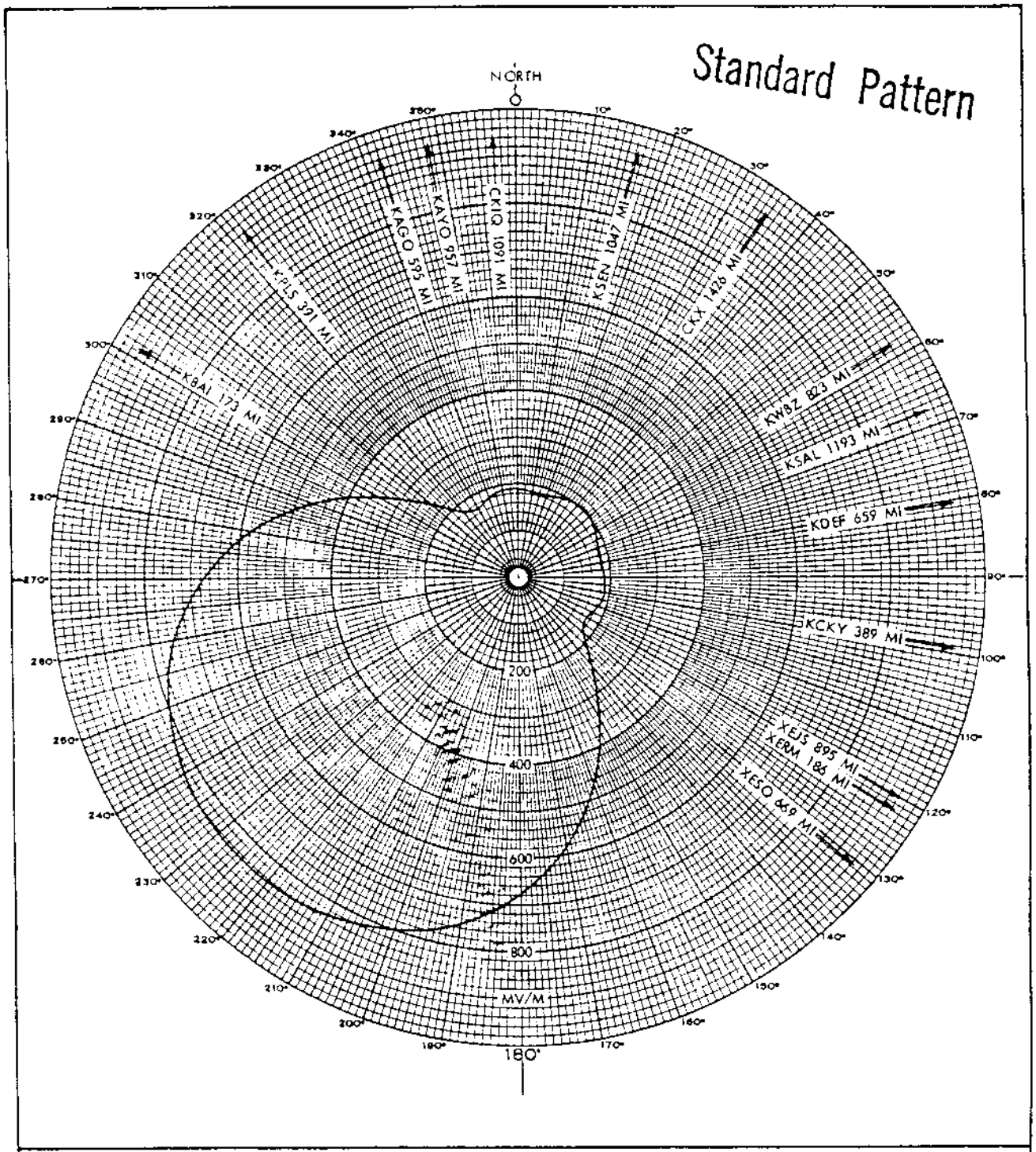
GROUND SYSTEM : 120 - 220 equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to copper strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

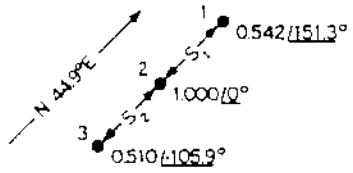
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	424.9 mv/m		
Night	454.9 mv/m	_____ mv/m	477.9 mv/m

Note:

KIIS



RMS_{STD} = 477.9 MV/M	E_{RSS} = 546.4 MV/M	G_2 = 216 FT = 90.9°
RMS_{THEO} = 454.9 MV/M	$S_1 = S_2$ = 225.8 FT = 95°	$G_1 = G_3$ = 214 FT = 90°



N. LAT 34°05'05"
W. LONG 118°12'10"

PROPOSED STANDARD
HORIZONTAL RADIATION
NIGHTTIME
UNATTENUATED FIELD STRENGTH
AT ONE MILE

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KIIS
1150 KHZ. 5 KW. DA-N
LOS ANGELES, CALIFORNIA

770501

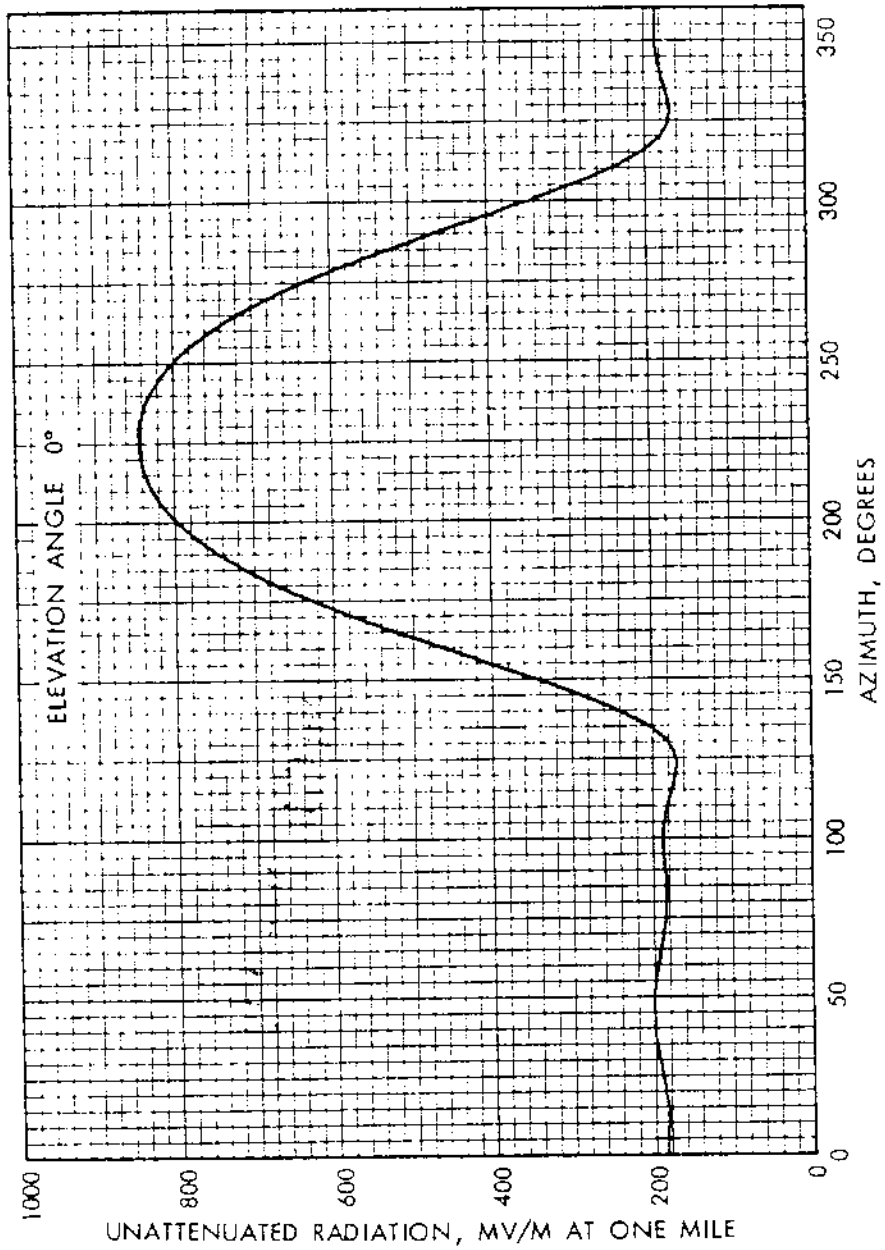
FIGURE 3B

KIIS

RADIO STATION KIIS

Standard Pattern

PROPOSED STANDARD RADIATION - NIGHTTIME



Hammett & Edison, Inc.
Consulting Engineers

770501

FIGURE 3C

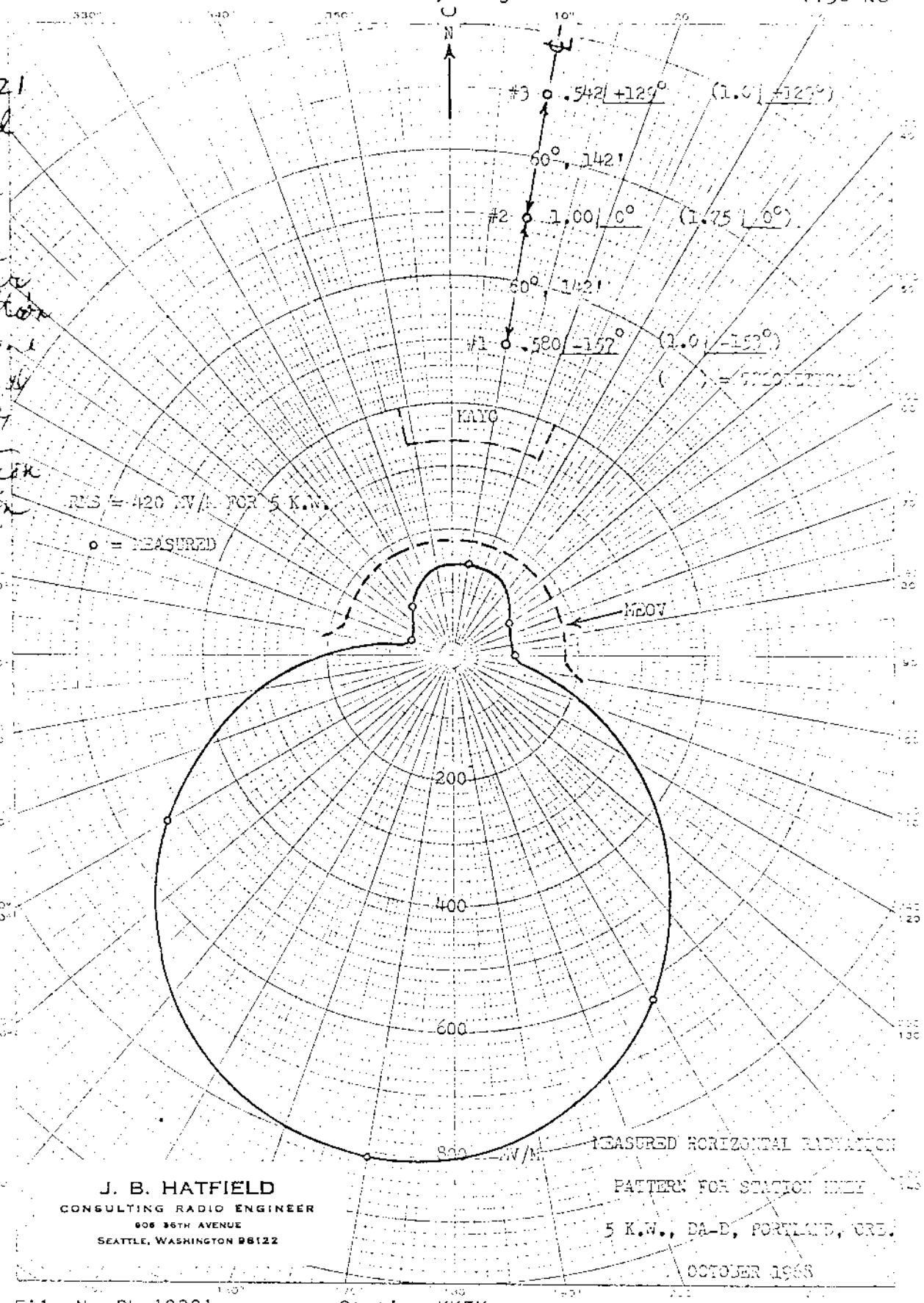
KKEY

Measured Day
(1-28-69ct)

Station KKEY
Portland, Oregon

5kw, DA-D, D
1150 kc

BL 12221
Granted
2-6-69
license
covering
increase
in power
installation
of doppler
directional
antenna
& change
in station
location



J. B. HATFIELD
CONSULTING RADIO ENGINEER
906 36TH AVENUE
SEATTLE, WASHINGTON 98122

FCC File No.BL-12221
Accepted 1-3-69

Station KKEY
Portland, Oregon

1150 kc

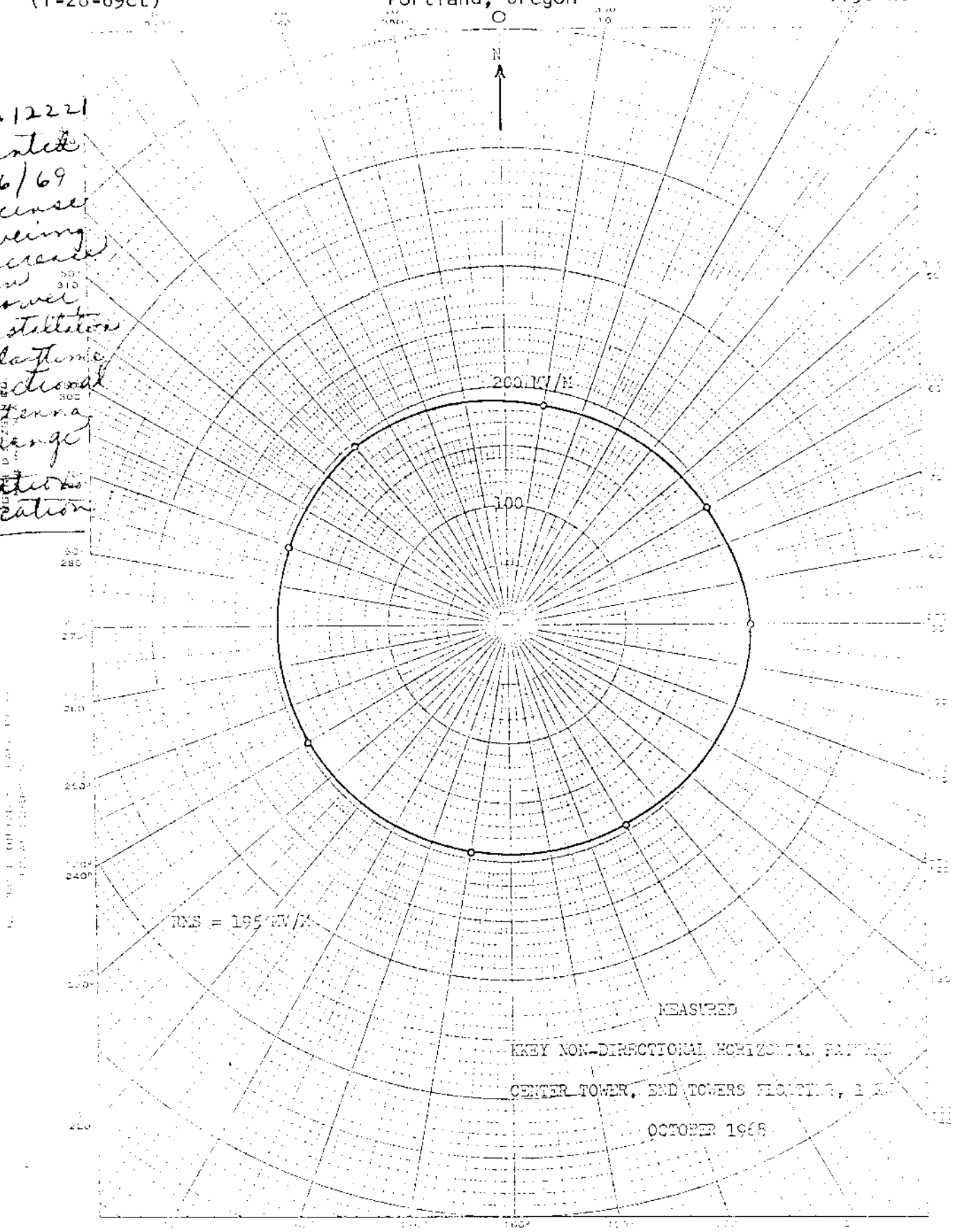
KKEY

Measured Non-DA
(1-28-69ct)

Station KKEY
Portland, Oregon

5kw, DA-D, D
1150 kc

BP-12221
Granted
2/6/69
license
covering
increase
in power
installation
of daytime
directional
antenna
& change
in station
location



FCC File No.BL-12221
Accepted 1-3-69

Station KKEY
Portland, Oregon

1150 kc

KKEY

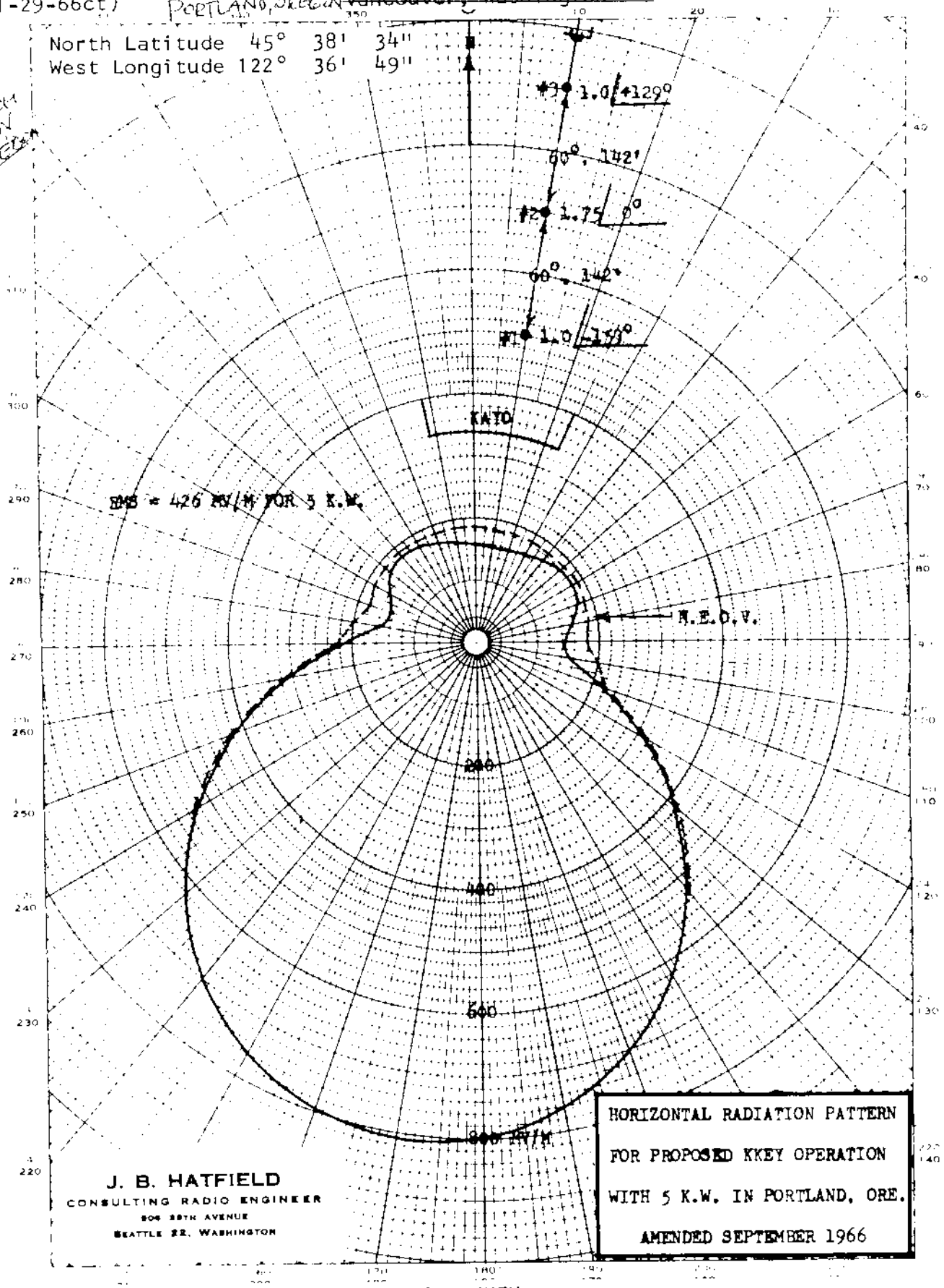
Proposed Day
(11-29-66ct)

Station KKEY
PORTLAND, OREGON ~~Vancouver, Washington~~

5kw, DA-D, D
1150 kc

North Latitude 45° 38' 34"
West Longitude 122° 36' 49"

11-22-67
GRANTED
APPL. TO
CHANGE FREQ
1 KW TO 5 KW
PORTLAND, OREGON



J. B. HATFIELD
CONSULTING RADIO ENGINEER
506 38TH AVENUE
SEATTLE 22, WASHINGTON

HORIZONTAL RADIATION PATTERN
FOR PROPOSED KKEY OPERATION
WITH 5 K.W. IN PORTLAND, ORE.
AMENDED SEPTEMBER 1966

FCC File No. BP-17277
Accepted 9-21-66

Station KKEY
Vancouver, Washington

1150 kc

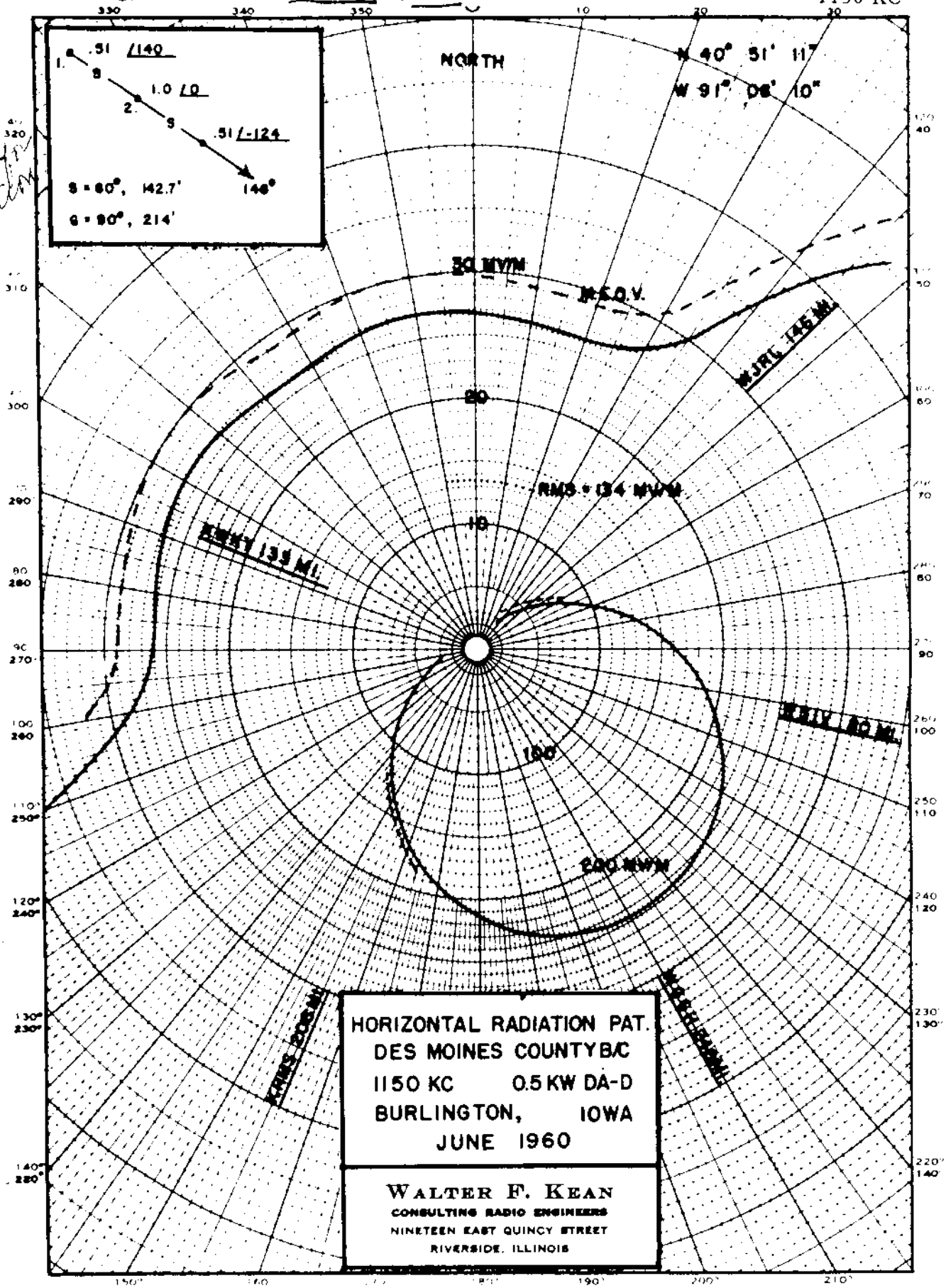
KKUZ ~~KTHD KYFD~~

PROPOSED DAY
(9-13-60g)

New; Des Moines County Bcstng. Co.
Burlington, Iowa

500w, DA-D,D
1150 KC

#300-
5-14-60
Hardship for
new station



FCC File No. BP-14193
Accepted 6-9-60

Des Moines County Broadcasting Company
Burlington, Iowa

1150 KC

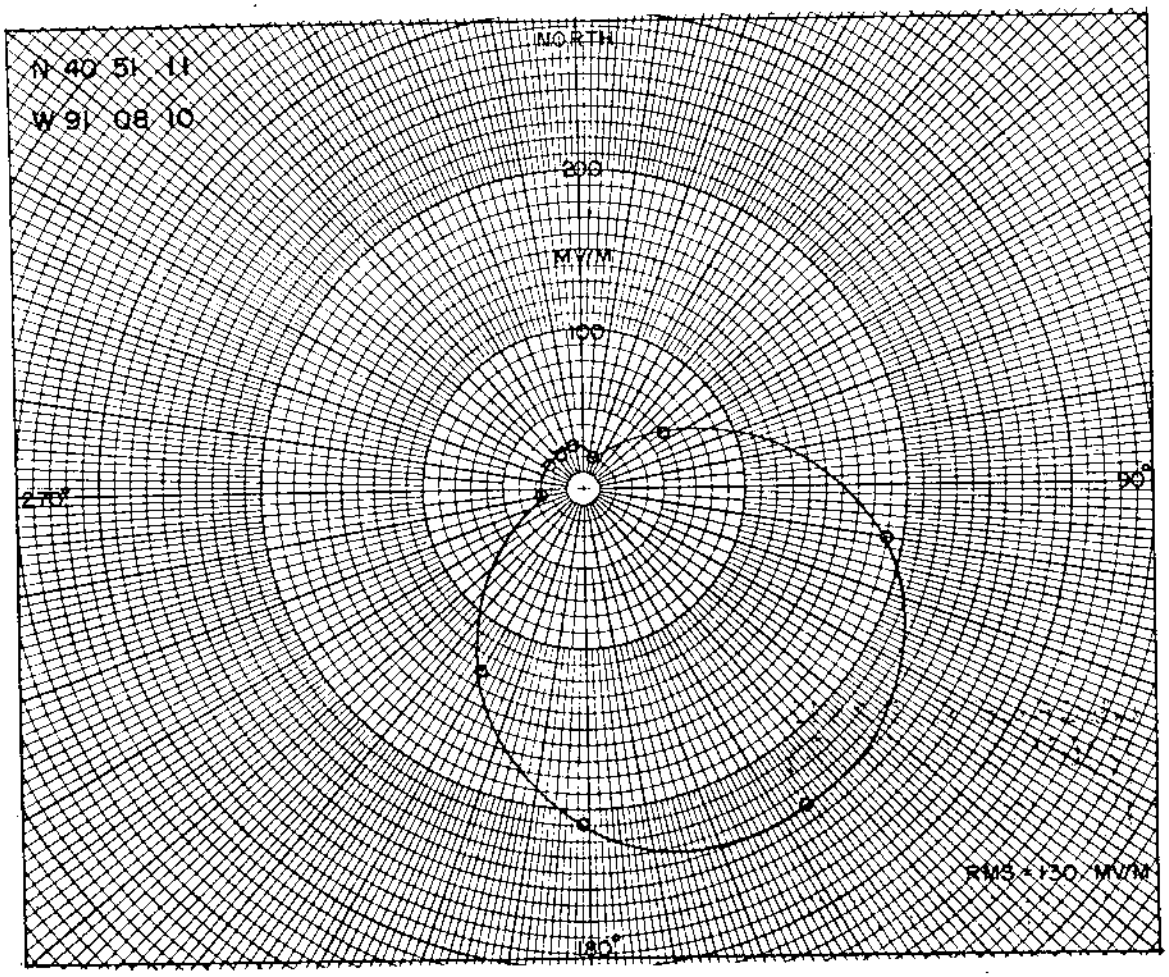
KKUZ ~~KYKD~~ ~~KYED~~

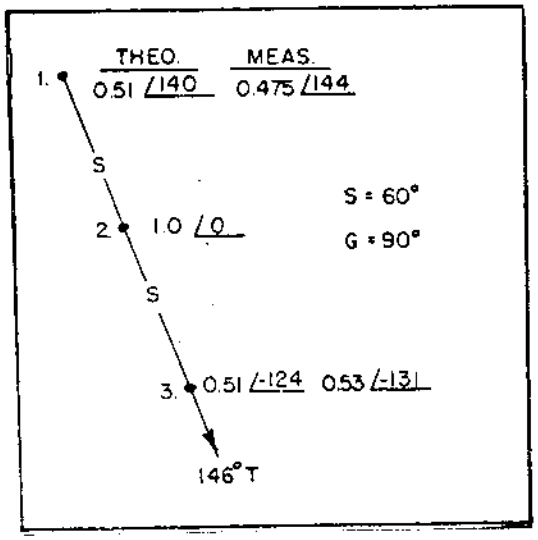
Measured Day
(1-28-66ct)

Station KYED
Burlington, Iowa

500w,DA-D,D
1150 kc

L.C. 12-28-65





MEASURED RADIATION PATTERN
KYED 1150 KC 0.5 KW DA
BURLINGTON, IOWA
AUG. 1965

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FIG. 1

FCC File No. BL-11067
Accepted 8-31-65 Amended

Station KYED
Burlington, Iowa

1150 kc

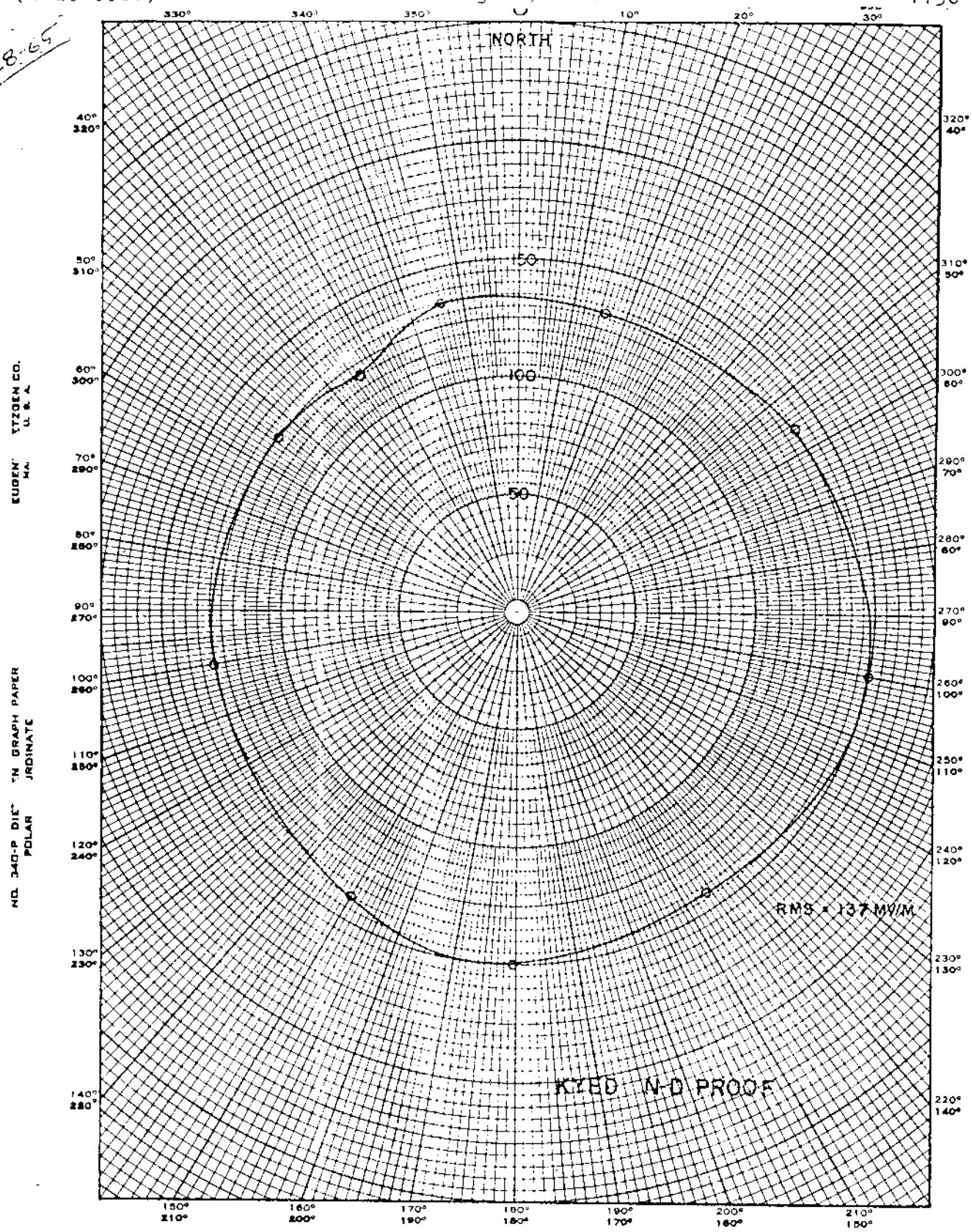
KKUZ ~~KYED~~ ~~KYED~~

Measured Non-DA
(1-28-66ct)

Station KYED
Burlington, Iowa

500w,DA-D,D
1150 kc

-IC, 12-28-65



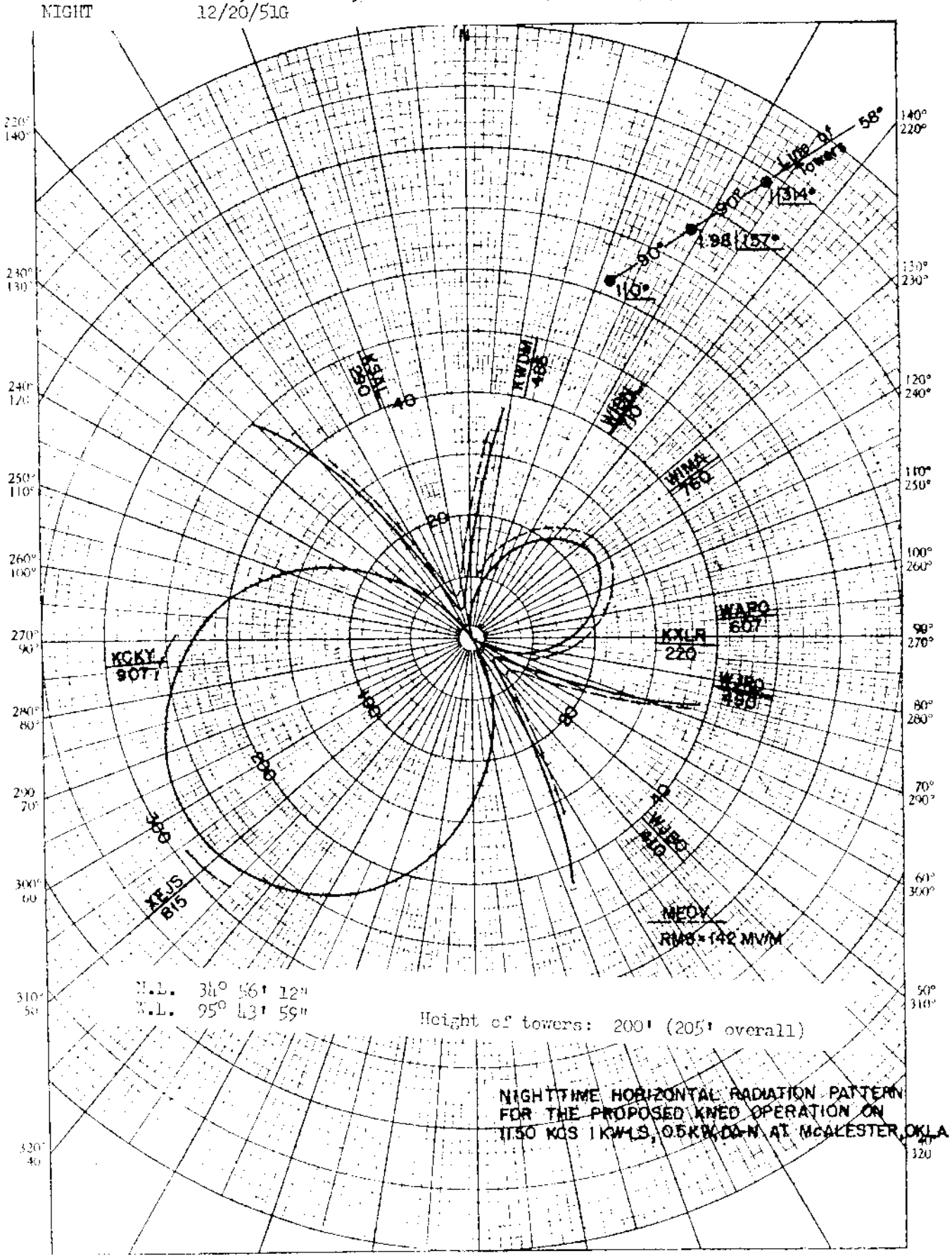
FCC File No.BL-11067
Accepted 8-31-65 Amended

Station KYED
Burlington, Iowa

1150 kc

KNED

PROPOSED NIGHT | KNED, McALESTER, OKLA. 12/20/51G | 500w, 1 KW-LS, U, DA-N | 1150 KC



APPL RECD 12/3/51 ACC 12/14/51 BP-8330 | KNED, McALESTER, OKLA. | 1150 KC

MEASURED KNED, MCALESTER, OKLA. 500W,1KW-LS,U, DA-N 1150 kc
NIGHT (7/10/53G)

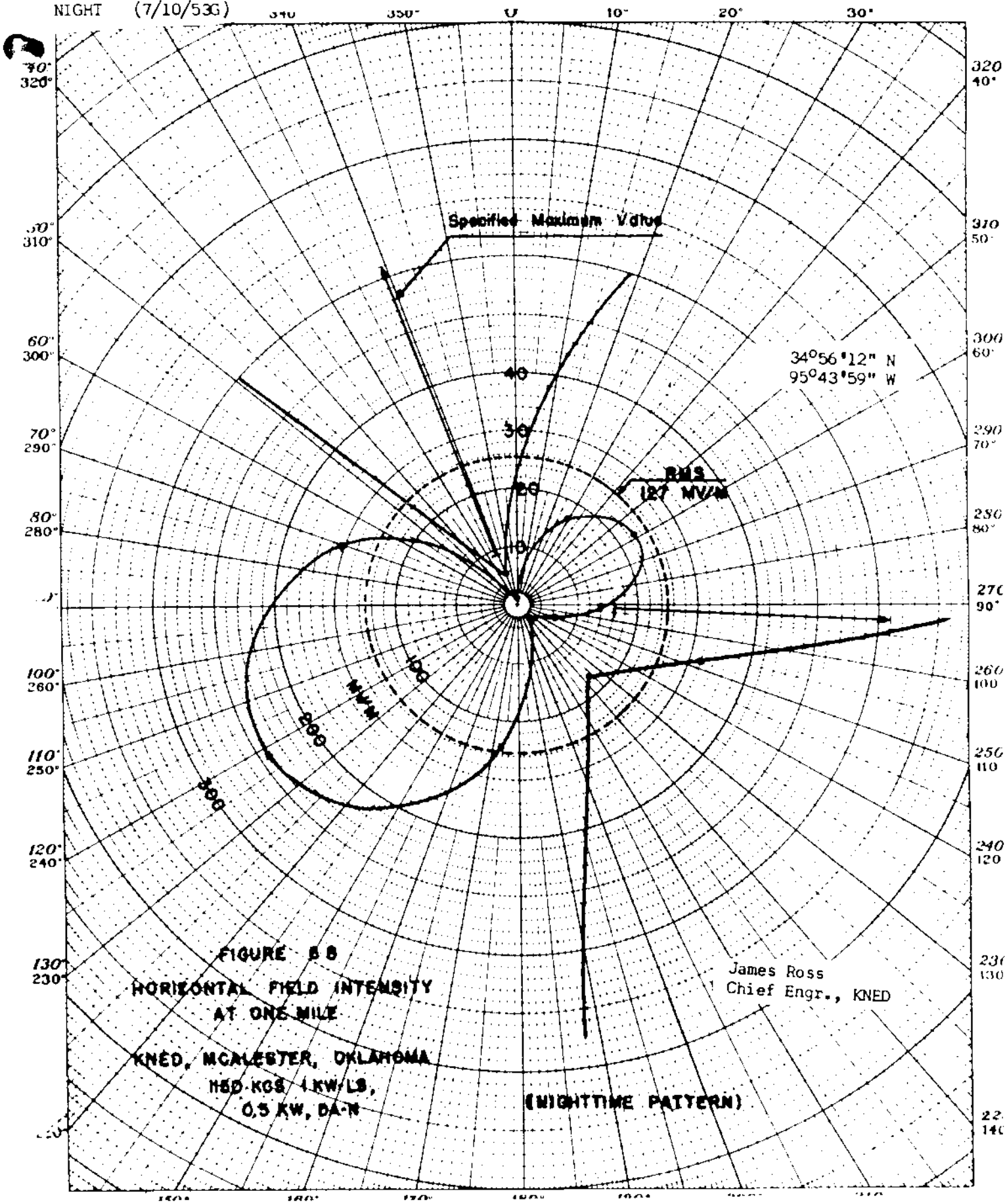
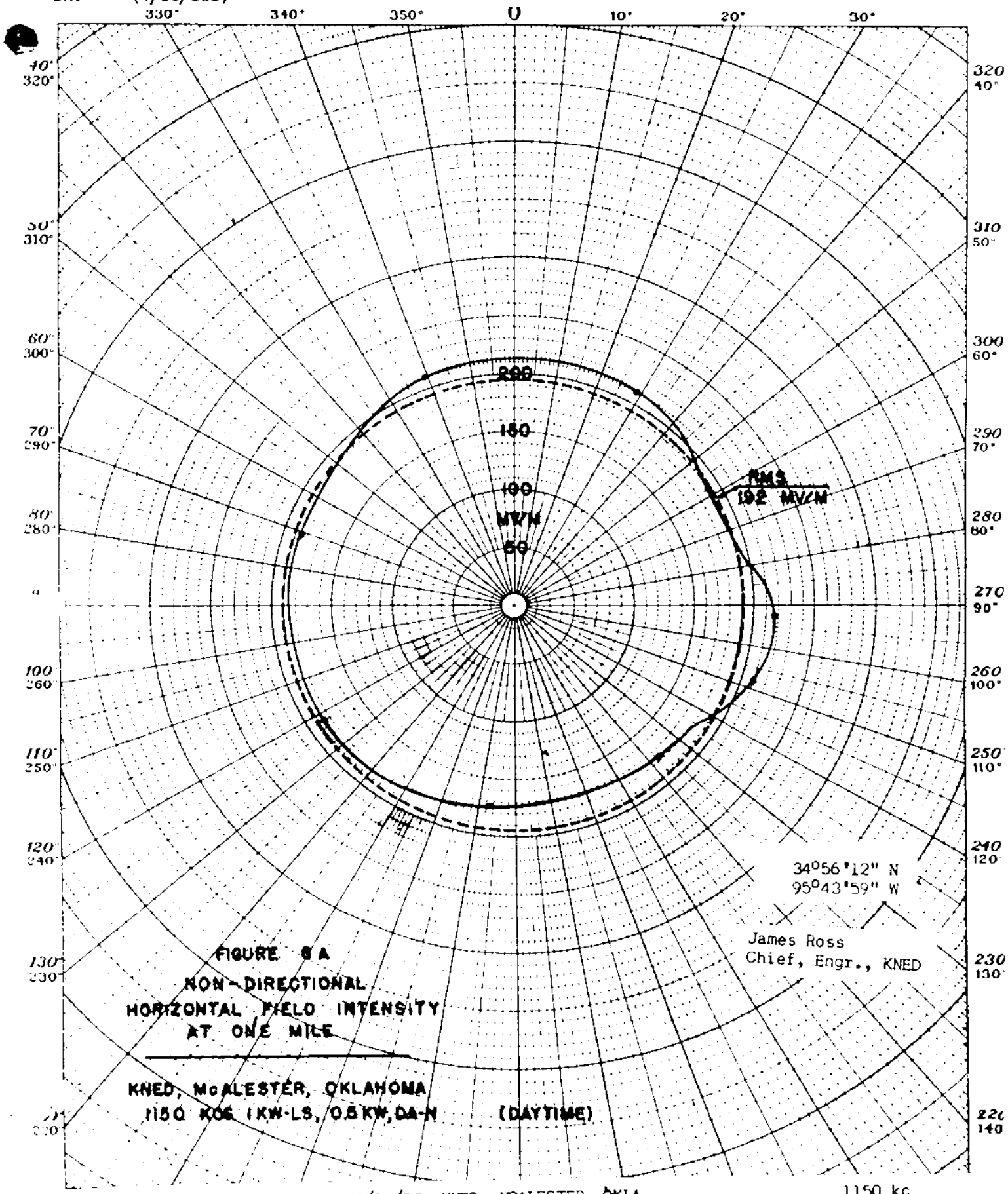


FIGURE 5 B
HORIZONTAL FIELD INTENSITY
AT ONE MILE
KNED, MCALESTER, OKLAHOMA
1150 KCS 1 KW-LS,
0.5 KW, DA-N

MEASURED KNED, MCALESTER, OKLA. 500W,1KW-LS, U, DA-N 1150 kc
DAY (7/10/53G)



FCC File No. BL-5018 Accepted 6/24/53 KNED, MCALESTER, OKLA. 1150 kc

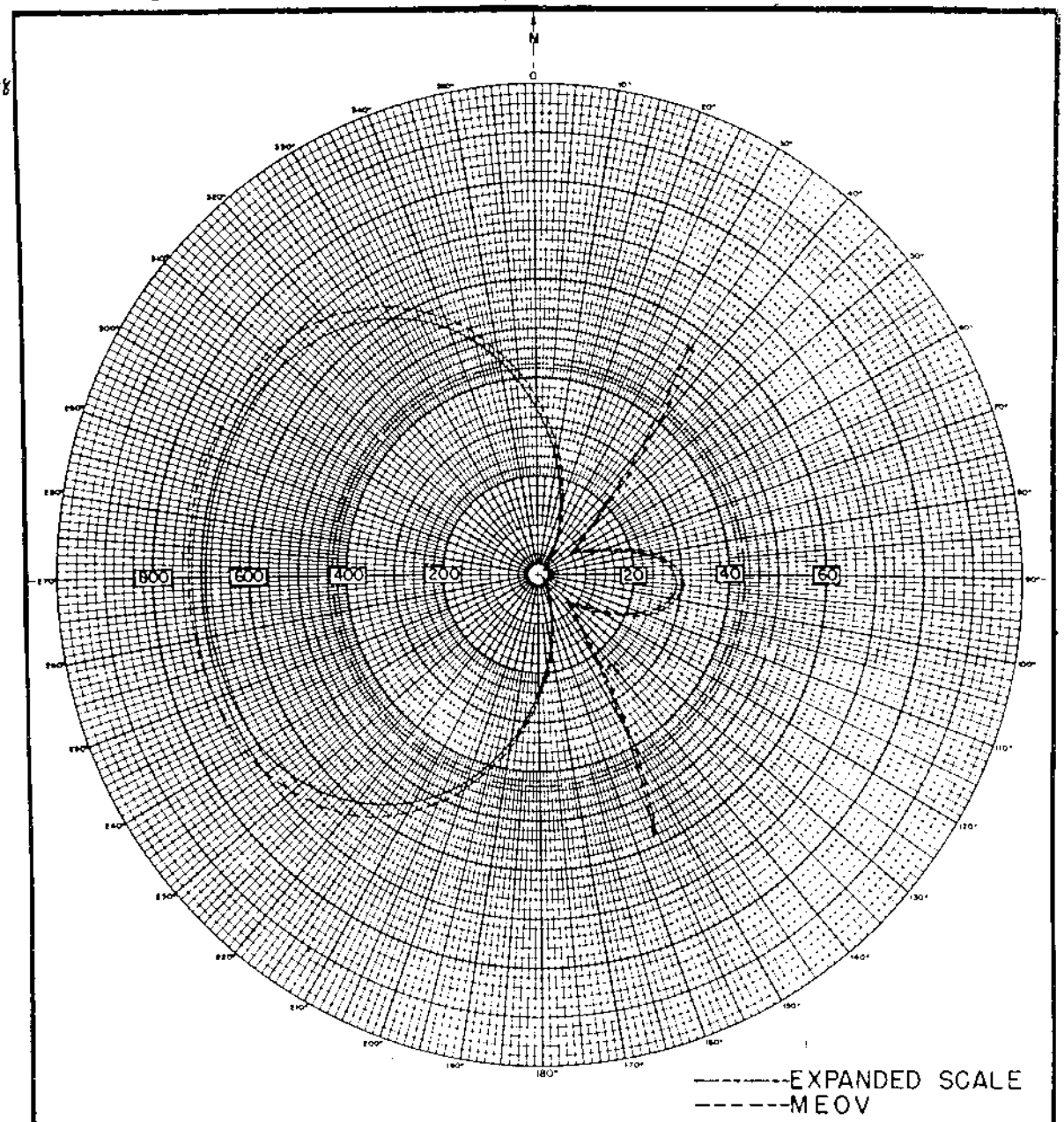
Santa Rosa
California
KPLS

PROPOSED DAY
(5/17/57g)

New, Radio Santa Rosa
Santa Rosa, California

500w,5kw-LS,DA-2,U
1150 KC

Granted CP 7/9/58
for new station

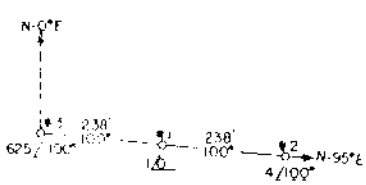


E_{RMS} = 432 MV/M

LATITUDE: 38° 27' 06"
LONGITUDE: 122° 39' 34"

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

ANTENNA PARAMETERS



G=88.4°

FIGURE 4

DAYTIME
HORIZONTAL PATTERN

RADIO SANTA ROSA
SANTA ROSA, CALIF

1150 KC 0.5KW,5KW-LS,DA-2,U

FCC File No. BP-11,084 (Ammended)
Accepted 5/8/57

Radio Santa Rosa
Santa Rosa, California

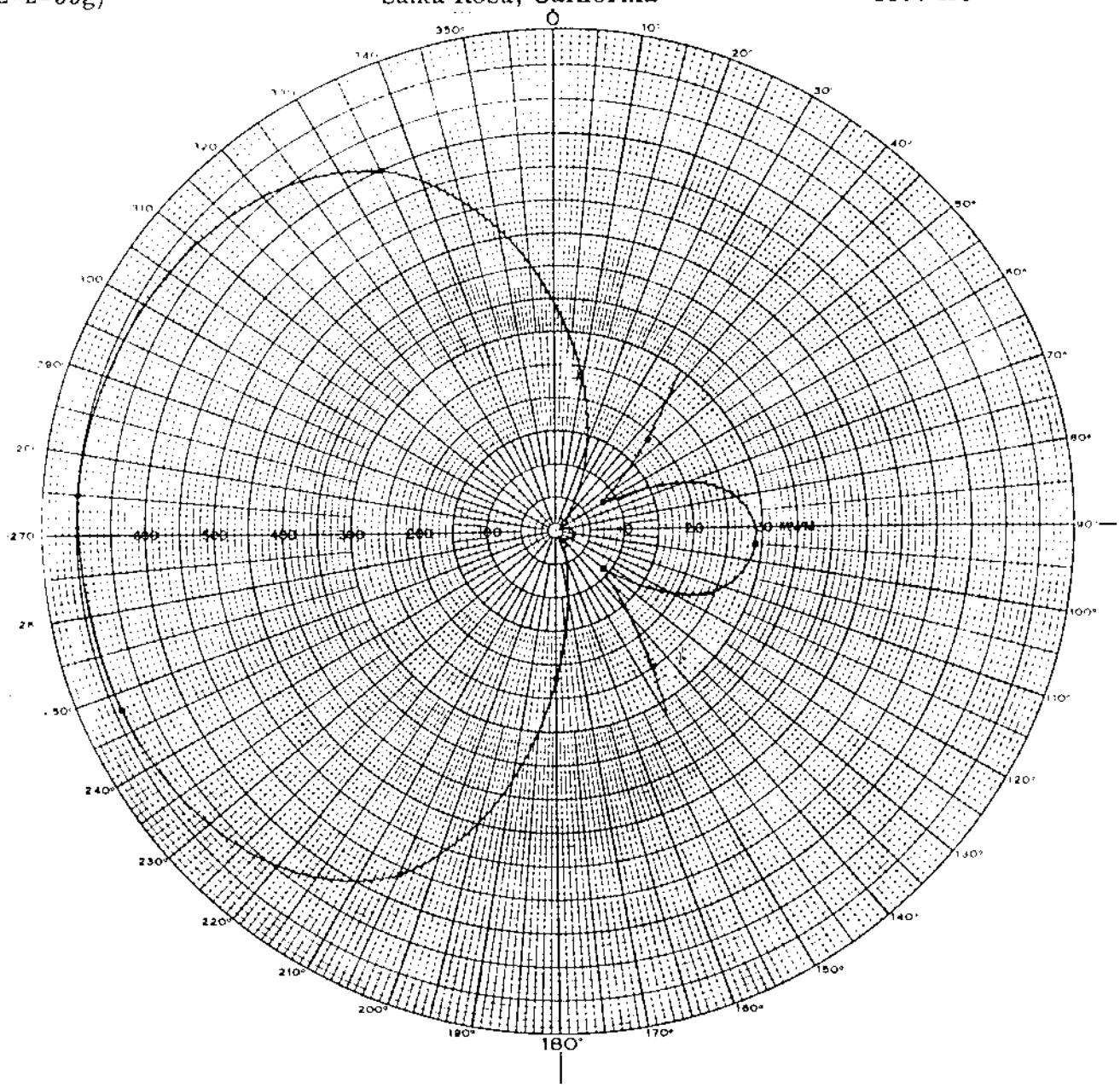
1150 KC

K.PLS

MEASURED DAY
(2-2-59g)

Station KJAX
Santa Rosa, California

500w, 5kw-LS, DA-2,U
1150 KC



E_{RMS} = 440 MV/M		FIGURE 10
LAT 38° 27' 13.5"	N-0°E #3 236' 100° 625 ∠-100° #1 238' 100° 1Ω #2 N-95°E 4 ∠100°	MEASURED DAYTIME PATTERN
LONG. 122° 39' 31"	G=88.4°	KJAX SANTA ROSA, CALIF. 1150 KC 0.5/5 KW DA2 U NOV 1958

FCC File No. BL-7344
Accepted 1-23-59

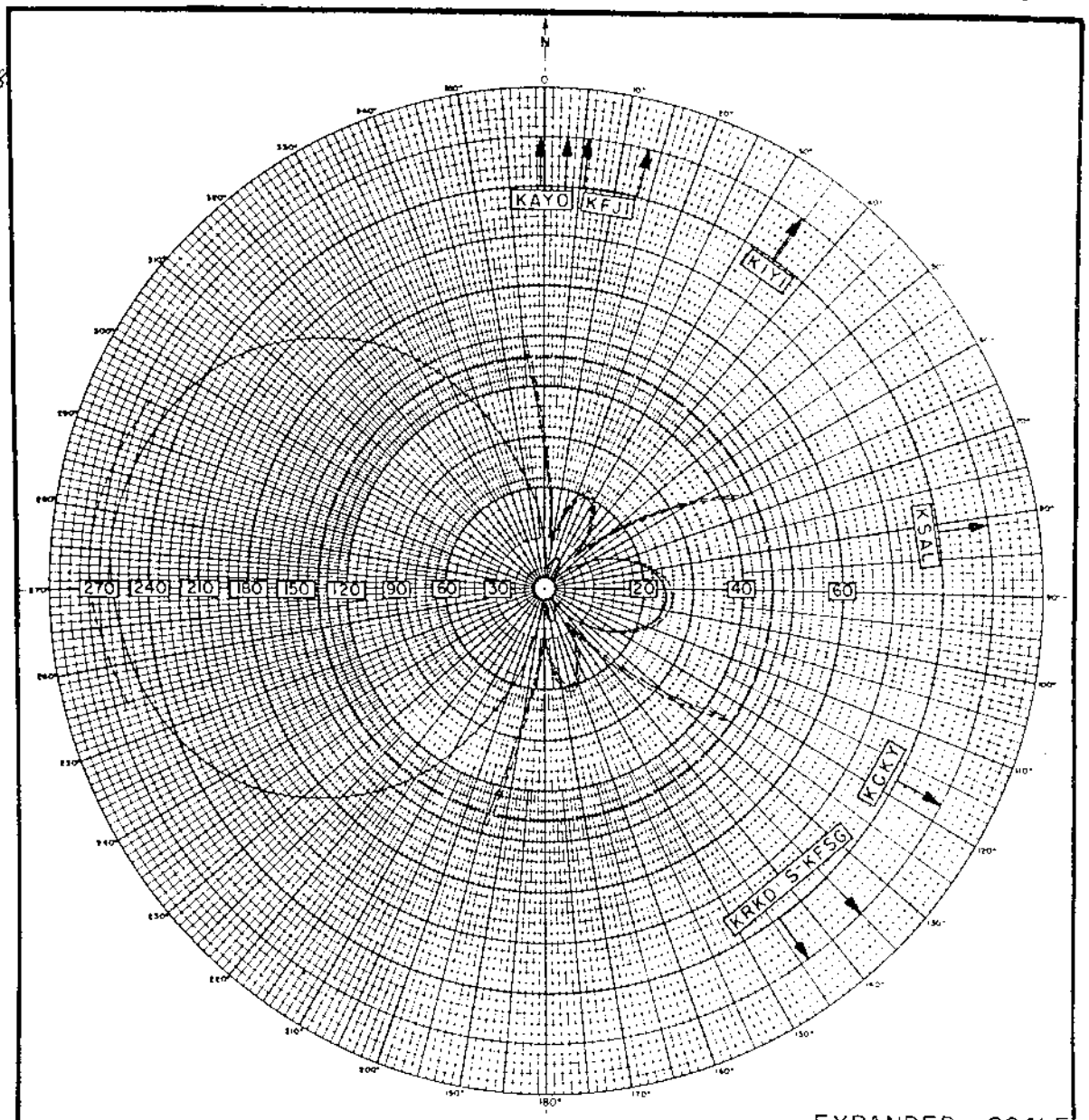
KJAX
Santa Rosa, California

1150 KC

Santa Rosa California KPLS

PROPOSED NIGHT (5/17/57g) | New, Radio Santa Rosa, Santa Rosa, California | 500w,5kw-LS,DA-2,U 1150 KC

Granted CP 7/9/58 for new station

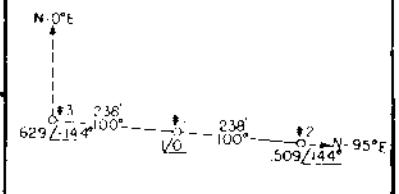


E_{RMS} = 137.5 MV/M

LATITUDE: 38° 27' 06"
LONGITUDE: 122° 39' 34"

JOHN H. MULLANEY
Consulting Radio Engineers
Washington, D. C.

ANTENNA PARAMETERS



G = 88.4°

FIGURE 6

NIGHTTIME HORIZONTAL PATTERN

RADIO SANTA ROSA
SANTA ROSA, CALIF.

1150 KC 0.5KW,5KW-LS,DA-2,U

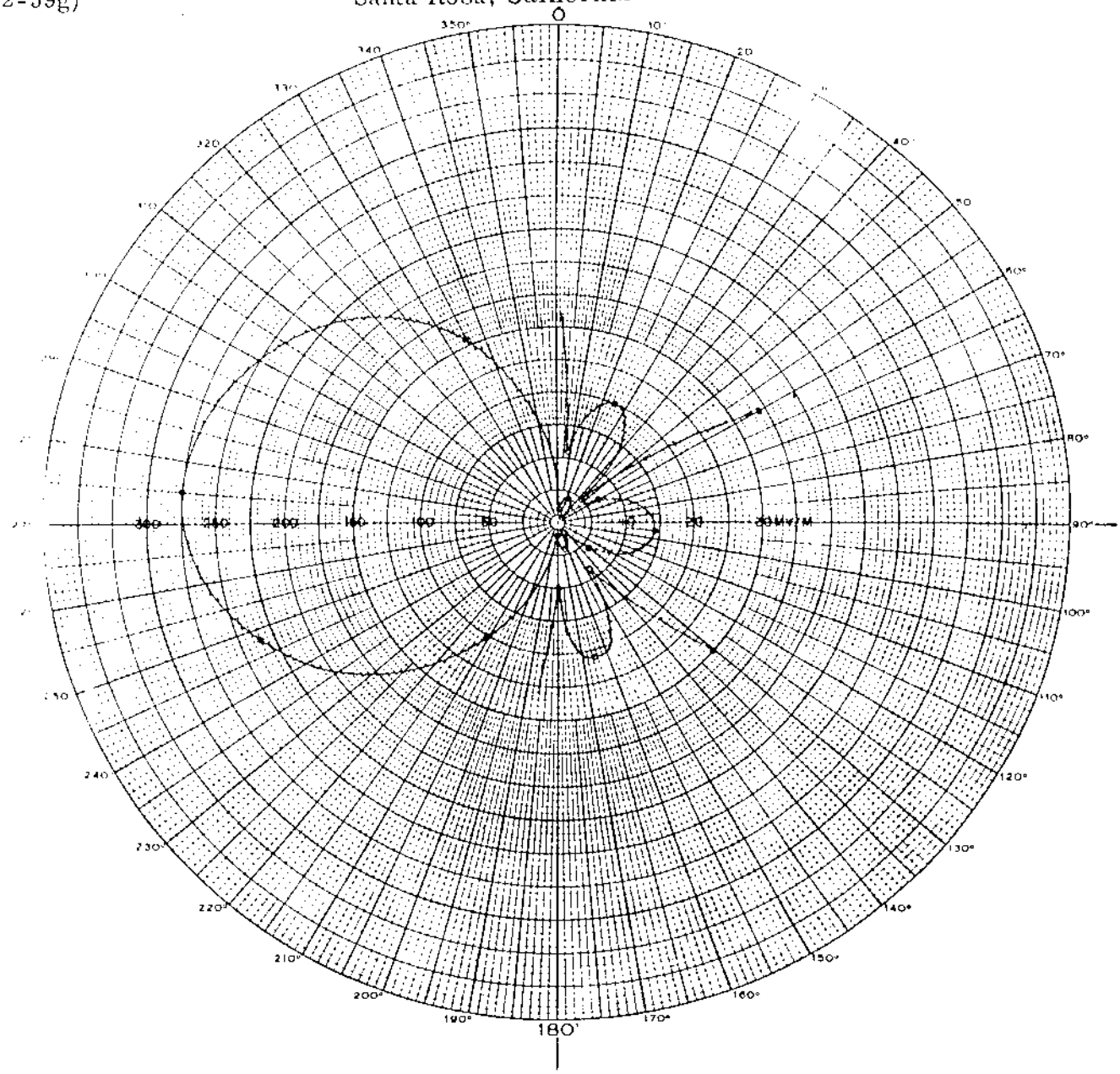
FCC File No. BP-11,084 (Ammended) Accepted 5/8/57 | Radio Santa Rosa, Santa Rosa, California | 1150 KC

K PLS

MEASURED NIGHT
(2-2-59g)

Station KJAX
Santa Rosa, California

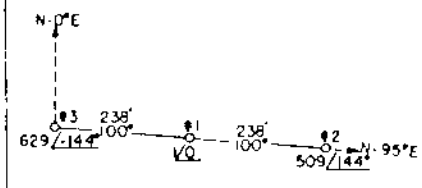
500w, 5kw-LS, DA-2,U
1150 KC



E_{RMS} = 139 MV/M

LAT 38° 27' 13.5"

LONG. 122° 39' 31"



G=88.4°

FIGURE 11

MEASURED NIGHTTIME PATTERN

KJAX

SANTA ROSA, CALIF.

1150 KC 05/5 KW DA2 U

NOV. 1958

FCC File No. BL-7344
Accepted 1-23-59

KJAX
Santa Rosa, California

1150 KC

KPLS

MEASURED NON-DA
(2-2-59g)

Station KJAX
Santa Rosa, California

500w, 5kw-LS, DA-2,U
1150 KC

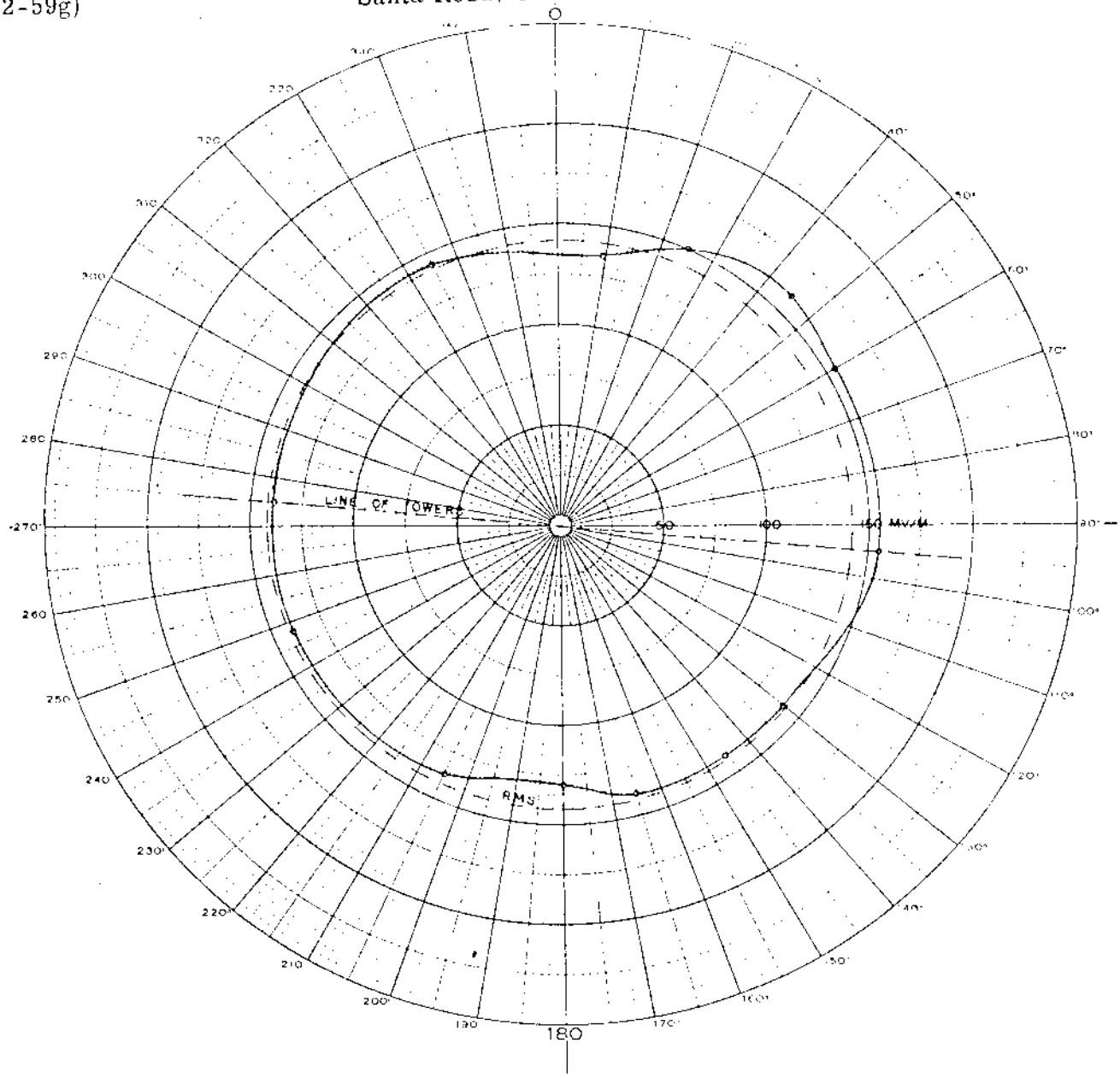


FIGURE 9

PATTERN PRODUCED BY CENTER TOWER OF ARRAY 500 WATTS
(END TOWERS FLOATING)

KJAX

SANTA ROSA, CALIF

NOV 1958

FCC File No. BL-7344
Accepted 1-23-59

KJAX
Santa Rosa, California

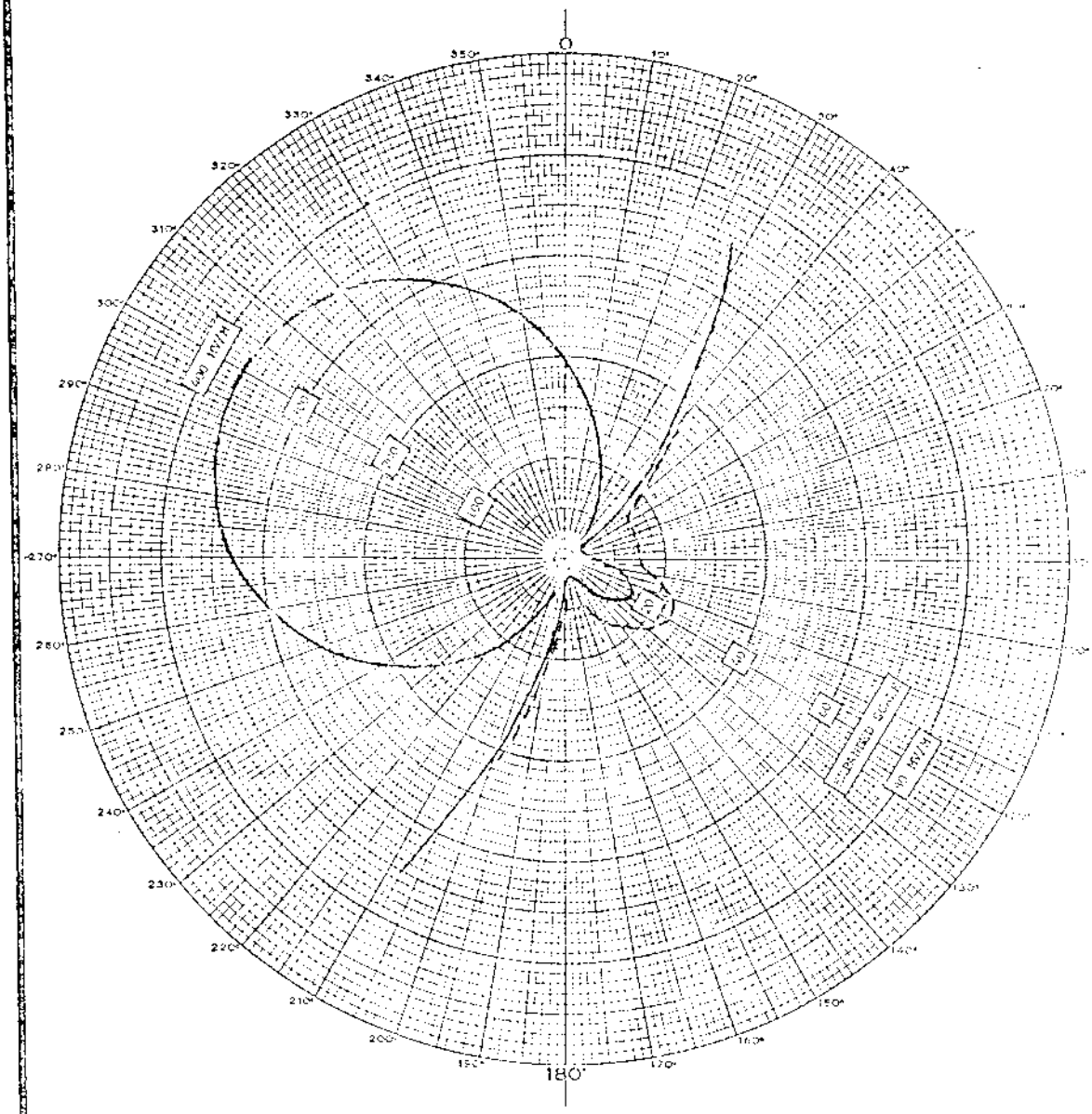
1150 KC

KQAM

Proposed Day
(11-24-70ct)

Station KBER
San Antonio, Texas

1kw,DA-D,D
1150 kc



LATITUDE: 29° 23' 15" LONGITUDE: 98° 23' 40"	ANTENNA PARAMETERS #1 0 1/-140° 60° #2 1.975/0° 60° #3 1/140° N=115°-E G=90°	FIGURE 1 MODIFICATION OF DIRECTIONAL ANTENNA PATTERN RADIO STATION KBER SAN ANTONIO, TEXAS 1150 KC 1KW, DA-D,D
JOHN H. MULLANEY AND ASSOCIATES		

FCC File No.BP-18913
Accepted 11-5-70

Station KBER
San Antonio, Texas

1150 kc

San Antonio, Texas

KQAM

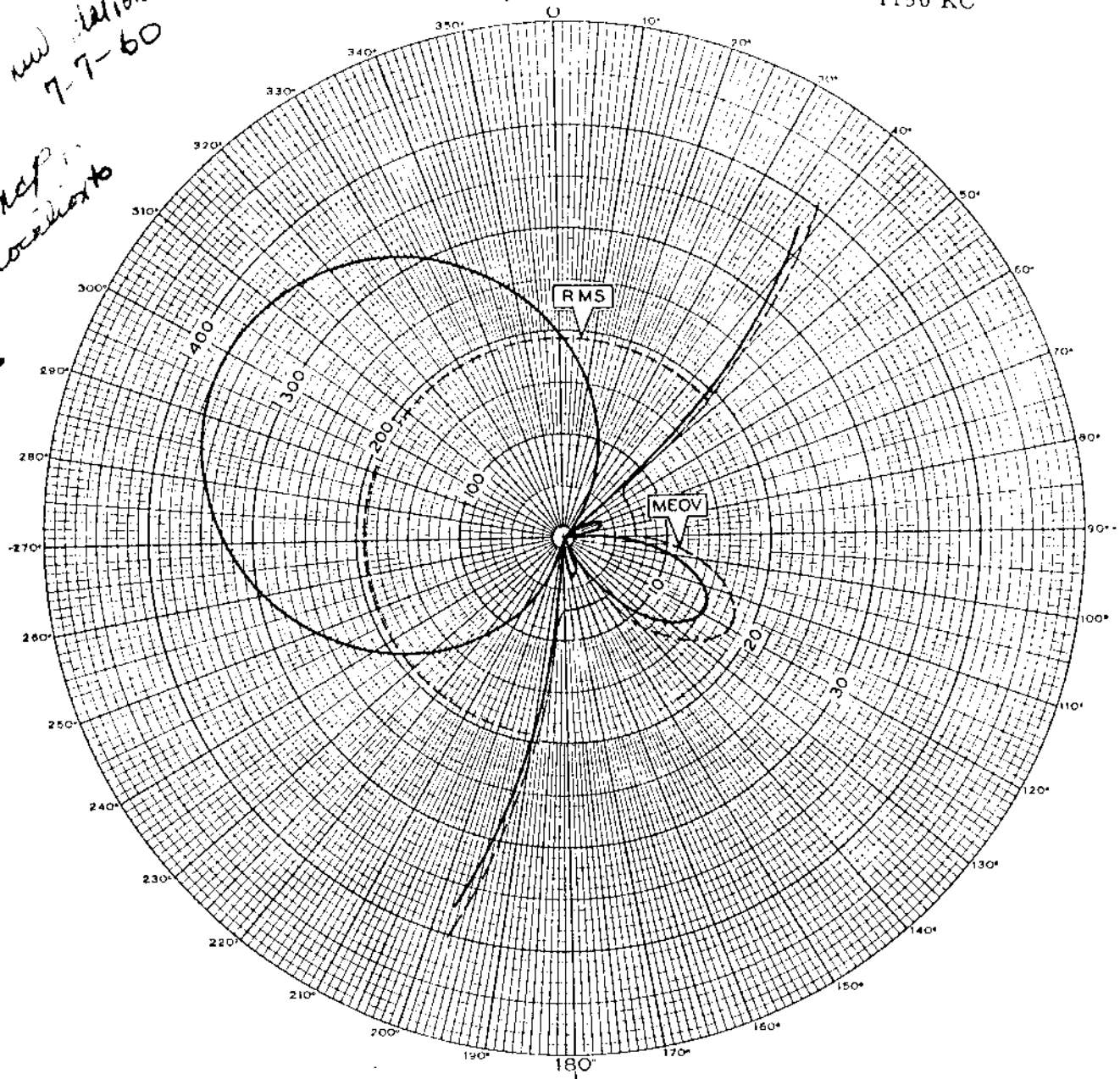
PROPOSED DAY
(7-8-59g)

New; Alamo B/Cstrs.
San Antonio, Texas

1kw, DA-D, D
1150 KC

Marked up for new station
7-7-60

Marked on graph paper
NL: 29-25-15
WL: 98-25-46



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS									STATION DATA
	TOWER No	ELECTRICAL HEIGHT G°	TRUE TOWER ORIENTATION ϕ°	SPACING S°	PHASING V°	HORIZONTAL FIELD mv/m E	FIELD RATIO F	ELEV ANGLE θ^T	ELEVATION RMS FIELD mv/m E_θ	CALL
	1	90	0	0	-140	158.2	1.0000	0	192.0	FREQUENCY 1150 kc
	2	90	118	60	0	312.5	1.9754	10		POWER 1.0 kw
	3	90	118	120	140	158.2	1.0000	20		TIME OF OPERATION DAYTIME
	4							30		TYPE OF OPERATION DIRECTIONAL
	5							40		DAYTIME TOWERS 3
	6							50		NIGHTTIME TOWERS —
	7							60		No. RADIALS PER TOWER 240
	8							70		LENGTH OF RADIALS 50-200 ft
	9							80		GROUND SCREEN DIMENSION —
	10							E_r^*	mv/m	LAT. 29 25 38
								P_r^*	kw	LONG 98 25 30
										SUPERSEDES
										PATTERN No.

DAYTIME OPERATION ☒ NIGHTTIME OPERATION [ ]

N 118° NO.1 60° NO.2 60° NO.3

ALAMO BCSTG. CO.
NEW AM
1150 KC 1000-D(DA)
SAN ANTONIO, TEXAS

EXHIBIT V-1C
PROPOSED
HORIZONTAL RADIATION
PATTERN

DAWKINS ESPY
CONSULTING RADIO ENGINEERS
BEVERLY HILLS, CALIF.

FCC File No. BP-11676
Accepted 6-22-59

Alamo Broadcasting Company
San Antonio, Texas

1150 KC

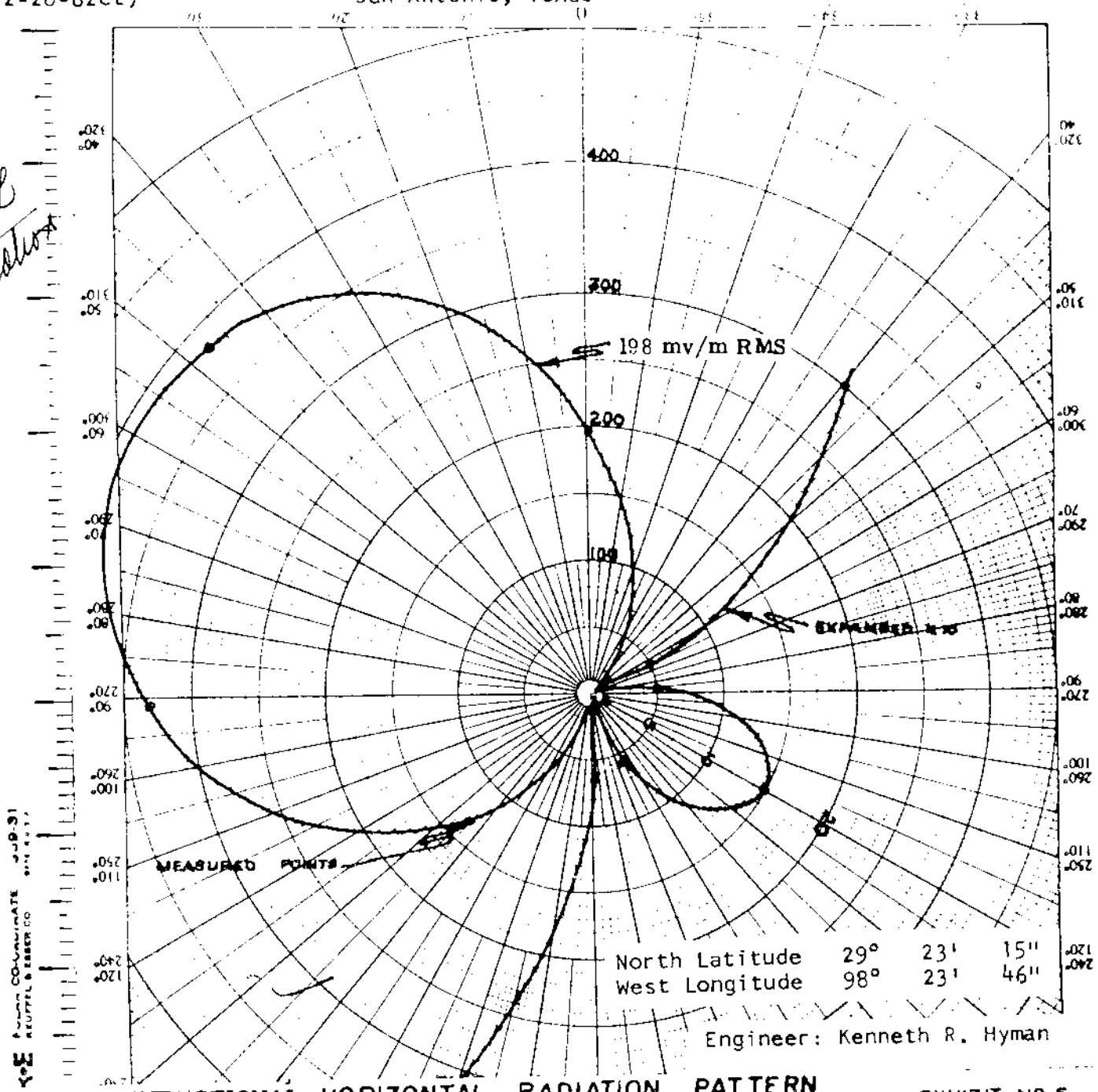
KQAM

Measured Day
(2-28-62ct)

Station KBER
San Antonio, Texas

1kw,DA-D,U
1150 kc

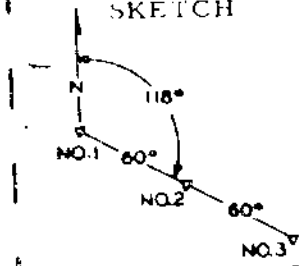
3-3-62
granted L
for new station



DIRECTIONAL HORIZONTAL RADIATION PATTERN

EXHIBIT NO. 6

ANTENNA PLACEMENT SKETCH



DIRECTIONAL ANTENNA PARAMETERS

STATION KBER
FREQUENCY 1150 KC

LOCATION SAN ANTONIO, TEX.
RATED POWER 1 KW.

Antenna No.	Tube Bearing	Spacing	Phasing	Current Ratio	Horizontal Field Intensity	Electrical Height
1	0°	0°	-138°	.500		90°
2	118°	60°	0°	1.000		90°
3	118°	120°	+140°	.533		90°

FCC File No.BL-8867
Accepted 1-23-62

Station KBER
San Antonio, Texas

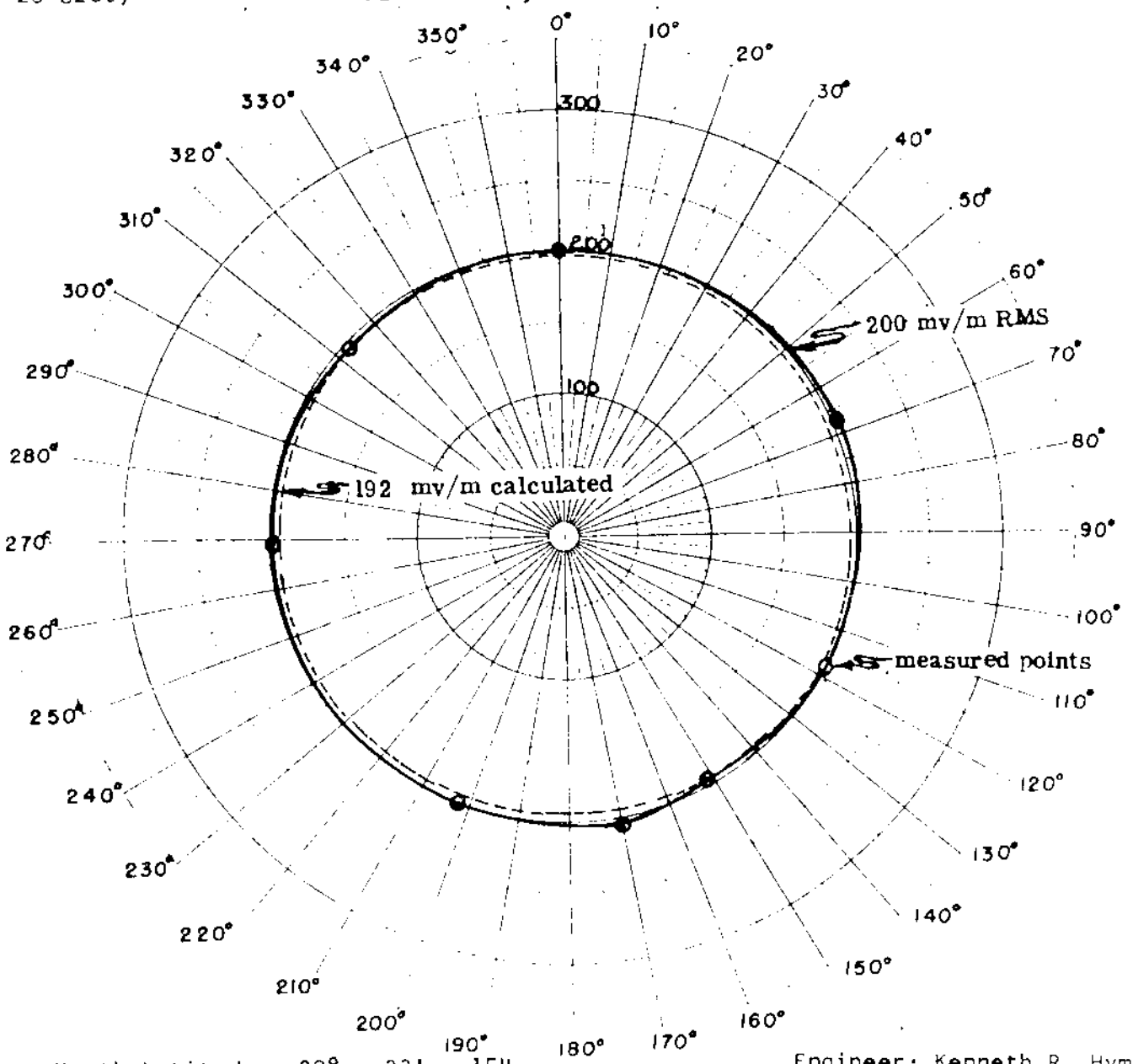
1150 kc

KQAM

Measured Non-DA
(2-28-62ct)

Station KBER
San Antonio, Texas

1kw,DA-D,D
1150 kc



North Latitude 29° 23' 15"
West Longitude 98° 23' 46"

Engineer: Kenneth R. Hyman

NON DIRECTIONAL HORIZONTAL RADIATION PATTERN

NON DIRECTIONAL ANTENNA PARAMETERS	
STATION KBER FREQUENCY 1150 KC	LOCATION San Antonio, Texas RATED POWER 1 KW.

EXHIBIT NO. 5

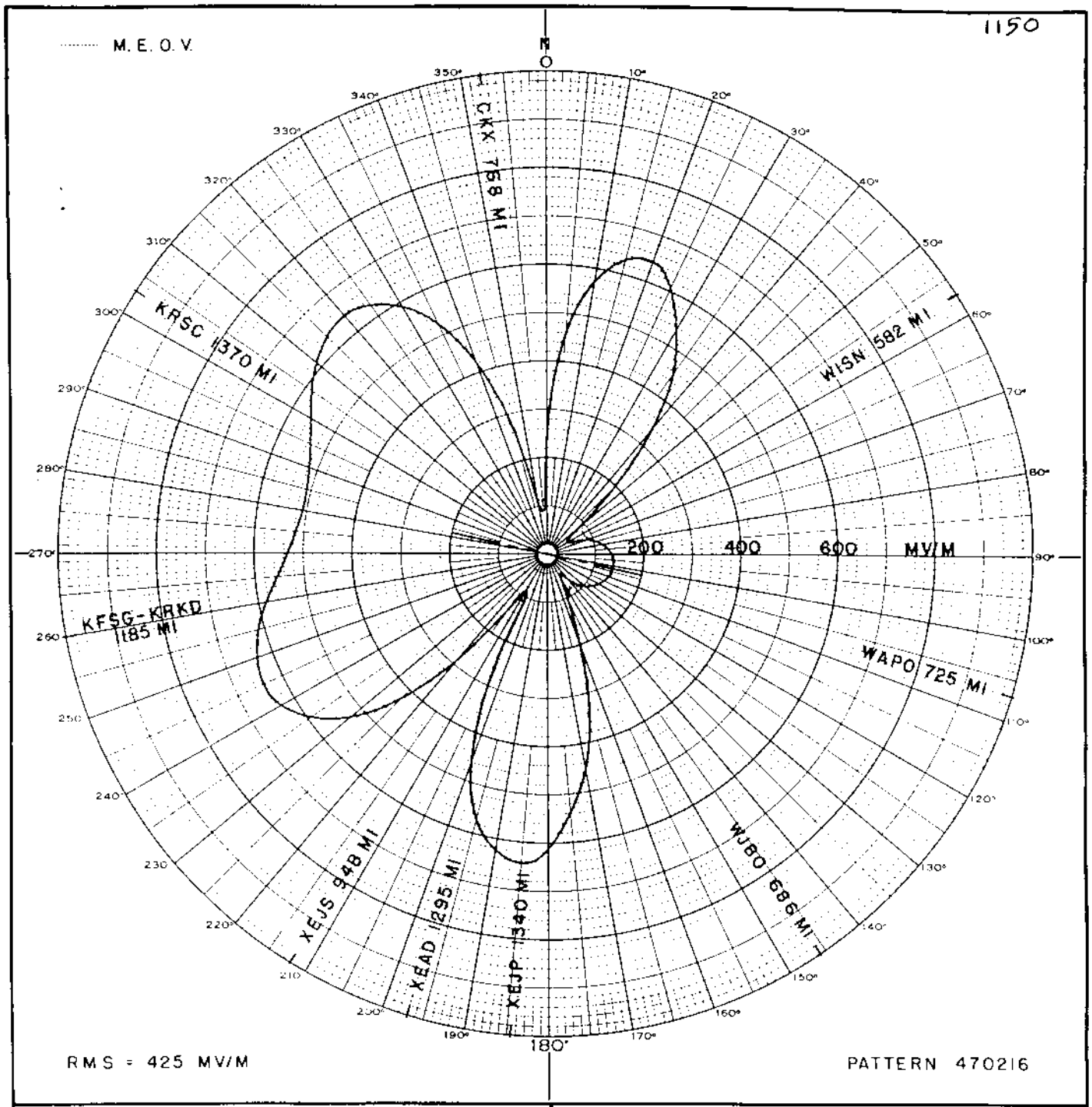
FCC File No. BL-8867
Accepted 1-23-62

Station KBER
San Antonio, Texas

1150 kc

KSAL

1150



① — 135° — ② — 209° — ③ — 135° — ④ — N 102.2° E →

ALL G'S = 90 DEGREES

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

DALLAS TEXAS

TOWER	1	2	3	4
FIELD	0.496	0.80	0.62	1.00
PHASE	+18	+63	-45	00

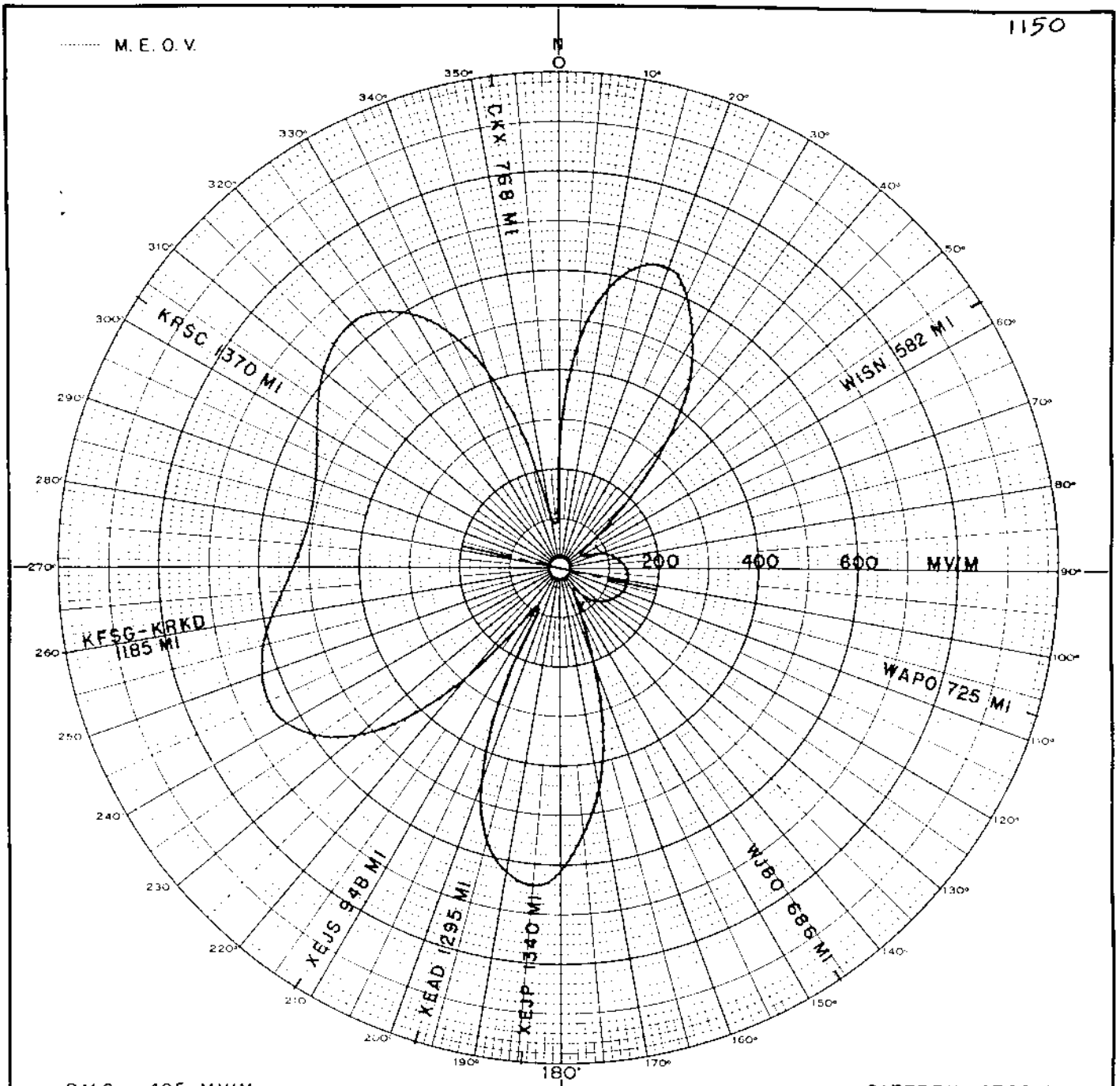
RADIO STATION KSAL

PROPOSED 1150 KC 5 KW DA-N

FIGURE 5A

KSAL

1150



RMS = 425 MV/M

PATTERN 470216

① — 135° — ② — 209° — ③ — 135° — ④ — N 102.2° E →

ALL G'S = 90 DEGREES

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

DALLAS TEXAS

TOWER	1	2	3	4
FIELD	0.496	0.80	0.62	1.00
PHASE	+18	+63	-45	00

Ralph Kamear

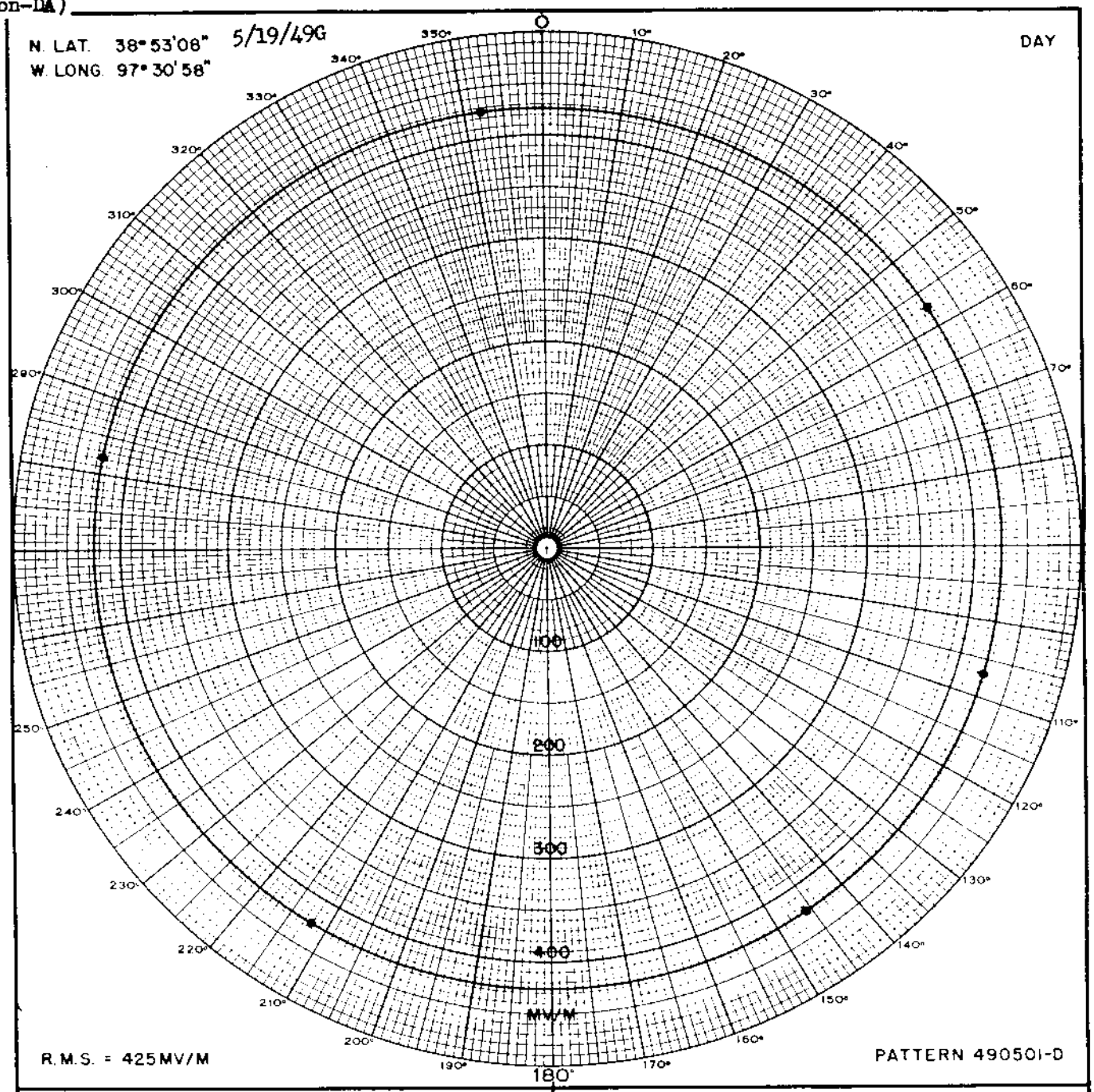
RADIO STATION KSAL

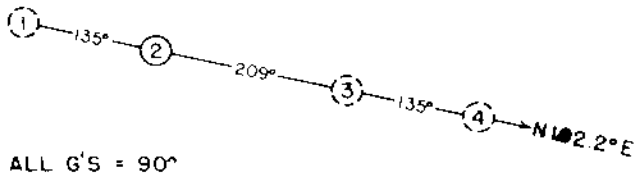
PROPOSED 1150 KC 5 KW DA-N

FIGURE 5A

KSAL

MEASURED DAY (non-DA) KSAL, SALINA, KANS. 5-13-49 5kw, DAN 1150 kc





RADIO STATION KSAL

SALINA, KANSAS

1150 KC 5 KW ND-D

PATTERN BASED ON FIELD INTENSITY MEASUREMENTS

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

490501 FIGURE 2A

KSEN

SUPPLEMENTAL DIRECTIONAL ANTENNA
DESCRIPTION SHEET

Station: KSEN | Main Studio: Shelby, Montana

Frequency: 1150 kHz | Power: 5 kW

Notification List No. 1606 | Date: November 13, 1974 | Class: III

GEOGRAPHICAL LOCATION OF THE
CENTER OF THE ANTENNA SYSTEM: North Latitude: 48° 28' 54"
West Longitude: 111° 53' 03"

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

Predicted effective Day Field: 438 mv/m at rated power.

Predicted effective Night Field: 392 mv/m at rated power.

Note: Please retain the nighttime verticle angle directional antenna radiation patterns notified for KSEN in United States Change List Number 1240, dated November 3, 1967, and the description sheet and daytime and nighttime horizontal radiation patterns notified in United States Change List Number 1308, dated February 19, 1969, 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 30460A5

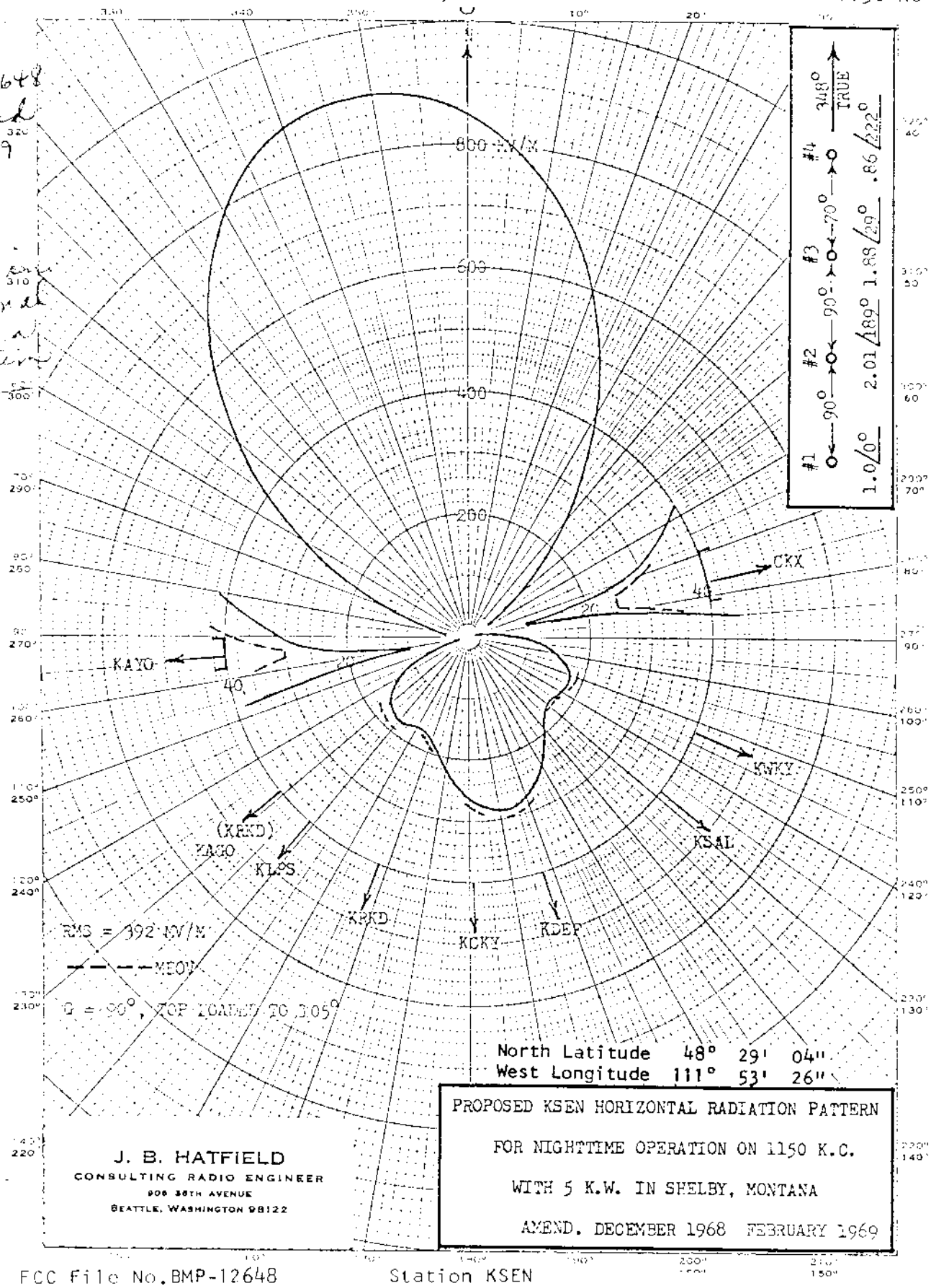
KSEN

Proposed Night
(2-28-69ct)

Station KSEN
Shelby, Montana

5kw,DA-2,U
1150 kc

BMP12648
Granted
2-19-69
[illegible]



FCC File No.BMP-12648
Accepted 2-13-69

Station KSEN
Shelby, Montana

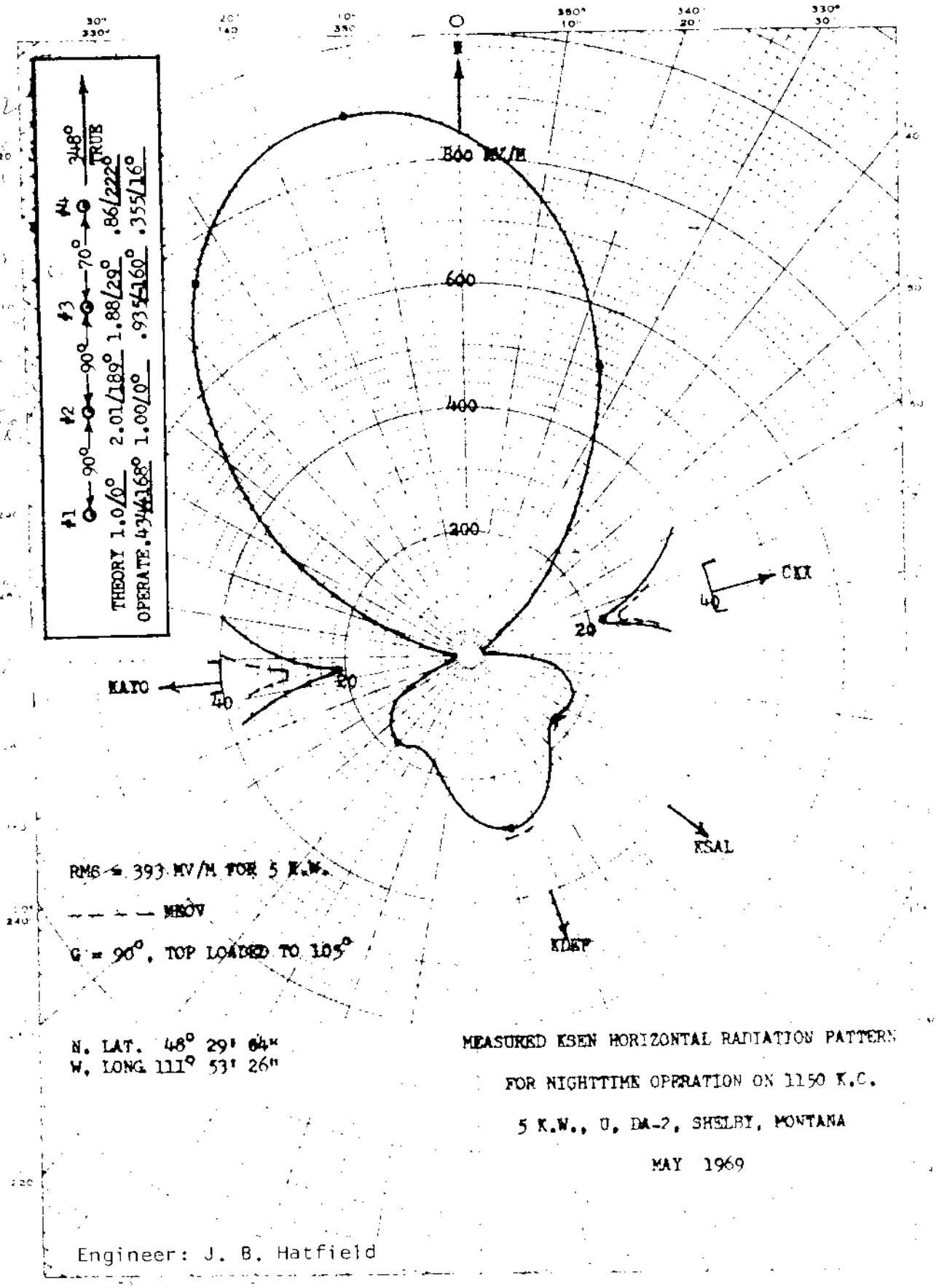
1150 kc

KSEN

Measured Night
(8-22-69ct)

Station KSEN
Shelby, Montana

5kw, DA-2, U
1150 kc



N. LAT. 48° 29' 04"
W. LONG. 111° 53' 26"

MEASURED KSEN HORIZONTAL RADIATION PATTERN

FOR NIGHTTIME OPERATION ON 1150 K.C.

5 K.W., U, DA-2, SHELBY, MONTANA

MAY 1969

Engineer: J. B. Hatfield

FCC File No.BL-12422
Accepted 8-15-69

Station KSEN
Shelby, Montana

1150 kc

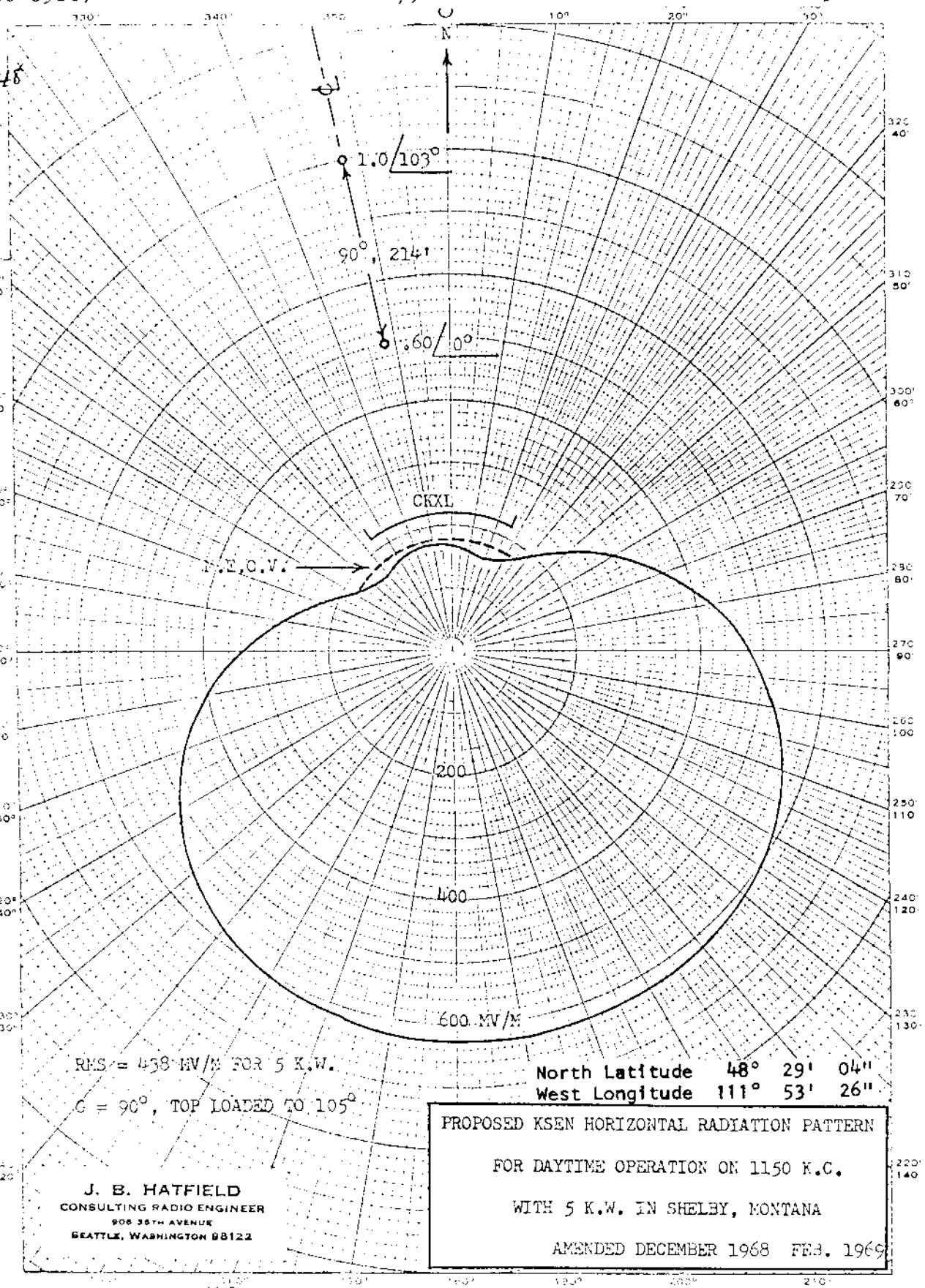
KSEN

Proposed Day
(2-28-69ct)

Station KSEN
Shelby, Montana

5kw, DA-2, U
1150 kc

BMP-12648
Granted
-19-69
Ord. of CP
to make
changes
in DA
and
antenna
system



FCC File No. BMP-12648
Accepted 2-13-69

Station KSEN
Shelby, Montana

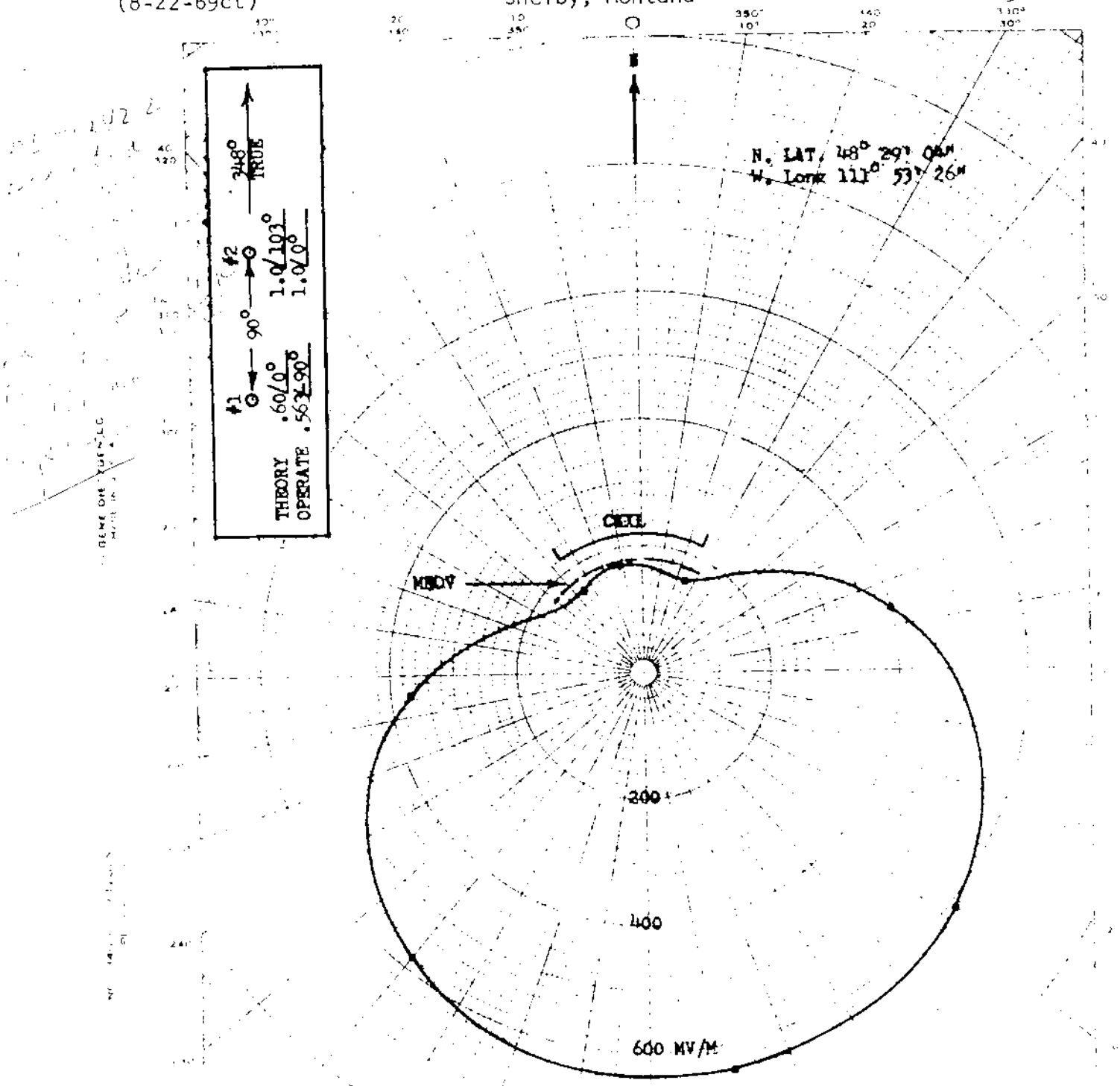
1150 kc

KSEN

Measured Day
(8-22-69ct)

Station KSEN
Shelby, Montana

5kw, DA-2, U
1150 kc



RMS = 442 MV/M FOR 5 K.W.

G = 90°, TOP LOADED TO 105°

MEASURED KSEN HORIZONTAL RADIATION PATTERN

FOR DAYTIME OPERATION ON 1150 K.C.

5 K.W., U, DA-2, SHELBY, MONTANA

MAY 1969

Engineer: J. B. Hatfield

FCC File No.BL-12422
Accepted 8-15-69

Station KSEN
Shelby, Montana

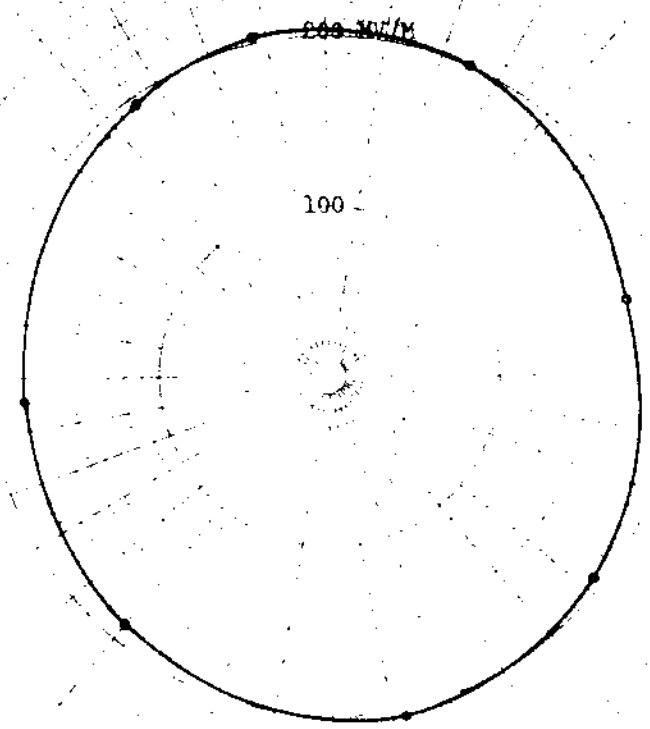
1150 kc

KSEN

Measured Non-DA
(8-22-69ct)

Station KSEN
Shelby, Montana

5kw,DA-2,U
1150 kc



RMS = 192 MV/M

G = 90° (214')

KSEN 1.0 K.W. HORIZONTAL PATTERN

FOR #2 TOWER, NON-DIRECTIONAL

AUGUST 1968

FCC File No.BL-12422
Accepted 8-15-69

Station KSEN
Shelby, Montana

1150 kc

KSUZ

SUPPLEMENTAL DIRECTIONAL ANTENNA
DESCRIPTION SHEET

Station: KSUZ

Main Studio: Port Neches, Texas

Frequency: 1150 kHz

Power: 0.5 kW

Notification List No. 1690

Date: June 24, 1976

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 30° 05' 04"
West Longitude: 93° 58' 13"

Authorized for Daytime operation (DA-D).

Predicted effective Day Field: 127 mv/m at rated power.

Note: Please retain the description sheet and directional antenna radiation patterns notified for a new station at Port Neches, Texas, in United States Change List Number 790, dated December 23, 1958, and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only a change in the geographical coordinates of the center of the antenna system.

Port Neches, Texas

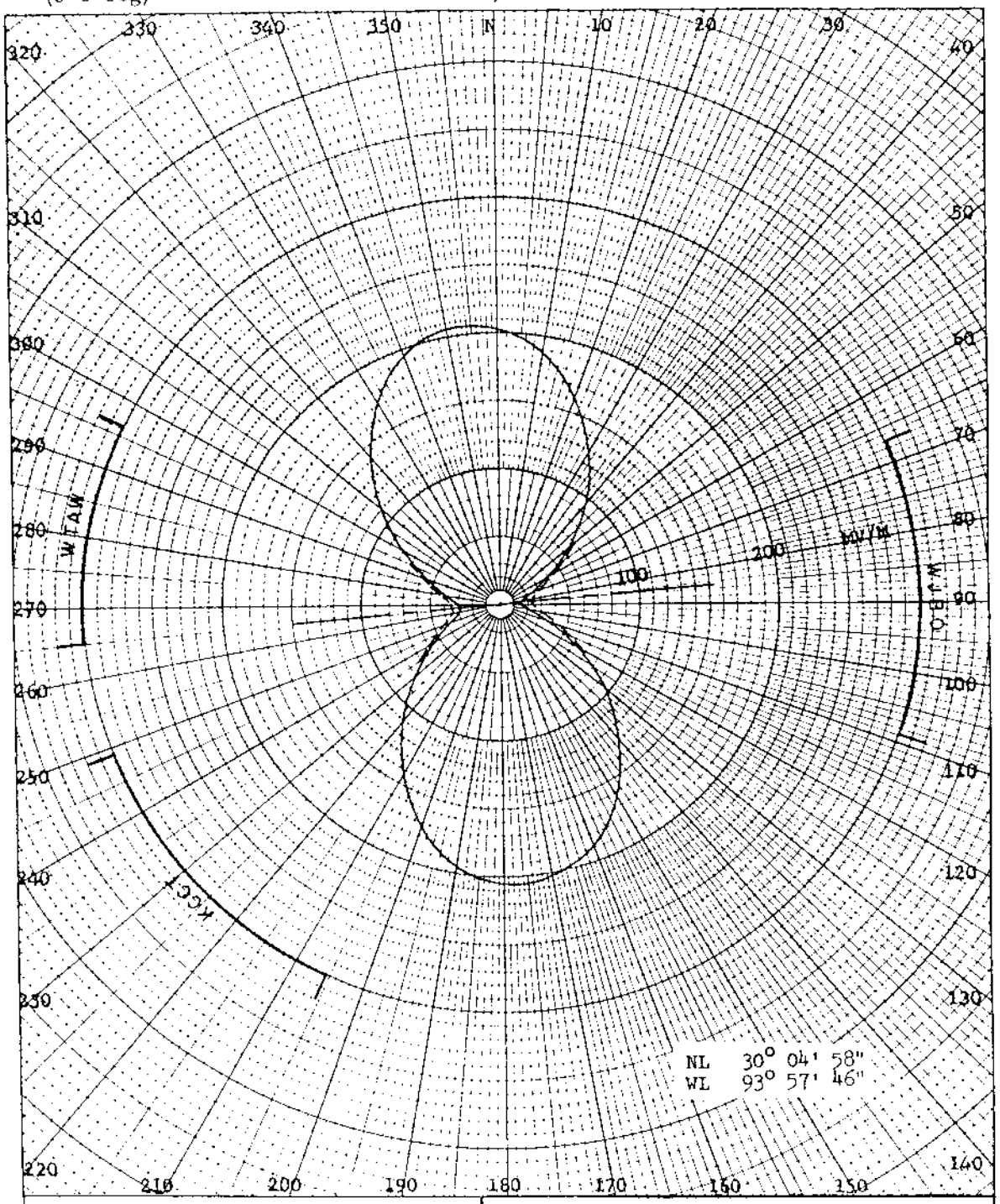
KSUZ

Granted CP 12/23/58 for new station

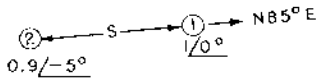
PROPOSED DAY (5-8-58g)

New; Mid-County Radio
Port Neches, Texas

500w, DA-D,D
1150 KC



S=170° = 404'2" --- MEOV



RMS = 127 MV/M

G'S = 92.5° = 220'

J. G. ROUNTREE
CONSULTING RADIO ENGINEER
5622 DYER STREET
DALLAS 6, TEXAS

MID-COUNTY RADIO
PORT NECHES, TEXAS
1150 KC, 500 W, DA, D

580220

FIGURE 4A

FCC File No. BP-11,943
Accepted 4-28-58

Mid-County Radio
Port Neches, Texas

1150 KC

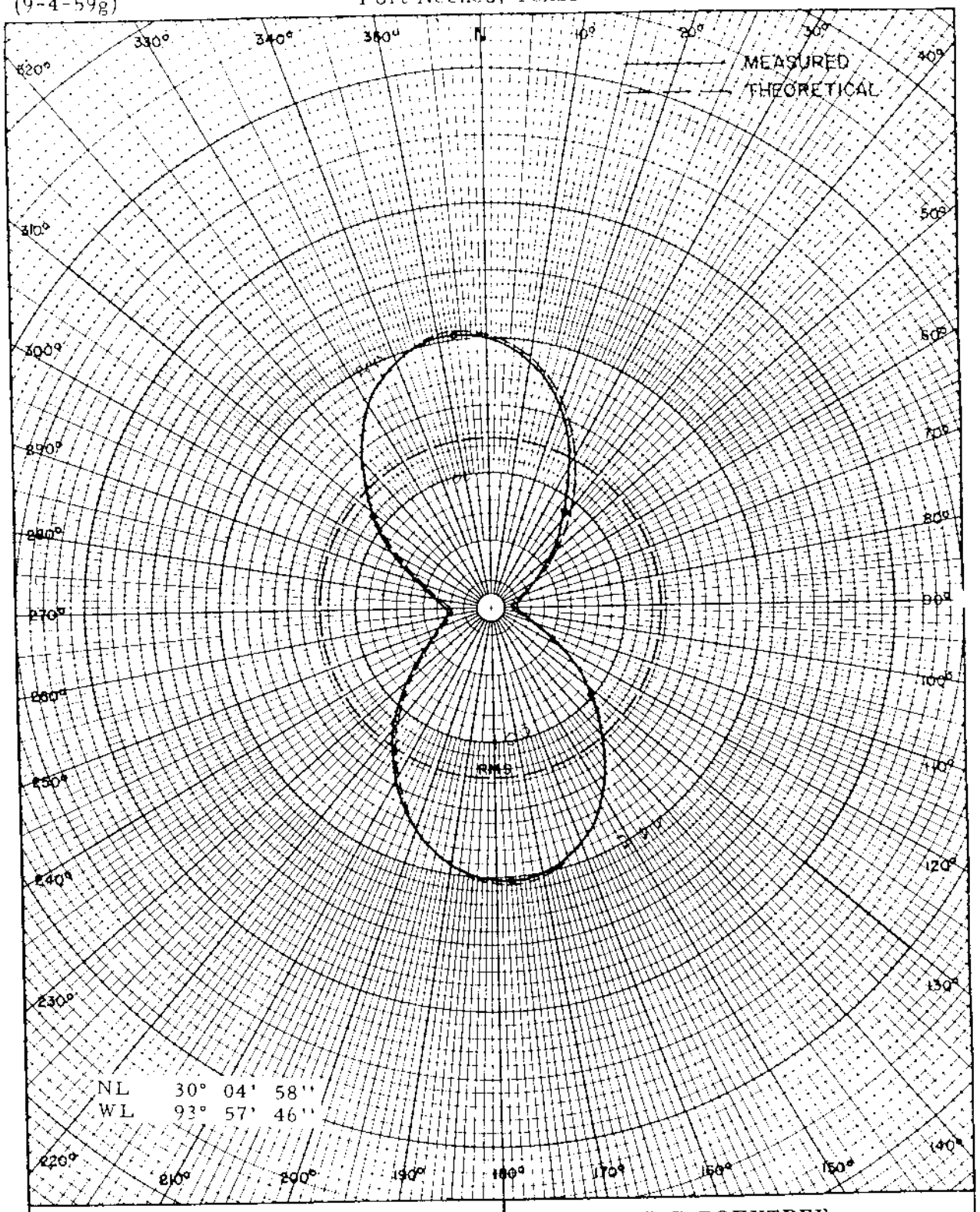
KSUZ

MEASURED DAY
(9-4-59g)

Station KPNG
Port Neches, Texas

500w, 1

1150 KC



MEASURED DA PATTERN

② ← S → ① → 85°T

SEE FIGURE 2 FOR OPERATING PARAMETERS

RMS = 126.0 MV/M

S = 170° = 404'2"

J. G. ROUNTREE
CONSULTING RADIO ENGINEER
5622 DYER STREET
DALLAS 6, TEXAS

RADIO STATION KPNG
PORT NECHES, TEXAS
1150 KC, 500W, DA-D

590620

FIGURE 3B

FCC File No. BL-7578
Accepted 8-25-59

KPNG
Port Neches, Texas

1150 KC

Granted L for new station
8-18-59

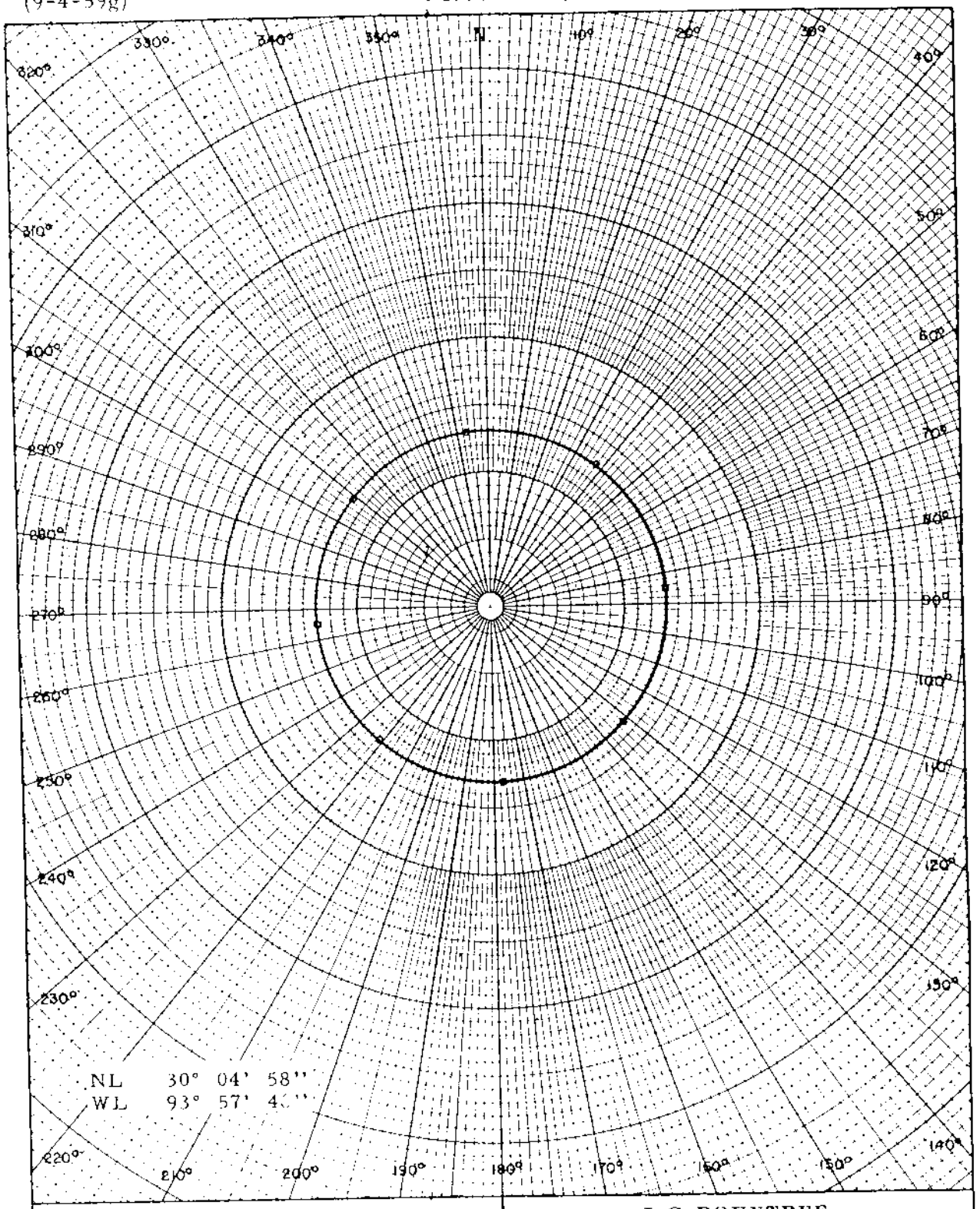
KSUZ

MEASURED NON-DA
(9-4-59g)

Station KPNG
Port Neches, Texas

500w, DA-D,D
1150 KC

granted for new station
11-18-59



MEASURED ND PATTERN

(2) ← S → (1) → 85° T
(DETUNED)

RMS = 130.6 MV/M

S = 170° = 404'2"

J. G. ROUNTREE
CONSULTING RADIO ENGINEER
5622 DYER STREET
DALLAS 6, TEXAS

RADIO STATION KPNG
PORT NECHES, TEXAS
1150 KC, 500W, DA-D

590620

FIGURE 3A

FCC File No. BL-7578
Accepted 8-25-59

KPNG
Port Neches, Texas

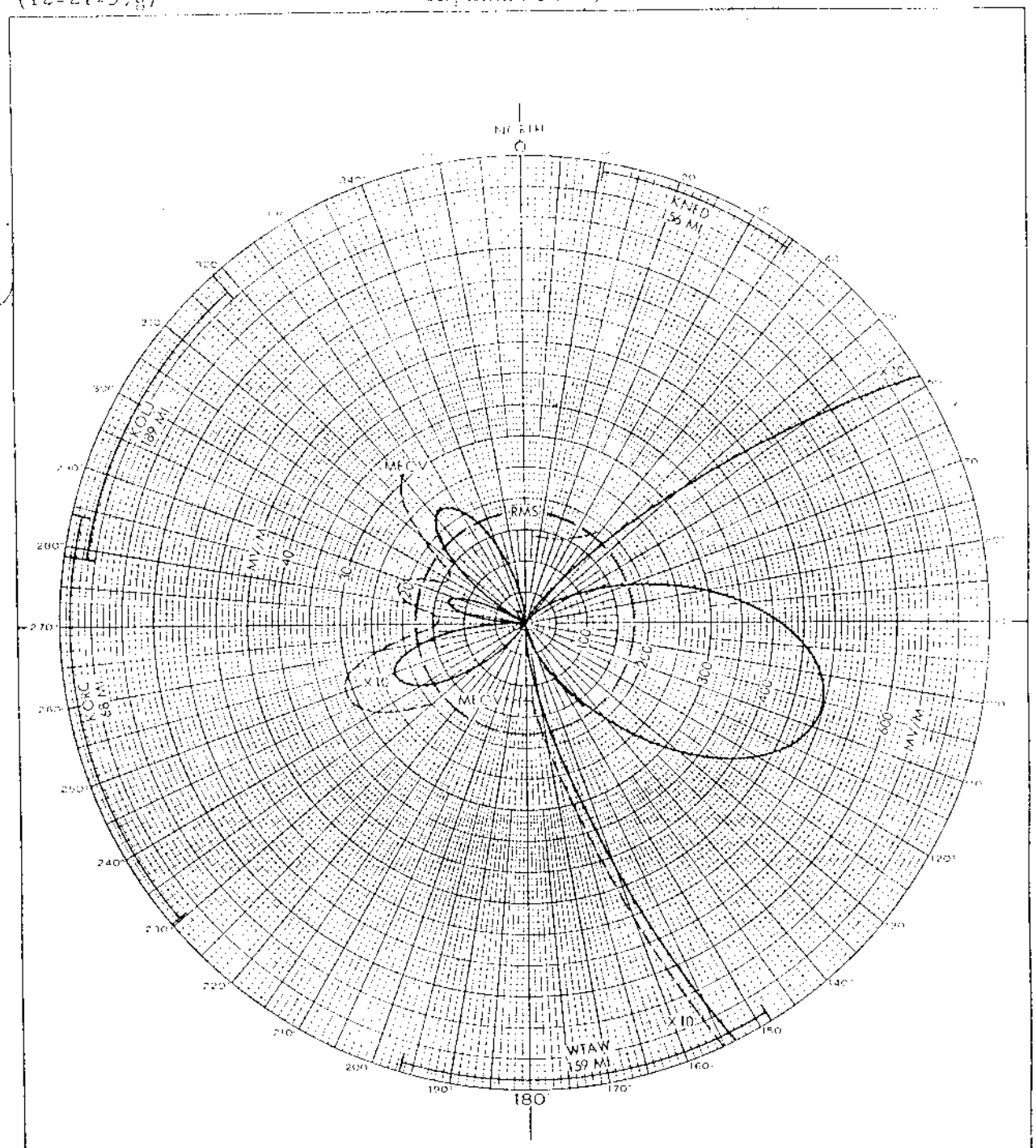
1150 KC

KVIL

PROPOSED DAY
(12-21-59g)

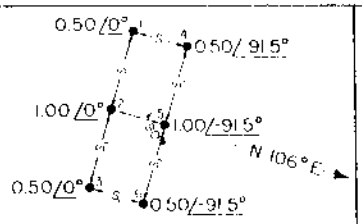
Station KVIL
Highland Park, Texas

1kw, DA-D, D
1150 KC



S_1 = 91.5° = 217'
S_2 = 180° = 428'
$G_{2,3,4,5,6}$ = 91.5° = 217'
RMS = 17.7 MV/M

N LAT. 32° 53' 36"
W LONG 96° 55' 33"



HAMMETT & EDISON
CONSULTING RADIO ENGINEERS
SAN FRANCISCO

RADIO STATION KVIL
1150 KC, 1KW, DA-D
HIGHLAND PARK, TEXAS

HORIZONTAL RADIATION PATTERN

UNATTENUATED FIELD INTENSITY
AT ONE MILE

590909

FIGURE 4B

FCC File No. BMP-8789
Accepted 11-24-59

KVIL
Highland Park, Texas

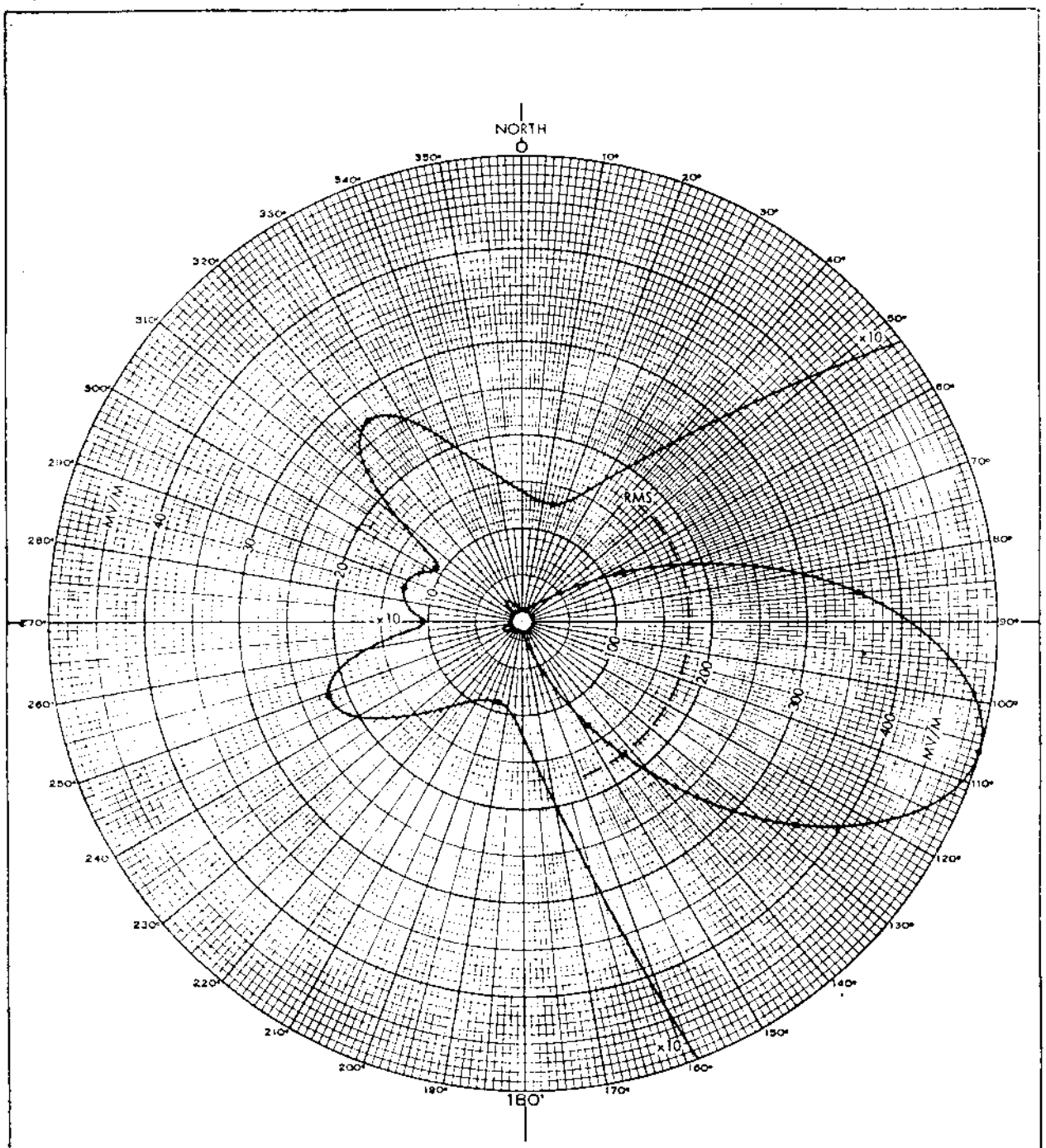
1150 KC

KVIL

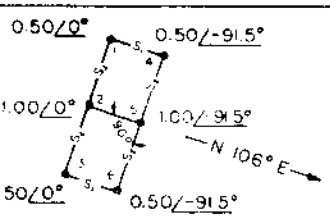
MEASURED DAY
(9-20-61ct)

Station KVIL
Highland Park, Texas

1kw,DA-D,D
1150 kc



$S_1 = 91.5° = 217'$
$S_2 = 180° = 428'$
$G_{1,2,3,4,5,6} = 91.5° = 217'$
RMS = 177 MV/M
N.LAT 32° 53' 36"
W.LONG 96° 55' 33"



HAMMETT & EDISON
CONSULTING RADIO ENGINEERS
SAN FRANCISCO

RADIO STATION KVIL
1150 KC, 1 KW, DA-D
HIGHLAND PARK, TEXAS

MEASURED
HORIZONTAL RADIATION PATTERN
DAYTIME

UNATTENUATED FIELD INTENSITY
AT ONE MILE

610628

FIGURE 10B

FCC File No.BL-8622
Accepted 8-21-61

Station KVIL
Highland Park, Texas

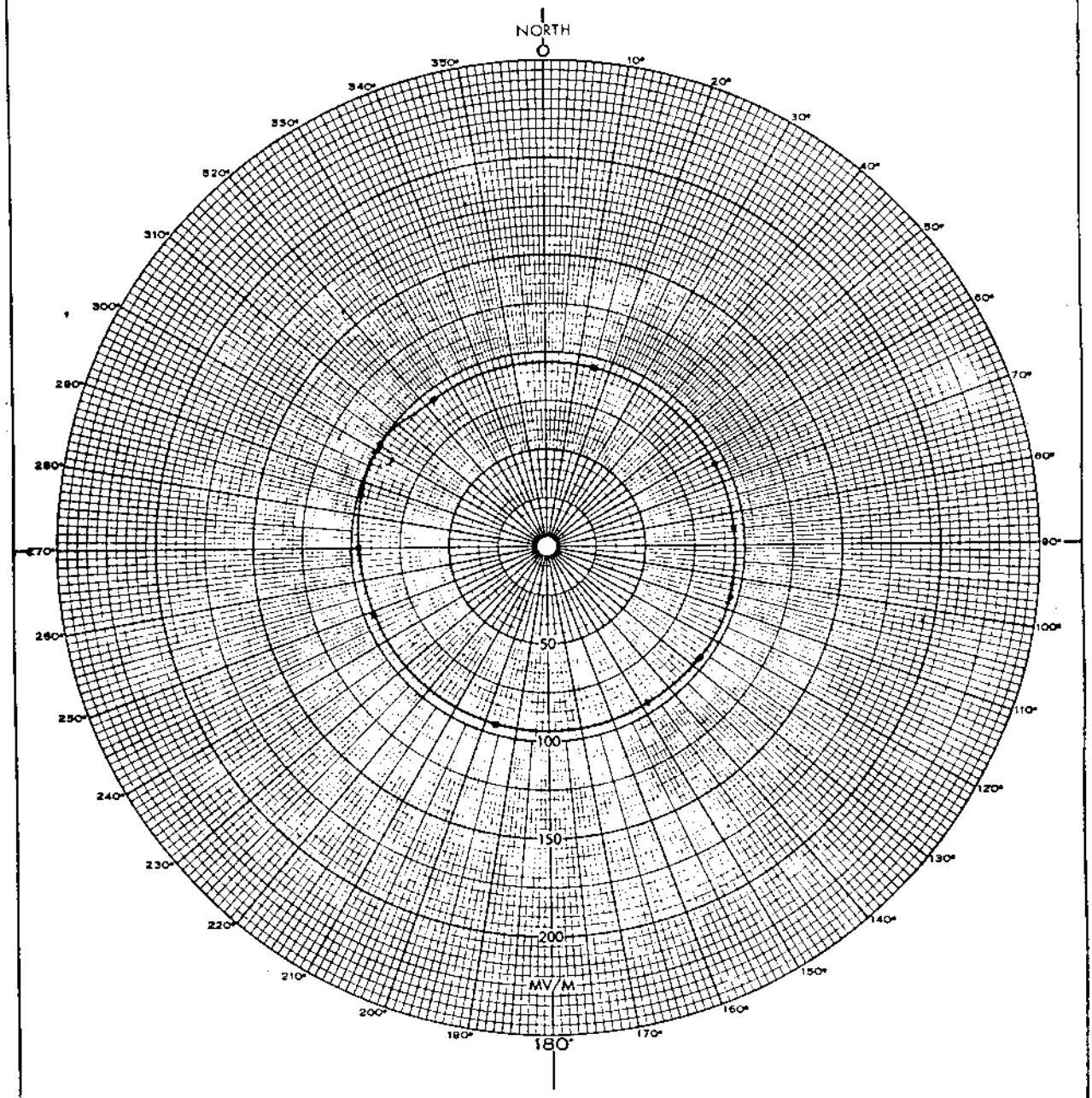
1150 kc

KVIL

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

Station KVIL
Highland Park, Texas

1kw,DA-D,D
1150 kc



N. LAT. 32° 53' 36"
W. LONG. 96° 55' 33"

G=91.5°=217'

RMS = 96 MV/M

TOWER 5 EXCITED
PRIOR TO ERECTION OF OTHER FIVE TOWERS.

HAMMETT & EDISON
CONSULTING RADIO ENGINEERS
SAN FRANCISCO

RADIO STATION KVIL
1150 KC, 1 KW, DA-D
HIGHLAND PARK, TEXAS

MEASURED
HORIZONTAL RADIATION PATTERN

250 WATTS NON-DIRECTIONAL TEST

UNATTENUATED FIELD INTENSITY
AT ONE MILE

610628

FIGURE 10A

FCC File No. BL-8622
Accepted 8-21-61

Station KVIL
Highland Park, Texas

1150 kc

KWBZ

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KWBZ

Main Studio: Englewood, Colorado

Frequency: 1150 kHz

Power: 1kw Night 5kw Day

Notification List No. 1781

Date: October 19, 1979 Class: III

Geographical Location of the Center of the Antenna System:

North Latitude: 39° 36' 18"
West Longitude: 104° 50' 25"

ANTENNA CHARACTERISTICS

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

TOWER:	W(#1)	WC(#2)	EC(#3)	E(#4)
HEIGHT ABOVE INSULATORS:	140'	140'	140'	140' (58.9°)
NIGHT PHASING:	0°	170.6°	-34.9°	143.1°
NIGHT FIELD RATIO:	1.0	0.53	0.69	0.81

SPACING AND ORIENTATION: The towers in a row are spaced 285.1' (119.91°) on a line bearing 102° true.

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

KWBZ

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day 1/	438.3 mv/m		
Night	178.3 mv/m	286.9 mv/m	187.4 mv/m

Note:

KWBZ

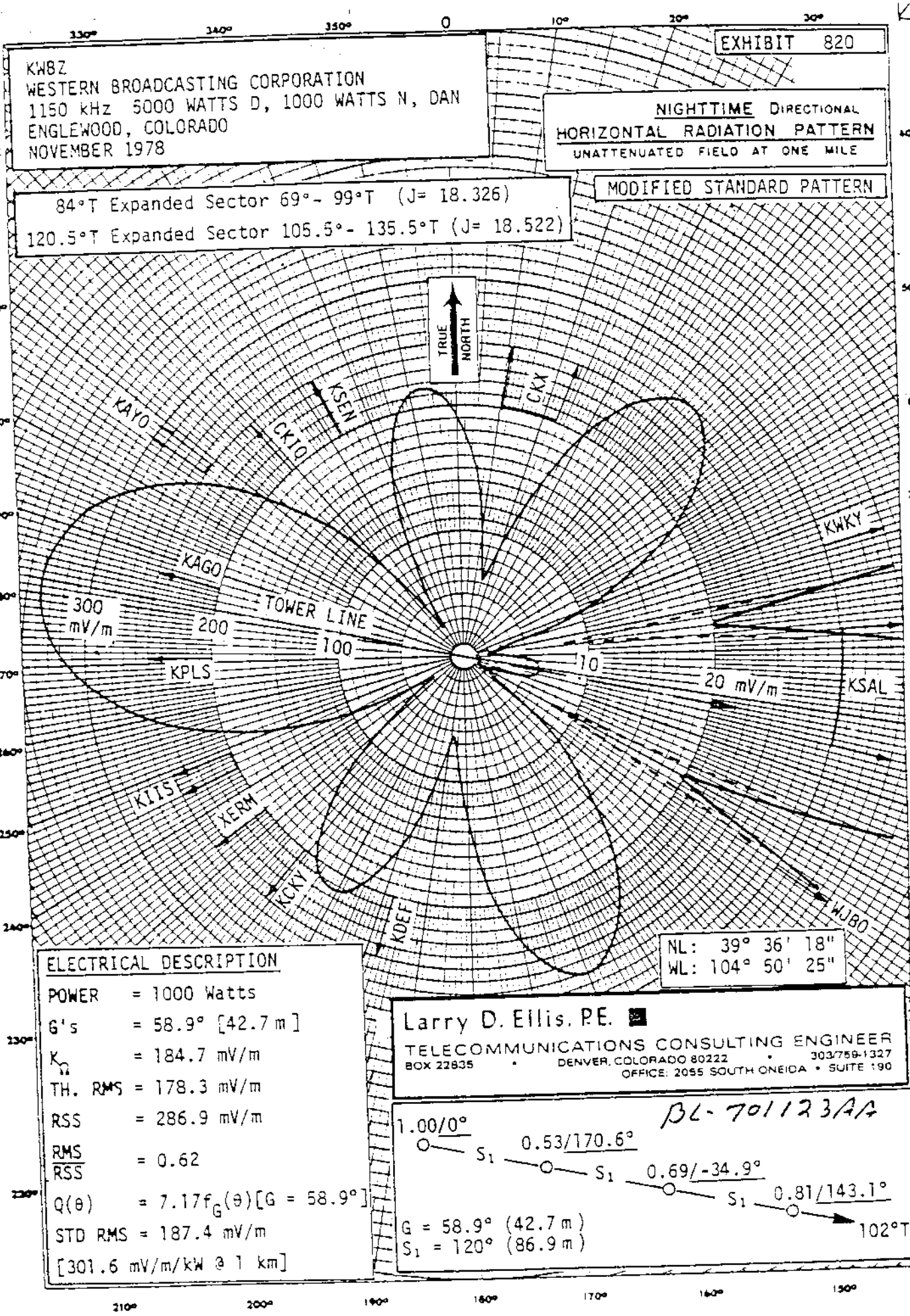
EXHIBIT 820

KWBZ
WESTERN BROADCASTING CORPORATION
1150 kHz 5000 WATTS D, 1000 WATTS N, DAN
ENGLEWOOD, COLORADO
NOVEMBER 1978

NIGHTTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

MODIFIED STANDARD PATTERN

84°T Expanded Sector 69°- 99°T (J= 18.326)
120.5°T Expanded Sector 105.5°- 135.5°T (J= 18.522)



NL: 39° 36' 18"
WL: 104° 50' 25"

ELECTRICAL DESCRIPTION

POWER = 1000 Watts
G's = 58.9° [42.7 m]
K_Ω = 184.7 mV/m
TH. RMS = 178.3 mV/m
RSS = 286.9 mV/m
RMS/RSS = 0.62
Q(θ) = $7.17 f_G(\theta)$ [G = 58.9°]
STD RMS = 187.4 mV/m
[301.6 mV/m/kW @ 1 km]

Larry D. Ellis, P.E.
TELECOMMUNICATIONS CONSULTING ENGINEER
BOX 22835 • DENVER, COLORADO 80222 • 303/759-1327
OFFICE: 2055 SOUTH ONEIDA • SUITE 190

BL-701123AA

1.00/0° — S_1 — 0.53/170.6° — S_1 — 0.69/-34.9° — S_1 — 0.81/143.1° → 102°T

G = 58.9° (42.7 m)
S_1 = 120° (86.9 m)

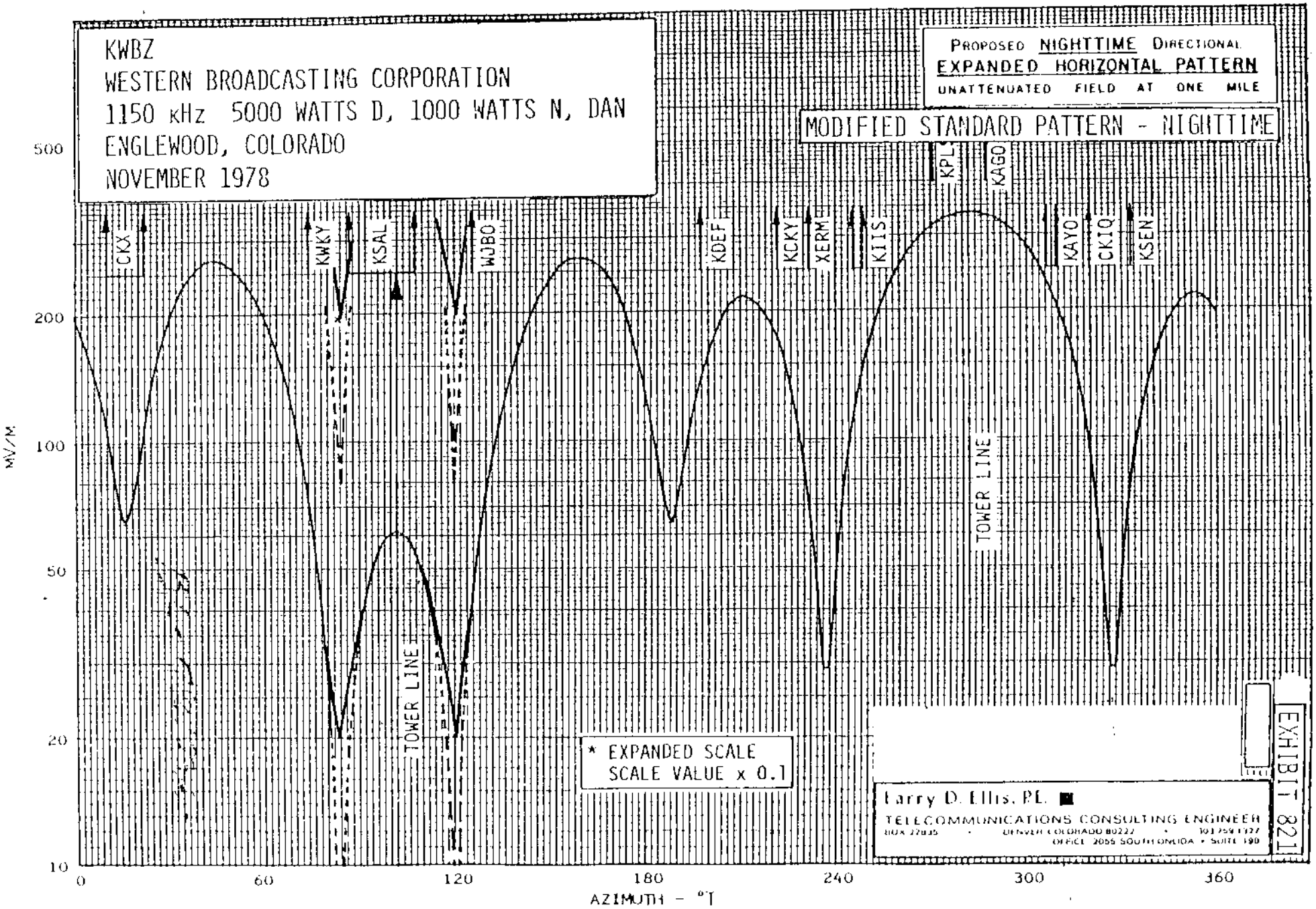


EXHIBIT 82

KWBZ

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION: KWBZ
FREQUENCY: 1150 kHz
Notification List No. 1748

Main Studio: Englewood, Colorado
Power: 1 kW Night 5 kW Day
Date: September 7, 1977 Class: III

Geographical Locations of the centers of the Day and Night antenna System:

Daytime
North latitude: 39: 38' 35"
West Longitude: 105° 00' 48"

NIGHTTIME
North latitude: 39° 36' 18"
West Longitude: 104" 50' 25"

NIGHTTIME ANTENNA CHARACTERISTICS

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

TOWER:	W(#1)	WL(#2)	EC(#3)	E(#4)	
HEIGHT ABOVE INSULATORS:	140'	140'	140'	140'	(58.9°)
PHASING:	0	+170.6°	-34.9°	+143.1°	
FIELD RATIO:	1	0.53	0.69	0.81	

SPACING AND ORIENTATION: The towers are located in a row spac-d 285' (120"_ on a line bearing 102° true.

NIGHT GROUND SYSTEM: 120-210 equally spaced copper radials plus 120 50' interspace radials tower. Radials are shortened and bonded to transverse straps along interesections between towers.

DAYTIME ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (ND)

HEIGHT ABOVE INSULATORS: 250!

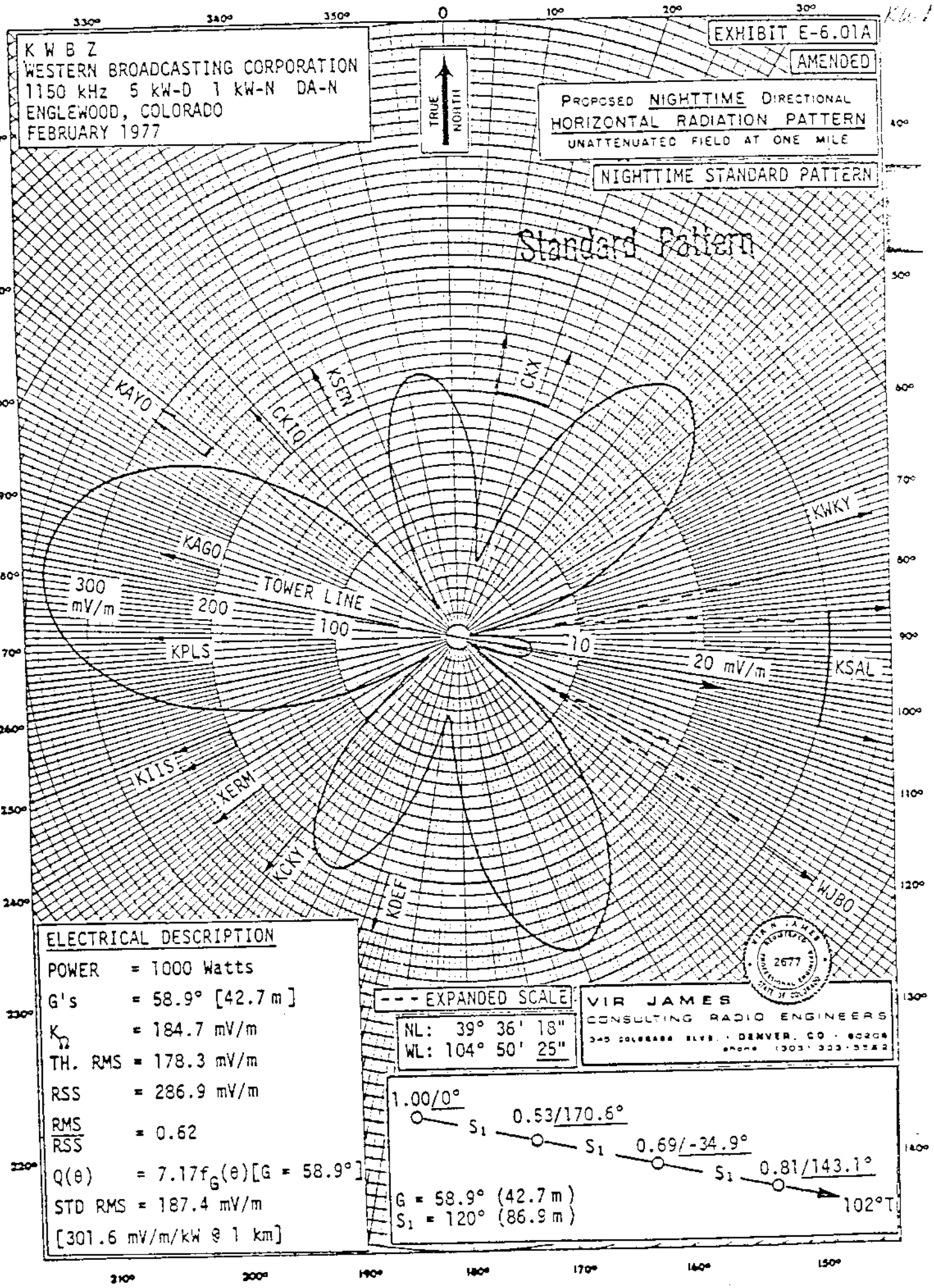
DAY GROUND SYSTEM: 120-250' equally spaced copper radial about the tower.

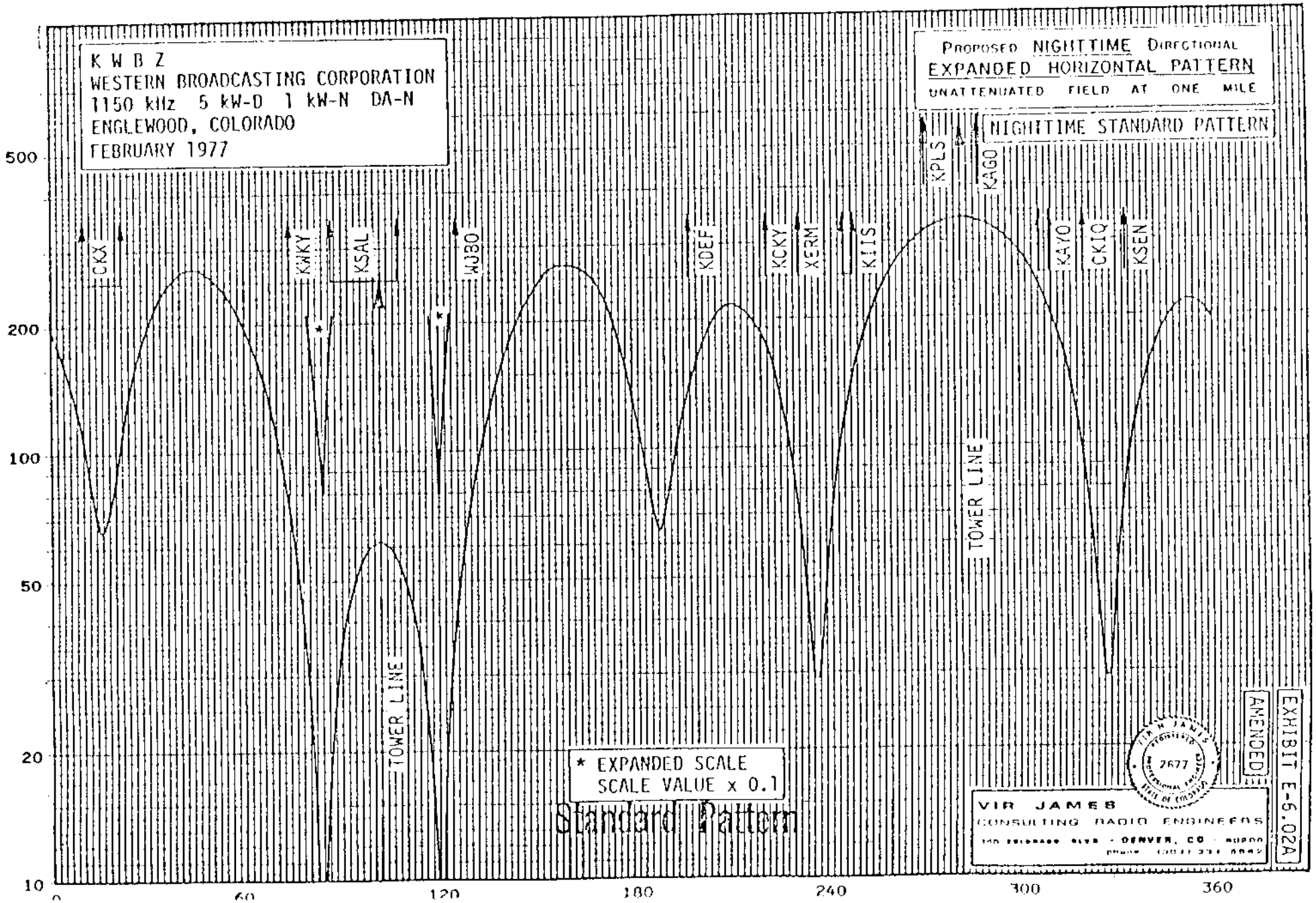
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	Theoretical rms	Theoretical rss	Standard rms
		- mv/m	- mv/m
day	438 mv/m		187.4 mv/m
night	178.3 mv/m	286.9 mv/m	

Note:

This notification concerns only a change to nighttime add new operation nighttime with daytime operation continued as previously notified.


K W B Z
WESTERN BROADCASTING CORPORATION
1150 kHz 5 kW-D 1 kW-N DA-N
ENGLEWOOD, COLORADO
FEBRUARY 1977
EXHIBIT E-6.01A
AMENDED
PROPOSED NIGHTTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
NIGHTTIME STANDARD PATTERN
TRUE NORTH
Standard Pattern
KAYO
KCIQ
KSEN
CKX
KWKY
KAGO
TOWER LINE
300 mV/m
200
100
10
20 mV/m
KPLS
KSAL
KIIS
KERM
KCKY
KDEF
WJBO
ELECTRICAL DESCRIPTION
POWER = 1000 Watts
G's = 58.9° [42.7 m]
K Ω = 184.7 mV/m
TH. RMS = 178.3 mV/m
RSS = 286.9 mV/m
RMS/RSS = 0.62
Q(θ) = 7.17f_G(θ)[G = 58.9°]
STD RMS = 187.4 mV/m
[301.6 mV/m/kW @ 1 km]
--- EXPANDED SCALE
NL: 39° 36' 18"
WL: 104° 50' 25"
VIR JAMES
CONSULTING RADIO ENGINEERS
1.00/0°
S1
0.53/170.6°
S1
0.69/-34.9°
S1
0.81/143.1°
102°T
G = 58.9° (42.7 m)
S1 = 120° (86.9 m)
POLAR ORDINATE


K W B Z
WESTERN BROADCASTING CORPORATION
1150 kHz 5 kW-D 1 kW-N DA-N
ENGLEWOOD, COLORADO
FEBRUARY 1977
PROPOSED NIGHTTIME DIRECTIONAL
EXPANDED HORIZONTAL PATTERN
UNATTENUATED FIELD AT ONE MILE
NIGHTTIME STANDARD PATTERN
CKX
KWKY
KSAL
WUBO
KDEF
KCKY
XERM
KIIS
KPLS
KAGO
KAYO
CKIQ
KSEN
TOWER LINE
TOWER LINE
* EXPANDED SCALE
SCALE VALUE x 0.1
Standard Pattern
500
200
100
50
20
10
0
60
120
180
240
300
360
VIR JAMES
CONSULTING RADIO ENGINEERS
DENVER, CO
2677
AMENDED
EXHIBIT E-6.02A

KWBZ
1150kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Stat on: KWBZ

Main Studio: Englewood, Colorado

Frequency: 1150 kHz

Power: 5kw Night 5kw Day

Notification List No. 1789

Date: September 12, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 39° 36' 18"
West Longitude: 104° 50' 25"

ANTENNA CHARACTERISTICS

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

TOWER:	#(#1)	WC(#2)	EC(#3)	E(#4)
HEIGHT ABOVE INSULATORS:	140'	140'	140'	140' (58.9°)
NIGHT PHASING:	0°	+17.6°	-34.9°	+143.1°
NIGHT FIELD RATIO:	1.0	0.53	0.69	0.81
DAY PHASING:	—	0°	45°	—
DAY FIELD RATIO:	—	1.0	0.55	—

SPACING AND ORIENTATION: Towers in a row are spaced 285.2' (120°) on a line bearing 102° true.

GROUND SYSTEM: 120 - 210' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	396.405 mv/m	377.718 mv/m	416.464 mv/m
Night	178.3 mv/m	286.9 mv/m	187.4 mv/m

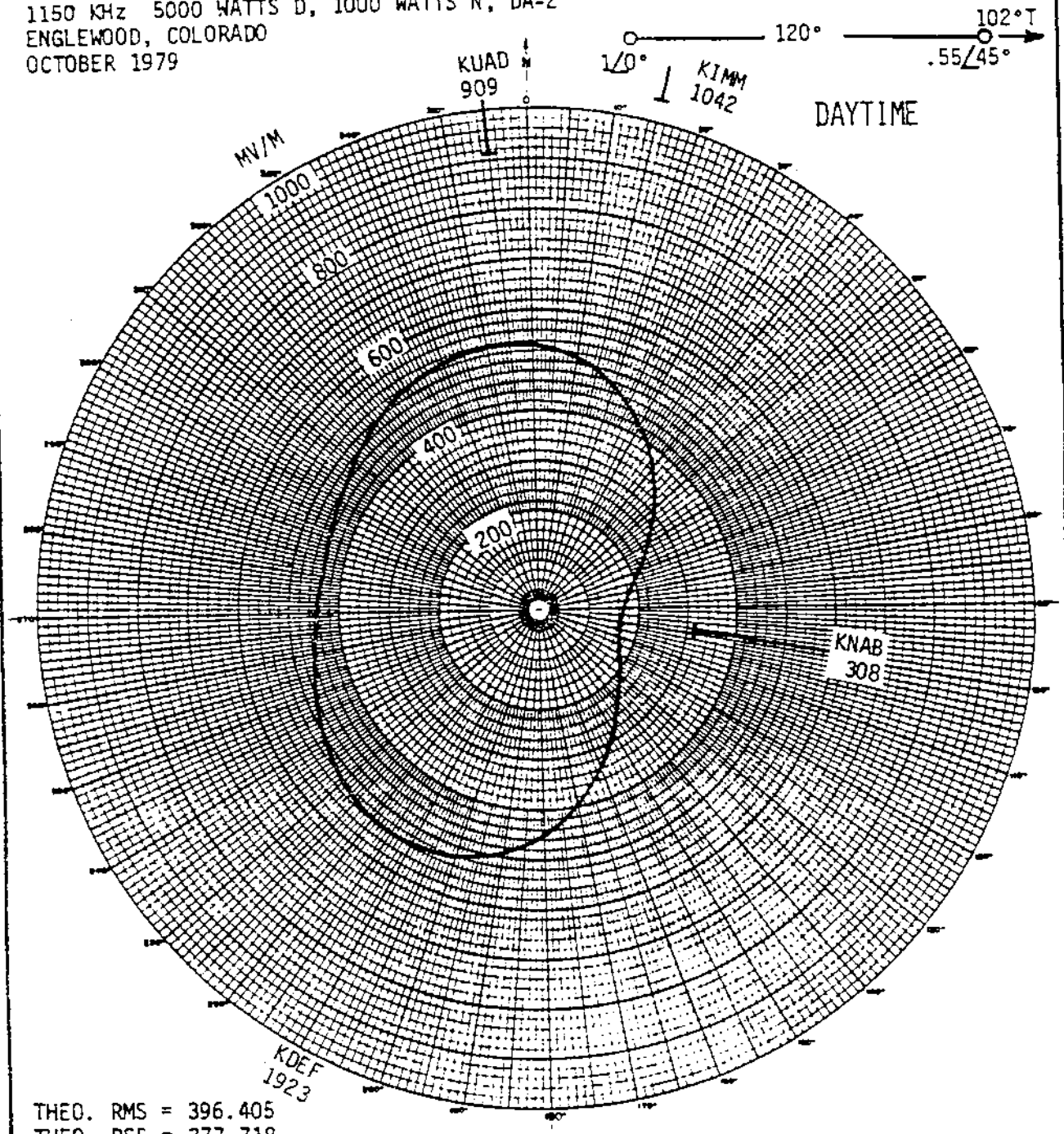
KWBZ
1150kHz

NOTE: Please retain the Nighttime directional antenna radiation pattern notified for Station KWBZ in United States Change List Number 1781 dated October 19, 1979 and attach to this Revised Description Sheet and Daytime pattern. This notification concerns only a change in the Daytime operation of the station with Nighttime operation continued as previously notified.

KWBZ
1150kHz

STANDARD HORIZONTAL RADIATION PATTERN

KWBZ
WESTERN BROADCASTING CORPORATION
1150 KHz 5000 WATTS D, 1000 WATTS N, DA-2
ENGLEWOOD, COLORADO
OCTOBER 1979



THEO. RMS = 396.405
THEO. RSS = 377.718
STD. RMS = 416.464
Q = 13.4164
K FACTOR = 330.962
HEIGHT = 58.9°

PROPOSED SITE:

N. LAT. 39° 36' 18"
W. LONG. 104° 50' 25"

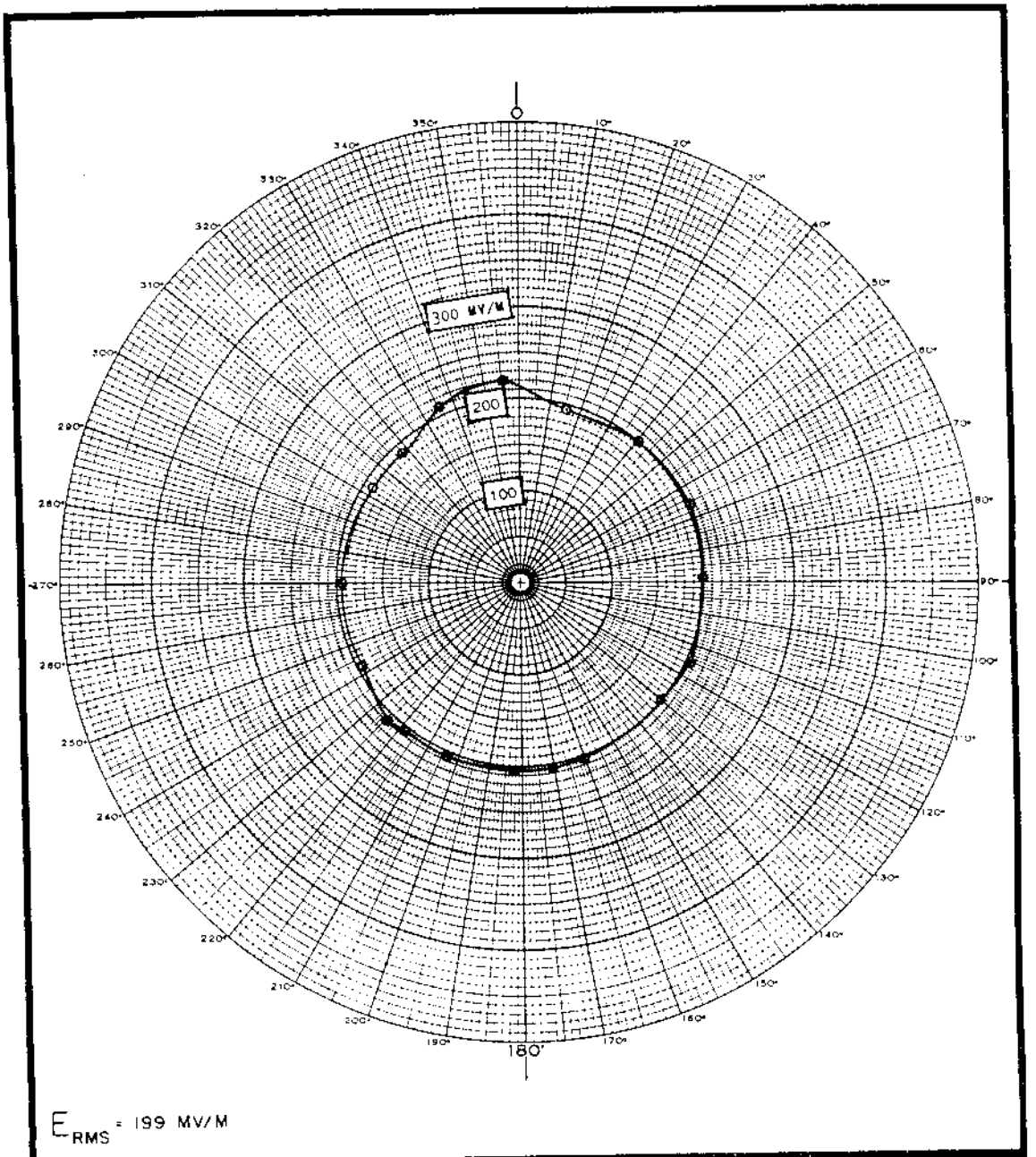
Larry D. Ellis, P.E.
TELECOMMUNICATIONS CONSULTING ENGINEER
BOX 22835 • DENVER, COLORADO 80222 • 303/759-1327
OFFICE 2056 SOUTH ONEIDA • SUITE 190

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

Station KWKY
Des Moines, Iowa

KWKY
1kw, DA-2, U
1150 kc

See Reverse Side



E_{RMS} = 199 MV/M

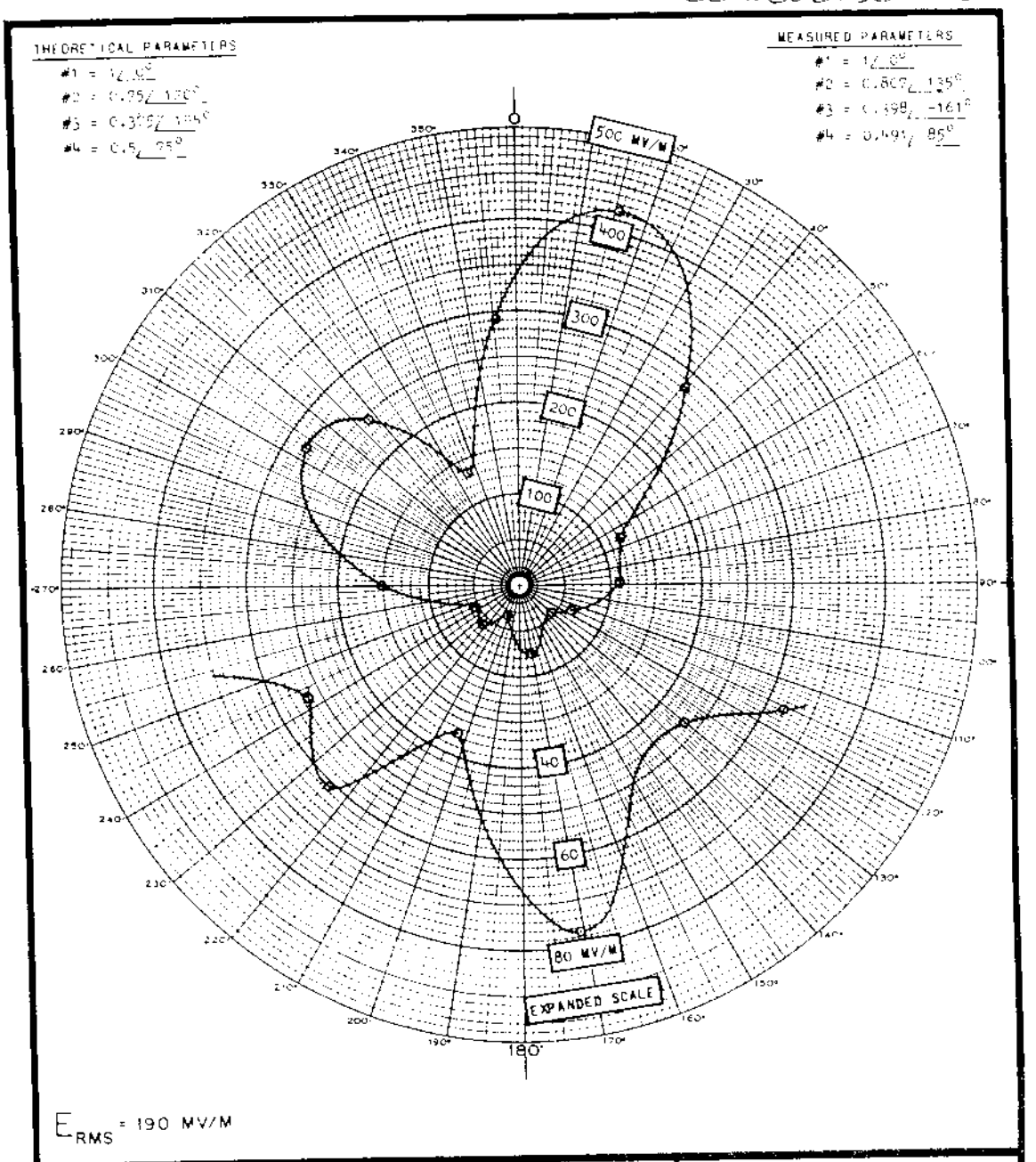
LATITUDE 41° 27' 07"	ANTENNA PARAMETERS	FIGURE 21
LONGITUDE 93° 40' 44"	NONDA TOWER #1	MEASURED NONDIRECTIONAL
JOHN H. MULLANEY AND ASSOCIATES		RADIO STATION KWKY DES MOINES, IOWA
		1150 KHz 1.0 KW, DA-2, U

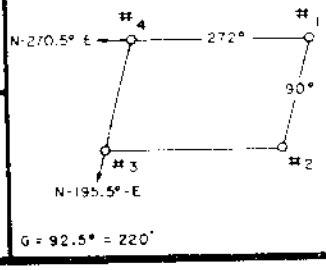
FCC File No.BL-12695
Accepted 8-13-70

Station KWKY
D s Moines, Iowa

1150 kc

SEE REVERSE SIDE



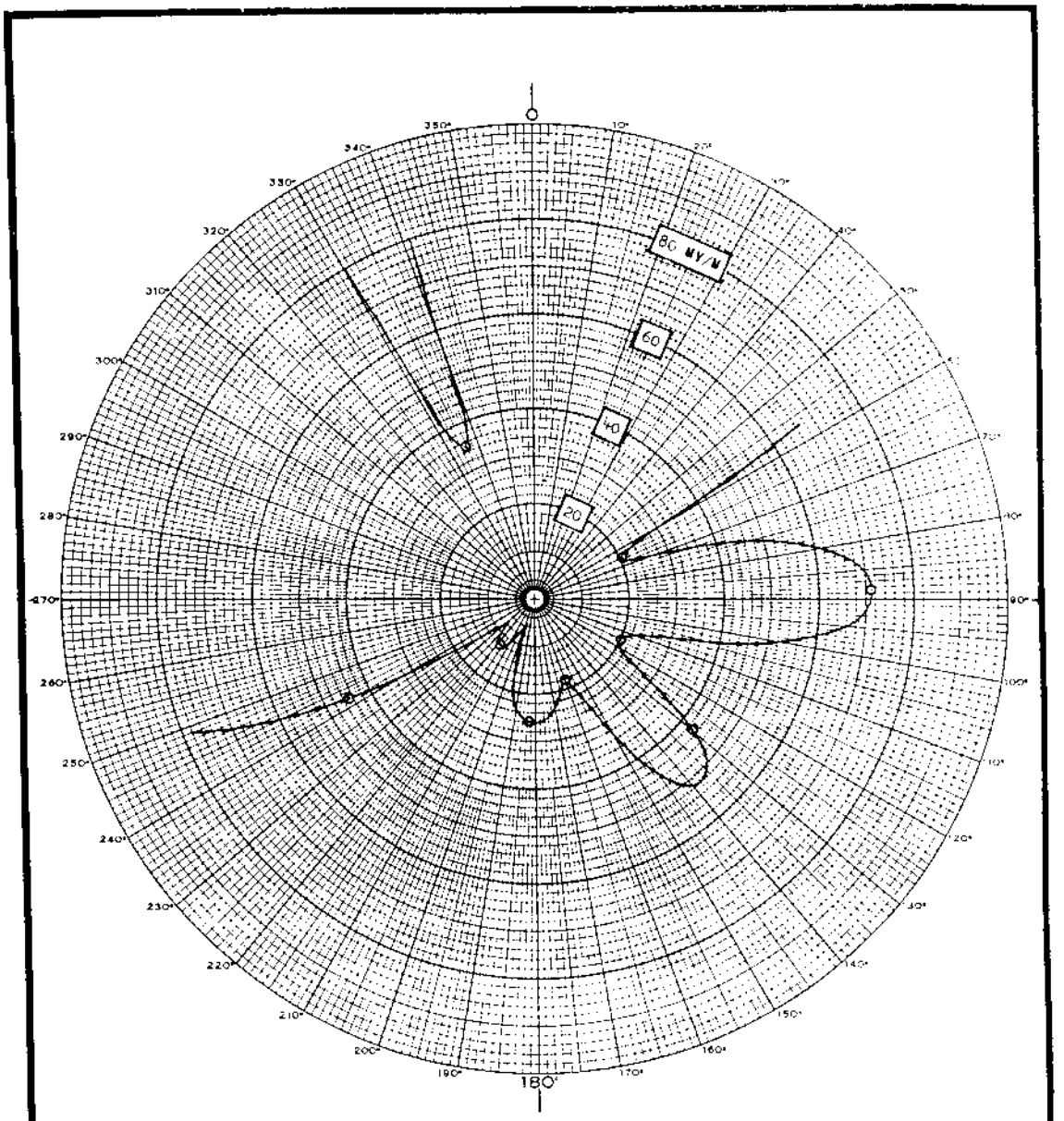
LATITUDE 41° 27' 07"	ANTENNA PARAMETERS	FIGURE 23
LONGITUDE 93° 40' 44"		MEASURED DAYTIME DIRECTIONAL PATTERN
JOHN H. MULLANEY AND ASSOCIATES		RADIO STATION KWKY DES MOINES, IOWA
	G = 92.5° = 220'	1150 KHz 1.0 KW, DA-2, U

Measured Night Nulls
(8-26-70ct)

Station KWKY
Des Moines, Iowa

1kw,DA-2,U
1150 kc

SEE REVERSE SIDE



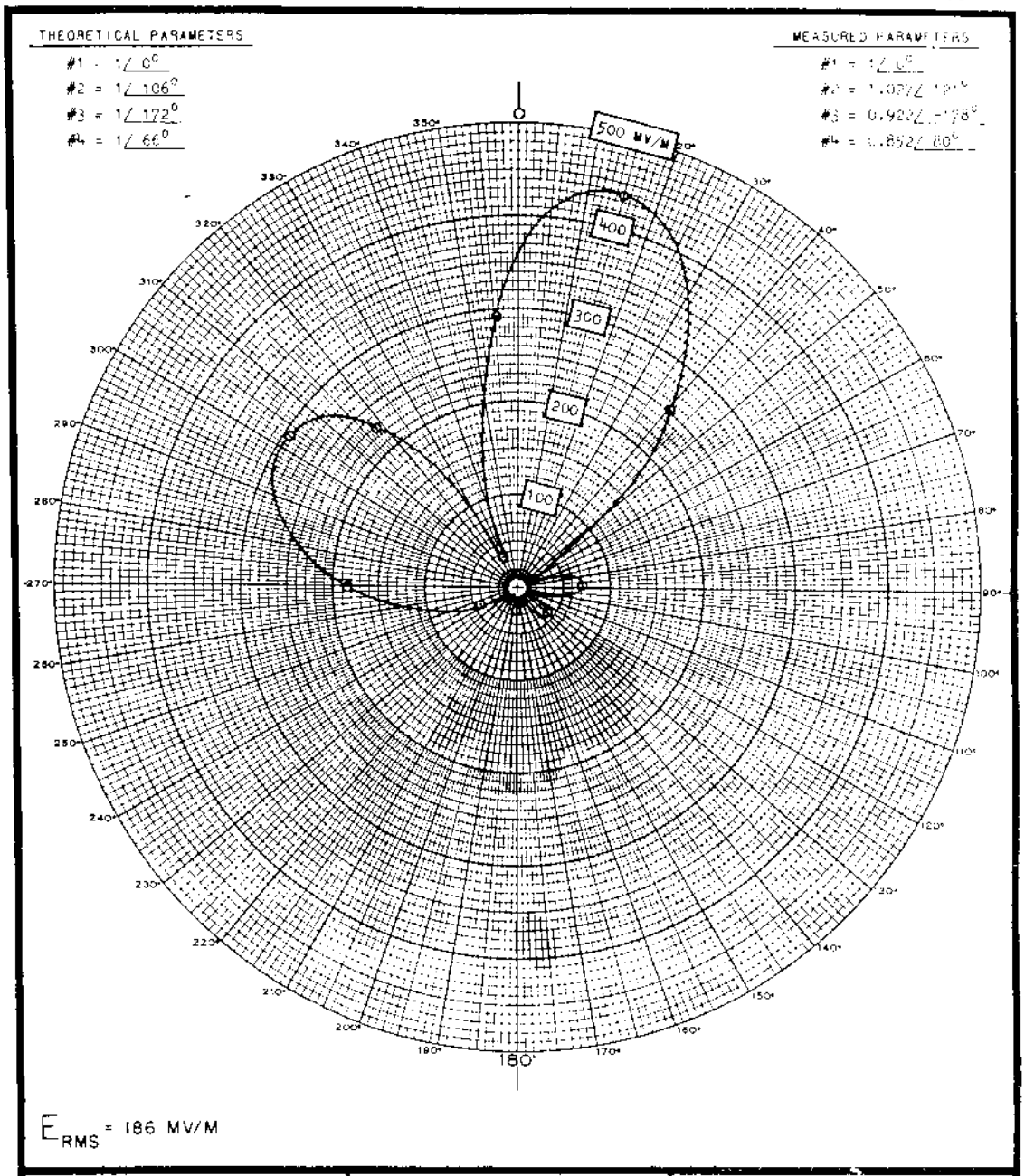
LATITUDE: 41° 27' 07" LONGITUDE 93° 40' 44"	ANTENNA PARAMETERS	FIGURE 22A
JOHN H. MULLANEY AND ASSOCIATES	DETAIL IN NULLS	MEASURED NIGHTTIME DIRECTIONAL PATTERN RADIO STATION KWKY DES MOINES, IOWA 1150 KHZ 1.0 KW, DA-2, U

FCC File No.BL-12695
Accepted 8-13-70

Station KWKY
Des Moines, Iowa

1150 kc

SEE REVERSE SIDE



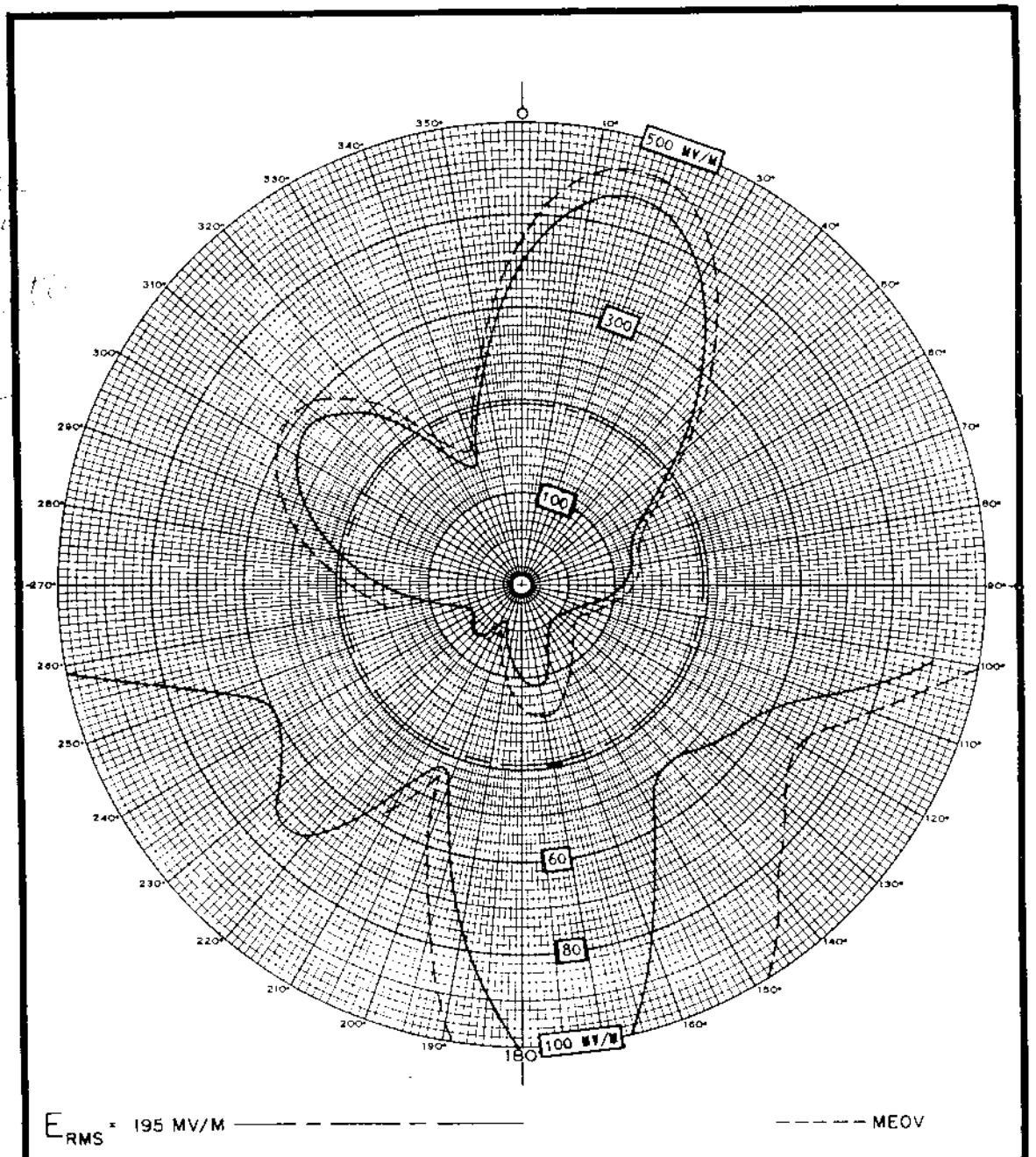
LATITUDE: 41° 27' 07" LONGITUDE 93° 40' 44"	ANTENNA PARAMETERS #4 N-270.5°-E — 272° — #1 90° #3 N-195.5°-E — #2 G = 92.5° = 220'	FIGURE 22 MEASURED NIGHTTIME DIRECTIONAL PATTERN RADIO STATION KWKY DES MOINES, IOWA 1150 KHz 1.0 KW, DA-2, U
JOHN H. MULLANEY AND ASSOCIATES		

KWKY

Proposed Day
(7-28-69ct)

Station KWKY
Des Moines, Iowa

1kw,DA-2,U
1150 kc



LATITUDE 41° 27' 07"

LONGITUDE 93° 40' 44"

JOHN H. MULLANEY
AND
ASSOCIATES

ANTENNA PARAMETERS

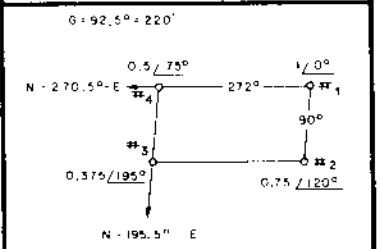


FIGURE 1

PROPOSED DAYTIME
DIRECTIONAL PATTERN

NORSEMAN BROADCASTING CORPORATION
DES MOINES, IOWA

1150 KHz

1 KW, DA-2, U

FCC File No.BP-18556
Accepted 5-21-69

Station KWKY
Des Moines, Iowa

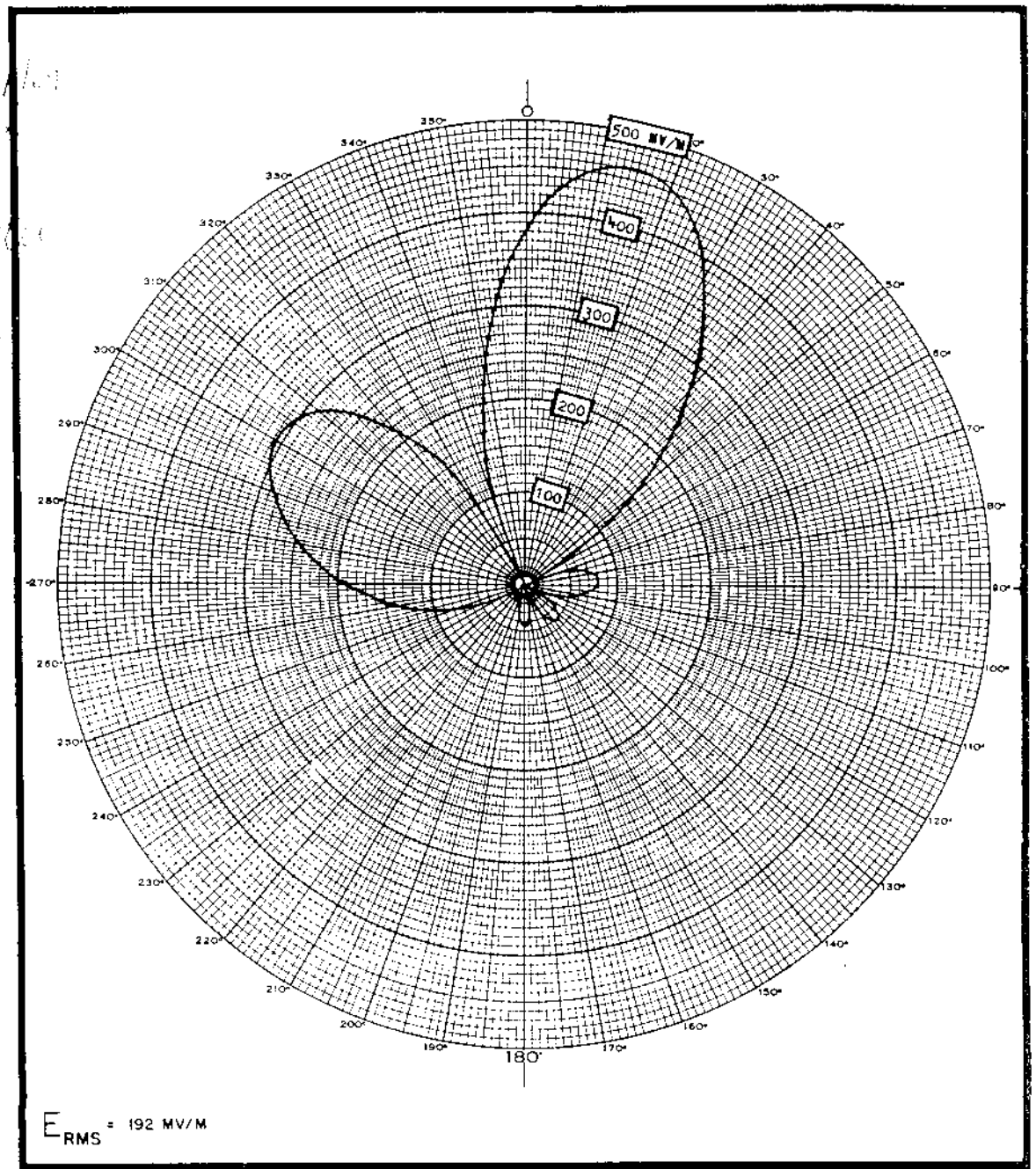
1150 kc

KWKY

Proposed Night
(7-28-69ct)

Station KWKY
Des Moines, Iowa

1kw, DA-2, U
1150 kc



E_{RMS} = 192 MV/M

LATITUDE: 41° 27' 07"

LONGITUDE 93° 40' 44"

JOHN H. MULLANEY
AND
ASSOCIATES

ANTENNA PARAMETERS

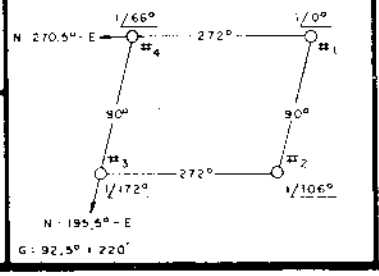


FIGURE 2

PROPOSED NIGHTTIME
DIRECTIONAL PATTERN

NORSEMAN BROADCASTING CORPORATION
DES MOINES, IOWA

1150 KHz

1 KW, DA-2, U

FCC File No.BP-18556
Accepted 5-21-69

Station KWKY
Des Moines, Iowa

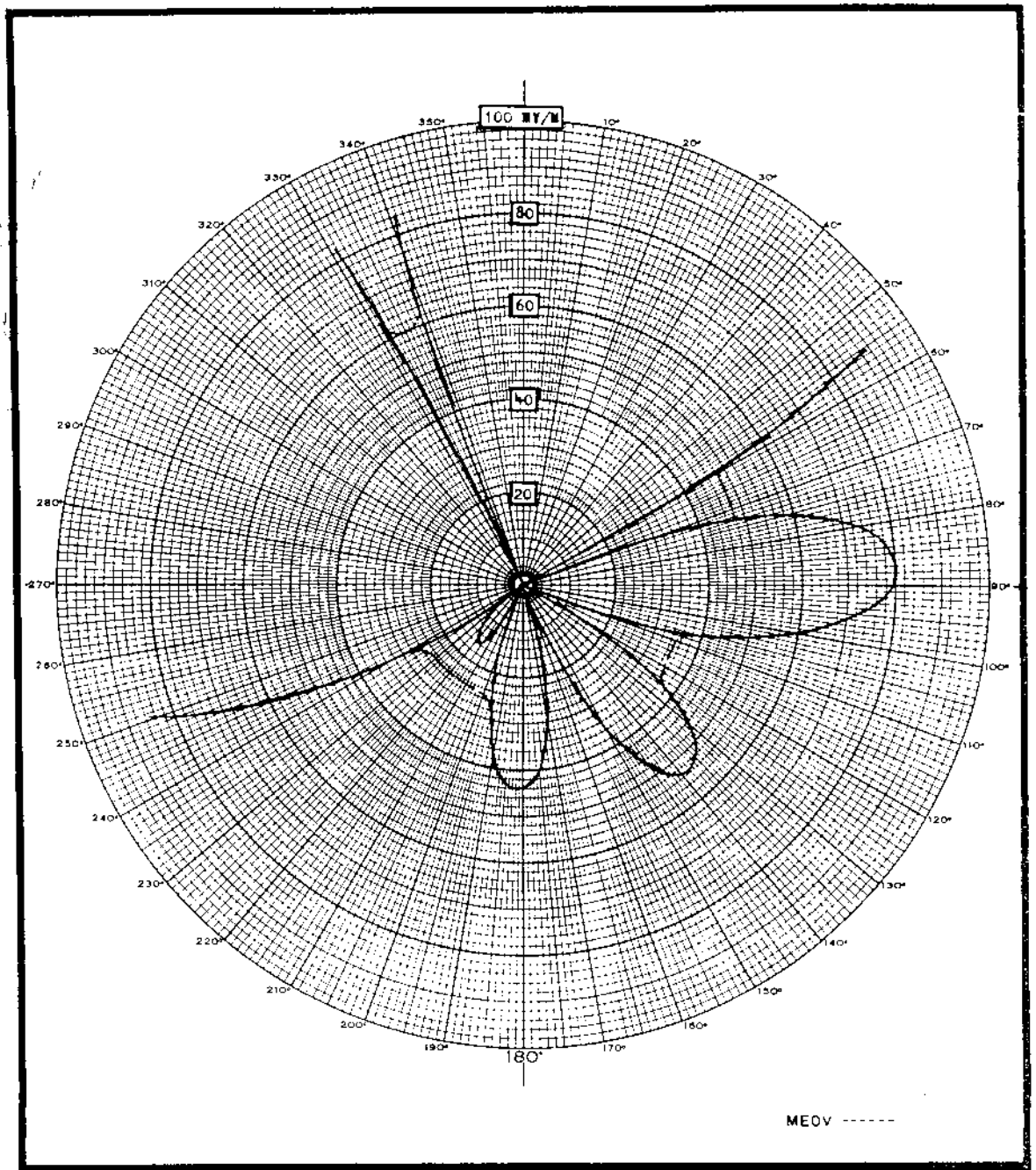
1150 kc

KWKY

Proposed Night Nulls
(7-28-69ct)

Station KWKY
Des Moines, Iowa

1kw, DA-2, U
1150 kc



LATITUDE: 41° 27' 07" LONGITUDE: 93° 40' 44"	ANTENNA PARAMETERS	FIGURE 2A PROPOSED NIGHTTIME DIRECTIONAL PATTERN
JOHN H. MULLANEY AND ASSOCIATES	DETAIL IN NULLS AND MEOV	NORSEMAN BROADCASTING CORPORATION DES MOINES, IOWA 1150 KHz 1 KW, DA-2, U

FCC File No. BP-18556
Accepted 5-21-69

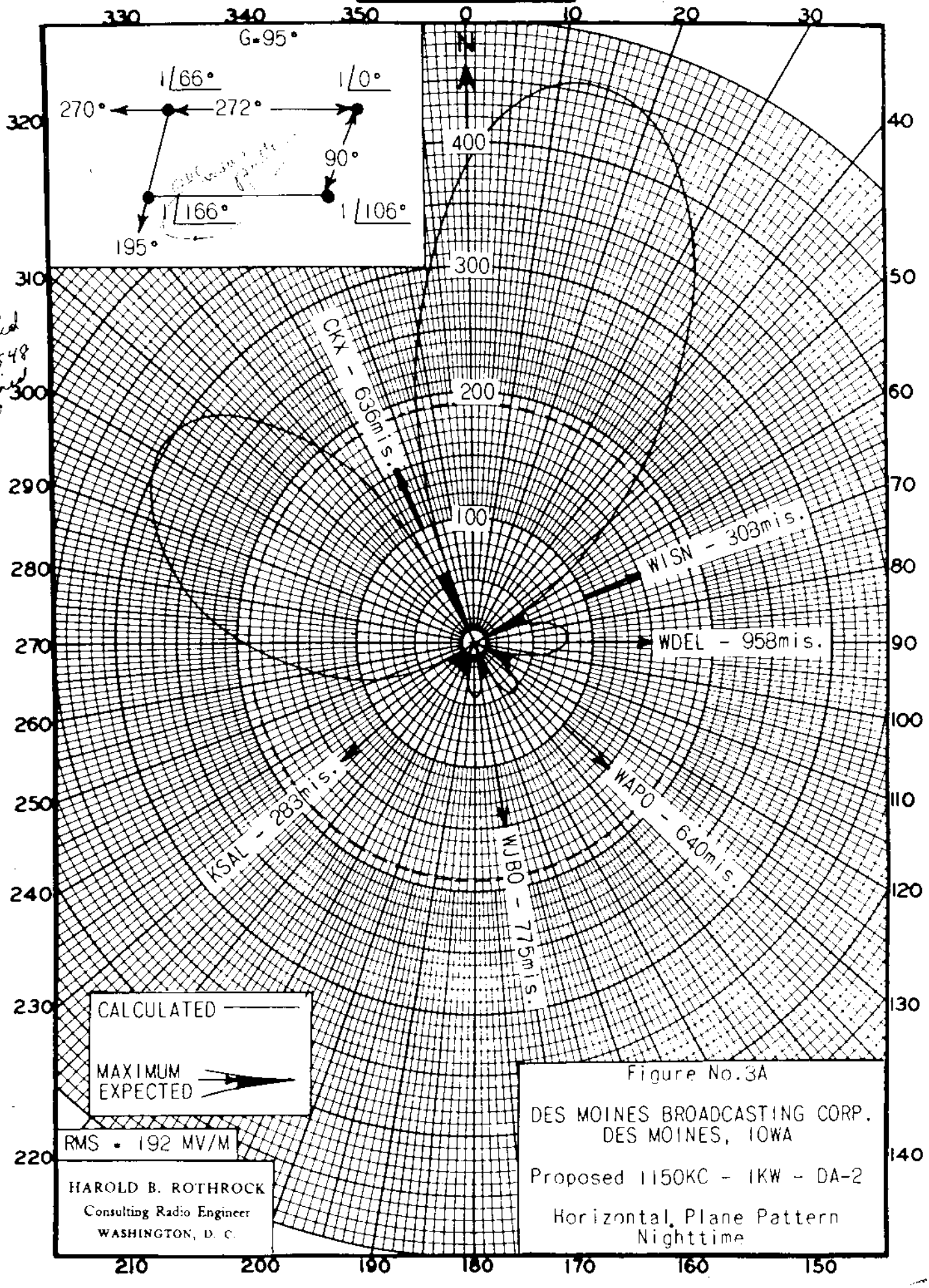
Station KWKY
Des Moines, Iowa

1150 kc

PATTERN No.: 470221
SUPERSEDES: 470122

KWKY

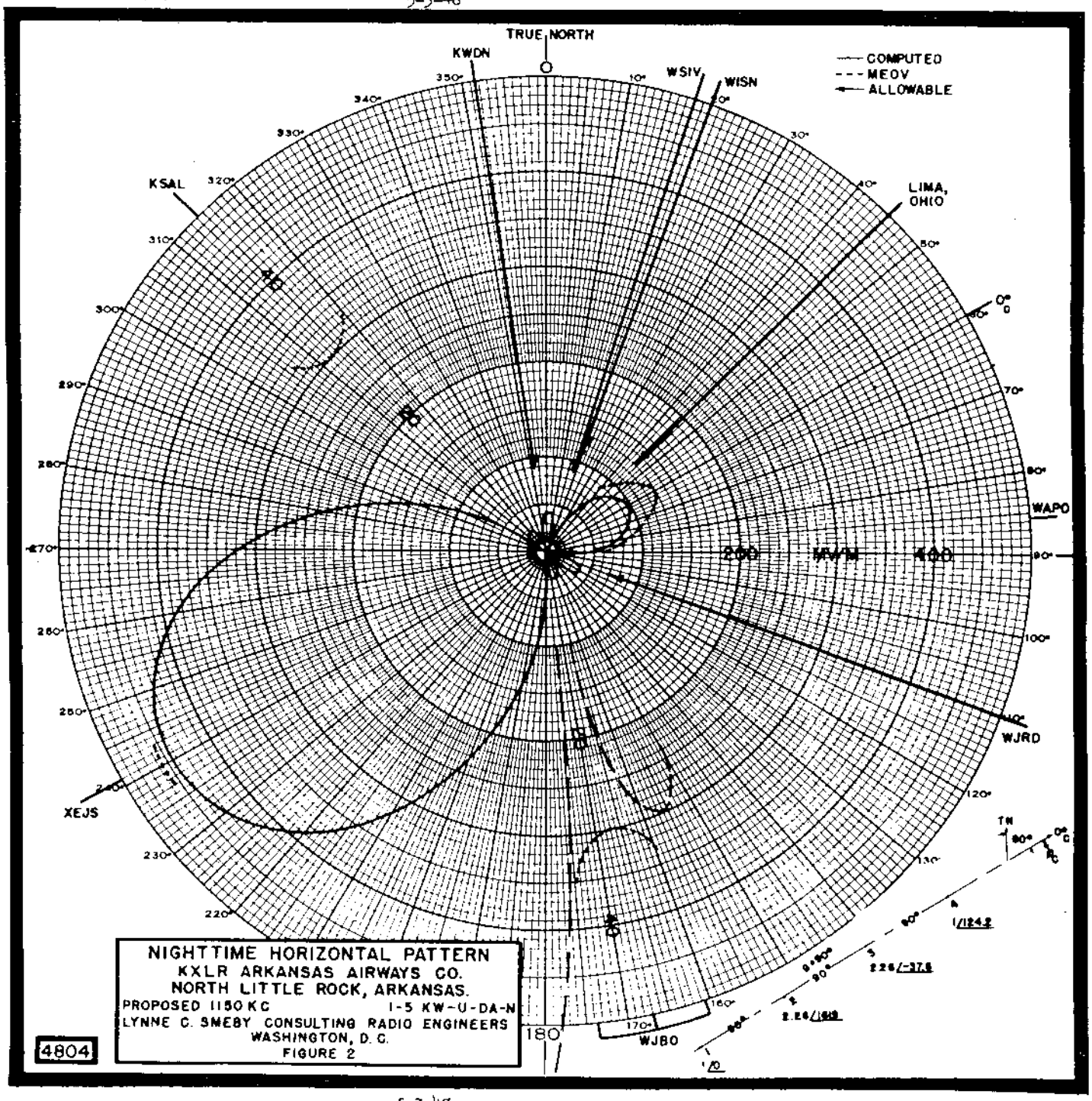
DES MOINES, IOWA
NEW - 1150KC



superseded by 062548 but retained for added info.

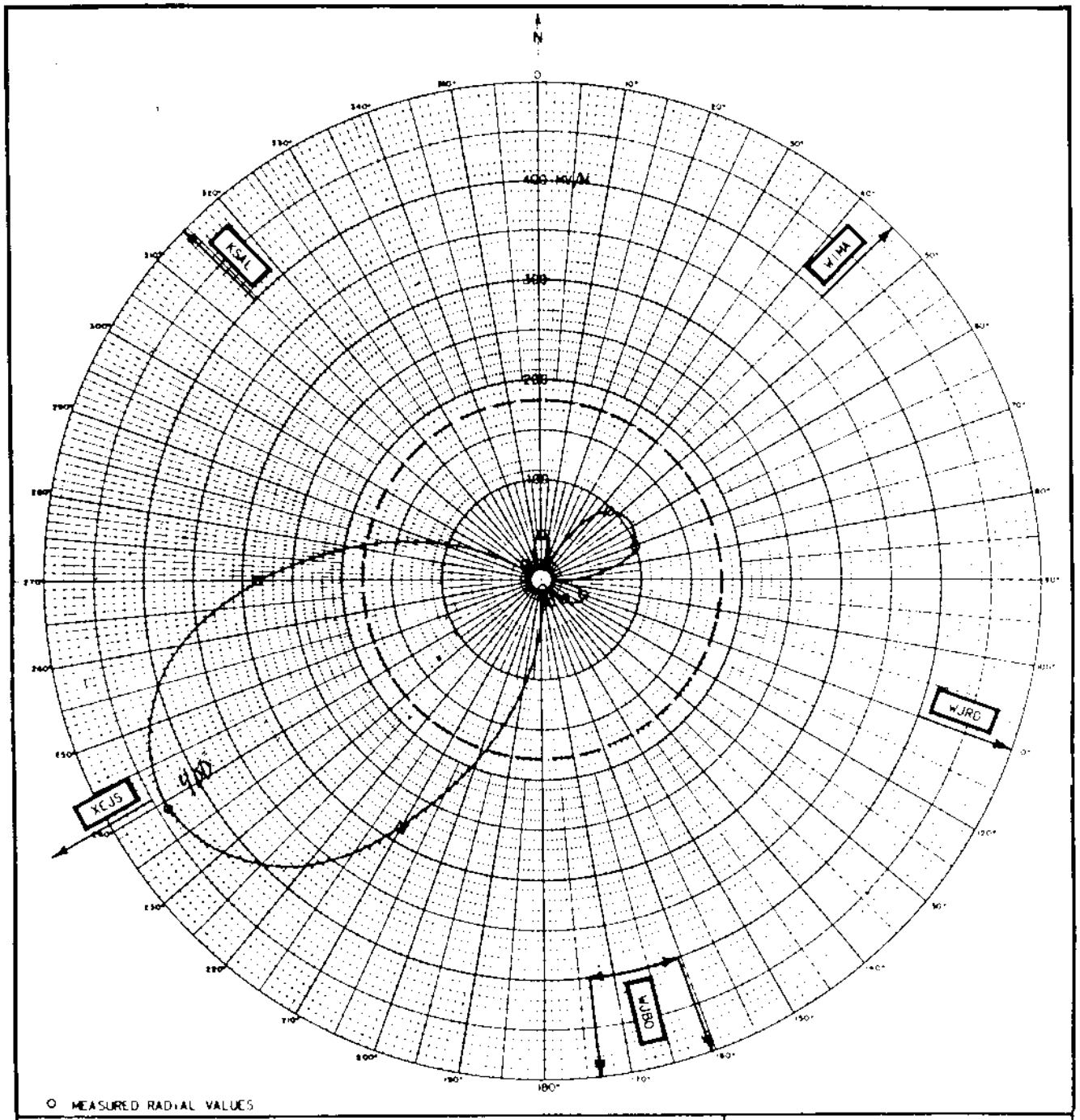
KXLR
1150

5-3-48



5-3-48

MEASURED NIGHT (3/4/53) KXLR, N. LITTLE ROCK, ARK. 1kw, 5kw-LS, DA-N 1150 kc



KXLR

HORIZONTAL RADIATION PATTERN

MEASURED

	S.W.			N.E.		
ANTENNA	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6
PHASE DEG	0°	161.9°	-37.6°	124.2°		
HEIGHT DEG	90°	90°	90°	90°		
FIELD RATIO	1.0	2.26	2.26	1.0		
NON OR ANT	*					

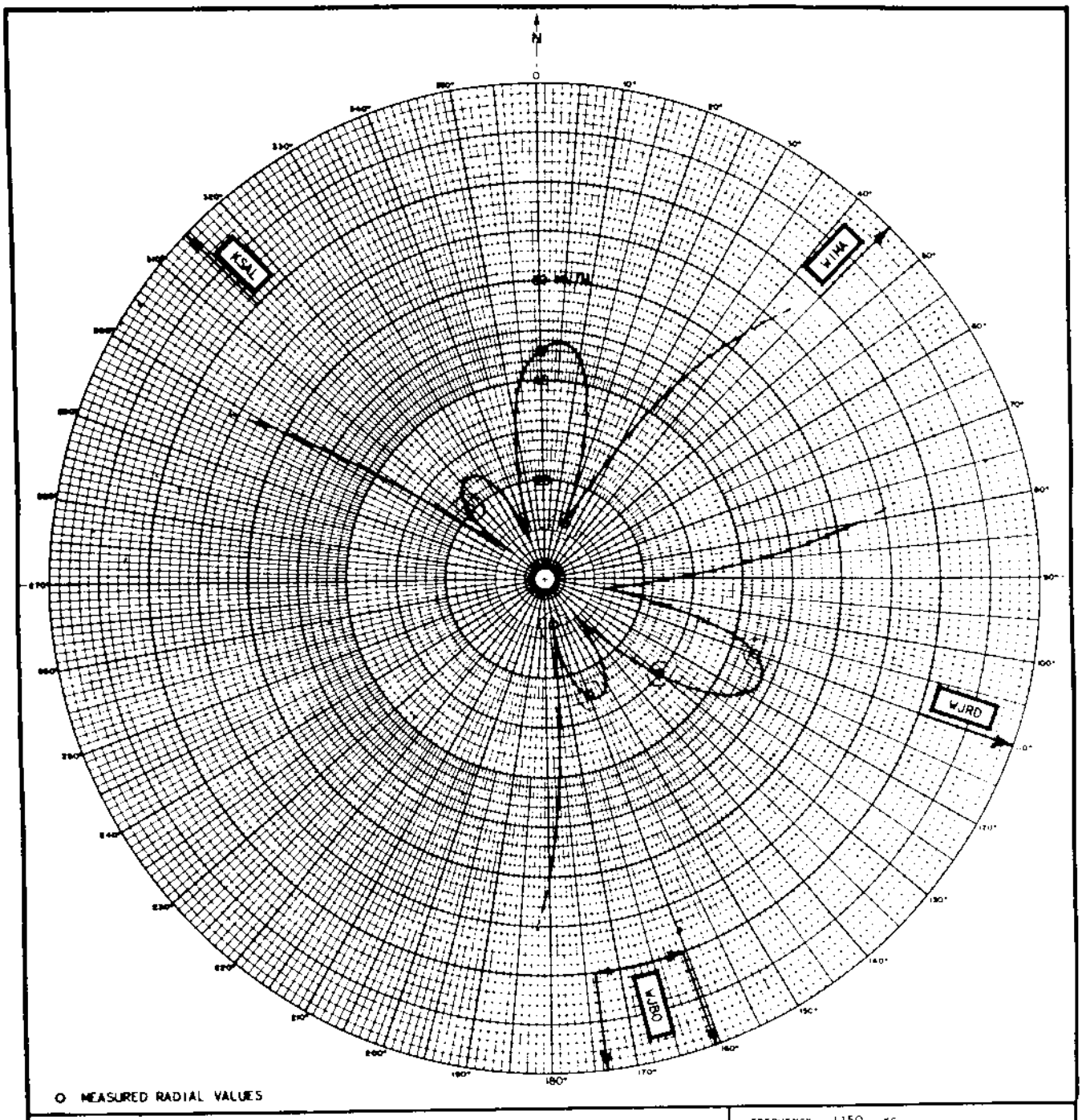
IN-LINE ARRAY BEARING N 60° E TRUE SPACING 90°

FREQUENCY	1150 KC
ASSIGNMENT	5 Kw-LS, 1 Kw-N(DA)
LONGITUDE	92 DEG 11 MIN 51 SEC
LATITUDE	34 DEG 45 MIN 55 SEC
WHEN USED	NIGHTTIME
RMS FIELD	179 MV/M (MEASURED)
DATE	DECEMBER 1952

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

FCC File No. BL-4904 Date Accepted 2/16/53 KXLR, N. Little Rock, Ark. 1150 kc

MEASURED NIGHT NULLS (3/4/53) KXLR, N. LITTLE ROCK, ARK. 1kw, 5kw-LS, DA-N 1150 kc



KXLR

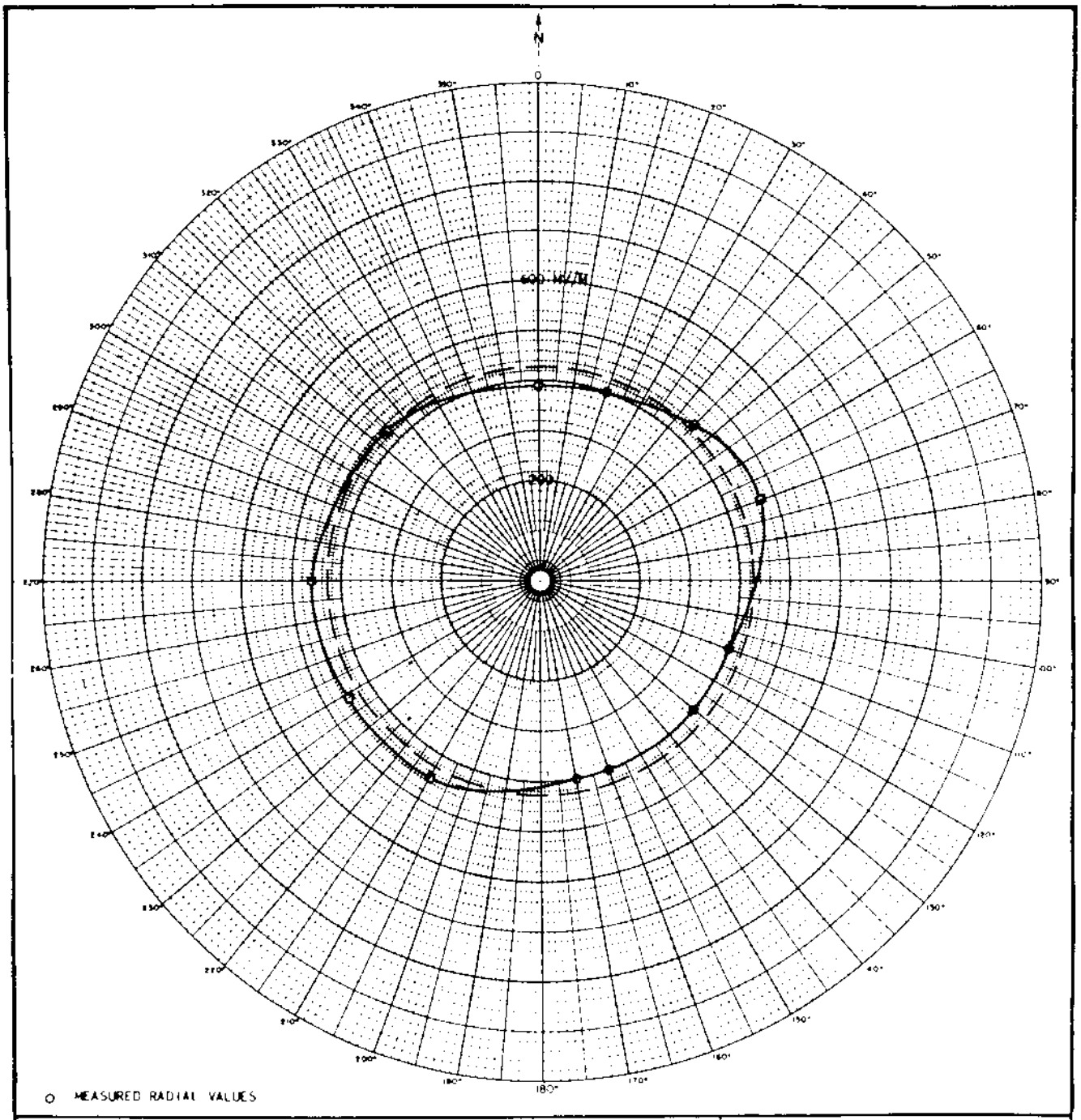
HORIZONTAL RADIATION PATTERN
ENLARGED VIEW (MEASURED)

	S.W.			N.E.		
ANTENNA	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6
PHASE DEG.	0°	161.9°	-37.6°	124.2°		
HEIGHT DEG.	90°	90°	90°	90°		
FIELD RATIO	1.0	2.26	2.26	1.0		
NON-DA ANT.	*					
IN-LINE ARRAY BEARING N60° E TRUE				SPACING 90°		

FREQUENCY	1150 KC
ASSIGNMENT	5 KW-LS, 1 KW-N(DA)
LONGITUDE	92 DEG 11 MIN 51 SEC
LATITUDE	34 DEG 45 MIN 55 SEC
WHEN USED	NIGHTTIME
R.M.S. FIELD	179 MV/M (MEASURED)
DATE	DECEMBER 1952

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

MEASURED KXLR, N. LITTLE ROCK, ARK. 1kw, 5kw-LS, DA-N 1150 kc
[redacted] (NON-D.A.) 3/4/53)



KXLR

HORIZONTAL RADIATION PATTERN
NON-DIRECTIONAL (MEASURED)

ANTENNA	NO 1	NO 2	NO 3	NO 4	NO 5	NO 6
PHASE DEG						
HEIGHT DEG						
FIELD RATIO						
NON DA ANT	•					

FREQUENCY 1150 KC
ASSIGNMENT 5 Kw-LS, 1 Kw-N(DA)
LONGITUDE 92 DEG 11 MIN 51 SEC
LATITUDE 34 DEG 45 MIN. 55 SEC.
WHEN USED DAYTIME
RMS FIELD 427 MV/M (MEASURED)
DATE DECEMBER 1952

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

FCC File No. BL-4904 Date Accepted 2/16/53 KXLR, N. Little Rock, Ark. 1150 kc

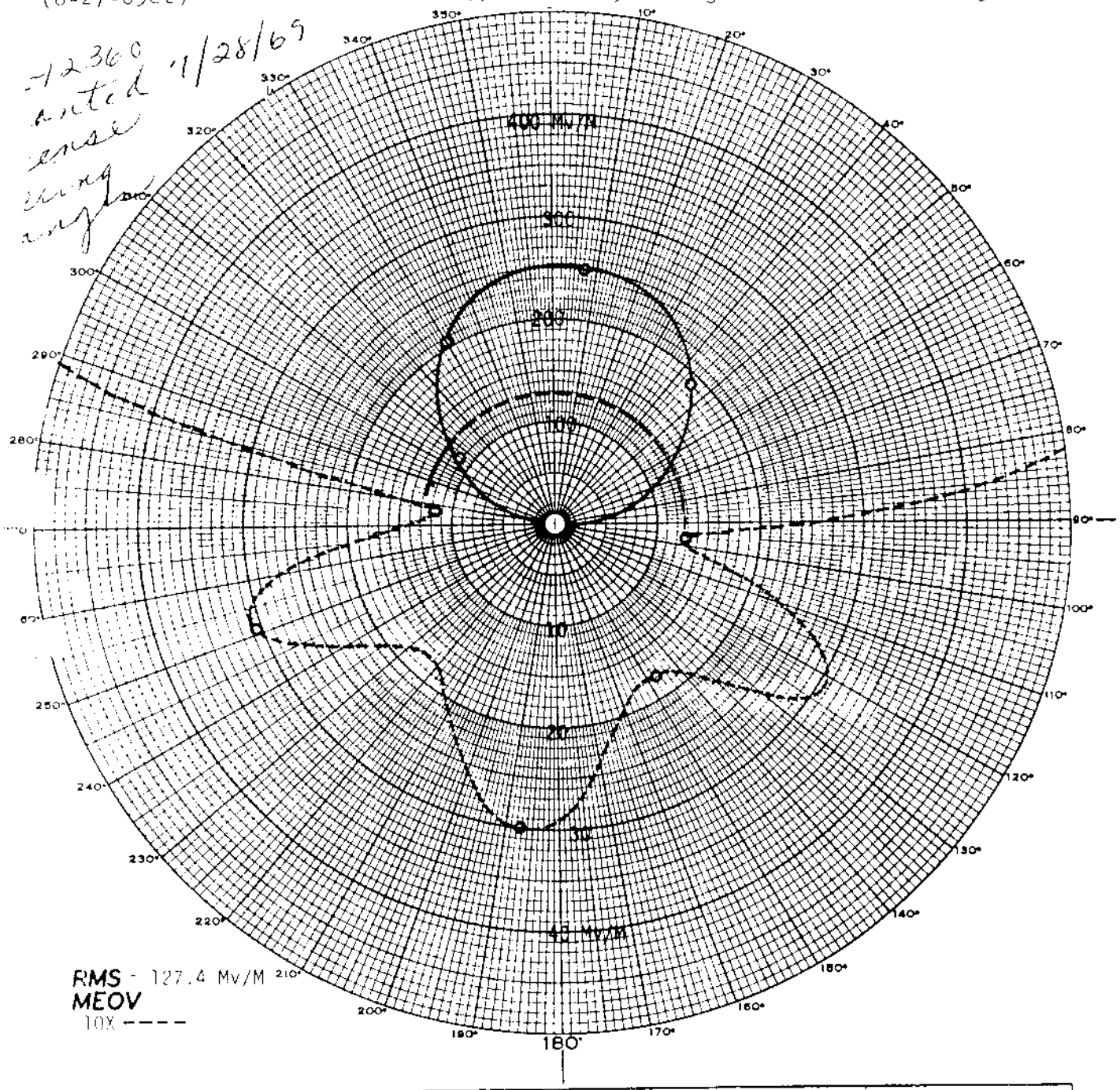
WCEN

Measured Night
(6-27-69ct)

Station WCEN
Mt. Pleasant, Michigan

500w,1kw-LS,DA-N,U
1150 kc

-12360
Acted 1/28/69
sense
ency
angle



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 6	STATION DATA
6.85° T. #3 0.549/-156° #2 1.000/0.0° #1 0.618/+156°	TOWER No. / ELECTRICAL HEIGHT G° / SPACING S° / PHASING ψ° / FIELD RATIO F 1 2 3 4 5 6 7 8 9 10 DAYTIME OPERATION ☐ NIGHTTIME OPERATION XX	MEASURED NIGHTTIME PATTERN ****** WCEN MOUNT PLEASANT MICHIGAN θ° 0°	CALL WCEN FREQ 1150 KHz. POWER 0.5 Kw TYPE DA-N TIME UNLIMITED LAT. 43-34-36 LONG. 84-45-57 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BL-12360
Accepted 5-28-69

Station WCEN
Mt. Pleasant, Michigan

1150 kc

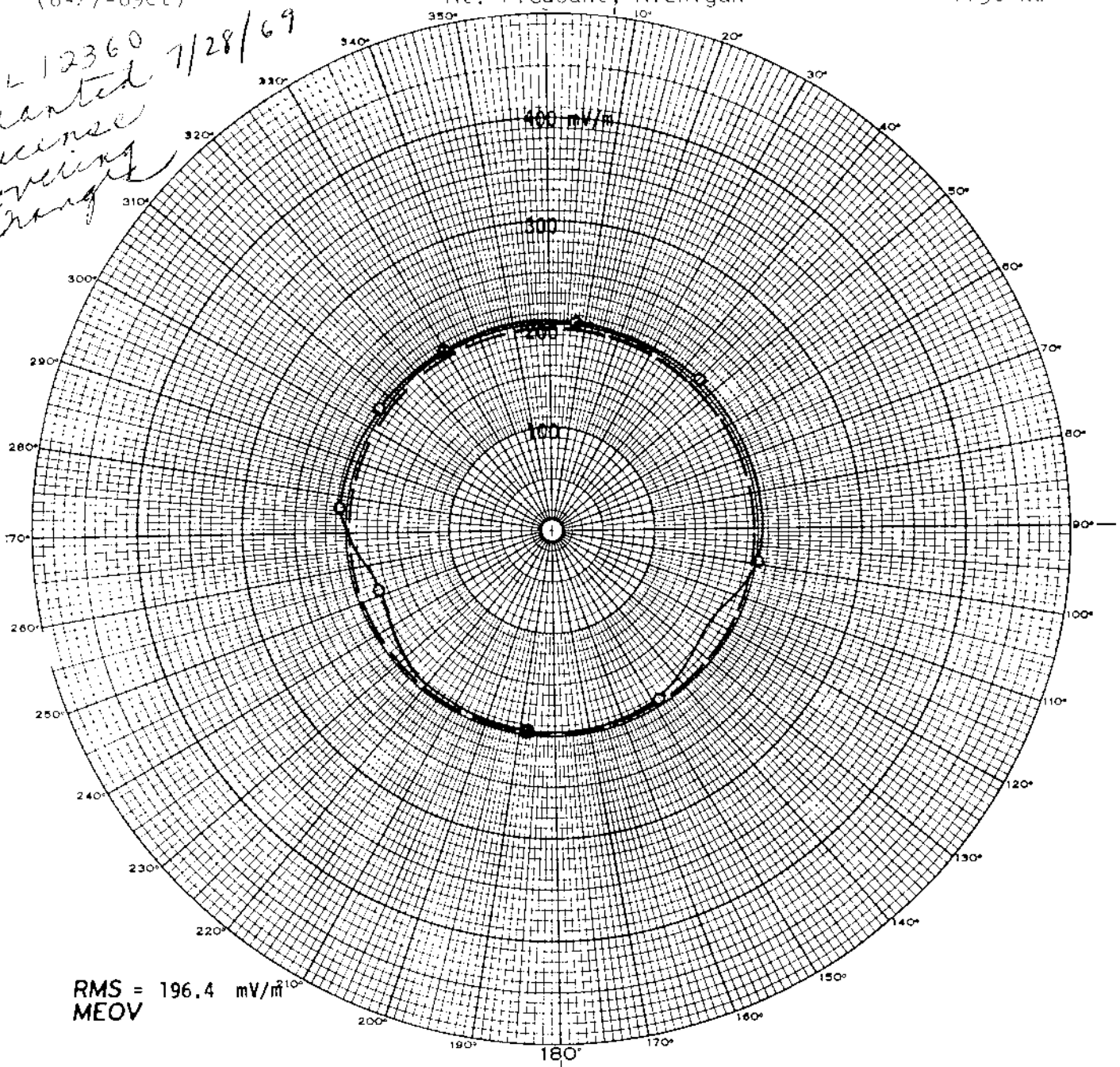
WCEN

Measured Non-DA
(6-27-69ct)

Station WCEN
Mt. Pleasant, Michigan

500w,1kw-LS,DA-N,U
1150 kc

BL 12360 Granted 7/28/69 license covering change



RMS = 196.4 mV/m
MEOV

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 1	STATION DATA
6.85°T #3 NU #2 NU #1 NDA G's=90.5° s=70°	TOWER No. / ELECTRICAL HEIGHT / SPACING / PHASING / FIELD RATIO 1 2 3 4 5 6 7 8 9 10 DAYTIME OPERATION ☑ NIGHTTIME OPERATION ☐	MEASURED NON-DIRECTIONAL PATTERN ********** WCEN MOUNT PLEASANT MICHIGAN θ° = 0°	CALL WCEN FREQ 1150 kHz. POWER 1.0 Kw TYPE DA-N TIME UNLIMITED LAT. 43-34-36 LONG. 84-45-57 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BL-12360
Accepted 5-28-69

Station WCEN
Mt. Pleasant, Michigan

1150 kc

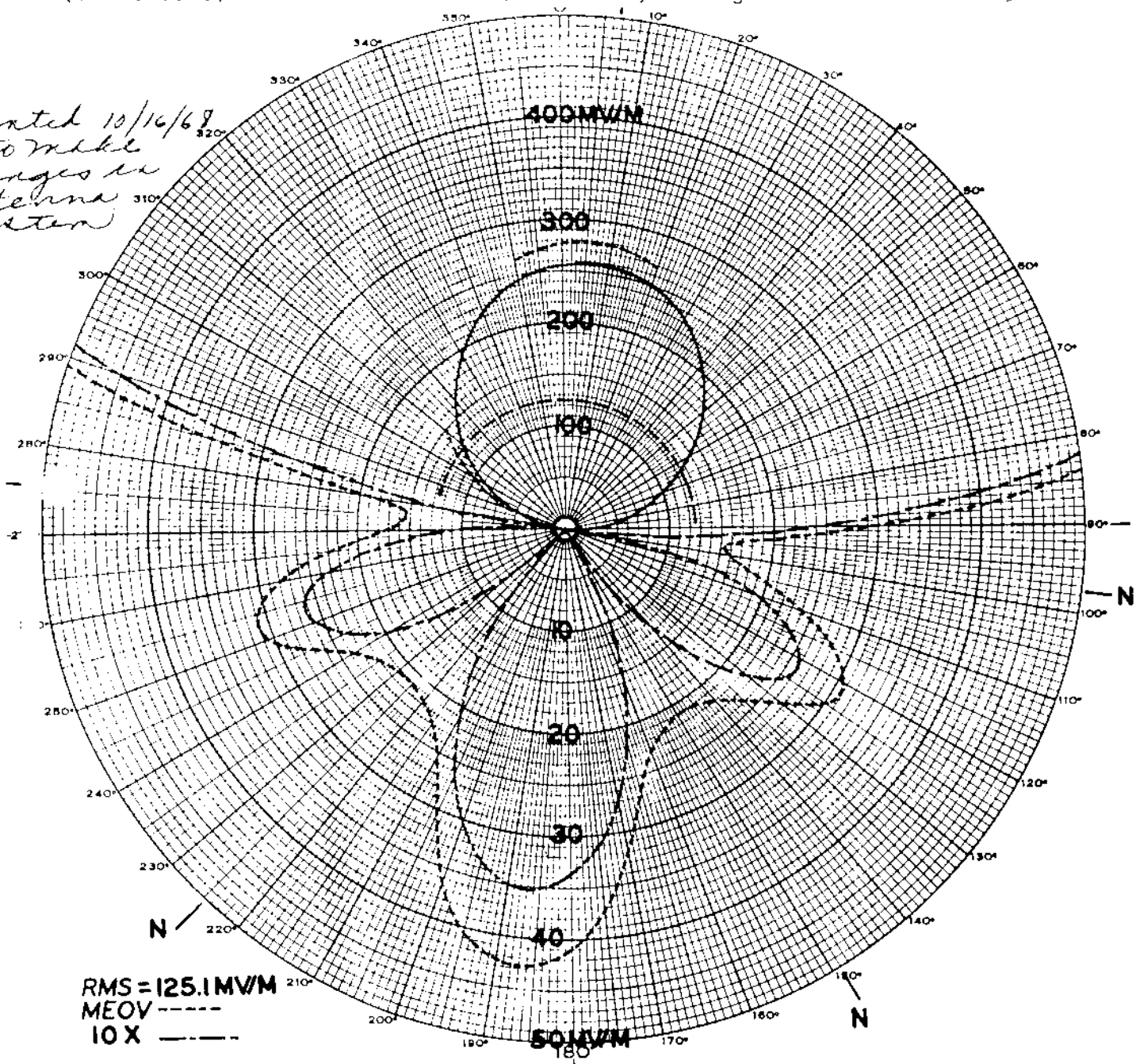
WCEN

Proposed Night
(10-28-68ct)

Station WCEN
Mt. Pleasant, Michigan

500w,1kw-LS,DA-N,U
1150 kc

Granted 10/16/68 to make changes in antenna system



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 4	STATION DATA
#3 1.00/57.4° (6.85°) S #2 1.79/208.7° S #1 1.00/0° 70°	TOWER No. / ELECTRICAL HEIGHT / SPACING / PHASING / FIELD RATIO	PROPOSED NIGHTTIME PATTERN ****** WCEN MOUNT PLEASANT, MICHIGAN θ° 0°	CALL WCEN FREQ 1150 KHz. POWER 0.5 Kw TYPE DA-N TIME UNLIMITED LAT. N-43-34-36 LONG. W-84-45-57 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BP-18344
Accepted 10-11-68

Station WCEN
Mt. Pleasant, Michigan

1150 kc

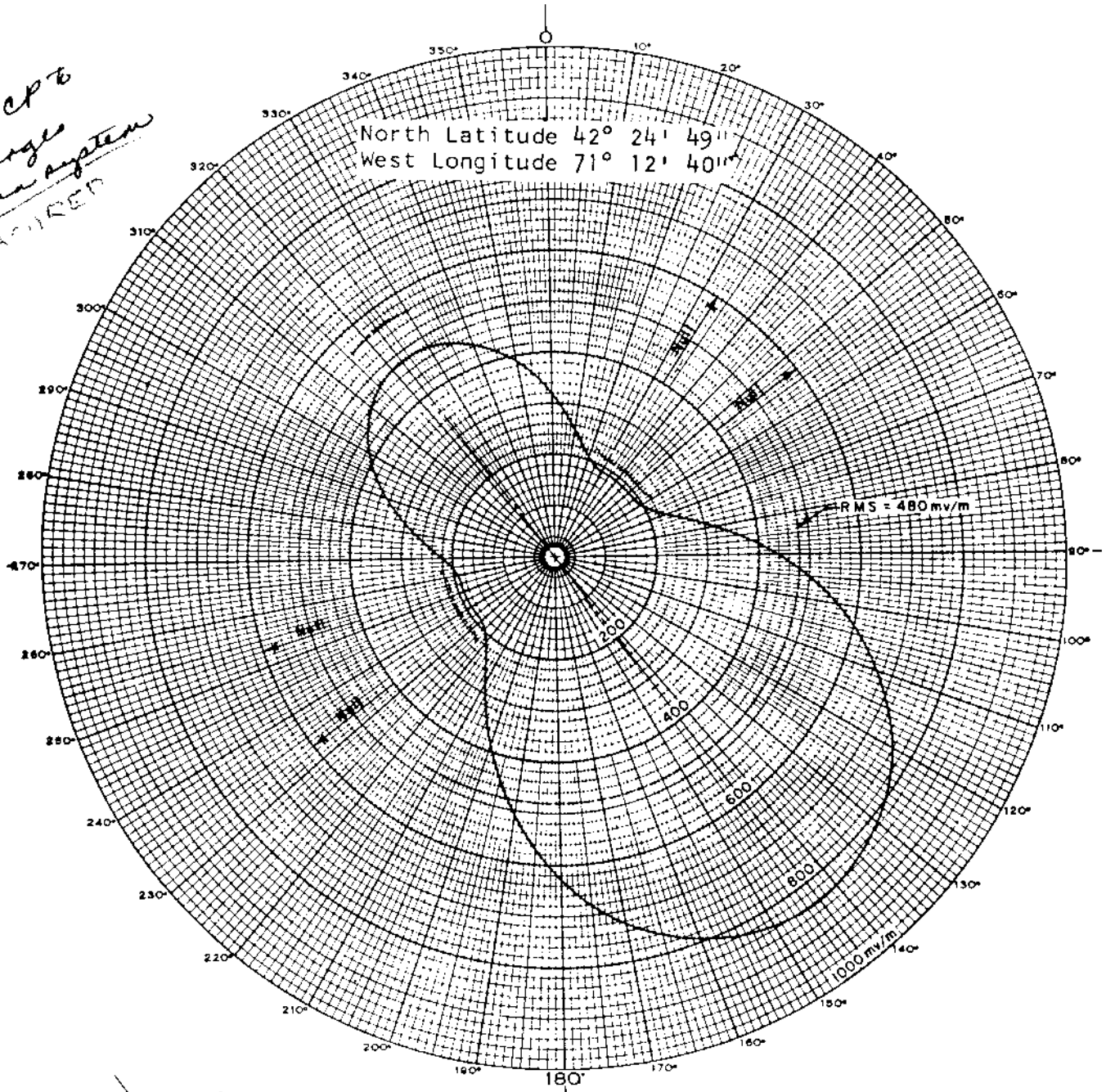
WCOP

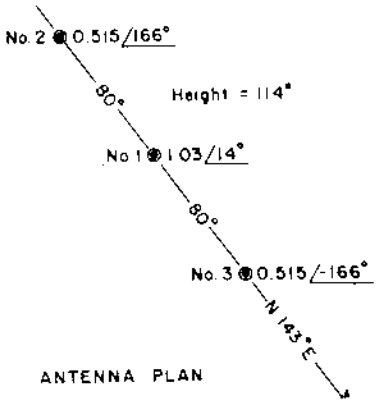
Proposed Day
(1-29-64ct)

Station WCOP
Boston, Massachusetts

5kw,DA-2,U
1150 kc

1-22-64
Granted cp to
make changes
in antenna system
SEE HEARING





ANTENNA PLAN

----MEOV

FIGURE 4
DAYTIME HORIZONTAL PLANE
PLOUGH BROADCASTING COMPANY, INC.
WCOP 5 KW-U, DA-2 1150 KC
BOSTON, MASSACHUSETTS

Prepared by
Lohnes and Culver *Washington 4, D.C.*
September 1963

FCC File No. BP-16053
Accepted 1-9-64

Station WCOP
Boston, Massachusetts

1150 kc

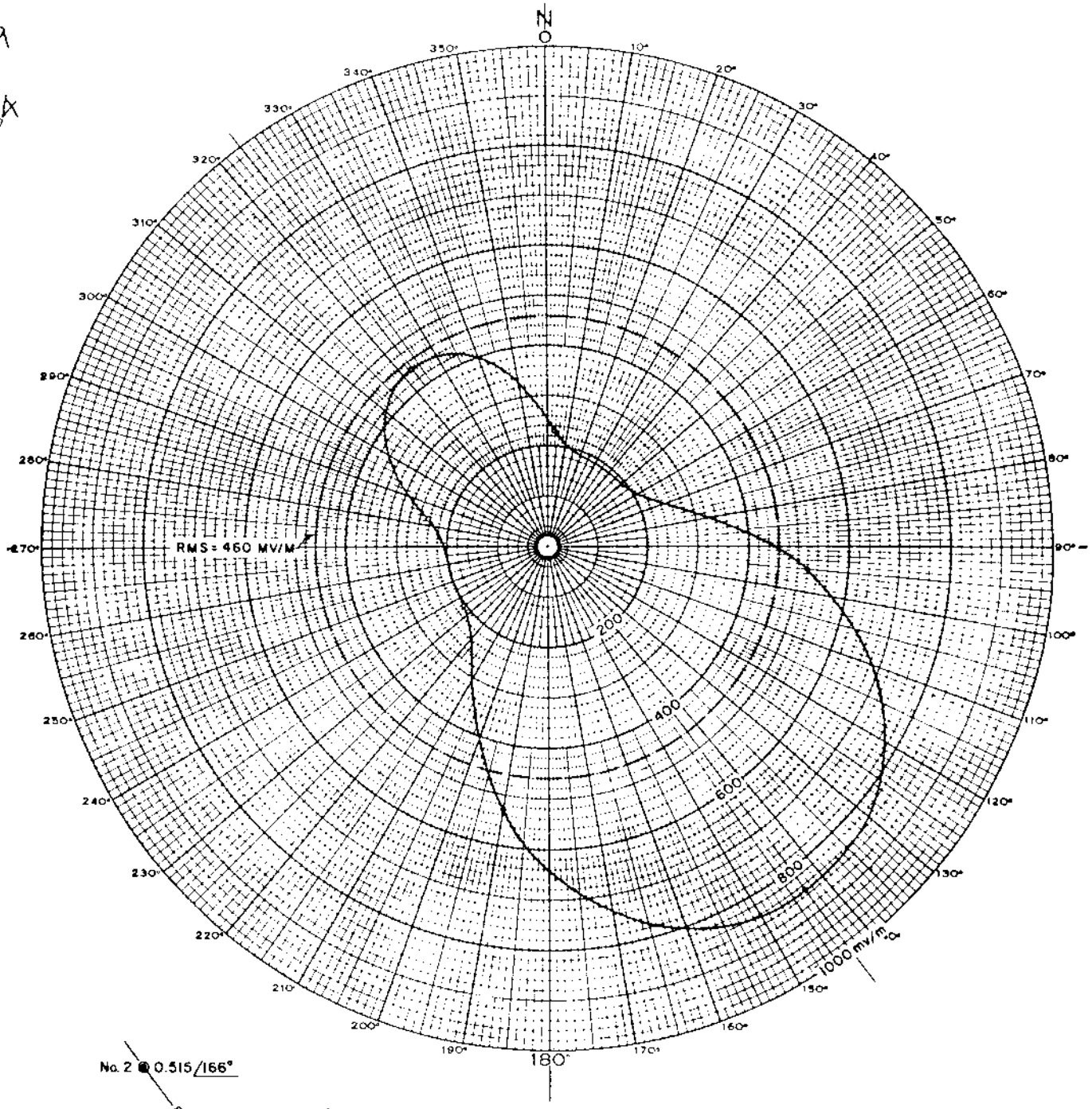
WHUE ~~WCOP~~

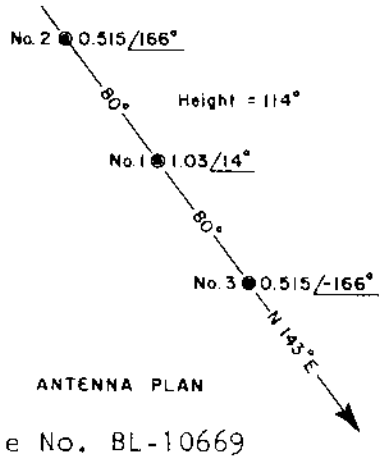
Measured Day
(11-27-64ct)

Station WCOP
Boston, Massachusetts

5kw,DA-2,U
1150 kc

BL-10669
GRANTED
12-31-64





ANTENNA PLAN

42° 24' 49"
71° 12' 40"

FIGURE 8
MEASURED RADIATION PATTERN
(DA-D OPERATION)
PLOUGH BROADCASTING COMPANY, INC.
WCOP 5 KW-U, DA-2 1150 KC
BOSTON, MASSACHUSETTS

Prepared by
Lohnes and Culver *Washington, D. C.*
May 1964

FCC File No. BL-10669
Accepted 11-6-64

Station WCOP
Boston, Massachusetts

1150 kc

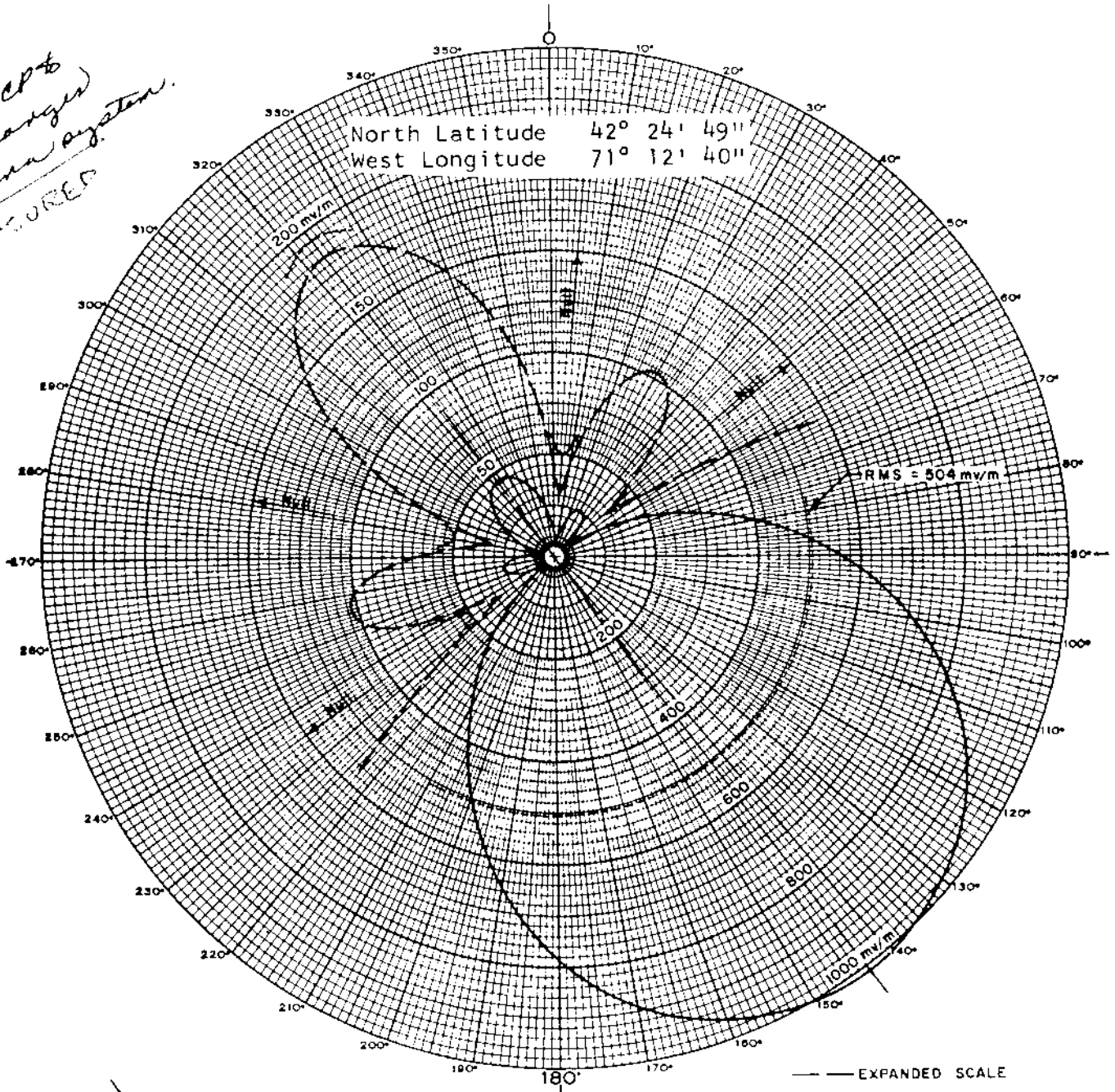
WHUE ~~WCOP~~

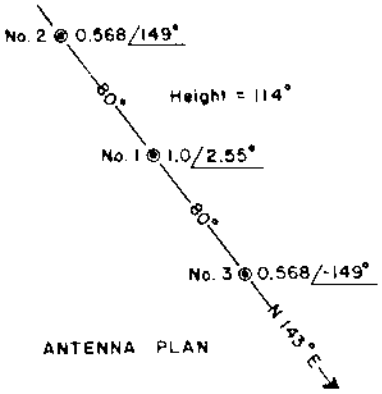
Proposed Night
(1-29-64ct)

Station WCOP
Boston, Massachusetts

5kw, DA-2, U
1150 kc

1-22-64 Granted cpto make changes in antenna system.
SEE MEASURED





ANTENNA PLAN

FIGURE I
NIGHTTIME HORIZONTAL PLANE
RADIATION PATTERN
PLOUGH BROADCASTING COMPANY, INC.
WCOP 5 KW-U, DA-2 1150 KC
BOSTON, MASSACHUSETTS

Prepared by
Lohnes and Culver *Washington 4, D.C.*
September 1963 1150 kc

FCC File No. PB-16053
Accepted 1-9-64

Station WCOP
Boston, Massachusetts

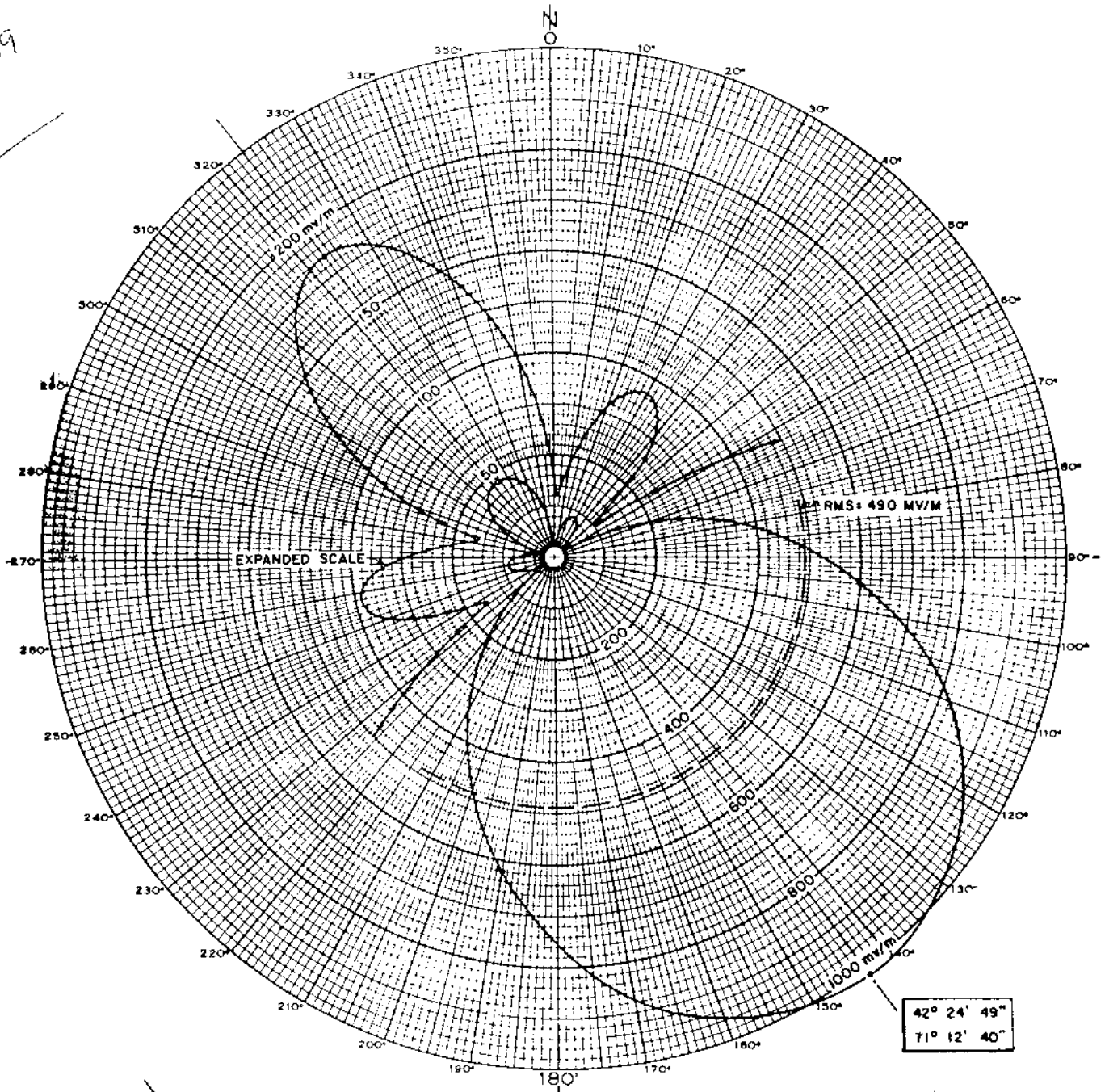
WHUE ~~WCOP~~

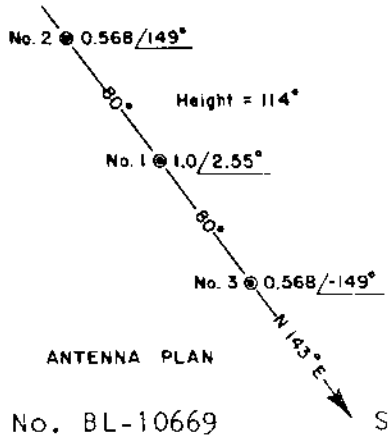
Measured Night
(11-27-64ct)

Station WCOP
Boston, Massachusetts

5kw,DA-2,U
1150 kc

BL-10669
GRANTED
12-31-64





ANTENNA PLAN

FIGURE 9
MEASURED RADIATION PATTERN
(DA-N OPERATION)
PLOUGH BROADCASTING COMPANY, INC.
WCOP 5 KW-U, DA-2 1150 KC
BOSTON, MASSACHUSETTS

Prepared by
. Lohnes and Culver *Washington, D. C.*
May 1964

FCC File No. BL-10669
Accepted 11-6-64

Station WCOP
Boston, Massachusetts

1150 kc

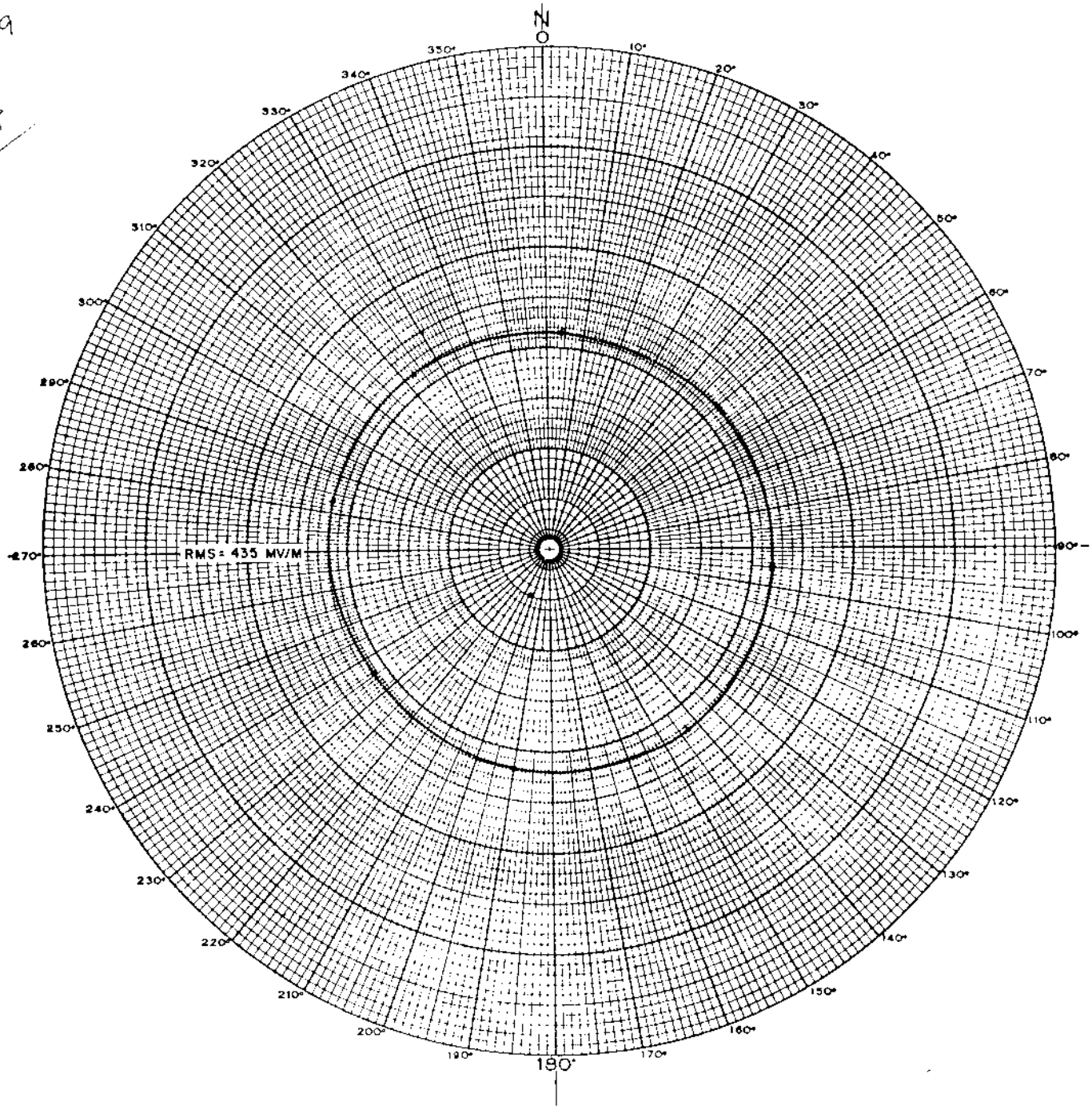
WCOP

Measured Non-DA
(11-27-64ct)

Station WCOP
Boston, Massachusetts

5kw,DA-2,U
1150 kc

BL-10669
GRANTED
12-31-64



42° 24' 49"
71° 12' 40"

FIGURE 7
NON-DIRECTIONAL RADIATION PATTERN
(5 KW TEST OPERATION)
PLOUGH BROADCASTING COMPANY, INC.
WCOP 5 KW-U, DA-2 1150 KC
BOSTON, MASSACHUSETTS

Prepared by
Lohnes and Culver *Washington, D. C.*
May 1964

FCC File No. BL-10669
Accepted 11-6-64

Station WCOP
Boston, Massachusetts

1150 kc

WCRK

PROPOSED
NIGHT (6-20-56g)

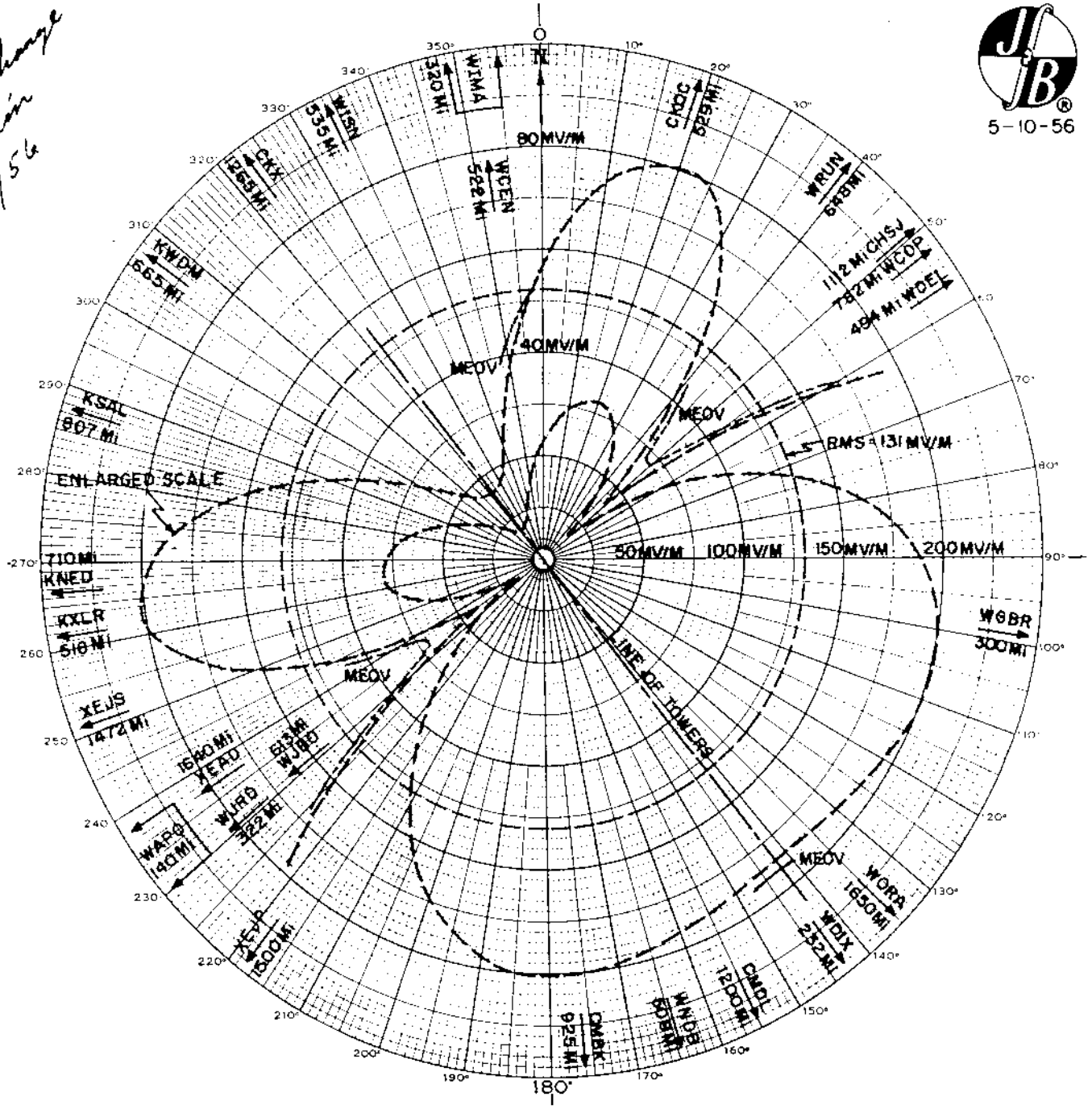
STATION WCRK
MORRISTOWN, TENN.

500 W, 1 KW
DA-N, U

1150 KC

5-10-56

Granted change of operation 12/19/56



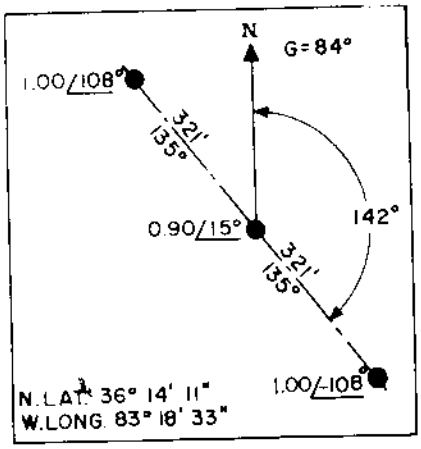


FIG. 2
PROPOSED NIGHTTIME HORIZONTAL RADIATION PATTERN
(θ=90°)

WCRK 1150KC 1KW, 500W DA-N
MORRISTOWN, TENN.

FCC File No. BP-10,224 (Amended) Accepted 6-14-56 WCRK, Morristown, Tenn. 1150 KC

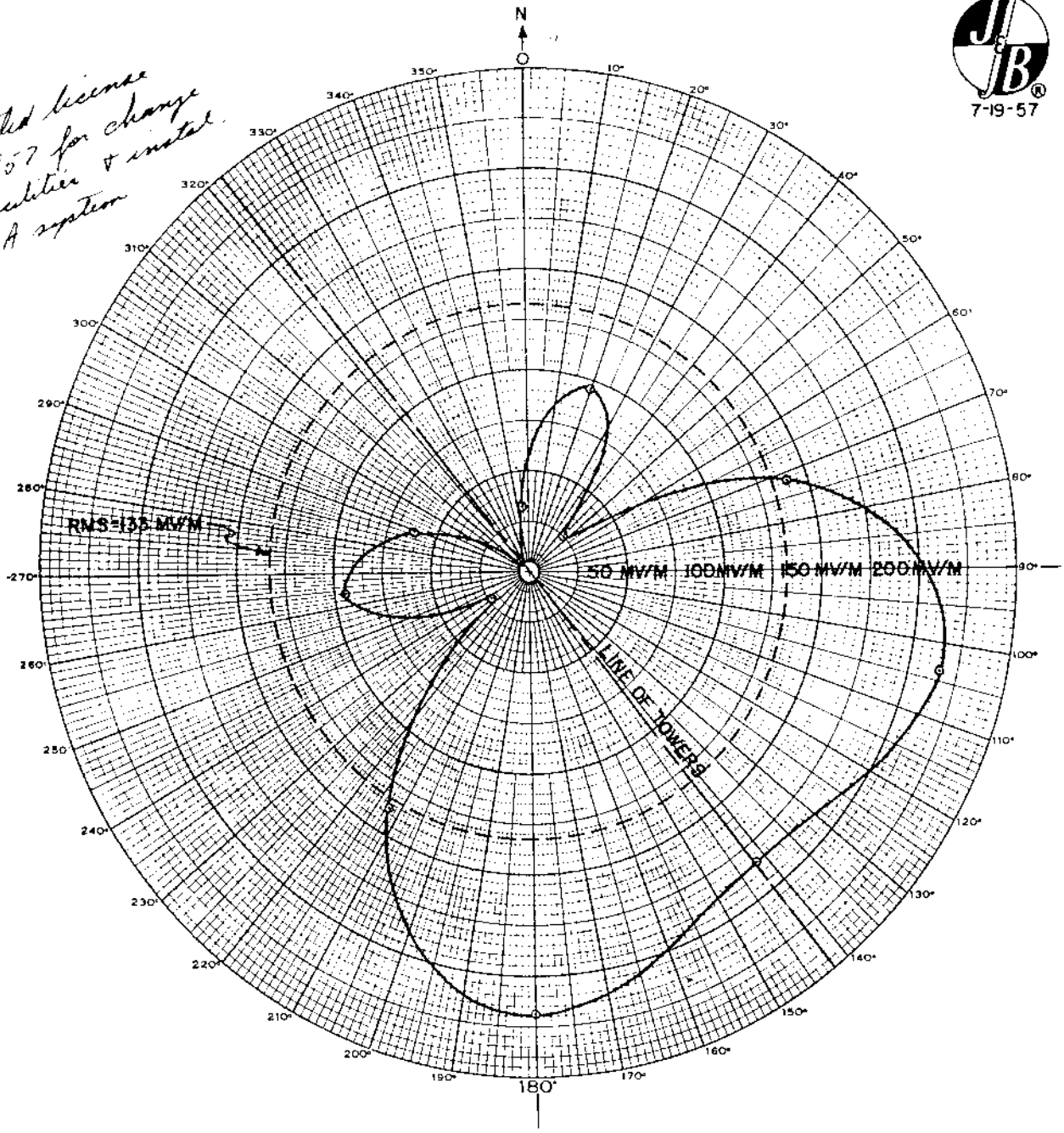
WCRK

MEASURED NIGHT
(10/30/57g)

Station WCRK 500w,1kw-LS, DA-N,U
Morristown, ~~Pennsylvania~~ Tenn. 1150 KC

7-19-57

Granted license 11/21/57 for change in facilities & install. of DA system



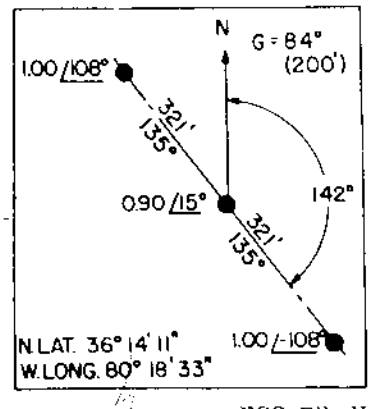


FIG. 19 (AMENDED)
MEASURED NIGHTTIME HORIZONTAL RADIATION PATTERN

WCRK 1150 KC 0.5-1KW DA-N
MORRISTOWN, TENN.

FCC File No. BL-6783
Accepted 10/16/57

WCRK
Morristown, Pennsylvania 1150 KC

WCRK

MEASURED NIGHT NULL (10/30/57g)

Station WCRK 500w,1kw-LS, DA-N,U
Morristown, ~~Pennsylvania~~ Tenn 1150 KC

7-19-57

Granted license 11/21/57

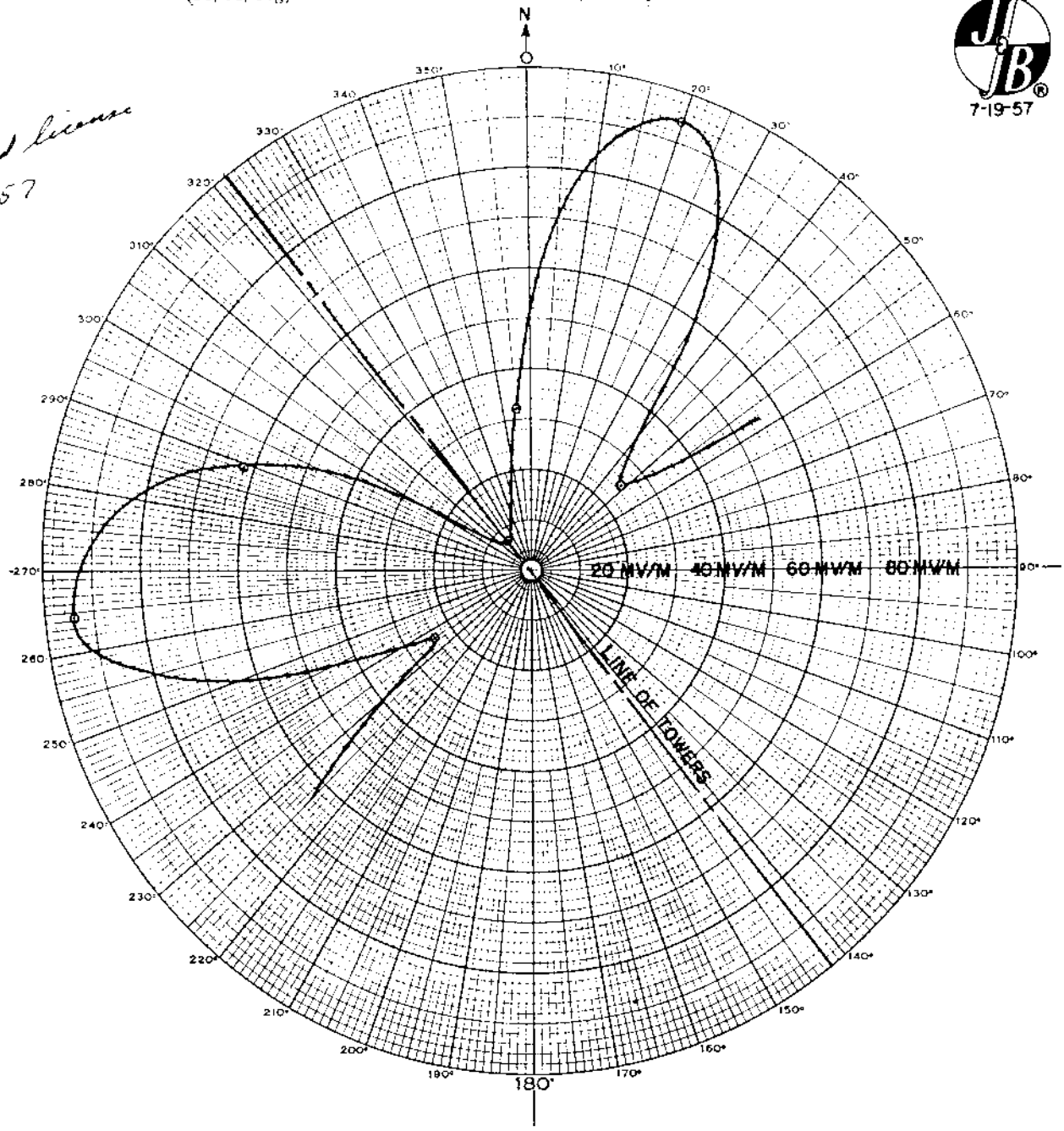


FIG. 20 (AMENDED)
MEASURED NIGHTTIME HORIZONTAL RADIATION PATTERN
(EXPANDED SCALE)
WCRK 1150 KC 0.5-1 KW DA-N
MORRISTOWN, TENN.

FCC File No. BL-6783
Accepted 10/16/57

WRCK
Morristown, Pennsylvania 1150 KC

7

WCRK

MEASURED NON-DA
(10/30/57g)

Station WCRK 500w,1kw-LS, DA-N,U
Morristown, ~~Pennsylvania~~ Tenn 1150 KC

6-19-57

granted license
12/21/57

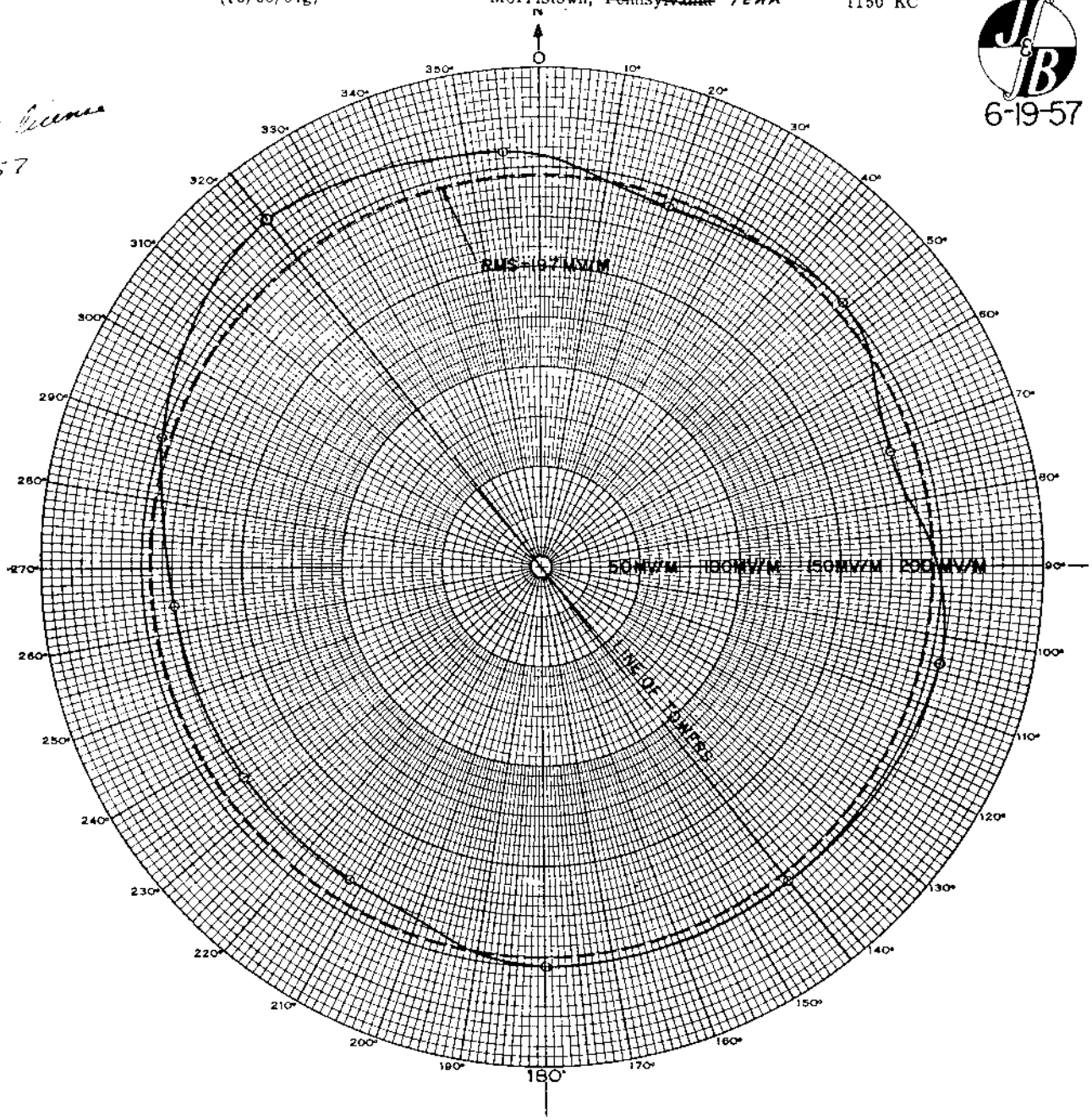


FIG. 20
MEASURED NON-DIRECTIONAL DAYTIME
HORIZONTAL RADIATION PATTERN

WCRK 1150 KC 0.5-1 KW DA-N
MORRISTOWN, TENN.

FCC File No. BL-6783
Accepted 10/16/57

WCRK
Morristown, Pennsylvania 1150 KC

WCUE AKRON, O

PROPOSED
DAY

NEW, AKRON, OHIO
Akron Bg. Corp.

2/21/49 1kw,D,DA NEW - 1150 KC

2/23/49G

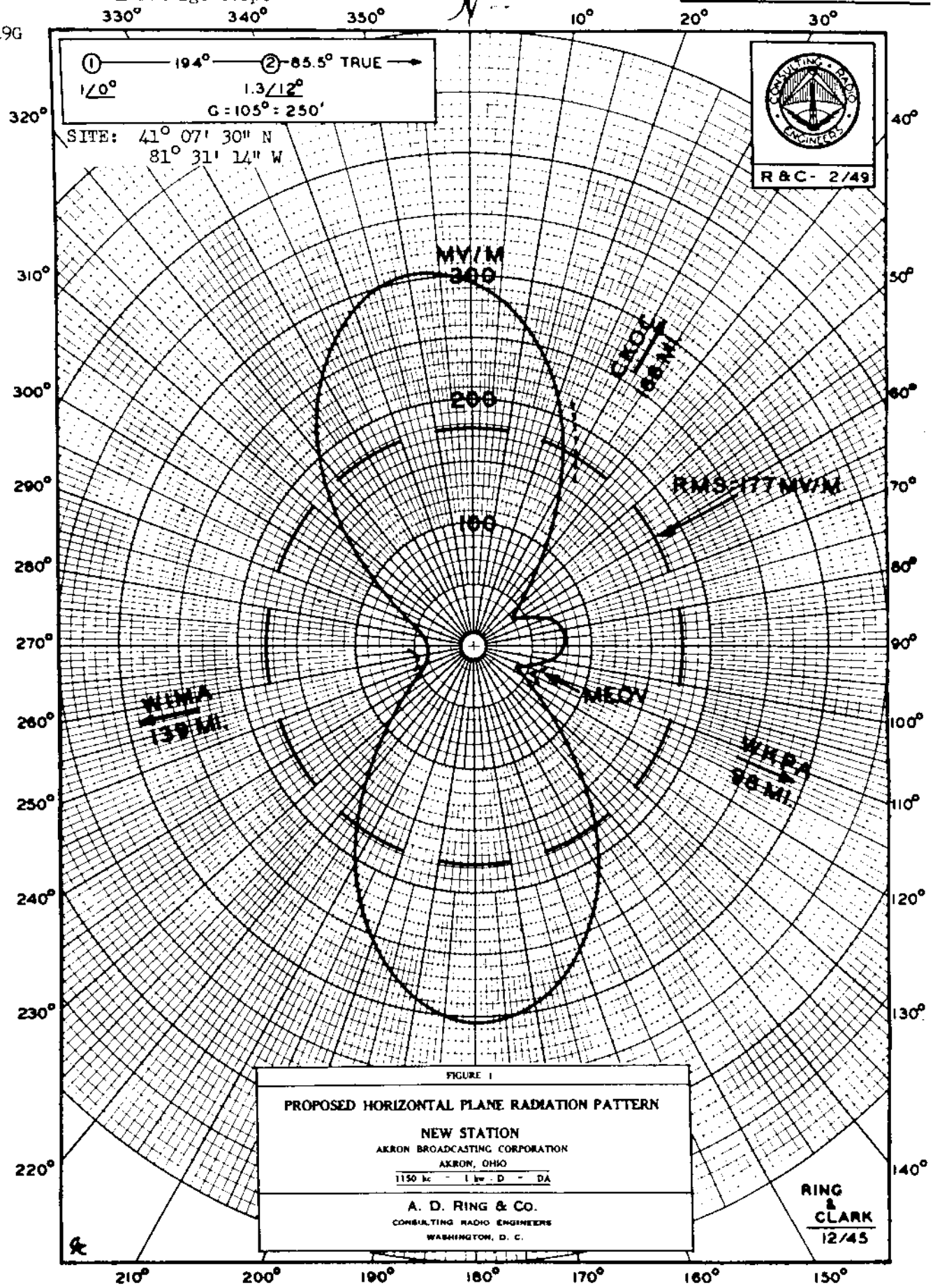


FIGURE 1

PROPOSED HORIZONTAL PLANE RADIATION PATTERN

NEW STATION
AKRON BROADCASTING CORPORATION
AKRON, OHIO
1150 kc - 1 kw - D - DA

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

P-7126

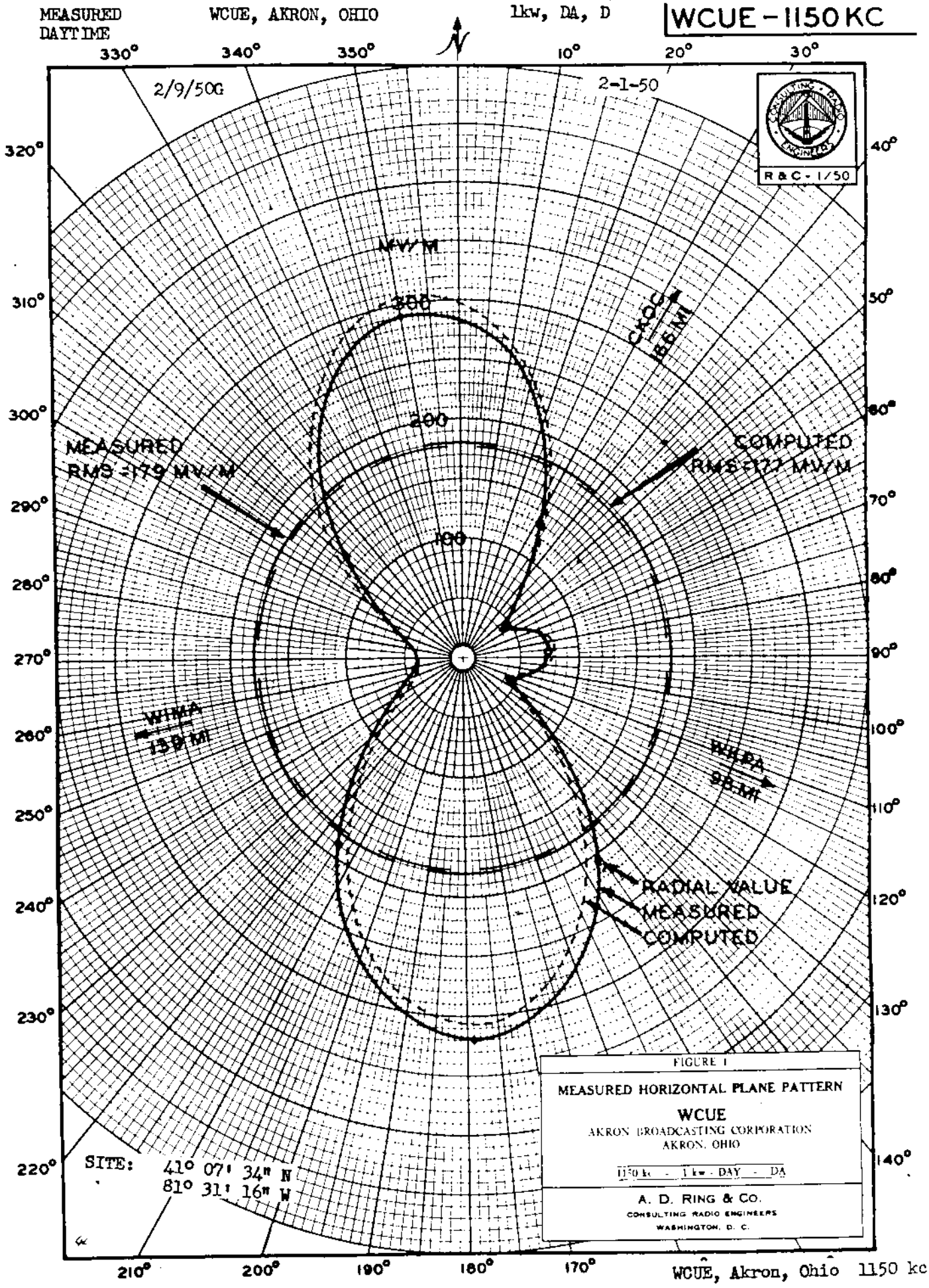


FIGURE 1

MEASURED HORIZONTAL PLANE PATTERN

WCUE

AKRON BROADCASTING CORPORATION
AKRON, OHIO

1150 kc - 1 kw - DAY - DA

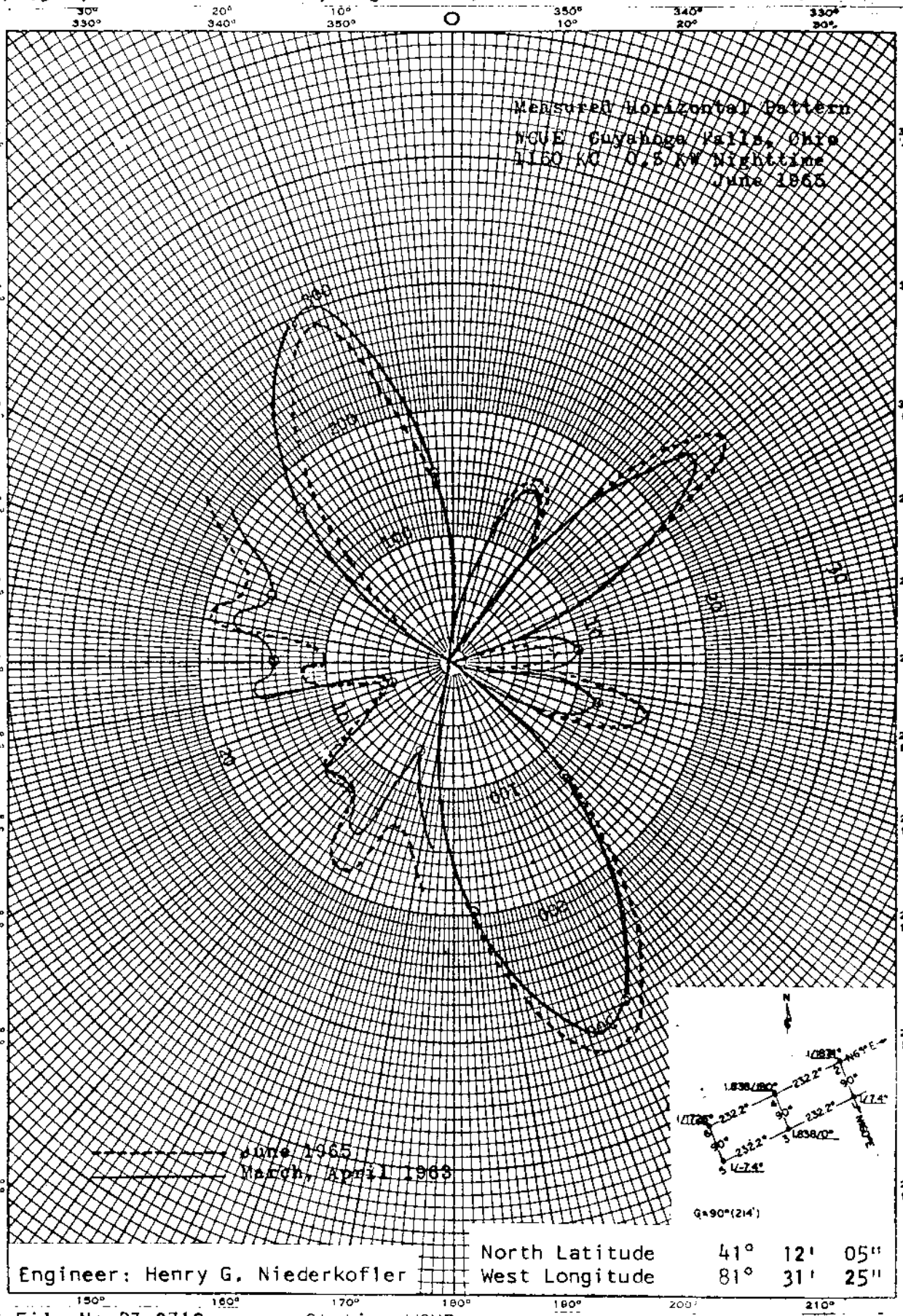
A. D. RING & CO.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

WCUE

Measured Night
(8-27-65ct)

Station WCUE
Cuyahoga Falls, Ohio

500w, 1kw-LS, DA-2, U
1150 kc



Engineer: Henry G. Niederkofler

North Latitude	41°	12'	05"
West Longitude	81°	31'	25"

FCC File No. BZ-2712
Accepted 8-2-65

Station WCUE
Cuyahoga Falls, Ohio

1150 kc

WCUE

4-18-63
granted modification of CP to make changes in nighttime DA pattern.

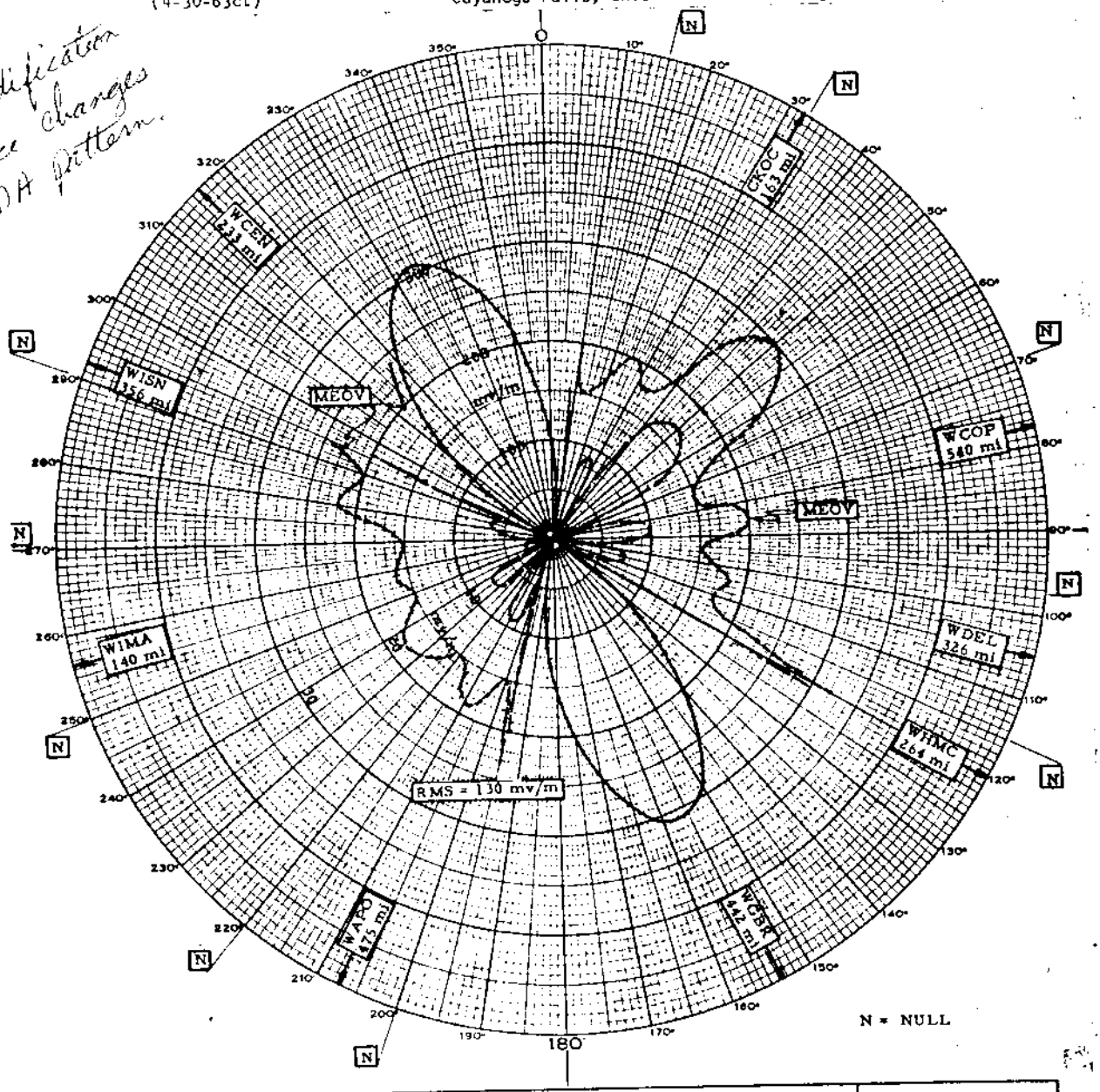
POLAR CO-ORDINATE MADE IN U.S.A. NO. 10 LP

CLEVELAND INSTITUTE OF RADIO ELECTRONICS
CLEVELAND, OHIO

Proposed Night
(4-30-63ct)

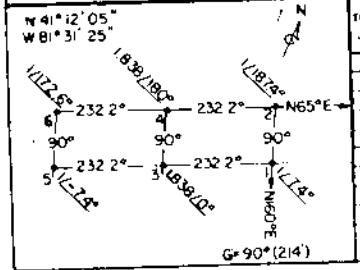
Station WCUE
Cuyahoga Falls, Ohio

500w, 1kw-LS, DA-2, U
1150 kc



TOWER PLACEMENT SKETCH

N 41° 12' 05"
W 81° 31' 25"



PATTERN PARAMETERS

TOWER No.	ELECTRICAL HEIGHT °	TRUE TOWER ORIENTATION °	SPACING °	PHASING °	HORIZONTAL FIELD mv/m E	FIELD RATIO F	ELEV. ANGLE °	ELEVATION RMS FIELD mv/m E_E
1	90	65	232.2	7.4		1.0	0	130
2	90	445	~~237.5~~	187.4		1.0	10	
3	90	0	0	0		1.838	20	
4	90	340	90	180		1.838	30	
5	90	245	232.2	-7.4		1.0	40	
6	90	~~[illegible]~~	~~[illegible]~~	172.6		1.0	50	
7							60	
8							70	
9							80	
10							E_E mv/m	
							E_M mv/m	

DAYTIME OPERATION [ ] NIGHTTIME OPERATION [X]

STATION DATA

CALL	WCUE
FREQUENCY	1150 kc
POWER	0.5 kw
TIME OF OPERATION	U
TYPE OF OPERATION	DA-2
DAYTIME TOWERS	2
NIGHTTIME TOWERS	6
No. RADIALS PER TOWER	120
LENGTH OF RADIALS	90° 214 ft
GROUND SCREEN DIMENSION	
LAT.	41° 12' 05"
LONG.	81° 31' 25"
SUPERSEDES	601000
PATTERN No.	630327

FIG. 3.1

CALCULATED NIGHT HORIZONTAL PATTERNS

WCUE Radio, Inc.

Cuyahoga Falls, Ohio

1150 kc, 500 w, 1 kw-LS, U, DA-D 630327

Carl E. Smith
Consulting Radio Engineers

FCC File No. BMP-10856
Accepted 4-15-63

Station WCUE
Cuyahoga Falls, Ohio

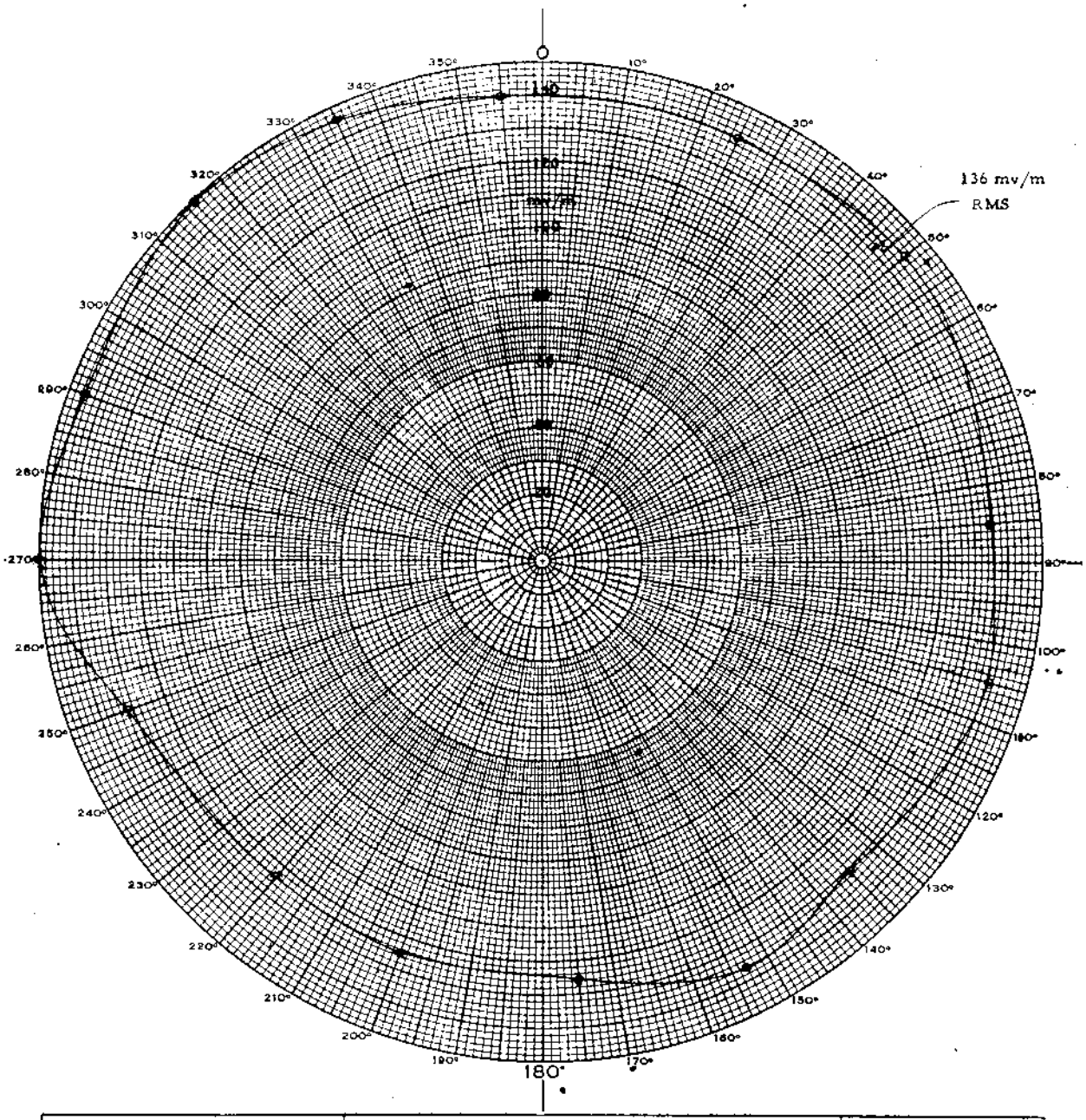
1150 kc

WCUE

Measured Non-DA
(6-28-63ct)

Station WCUE
Cuyahoga Falls, Ohio

500w, 1kw-LS, DA-2, U
1150 kc



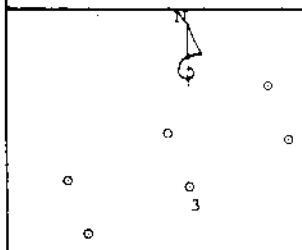
TOWER PLACEMENT SKETCH	PATTERN PARAMETERS									STATION DATA	
	TOWER No.	ELECTRICAL HEIGHT G°	TRUE TOWER ORIENTATION θ°	SPACING S°	PHASING ψ°	HORIZONTAL FIELD mv/m E	FIELD RATIO F	ELEV ANGLE θ°	ELEVATION RMS FIELD mv/m E_θ	CALL	WCUE
	1									FREQUENCY	1160 kc
	2							0	136	POWER	0.5 kw
	3	90						10		TIME OF OPERATION	U
	4							20		TYPE OF OPERATION	DA-2
	5							30		DAYTIME TOWERS	2
	6							40		NIGHTTIME TOWERS	6
	7							50		NO. RADIALS PER TOWER	120
	8							60		LENGTH OF RADIALS	90' 214 ft
	9							70		GROUND SCREEN DIMENSION	24 x 24
	10							80		LAT.	41° 12' 05"
										LONG.	81° 31' 25"
								E_θ	mv/m	SUPERSEDES	
	DAYTIME OPERATION ☐			NIGHTTIME OPERATION ☐					kw	PATTERN No.	630115

FIG. 5.16
MEASURED ND HORIZONTAL PATTERN
WCUE Radio, Inc.
Cuyahoga Falls, Ohio
1150 kc 500 w, 1 kw-LS, U, DA-2

Carl E. Smith
Consulting Radio Engineers

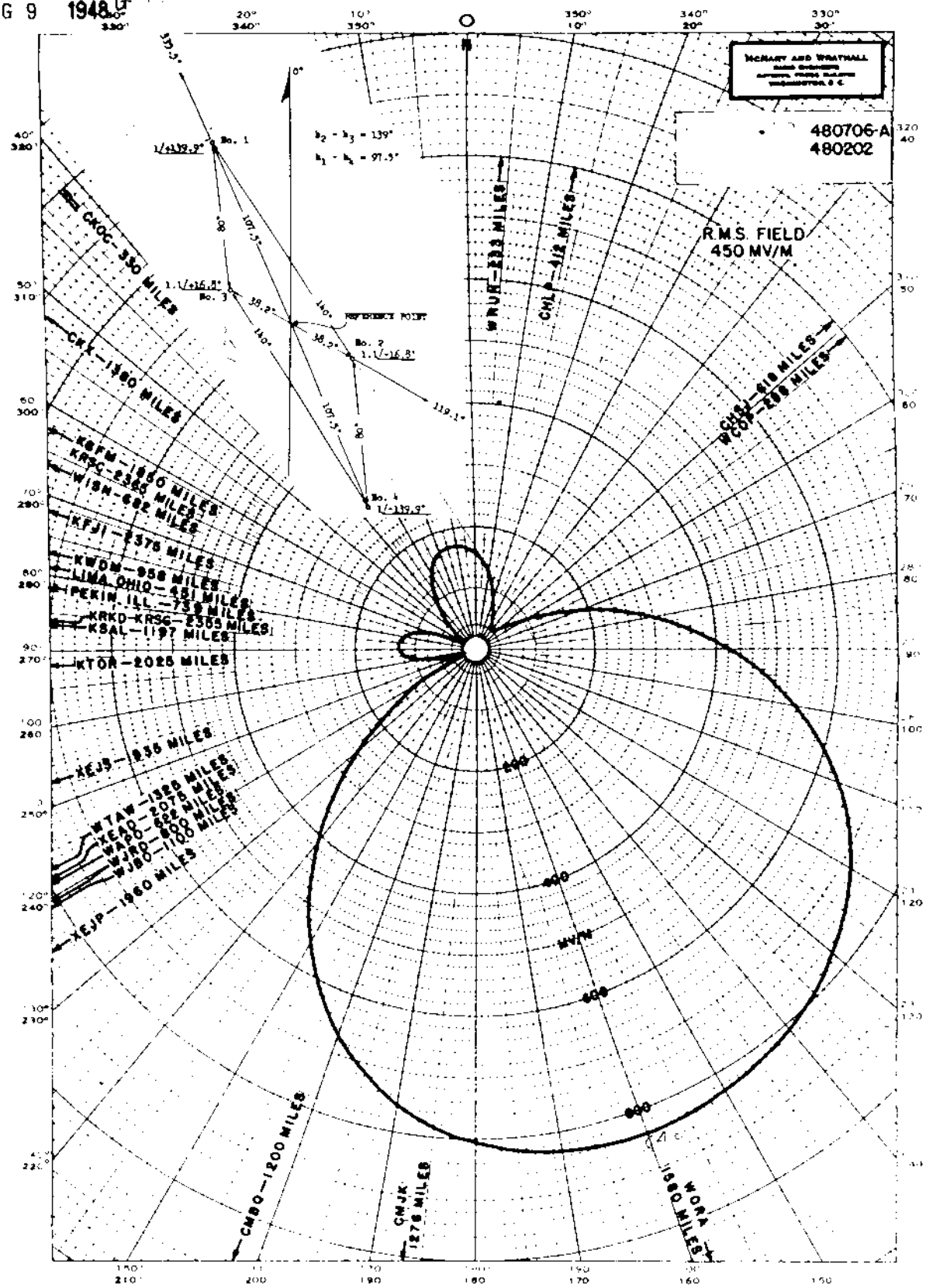
FCC File No. BL-10067
Accepted 6-18-63

Station WCUE
Cuyahoga Falls, Ohio

1150 kc

WDEL
1150

AUG 9 1948



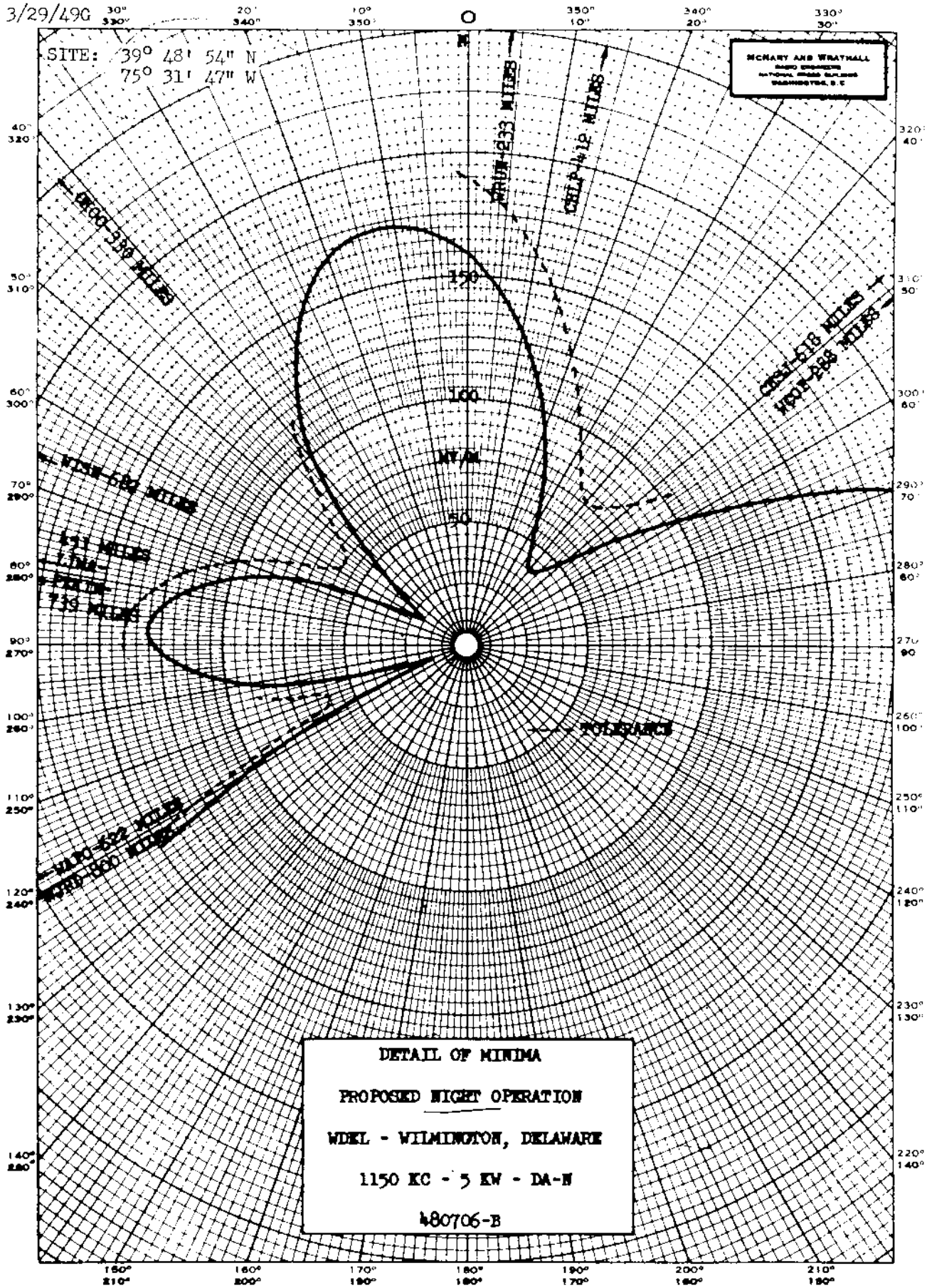
CALCULATED HORIZONTAL PLANE PATTERN
PROPOSED NIGHT OPERATION
WDEL—WILMINGTON, DEL.
1150 KC—5 KW—DA-2

Amendment Recd. 8-3-49 BP-6-

WDEL

PROPOSED NIGHT NULLS WDEL, WILMINGTON, DELA. 8-3-48 5kw, DAN 1150 kc

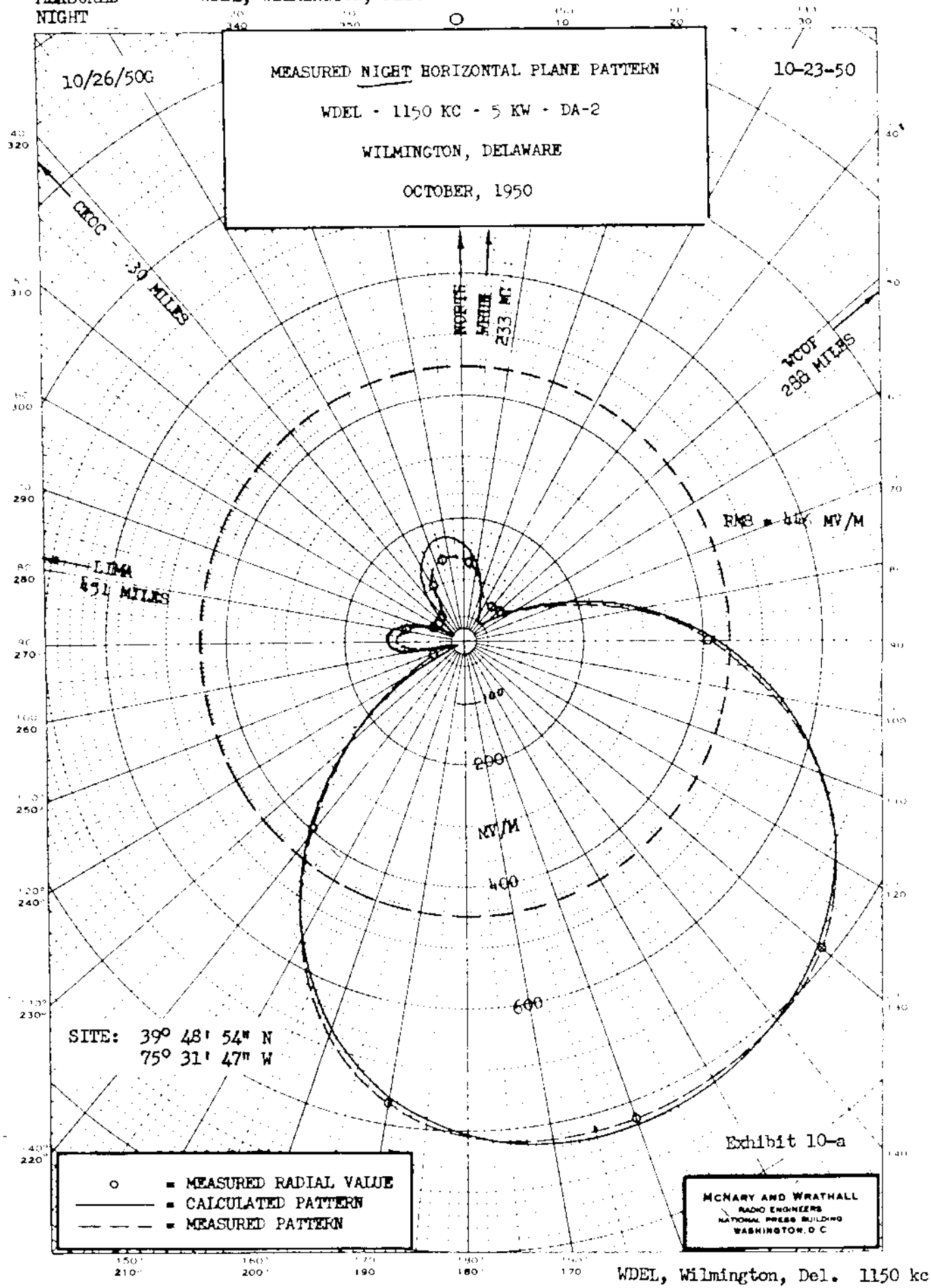
3/29/49G



WDEL, Wilmington, Del. 1150kc

WDEL

MEASURED NIGHT — WDEL, WILMINGTON, DEL. — 5kw, DA-2 — 1150 kc



WDEL, Wilmington, Del. 1150 kc

WDEL

MEASURED NIGHT NULLS — WDEL, WILMINGTON, DEL. — 5kw, DA-2 — 1150 kc

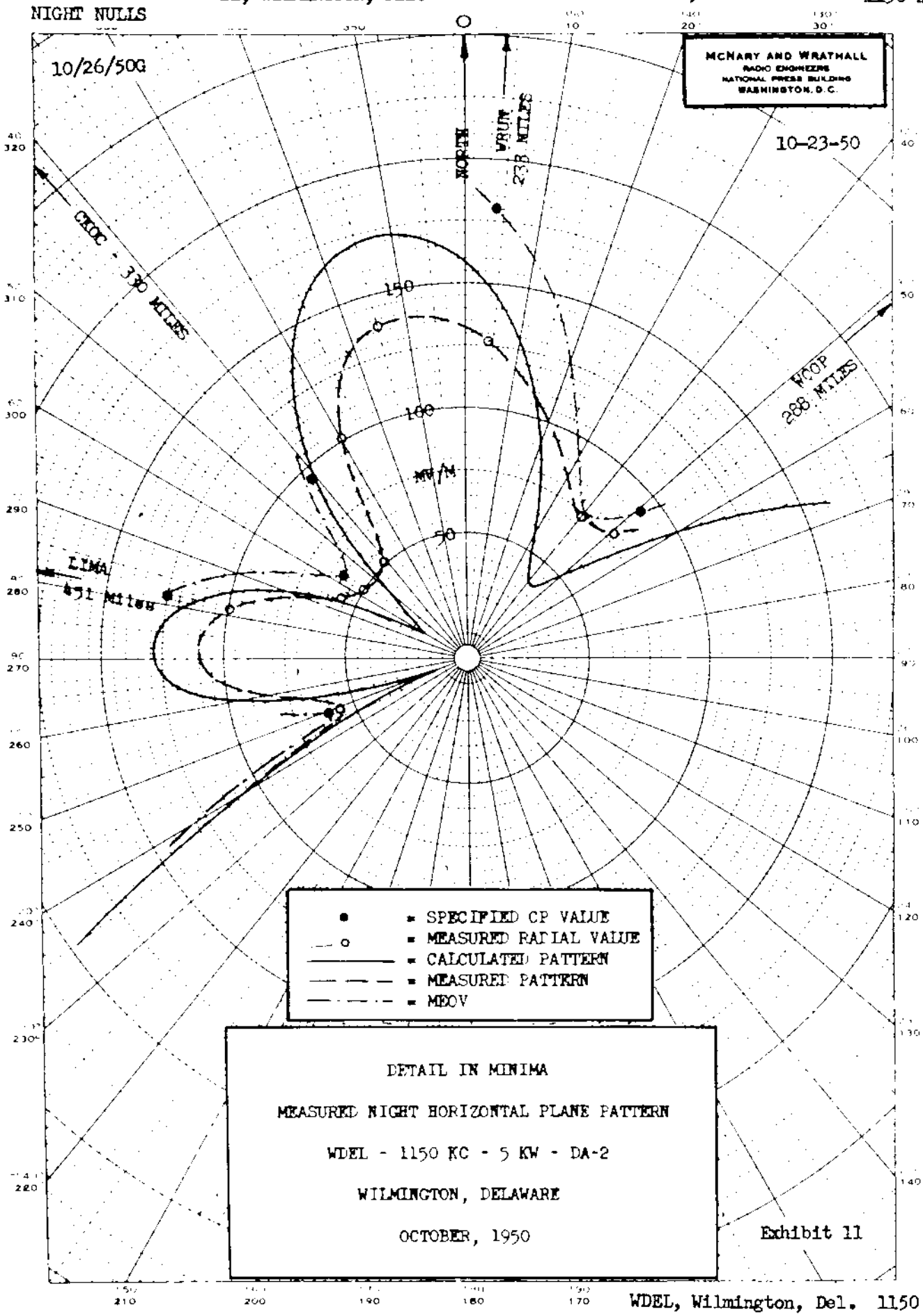
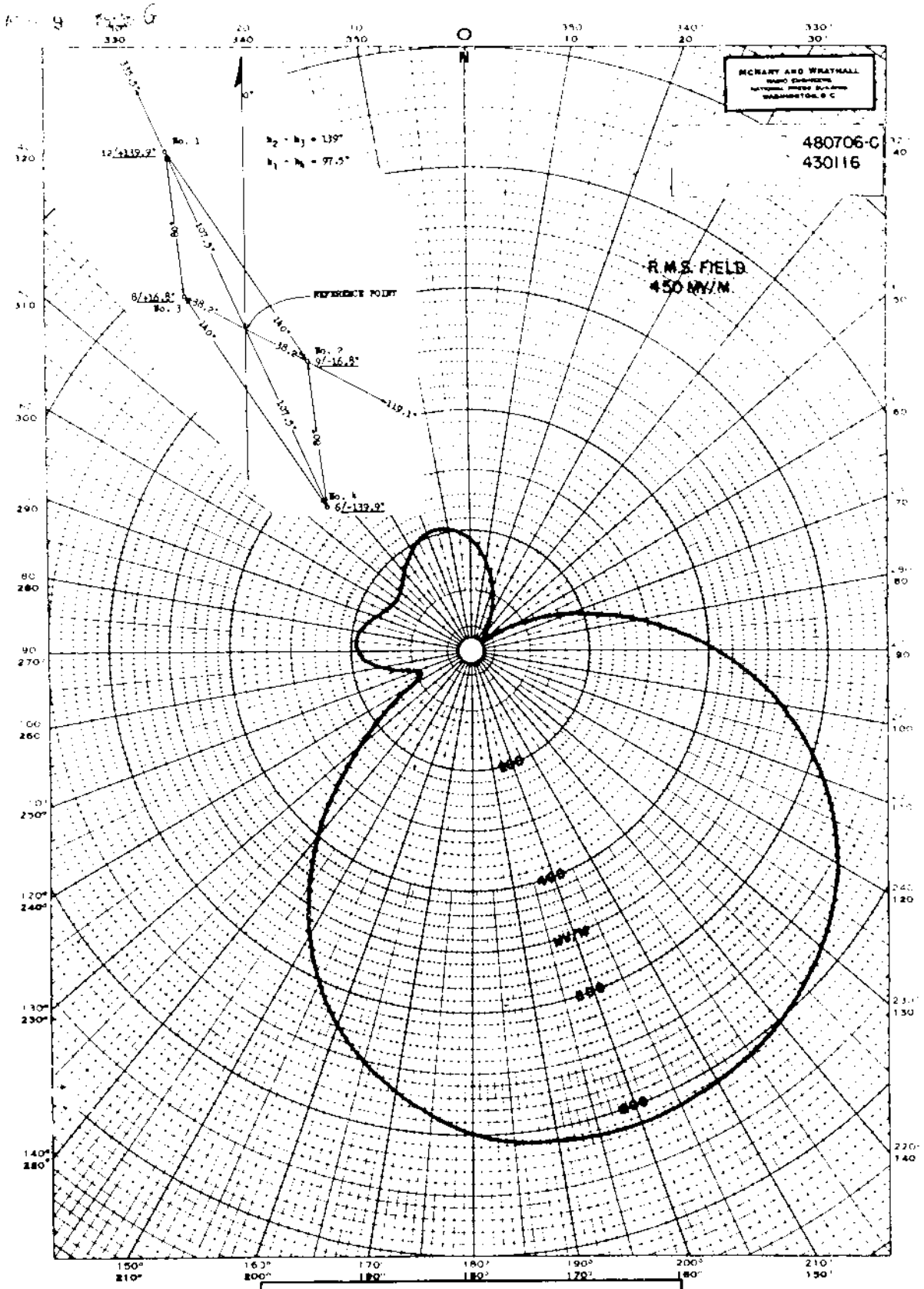


Exhibit 11

WDEL, Wilmington, Del. 1150 kc

WDEL
1150



CALCULATED HORIZONTAL PLANE PATTERN
PROPOSED DAY OPERATION
WDEL—WILMINGTON, DEL.
1150 KC – 5 KW – DA-2

Amendment Recd. 8-3-48 BP-6606

WDEL

MEASURED DAY — WDEL, WILMINGTON, DEL. — 5kw, DA-2 — 1150 kc

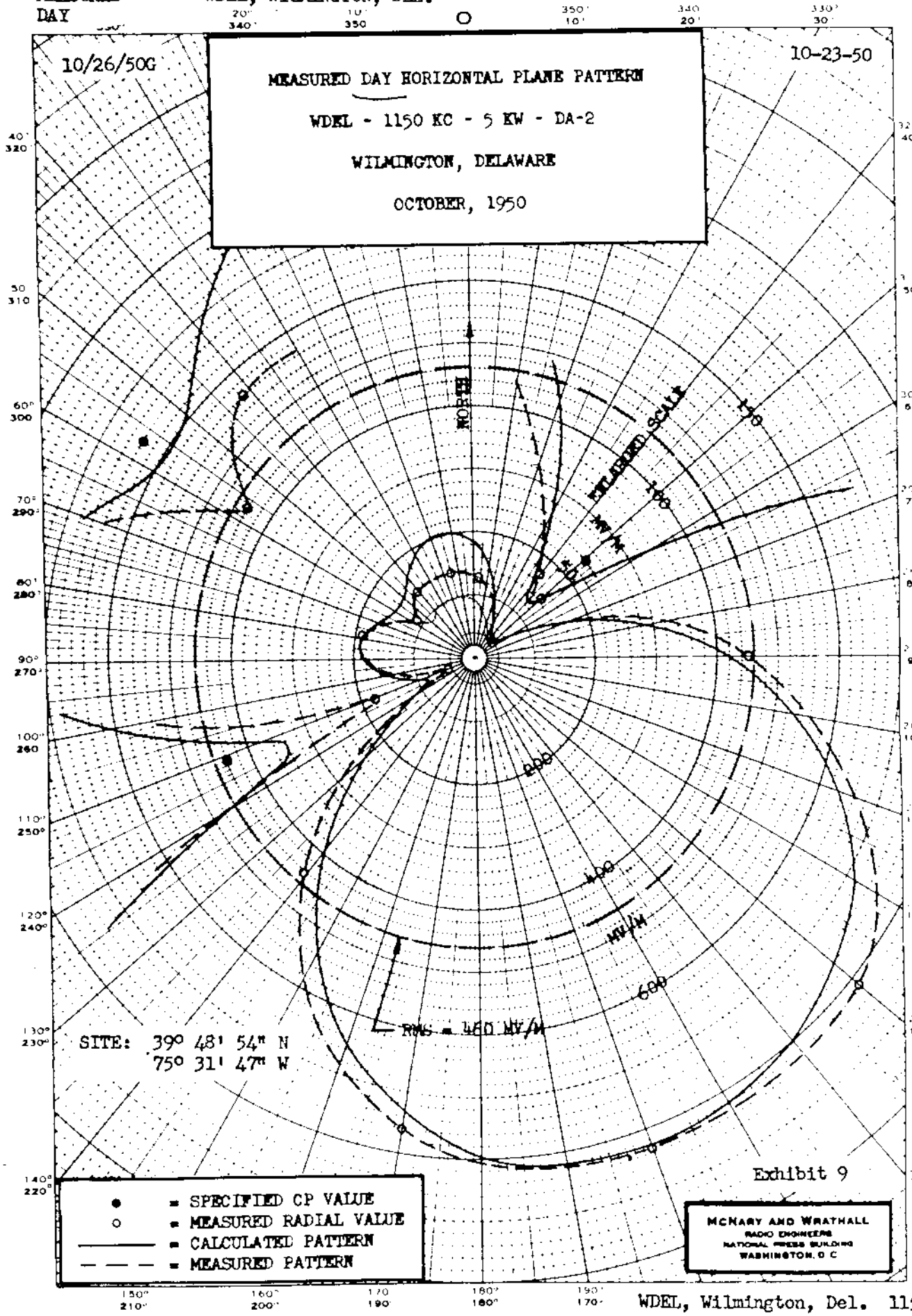


Exhibit 9

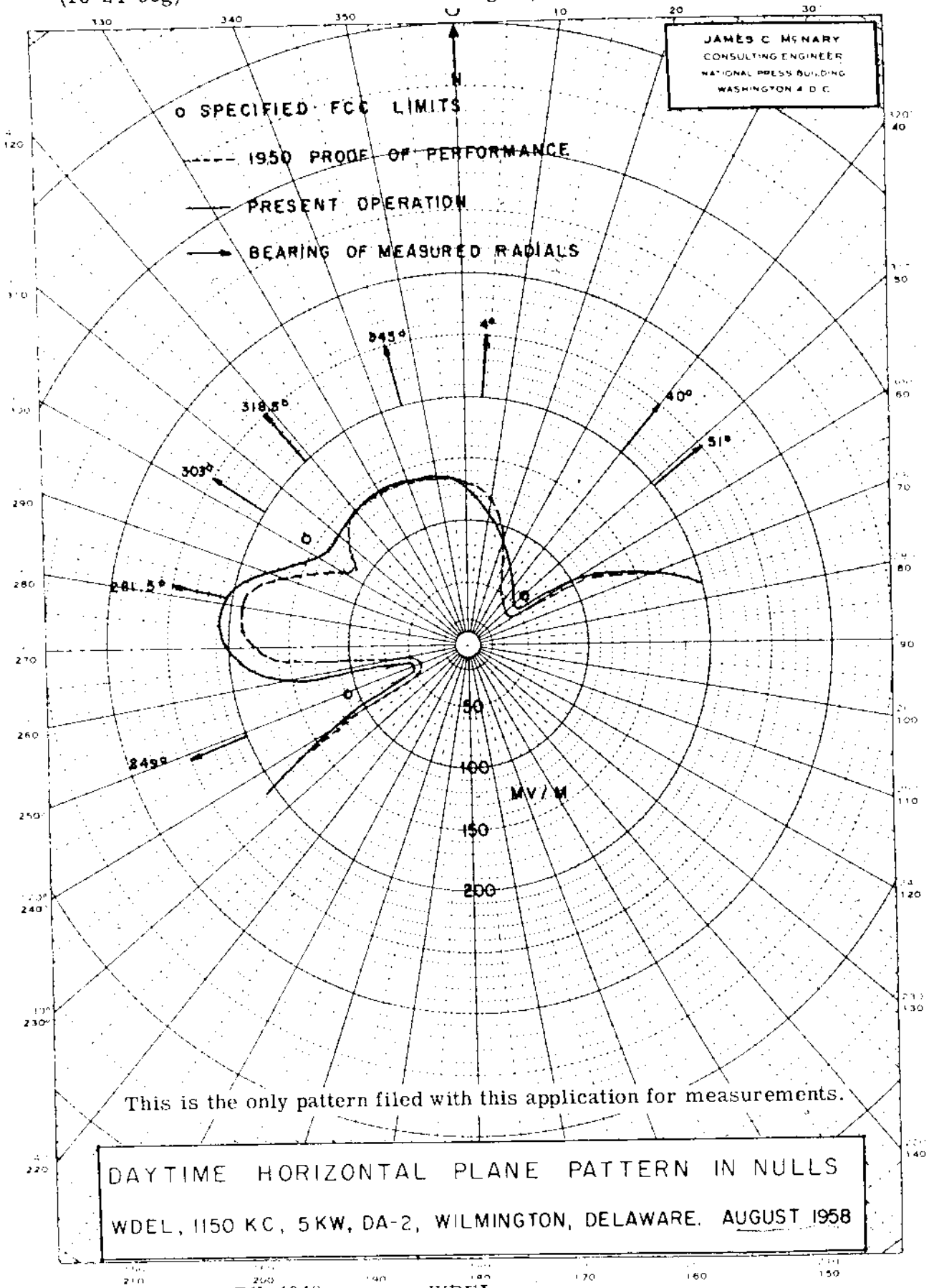
WDEL, Wilmington, Del. 1150 kc

WDEL

MEASURED DAY NULLS
(10-24-58g)

Station WDEL
Wilmington, Delaware

5kw, DA-2,U
1150 KC



This is the only pattern filed with this application for measurements.

DAYTIME HORIZONTAL PLANE PATTERN IN NULLS

WDEL, 1150 KC, 5KW, DA-2, WILMINGTON, DELAWARE. AUGUST 1958

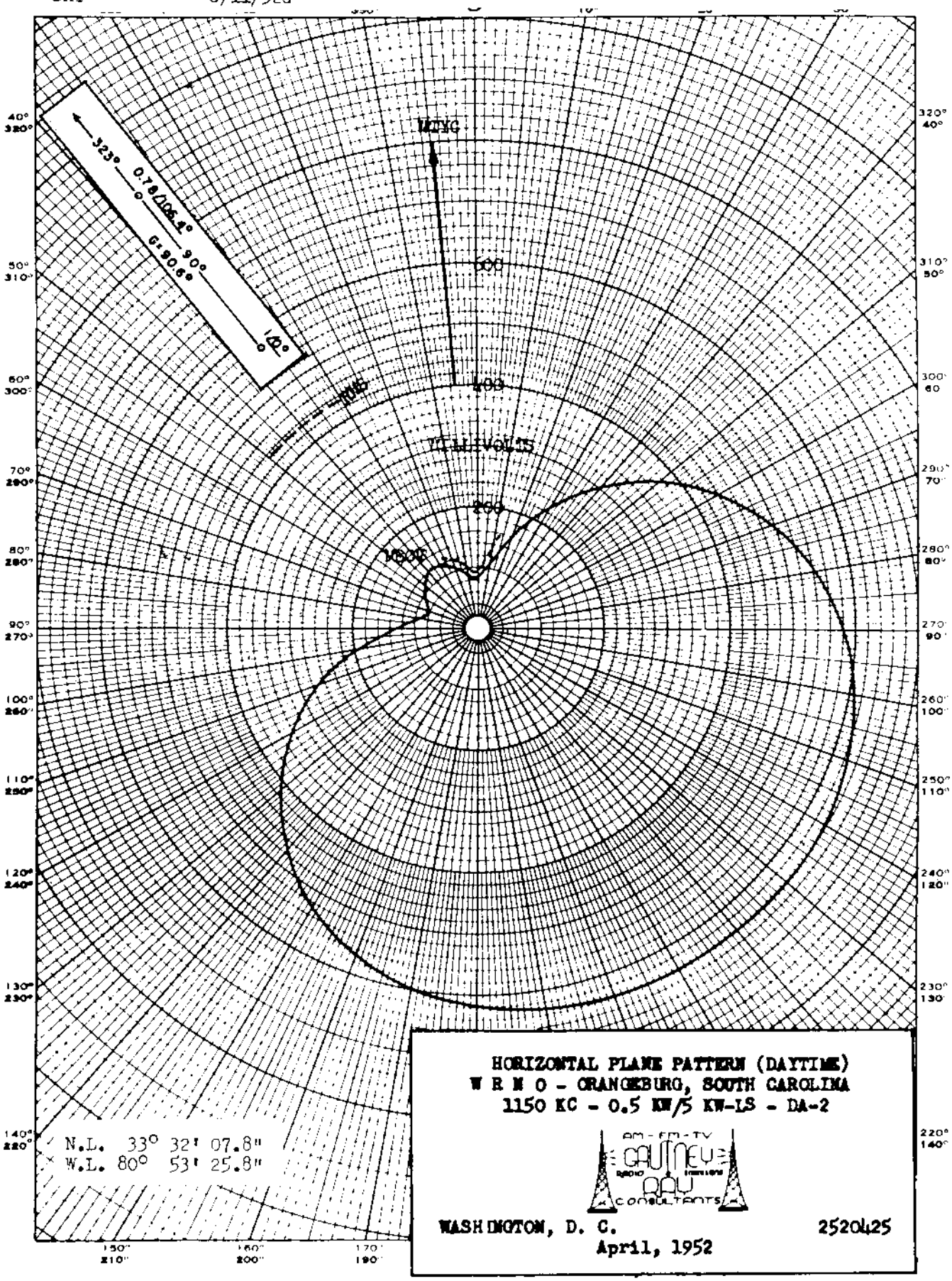
FCC File No. BZ-4048
Accepted 10-14-58

WDEL
Wilmington, Delaware

1150 KC

WDIX ~~WRNO~~

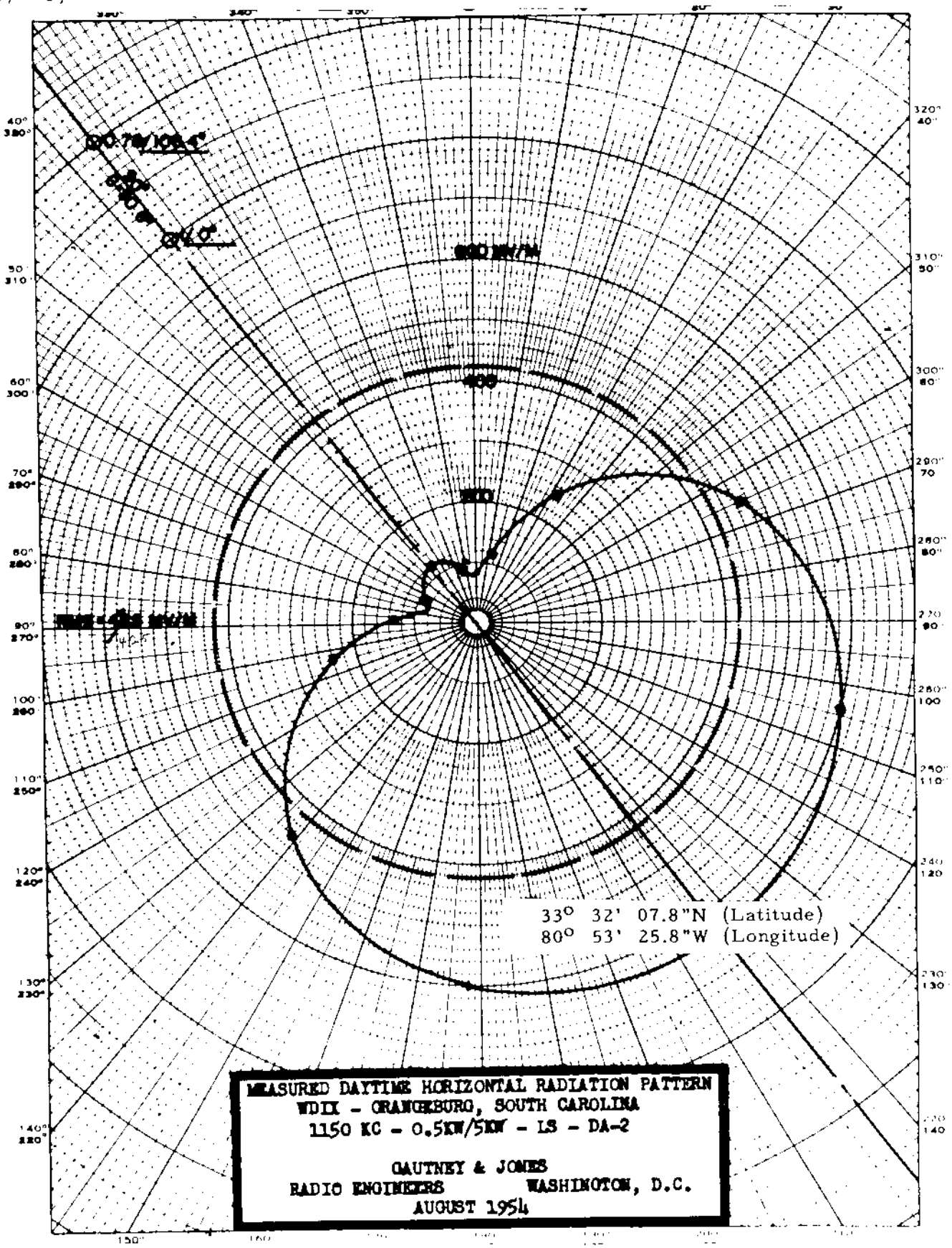
PROPOSED ~~WRNO~~, ORANGEBURG, S. C. 500W, 5KW-LS, U, DA-2 1150 KC
DAY 6/11/52G



APPL RECD 5/19/52 ACC 6/5/52 BP-8500 WRNO, ORANGEBURG, S. C. 1150 KC

WDIX

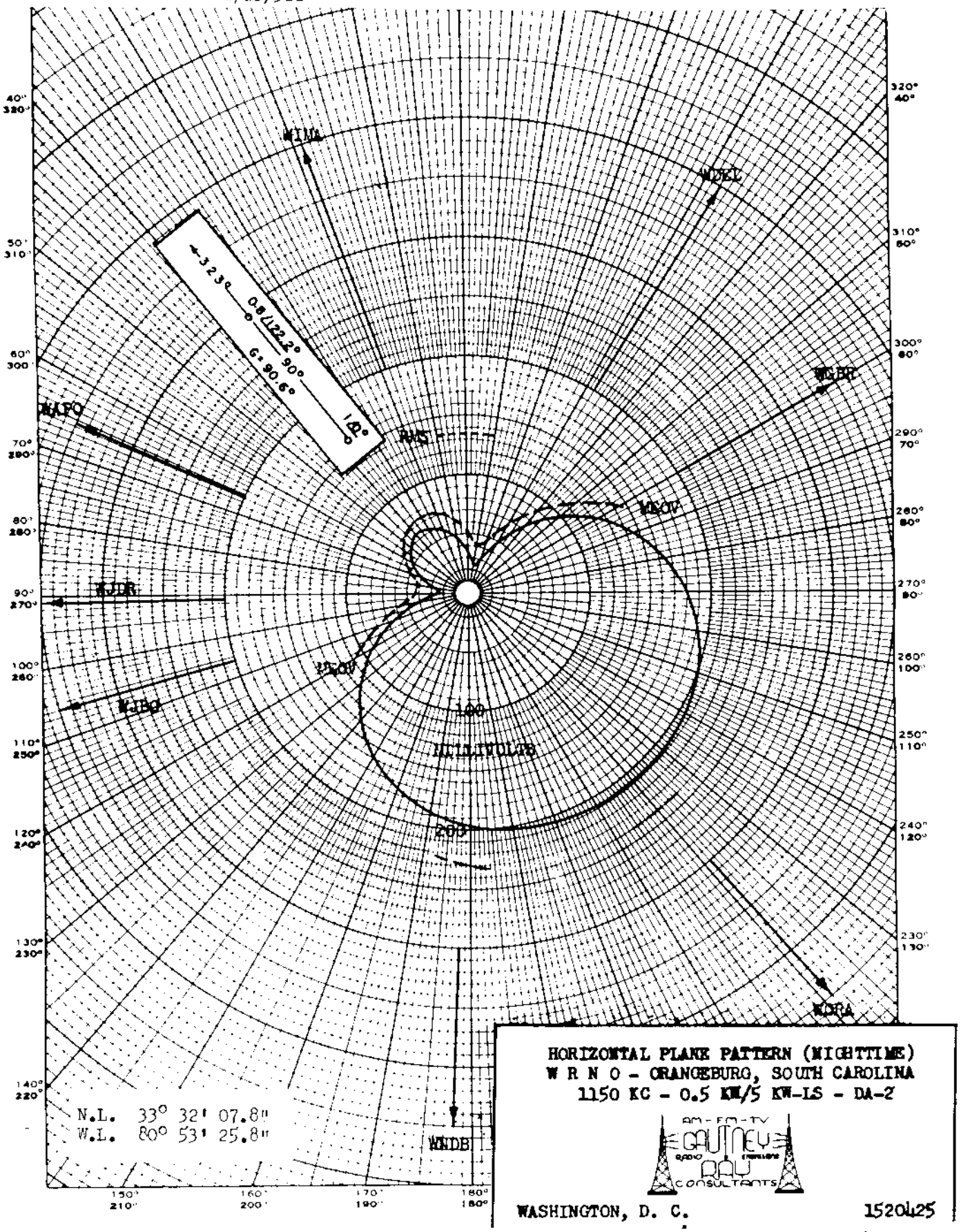
MEASURED DAY (11/22/54G) | STATION WDIX ORANGEBURG, S. C. | 500 W, 5 KW DA-2, U | 1150 KC



File No. BL-5500 | Accepted 10/29/54 | STATION WDIX ORANGEBURG, S.C. | 1150 KC

WDIX ~~WRNO~~

PROPOSED NIGHT — ~~WRNO~~, ORANGEBURG, S. C. 6/11/52G — 500W, 5KW-LS, U, DA-2 — 1150 KC



HORIZONTAL PLANE PATTERN (NIGHTTIME)
W R N O - ORANGEBURG, SOUTH CAROLINA
1150 KC - 0.5 KW/5 KW-LS - DA-2

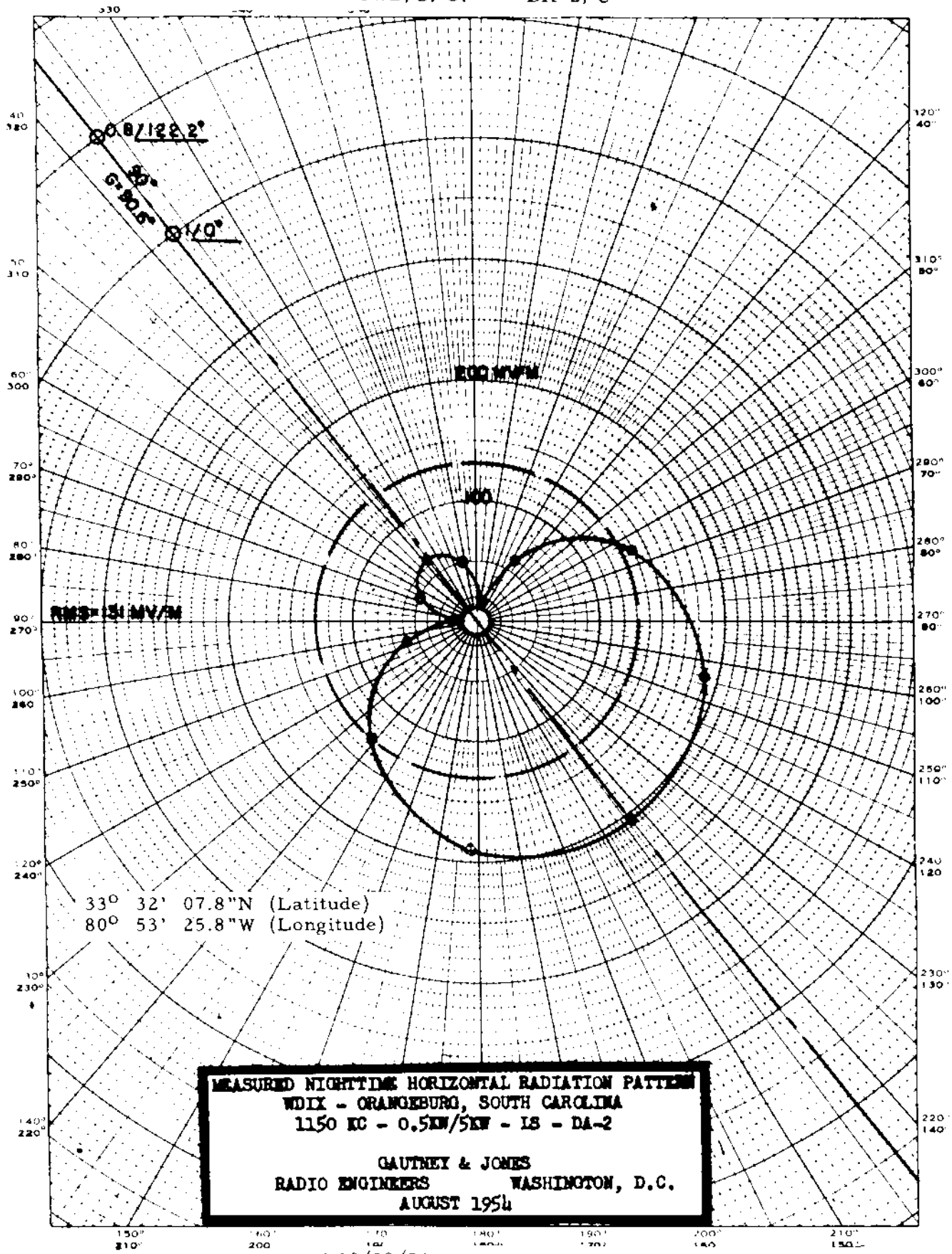
AM-FM-TV GAUTNEY & RAU CONSULTANTS

WASHINGTON, D. C. 1520425

APPL RECD 5/19/52 ACC 6/5/52 BP-8500 WRNO, ORANGEBURG, S. C. 1150 KC

WDIX

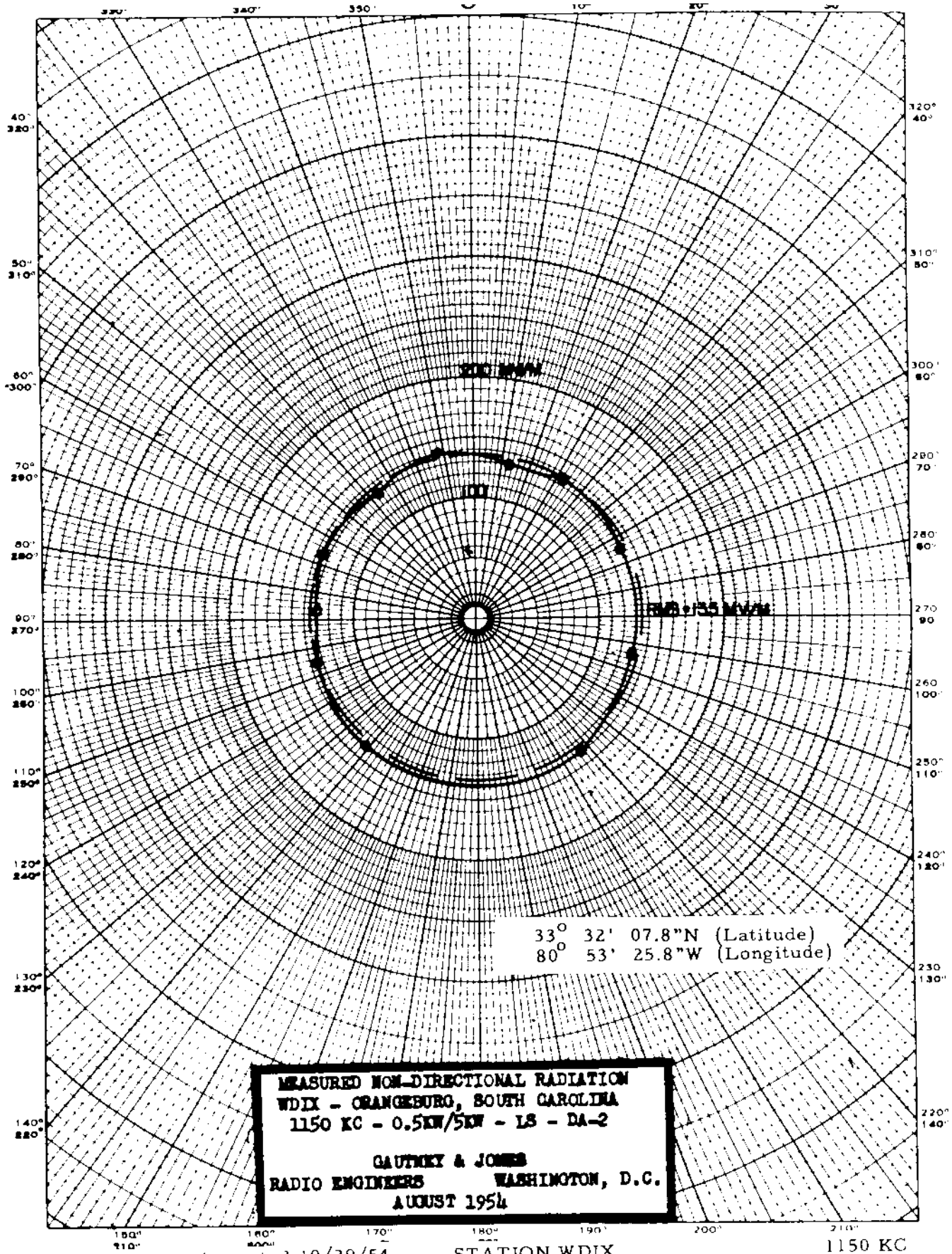
MEASURED NIGHT (11/22/54G) | STATION WDIX ORANGEBURG, S. C. | 500 W, 5 KW DA-2, U | 1150 KC



File No. BL-5500 | Accepted 10/29/54 | STATION WDIX ORANGEBURG, S.C. | 1150 KC

WDIX

MEASURED NON-DIRECTIONAL (11/22/54G) | STATION WDIX ORANGEBURG, S.C. | 500 W, 5 KW DA-2, U | 1150 KC



File No. BL-5500 Accepted 10/29/54 STATION WDIX ORANGEBURG, S.C. 1150 KC

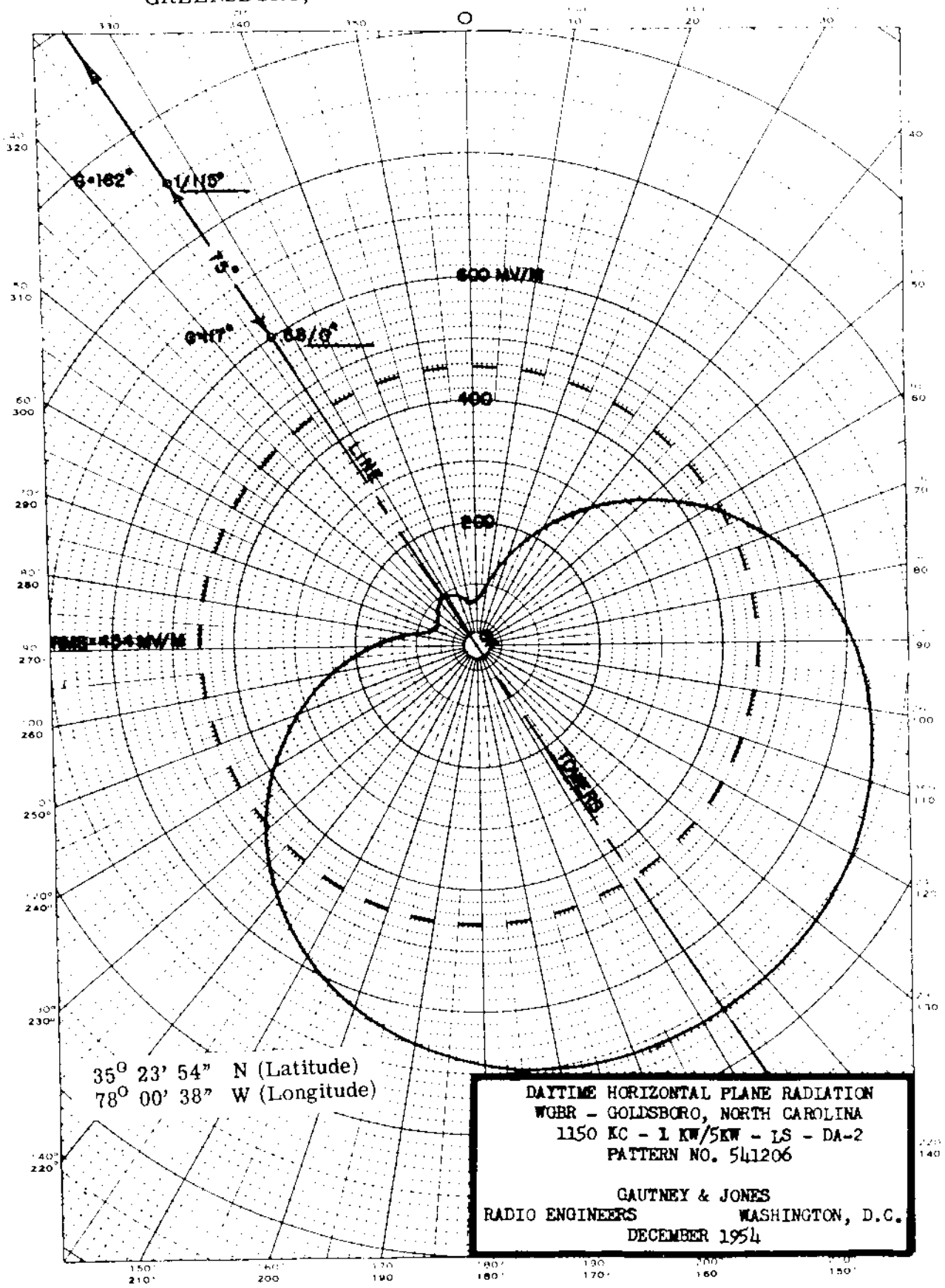
WGBR

PROPOSED DAY
(1-13-55G)

GOLDS WGBR
~~GREENS~~BORO, N. C.

1 KW/5KW-LS
DA-2, U

1150 KC



FCC File No. BP-9599 Accepted 12-27-54 WGBR, GREENSBORO, N.C. 1150 KC

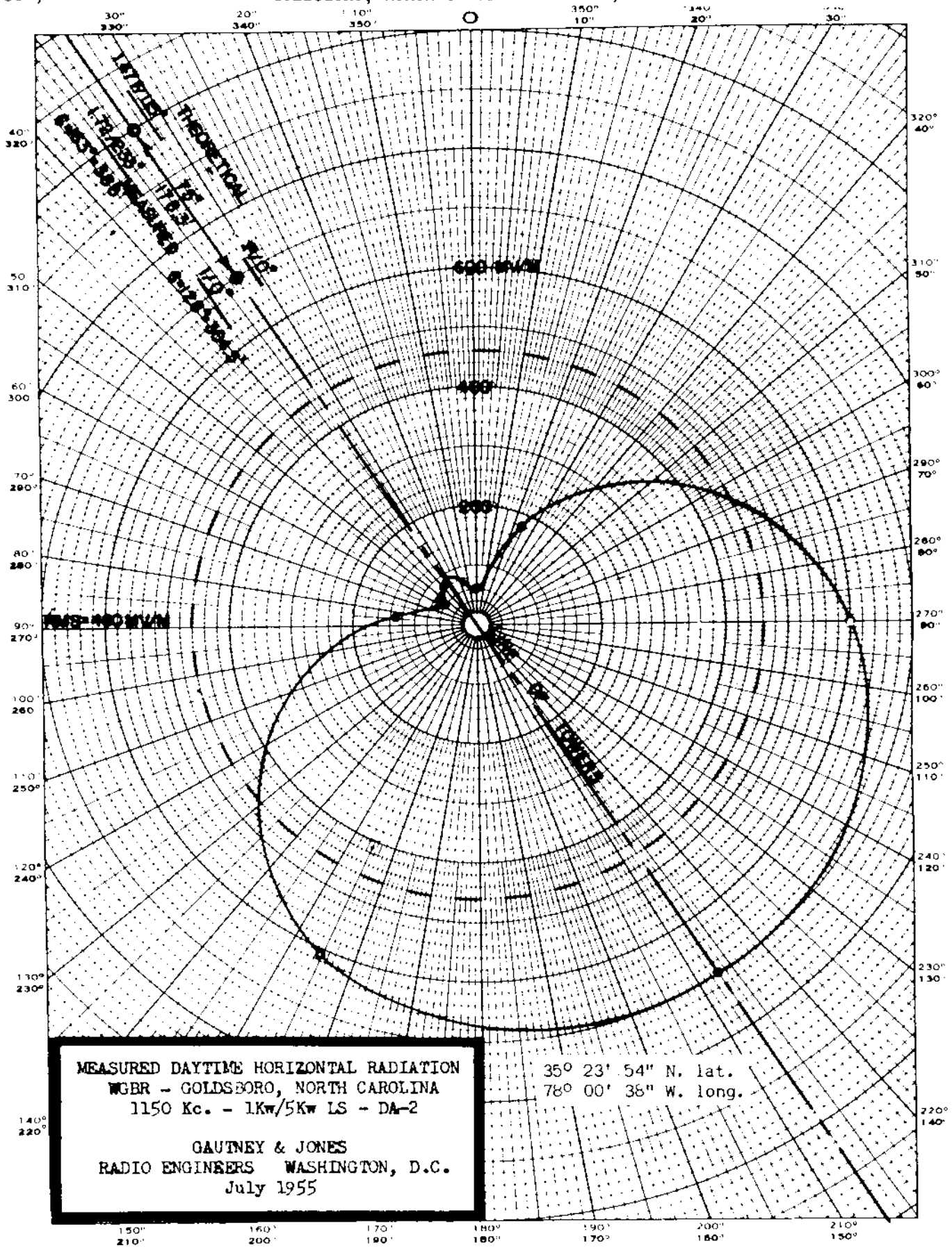
WGBR

MEASURED DAY
(4-9-56G)

STATION WGBR
GOLDSBORO, NORTH CAROLINA

1KW-N, 5KW-D
DA-2, U

1150 KC



MEASURED DAYTIME HORIZONTAL RADIATION
WGBR - GOLDSBORO, NORTH CAROLINA
1150 Kc. - 1Kw/5Kw LS - DA-2

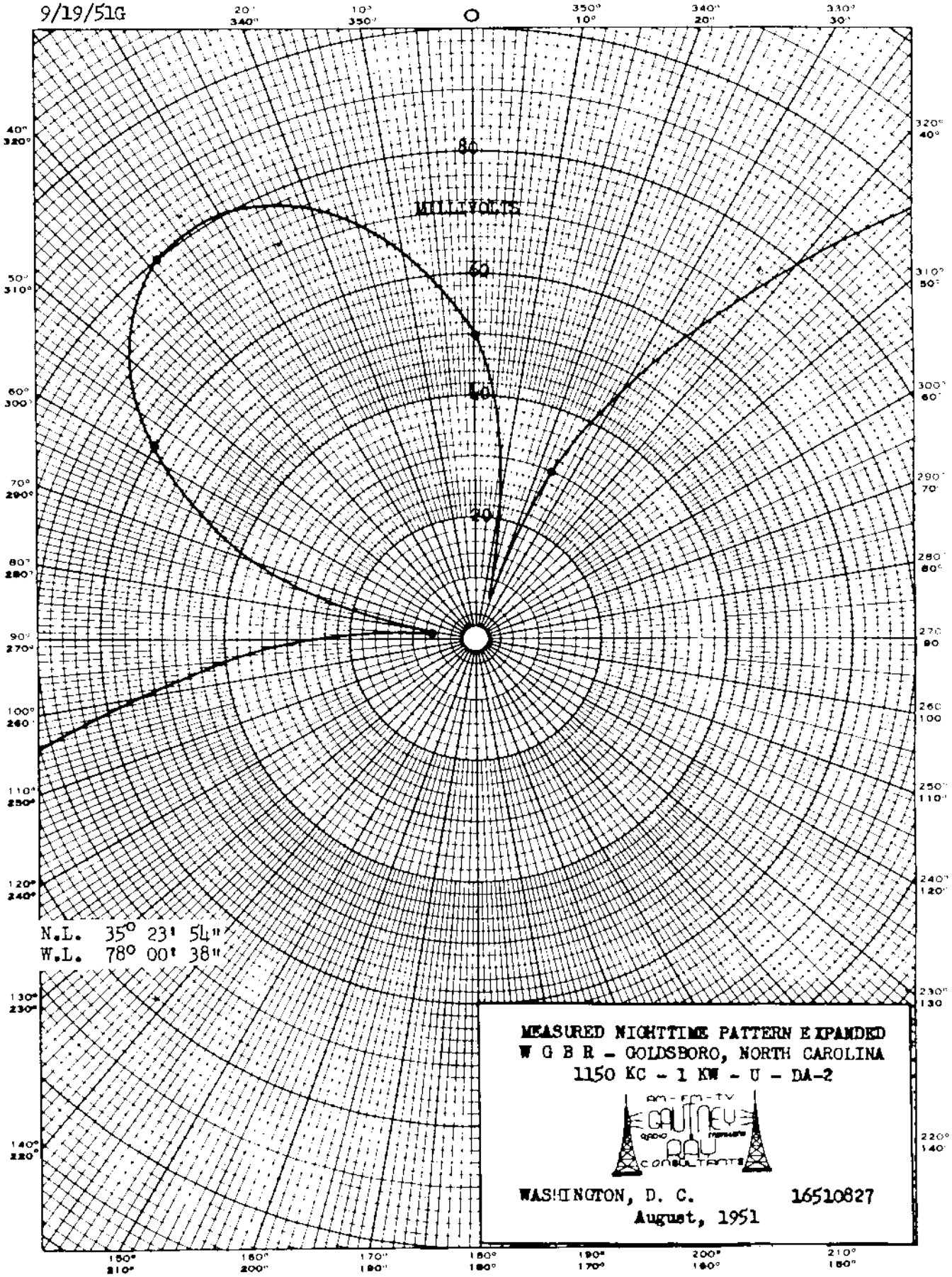
GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D.C.
July 1955

FILE NO. BL-5810 RECEIVED 7-22-55 FCC WGBR, Goldsboro, N. C. 1150 KC

WGBR

MEASURED NIGHT NULLS 9/19/51G

WGBR, GOLDSBORO, N.C. 1 kw, U, DA-2 1150 KC

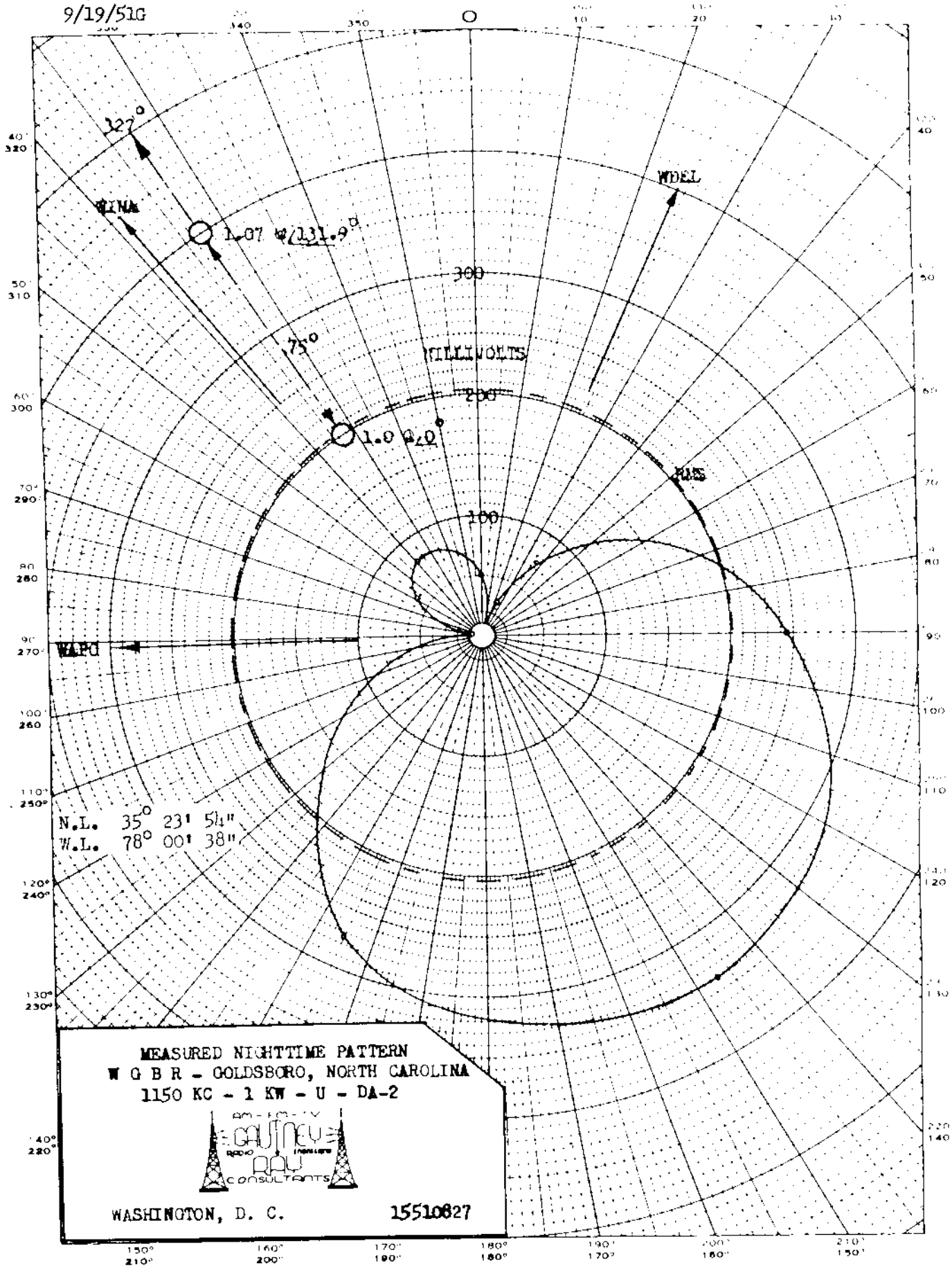


APPL RECD 8/31/51 BL-4531

WGBR, GOLDSBORO, N.C. 1150 KC

WGBR

MEASURED NIGHT 9/19/51G — WGBR, GOLDSBORO, N.C. — 1 kw, U, DA-2 — 1150 KC



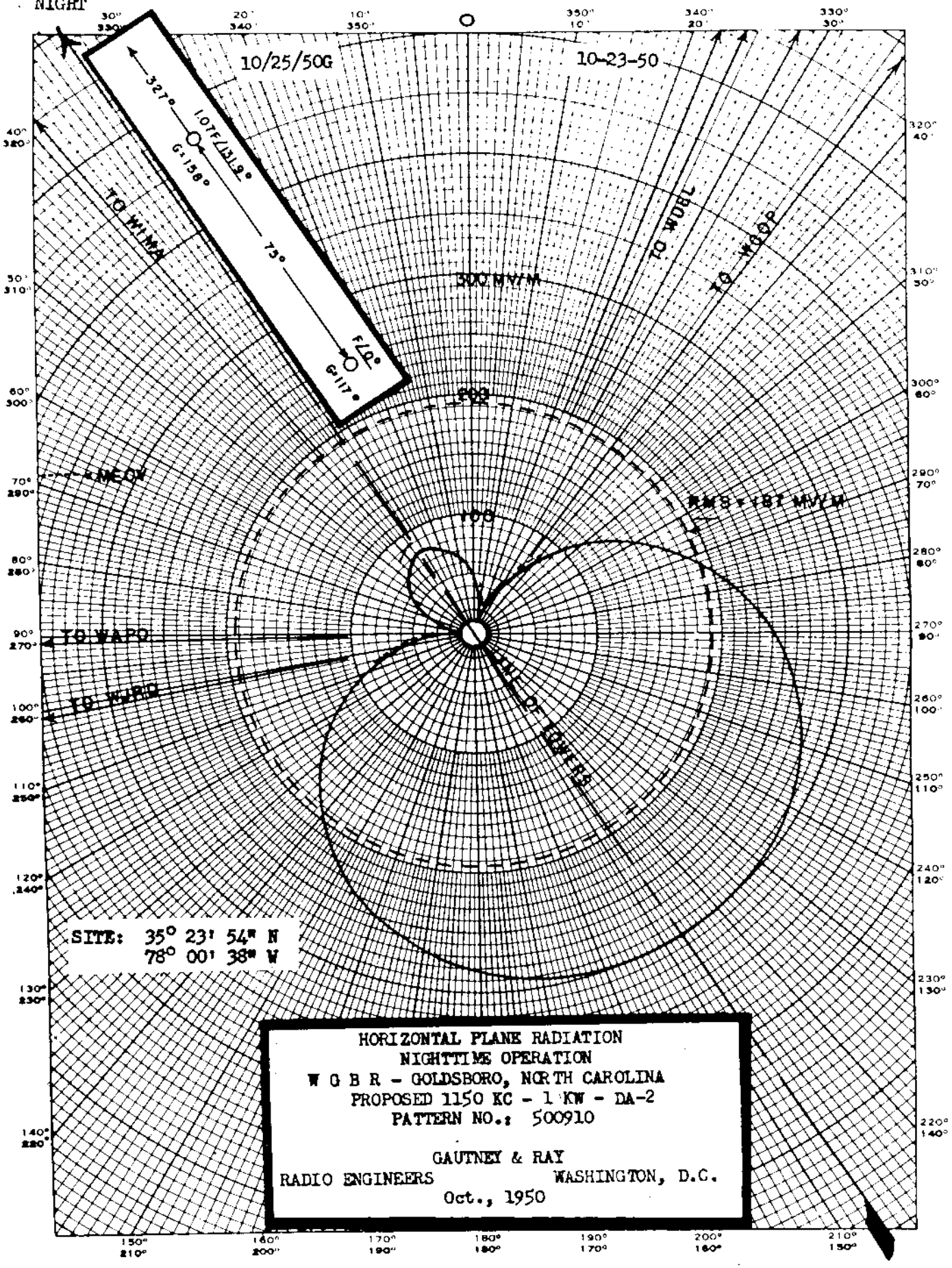
APPL RECD 8/31/51 BL-4531 WGBR, GOLDSBORO, N.C. 1150 KC

WGBR

PROPOSED NIGHT

WGBR, GOLDSBORO, N. C.

1kw, DA-2 1150 kc



HORIZONTAL PLANE RADIATION
NIGHTTIME OPERATION
W G B R - GOLDSBORO, NORTH CAROLINA
PROPOSED 1150 KC - 1 KW - DA-2
PATTERN NO.: 500910

GAUTNEY & RAY
RADIO ENGINEERS WASHINGTON, D.C.
Oct., 1950

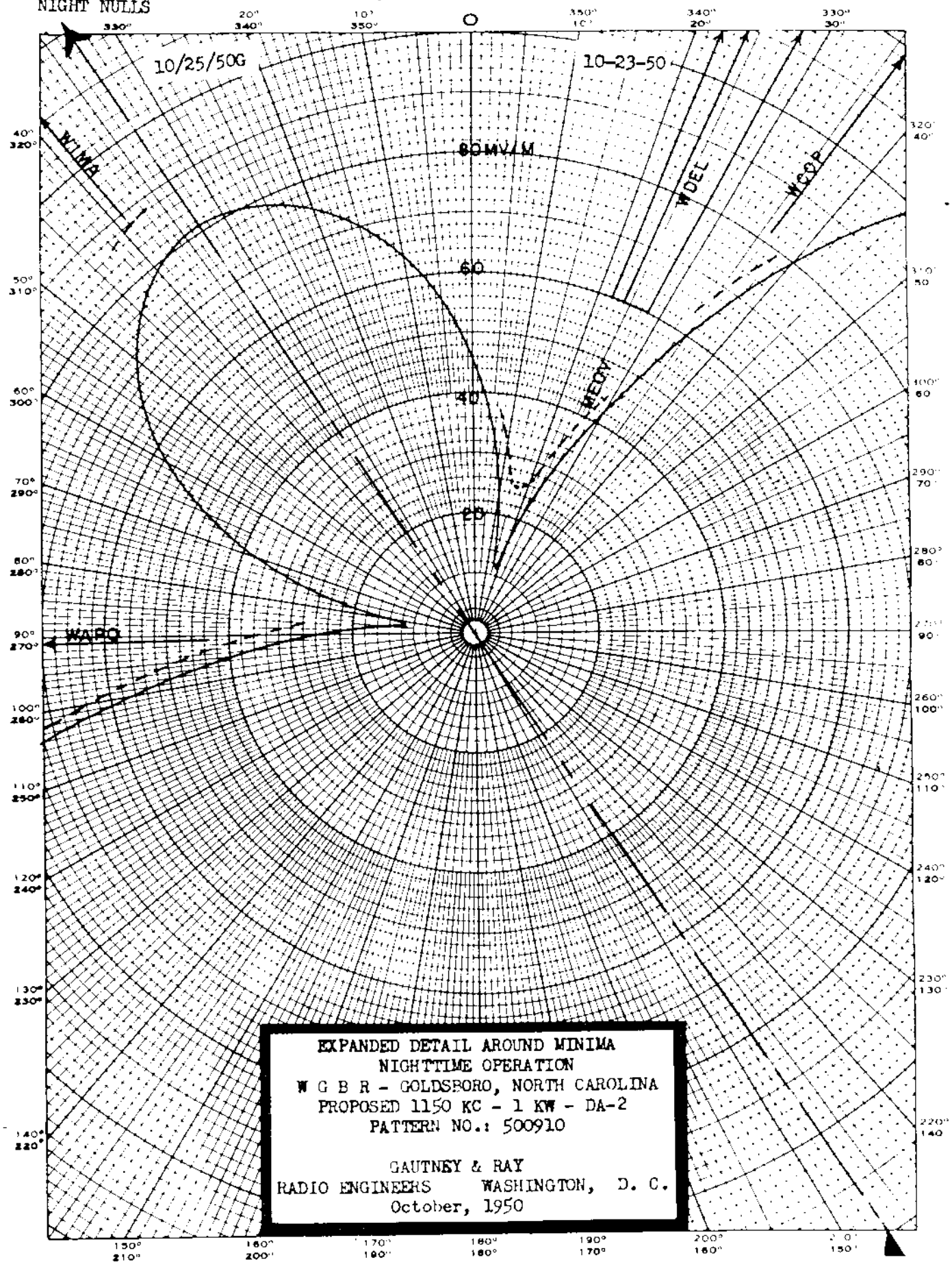
WGBR

PROPOSED NIGHT NULLS

WGBR, GOLDSBORO, N. C.

1kw, DA-2

1150 kc



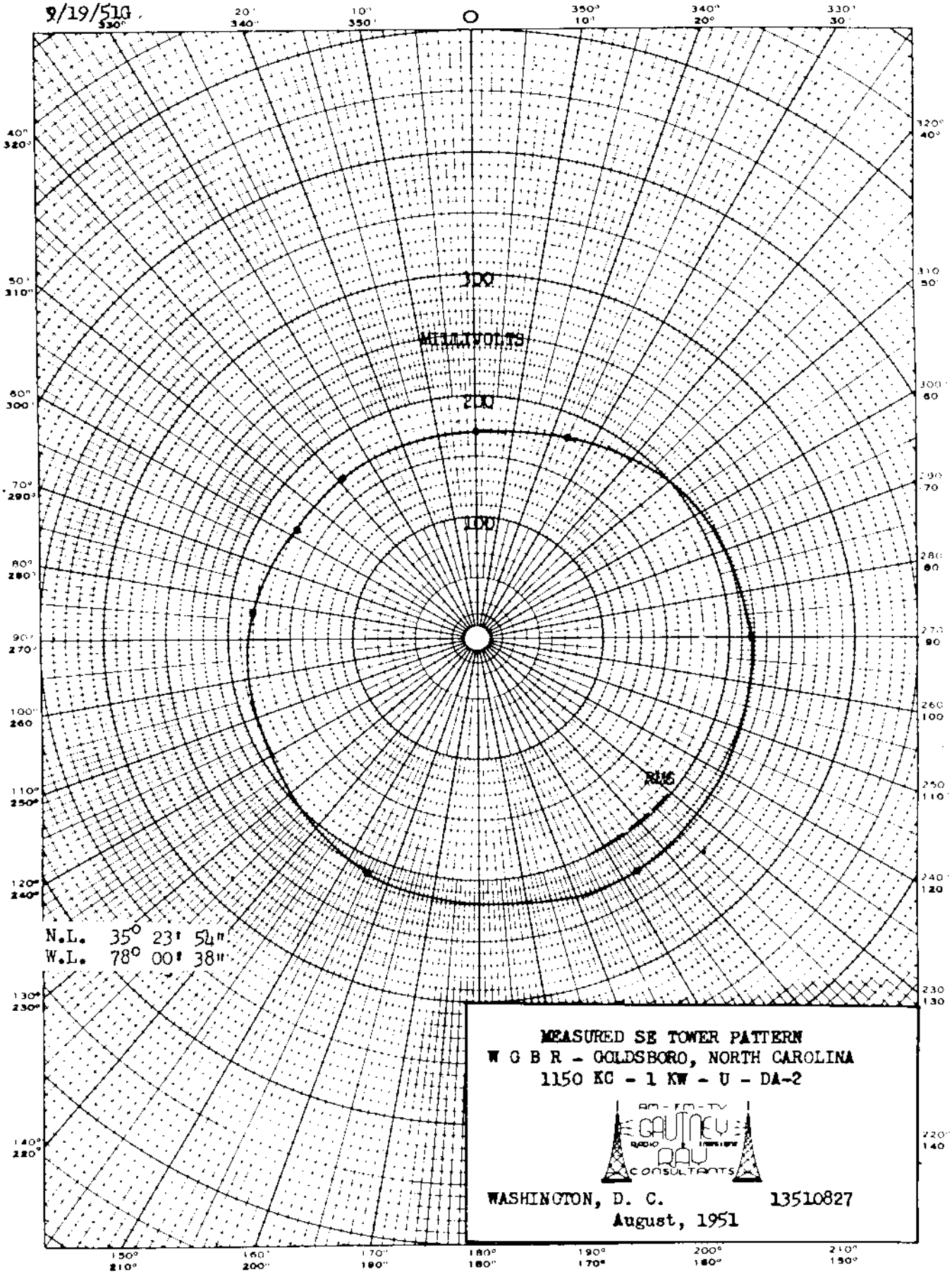
WGBR, Goldsboro, N. C. 1150 kc

WGBR

MEASURED WGBR, GOLDSBORO, N.C. 1 KW, U, DA-2 1150 KC

NON-DA

9/19/51G

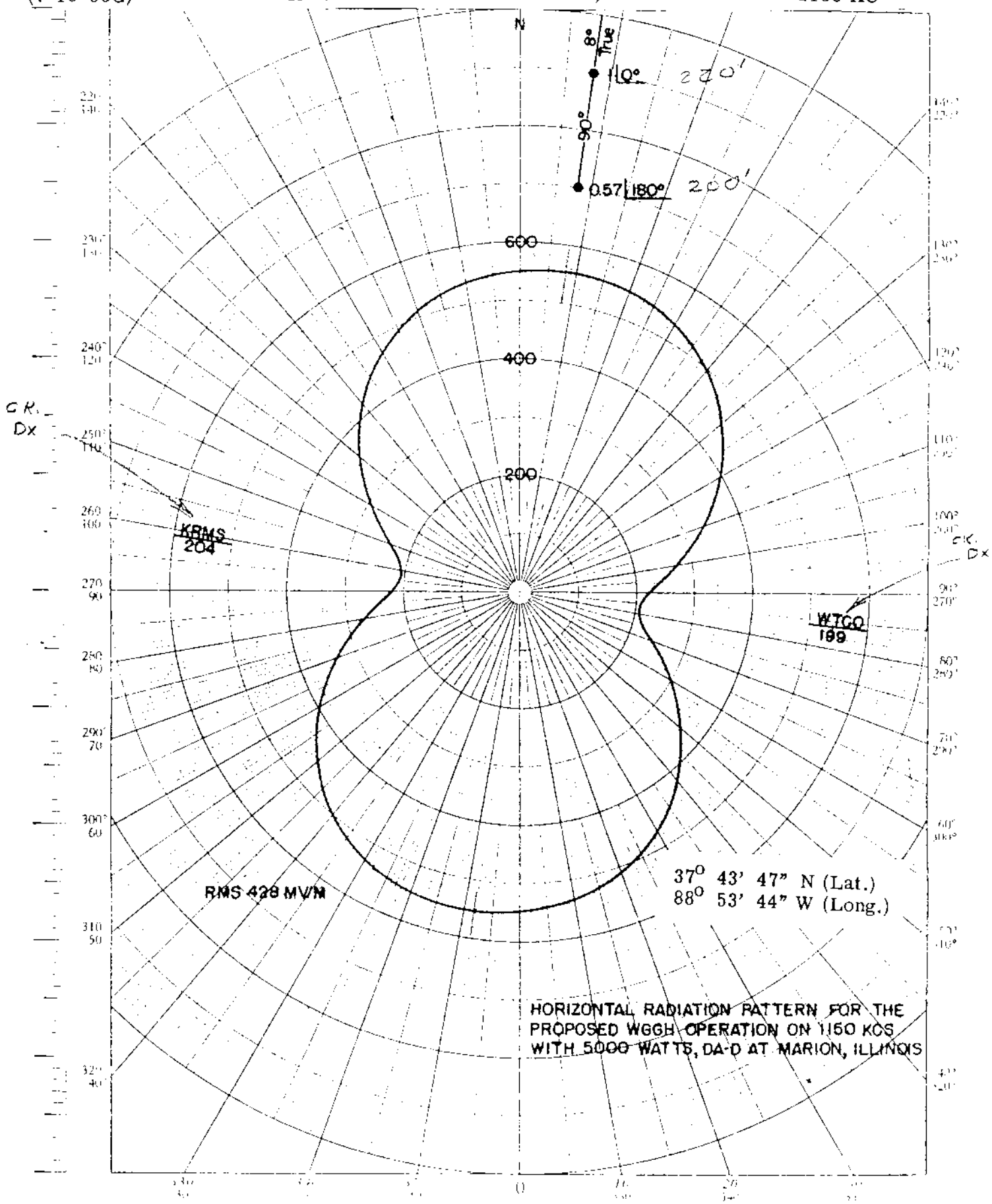


APPL RECD 8/31/51 BL-4531 WGBR, GOLDSBORO, N.C. 1150 KC

WGGH

ARC TOWERS EQUAL HT. ? NO

PROPOSED DAY (7-18-55G) | WGGH, MARION, ILLINOIS | 5 KW DA-D, D | 1150 KC



File BMP-6880 | Accepted 7-5-55 FCC | WGGH, Marion, Illinois | 1150 KC

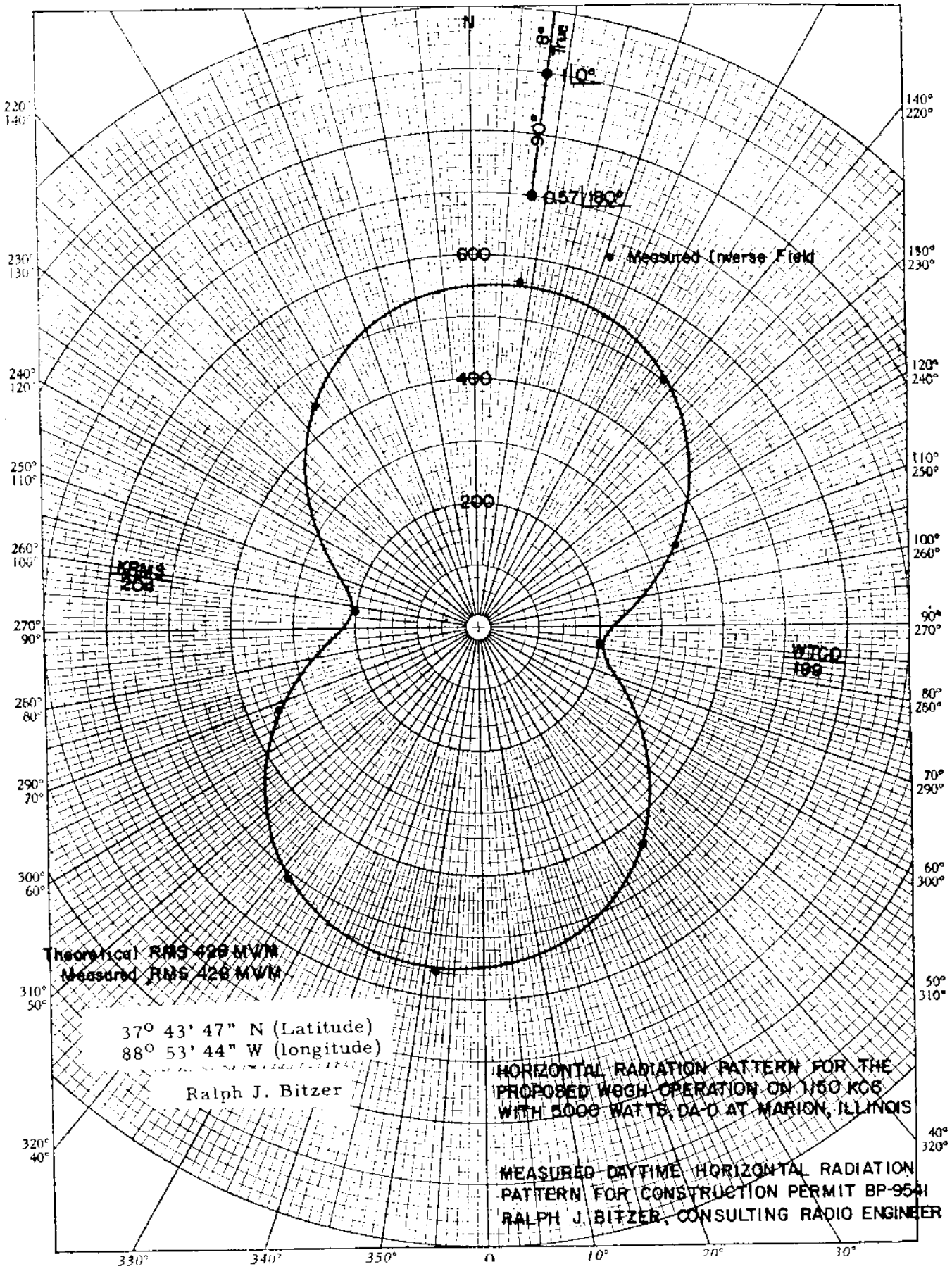
WGGH

MEASURED
DAY (2/29/56g)

STATION WGGH
MARION, ILLINOIS

5 KW
DA-D,D

1150 KC



FCC File No. BL-6078 Accepted 2-27-56 WGGH, Marion, Illinois 1150 KC

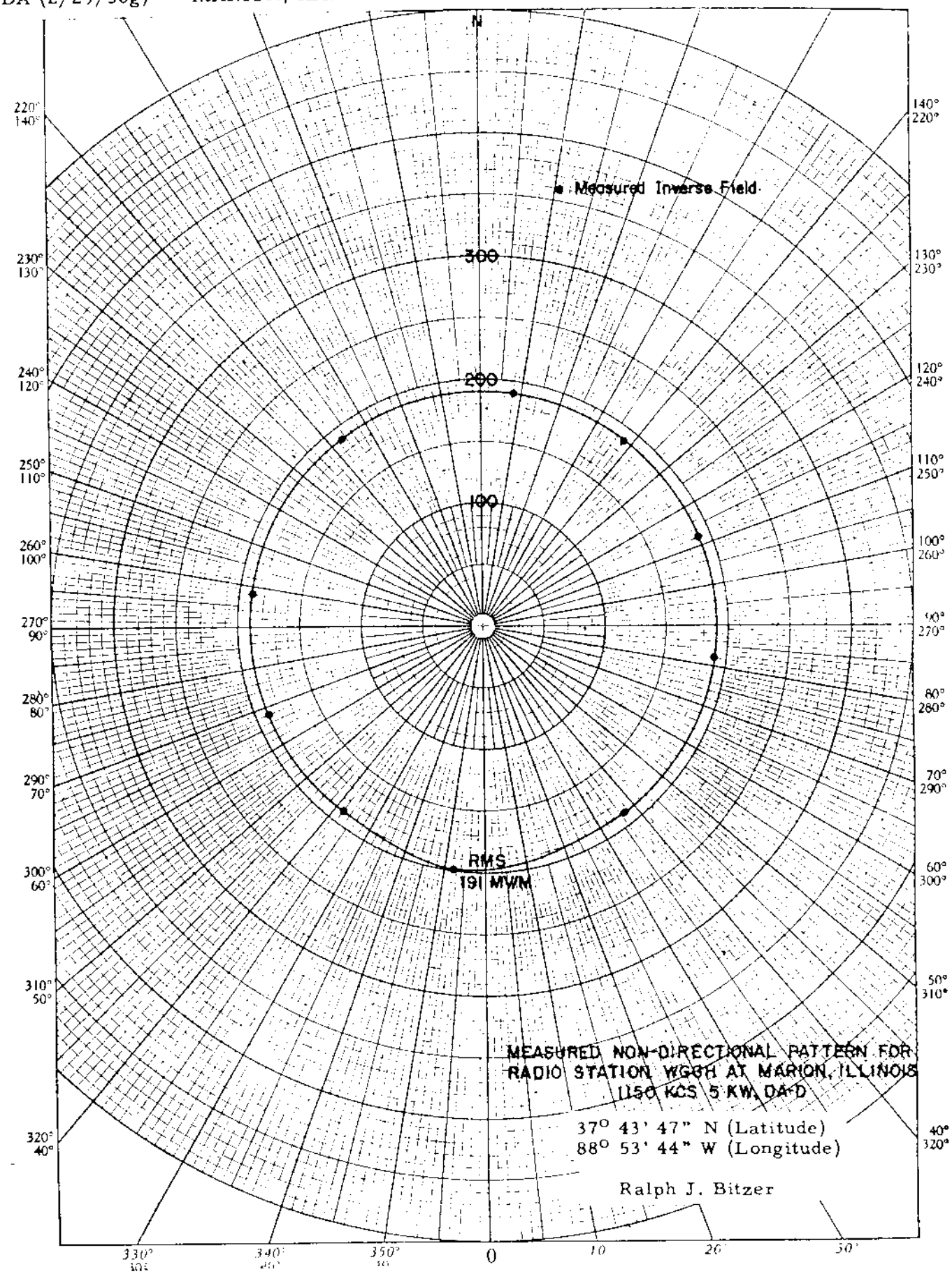
WGGH

MEASURED
NON-DA (2/29/56g)

STATION WGGH
MARION, ILLINOIS

5 KW
DA-D,D

1150 KC

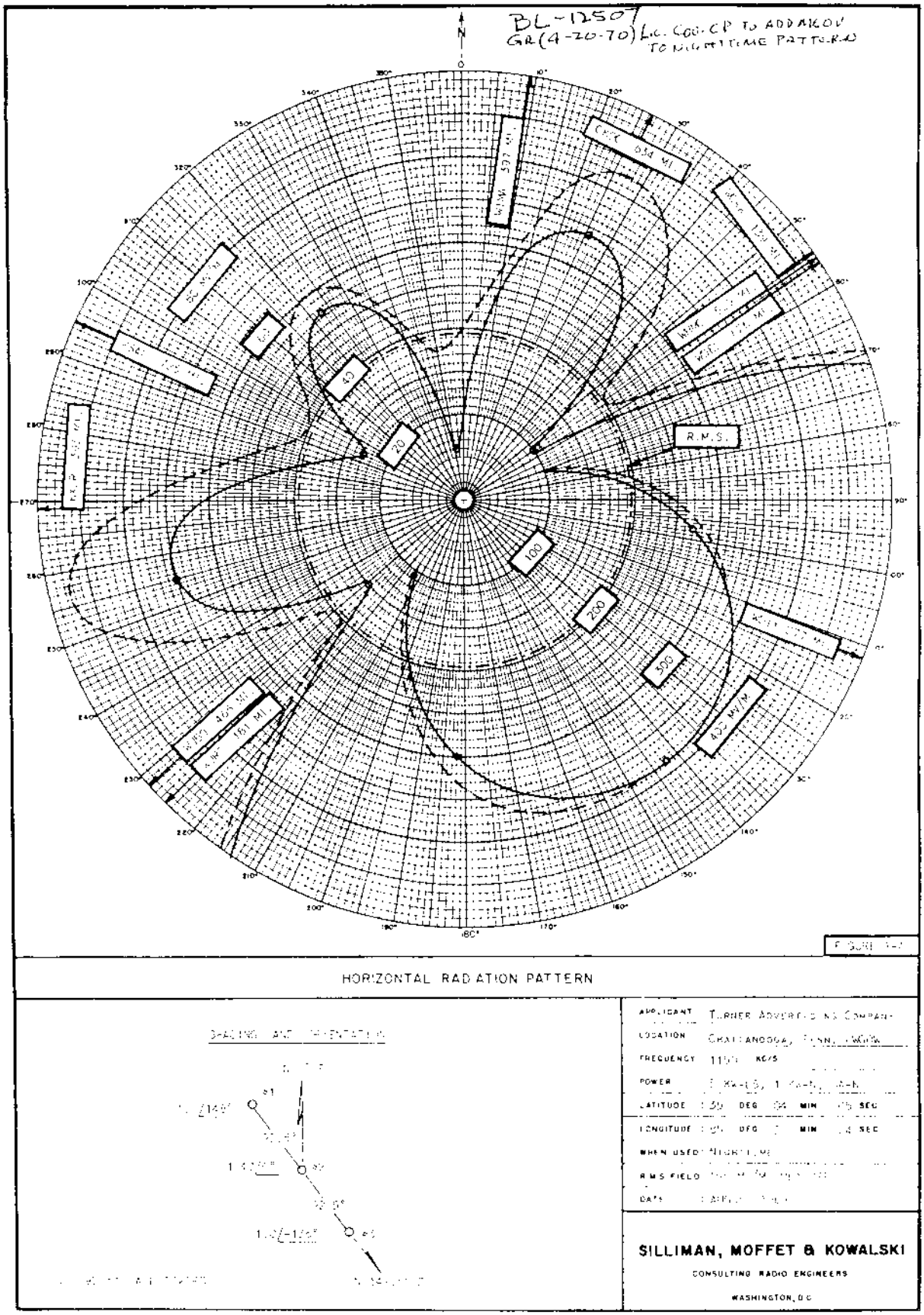


FCC File No. BL-6078 Accepted 2-27-56 WGGH, Marion, Illinois 1150 KC

Measured Night
(3-27-70ct)

Station WGOW
Chattanooga, Tennessee

WGOW
1kw, 5kw-LS, DA-N, U
1150 kc



FCC File No.BL-12507
Accepted 2-25-70

Station WGOW
Chattanooga, Tennessee

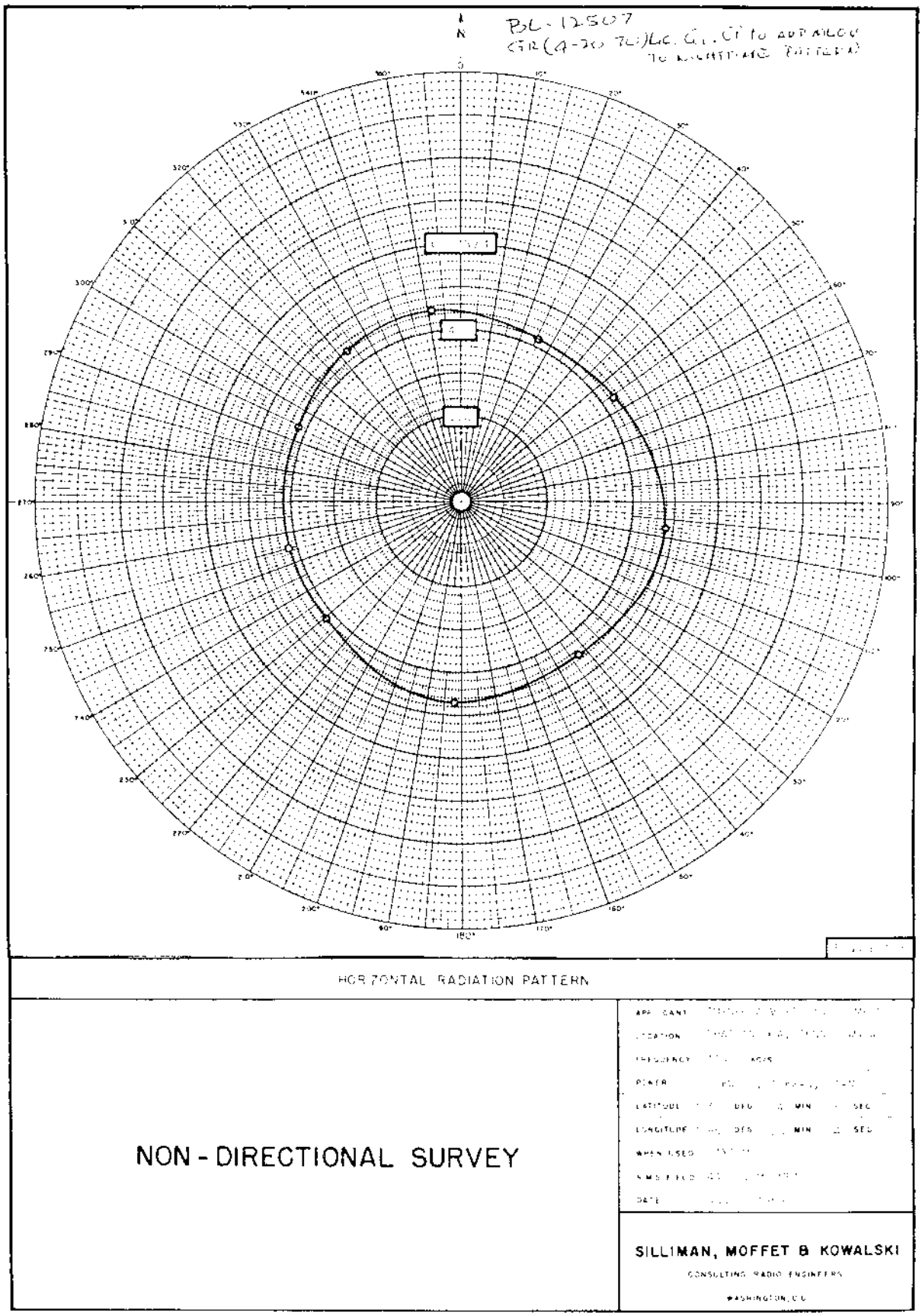
1150 k

WGOW

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

Station WGOW
Chattanooga, Tennessee

1kw, 5kw-LS, DA-N, U
1150 kc



FCC File No. BL-12507
Accepted 2-25-70

Station WGOW
Chattanooga, Tennessee

1150 kc

WGOW

Proposed Night
(5-27-69ct)

Station WGOW
Chattanooga, Tennessee

1kw,5kw-LS,DA-N,U
1150 kc

BP-18563
Revised
5-27-69 ct
To add proposed
nighttime
directional
antenna
pattern

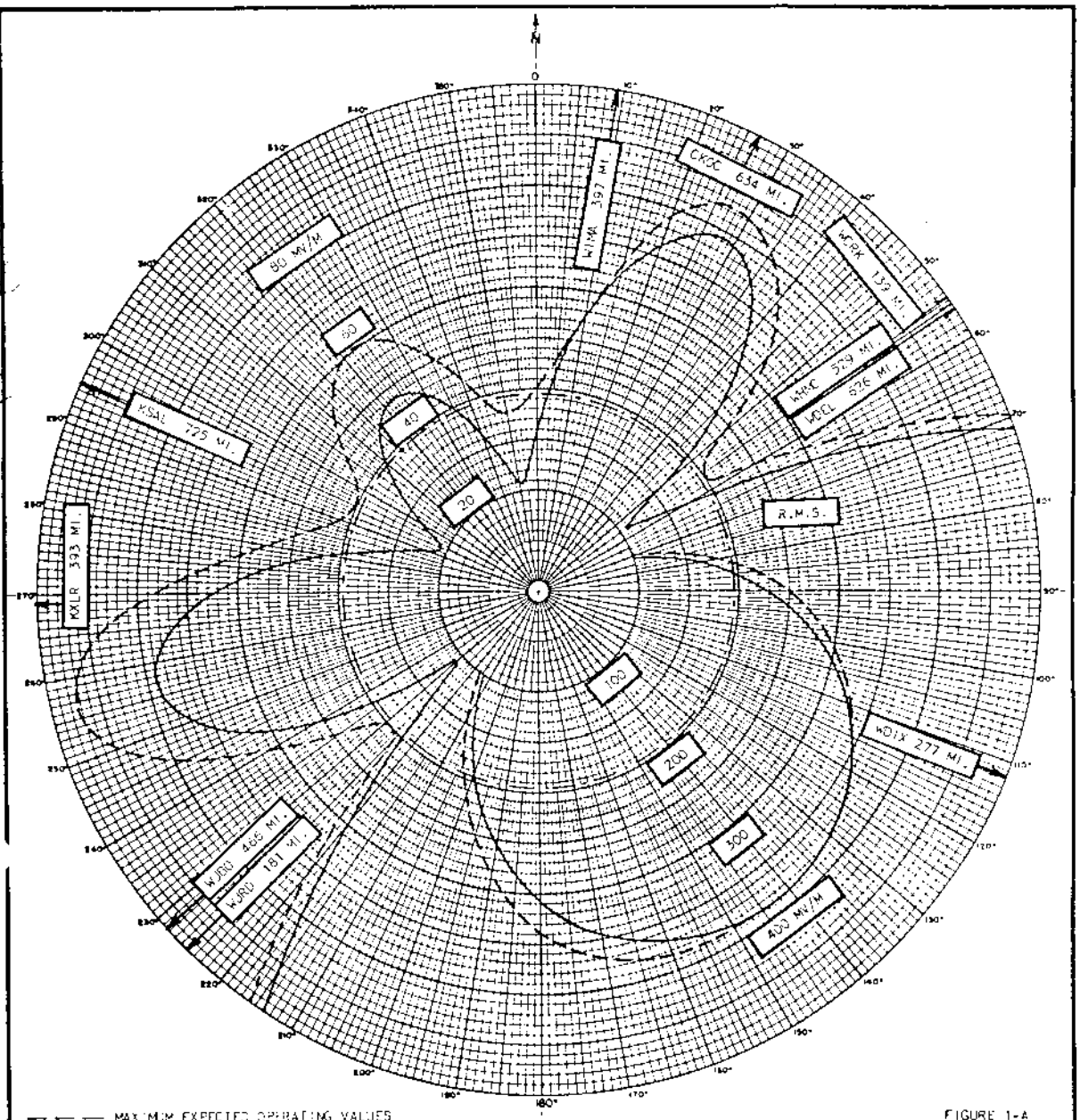
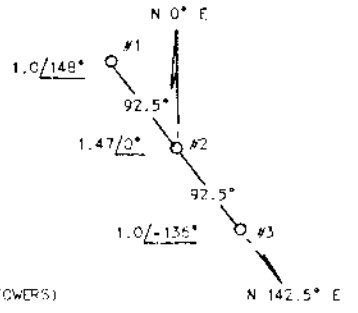


FIGURE 1-A

HORIZONTAL RADIATION PATTERN

SPACING AND ORIENTATION



G = 92.5° (ALL TOWERS)

APPLICANT	TURNER ADVERTISING COMPANY
LOCATION	CHATTANOOGA, TENN. (WGOW)
FREQUENCY	1150 KC/S
POWER	5 KW-LS, 1 KW-N, DA-N
LATITUDE	35 DEG 04 MIN. 05 SEC.
LONGITUDE	85 DEG 20 MIN. 04 SEC.
WHEN USED	NIGHTTIME
R.M.S. FIELD	195 MV/M
DATE	MARCH 1969

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

FCC File No.BP-18563
Accepted 5-26-69

Station WGOW
Chattanooga, Tennessee

1150 kc

PROPOSED DAY (1-29-57g)

Nick J. Chaconas .5/1 KW, DA-~~D, D~~-2
Gaithersburg, Maryland

1150 KC

GAITHERSBURG Md
WHMC

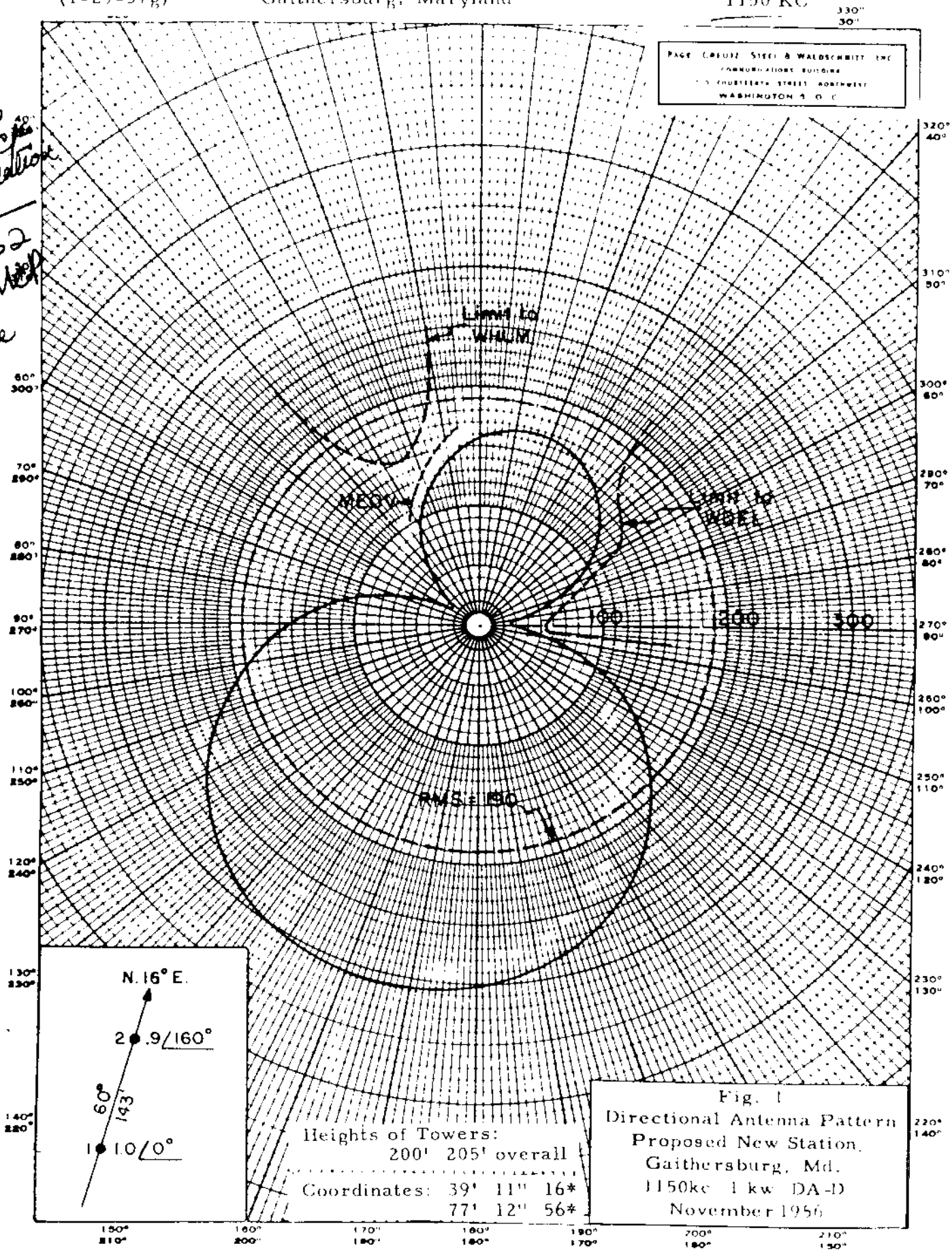


Fig. 1
Directional Antenna Pattern
Proposed New Station,
Gaithersburg, Md.
1150kc 1 kw DA-D
November 1956

FCC File No. BP-10,996 Accepted 1-17-57 Nick J. Chaconas
Gaithersburg, Md. 1150 K C

GAITHERSBURG, Md
WHMC

PROPOSED DAY NULL Nick J. Chaconas 5/ 1 KW, DA-~~D, D~~-2
(1-29-57g) Gaithersburg, Maryland

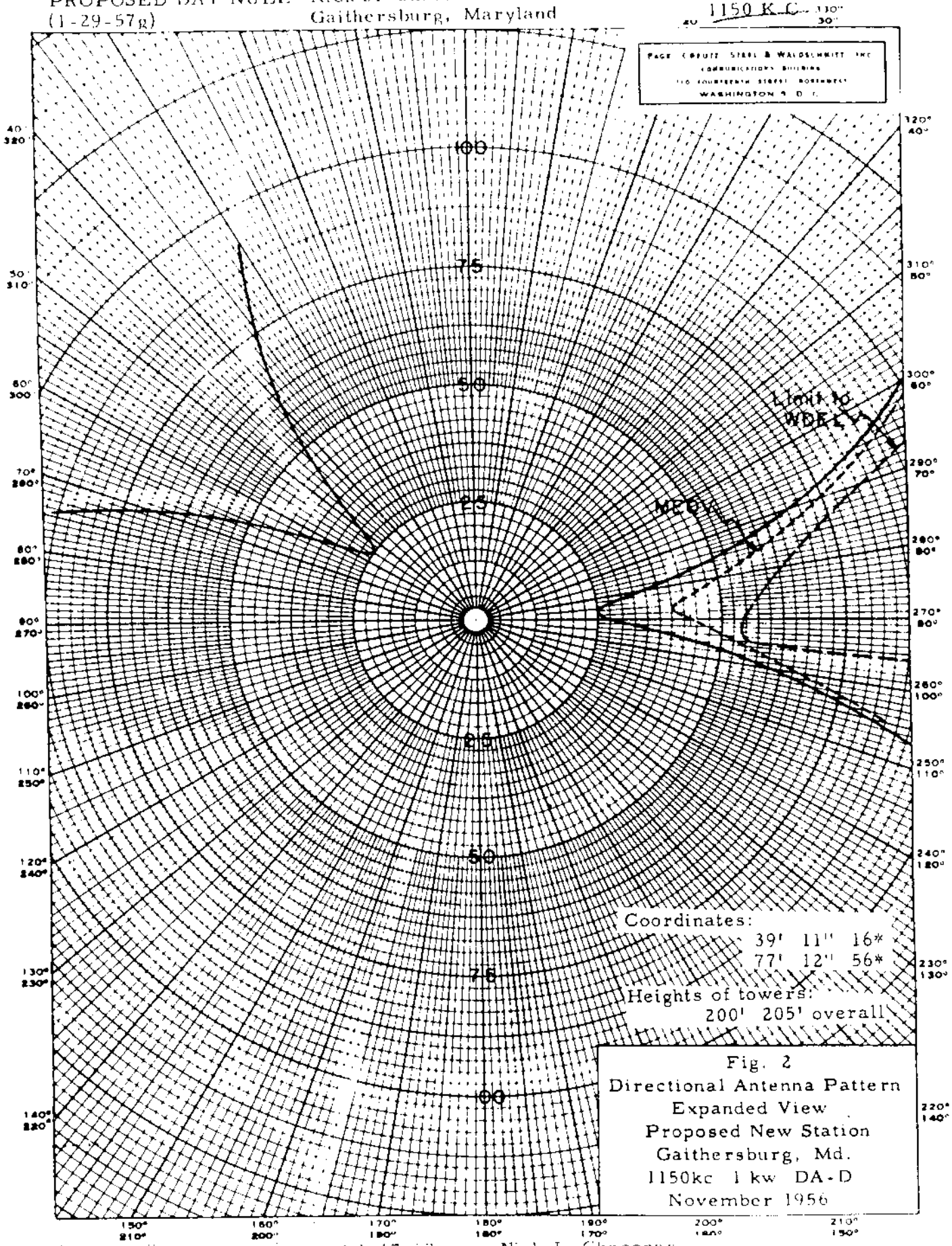


Fig. 2
Directional Antenna Pattern
Expanded View
Proposed New Station
Gaithersburg, Md.
1150kc 1 kw DA-D
November 1956

FCC File No. BP-10,996 Accepted 1-17-57 Nick J. Chaconas
Gaithersburg, Md. 1150 KC

Gaithersburg Md. WHMC

PROPOSED NIGHT (10/11/57g) | New; Nick J. Chaconas Gaithersburg, Maryland | 500w,1kw-LS, DA-2,U 1150 KC

12-7-60 granted CP for new station

7-14-62 granted MCP to increase height

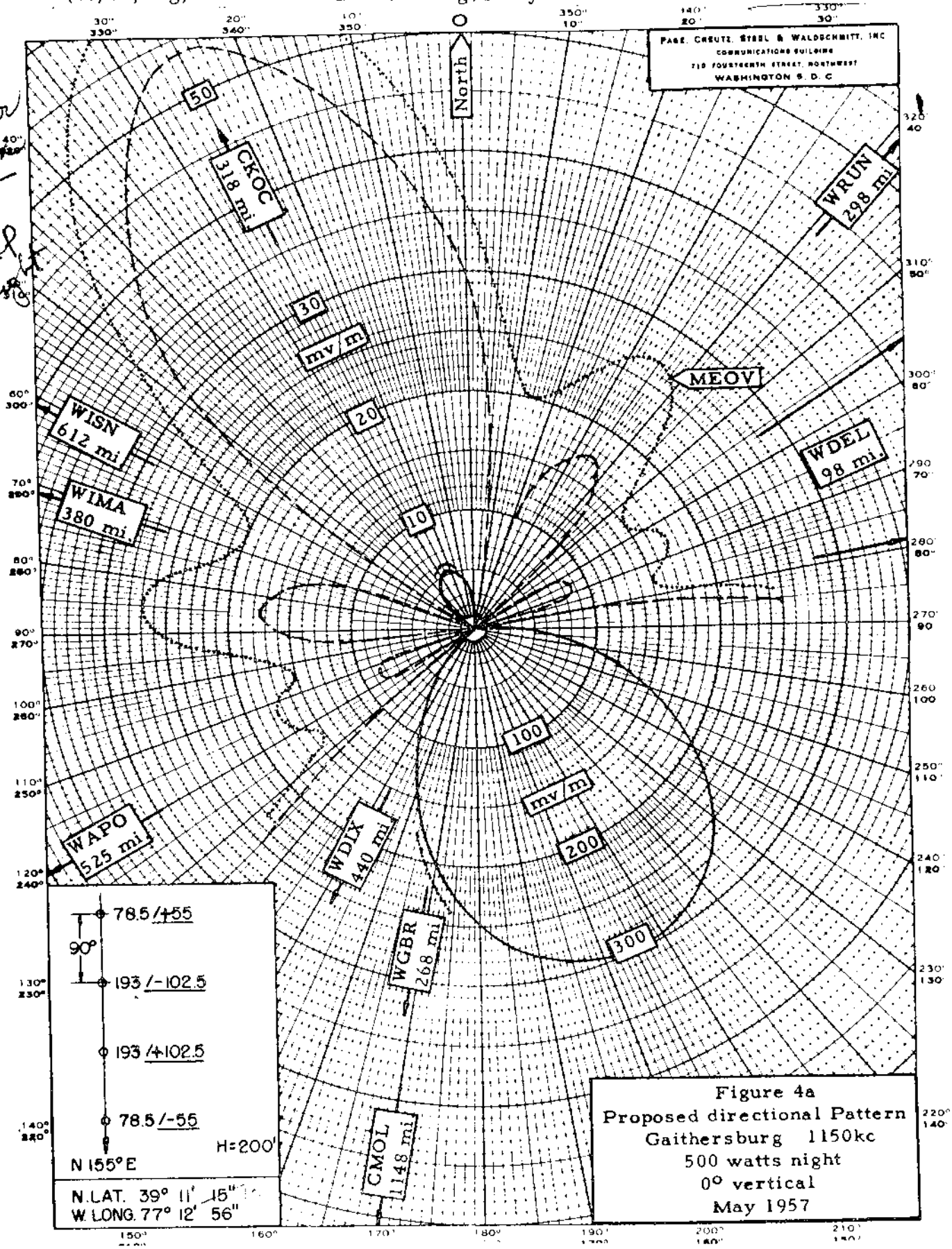


Figure 4a
Proposed directional Pattern
Gaithersburg 1150kc
500 watts night
0° vertical
May 1957

FCC File No. BP-10,996 Accepted 10/1/57 (Amended) | Nick J. Chaconas Gaithersburg, Maryland | 1150 KC

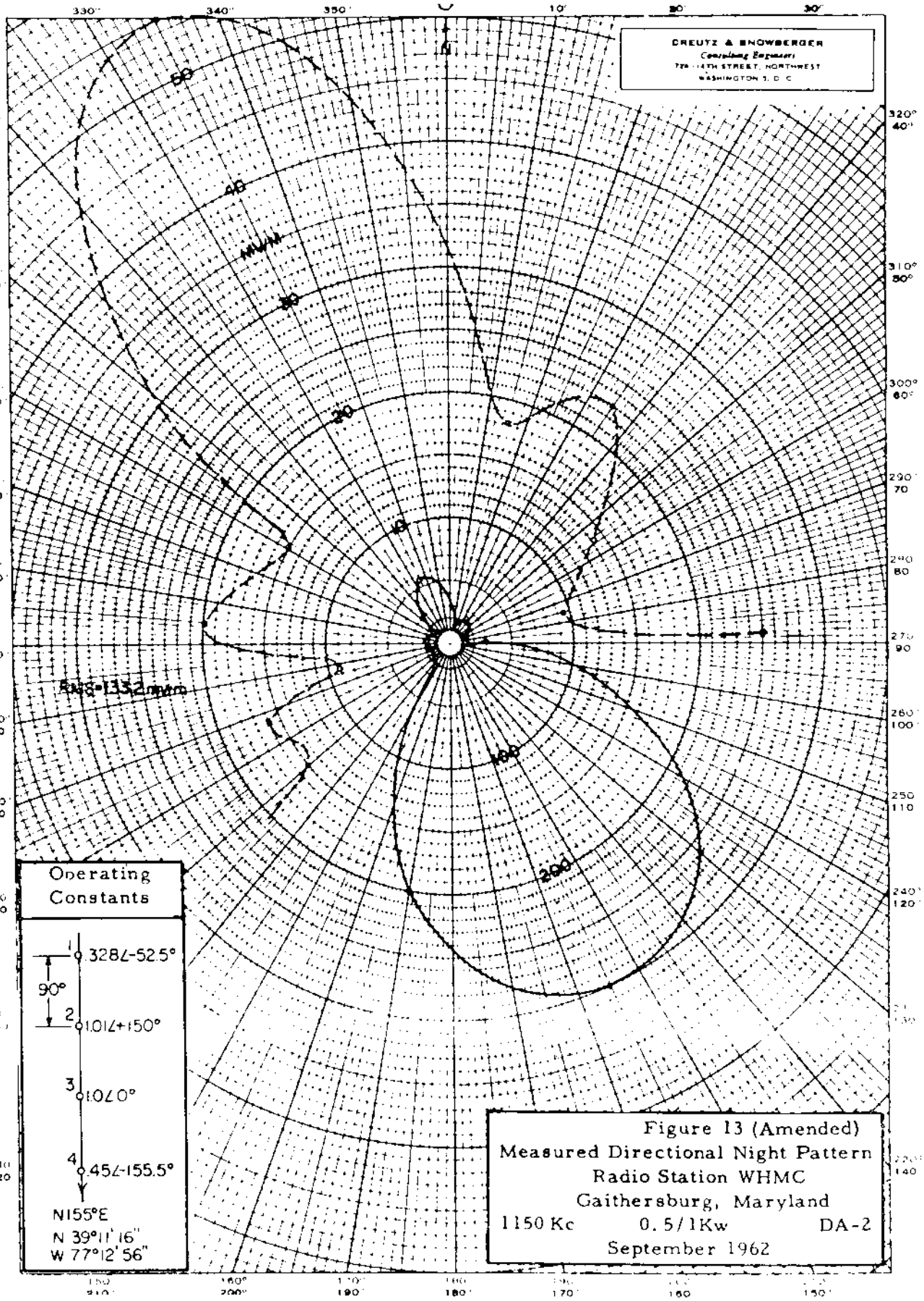
WHMC

Measured Night
(2-26-63ct)

Station WHMC
Gaithersburg, Maryland

500w,1kw-LS,DA-2,U
1150 kc

3-16-64
Grant
license
for new
station



FCC File No.BL-9737
Accepted 2-18-63

Station WHMC
Gaithersburg, Maryland

1150 kc

WHMC

Measured Non-DA
(2-26-63ct)

Station WHMC
Gaithersburg, Maryland

500w,1kw-LS,DA-2,U
1150 kc

3-16-64
Granted
license for
new station

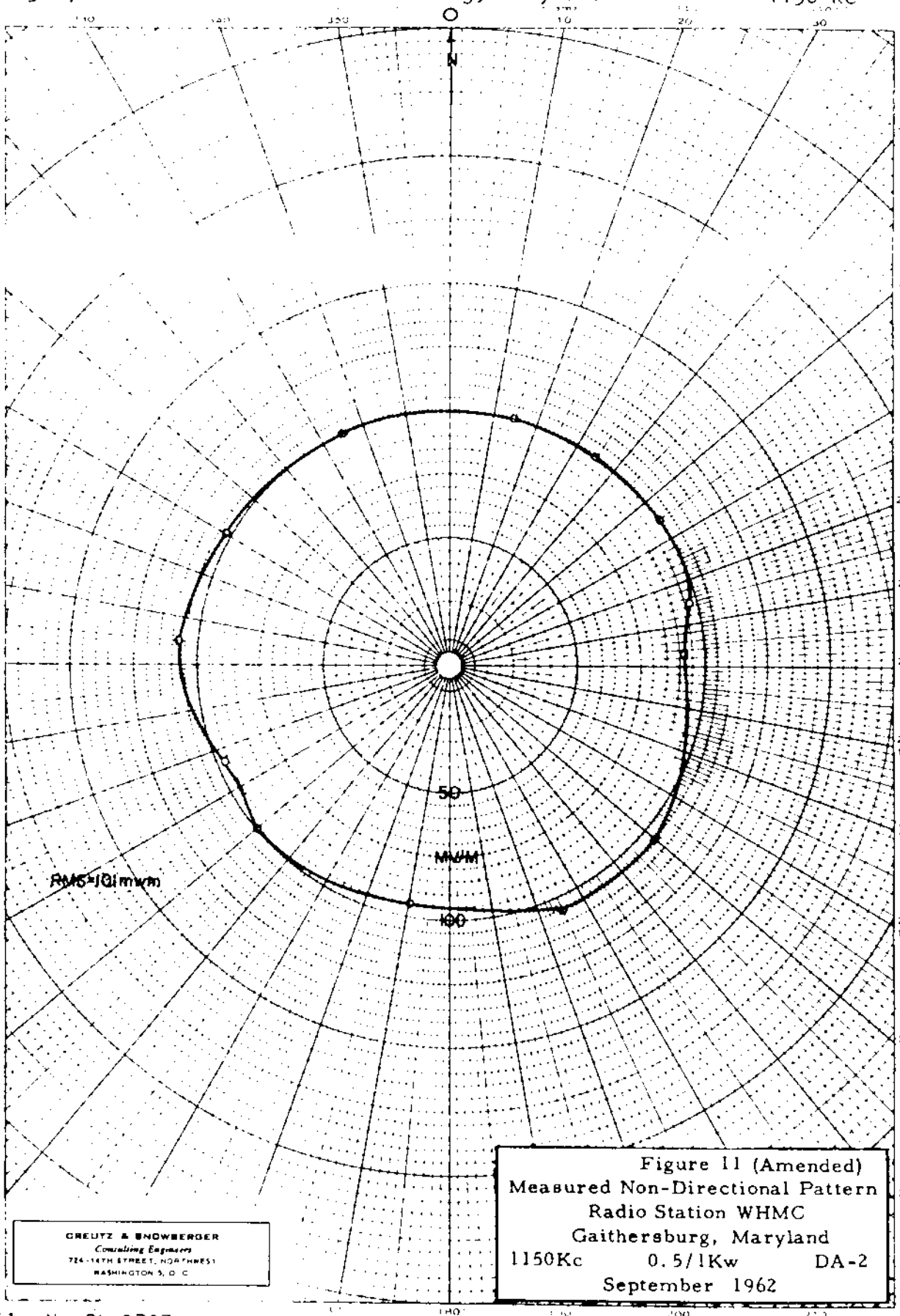


Figure 11 (Amended)
Measured Non-Directional Pattern
Radio Station WHMC
Gaithersburg, Maryland
1150Kc 0.5/1Kw DA-2
September 1962

FCC File No.BL-9737
Accepted 2-18-63

Station WHMC
Gaithersburg, Maryland

1150 kc

WHMC

Measured Day
(2-26-63ct)

Station WHMC
Gaithersburg, Maryland

500w, 1kw-LS, DA-2, U
1150 kc

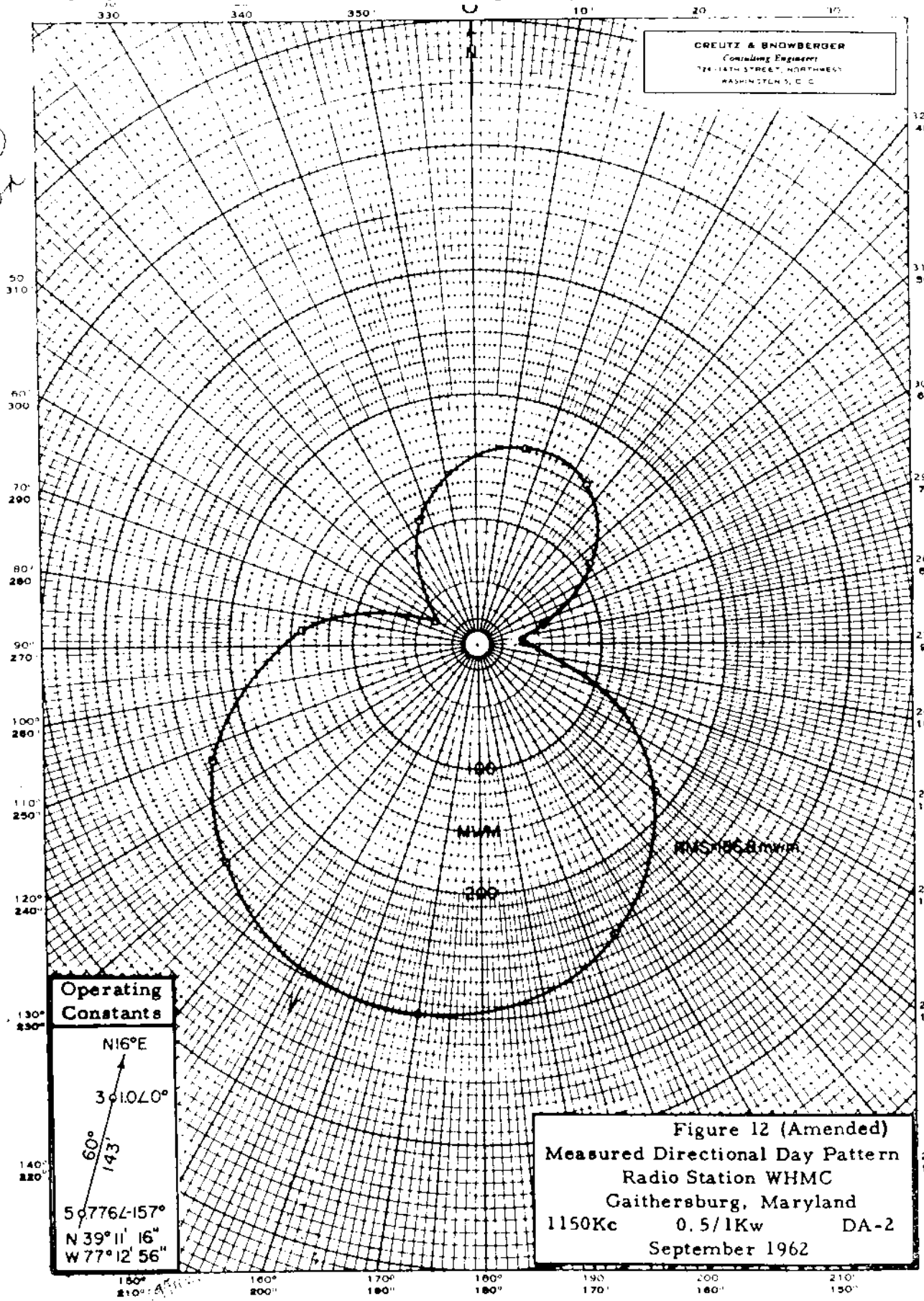


Figure 12 (Amended)
Measured Directional Day Pattern
Radio Station WHMC
Gaithersburg, Maryland
1150Kc 0.5/1Kw DA-2
September 1962

FCC File No. BL-9737
Accepted 2-18-63

Station WHMC
Gaithersburg, Maryland

1150 kc

WIMA

July 7, 1971 K & E

SUPPLEMENTAL
DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WIMA

Main Studio: Lima, Ohio

Frequency: 1150 kHz

Power: 1 kw

Notification List No. 1417

Date: March 24, 1971 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 40° 40' 46"

West Longitude: 84° 06' 34"

Predicted effective Day Field: (omnidirectional) 197 mv/m at rated power.

Note: Please retain the description sheet and directional antenna radiation patterns notified for station WIMA in United States Change List Number 295, dated October 27, 1948 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.

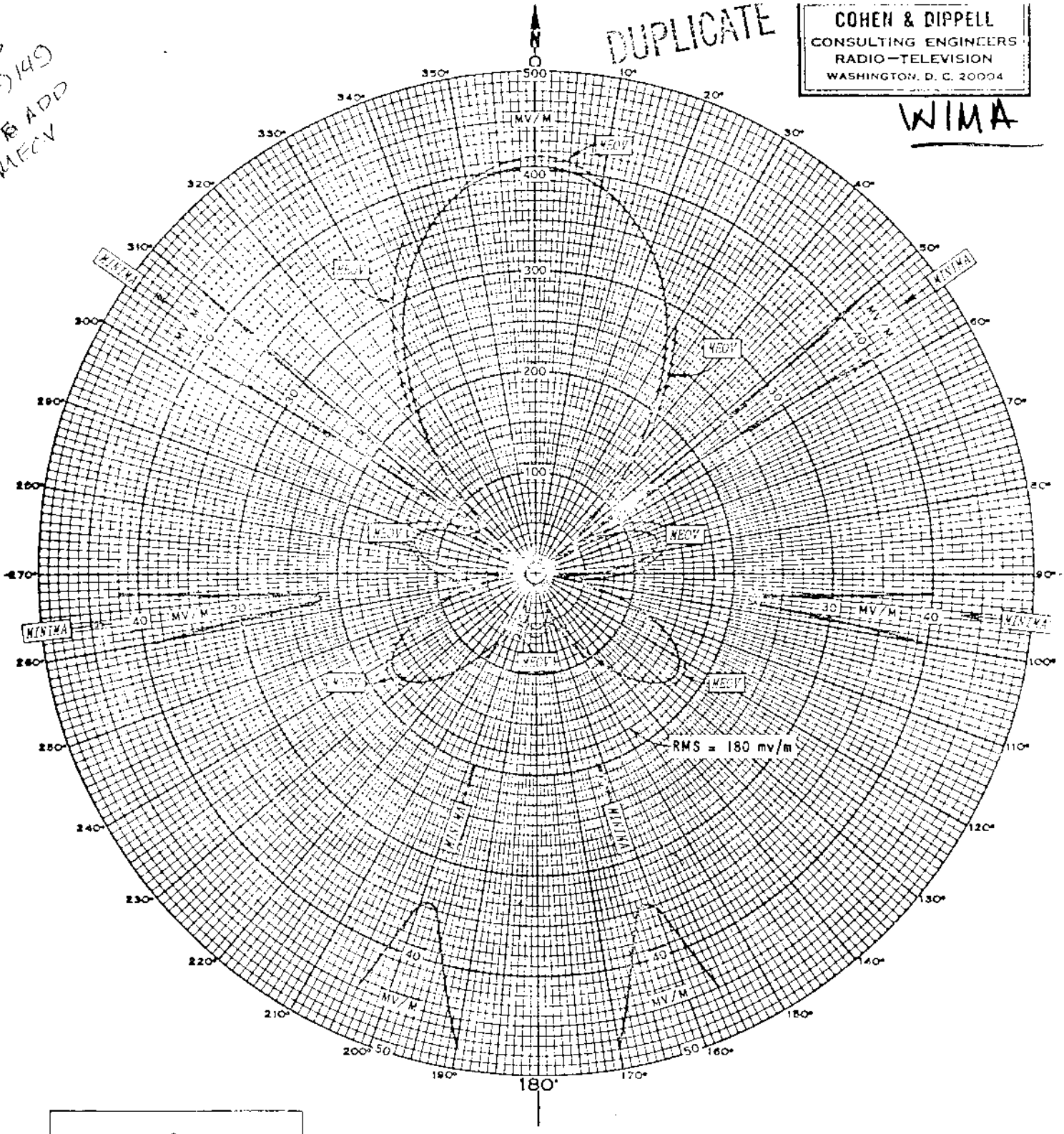
CTR NO 30883A4

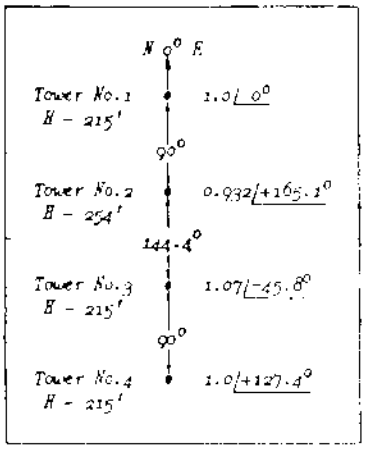
FEB73
BP-19149
P1 & ADD
MFCV

DUPLICATE

COHEN & DIPPELL
CONSULTING ENGINEERS
RADIO—TELEVISION
WASHINGTON, D. C. 20004

WIMA



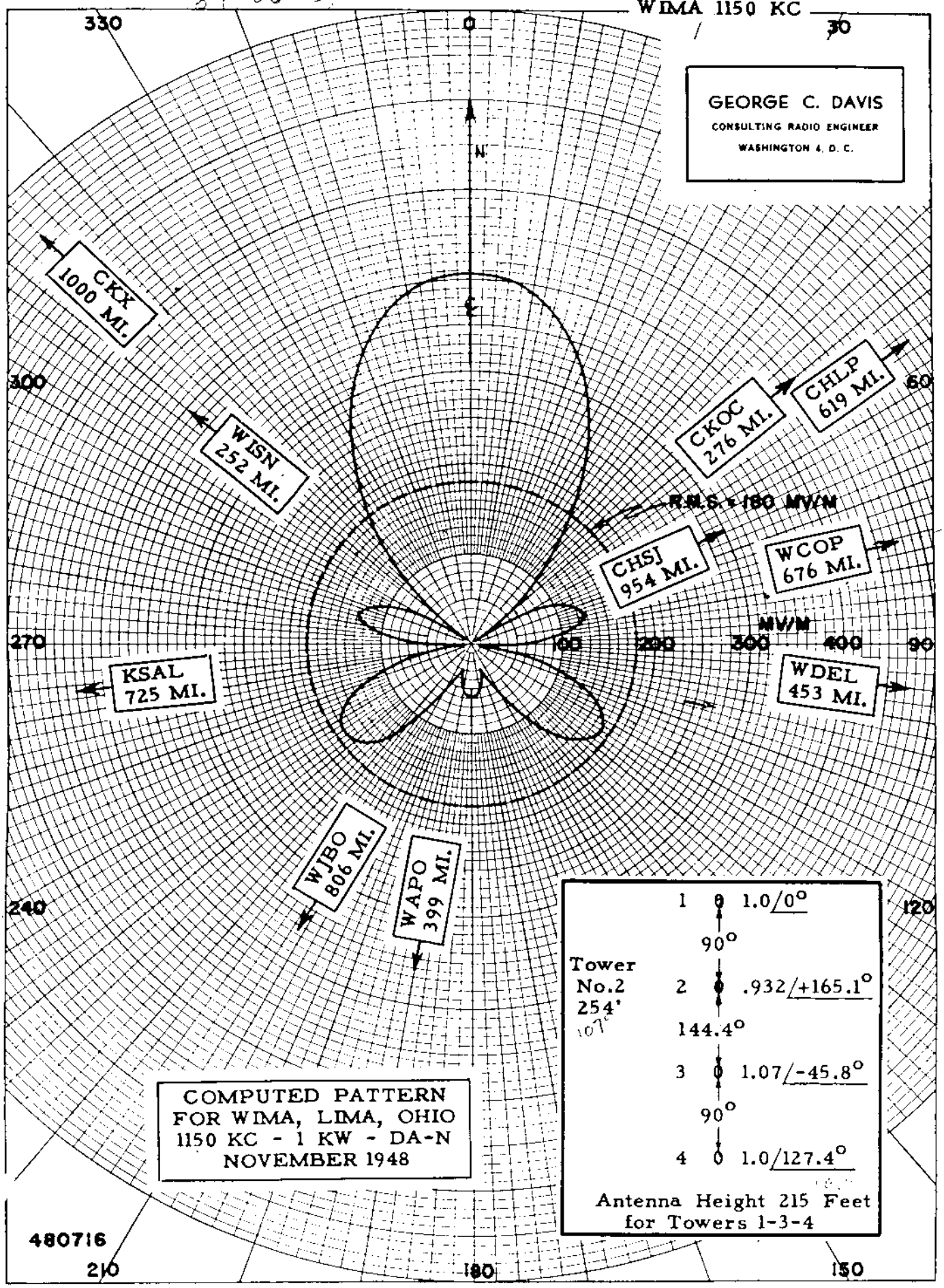


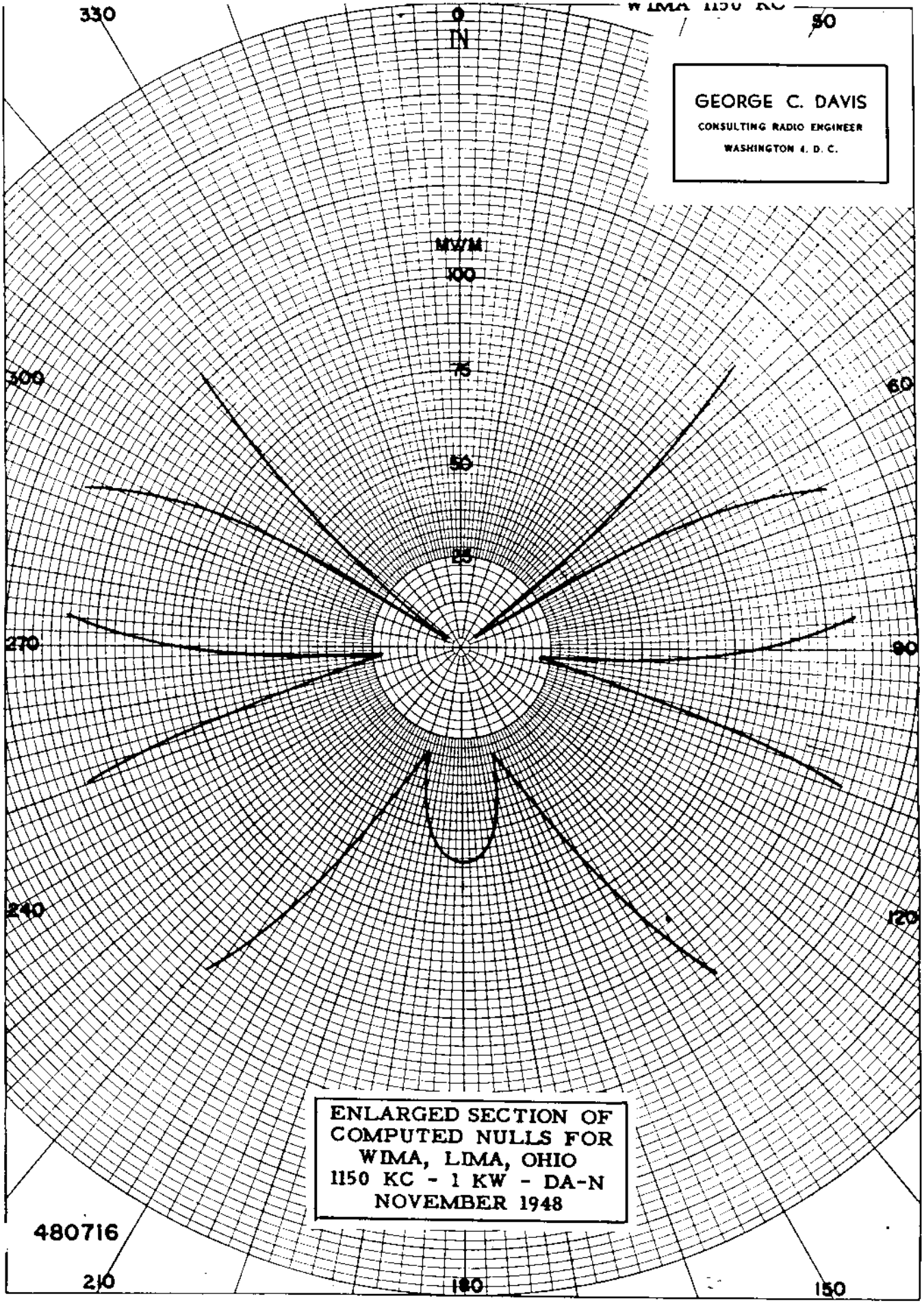
COMPUTED
HORIZONTAL PLANE RADIATION PATTERN
FOR THE PRESENT NIGHTTIME OPERATION OF
WIMA, LIMA, OHIO
1150 kHz - 1 Kw - DA-N U
NOVEMBER 1971

NORTH LATITUDE 40° 40' 46.5"
WEST LONGITUDE 84° 06' 34"

40-40-32
84-06-32

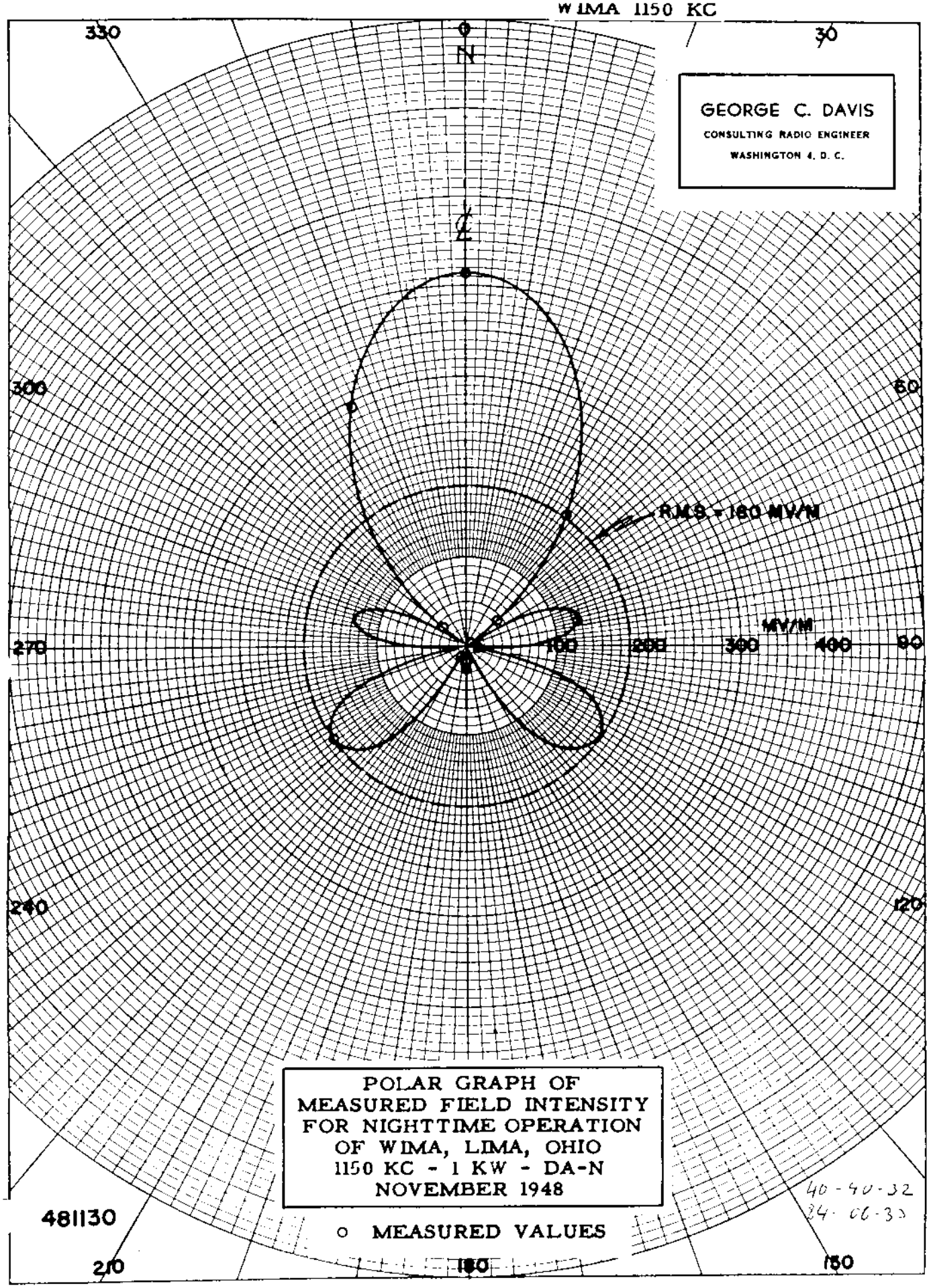
WIMA

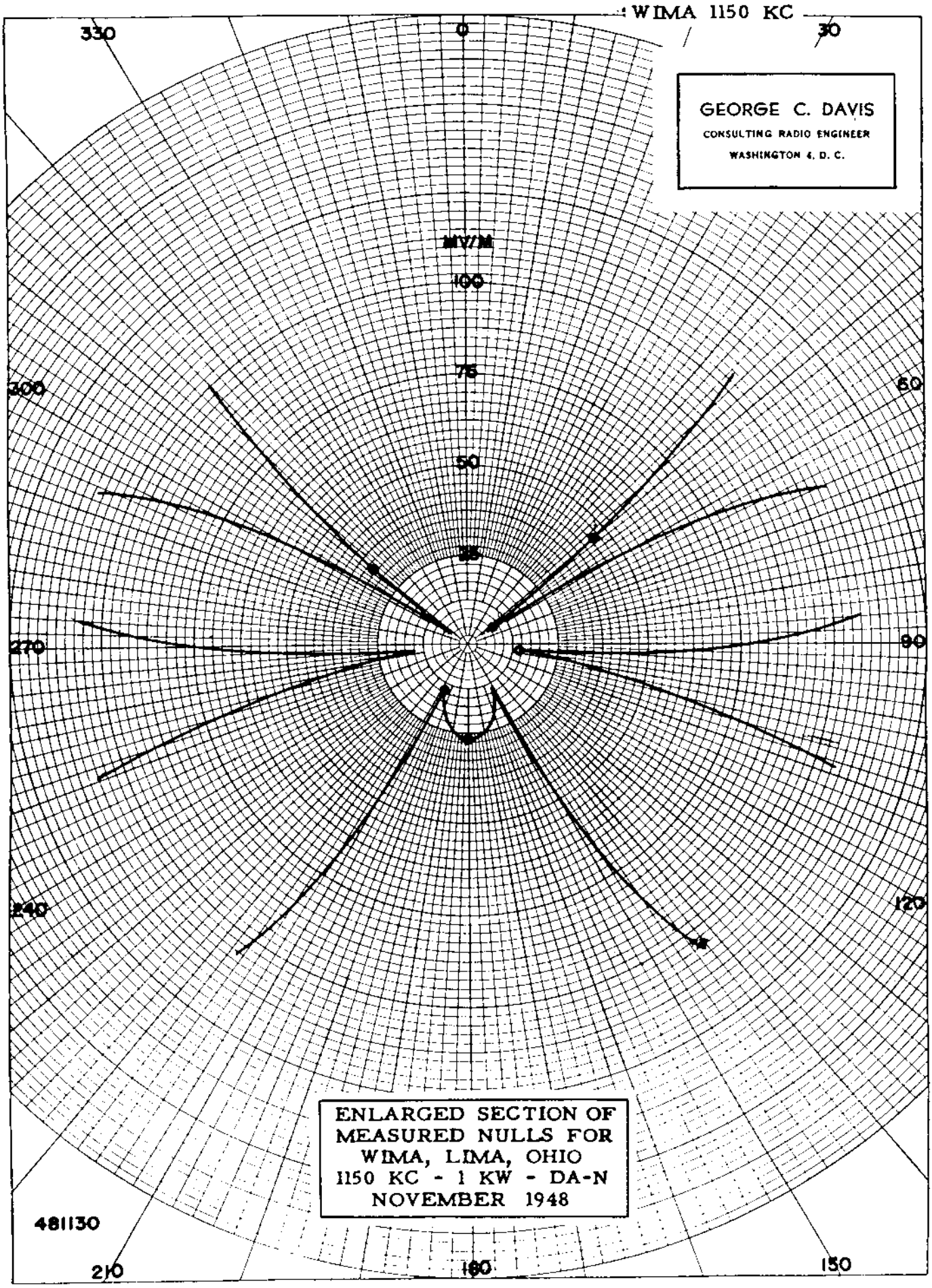




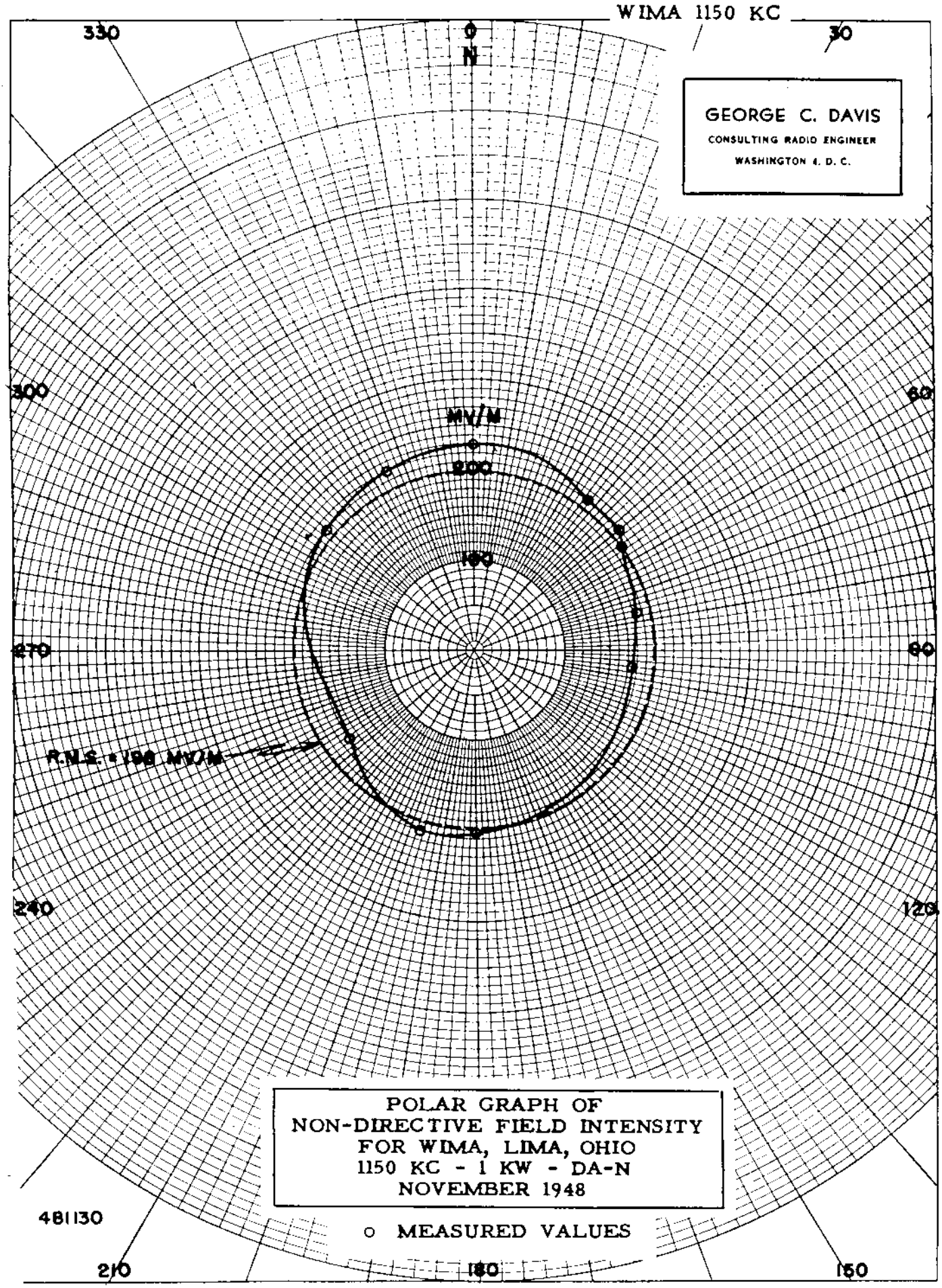
ENLARGED SECTION OF COMPUTED NULLS FOR WIMA, LIMA, OHIO 1150 KC - 1 KW - DA-N NOVEMBER 1948

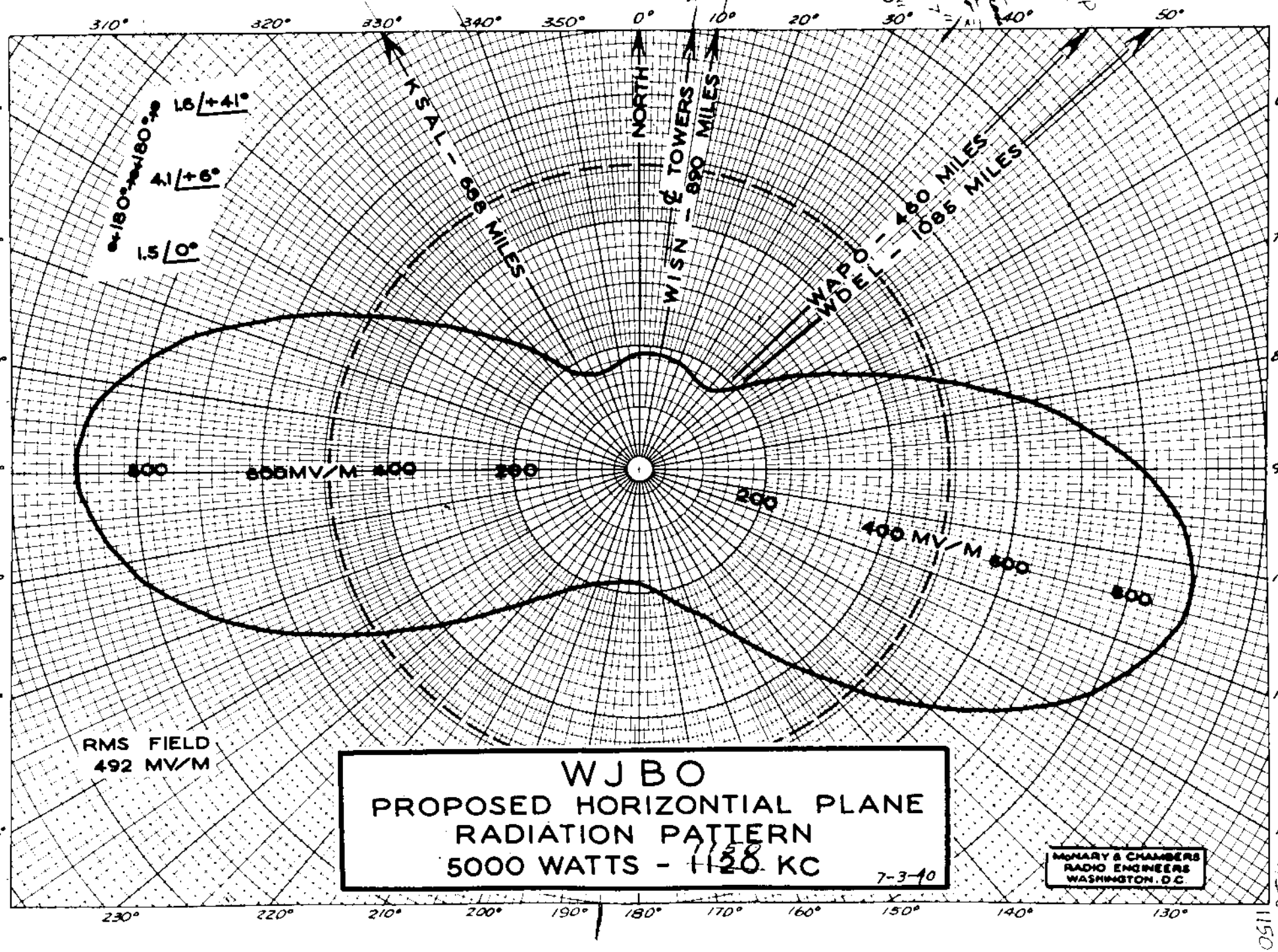
WIMA 1150 KC

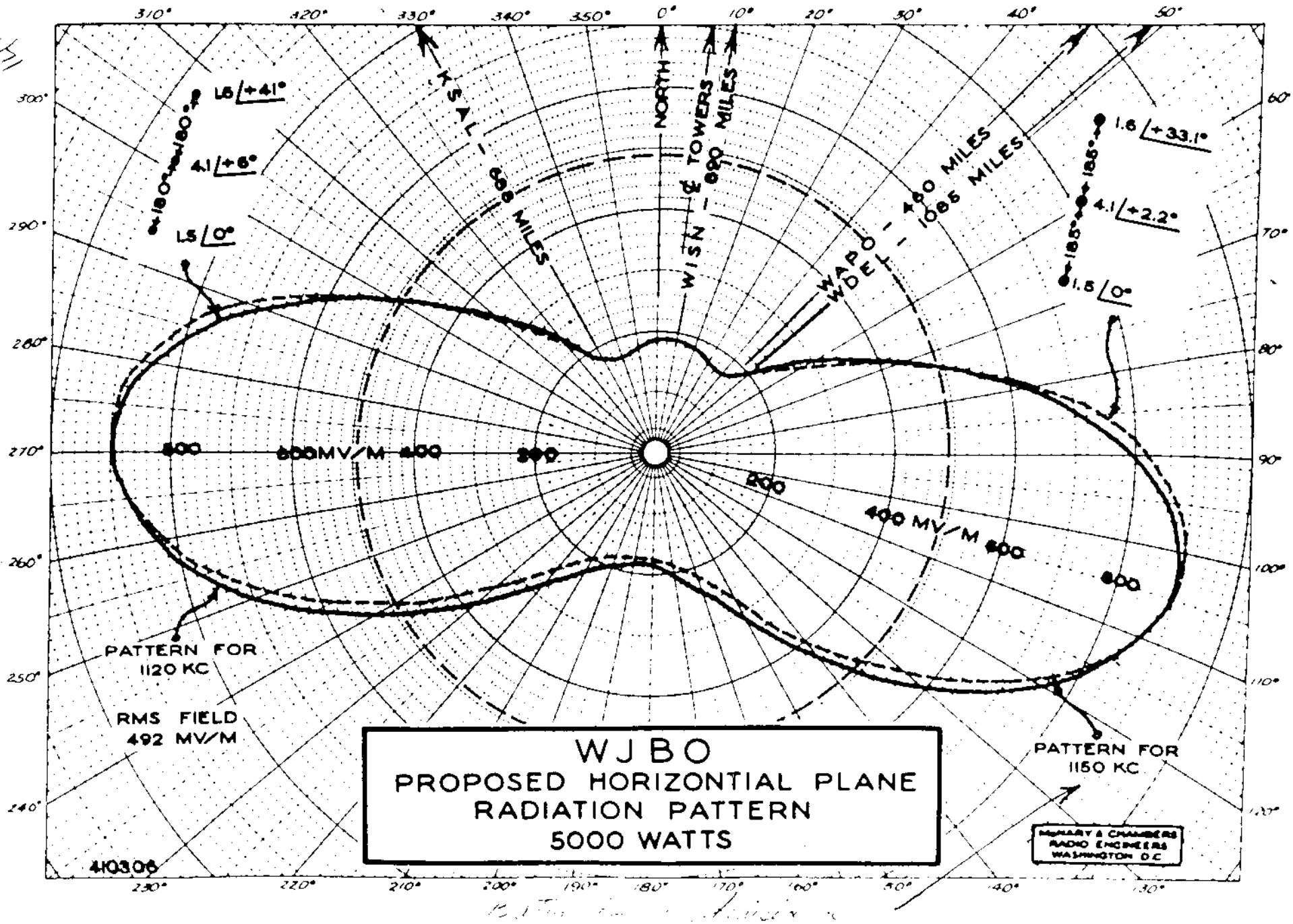

GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON 4, D. C.
0
N
30
60
90
120
150
180
210
240
270
300
330
R.M.S. = 180 MV/M
MV/M
100
200
300
400
POLAR GRAPH OF
MEASURED FIELD INTENSITY
FOR NIGHTTIME OPERATION
OF WIMA, LIMA, OHIO
1150 KC - 1 KW - DA-N
NOVEMBER 1948
○ MEASURED VALUES
481130
40-40-32
34-06-30

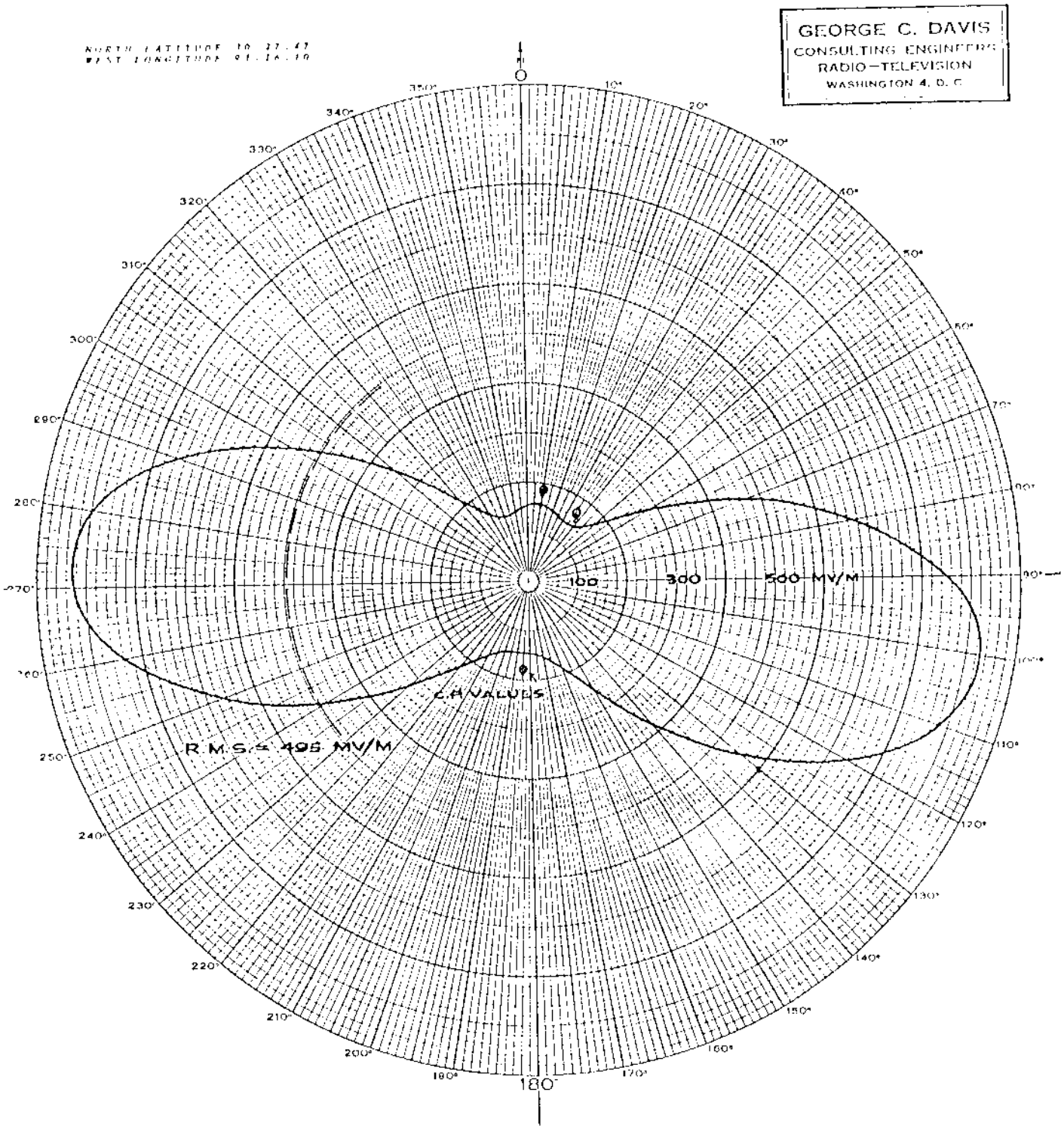


ENLARGED SECTION OF MEASURED NULLS FOR WIMA, LIMA, OHIO 1150 KC - 1 KW - DA-N NOVEMBER 1948


WIMA 1150 KC
GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON 4, D. C.
0
N
30
60
90
120
150
180
210
240
270
300
330
MV/M
200
100
R.M.S. = 198 MV/M
POLAR GRAPH OF
NON-DIRECTIVE FIELD INTENSITY
FOR WIMA, LIMA, OHIO
1150 KC - 1 KW - DA-N
NOVEMBER 1948
481130
o MEASURED VALUES


WJBO
PROPOSED HORIZONTIAL PLANE
RADIATION PATTERN
5000 WATTS - 1120 KC
7-3-40
McNARY & CHAMBERS
RADIO ENGINEERS
WASHINGTON, D.C.
RMS FIELD
492 MV/M
NORTH
WISN - ℄ TOWERS - 890 MILES
KSAL - 688 MILES
WAPO - 460 MILES
WDEL - 1085 MILES
600MV/M
400
200
400 MV/M
600
1.6 /+41°
4.1 /+6°
1.5 /0°
310°
320°
330°
340°
350°
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
150°
160°
170°
180°
190°
200°
210°
220°
230°
240°
250°
260°
270°
280°
290°
300°


WJBO
PROPOSED HORIZONTIAL PLANE
RADIATION PATTERN
5000 WATTS
NORTH
WISN & TOWERS
680 MILES
WTMJ - 68 MILES
WAPO - 460 MILES
WDEL - 1085 MILES
1.5 /+41°
4.1 /+6°
1.5 /0°
1.6 /+33.1°
4.1 /+2.2°
1.5 /0°
600MV/M
400
200
400 MV/M
PATTERN FOR
1120 KC
RMS FIELD
492 MV/M
PATTERN FOR
1150 KC
McNARY & CHAMBERS
RADIO ENGINEERS
WASHINGTON D.C.
410306



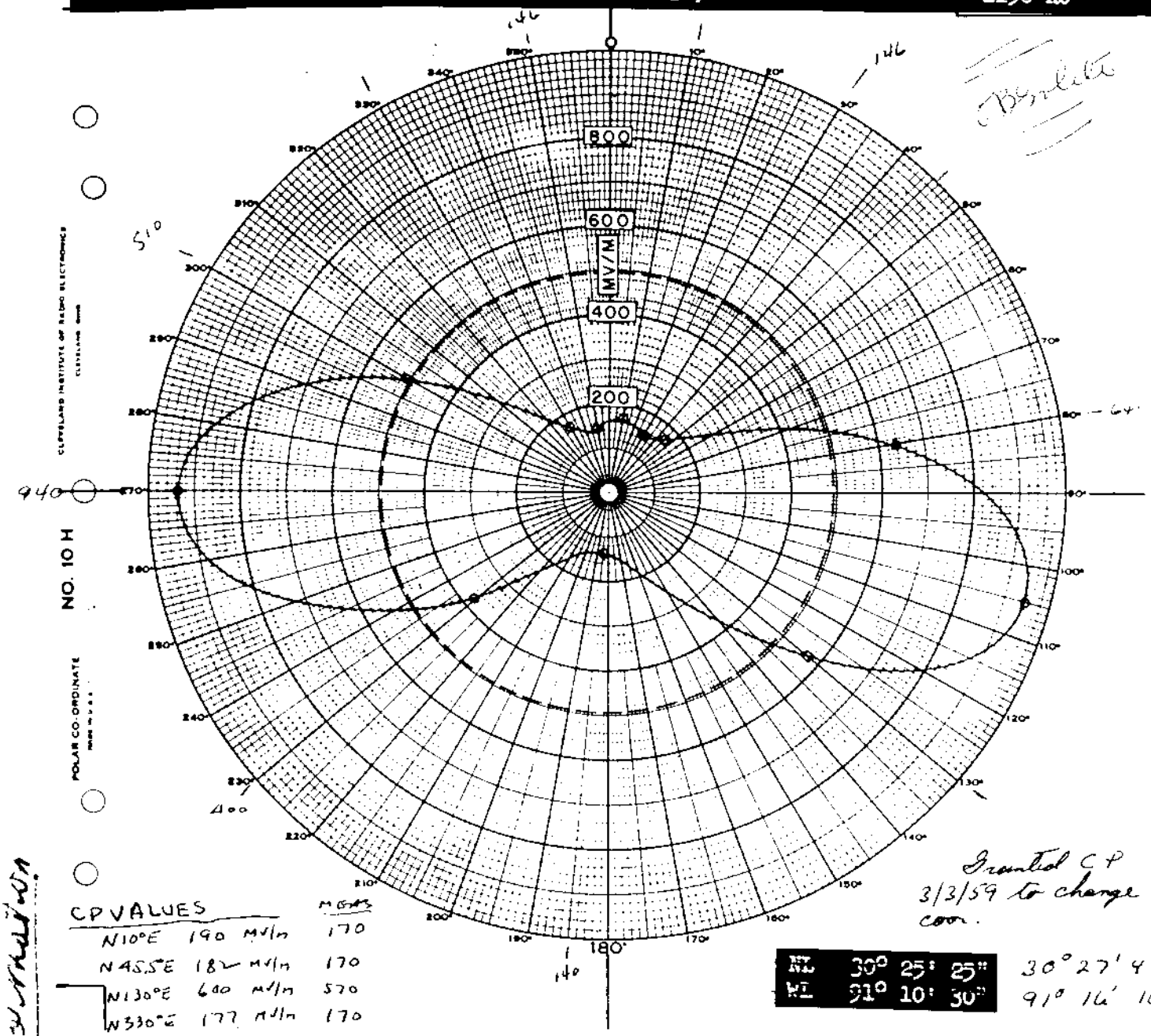
$1 \angle 0°$ — 185° — $2.7 \angle +5°$ — 185° — $1.08 \angle +27°$ — N 7°E

H = 94° H = 196° H = 94°

COMPUTED
HORIZONTAL PLANE PATTERN
WJBO, BATON ROUGE, LOUISIANA
1150 KC, 5 KW, DA-1
OCTOBER 1959

WWJBO

MEASURED DAY & NIGHT — Station WJBO — 5kw, DA-1,U
Baton Rouge, Louisiana — 1150 KC

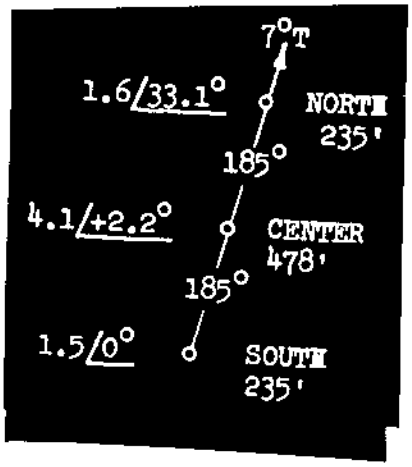


Granted CP 3/3/59 to change coor.

CP VALUES

			MGMS
N10°E	190	MV/m	170
N45.5°E	182	MV/m	170
N130°E	640	MV/m	570
N330°E	177	MV/m	170

NL	30°	25'	25"	30° 27' 47"
WL	91°	10'	30"	91° 16' 10"



RMS - 495 MV/M

FIGURE
Measured Horizontal Radiation Pattern
WJBO Baton Rouge, La.
5 Kw DA-1
Freq. 1150

WJBO

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

Station WJBO 5kw, DA-1,U
Baton Rouge, Louisiana 1150 KC

North Latitude 30° 27' 47"
West Longitude 91° 16' 10"

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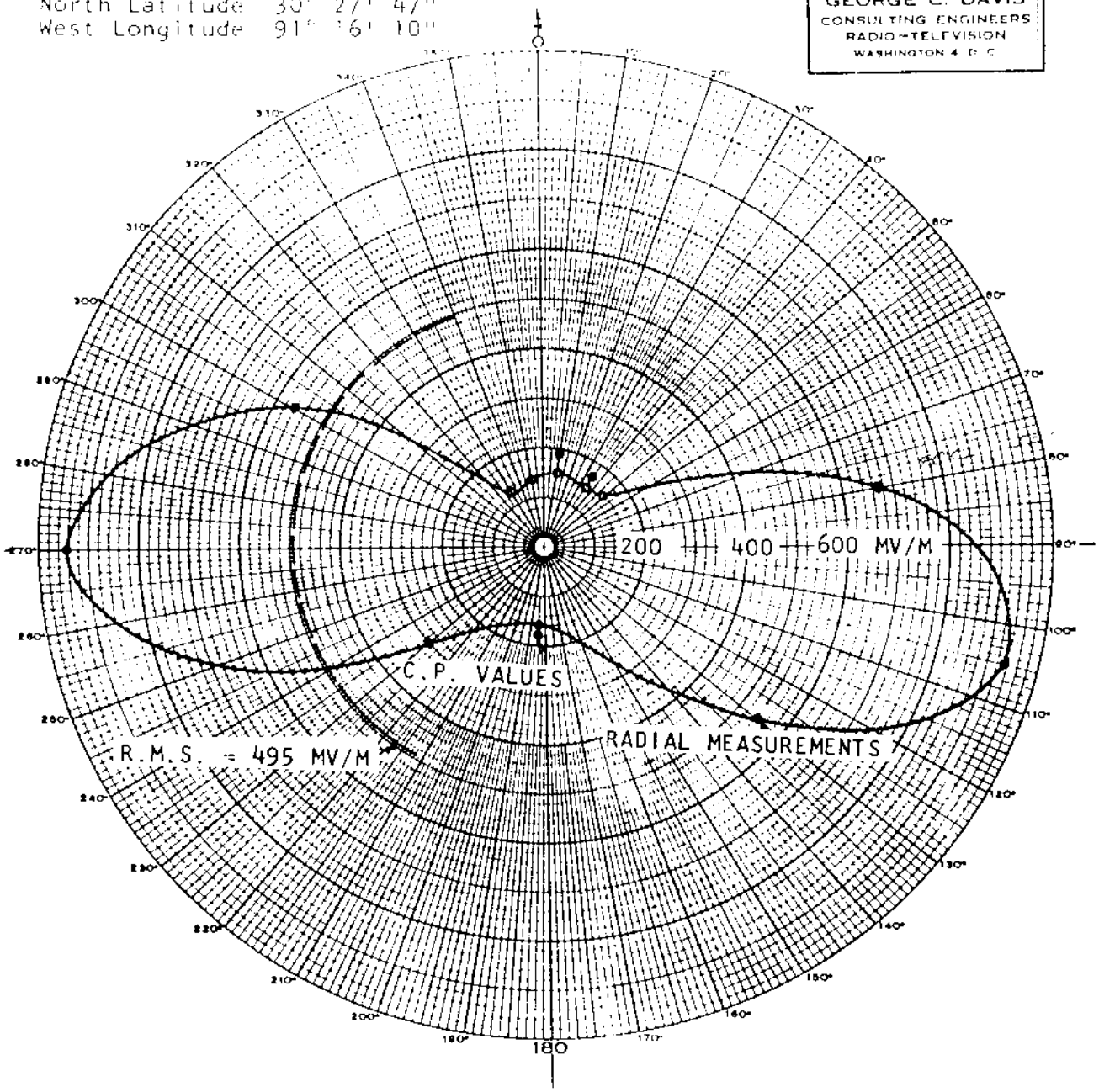
CONSULTING ENGINEERS
RADIO-TELEVISION
WASHINGTON 4, D. C.



1 /0° 2.7 /+8° 1.06 /+27°
185° 185° N 7° E
H = 94° H = 196° H = 94°

MEASURED HORIZONTAL PLANE PATTERN
WJBO - 1150 KC - 5 KW - DA-1
BATON ROUGE, LOUISIANA
SEPTEMBER 1959

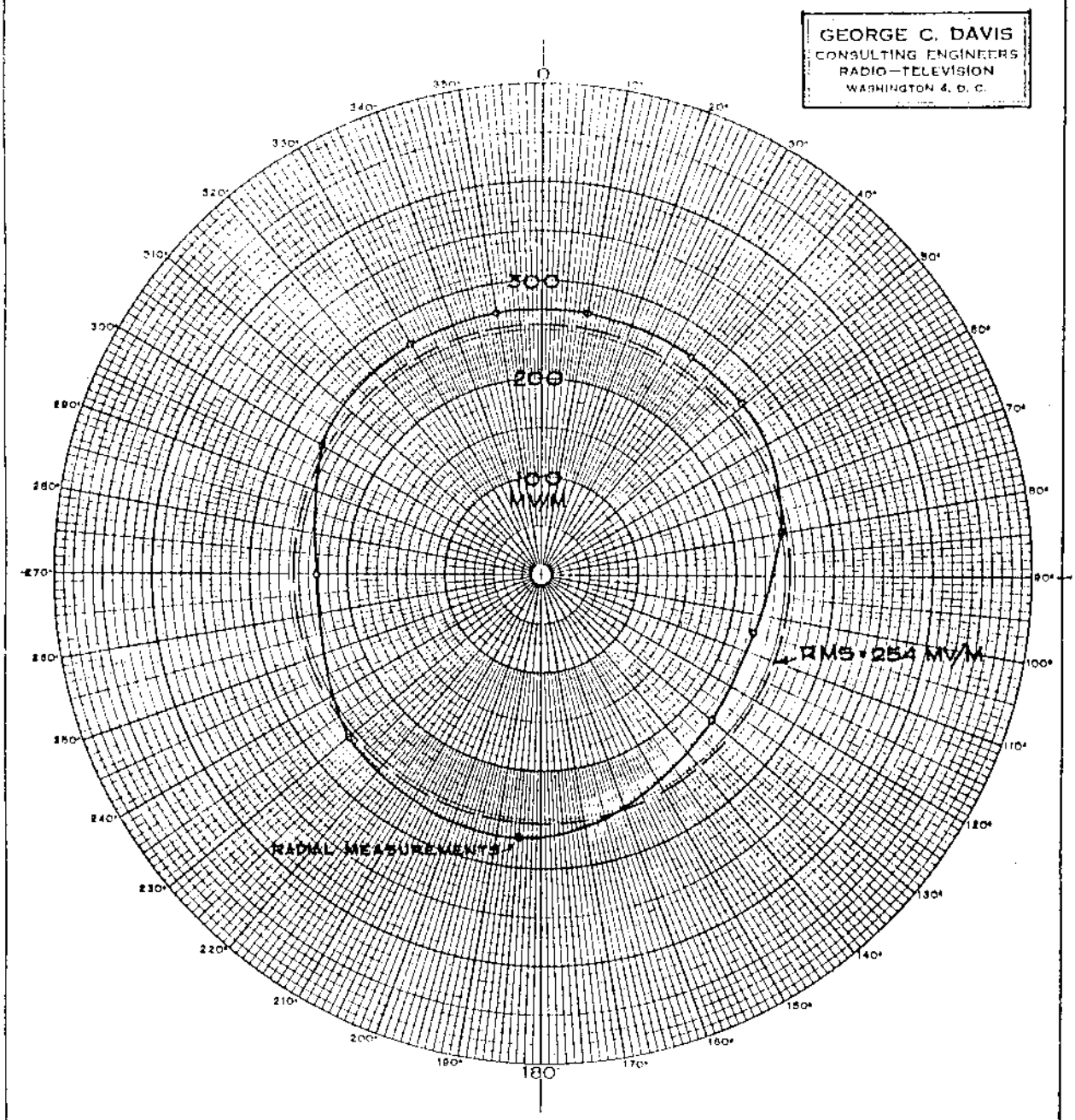
FCC File No. BL-7728
Accepted 11-30-59

WJBO
Baton Rouge, Louisiana 1150 KC

Granted - 6-6-60

MEASURED NON-DA
(12-21-59g)

Station WJBO 5kw, DA-1, U
Baton Rouge, Louisiana 1150 KC



NORTH LATITUDE 30° 27' 47"
WEST LONGITUDE 91° 16' 10"

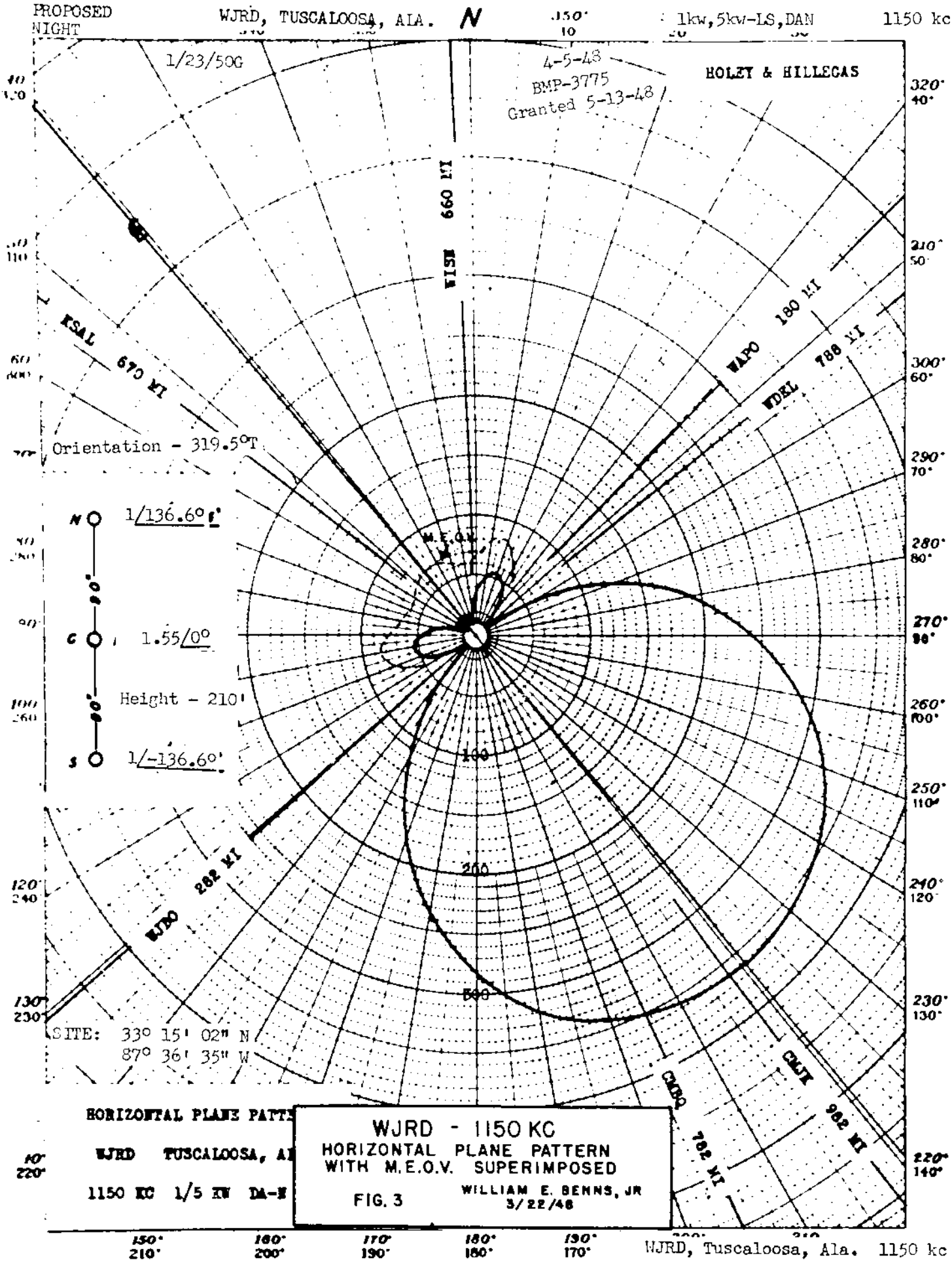
HEASURED HORIZONTAL PLANE PATTERN
1 KW NON-DIRECTIONAL OPERATION
WJBO - 1150 KC - BATON ROUGE, LOUISIANA
SEPTEMBER 1959

FCC File No. BL-7728
Accepted 11-30-59

WJBO
Baton Rouge, Louisiana 1150 KC

Filed 6 6 60

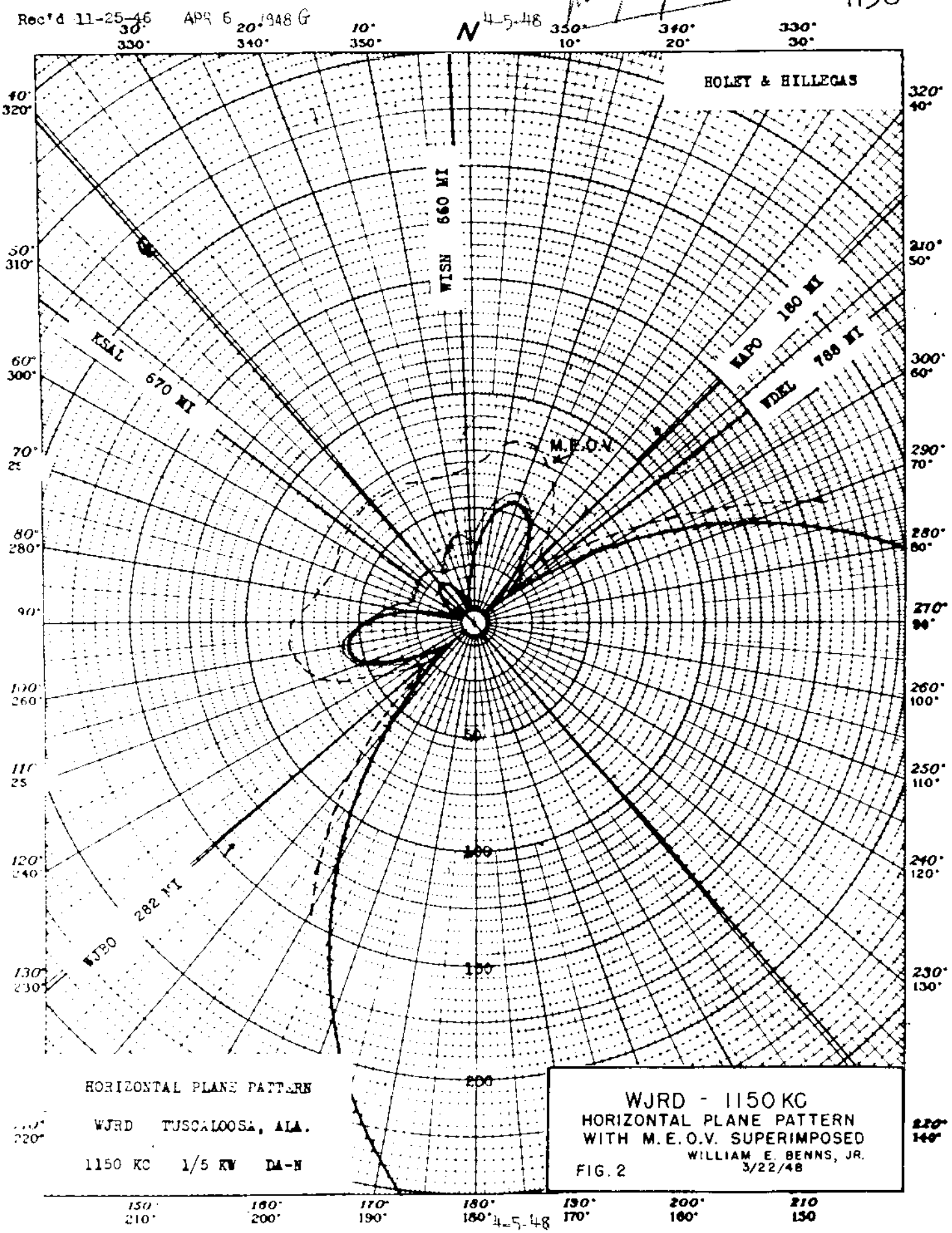
WJRD


PROPOSED NIGHT
WJRD, TUSCALOOSA, ALA.
N
1kw,5kw-LS,DAN
1150 kc
1/23/50G
4-5-48
BMP-3775
Granted 5-13-48
HOLZT & HILLECAS
WISH 660 MI
KSAL 670 MI
WAPO 180 MI
WDEL 788 MI
Orientation - 319.5°T
N 1/136.6°
C 1.55/0°
Height - 210'
S 1/-136.6°
M.E.O.V.
100
200
500
WJDO 282 MI
CMBQ 782 MI
CMJK 982 MI
SITE: 33° 15' 02" N
87° 36' 35" W
HORIZONTAL PLANE PATTE
WJRD TUSCALOOSA, AL
1150 KC 1/5 KW DA-N
WJRD - 1150 KC
HORIZONTAL PLANE PATTERN
WITH M.E.O.V. SUPERIMPOSED
FIG. 3
WILLIAM E. BENNS, JR
3/22/48
WJRD, Tuscaloosa, Ala. 1150 kc

Rec'd 11-25-46 APR 6 1948 G

4-5-48

WJRD 1150



MEASURED NIGHT Station WJRD Tuscaloosa, Alabama 1150 KC

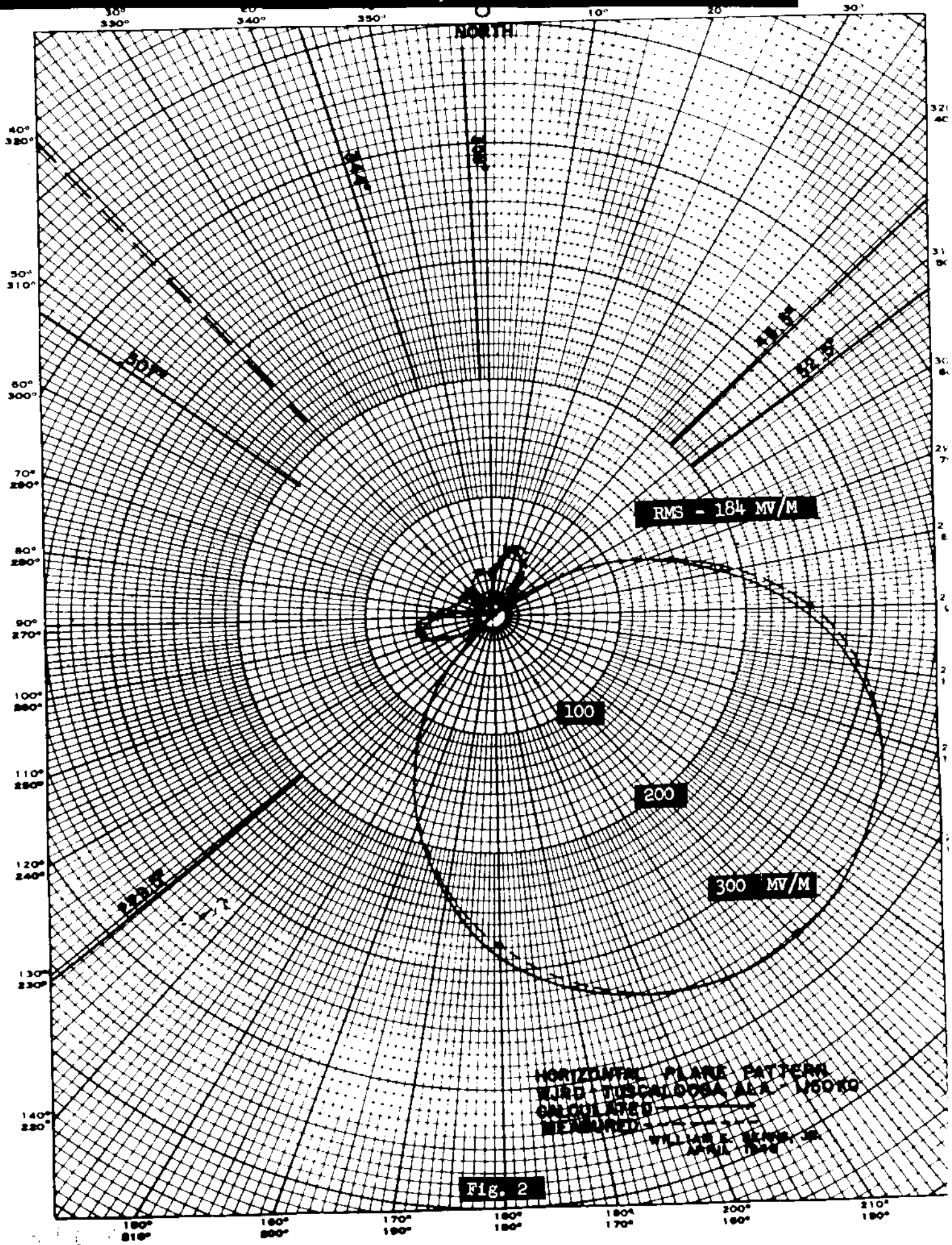


Fig. 2

POLAR CO-ORDI

WJRD

MEASURED NIGHT NULLS | Station WJRD, Tuscaloosa, Alabama | 1kw,5kw-LS, DA-N,U 1150 KC

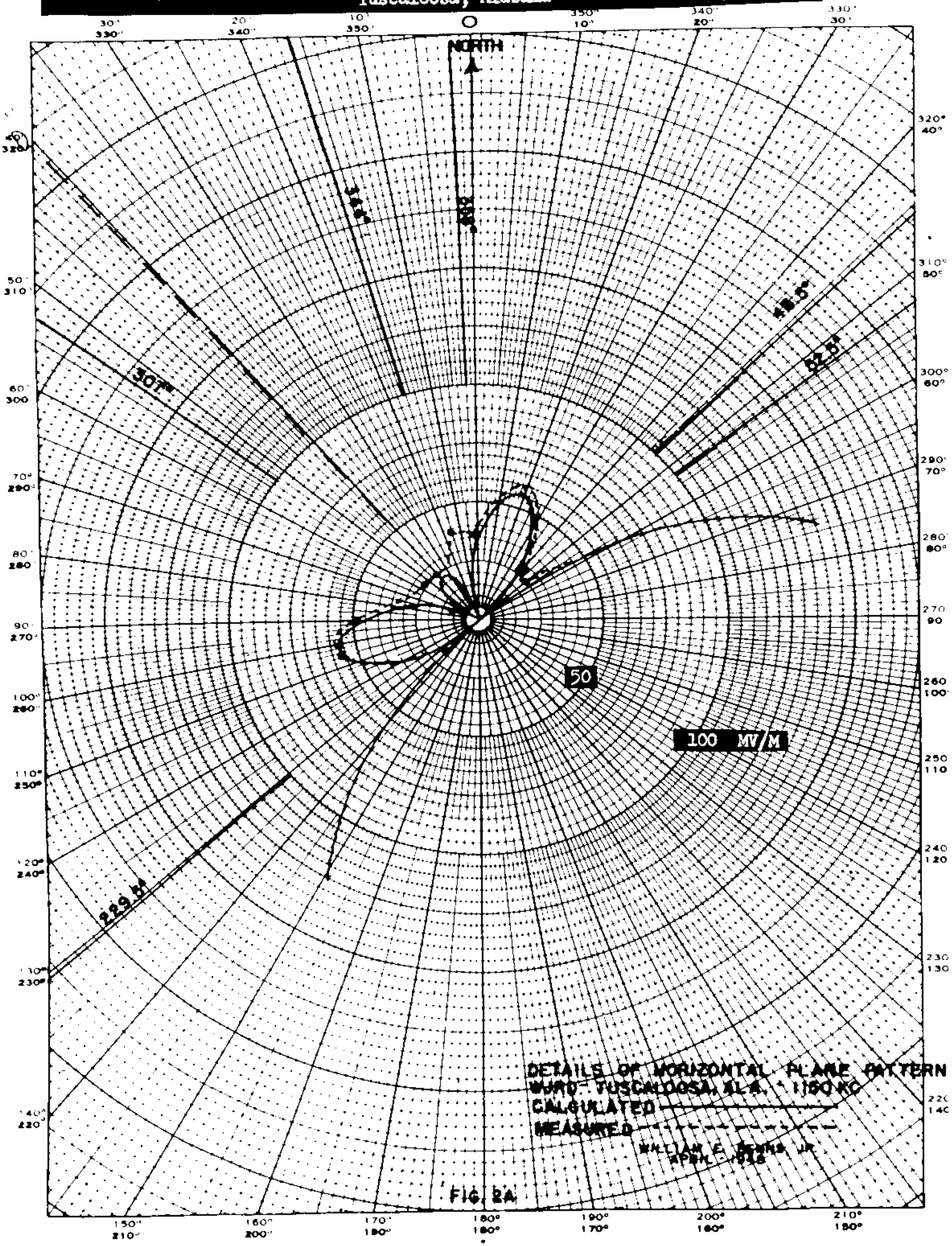


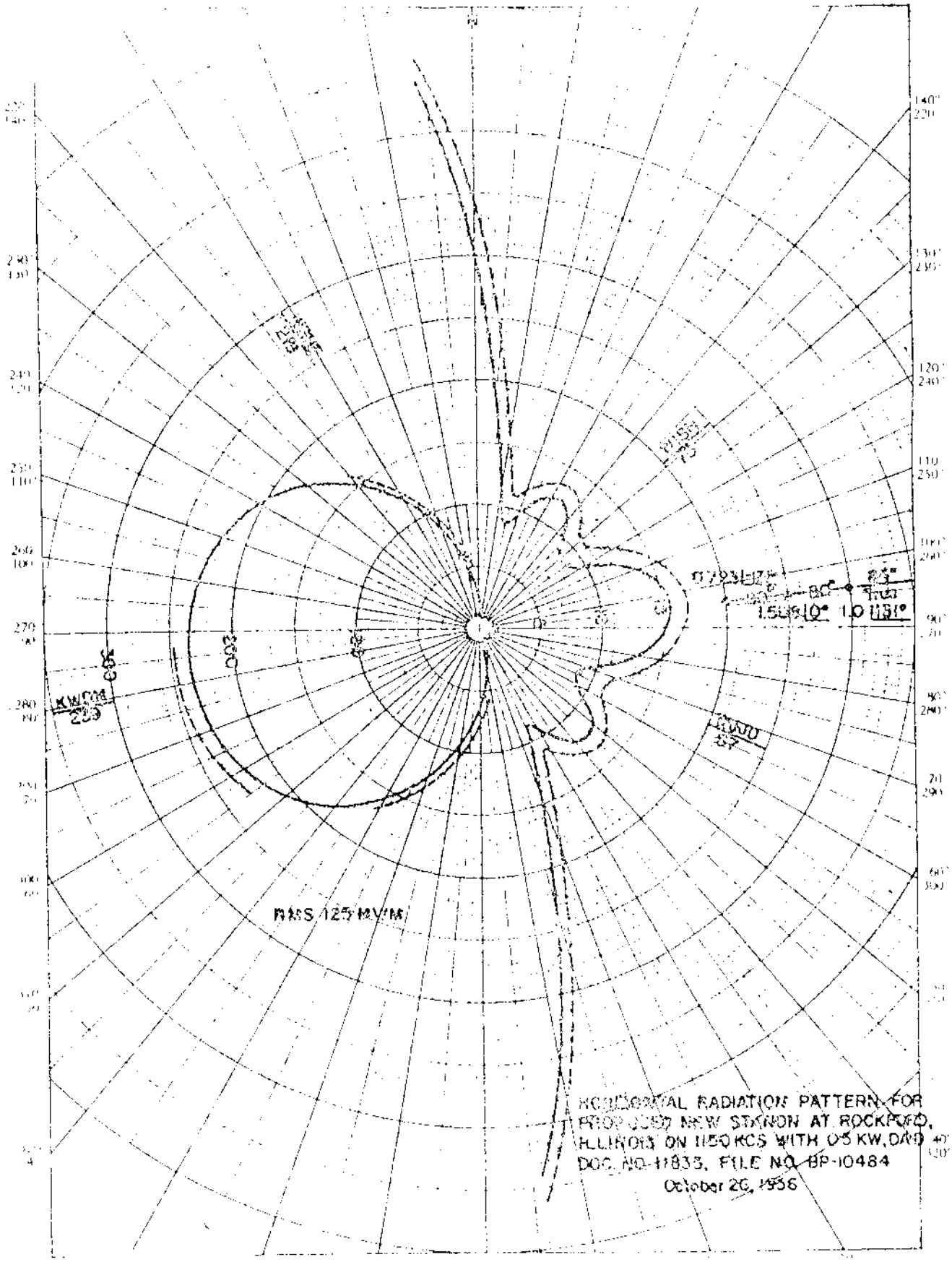
FIG. 2A

Rockford, Ill.

WJKL

Granted CP for new Sta. 2-3-60

PROPOSED DAY Town & Country Radio, Inc. 500 W, DA-d, D 1150 KC
(12-18-56g) Rockford, Illinois



FCC File No. BP-10,484(Amended) Accepted 11-29-56 Town & Country Radio, Inc. Docket #11835 Rockford, Illinois 1150 KC

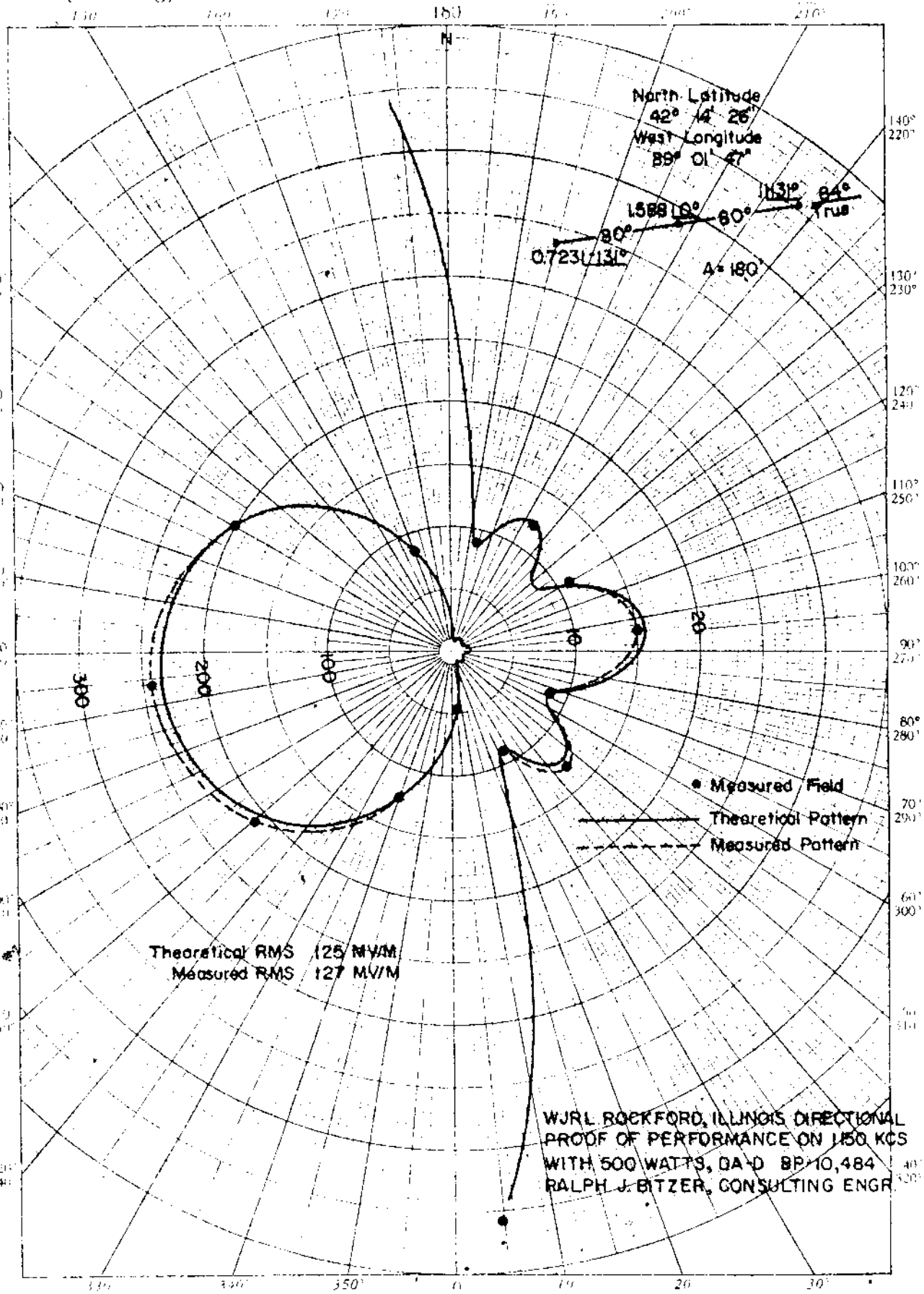
WJRL

MEASURED DAY
(7-29-60g)

Station WJRL
Rockford, Illinois

500w, DA-D,D
1150 kc

1-7-60
carried L for
new station



FCC File No. BL-7985
Accepted 7-12-60

WJRL
Rockford, Illinois

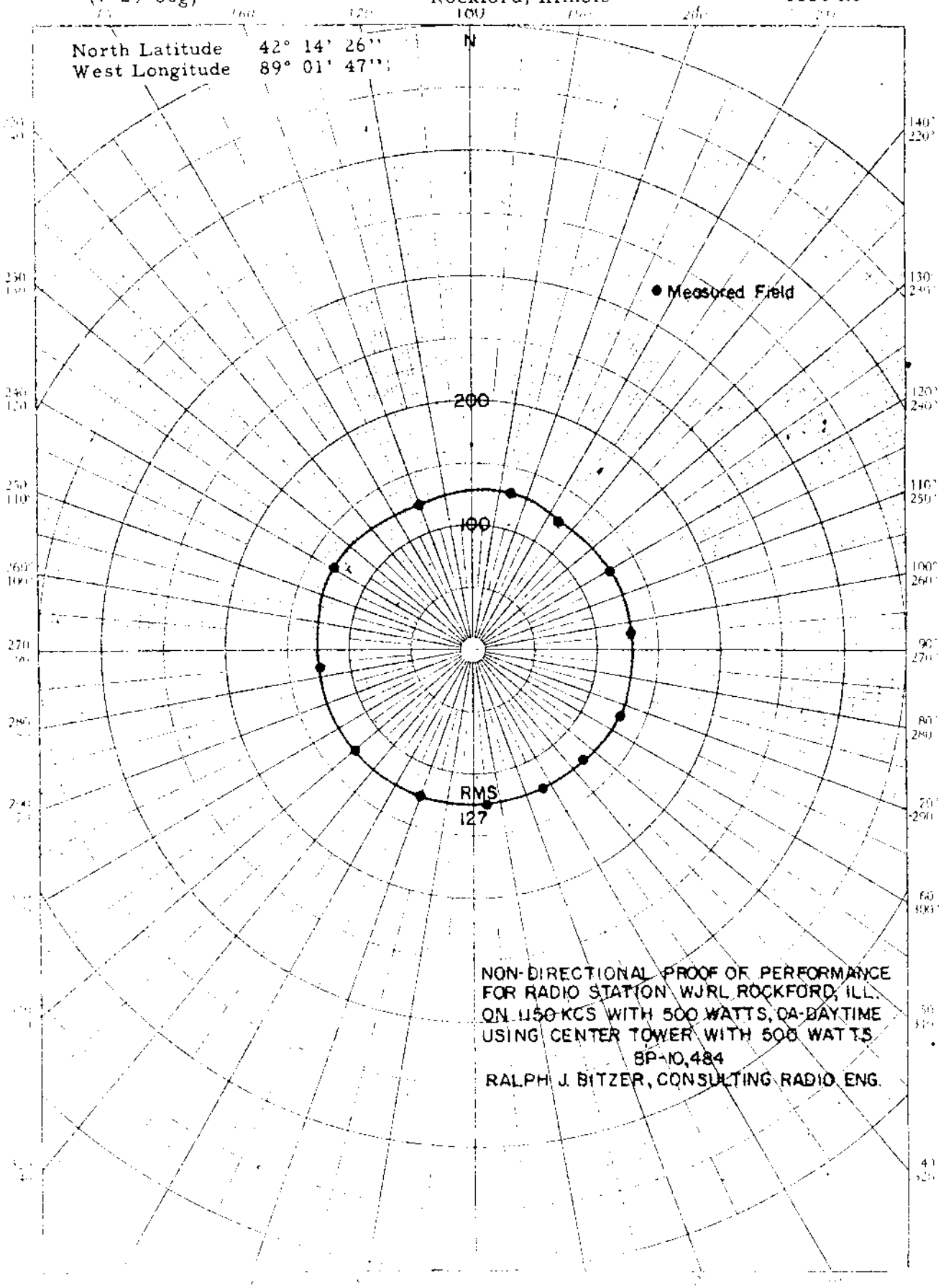
1150 kc

WJRL

MEASURED NON-DA
(7-29-60g)

Station WJRL
Rockford, Illinois

500w, DA-D,D
1150 kc



FCC File No. BL-7985
Accepted 7-12-60

WJRL
Rockford, Illinois

1150 kc

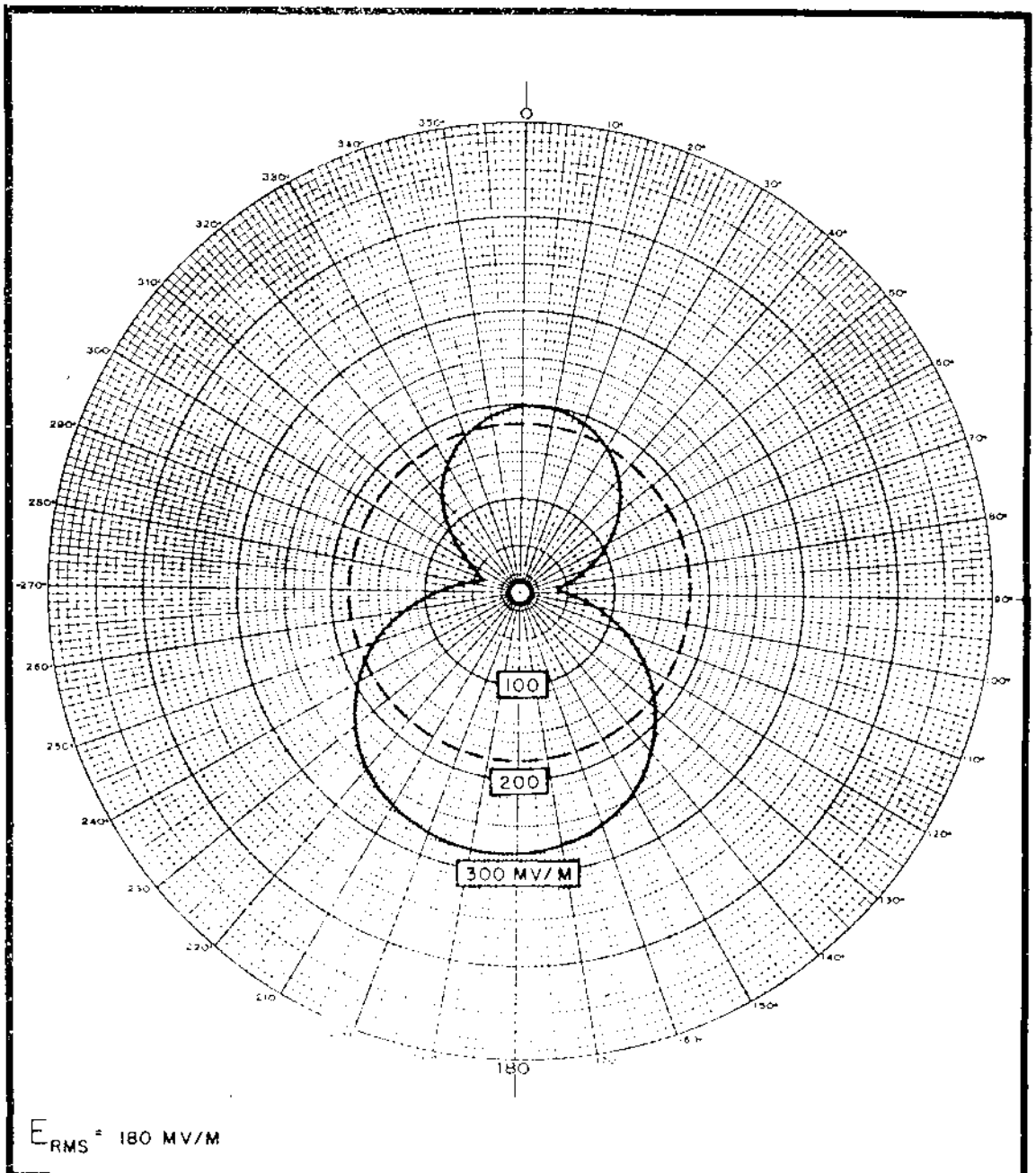
WKPA

Proposed Day
(5-27-66ct)

Station WKPA
New Kensington, Pennsylvania

1kw,DA-D,D
1150 kc

-P CHG DA-SYS
6-2-66



E_{RMS} = 180 MV/M

LATITUDE 40° 34' 24"	ANTENNA PARAMETERS	FIGURE 1
LONGITUDE 79° 46' 58"	N-6°-E #2 0.825/166° 70°/166.5' #1 1.0/0° G_1 = 187.2°/445' G_2 = 347°/225'	HORIZONTAL POLAR PATTERN RADIO STATION WKPA NEW KENSINGTON, PENNA.
JOHN H. MULLANEY AND ASSOCIATES A DIVISION OF MULTRONICS INC.		1150KC 1 KW, DA-D,D

FCC File No. BP-17212
Accepted 5-6-66

Station WKPA
New Kensington, Pennsylvania

1150 kc

WKPA

Measured Day
(2-28-68ct)

Station WKPA
New Kensington, Pennsylvania

1kw,DA-D,D
1150 kc

3-13-68
GRANTED
LICENSE
COV. CHANGE
IN ANTENNA
SYSTEM

THEORETICAL PARAMETERS:

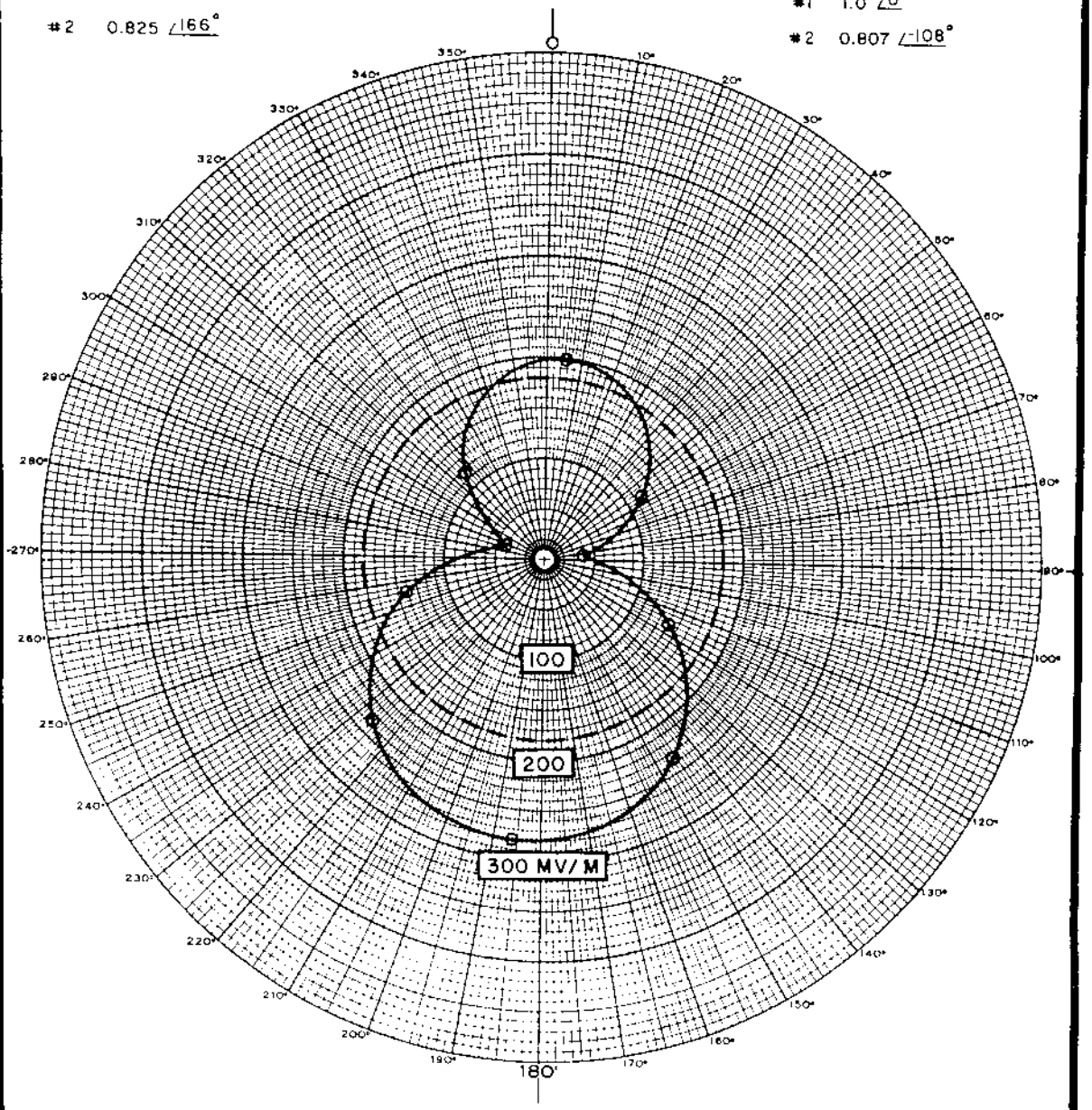
#1 1 ∠0°

#2 0.825 ∠166°

MEASURED PARAMETERS:

#1 1.0 ∠0°

#2 0.807 ∠-108°



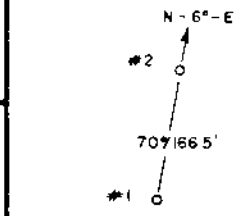
E_{RMS} = 180 MV/M

LATITUDE 40° 34' 24"

LONGITUDE 79° 46' 58"

JOHN H. MULLANEY
AND
ASSOCIATES

ANTENNA PARAMETERS



G_1 = 187.2°/ 44.5'
G_2 = 94.7°/ 22.5'

FIGURE 1

HORIZONTAL POLAR PATTERN
(MEASURED)

RADIO STATION WKPA
NEW KENSINGTON, PENNA.

1150 KC

1 KW, DA-D,D.

JULY 1967

FCC File No.BL-11742
Accepted 2-7-68

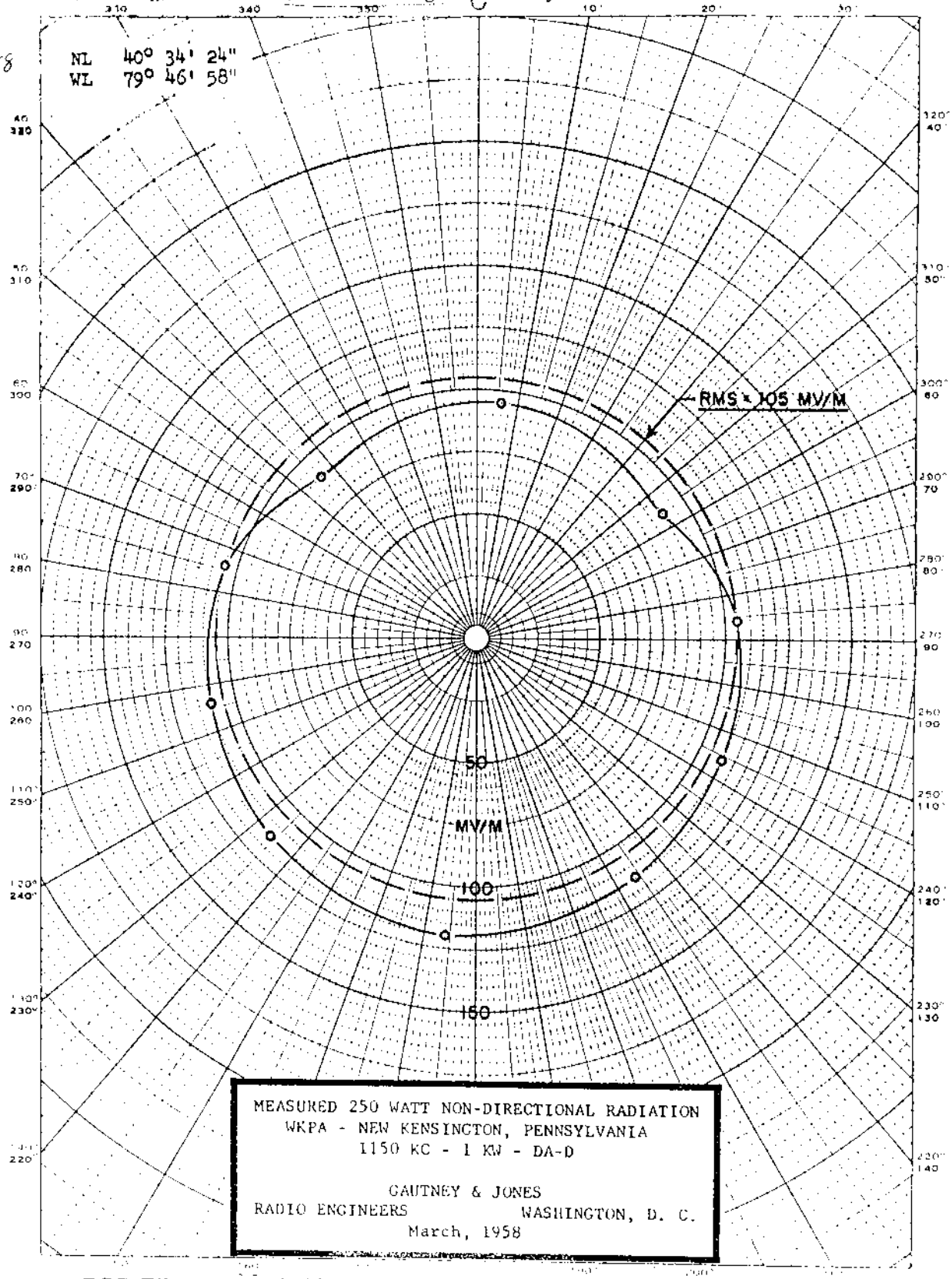
Station WKPA
New Kensington, Pennsylvania

1150 kc

Kensington, Pa. WKPA

MEASURED NON-DA Station WKPA 1kw, DA-D,D
(5-8-58g) NEW Kensington, Pennsylvania 1150 KC

Granted 7/2/58 license for increase in power & for DA system



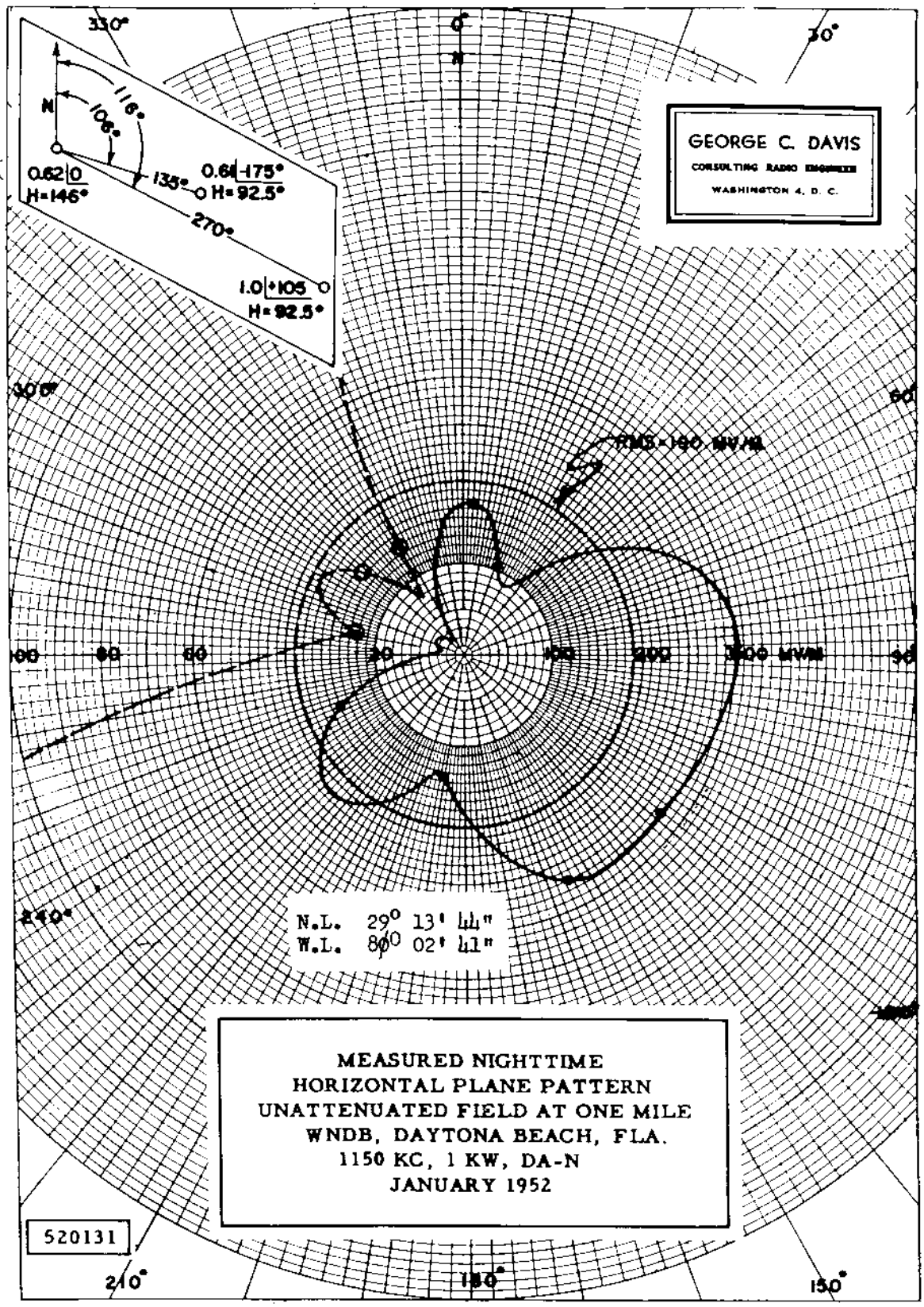
FCC File No. BL-7099
Accepted 4-25-58

WKPA
Kensington, Pennsylvania 1150 KC

WNDB

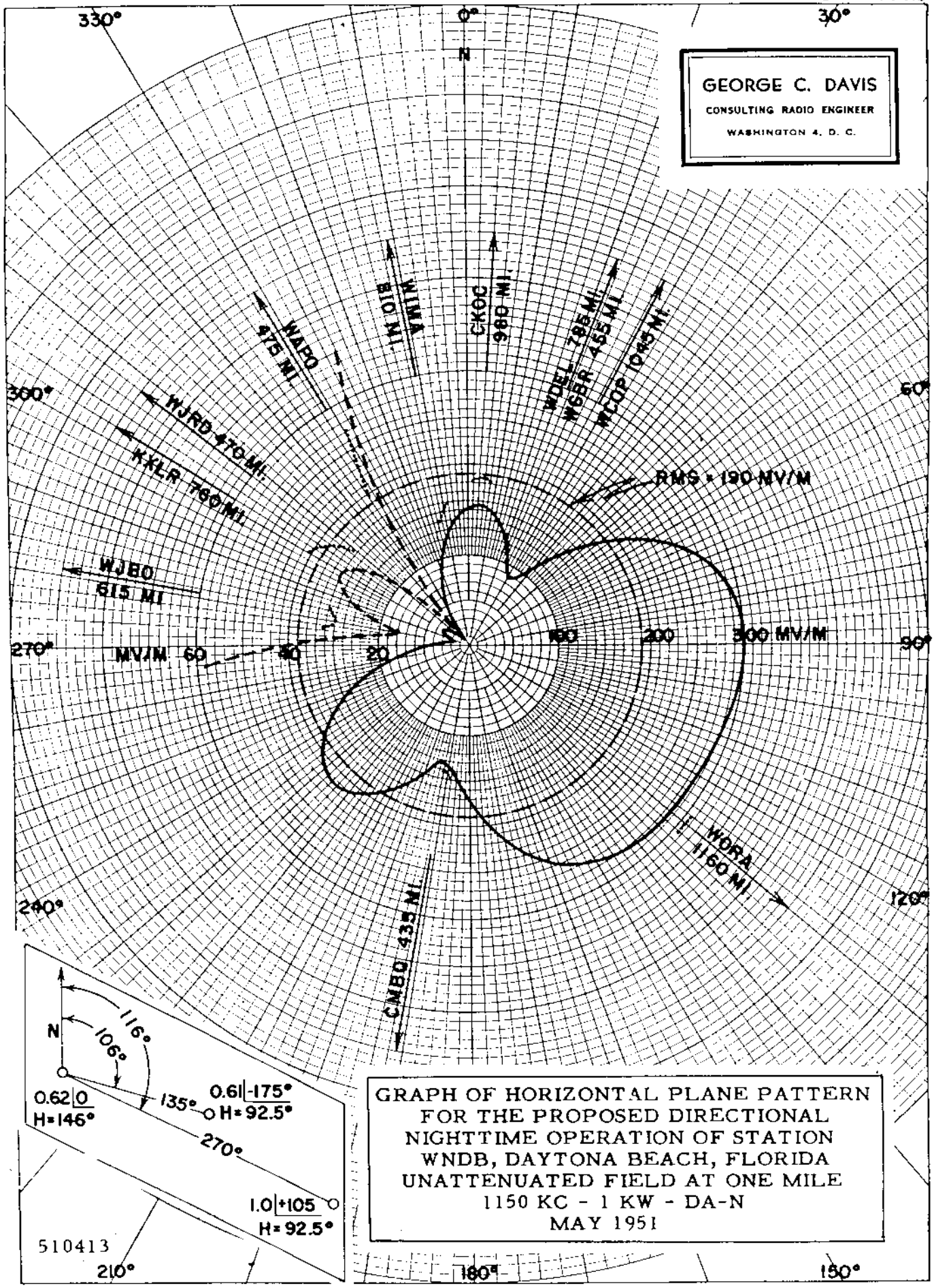
MEASURED NIGHT — WNDB, DAYTONA BEACH, FLA. 3/19/52G — 1 KW, U, DA-N — 1150 KC

BP-17426
2-3-67
GRANTED CP
to increase
antenna height
by 15 feet.



APPL RECD 2/15/52 ACC 3/14/52 BL-4675 — WNDB, DAYTONA BEACH, FLA. — 1150 KC

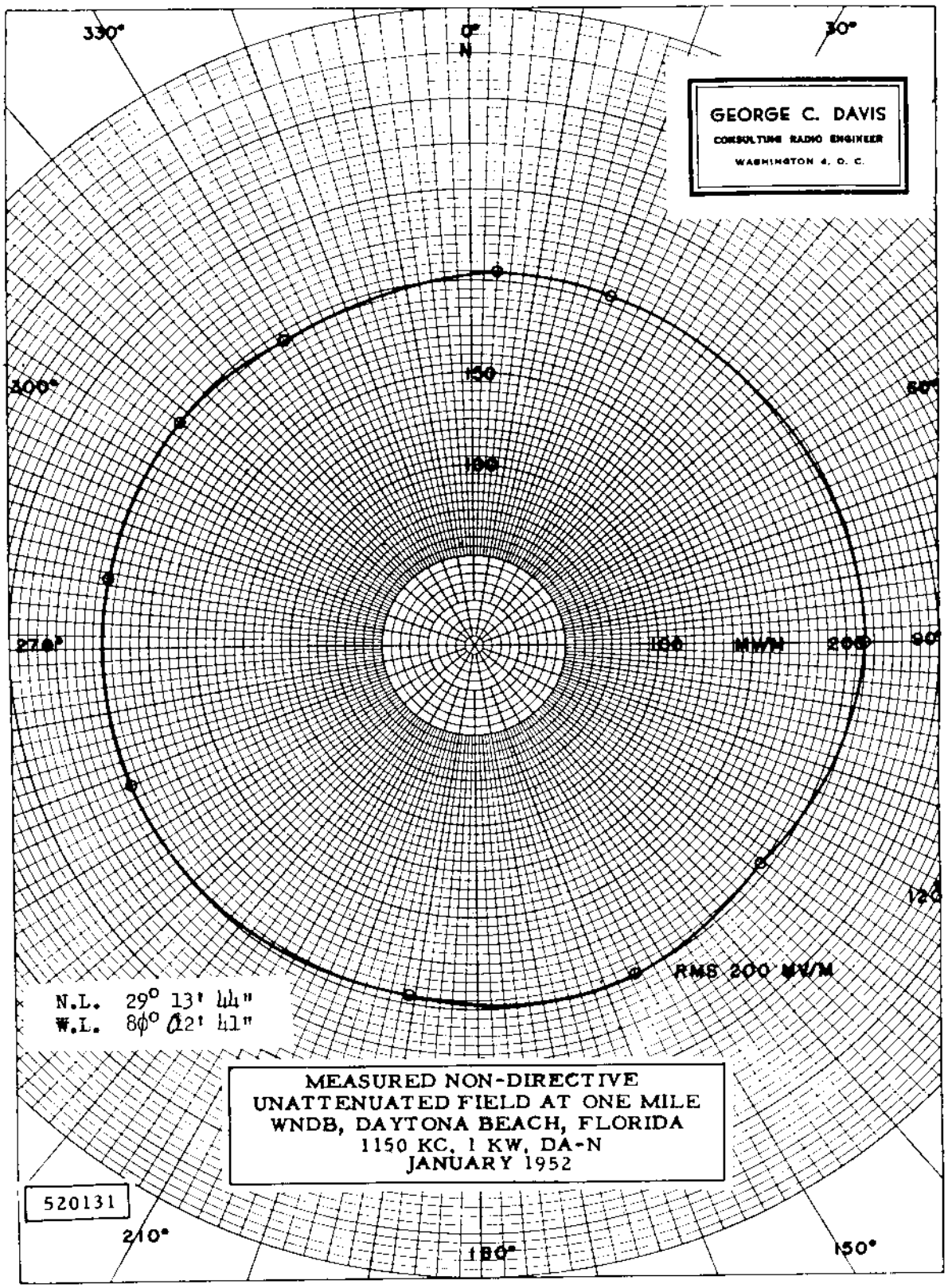
WNDB - 1150 KC



GRAPH OF HORIZONTAL PLANE PATTERN
FOR THE PROPOSED DIRECTIONAL
NIGHTTIME OPERATION OF STATION
WNDB, DAYTONA BEACH, FLORIDA
UNATTENUATED FIELD AT ONE MILE
1150 KC - 1 KW - DA-N
MAY 1951

WNDB

MEASURED NON-DA | WNDB, DAYTONA BEACH, FLA. 3/19/52G | 1 KW, U, DA-N | 1150 KC



APPL RECD 2/15/52 ACC 3/14/52 BL-4675 | WNDB, DAYTONA BEACH, FLA. | 1150 KC

WKUM UTICA-ROME, N.Y. 1150KC

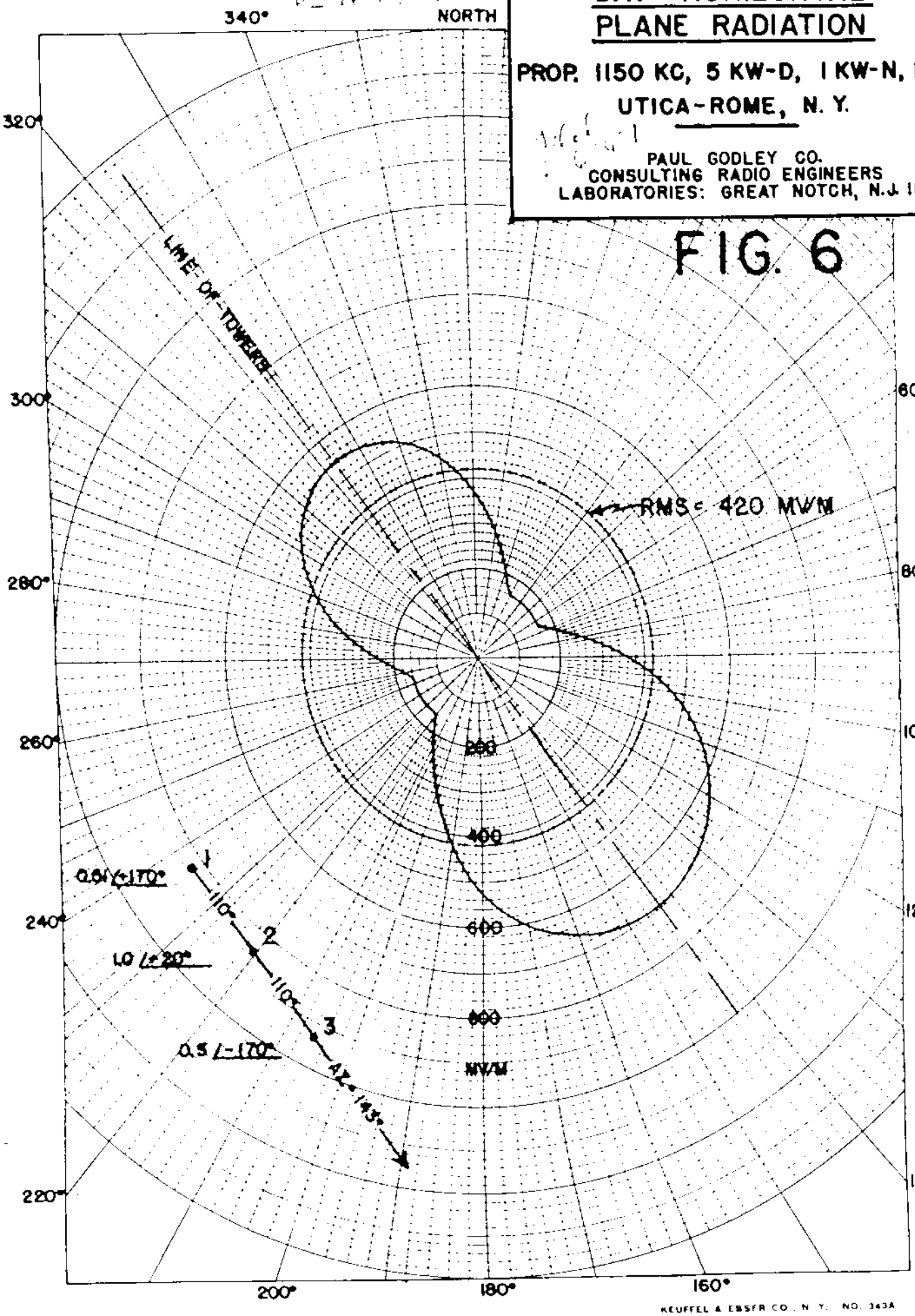
DAY HORIZONTAL PLANE RADIATION

PROP. 1150 KC, 5 KW-D, 1 KW-N, DA-2

UTICA-ROME, N. Y.

PAUL GODLEY CO.
CONSULTING RADIO ENGINEERS
LABORATORIES: GREAT NOTCH, N.J. 11/46

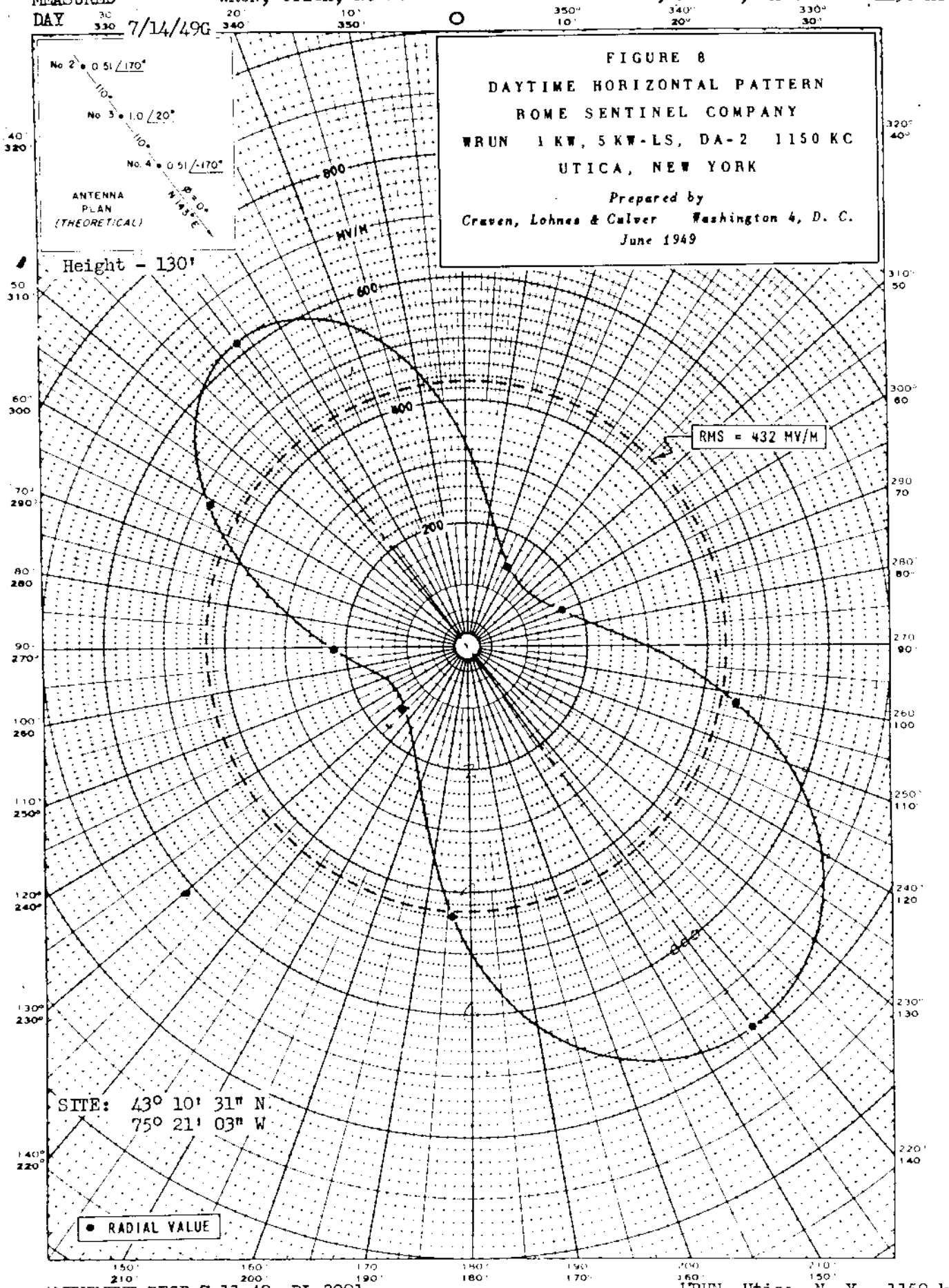
FIG. 6



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

WRUN

MEASURED DAY 7/14/49G WRUN, UTICA, N. Y. 1kw, 5kw-LS, DA-2 1150 kc



AMENDMENT RECD 7-11-49 BL-3291

WRUN, Utica, N. Y. 1150 kc

WRUN

PROPOSED NIGHT WRUN, UTICA, NY 11/22/48G 11-18-48L 1kw,5kw-LS,DA2 1150 kc

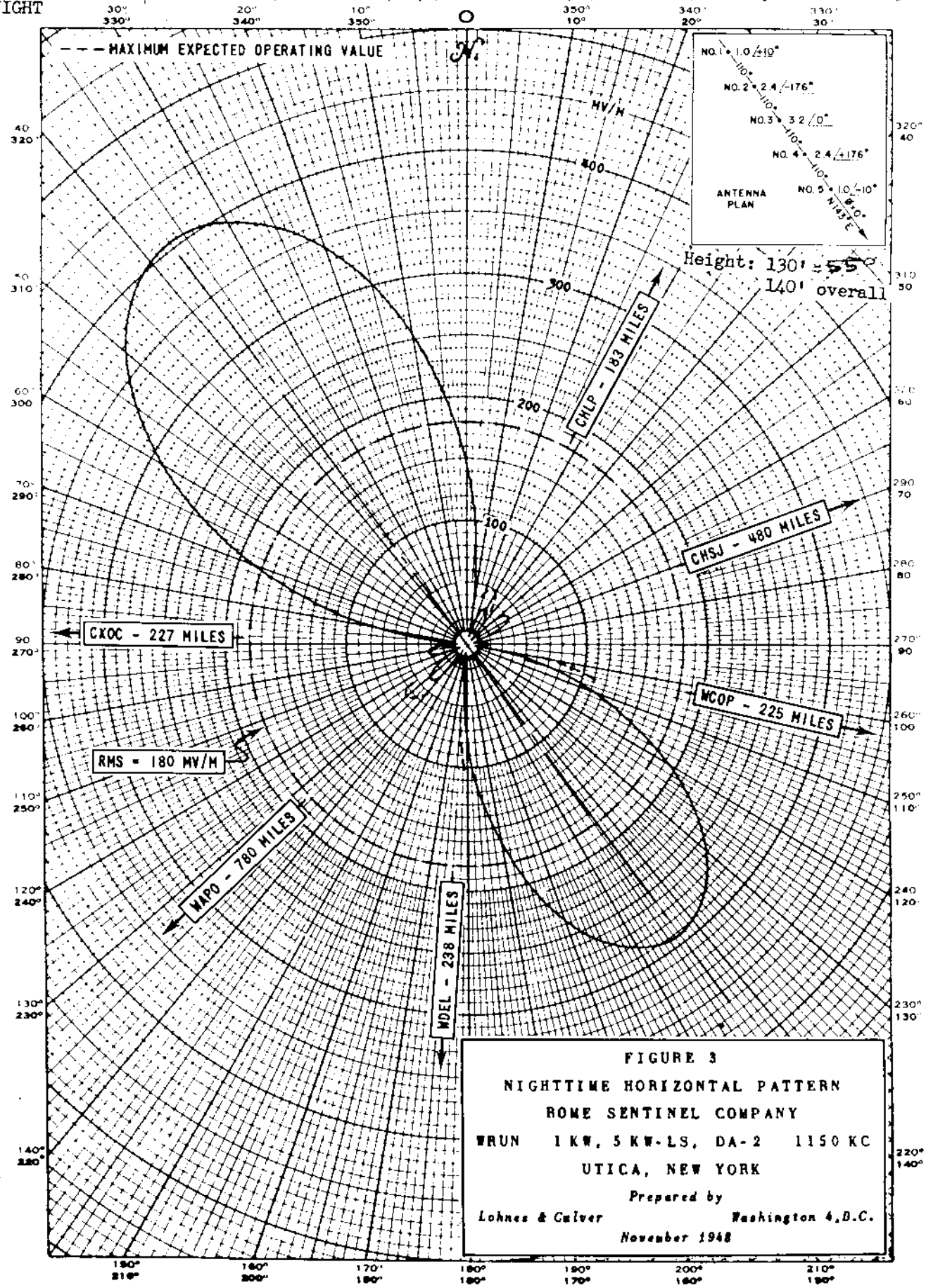


FIGURE 3

NIGHTTIME HORIZONTAL PATTERN

ROME SENTINEL COMPANY

WRUN 1 KW, 5 KW-LS, DA-2 1150 KC

UTICA, NEW YORK

Prepared by

Lohnes & Culver *Washington 4, D.C.*

November 1948

WRUN

PROPOSED NIGHT NULLS

WRUN, UTICA, NY 11/22/48G 11-18-48L 1kw,5kw-LS,DA2 1150 kc

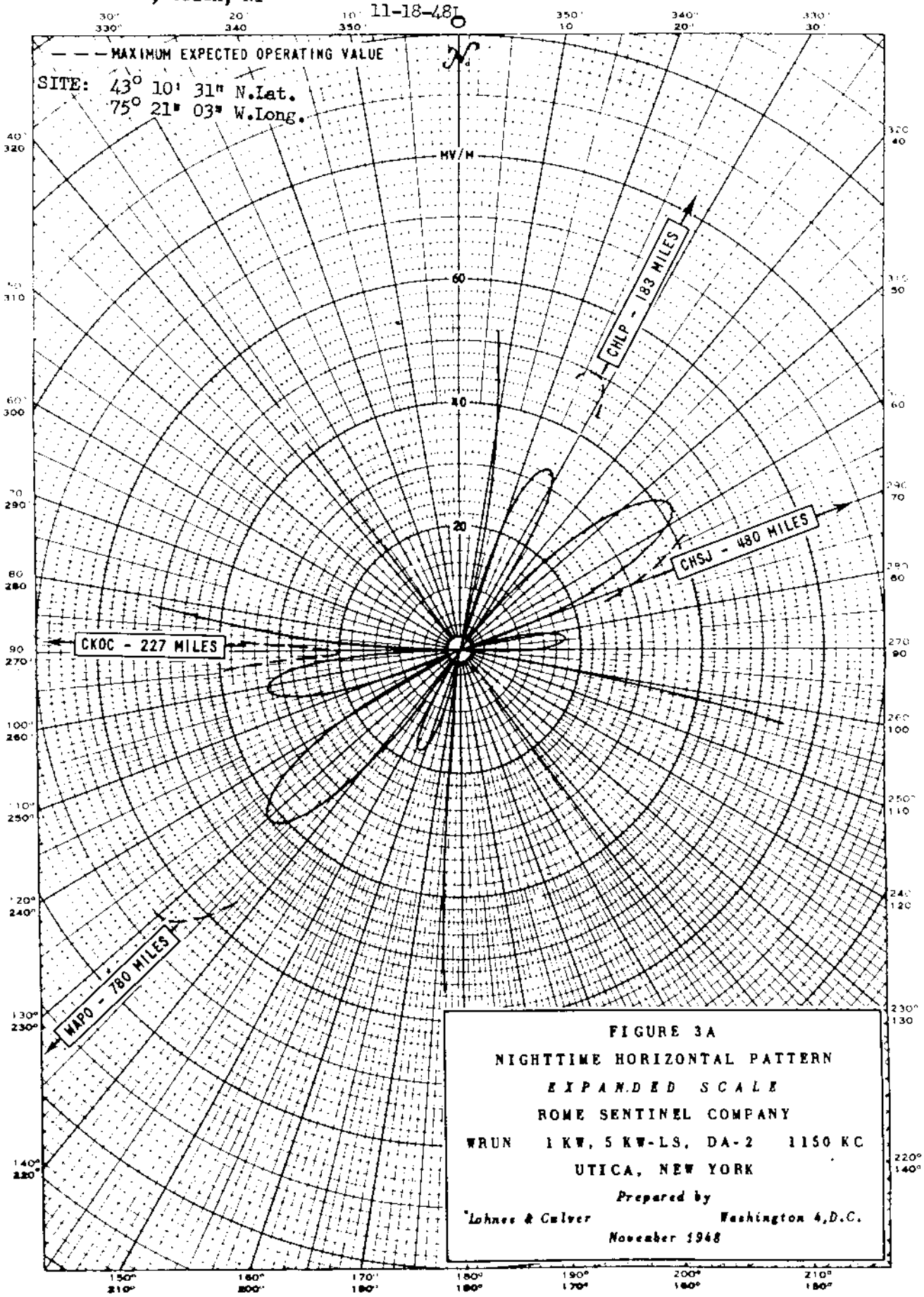


FIGURE 3A

NIGHTTIME HORIZONTAL PATTERN

EXPANDED SCALE

ROME SENTINEL COMPANY

WRUN 1 KW, 5 KW-LS, DA-2 1150 KC

UTICA, NEW YORK

Prepared by

Lohnes & Culver *Washington 4,D.C.*

November 1948

WRUN

MEASURED WRUN, UTICA, N. Y. 1kw, 5kw-LS, DA-2 1150 kc

NIGHT 7/14/49G

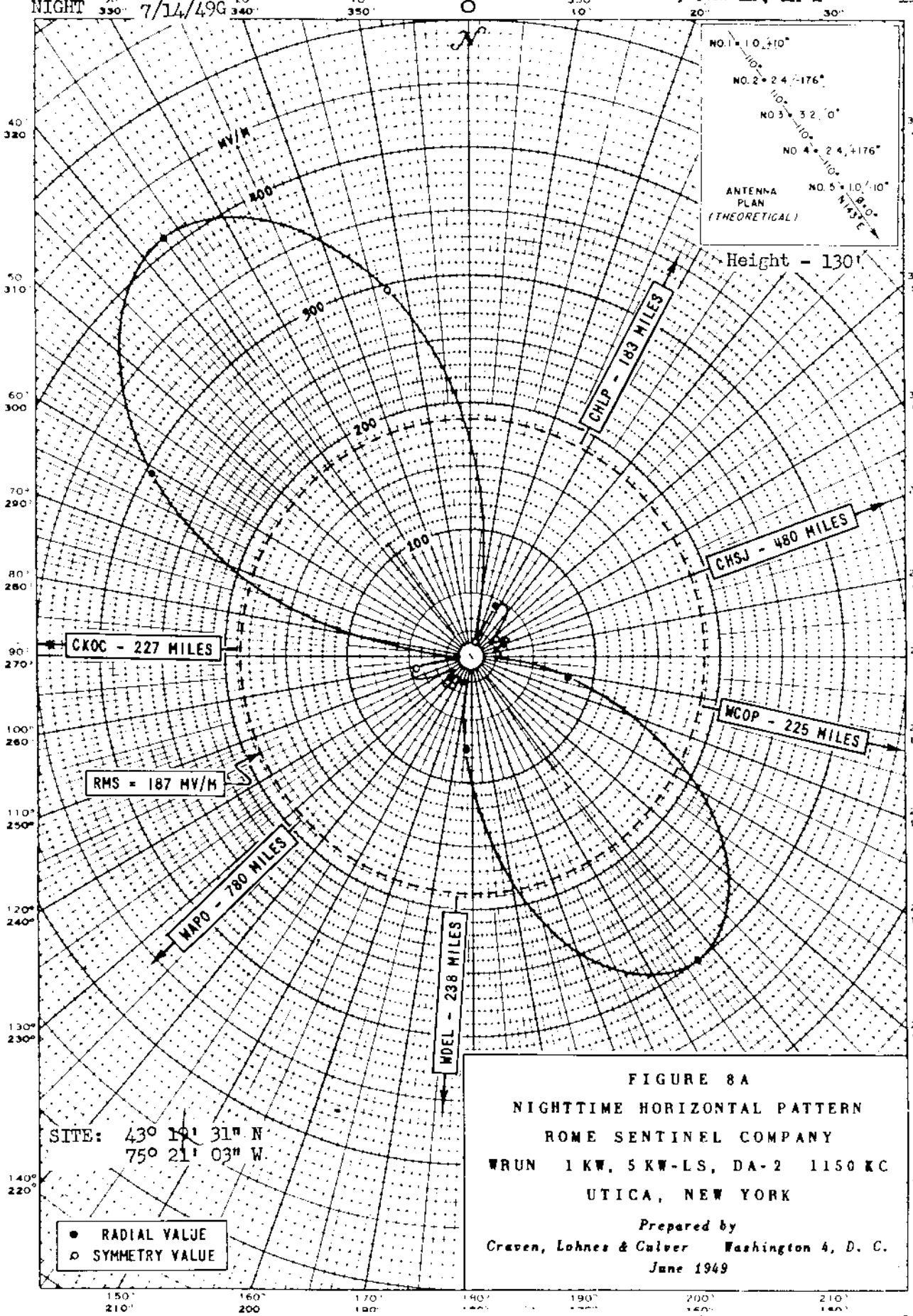


FIGURE 8A

NIGHTTIME HORIZONTAL PATTERN

ROME SENTINEL COMPANY

WRUN 1 KW, 5 KW-LS, DA-2 1150 KC

UTICA, NEW YORK

Prepared by

Craven, Lohnes & Culver Washington 4, D. C.

June 1949

AMENDMENT RECD 7-11-49 BL-3291

WRUN, Utica, N. Y. 1150 kc

WRUN

MEASURED NIGHT NULLS

WRUN, UTICA, N. Y.

1kw, 5kw-LS, DA-2

1150 kc

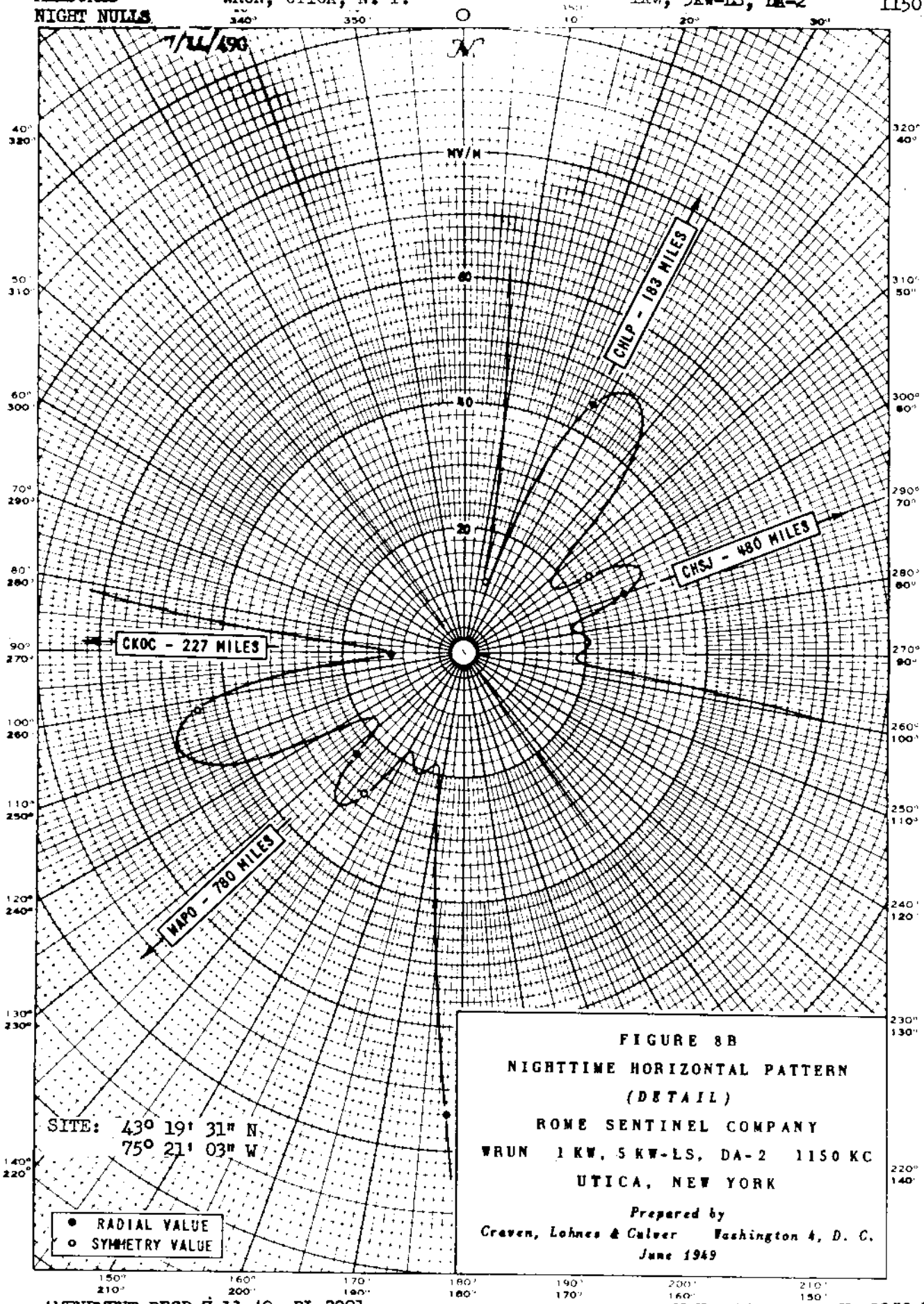


FIGURE 8B

NIGHTTIME HORIZONTAL PATTERN

(DETAIL)

ROME SENTINEL COMPANY

WRUN 1 KW, 5 KW-LS, DA-2 1150 KC

UTICA, NEW YORK

Prepared by

Craven, Lohnes & Culver Washington 4, D. C.

June 1949

AMENDMENT RECD 7-11-49 BL-3291

WRUN, Utica, N. Y. 1150 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station	: WTAW	Main Studio:	College Station, Texas
Frequency	: 1150 kHz	Power	: 0.5kw Night 1kw Day
Notification List No.:	1753	Date	: October 13, 1977 Class: [illegible]

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	30°	38'	05"
West Longitude:	96°	21'	20"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)

Number of elements: 3

Type of elements : Towers #1 and #3 are series excited, uniform cross-section, guyed. Tower #2 is shunt excited folded unipole, self supporting, tapered. All are vertical steel towers.

TOWER :	N(#1)	SW(#2)	SE(#3)
HEIGHT ABOVE INSULATORS :	142'	222'(93.4°)	142'(60°)
NIGHT PHASING:	0°	-93.0°	+95.0°
NIGHT FIELD RATIO :	1	1.020	0.776

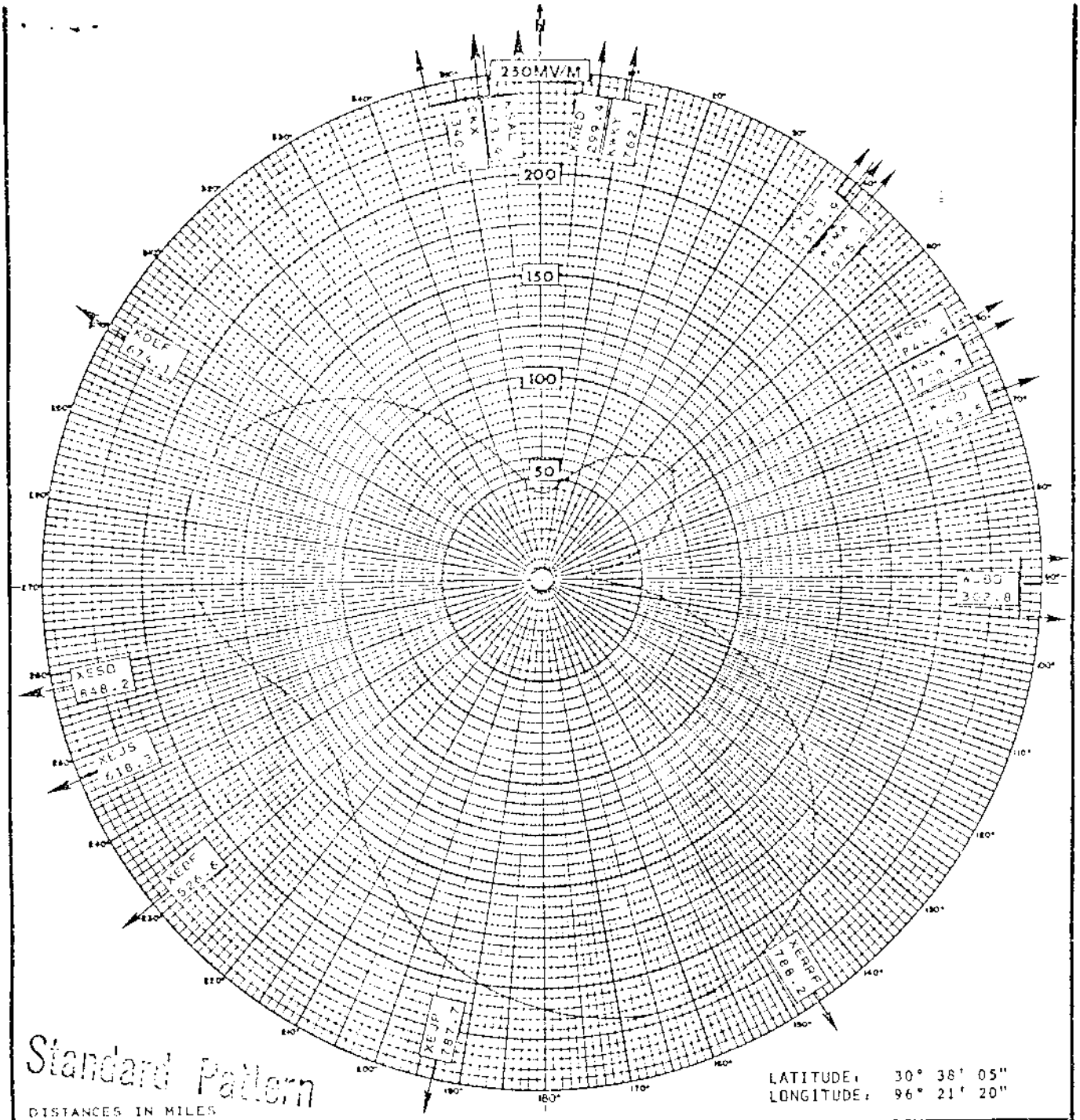
SPACING AND ORIENTATION: From reference tower #1, tower #2 is located 278.0' (117.0°) on a line bearing 194.0° true, and tower #3 is located 412.8' (173.7°) on a line bearing 173.5° true.

GROUND SYSTEM: 120 - 310' equally spaced copper radials about tower #2, 120-80' to 300' copper radials about tower #1 and #3, plus a 24' square ground screen about towers #1 and #3. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	192 mv/m		
Night	133.31 mv/m	165.83 mv/m	139.98 mv/m

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

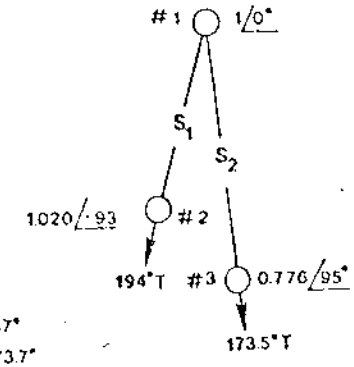


LBA

LAWRENCE BEHR ASSOCIATES, INC.

GREENVILLE, N.C. 27834

ANTENNA PARAMETERS



$S_1 = 117°$
$S_2 = 173.7°$
$G_2 = 93.6°$
$G_1 = G_3 = 60°$

RSS_{TH}/RMS_{TH}	= 1.244
RSS_{TN}	= 165.831
RSS_{STD}	= 174.122
RMS_{TH}	= 133.310
RMS_{STD}	= 139.976
$R_{(1,2,3)}$	= 1.0 OHMS

FIGURE 9A

PROPOSED STANDARD NIGHTTIME HORIZONTAL PATTERN

RADIO BRYAN, INC.
RADIO STATION WTAW
COLLEGE STATION, TEXAS

1150 KHZ, 1.0D/0.5N

3-76

WTMP

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WTMP

Main Studio: Temple Terrace, Florida

Frequency: 1150 kHz

Power: 2.5kw Night 5 kw Day

Notification List No. 1781

Date: October 19, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTERS OF THE ANTENNA SYSTEMS:

DAYTIME				NIGHTTIME			
North Latitude:	27°	56'	51"	North Latitude:	28°	03'	49"
West Longitude:	82°	23'	50"	West Longitude:	82°	18'	43"

ANTENNA CHARACTERISTICS

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

TOWER:	#1	#2	#3	#4	#5	#6
HEIGHT ABOVE INSULATORS:	1,237.98'	6332.1(136°)	1237.98'	1237.98'	1237.98'	1237.98'(100.17°)
NIGHT PHASING:	0	-21.48°	-19.43°	-22.87°	-0.04°	-.83
NIGHT FIELD RATIO:	1	1.419	3.308	1.677	1.926	2.4

SPACING AND ORIENTATION: With tower #1 as reference, tower #2 is spaced 253.74° on a line bearing 214° true, tower #3 is spaced 263.75° on a line bearing 291.32° true, tower #4 is spaced 417.94° on a line bearing 313.95° true, tower #5 is spaced 342.13°T on a line bearing 347.98° true, tower #6 is spaced 169.63° on a line bearing .03° true

GROUND SYSTEM: 120 - 215' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to copper straps along intersections between towers.

100.17° 237.98'
136° 325.11'

WTMP

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day 1/	400 mv/m		
Night	341.05 mv/m	600.9 mv.m	358.10 mv/m

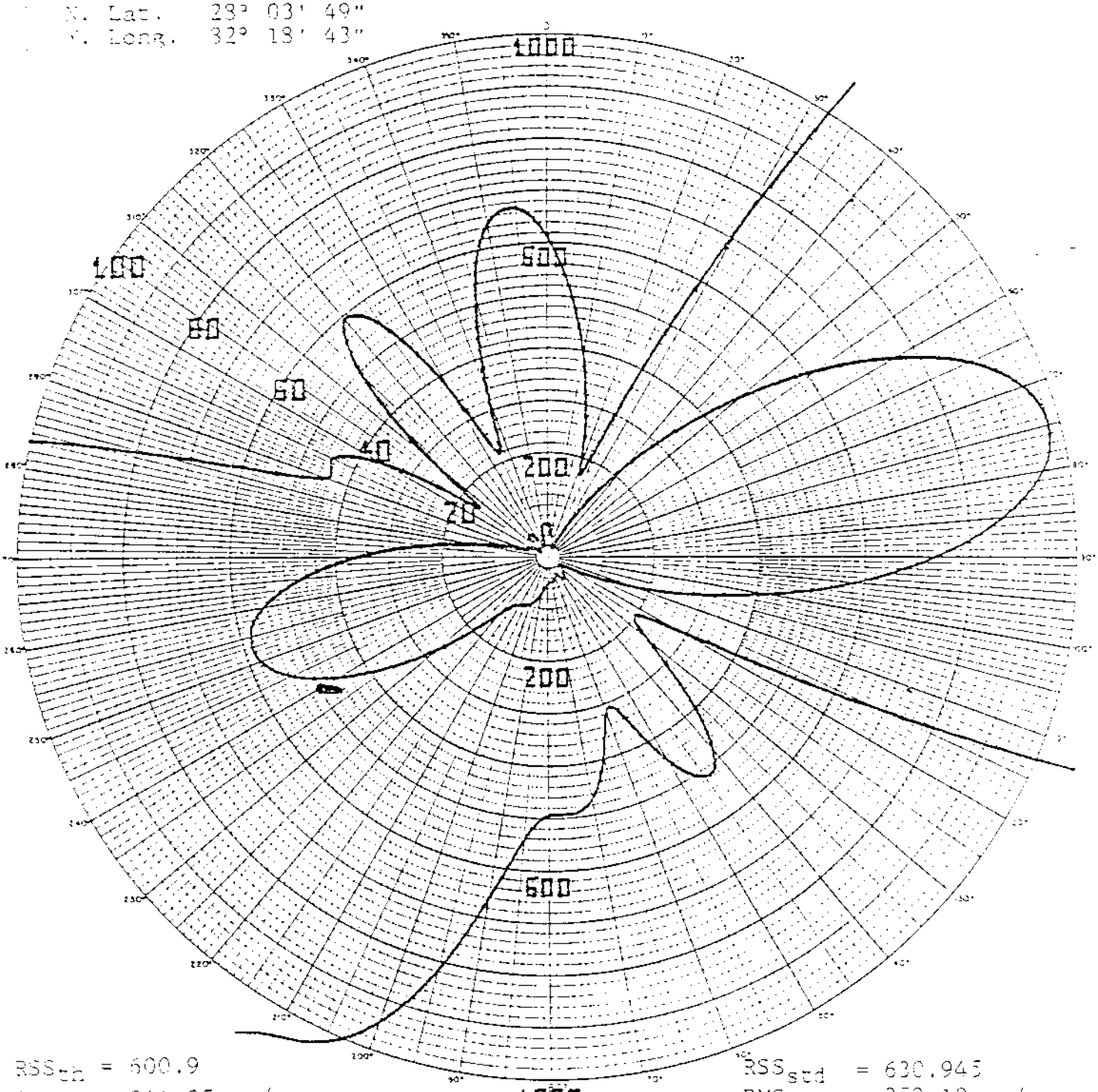
Note: Please retain the Daytime directional antenna radiation pattern notified for Station WIOK in United States Change List Number 708 dated May 29, 1957 and attach to this Revised Description Sheet and Nighttime pattern. This notification concerns only a change in the Nighttime operation of the station with Daytime operation continued as previously notified.

CTR NO

Geographic Coordinates:

N. Lat. 28° 03' 49"
W. Long. 82° 18' 43"

STANDARD PATTERN WTMP



RSS_{th} = 600.9

RMS_{th} = 341.05 mv/m

RSS_{std} = 630.945

RMS_{std} = 358.10 mv/m

	FIELD RATIO	SPACING DEGREES	AZIMUTH DEGREES	[illegible] DEGREES
[illegible]	1.000	0.00	0.00	0.00
[illegible]	0.919	253.74	241.00	-11.48
[illegible]	0.752	228.75	291.31	-19.97
[illegible]	1.077	417.94	313.96	-22.[illegible]
[illegible]	1.920	342.13	347.96	[illegible]
[illegible]	2.496	189.66	0.03	[illegible]

PROPOSED NIGHTTIME
RADIO STATION WTMP
TEMPLE TERRACE, FLA.,
1150KHz 2.5KW DA-2

JAMES M. JOHNSON & ASSOCIATES
RADIO ENGINEERING
5912 Barbados Way West
West Palm Beach, Florida 33407

FIGURE 9

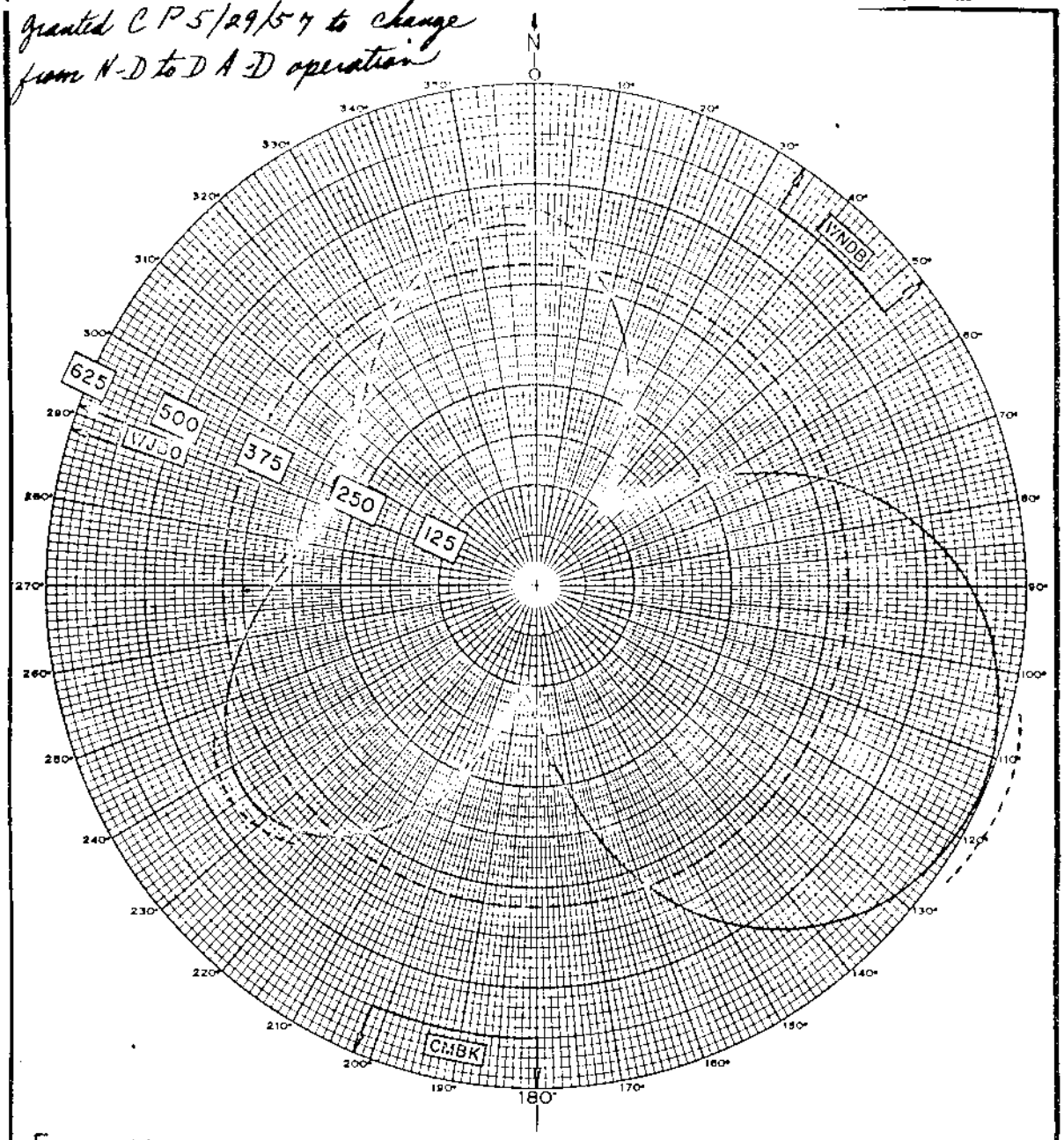
TAMPA, FLA.

WTMI

PROPOSED DAY Rounsaville of Charlotte, Inc.
(12-18-56g) Tampa, Florida 5 KW, DA-D, D 1150 KC

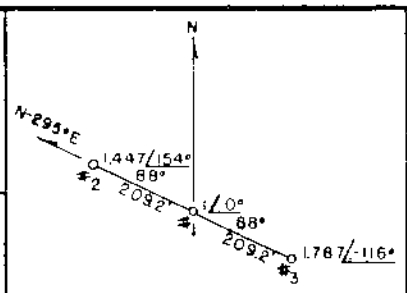
granted CP 5/29/57 to change from N-D to DA-D operation

granted for increase in power and installation of DA.



LATITUDE: 27° 56' 50.8"
LONGITUDE: 82° 23' 50"

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



G_2 = 90.5°
G_1, G_3 = 75.8°

FIGURE 4

DAYTIME
HORIZONTAL POLAR PATTERN

RADIO STATION WIOK
TAMPA, FLORIDA

1150 KC 5 KW-DA-D

FCC File No.
BP-10,926 Accepted 12-10-56

Station, Rounsaville of Charlotte, Inc.
Tampa, Florida 1150 KC

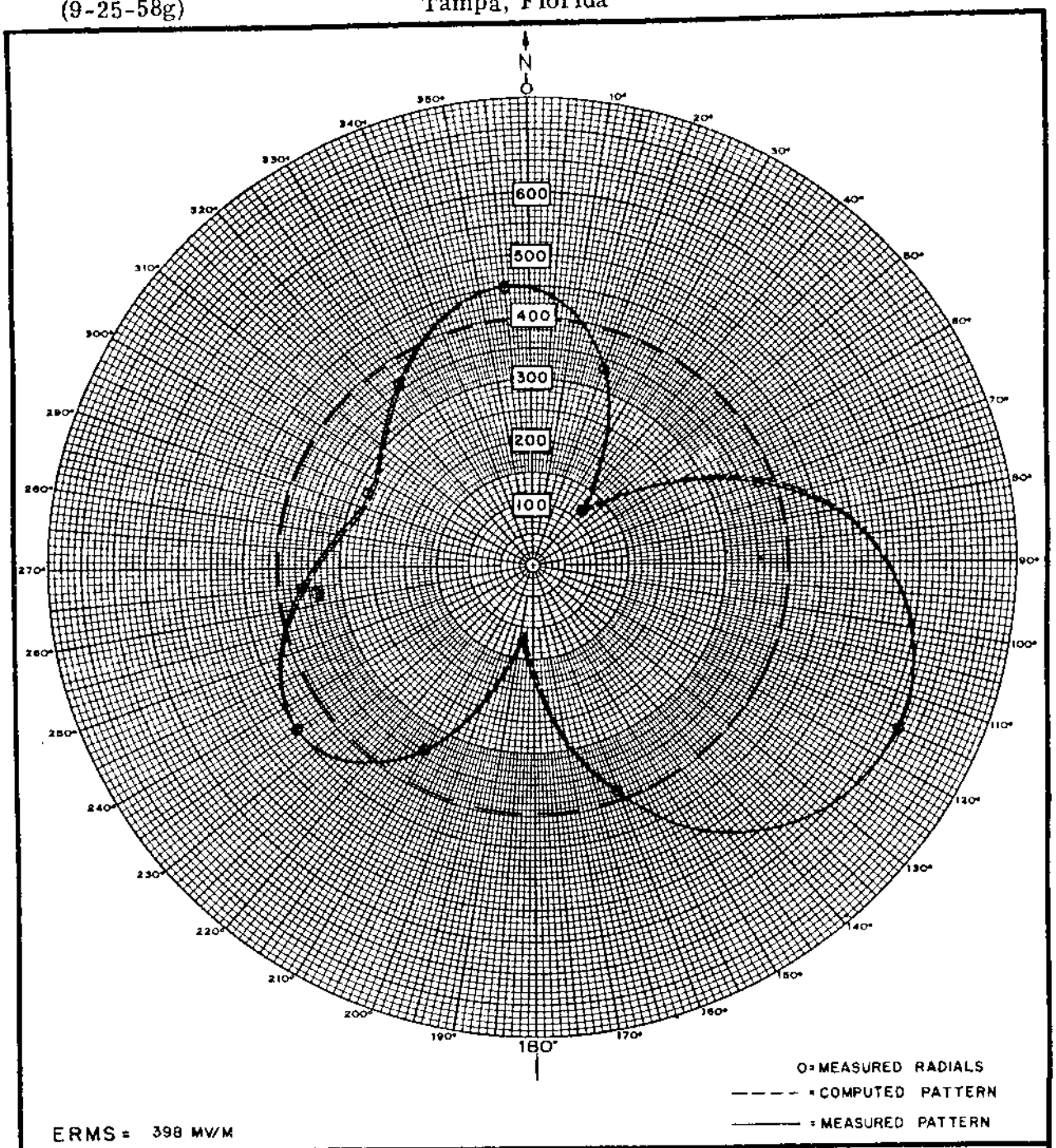
WTMP

MEASURED DAY
(9-25-58g)

Station WTMP
Tampa, Florida

5kw, DA-D,D
1150 KC

granted licence for increased power and DA-7-16-59



LATITUDE: 27° 56' 50.8"
LONGITUDE: 82° 23' 50"

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

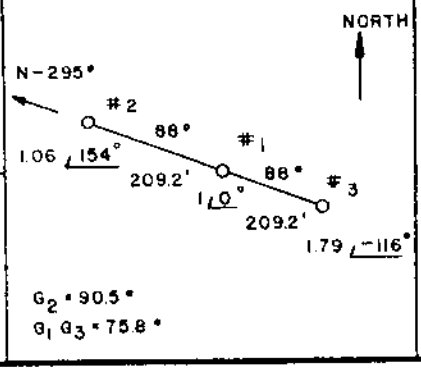


FIGURE 20
MEASURED DAYTIME
HORIZONTAL POLAR PATTERN

RADIO STATION WTMP
TAMPA, FLORIDA

1150 KC
5 KW-DA-D

FCC File No. BL-7206
Accepted 9-18-58

WTMP
Tampa, Florida

1150 KC

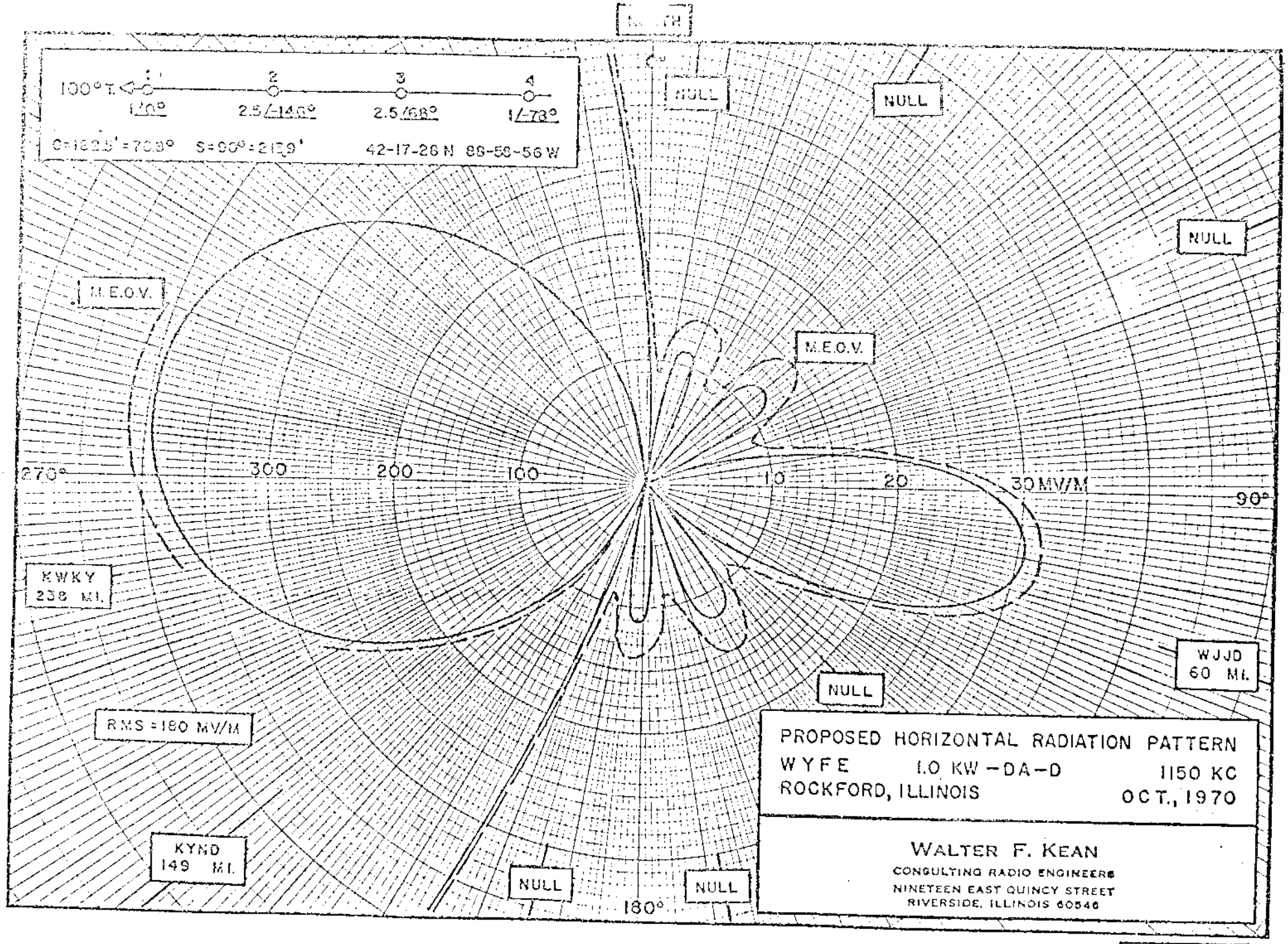

100° T.
1 1/-60°
2 2.5/-146°
3 2.5/68°
4 1/-73°
42-17-26 N 88-58-56 W
NULL
NULL
NULL
M.E.O.V.
M.E.O.V.
270°
300
200
100
10
20
30 MV/M
90°
KWKY
238 MI.
WJJD
60 MI.
NULL
RMS = 180 MV/M
KYND
149 MI.
NULL
NULL
180°
PROPOSED HORIZONTAL RADIATION PATTERN
WYFE 1.0 KW - DA - D 1150 KC
ROCKFORD, ILLINOIS OCT., 1970
WALTER F. KEAN
CONSULTING RADIO ENGINEERS
NINETEEN EAST QUINCY STREET
RIVERSIDE, ILLINOIS 60546

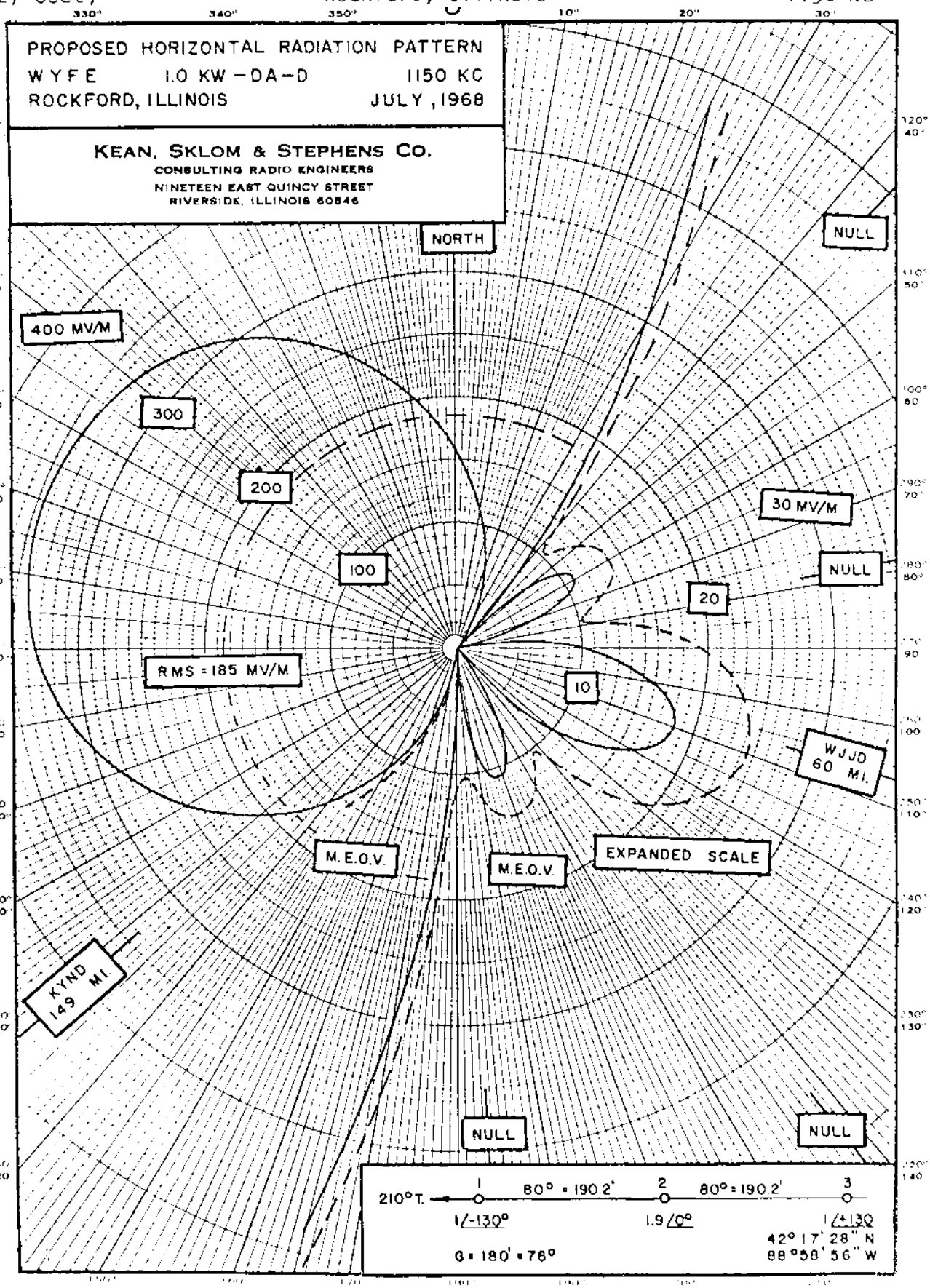
FIGURE 1

WYFE

Proposed Day
(12-27-68ct)

Station WYFE
Rockford, Illinois

1kw,DA-D,D
1150 kc



FCC File No.BP-18292
Accepted 12-6-68

Station WYFE
Rockford, Illinois

1150 kc

WYNE
1150KHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WYNE

Main Studio: Kimberly, Wisconsin

Frequency: 1150 kHz

Power: 5kw Night 5kw Day

Notification List No. 1785

Date: November 16, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 44° 08' 48"
West Longitude: 88° 28' 54"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation (DA-2)
Number of elements: 5
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	N(#1)	NC(#2)	C(#3)	SC(#4)	S(#5)
HEIGHT ABOVE INSULATORS:	215'	215'	215'	215'	215' (90.5°)
NIGHT PHASING:	-130°	25°	180°	-25°	130°
NIGHT FIELD RATIO:	1.0	2.9425	3.97	2.9425	1.0
DAY PHASING:	-32°	102.32°	-117.01°	32°	---
DAY FIELD RATIO:	1.0	1.5392	1.1762	.3802	---

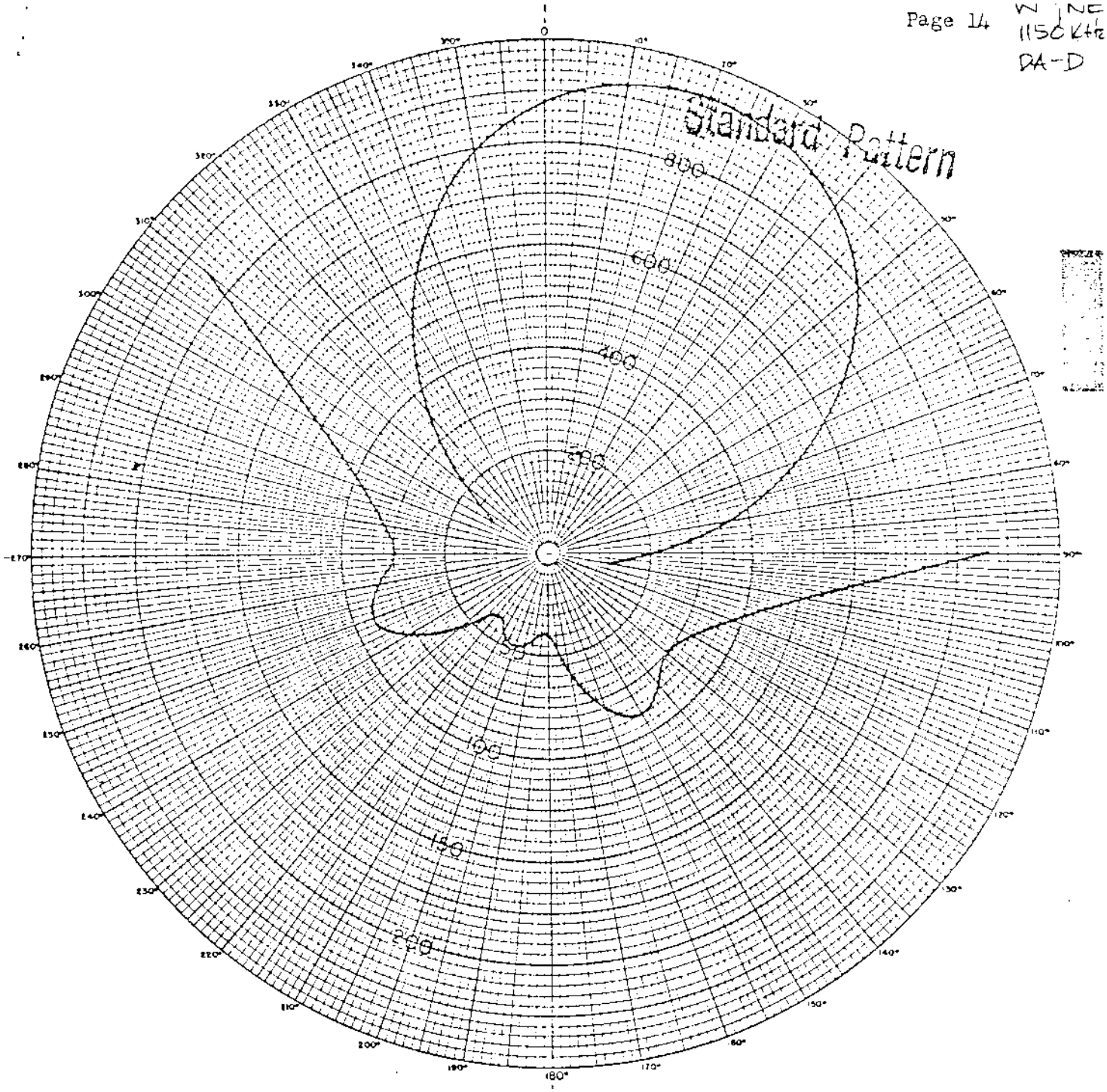
SPACING AND ORIENTATION: Five towers in a row are spaced 237' (100°) on a line bearing 20° true.

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

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	428 mv/m	597.6 mv/m	449 mv/m
	430 mv/m	991.5 mv/m	452 mv/m

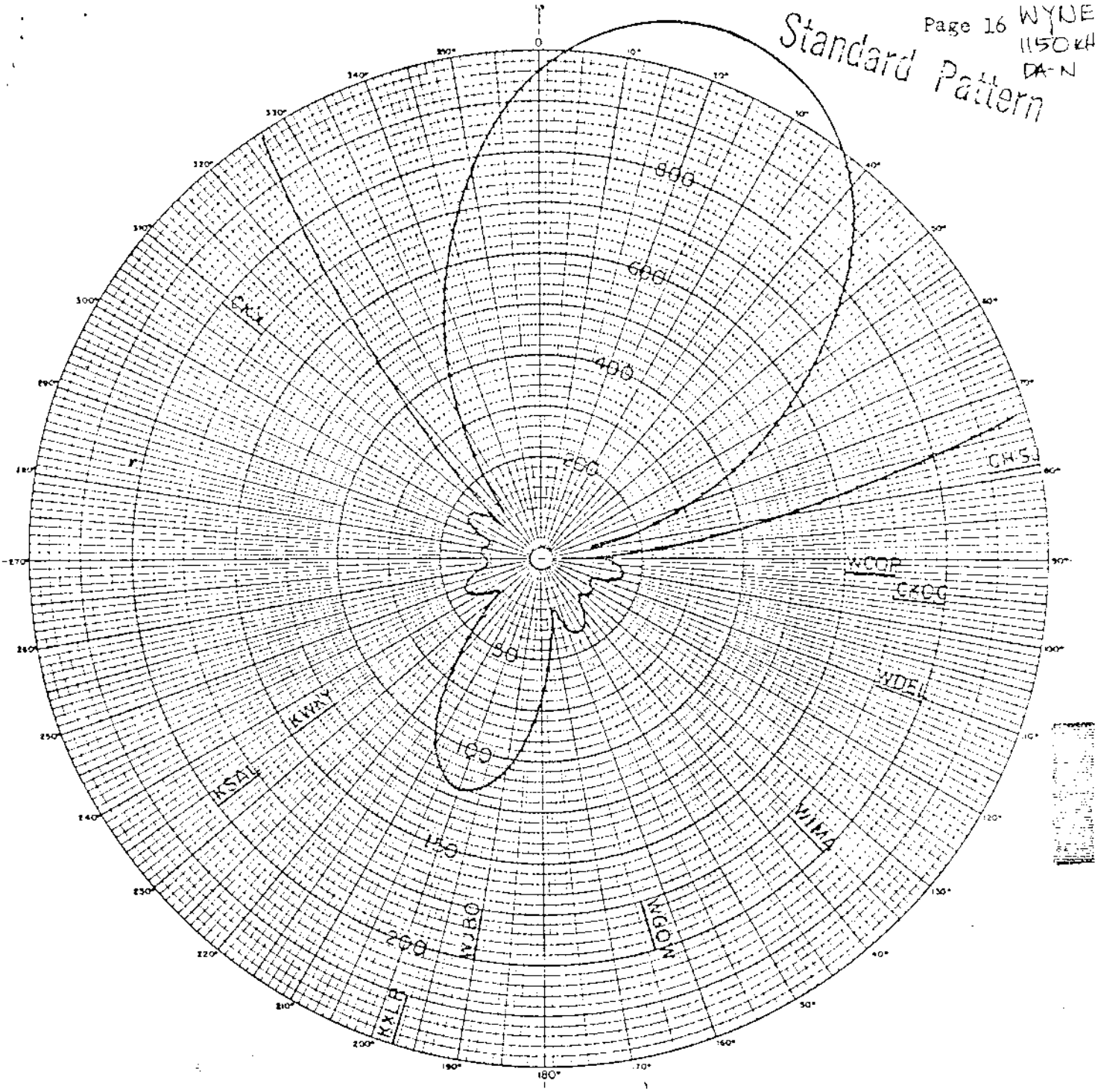
W INE
1150 Kfz
DA-D



HORIZONTAL RADIATION PATTERN	Standard Pattern
20° / 1 ∠-32° / 100° / 1.5392 ∠102.32° / 100° / 1.1762 ∠-117.01° / 100° / 0.3802 ∠32°	E_{th} (RMS) = 428 E_{st} (RMS) = 450 E_{rss} = 597.6 A - 215/220' (90°)
APPLICANT : WZNE	
LOCATION : Kimberly, Wisconsin	
FREQUENCY : 1150 KC/S	
POWER : 5000 Watts	
LATITUDE : 44 DEG 08 MIN. 28 SEC.	
LONGITUDE : 88 DEG 32 MIN 54 SEC	
WHEN USED : Daytime	
R.M.S. FIELD : 428 MV/M	
DATE November 15th, 1977	
RALPH J. BITZER CONSULTING RADIO ENGINEERS ST. LOUIS, MISSOURI	

WYNE
1150 kH
DA-N

Standard Pattern



HORIZONTAL RADIATION PATTERN	Standard Pattern 0°
1 ∠-130°	E_{th} (RMS) = 430.0
2.9425 ∠25.0°	E_{sl} (RMS) = 452.3
3.9700 ∠180.0°	E_{rss} = 991.5
2.9425 ∠-25.0°	A - 215/220° (90°)
1 ∠130°	

100° 100° 100° 100° 20° True

APPLICANT	WLIB
LOCATION	Kimberly, Wisconsin
FREQUENCY	1150 KC/S
POWER	5000 Watts
LATITUDE	44 DEG 08 MIN 18 SEC.
LONGITUDE	88 DEG 28 MIN 24 SEC.
WHEN USED	Nighttime
R.M.S. FIELD	430 MV/M
DATE	November 25th, 1970

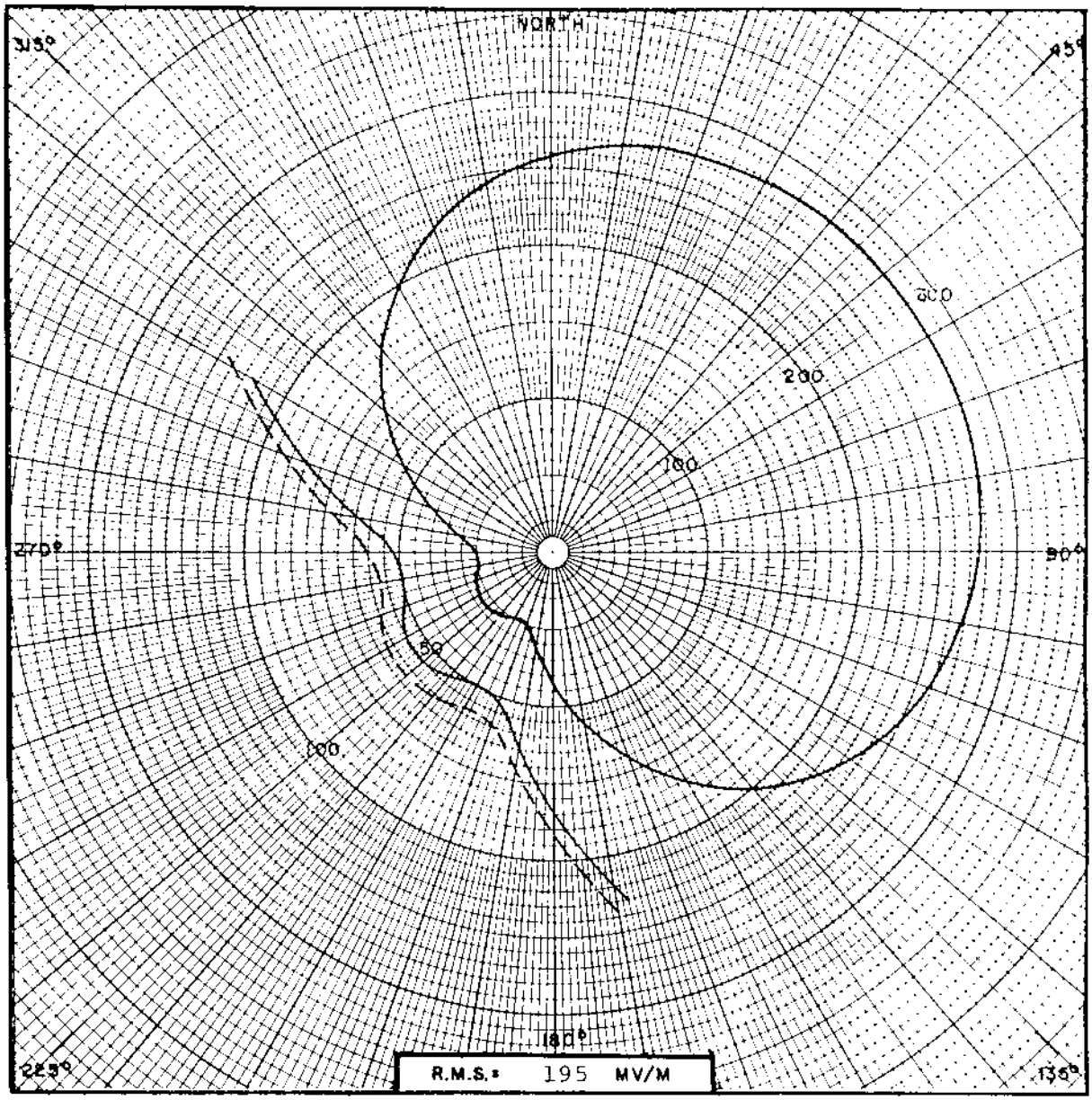
RALPH J. BITZER
CONSULTING RADIO ENGINEERS
ST. LOUIS, MISSOURI

Proposed Day
(10-26-70ct)

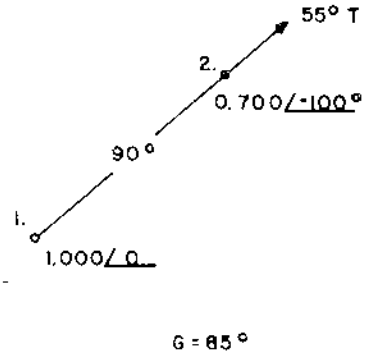
Station WYNE
Appleton, Wisconsin

SEE REVERSE SIDE

WYNE
1kw, DA-D, D
1150 kc



PATTERN PARAMETERS



DIRECTIONAL
RADIATION PATTERN
TOTAL RADIO, INC

☐ MEASURED ☒ PROPOSED

FREQ: 1150 (KHZ) POWER 1.0 (KW) ☒ DA-D
N. LAT. 44° 11' 50" ☐ DA-N
W. LONG. 88° 30' 30" ☐ N-D

LOCATION: Appleton, Wisconsin

DATE: June 1969

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No. BP-18319
Accepted Amended 9-9-69

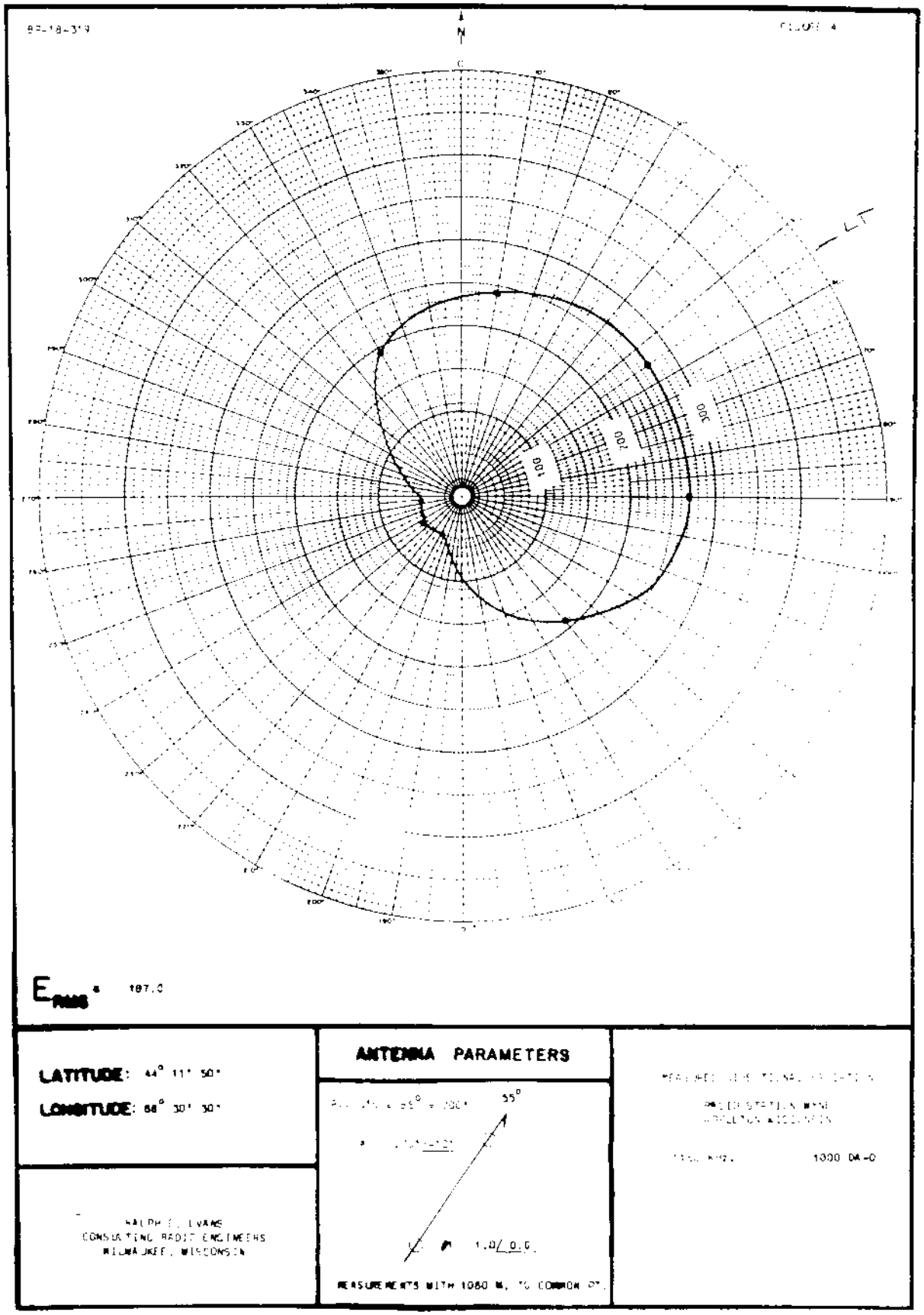
Station WYNE
Appleton, Wisconsin

1150 kc

Measured Day
(10-26-70ct)

Station WYNE
Appleton, Wisconsin

WYNE
1kw,DA-D,D
1150 kc



FCC File No.BL-12730
Accepted 9-30-70

Station WYNE
Appleton, Wisconsin

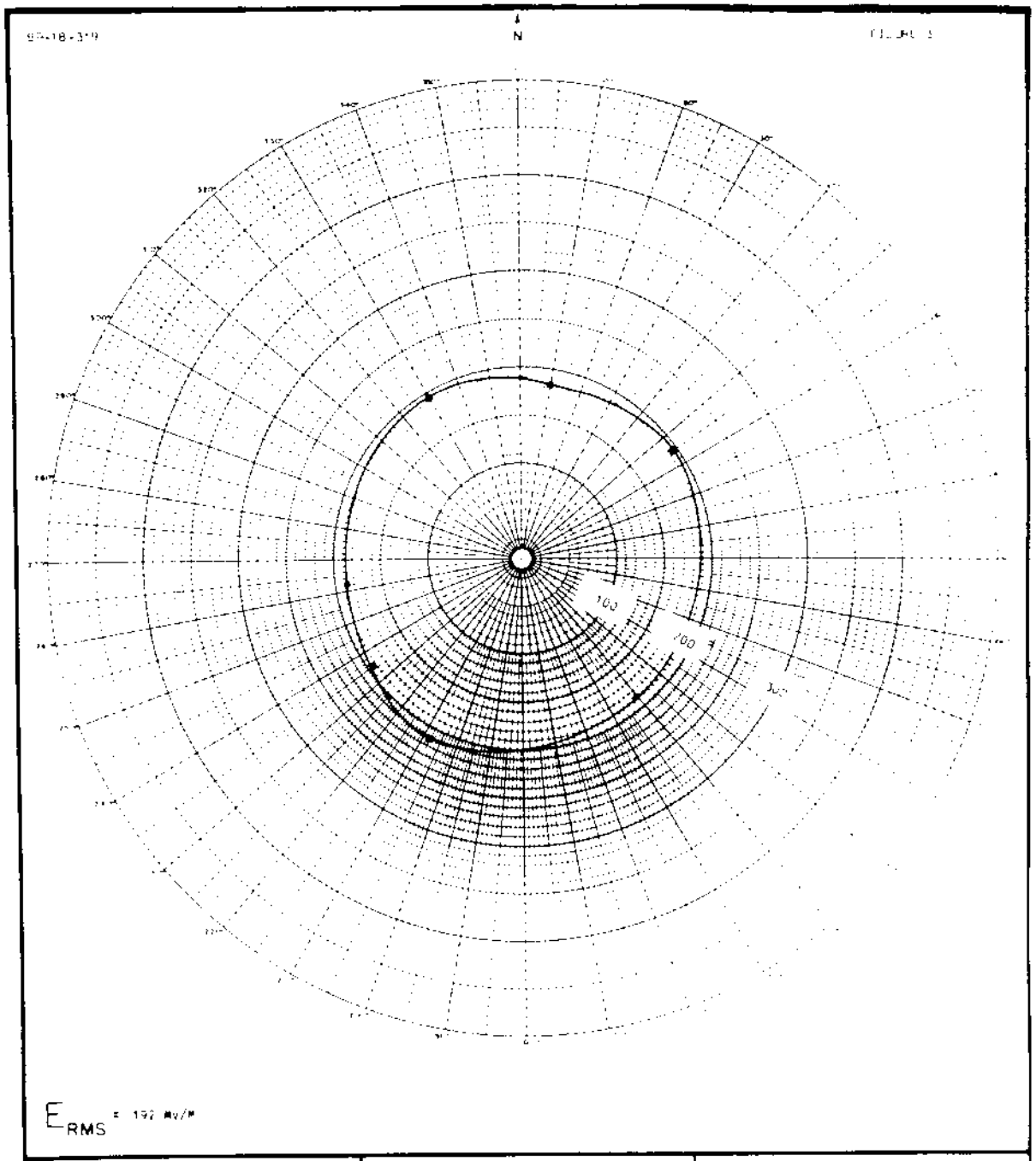
1150 kc

WYNE

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

Station WYNE
Appleton, Wisconsin

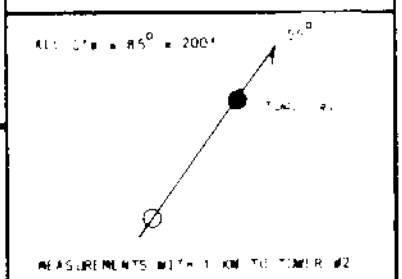
1kw,DA-D,D
1150 kc



LATITUDE 44° 11' 50"

LONGITUDE 88° 30' 30"

ANTENNA PARAMETERS



MEASURED NON-DIRECTIONAL RADIATION

RADIO STATION WYNE
APPLETON WISCONSIN

1150 KHz. 1KW DA-D

FCC File No.BL-12730
Accepted 9-30-70

Station WYNE
Appleton, Wisconsin

1150 kc

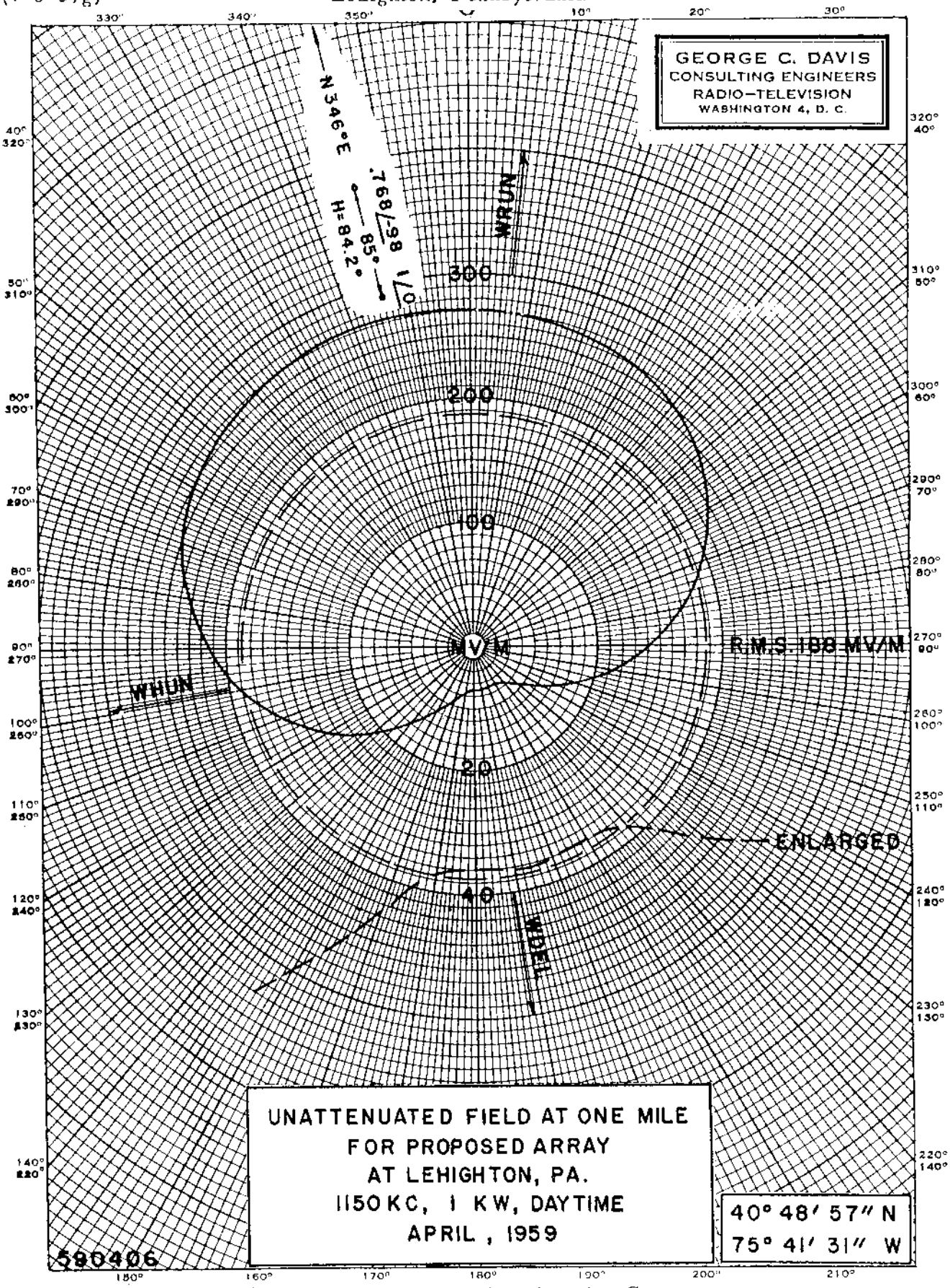
Lehighton Pa

WYNS

PROPOSED DAY
(7-8-59g)

New; Valley B/C Co.
Lehighton, Pennsylvania

1kw, DA-D, D
1150 KC



FCC File No. BP-11651
Accepted 5-15-59 (Amended)

Valley Broadcasting Company
Lehighton, Pennsylvania

1150 KC

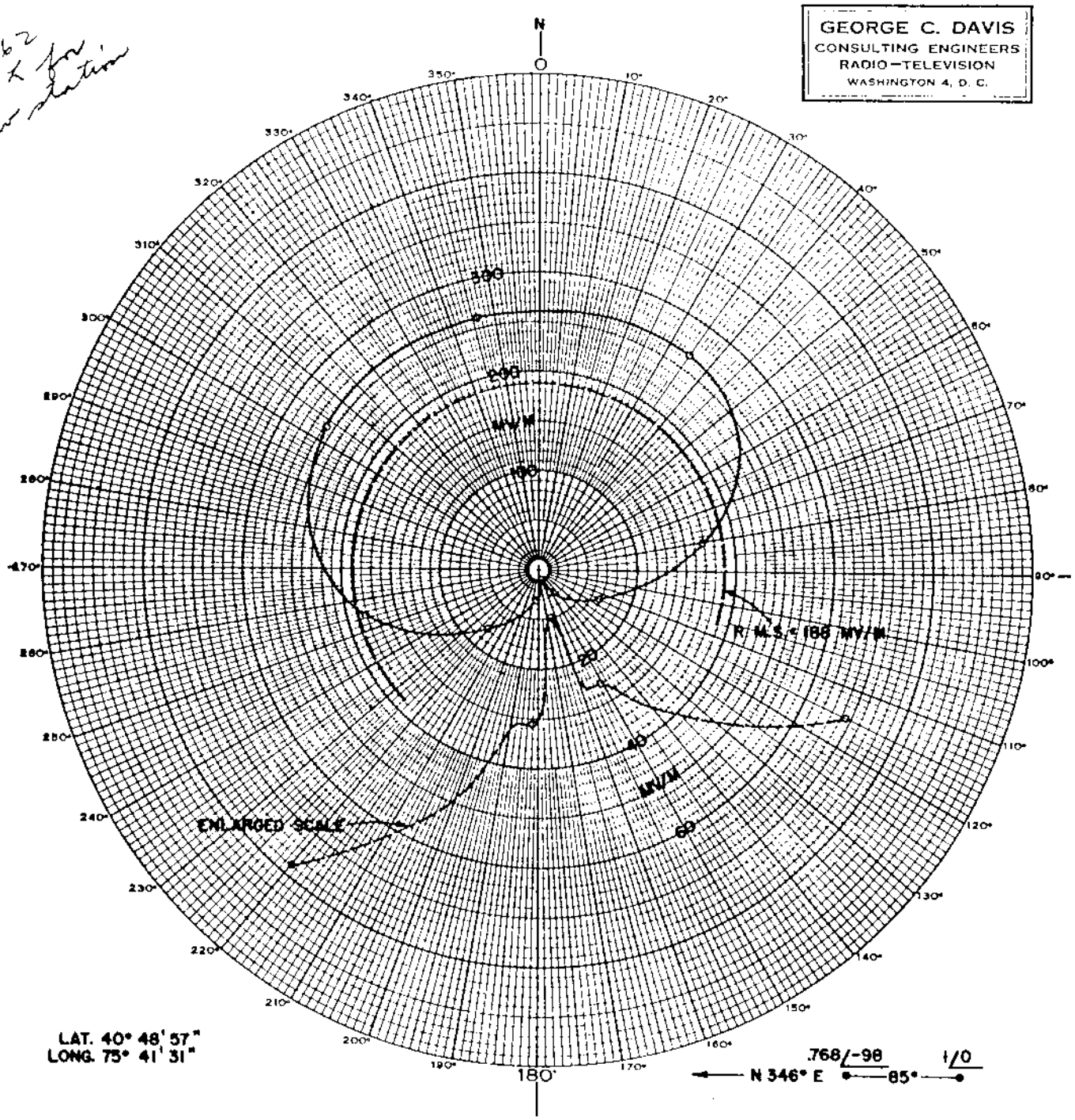
WYNS

Measured Day
(5-25-62ct)

Station WYNS
Lehighton, Pennsylvania

1kw,DA-D,D
1150 kc

6-21-62 granted K for a new station



MEASURED
HORIZONTAL PLANE PATTERN
FOR DIRECTIONAL DAYTIME OPERATION
WYNS - LEHIGHTON, PENNSYLVANIA
1150 KC - 1 KW - DA-D
MARCH 1962

FCC File No.BL-9250
Accepted 5-14-62

Station WYNS
Lehighton, Pennsylvania

1150 kc

WYNS

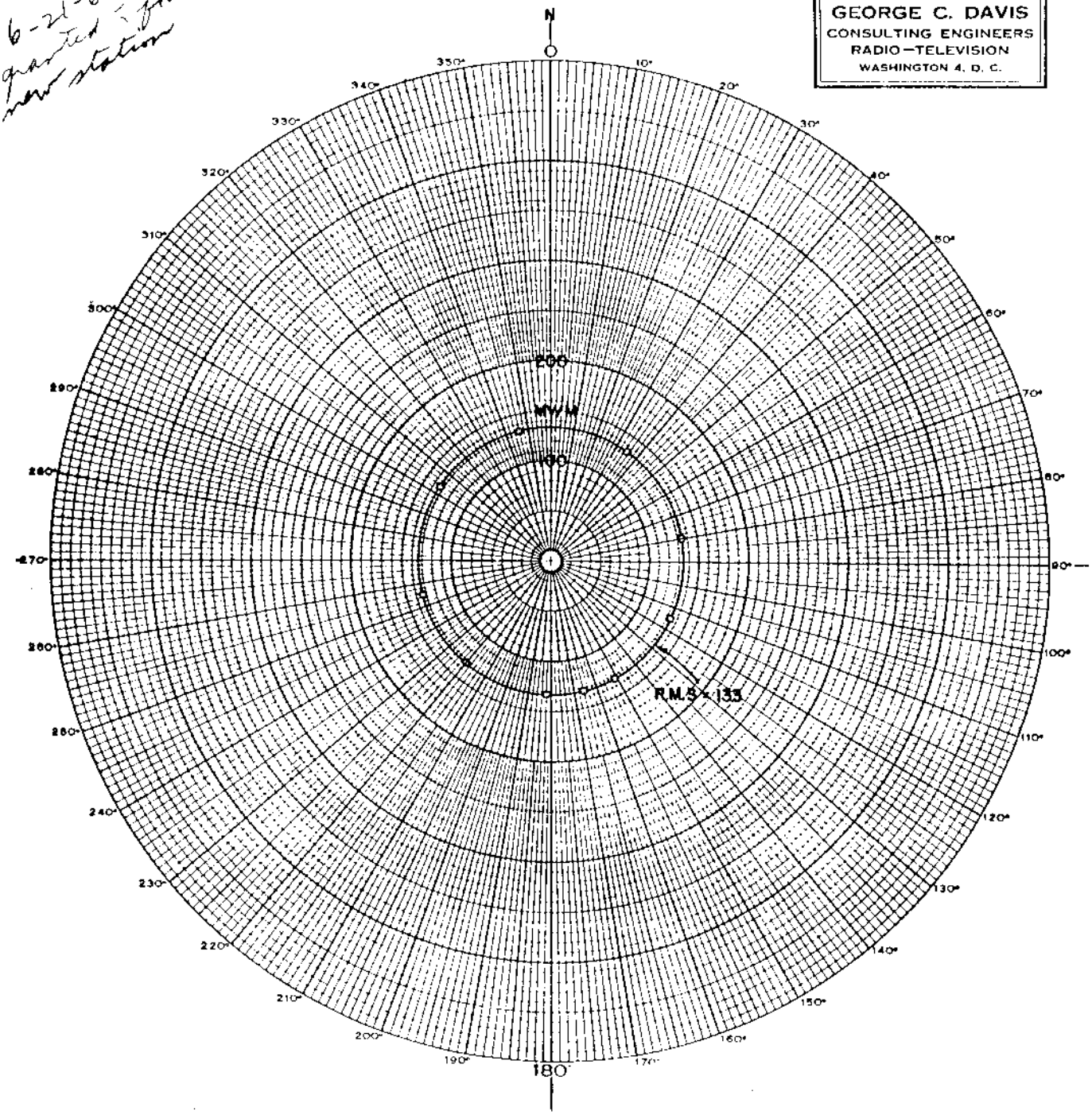
Measured Non-DA
(5-25-62ct)

Station WYNS
Lehighton, Pennsylvania

1kw,DA-D,D
1150 kc

6-21-62
granted for a
new station

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



MEASURED
HORIZONTAL PLANE PATTERN
FOR NON-DIRECTIONAL DAYTIME OPERATION
WYNS - LEHIGHTON, PENNSYLVANIA
1150 KC - 0.5 KW - ND-D
MARCH 1962

FCC File No.BL-9250
Accepted 5-14-62

Station WYNS
Lehighton, Pennsylvania

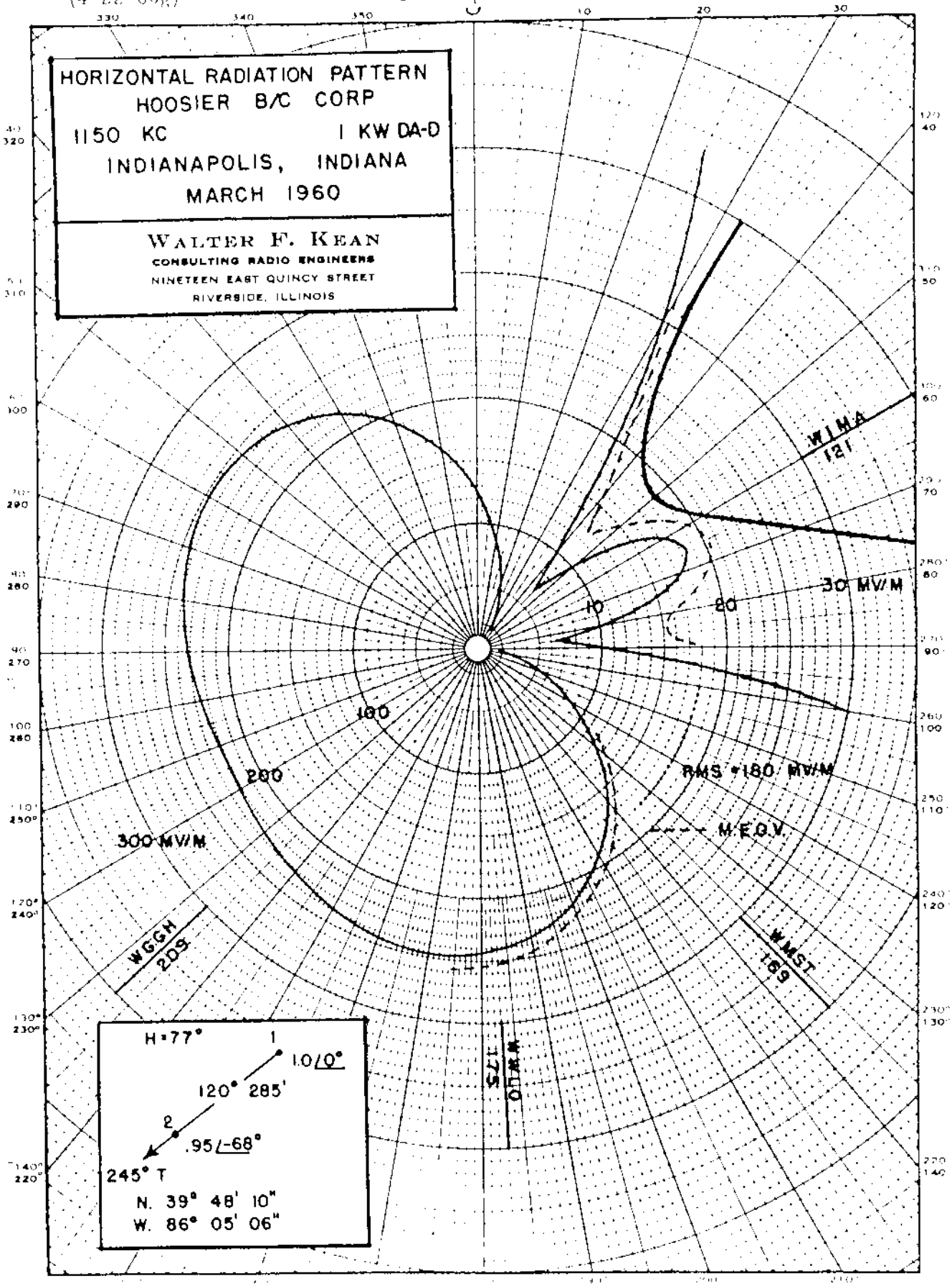
1150 kc

Indianapolis

PROPOSED DAY
(4-22-60g)

New; Hoosier B/C Co.
Indianapolis, Indiana

1kw, DA-D,D
1150 KC



FCC File No. BP-14000
Accepted 4-6-60

Hoosier Broadcasting Company
Indianapolis, Indiana

1150 KC

Indianapolis, Ind.

PROPOSED DAY
(4-22-60g)

New; Independent Indianapolis B/C Corp.
Indianapolis, Indiana

1kw, DA-D,D
1150 KC

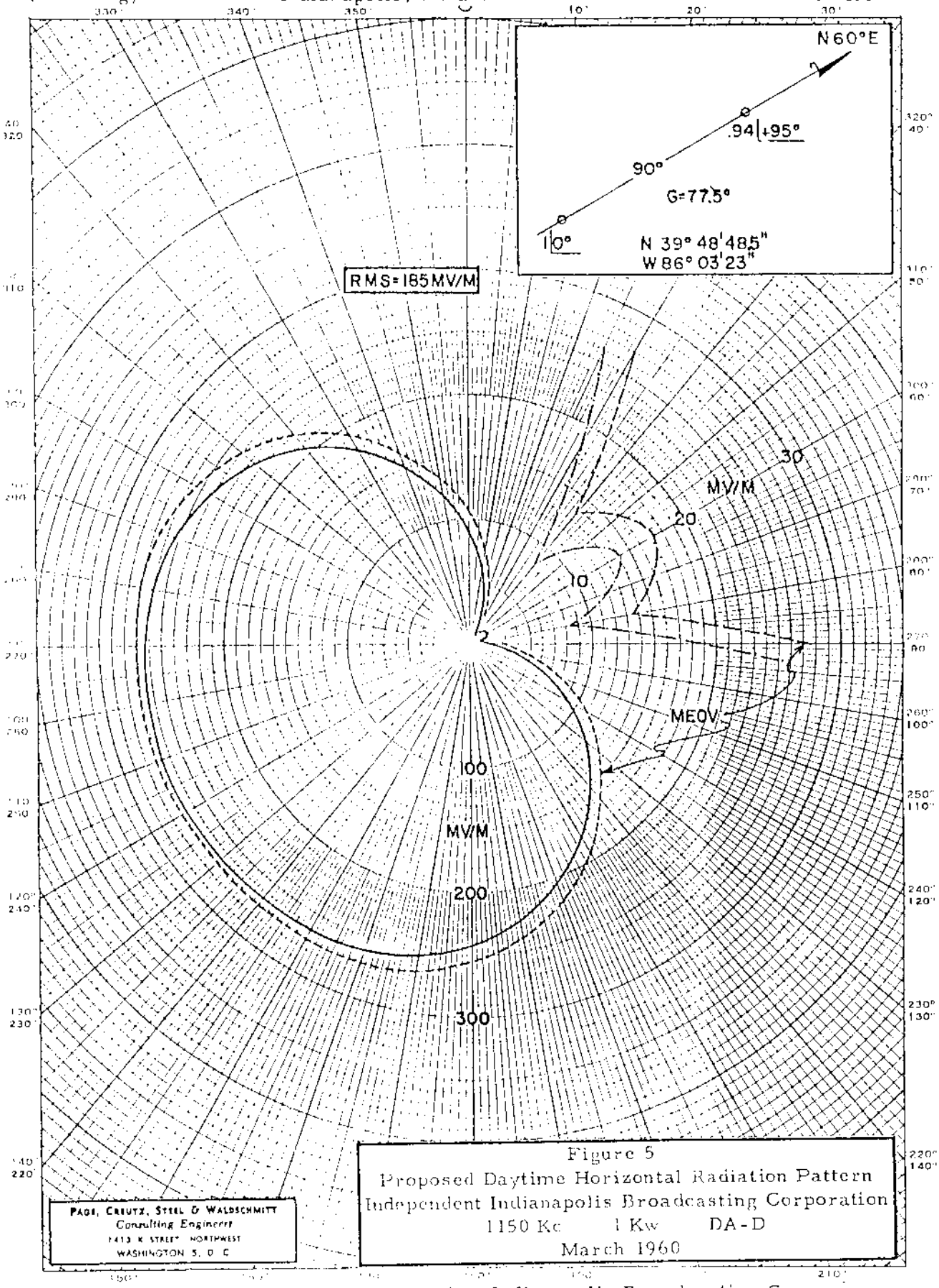


Figure 5
Proposed Daytime Horizontal Radiation Pattern
Independent Indianapolis Broadcasting Corporation
1150 Kc 1 Kw DA-D
March 1960

FCC File No. BP-14032
Accepted 4-12-60

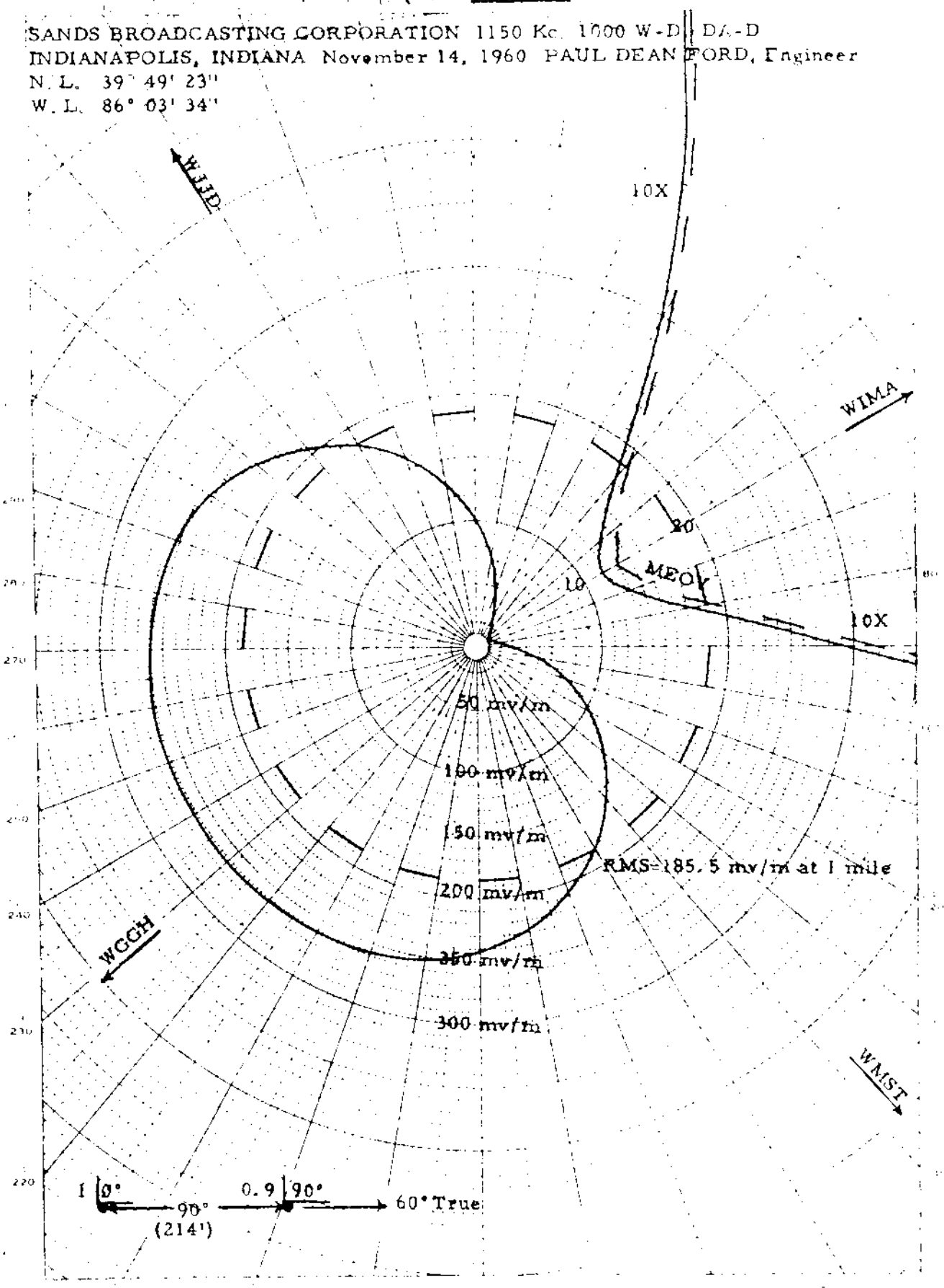
Independent Indianapolis Broadcasting Corp.
Indianapolis, Indiana

1150 KC

PROPOSED DAY (2-17-61q)

New; Sands Bcstng. Corp. Indianapolis, Indiana

1kw, DA-D,D 1150 KC



FCC File No. BP-12700
Accepted 2-14-61 (Amended)

Sands Broadcasting Corporation
Indianapolis, Indiana

1150 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: XEAD

Main Studio: Guadalajara, Jal.

Frequency: 1150 kHz

Power: 20 kw

Notification List No. 283

Date: March 8, 1978

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 20° 39' 52"
West Longitude: 103° 14' 44"

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:	W(#2)	C(#1)	E(#3)
HEIGHT ABOVE INSULATORS:	214'	214'	214' (90°)
PHASING:	-135°	0°	+135°
FIELD RATIO:	0.55	1	0.55

SPACING AND ORIENTATION: Adjacent towers are spaced 190.2' (80°) on a line bearing 106° true.

GROUND SYSTEM: 120 - 214' equally spaced copper 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

968.6 mv/m

HOJA DESCRIPTIVA DEL SISTEMA RADIADOR DE LA ESTACION

1. LISTA DE CAMBIOS ----------
2. FECHA ----------
3. FRECUENCIA 1150 KHz.
4. DISTINTIVO XEAD
5. POBLACION GUADALAJARA, JAL
6. UBICACION. PREDIO RUSTICO, MPIO. TONALÁ, JAL. LAT. NORTE 20°39'52" LON. OESTE 103°14'44"
7. POTENCIA 20 KW
8. CLASE III

CARACTERISTICAS TECNICAS DEL RADIADOR

9. TIEMPO DE OPERACION DIURNO
10. SISTEMA DEL RADIADOR DIRECCIONAL
11. NUMERO DE ELEMENTOS 3

TIPO DE ELEMENTOS RADIADORES

12. TIPO DE ALIMENTACION SERIE
13. SECCION TRANSVERSAL FORMA TRIANGULAR, DIEMSIONES..60 CENTIMETROS
14. TIPO DE ELEMENTO RADIADOR ARRIOSTRADA
15. TIPO DE SOPORTE CON RETENIDAS..TIPO DE RETENES..CABLE TRENZADO CON AISLADORES
16. LONGITUD DE TOPETE CAPACITIVO NO USA
17. PERDIDAS DE IMPEDANCIA EN LA BASE EN SERIE 3 OHMS
18. No. DE ELEMENTOS RADIADORES 3
19. ALTURA SOBRE EL ASILADOR 90°E (65.22 METROS) CADA TORRE
20. DEFASAMIENTO ± 135° CON REFERENCIA A LA TORRE CENTRAL
21. RELACION DE CORRIENTES 0.55
22. DESCRIPCION DE LA ORIENTACION DEL SISTEMA RADIADOR
AZIMUT DEL EJE DE LAS TORRES 106°

SISTEMA DE TIERRA

23. No. DE RADIALES POR ELEMENTO 120
24. LONGITUD DE LOS RADIALES 65.22 METROS
25. TIPO DEL RADIAL ALAMBRE DE COBRE AWG, No. 10

RADIACION DEL SISTEMA

26. INTENSIDAD DE CAMPO EFECTIVO TEORICO (OMNIDIRECCIONAL) DE LA POTENCIA RADIADA (RCM) 968.0 mV m
27. INTENSIDAD DE CAMPO EFECTIVO TEORICO A 1000 METROS POR KILOWATT DE POTENCIA RADIADO 194.0 mV m
28. NOTA

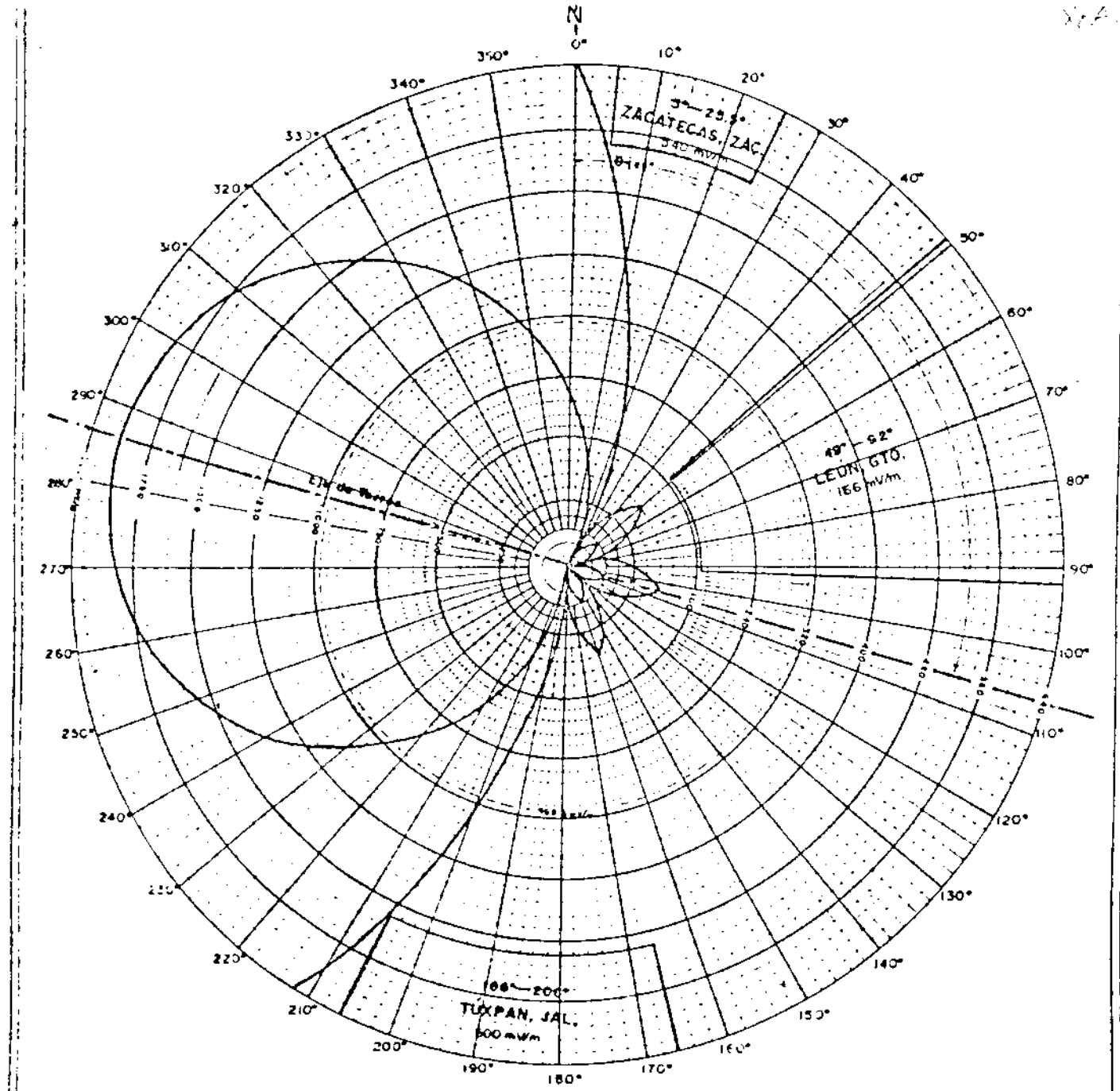
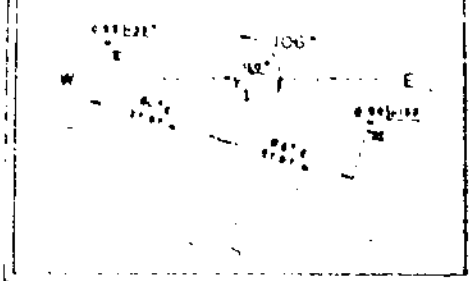


DIAGRAMA DE RADIACION HORIZONTAL CALCULADO EN mV/m A 1609 m.

2 - ESQUEMA DE LAS TORRES Y SU ORIENTACION RESPECTO AL NORTE GEOGRAFICO

AZIMUT
106°00'00"



3 - FRECUENCIA:

1150 KHz

XEAD

COORDENADAS GEOGRAFICAS

L.N. 20° 39' 52"
L.O. 103° 14' 44"

4.- PERITO EN TELECOMUNICACIONES

ING. JOSE LUIS GONZALEZ CORTEZ
Nº 26.

DISEÑO:

FILIBERTO SOLIS CERVANTES

GUADALAJARA, JAL. ____ JUNIO DE 1978

DIAGRAMA DE RADIACION HORIZONTAL TABULADO

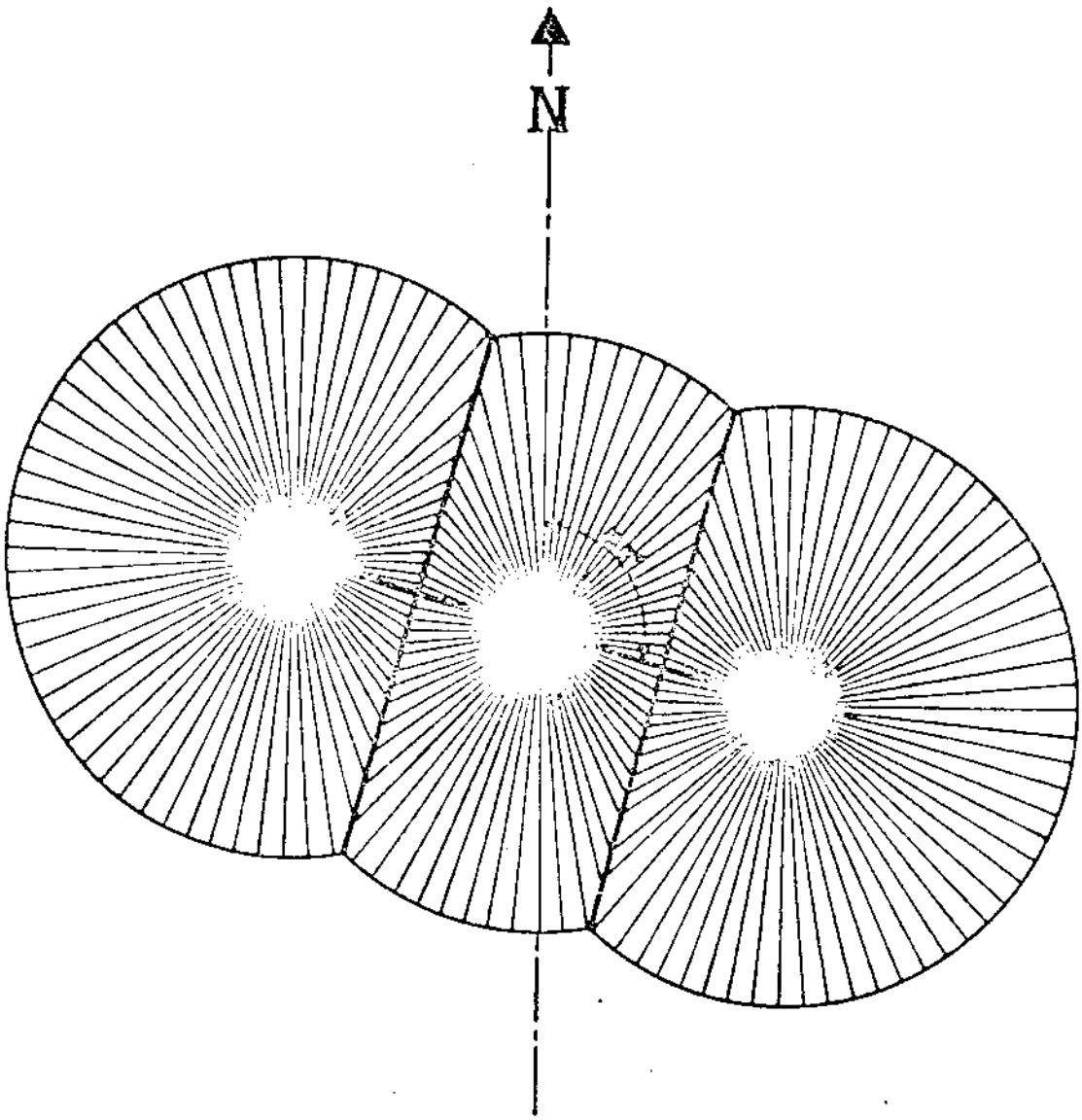
1.- OPERACION DIURNA 2.- XEAD

3.- 1150 KHz 4.- PREDIO MPIO. TONALA, JAL. 5.- 20 Kw

$E = 1257.41 \left[0.909 + \cos(80 \cos \phi + 135) \right]$

Azimut $\phi = \psi + 254°$		A	B	C	D	E	F mV/m a 1609m
ψ	ϕ	Cos ϕ	80 X (A)	B + 135	Cos (C)	0.909 + D	1257.706 X (E)
0°	254°	-0.276	-22.050	112.949	-0.390	0.519	652.706
2°	256°	-0.242	-19.353	115.646	-0.433	0.476	598.761
4°	258°	-0.208	-16.633	118.367	-0.475	0.434	545.567
5°	259°	-0.191	-15.265	119.735	-0.496	0.413	519.318
7°	261°	-0.156	-12.515	122.485	-0.537	0.372	467.653
10°	264°	-0.105	-8.362	126.638	-0.597	0.312	392.622
20°	274°	0.070	5.580	140.580	-0.773	0.136	171.614
26°	280°	0.174	13.892	148.892	-0.856	0.053	66.399
28°	282°	0.208	16.633	151.633	-0.880	0.029	36.563
30°	284°	0.242	19.354	154.354	-0.902	0.008	9.451
35°	289°	0.326	26.045	161.045	-0.946	-0.037	-46.243
40°	294°	0.407	32.539	167.539	-0.976	-0.067	-84.803
46°	300°	0.500	40.000	175.000	-0.996	-0.087	-109.639
50°	304°	0.559	44.735	179.735	-0.999	-0.091	-114.411
55°	309°	0.629	50.345	185.346	-0.996	-0.087	-108.955
60°	314°	0.695	55.573	190.573	-0.983	-0.074	-93.077
65°	319°	0.755	60.377	195.377	-0.964	-0.055	-69.413
70°	324°	0.809	64.721	199.721	-0.941	-0.032	-40.670
75°	329°	0.857	68.573	203.573	-0.917	-0.008	-9.492
85°	339°	0.934	74.686	209.686	-0.869	0.040	50.612
90°	344°	0.961	76.900	211.901	-0.849	0.060	75.491
95°	349°	0.982	78.530	213.530	-0.834	0.075	94.815
100°	354°	0.995	79.562	214.562	-0.824	0.086	107.489
105°	359°	0.999	79.968	214.968	-0.819	0.090	112.822
106	360°	1.000	80.000	215.000	-0.819	0.090	112.975
116°	10°	0.965	76.704	213.765	-0.831	0.078	97.909

Azimut $\phi = \psi + 254°$		A	B	C	D	E	F mV/m a 1609 m
ψ	ϕ	Cos ψ	80 X (A)	B + 135	Cos (C)	0.909 + D	1 257.706 X (E)
126°	20°	0.940	75.176	210.175	-0.865	0.045	55.966
136°	30°	0.866	69.282	204.282	-0.911	-0.003	- 3.184
146°	40°	0.766	61.283	196.283	-0.960	-0.051	- 63.984
156°	50°	0.643	51.423	186.423	-0.994	-0.035	-106.531
166°	60°	0.500	40.000	175.000	-0.996	-0.087	-109.639
176°	70°	0.342	27.361	162.361	-0.953	-0.044	- 55.310
186°	80°	0.174	13.891	148.891	-0.856	0.053	66.399
196°	90°	0.000	0.000	135.000	-0.707	0.202	253.862
19[illegible]	91°	-0.017	- 1.396	133.603	-0.689	0.219	275.790
198°	92°	-0.035	- 2.791	132.208	-0.671	0.237	298.226
199°	93°	-0.052	- 4.186	130.813	-0.653	0.255	321.150
200°	94°	-0.070	- 5.580	129.419	-0.634	0.274	344.538
201°	95°	-0.087	- 6.972	128.027	-0.616	0.293	368.370
203°	97°	-0.122	- 9.749	125.250	-0.577	0.332	417.269
206°	100°	-0.174	-13.891	121.108	-0.516	0.392	493.338
216°	110°	-0.342	-27.361	107.638	-0.303	0.605	761.979
226°	120°	-0.500	-40.000	95.000	-0.087	0.822	1 033.395
236°	130°	-0.643	-51.423	83.576	0.112	1.021	1 283.649
246°	140°	-0.766	-61.283	73.716	0.280	1.189	1 495.552
256°	150°	-0.866	-69.282	65.717	0.411	1.320	1 660.068
266°	160°	-0.939	-75.175	59.824	0.503	1.412	1 775.021
276°	170°	-0.984	-78.784	56.215	0.556	1.465	1 842.196
286°	180°	-1.000	-80.000	55.000	0.573	1.482	1 864.206
296°	190°	-0.984	-78.784	56.215	0.556	1.465	1 842.196
306°	200°	-0.939	-75.175	59.824	0.503	1.412	1 775.021
316°	210°	-0.866	-69.282	65.717	0.411	1.320	1 660.068
326°	220°	-0.766	-61.233	73.716	0.260	1.189	1 495.552
336°	230°	-0.643	-51.423	83.576	0.111	1.020	1 283.649
346°	240°	-0.500	-40.000	95.000	-0.087	0.822	1 033.395
356°	250°	-0.342	-27.361	107.638	-0.303	0.606	761.979
360°	254°	-0.276	-22.050	112.949	-0.389	0.519	652.706



SISTEMA DE TIERRA

2._ LOS RADIALES SON DE ALAMBRE DE COBRE AWG. Nº 10 EN CADA TORRE 120, DE 65.25 METROS DE LONGITUD LOS MAYORES, EL RESTO COMO SE INDICA EN EL PLANO.

TODO EL SISTEMA ESTA ENTERRADO A 30 cm.

3._

XEAD

L.N. 20°39'52".
L.O. 103°14'44"

4._ 1150 KHz

5._ PERITO TELECOM. Nº 26
ING. JOSE LUIS GONZALEZ C.

JUNIO _____ 1970.

DIRECTIONAL ANTENNA DESCRIPTION SHEET
(Issued July 21, 1965)

Station: XEGE

Main Studio: Mexicali, Baja California

Frequency: 1150 kc/s

Power: 0.5kw

Notification List No. (*)

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 32° 38' 07"

West Longitude: 115° 29' 13"

ANTENNA CHARACTERISTICS

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

TOWER:	North	South	
HEIGHT ABOVE INSULATORS:	214.0'	214.0'	(90°)
PHASING:	0°	180°	
FIELD RATIO:	1	1	

SPACING AND ORIENTATION: Elements are spaced 142.6' (60°) on a line bearing 20° true.

GROUND SYSTEM: 60 - 214.0' equally spaced copper radials about each tower.

(See diagram attached)

Predicted effective Night Field: 123.70 mv/m at rated power.

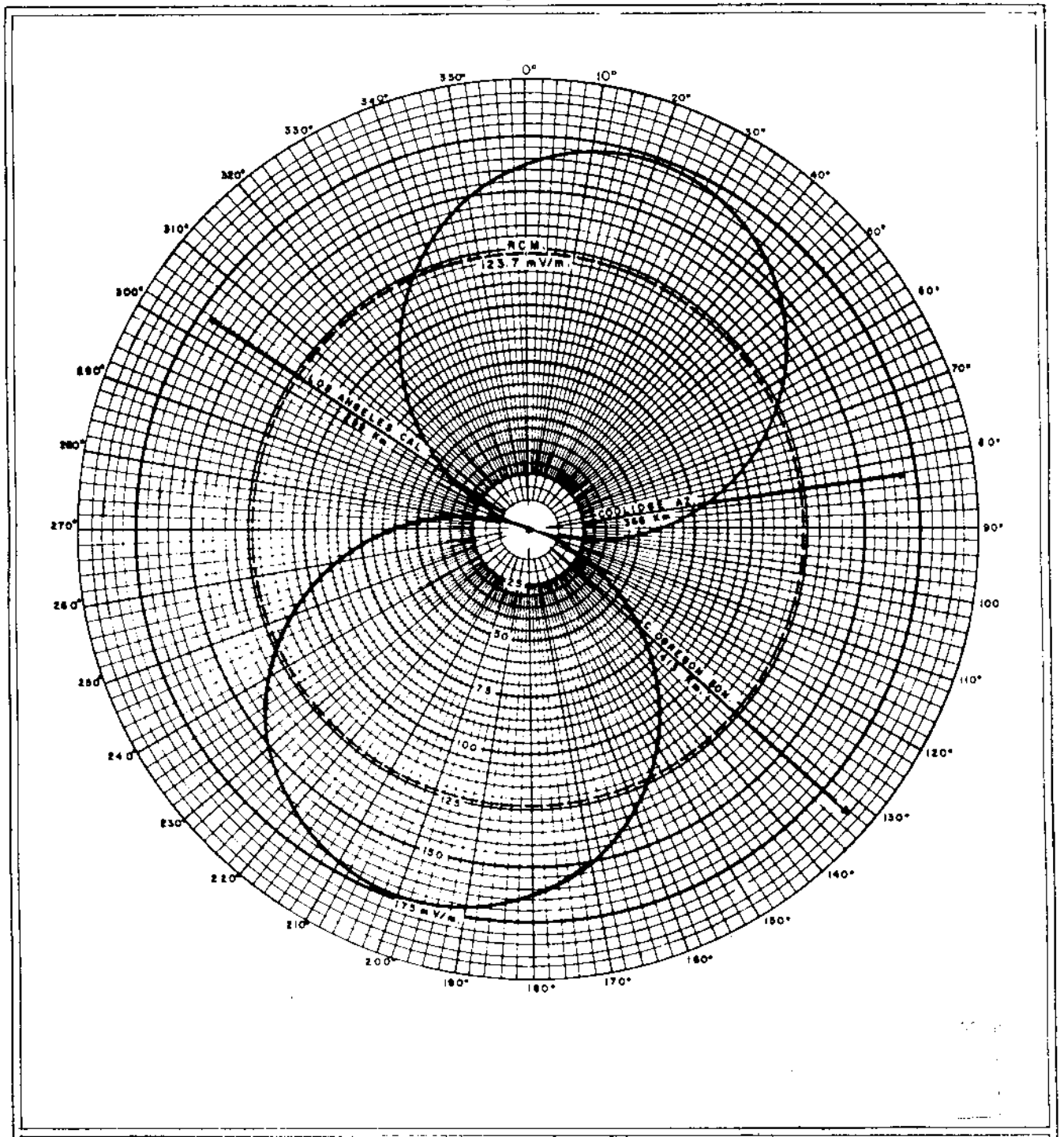
(*) FCC Note: This "supplementary" information corresponds to a change in an existing station assignment concerning which official notification has not been received in the Commission as of July 21, 1965.

XEGE

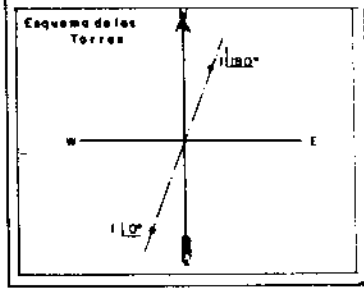
Proposed Night
(8-27-65ct)

Station XEGE
Mexicali, Baja California

500w,DA-N,U,Class III
1150 kc



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



RADIODIFUSORA

XEGE

Mexicali B. C

1150 khz.
500 Watts. N.

MANUEL CASTELLANOS
Ingeniería de COMUNICACIONES

DESCRIPCION DEL SISTEMA DIRECCIONAL DE RADIACION

OPERACION NOCTURNA

ESTACION	X E J P	ESTUDIOS EN	Articulo 123 No. 90 D.F
FRECUENCIA	1150 KHz.	POTENCIA	10,000 Watts.
CLASE:	III	LISTA DE CAMBIOS.	
		FECHA:	DICIEMBRE DE 1959.

LOCALIZACION GEOGRAFICA DEL SISTEMA RADIADOR:	LONGITUD O: 99° 04' 56" LATITUD N: 19° 30' 15"
AUTORIZADO PARA OPERACION.	AD-N.
NUMERO DE ELEMENTOS RADIADORES:	DOS.
TIPO DE ELEMENTOS RADIADORES.	TORRES VERTICALES DE SECCION CONSTANTE; CUADRANGULAR LA NORTE Y TRIANGULAR LA SUR SOPORTADAS CON RETENIDAS ALIMENTACION TIPO SERIE.

	NORTE (No. 1)	SUR (No. 2)
TORRES		
ALTURA SOBRE AISLADORES	65.20 M. (90°)	65.20 M. (90°)
SEPARACION ENTRE TORRES:	43.50 M (60°)	
MAGNITUDES RELATIVAS DE CORRIENTES:	1	1
DEFASAMIENTO:	135°	0°
AZIMUT DEL EJE DE LAS TORRES:	MOSTRADO EN EL LOBULO HORIZONTAL = 30°	
RAIZ CUADRATICA MEDIA TEORICA:	553.38 mV/M.	
INTENSIDAD DE CAMPO R.C.M. NO ATENUADA A UNA MILLA POR KILOWATT DE POTENCIA RADIADA.	175 mV/M.	

———— o 0 0 o ————

XEJP

DESCRIPTION SHEET (1-10-58g) | Station XEJP Mexico, D.F., Mexico | 10kw, DA-N, Class III-A 1150 KC

MODIFIED
DIRECTIONAL ANTENNA DESCRIPTION SHEET
(Issued 1-2-58)

54109

Station: XEJP

Main Studio: Mexico, D.F.

Frequency: 1150 kc

Power: 10 kw

Notification List No. 151

Date: July 30, 1952 Class: III-A

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 19° 30' 46"

West Longitude: 99° 05' 14"

ANTENNA CHARACTERISTICS

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

TOWER:	South	North
HEIGHT ABOVE INSULATORS:	214'	214' (90°)
SPACING:	214 or 90° between adjacent towers.	
PHASING:	0°	90°
FIELD RATIO:	1	1

ORIENTATION: Elements on a line bearing 0° true.

Ground System: 120-114' equally spaced radials about each tower base. Radials are shortened and bonded by transverse straps along intersections between towers. Centers of systems bonded together.

Predicted effective Field: 553.4 mv/m at rated power.

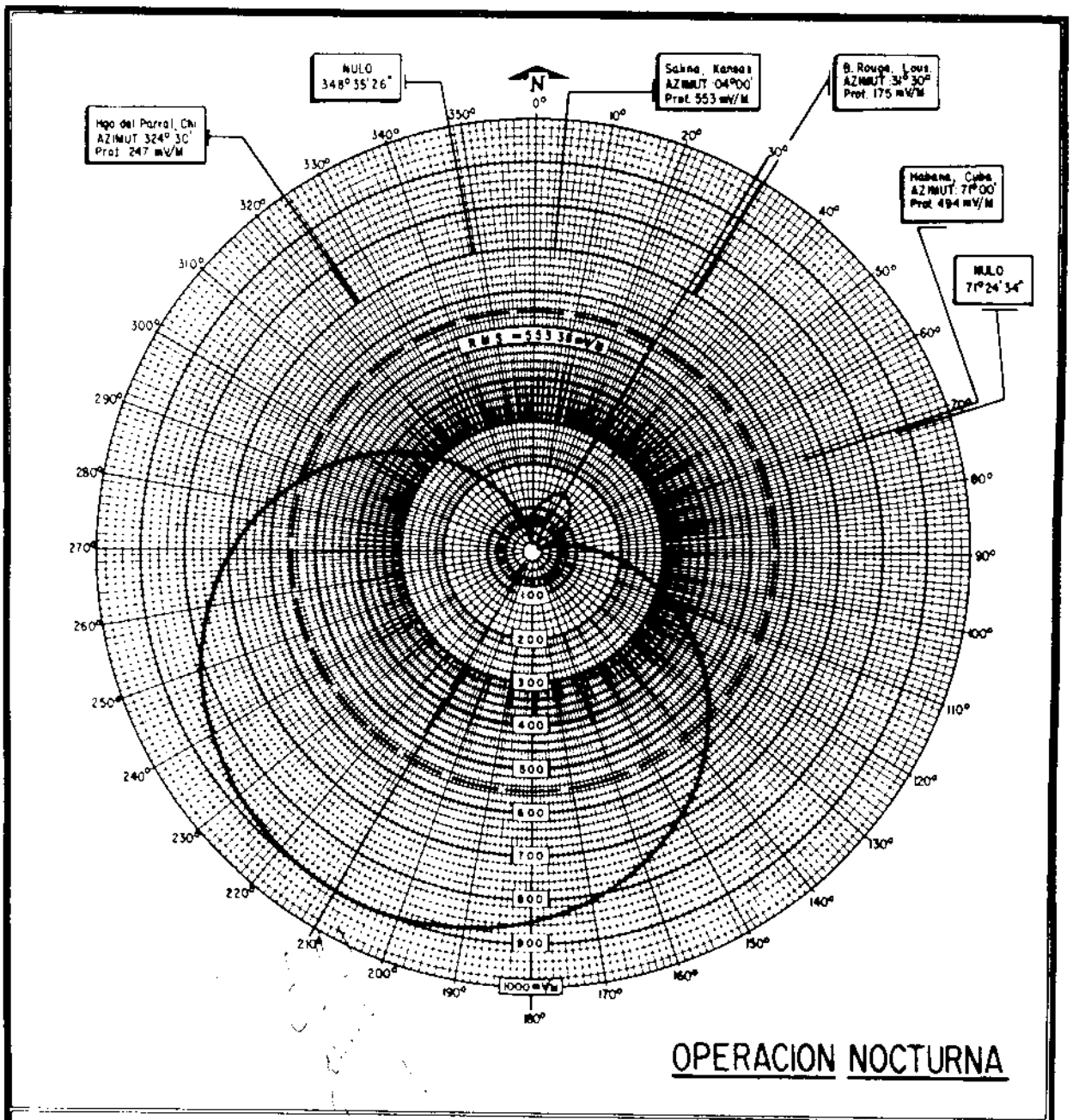
Note: The purpose of this modified description sheet is to correct errors in the height of the towers and the spacing between towers which occurred in converting meters to feet.

XEJP

Proposed Night
(8-23-63ct)

Station XEJP
Mexico, D.F.

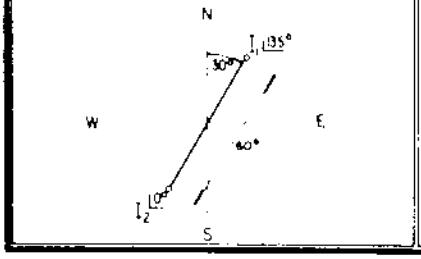
10kw,DA-N,U,Class III
1150 kc



OPERACION NOCTURNA

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

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



RADIODIFUSORA

XEJP

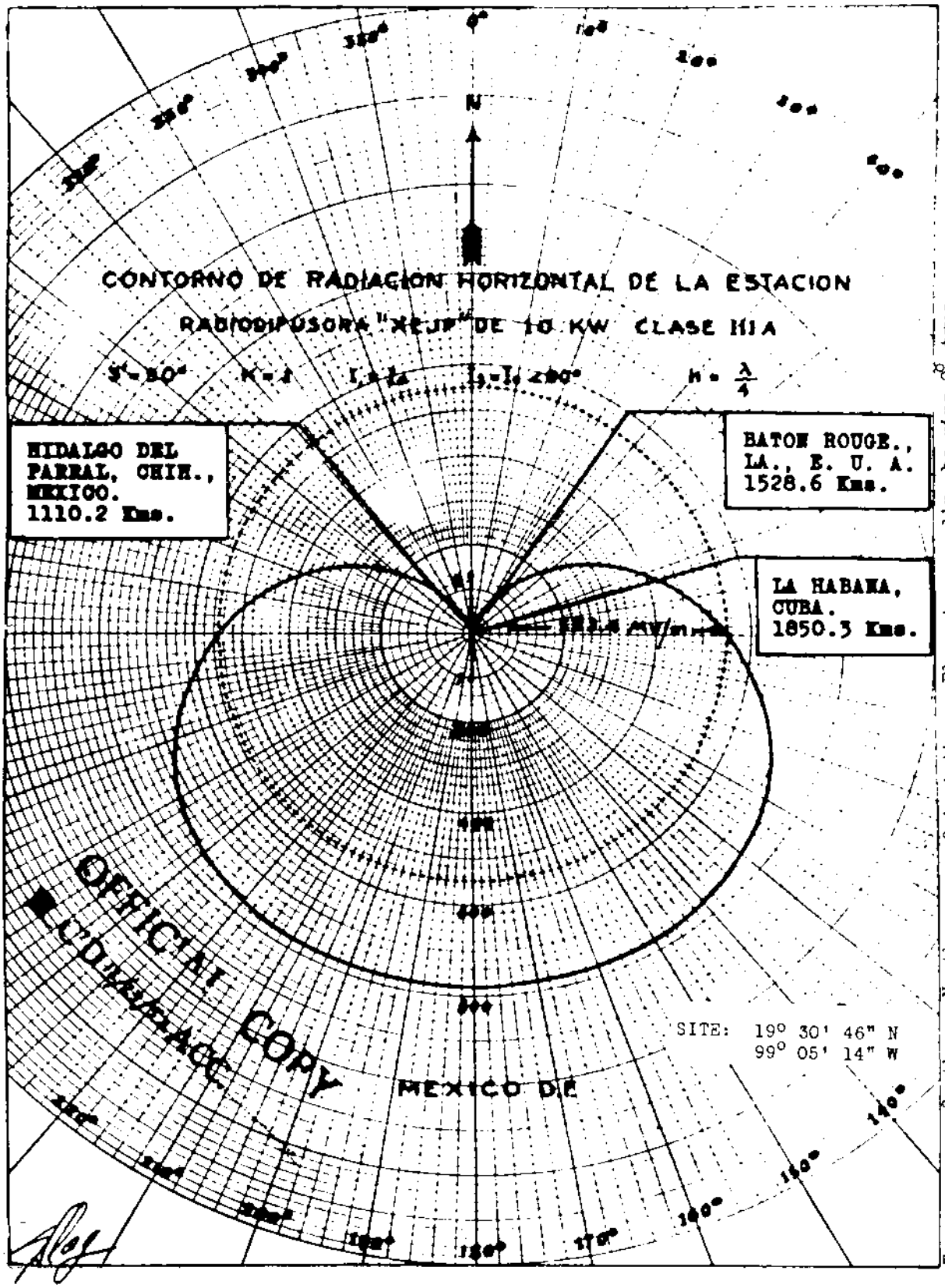
MEXICO, D.F.

1,150 KHz.
10,000 Watts.

Diseño
Luis Vásquez O
ING COMUNICACIONES ELECTRICAS

Dibujo e sesma

PROPOSED NIGHT (2/3/53G) XEJP, MEXICO, D. F. 10kw, DA-N 1150 kc/s



Tower: South North
Height Above Insulators: 113.85' 113.85' (90°)
Spacing: 113.85' or 90° between adjacent towers.
Phasing: 00 90°
Field Ratio: 1 1

Orientation: Elements on a line bearing 0° true.
Ground System: 120-114' equally spaced radials about each tower base. Radials are shortened and bonded by transverse straps along intersections between towers. Centers of systems bonded together.

- Predicted effective Field: 553.4 mv/m at rated power.

Recd FCC 12/23/52 XEJP, Mexico, D. F. 1150 kc/s