1410-1420

Station	Main Studio	Freq	Power	Date
CFMB	Montreal, QU	1410	10 kW/DA-1	2/27/59
CFUN	Vancouver, BC	1410	50 kW/DA-2	3/28/68
CFUN	Vancouver, BC	1410	10 kW/DA-N	11/16/59
CIGO	Pt. Hawkesbury, NS	1410	10 kW/DA-2	12/7/79
CKSL	London, ON	1410	10 kW/DA-2	10/30/63
KAHL	North Platte, NE	1410	0.5/1 kW/DA-N	2/28/66
KAHL	North Platte, NE	1410	0.5/5 kW/DA-N	8/24/76
KBAN	Bowie, TX	1410	0.5 kW/DA-D	7/19/57
KBCC	Cuba, MO	1410	1 kW/DA-D	6/2/77
KBUL	Wichita, KS	1410	1/5 kW/DA-2	7/8/58
KCAL	Redlands, CA	1410	0.5/5 kW/ND-D	6/3/75
KCAL	Redlands, CA	1410	0.5/5 kW/DA-2	9/28/65
KCLO	Leavonworth, KS	1410	1 kW/DA-D	11/16/59
KCOL	Ft. Collins, CO	1410	1 kW/DA-N	1/13/50
KDOX	Marshall, TX	1410	500 kW/DA-D	12/3/56
KDOX	Marshall TX	1410	0.5 kW/DA-D	8/18/58
KJCH	Cleveland, TX	1410	0.5 kW/DA-2	6/18/53
KKOK	Lompoc. CA	1410	0.5 kW/DA-D	10/2/59
KMYC	Martysville, CA	1410	1/5 kW/DA-2	1/11/56
KMYC	Martysville, CA	1410	1 kW/DA-N	10/20/52
KNAL	Victoria, TX	1410	0.5 kW/DA-N	5/10/50
KQV	Pittsburgh, PA	1410	5 kW/DA-2	7/28/69
KRIG	Odessa, TX	1410	1 kW/DA-D	10/45
KRWB	Roseau, MN	1410	1 kW/DA-N	12/29/65
KVEG	N. Las Vegas, NV	1410	5 kW/DA-N	8/22/80
WAZY	Lafayette, IN	1410	1 kW/DA-D	12/21/59

1410-1420

Station	Main Studio	Freq	Power	Date
WDOE	Dunkirk, NY	1410	0.5 kW/DA-N	12/9/49
WDOV	Dover, DE	1410	5 kW/DA-N	11/29/65
WELM	Elmira, NY	1410	1/0.5 kW/DA-N	7/29/60
WHAG	Hagerstown, MD	1410	1 kW/DA-D	7/27/62
WING	Dayton, OH	1410	5 kW	9/46
WIZM	La Crosse, WI	1410	5 kW/DA-N	10/46
WLAQ	Rome, GA	1410	1 kW/DA-N	5/19/50
WLBJ	Bowling Green, KY	1410	1 kW/DA-N	3/23/49
WLBJ	Bowling Green, KY	1410	1/5 kW/DA-2	2/26/62
WLSH	Lansford, PA	1410	5 kW/DA-D	4/59
WLSH	Lansford, PA	1410	1 kW/DA-D	3/62
WMYR	Ft. Myers, FL	1410	5 kW/DA-N	8/26/70
WMYR	Ft. Myers, FL	1410	0.5/1 kW/DA-N	10/19/53
WOKW	Brockton, MA	1410	1 kW/DA-D	11/28/61
WOTT	Watertown, NY	1410	1/5 kW/DA-N	4/14/71
WPOP	Hartford, CT	1410	5 kW/DA-2	3/19/76
WPXC	Prattville, AL	1410	1/5 kW/DA-2	8/22/69
WRMN	Elgin, IL	1410	0.5/1 kW/DA-N/ND-D	10/26/79
WSRC	Durham, NC	1410	5 kW/DA-D	6/28/78
WTIM	Taylorville, IL	1410	1 kW/DA-D	11/2/77
WUNI	Mobile, AL	1410	5 kW	9/52
NEW	Calgary, AB	1420	1/0.5 kW/DA-2	12/21/71
NEW	Calgary, AB	1420	10 kW/DA-2	11/82
CJMT	Chicoutimi, QU	1420	1 kW/DA-1	10/11/57
CJVR	Melfort, Saskatchewan	1420	1 kW/DA-N	8/28/67
CKPT	Peterborough, ON	1420	10/5 kW/DA-2	7/8/75

1410-1420

Station	Main Studio	Freq	Power	Date
NEW	Trenton, NJ	1420	0.5 kW/DA-D	9/12/80
NEW	Granbury, TX	1420	0.5/5 KW/DA-2	10/26/79
KBTN	Neosho, MO	1420	0.5 kW/DA-N/ND-D	10/26/79
KITI	Centralia-Chehalis, WA	1420	1 kW/DA-N	8/30/78
KITI	Centralia-Chehalis, WA	1420	1 kW ND/1 kW DA-N	6/76
KLFB	Lubbock, TX	1420	0.5 kW	8/22/80
KLUF	Shreveport, LA	1420	1 kW/DA-N	9/26/69
KOOO	Omaha, NE	1420	1 kW/DA-D	12/3/68
KPAR	Granbury, TX	1420	0.5 kW/DA-2	9/12/80
KPEL	Lafayette, LA	1420	0.5 kW/DA-N	12/15/50
KPEL	Lafayette, LA	1420	0.5/1 kW/DA-N	9/19/51
KREN	Renton, WA	1420	0.5 kW/DA-D	5/25/62
KSCR	Renton, WA	1420	0.5 kW/DA-D	10/26/79
KSTN	Stockton, CA	1420	1 KW/DA-N	11/45
KSTN	Stockton, CA	1420	1/5 kW/DA-2	6/56
KSTN	Stockton, CA	1420	5 kW/DA-D	10/29/59
KSTN	Stockton, CA	1420	1 kW/DA-N	10/29/59
KSTN	Stockton, CA	1420	1 kW/NON-DA	10/29/59
KTAN	Sierra Vista, AZ	1420	1/0.5 kW/DA-N	10/5/64
KTOE	Mankato, MN	1420	5 kW/DA-N	7/16/54
KUJ	Walla Walla, WA	1420	5 kW/DA-N	12/47
KULY	Ulysses, KS	1420	0.5/1 kW/DA-2	7/17/64
WACK	Newark, NY	1420	0.5 kW/DA-N	6/28/78
WAMM	Flint, MI	1420	0.5 kW/DA-D	10/1/75
WAVO	Decatur, MI	1420	1 kW/DA-D	10/22/75
WBEC	Pittsfield, MA	1420	1 kW/DA-2	1/67

1410-1420

Station	Main Studio	Freq	Power	Date
WBRD	Bradenton, FL	1420	1 kW/DA-D	7/11/56
WBSM	New Bedford, MA	1420	1 kW/DA-1	7/55
WBSM	New Bedford, MA	1420	1/5 kW/DA-2	12/57
WCED	Du Bois, PA	1420	0.5/5 kW/DA-2	5/56
WCOJ	Coatesville, PA	1420	5 kW/DA-N	10/55
WDBF	Delray Beach, FL	1420	0.5/5 kW/DA-2	10/62
WHK	Cleveland, OH	1420	5 kW/DA-N	8/28/63
WIMS	Michigan City, IN	1420	5 kW/DA-2	8/30/79
WIMS	Michigan City, IN	1420	0.5/5 kW/DA-2	6/60
WIMS	Michigan City, IN	1420	0.1/0.5 kW/N(DA)	9/52
WINI	Murphysboro, IL	1420	0.5 kW/DA-N	7/1/77
WKPR	Kalamazoo, MI	1420	1 kW/DA-D	12/56
WKSR	Pulaski, TN	1420	0.25 kW/DA-N	6/1/51
WLNA	Peekskill, NY	1420	1/5 kW/DA-2	11/2/79
WOC	Davenport, IA	1420	5 kW/DA-2	3/22/55
WRBL	Columbus, GA	1420	5 kW/DA-N	5/45
WVJS	Owensboro, KY	1420	1/5 kW/DA-2	4/60
WVJS	Owensboro, KY	1420	1 kW/DA-2	4/21/47
WVOT	Wilson, NC	1420	0.5/1 kW/DA-N	2/9/49
XEEW	Matamoros, Tamaulipas	1420	1 kW/DA-1	6/29/56
NEW	Digby, NS	1420	1 kW/DA-1	9/26/68

#131

CFMB

DESCRIPTION SHEET
(5-28-59g)

New Station
Montreal, Quebec, Canada

10kw, DA-1,U, Class III
1410 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: New

Main Studio: Montreal, Que.

Frequency: 1410 KC/S

Power: 10 KW

Class: III

Notification List No. 131

Date: February 27, 1959

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM:

North Latitude: 45° 24' 10"

West Longitude: 73° 24' 52"

ANTENNA CHARACTERISTICS

Mode of Operation: Same pattern day and night (DA-1)
Number of elements: Four (4)
Type of elements: Uniform cross section guyed steel towers, base insulated for series feed

TOWER:	#1 (S)	#2 (SC)	#3 (NC)	#4 (N)
HEIGHT ABOVE INSULATORS:	200'(103.3°)	200'(103.3°)	200'(103.3°)	200'(103.3°)
OVERALL HEIGHT:	205'	205'	205'	205'
SPACING:	174.2' (90°) between adjacent towers			
PHASING:	0°	-141°	+77°	-75°
FIELD RATIO:	1.0	2.3	2.07	.875
ORIENTATION	All towers on line bearing 348° East of True North			
GROUND SYSTEM:	120 equiangularly spaced radials extend from the base of each tower to a distance of 280 feet (0.4 wavelength) with the exception of those radials joined along the common chords. The ground wires consist of solid copper wire #10 B & S gauge and are buried to a depth of approximately 8 inches.			

Predicted effective field: 700 mv/m at 1 mile (221 mv/m for 1 KW)

#131

CFMB

PROPOSED DAY & NIGHT (5-28-59g)

New Station Montreal, Quebec, Canada

10kw, DA-1,U, Class III

1410 KC

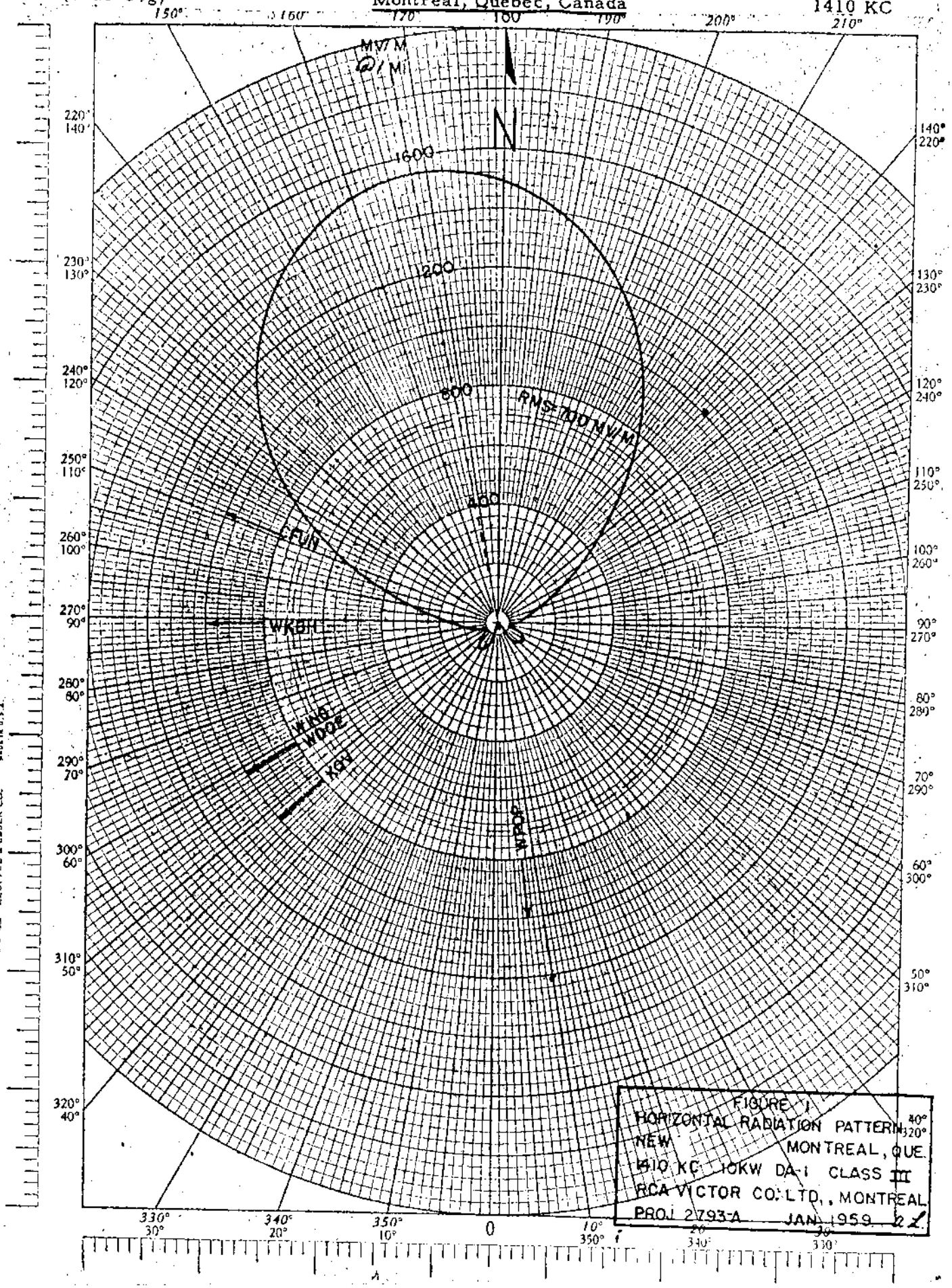


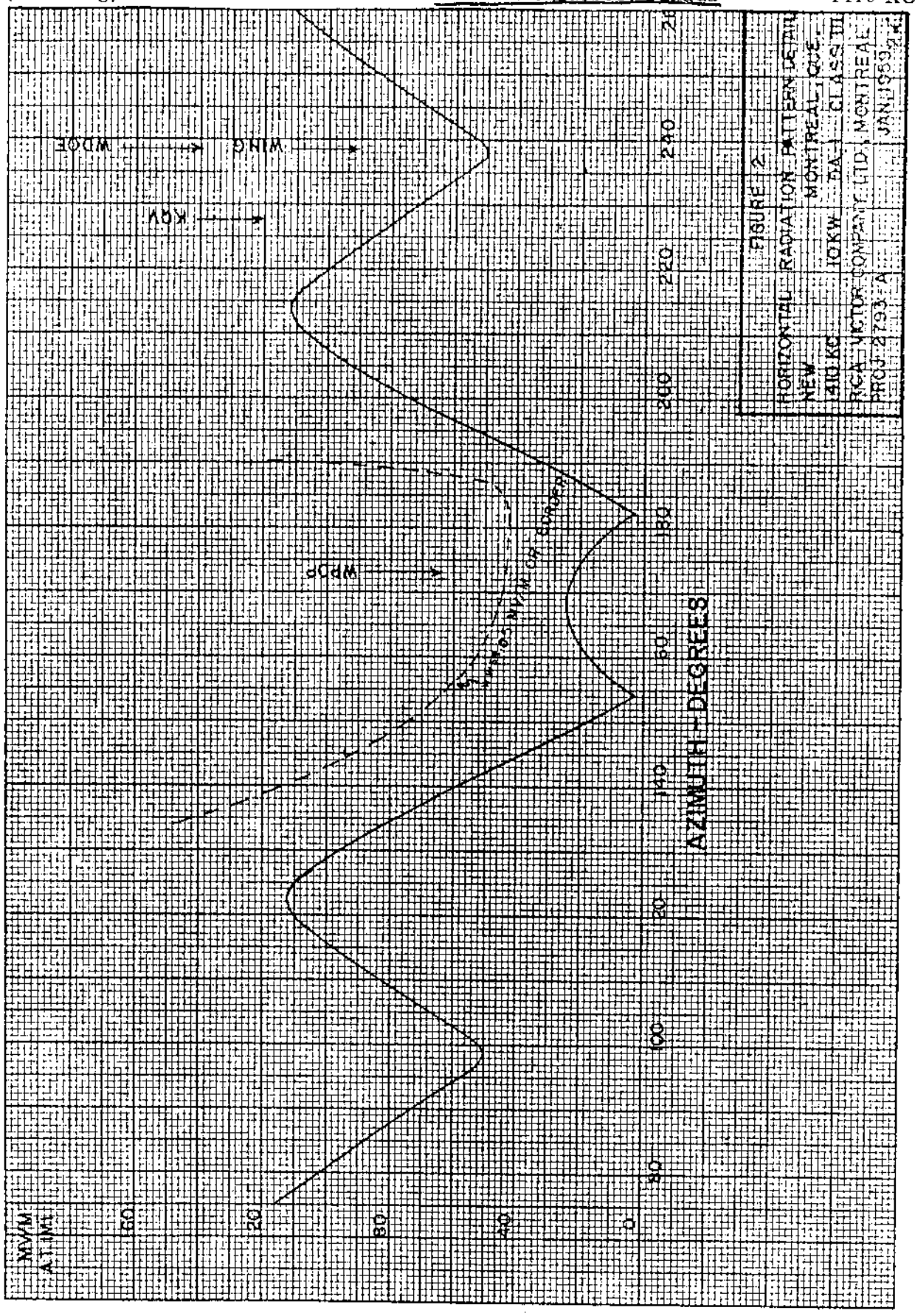
FIGURE 1
HORIZONTAL RADIATION PATTERN
NEW MONTREAL, QUE.
1410 KC 10KW DA-1 CLASS III
RCA VICTOR CO. LTD., MONTREAL
PROJ 2793-A JAN. 1959

#13

CFMB

PROPOSED DAY & NIGHT NULLS (5-28-59g)

New Station 10kw, DA-1,U,Class III
Montreal, Quebec, Canada 1410 KC



CFUN

Description Sheet
(3-28-68ct)

Station CFUN
Vancouver, B. C.

50kw, DA-2, U, Class III
1410 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION : CFUN

MAIN STUDIO : Vancouver, B.C.

FREQUENCY : 1410 KC/S

POWER : 50 KW

NOTIFICATION LIST NO: 240

DATE MARCH 11, 1968

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM : North Latitude 49° 07' 41"
West Longitude 123° 01' 41"

ANTENNA CHARACTERISTICS

MODE OF OPERATION : DA-2 (Directional, Full Time, Different Patterns Day and Night)

NUMBER OF ELEMENTS : Three (3)

TYPE OF ELEMENTS : Uniform cross-section guyed steel towers, base insulated for series feed, no top loading

TOWER :	1 (S)	2 (NW)	3 (N)
HEIGHT ABOVE INSULATORS:	350' (180.5°)	350' (180.5°)	350' (180.5°)
OVERALL HEIGHT :	355'	355'	355'

SPACING AND ORIENTATION: Tower 1 & 2 203.5' (105°) apart on line 317° E. of true N.
Tower 1 & 3 232.6' (120°) apart on line 0° true N.

PHASING - DAY :	0°	—	-48°
- NIGHT :	0°	-90°	—
FIELD RATIO -DAY :	1.00	—	1.00
-NIGHT :	1.00	.85	—

GROUND SYSTEM : 120 equally spaced radials of B&S No. 10 bare copper wire per tower, extending to a distance of 280' (.4 wavelength) except where banded on the common chord equidistant between towers and buried approximately 8".

PREDICTED EFFECTIVE FIELD:
DAY : 1640 MV/M at 1 mile (232 MV/M for 1 KW)
NIGHT : 1670 MV/M at 1 mile (236 MV/M for 1 KW)

NOTE: This notification reflects a change of transmitter site, only from that notified on List #216. To this description sheet attach the radiation patterns previously distributed relative to notification on list 216.

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION : CFUN

MAIN STUDIO : Vancouver, B.C.

FREQUENCY : 1410 KC/S

POWER : 50 KW

NOTIFICATION LIST NO : 216

DATE : July 26, 1966

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM : North Latitude 49° 08' 45"
West Longitude 122° 58' 55"

ANTENNA CHARACTERISTICS

MODE OF OPERATION : DA-2 (Directional, Full Time, Different Patterns Day and Night)

NUMBER OF ELEMENTS : Three (3)

TYPE OF ELEMENTS : Uniform cross-section guyed steel towers, base insulated for series feed, no top loading

TOWER	1 (S)	2 (NW)	3 (N)
HEIGHT ABOVE INSULATORS	350' (180.5°)	350' (180.5°)	350' (180.5°)
OVERALL HEIGHT	355'	355'	355'

SPACING AND ORIENTATION : Tower 1 & 2 203.5' (105°) apart on line 317° E. of true N.
Tower 1 & 3 232.6' (120°) apart on line 0° true N.

PHASING - DAY	0°	---	-48°
PHASING - NIGHT	0°	-90°	---
FIELD RATIO - DAY	1.00	---	1.00
FIELD RATIO - NIGHT	1.00	.85	---

GROUND SYSTEM : 120 equally spaced radials of B&S No.10 bare copper wire per tower, extending to a distance of 280' (.4 wavelength) except where banded on the common chord equidistant between towers and buried approximately 8".

PREDICTED EFFECTIVE FIELD :
DAY : 1640 MV/M at 1 mile (232 MV/M for 1 KW)
NIGHT : 1670 MV/M at 1 mile (236 MV/M for 1 KW)

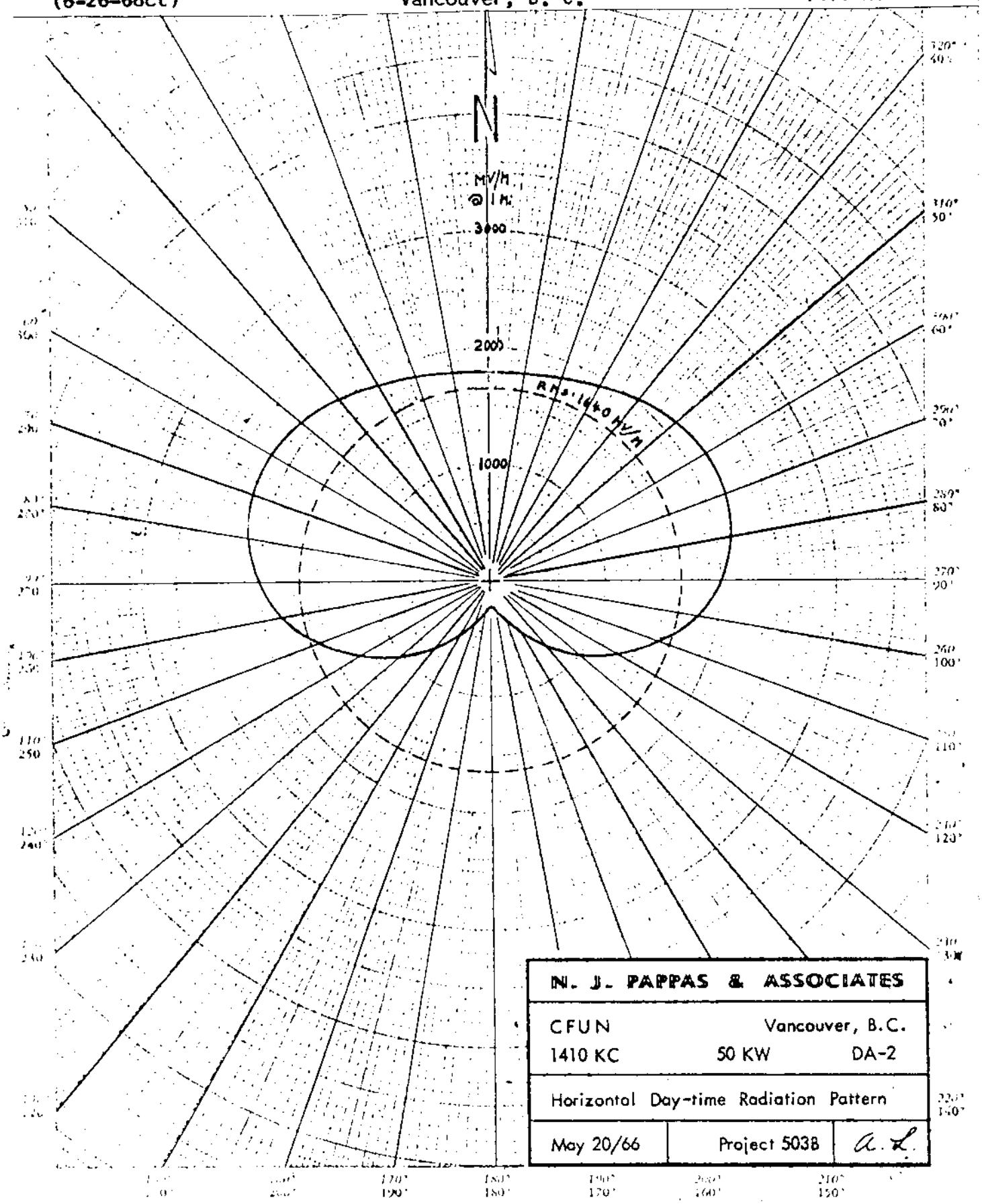
216
PD #159

CFUN

Proposed Day
(8-26-66ct)

Station CFUN
Vancouver, B. C.

50kw,DA-2,U,Class III
1410 kc



N. J. PAPPAS & ASSOCIATES		
CFUN		Vancouver, B.C.
1410 KC	50 KW	DA-2
Horizontal Day-time Radiation Pattern		
May 20/66	Project 5038	A. L.

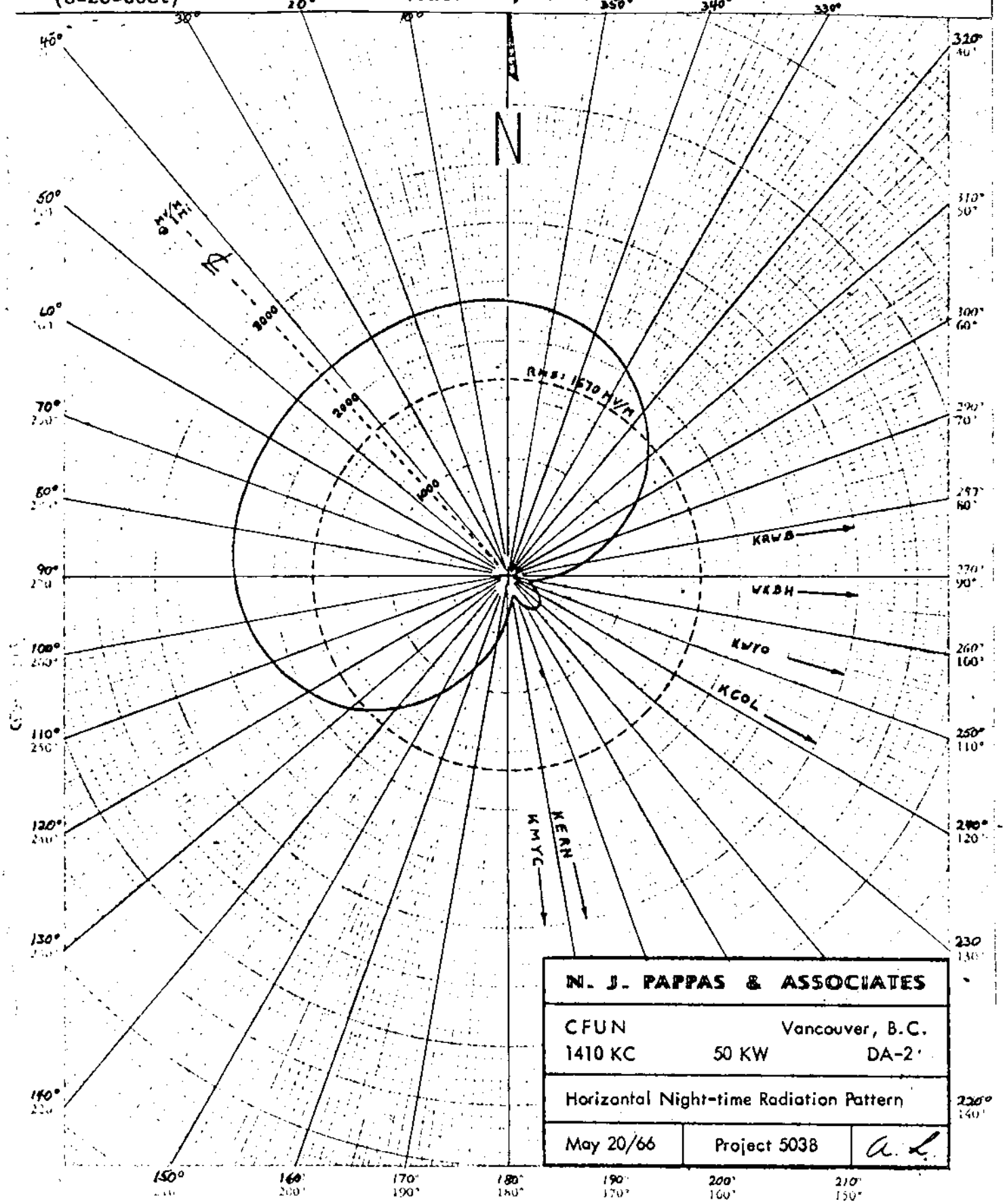
216
20#139

CFUN

Proposed Night
(8-26-66ct)

Station CFUN
Vancouver, B. C.

50kw, DA-2, U, Class III
1410 kc



139 pc

CFUN

DESCRIPTION SHEET
(11-16-59g)

Station CFUN
Vancouver, British Columbia, Canada

10kw, DA-N,U, Class III
1410 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : CFUN

Main Studio: Vancouver, B.C.

Frequency: 1410 kcs.

Power: 10 KW. Class: III

Notification List No. 139

Date: October 5, 1959

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM: North Latitude: 49° 11' 51''

West Longitude: 123° 02' 38''

ANTENNA CHARACTERISTICS

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

TOWERS:	#1 (SE)	#2 (NW)
HEIGHT ABOVE INSULATORS:	175' (90°)	350' (180°)
OVERALL HEIGHT:	182'	357'
SPACING:	292' (150°)	
PHASING:	0	-50
RATIO:	1.0	0.65

GROUND SYSTEM: 120 radials per tower 0.4 wavelengths long except where intersected. Bonded to common chord at intersections.

PREDICTED EFFECTIVE FIELD: Day: 750 mv/m at 1 mi. (237 mv/m for 1 KW.)

Night: 700 mv/m at 1 mi. (220 mv/m for 1 KW.)

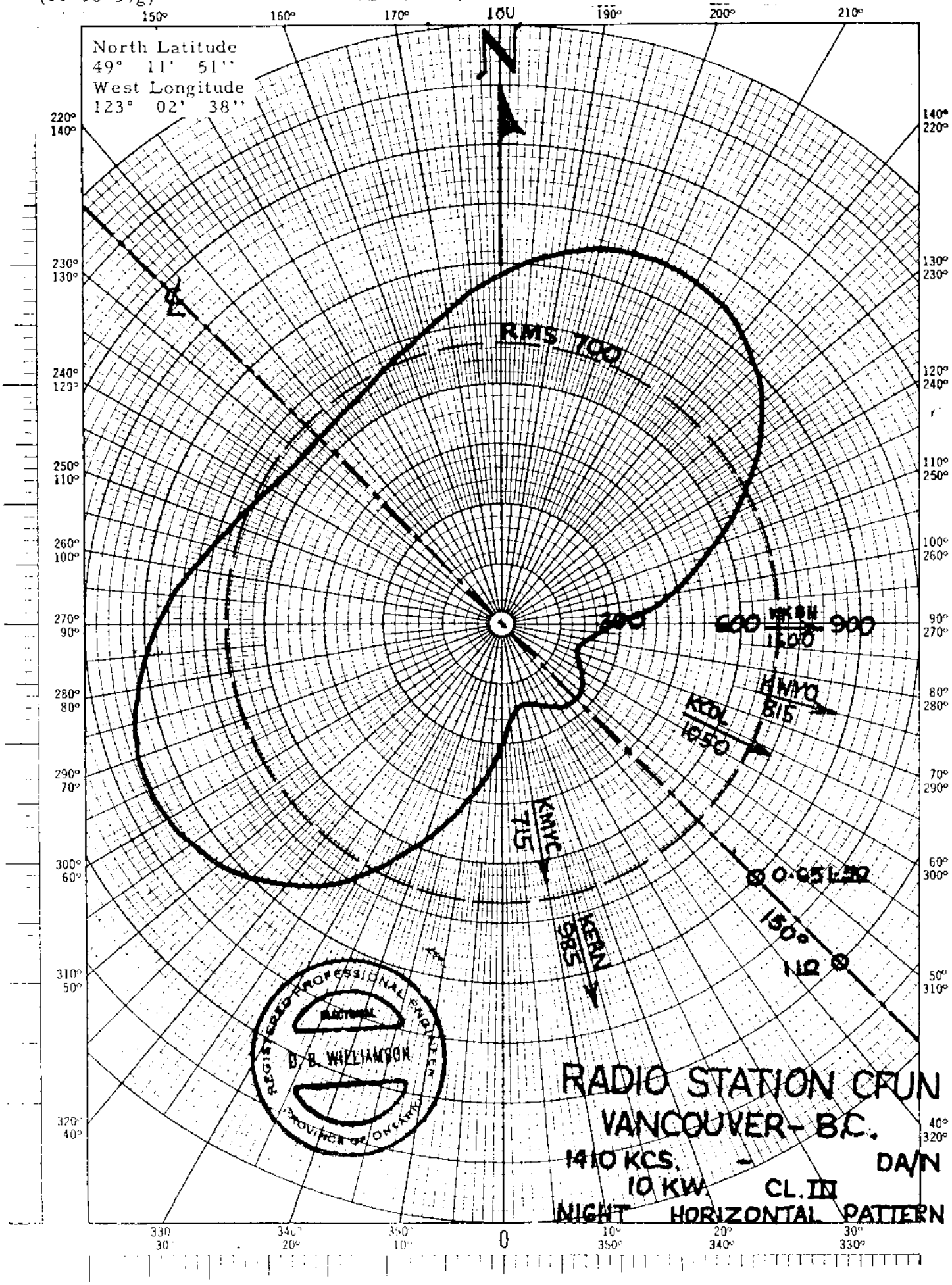
ORIENTATION: 315° True.

CFUN

PROPOSED NIGHT
(11-16-59g)

Station CFUN
Vancouver, British Columbia, Canada

10kw, DA-N,U, Class III
1410 KC



CIGO
1410

IFRB Serial No. 1 2 3 6 8

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

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

PART I GENERAL INFORMATION

(01) Administration: CANADA Sheet No. 416 Date 830110

Assigned frequency (kHz)		(02)	1410
Transmitting station	Name of the station	(03)	PORT HAWKESBURY
	Call sign	(04)	CIGO
	Additional identification	(05)	NS
	Station class	(06)	
	Operational Status	(07)	
Country		(08)	CAN
Geographical coordinates of the transmitting station		(09)	61 W 26 09 45 N 40 58

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

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

(13) Date of bringing into service or cessation of operation: 75 10 22 (Year Month Day)

Withdraw proposed change 820405, List 411.

STATION PARAMETERS	DAYTIME OPERATION		NIGHT-TIME OPERATION	
Station power (kW)	(21)	10	(31)	No change
r.m.s. value of radiation for station power (mV/m at 1 km)	(25)		(35)	
Antenna type	(26)	B	(36)	
Simple vertical antenna electrical height (degrees)	(27)		(37)	

(44) Remarks

COORDINATION UNDER ARTICLE 4:								
COUNTRY	USA							
IN PROGRESS								
ACCEPTANCE OBTAINED								

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

IFRB Serial No. 1 2 3 6 8

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 416

Date 830110

(01) PORT HAWKESBURY
Name of transmitting station

(02) CAN
Country

(03) HJ
Hours of operation

(04) 2
Total number of towers

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	75.	90.		90.	
2	1.	75.	0.	0.		90.	

(14) r.m.s value of radiation: 97.6 mV/m at 1 km

(15) Type of pattern: E

(16) Special quadrature factor: . mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

0615
1410

1410

IFRB Serial No. 12368

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

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

PART I GENERAL INFORMATION

(01) Administration: CANADA Sheet No. 411 Date 82.4.5

Assigned frequency (kHz)		(02)	1410
Transmitting station	Name of the station	(03)	PORT HAWKESBUR
	Call sign	(04)	CIGQ
	Additional Identification	(05)	
	Station class	(06)	
	Operational Status	(07)	
Country		(08)	CAN
Geographical coordinates of the transmitting station		(09)	61W26'09" 45N40'58

Correction

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

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

(13) Date of bringing into service or cessation of operation: 82 07 01 (Year Month Day)

STATION PARAMETERS	DAYTIME OPERATION	NIGHT-TIME OPERATION
		No Change
Station power (kW)	(21) 10.	(31)
r.m.s. value of radiation for station power (mV/m at 1 km)	(25) → 968.	(35)
Antenna type	(26) → A	(36)
Simple vertical antenna electrical height (degrees)	(27) → 90.	(37)

(44) Remarks

COORDINATION UNDER ARTICLE 4:								
COUNTRY	USA							
IN PROGRESS	X							
ACCEPTANCE OBTAINED								

SECTION IV : DIRECTIONAL ANTENNA - DESCRIPTION SHEET

Call Sign : CIGC Main Studio : Port Hawkesbury, N.S.

Frequency : 1410 kHz Class : III Power : 10 kW Mode : DA-2

Notification List No. : 392 Date : December 7, 1979

Geographical Location of the Antenna System : 45° 40' 58" North Latitude
61° 26' 09" West Longitude

Antenna Characteristics : Number of Elements : Two (2)

Type of Elements : Uniform cross-section, guyed steel towers, series fed, base insulated. No top loading.

Tower Number	:	1 (W)	2 (E)
Height above insulator	:	174.2' (90°)	174.2'
Overall Height	:	177'	177'
Field Ratio (Day)	:	1.0	1.0
Phasing (Day)	:	Ref	-75°
Field Ratio (Night)	:	1.0	1.0
Phasing (Night)	:	Ref	-120°
Orientation	:	On a line bearing 90°E	
Spacing	:	145.1' (75°) betw. twrs.	

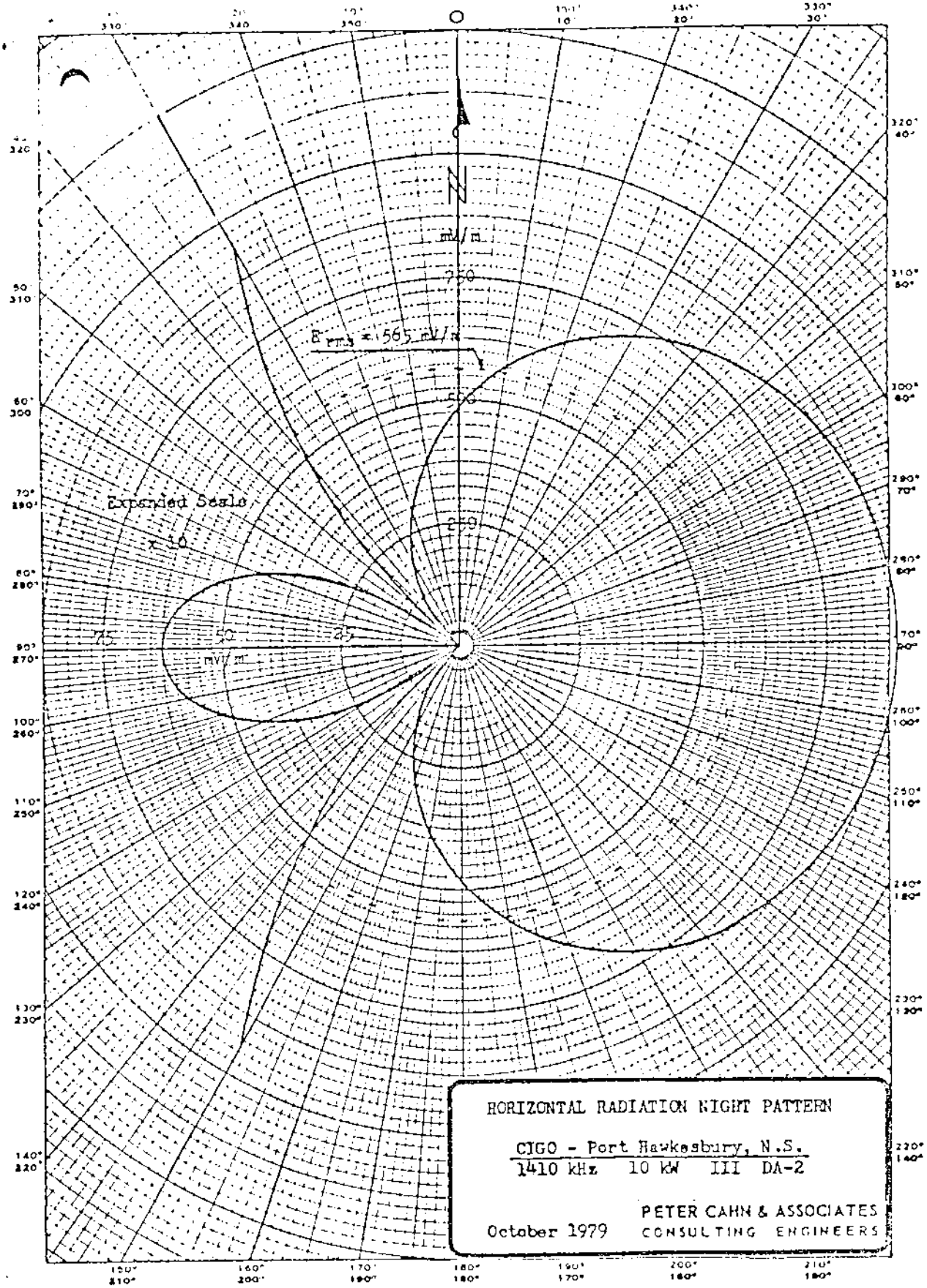
Ground System : 120 equiangularly spaced radials of No. 10 AWG soft-drawn, bare copper wire and buried approximately 8" in ground. Each radial is 279' long excluding those joined along the common chord. This represents a 0.4λ equivalent ground system.

Measured Effective Field : 620 mV/m at 1 mile for 10 kW, DAY
196 mV/m at 1 mile for 1 kW;

565 mV/m at 1 mile for 10 kW, NIGHT
179 mV/m at 1 mile for 1 kW.

This notification concerns only a decrease in the effective night-time field from the alue notified on Change List 337 dated January 8, 1975. The measured effective day-time field of 620 mV/m is within acceptable tolerance of the notified value of 610 mV/m. Accordingly, please retain the January 8, 1975 day-time pattern.

CIGO



HORIZONTAL RADIATION NIGHT PATTERN

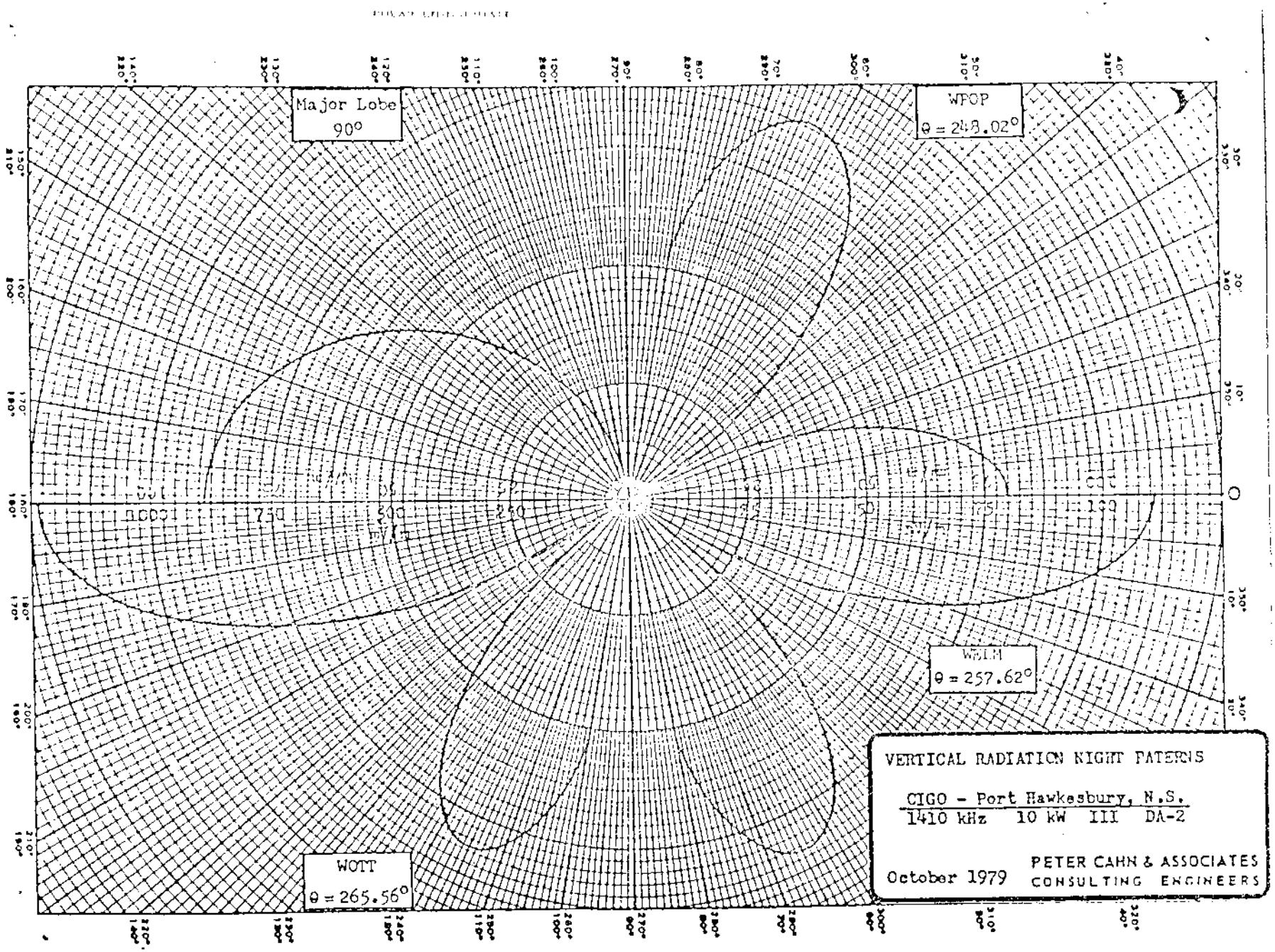
CIGO - Port Hawkesbury, N.S.

1410 kHz 10 KW III DA-2

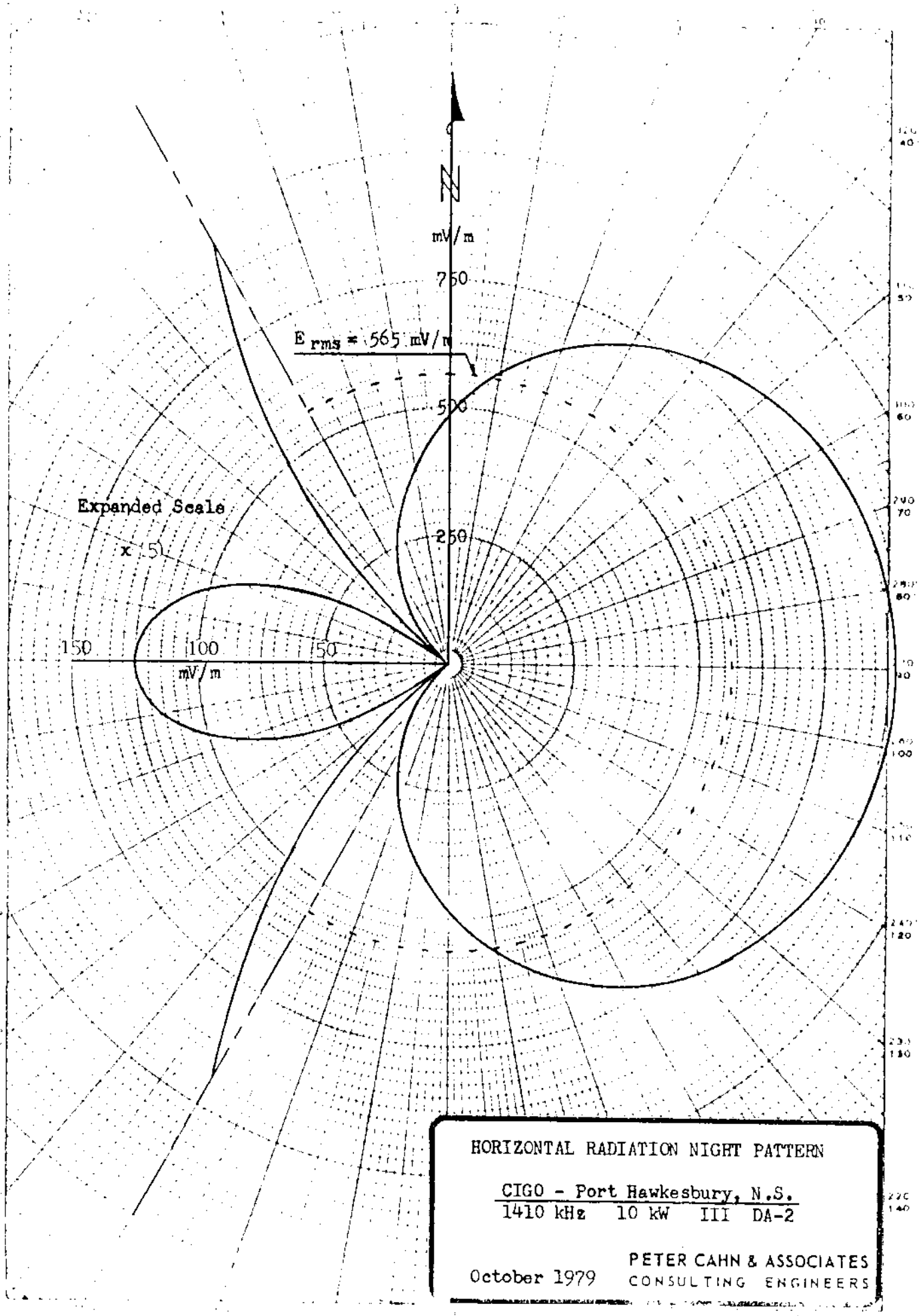
October 1979

PETER CAHN & ASSOCIATES
CONSULTING ENGINEERS

CIGO


Major Lobe
90°
WFOP
θ = 248.02°
WOTT
θ = 265.56°
WOLM
θ = 257.62°
VERTICAL RADIATION NIGHT PATERNS
CIGO - Port Hawkesbury, N.S.
1410 kHz 10 kW III DA-2
October 1979
PETER CAHN & ASSOCIATES
CONSULTING ENGINEERS

CIGO



HORIZONTAL RADIATION NIGHT PATTERN

CIGO - Port Hawkesbury, N.S.

1410 kHz 10 kW III DA-2

October 1979

PETER CAHN & ASSOCIATES
CONSULTING ENGINEERS

CKSL

181

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-2

STATION CALL:	C K S L
MAIN STUDIO:	London, Ontario.
FREQUENCY:	1410 kc/s
POWER:	Day 10 kw, 10 kw Night
CLASS:	III
TIME:	Unlimited
NOTIFICATION REFERENCE: 181	September 30, 1963
GEOGRAPHICAL LOCATION:	Lat 42°52'59" Lon 81°13'25"
ANTENNA CHARACTERISTICS:	Five elements, guyed, uniform cross section, base insulated, series feed. No top loading. height 174.5 feet or 90 degrees.

Tower	Day Ratio	Day Phase	Night Ratio	Night Phase
# 1	1.0000	00.0°	1.000	00.0°
# 2	1.8130	-153.2°	2.380	-148.6°
# 3	1.4070	50.7°	2.631	59.6°
# 4	0.3825	-99.0°	1.535	-89.4°
# 5	---	---	0.378	126.0°

Orientation	Elements on a line bearing 352°
Spacing	Adjacent elements 174.5 ft (90°)
Ground system	120 radials per tower, #10 AWG bare soft copper wire, buried 8 inches. Radials joined along line between towers and bonded to soft copper strap at tower base. Average length 279 feet.
Predicted B M S	600 mv/m at 1 mile for 10 kw 190 mv/m at 1 mile for 1 kw

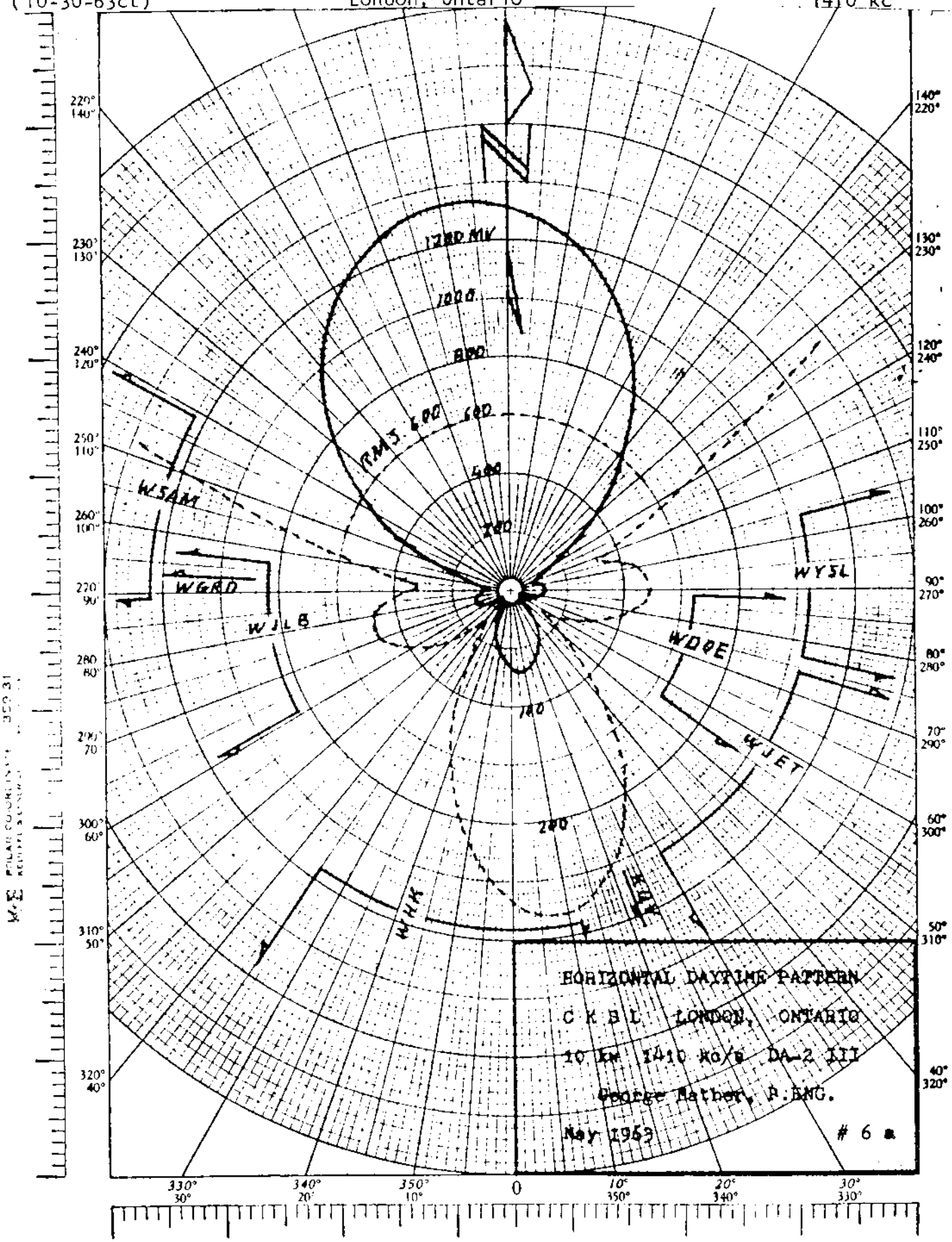
(81)

CKSL

Proposed Day
(10-30-63ct)

Station CKSL
London, Ontario

10kw,DA-2,U,Class III
1410 kc



DIRECTIONNAL ANTENNA DESCRIPTION SHEET

Station: New
Power: 10 kw (day and night)
Main Studio: Port Hawkesbury, N.S.
Frequency: 1410 kc
Canadian Change List. No. 337 dated January 8, 1975.

CLASS: III

Site: North latitude: 45° 41' 02"
West longitude: 61° 26' 19"

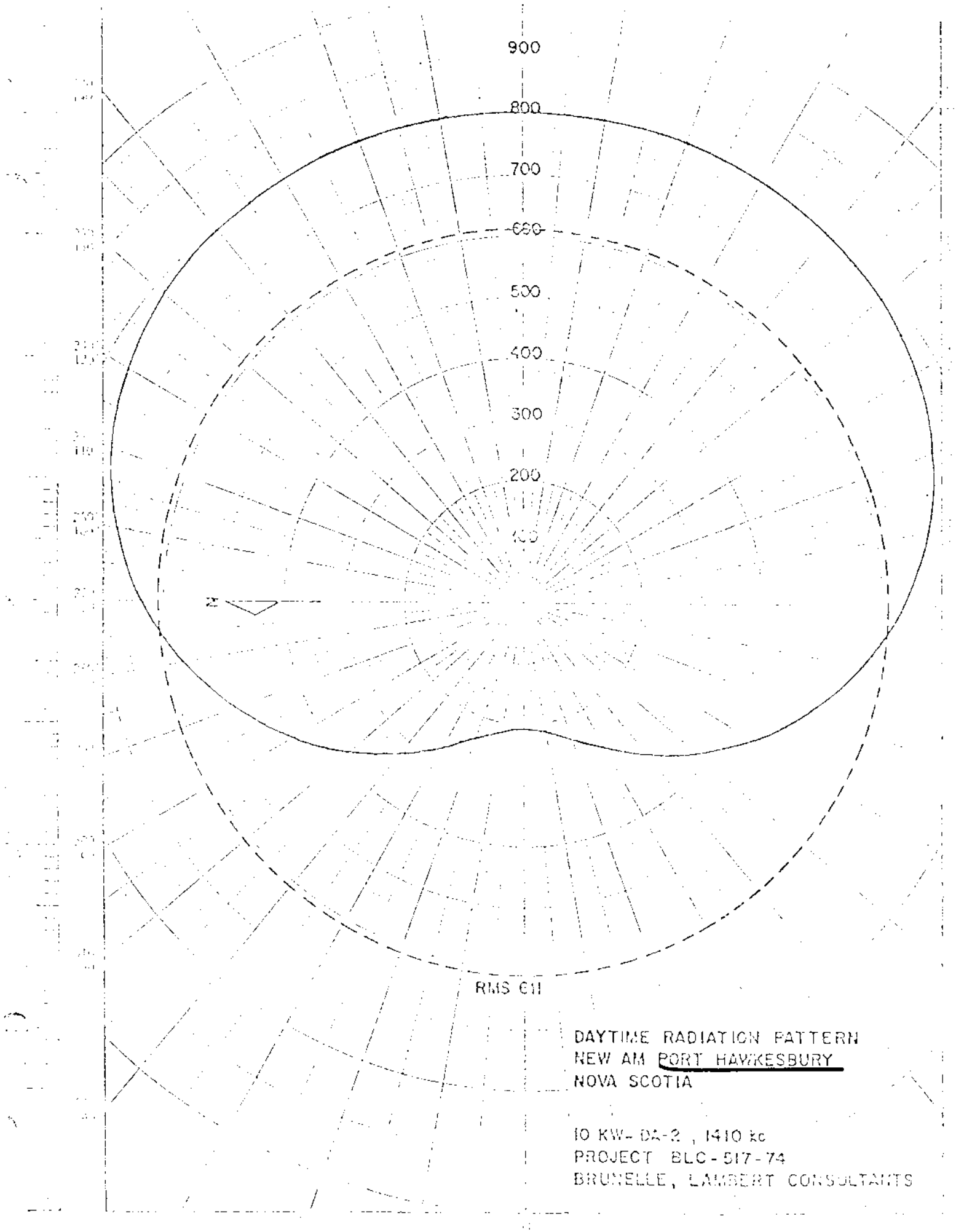
Antenna
Characteristics: Series fed, uniform cross-section guyed, vertical steel towers
Authorized for day-time and night-time operation (DA-2)

Number of elements: 2

Tower:	No 1 (west)	No 2 (east)
Height above insulators:	174.2 (90°)	174.2 (90°)
Spacing:	Ref.	75°
Orientation:	Ref.	90°
Day		
Phasing	0°	- 75°
Field ratio	1.0	1.0
Night		
Phasing	0°	- 120°
Field ratio	1.0	1.0

Ground system: 120 radials per tower, 0.4 wavelength or to chords, bonded, buried 8" #10 AWG

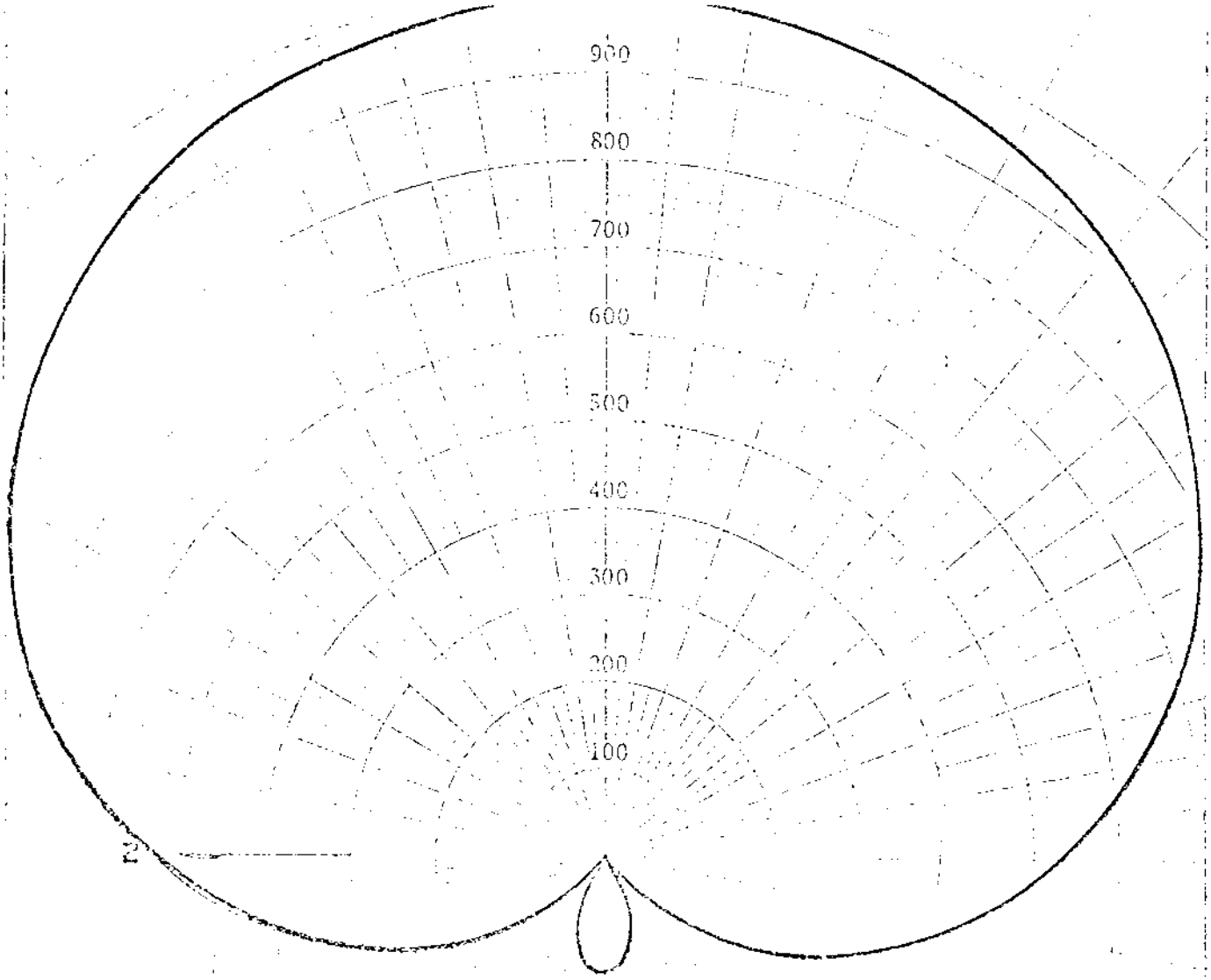
Predicted effective field: 611 mv/m (day)
630 mv/m (night)



DAYTIME RADIATION PATTERN
NEW AM PORT HAWKESBURY
NOVA SCOTIA

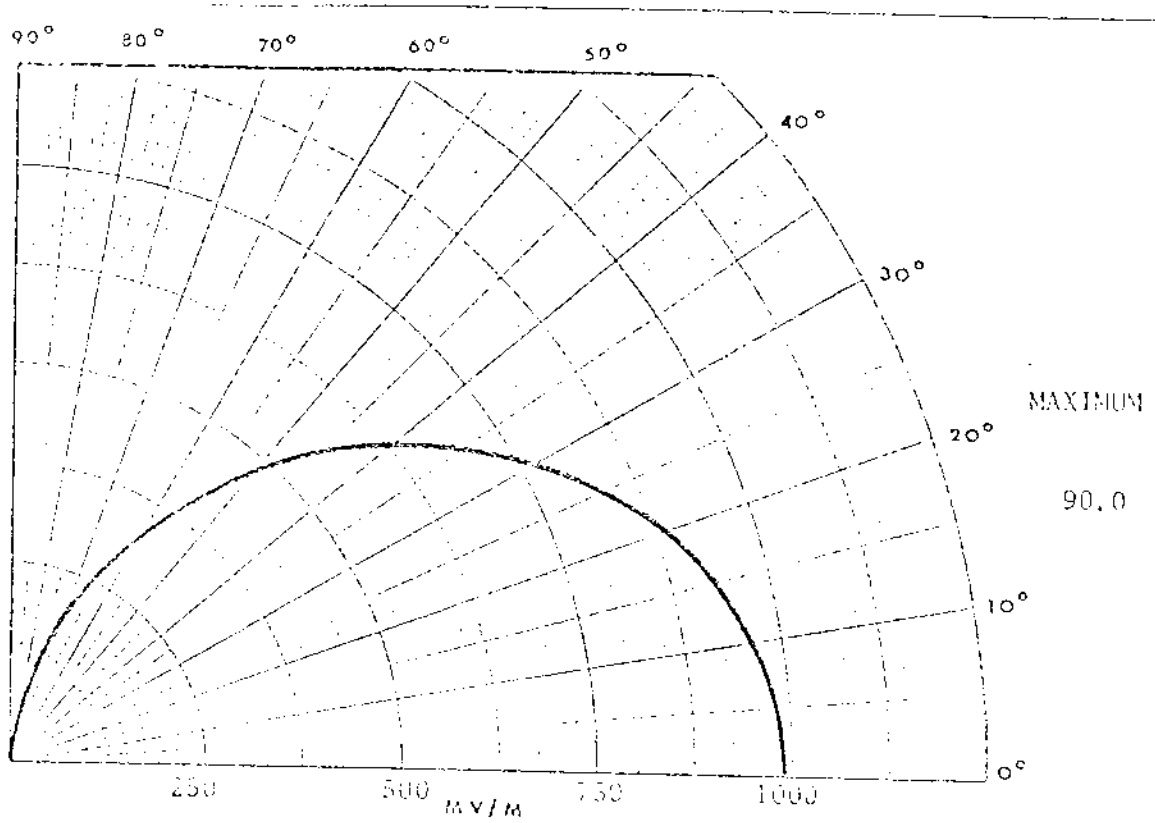
10 KW- DA-2 , 1410 kc
PROJECT BLC-517-74
BRUNELLE, LAMBERT CONSULTANTS

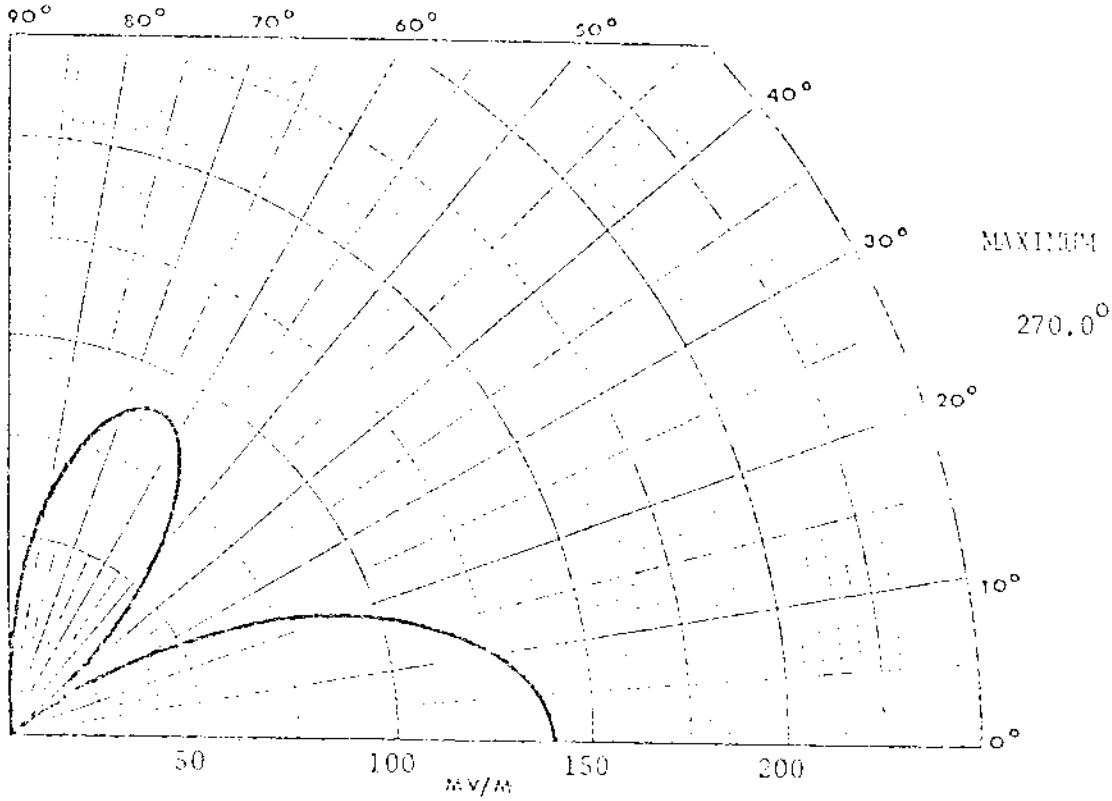
FEBRUARY 26 1974



NIGHTTIME RADIATION PATTERN
NEW AM PORT BASKESBURY
NOVA SCOTIA

10 kw DA-2 1410 kc
Project BLC-517-74 Feb 74
BRUNELLE LAMBERT CONSULTANTS



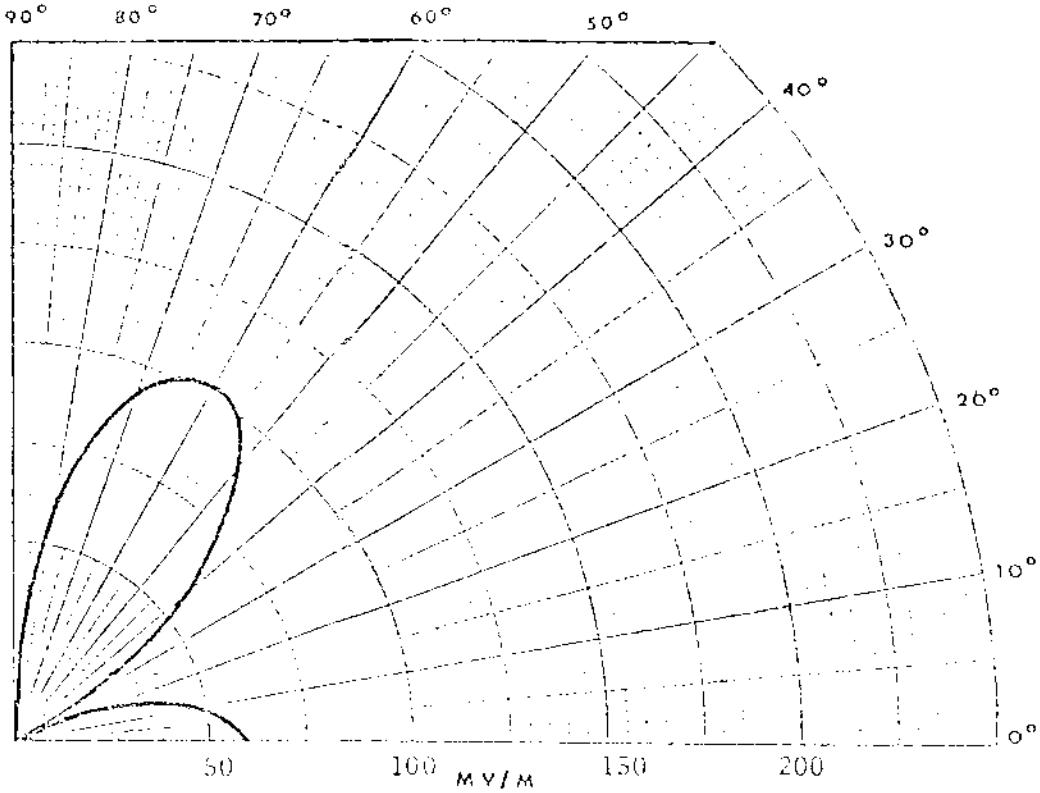


VERTICAL RADIATION PATTERNS

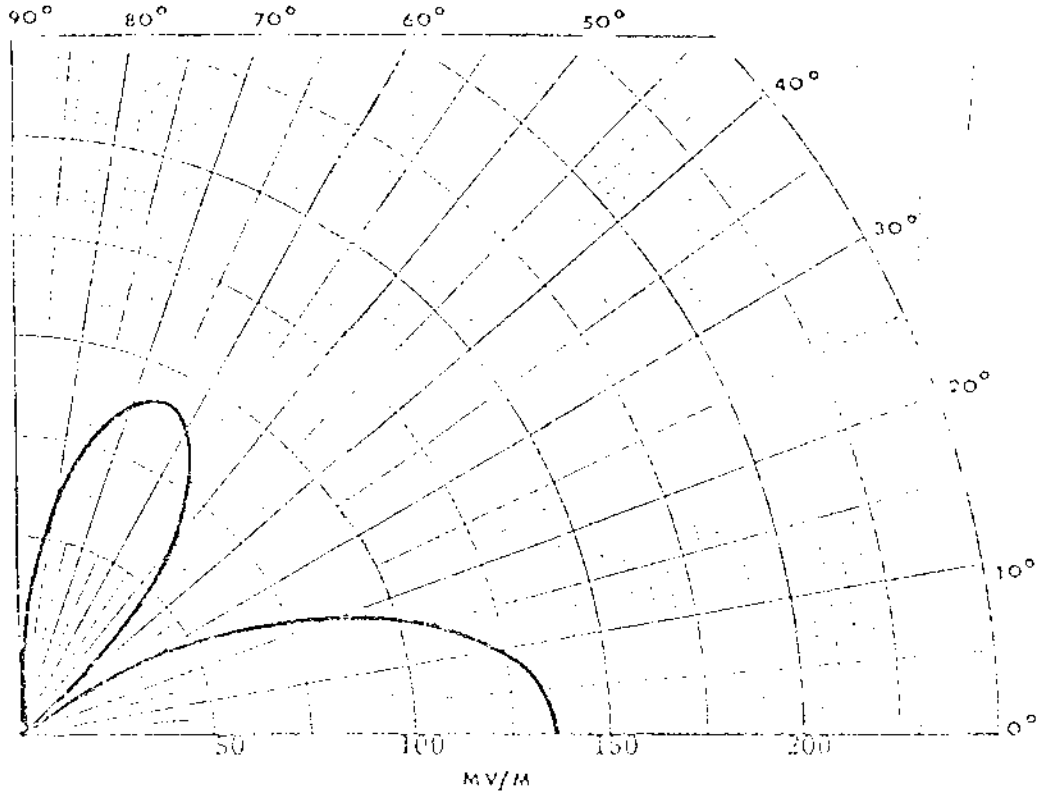
PROPOSED VERTICAL RADIATION PATTERN
NEW PORT HAWKESBURY, N.S.
1410 Kc 10 kw DA-2 CLass III
Project [illegible] Feb 74

[illegible] Communications Consultants Ltd.

Communications Consultants
[illegible]



297.96

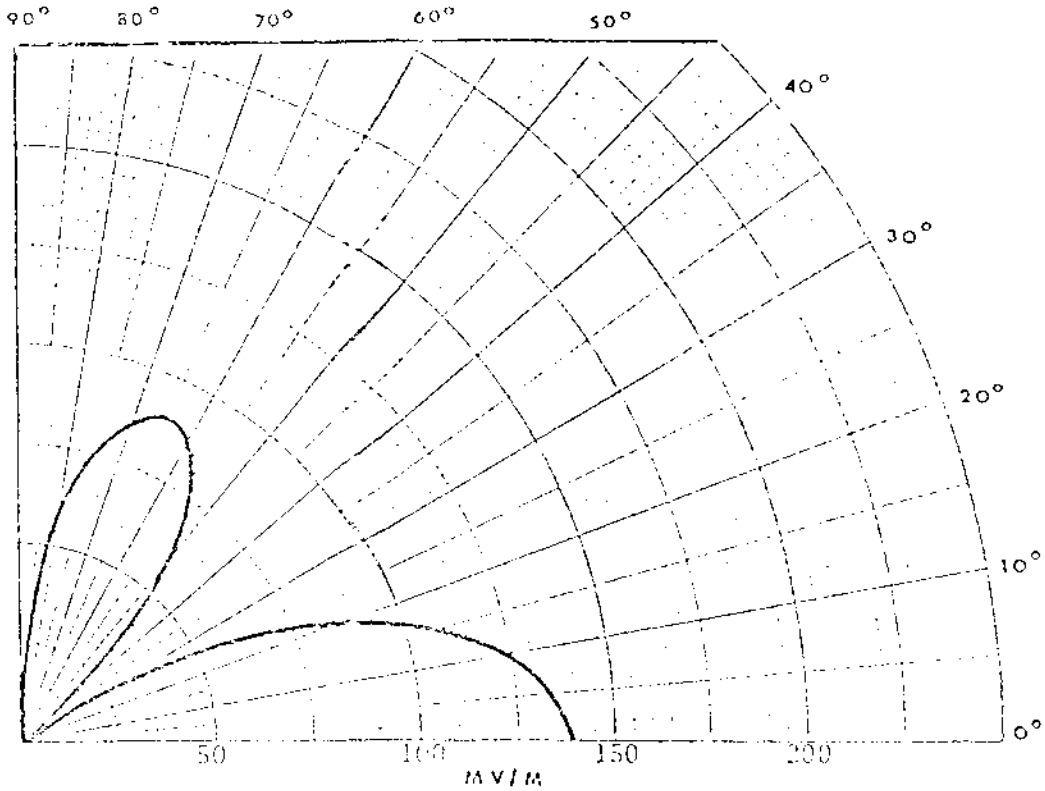


265.88

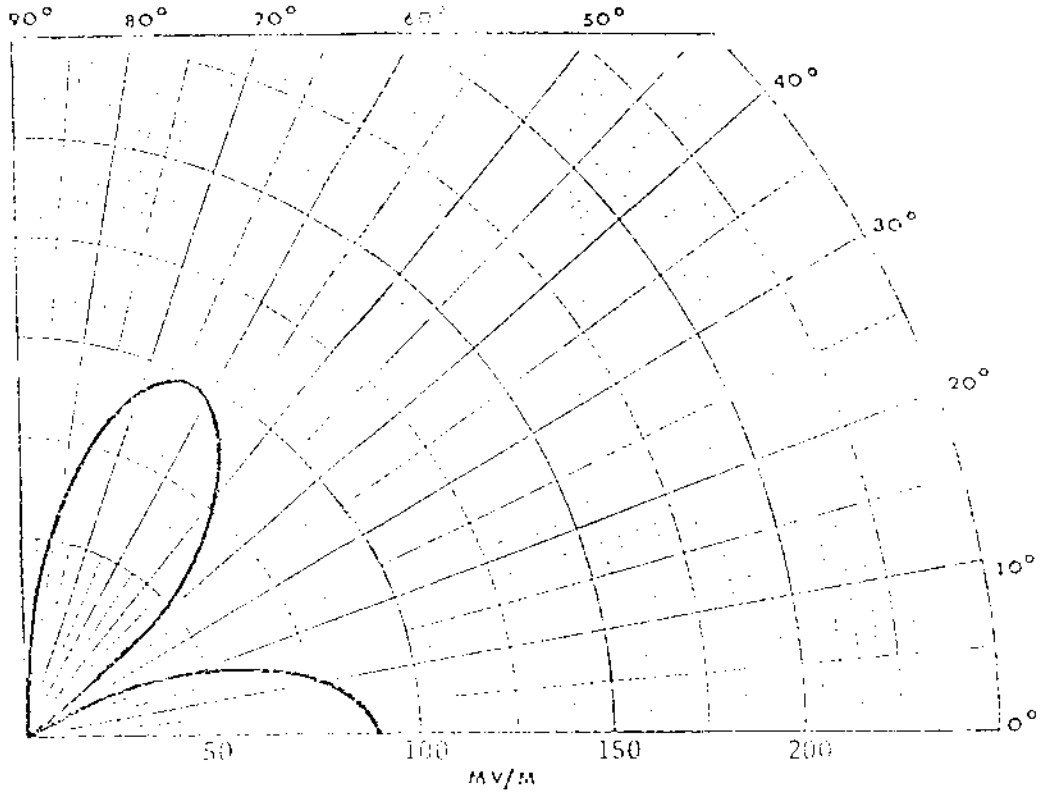
VERTICAL RADIATION PATTERNS

PROPOSED VERTICAL RADIATION PATTERNS
NEW PORT HAWKESBURY, N.S.
1410 kc 10 kw DA-2 Class: III
Project BLC-517-71 Feb 74

Lincoln Lambert Consultants Ltd.
Communications Consultants
Telephone [illegible]



272.38

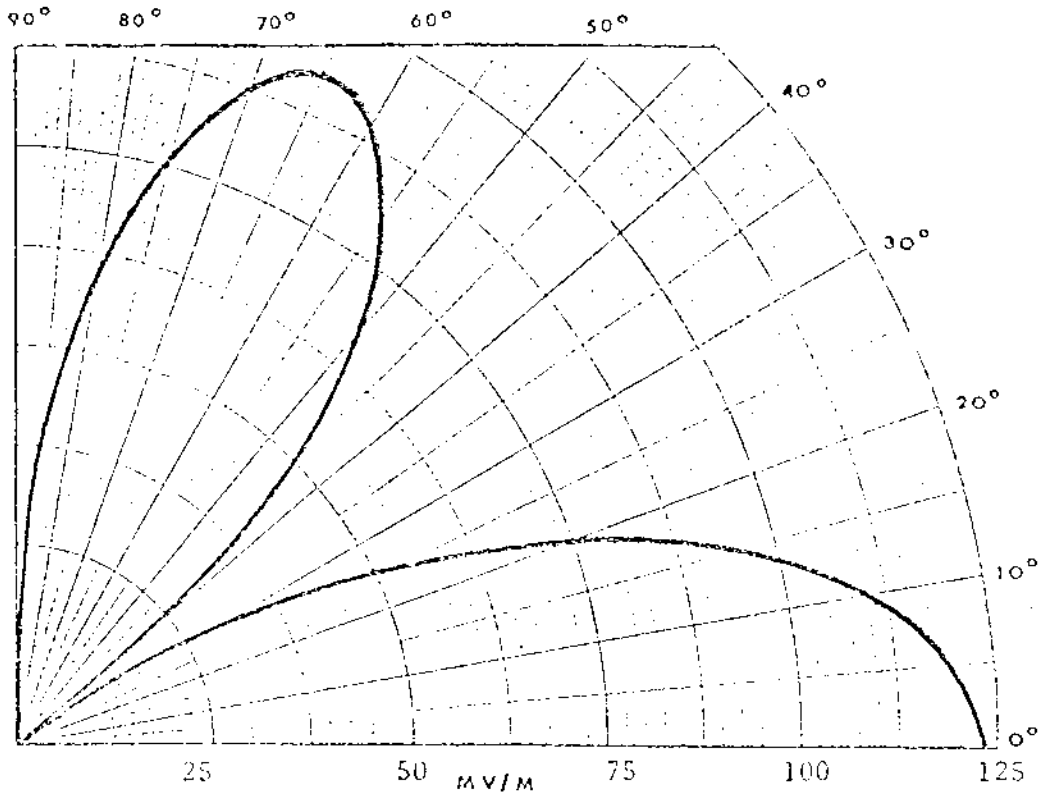


248.02

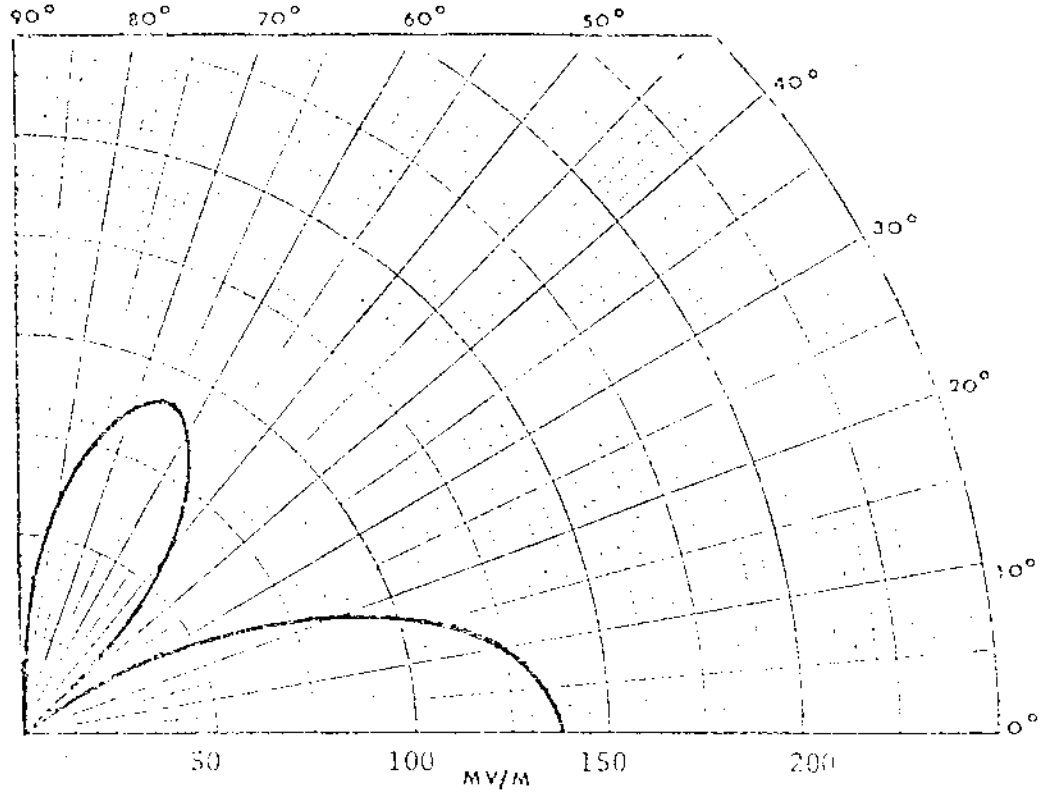
VERTICAL RADIATION PATTERNS

PROPOSED VERTICAL RADIATION PATTERN
NEW PORT HAWKESBURY, N.S.
1420 kc 10 kw DA-2 Class: I
Project BLC-517-74 Feb 74

Lincoln Lambert consulting Ltd.
Communications Consultants



257.62



265.56

VERTICAL RADIATION PATTERNS

PROPOSED VERTICAL RADIATION PATTERNS
NEW PORT HAWKESBURY, N.S.
1410 kc 10 kw DA-2 Class III
Project #EP-517-74 Feb 74

Broadcast Technical Consultants Ltd.
Communications Consultants
Edmonton Alta. T5J 1T1

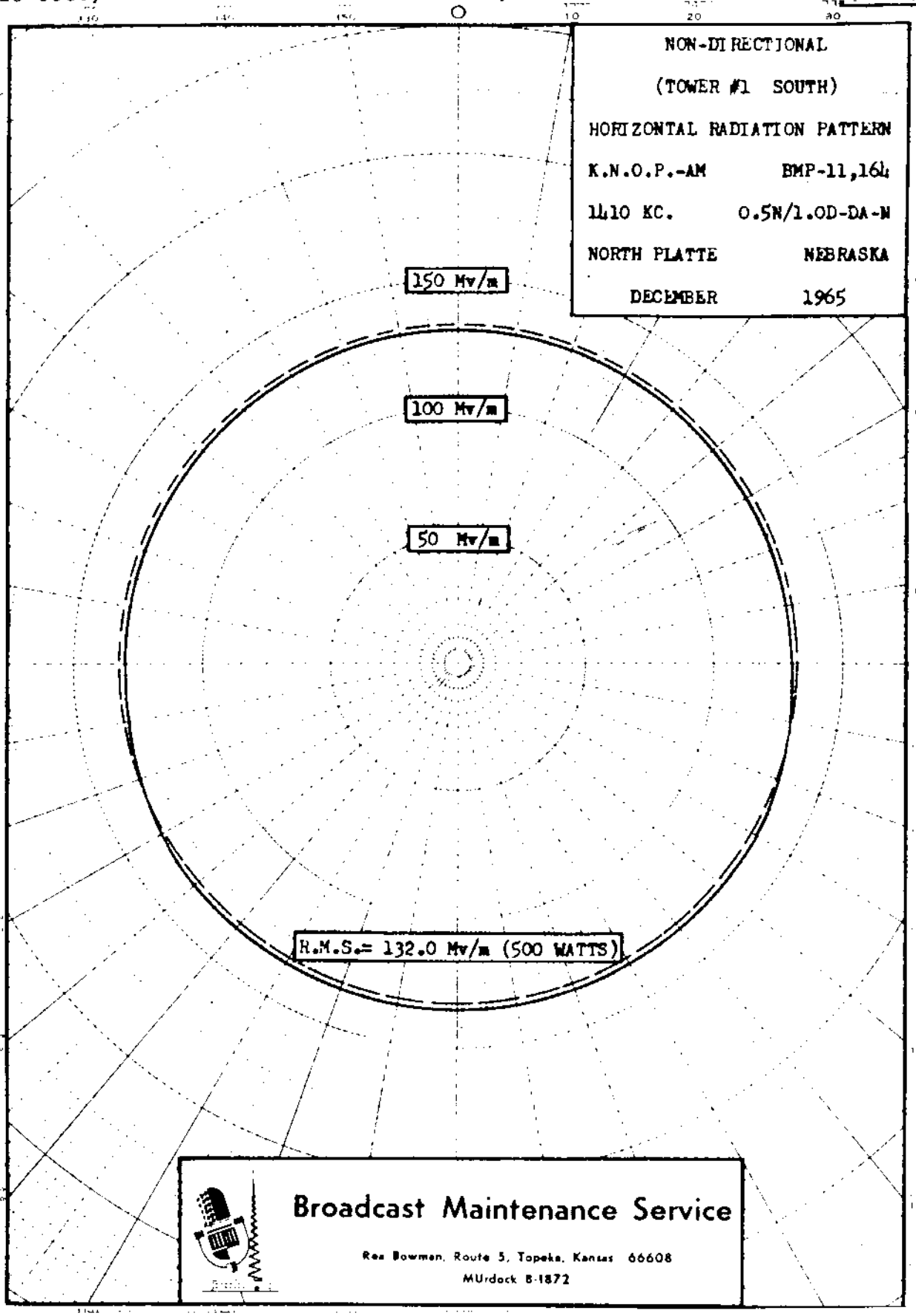
KAML ~~KNOP~~

Measured Non-DA
(2-28-66ct)

Station KNOP
North Platte, Nebraska

500w, 1kw-LS, DA-N, U
1410 kc

IC 3-15-66



FCC File No.BL-11202
Accepted 2-9-66

Station KNOP
North Platte, Nebraska

1410 kc

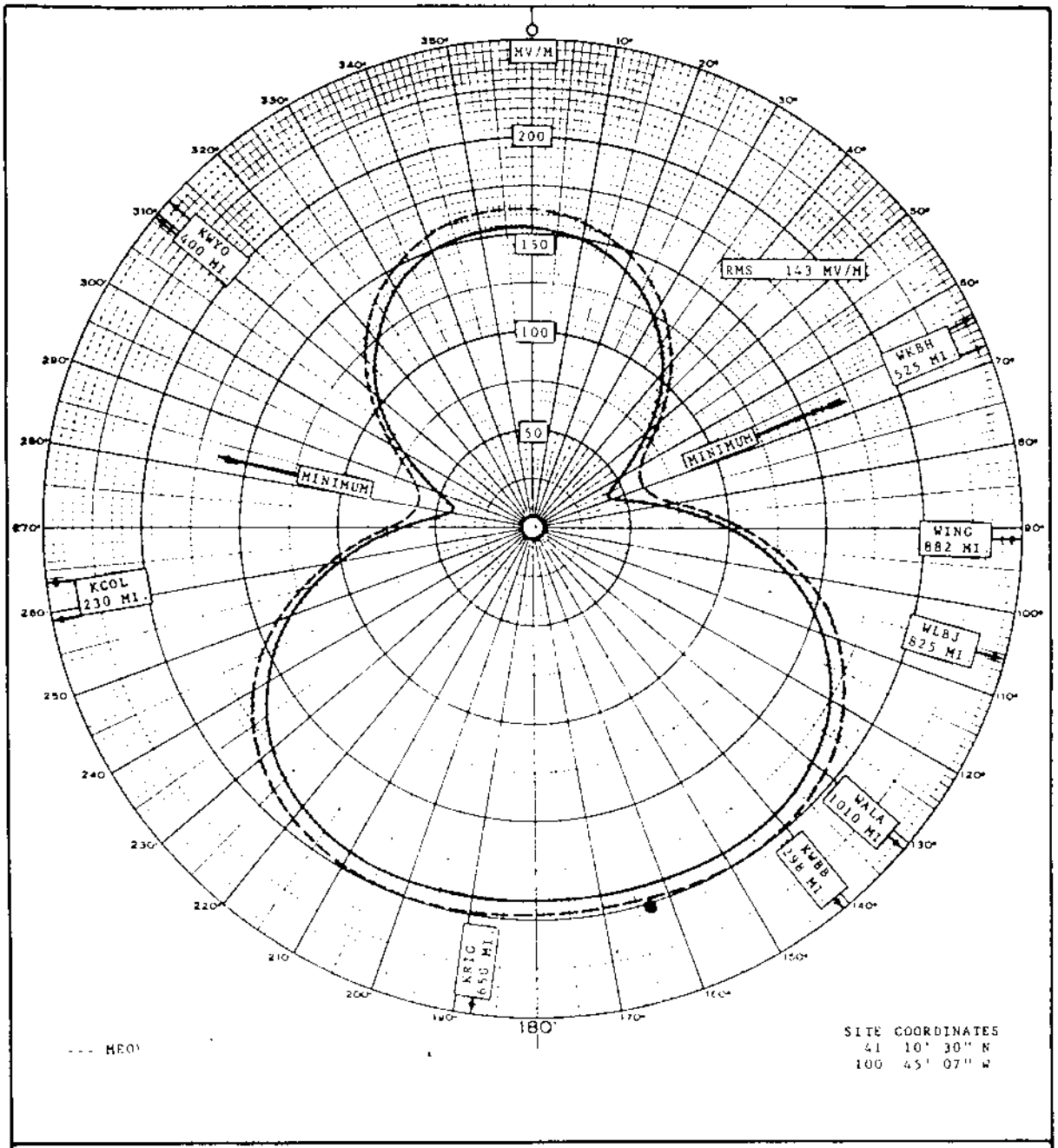
KAHL ~~KNOP~~

Proposed Night
(2-28-64ct)

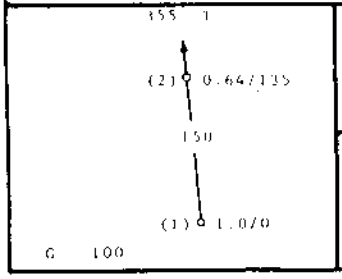
Station KNOP
North Platte, Nebraska

500w,1kw-LS,DA-N,U
1410 kc
Figure 6A
Sheet 1

#201-8-26-64
granted MCP
a DA-N, and
0.5-1kw-LS



PROPOSED NIGHT HORIZONTAL PLANE RADIATION PATTERN



NORTH PLATTE TELEVISION, INC.
NORTH PLATTE, NEBRASKA

Jules Cohen & Associates
Consulting Electronics Engineers

PROPOSED OPERATION
RADIO STATION KNOP
1410 KC
0.5 KW, 1 KW-LS U DA-N
Pattern 631220
Amended

FCC File No.BMP-11164
Accepted 2-13-64

Station KNOP
North Platte, Nebraska

1410 kc

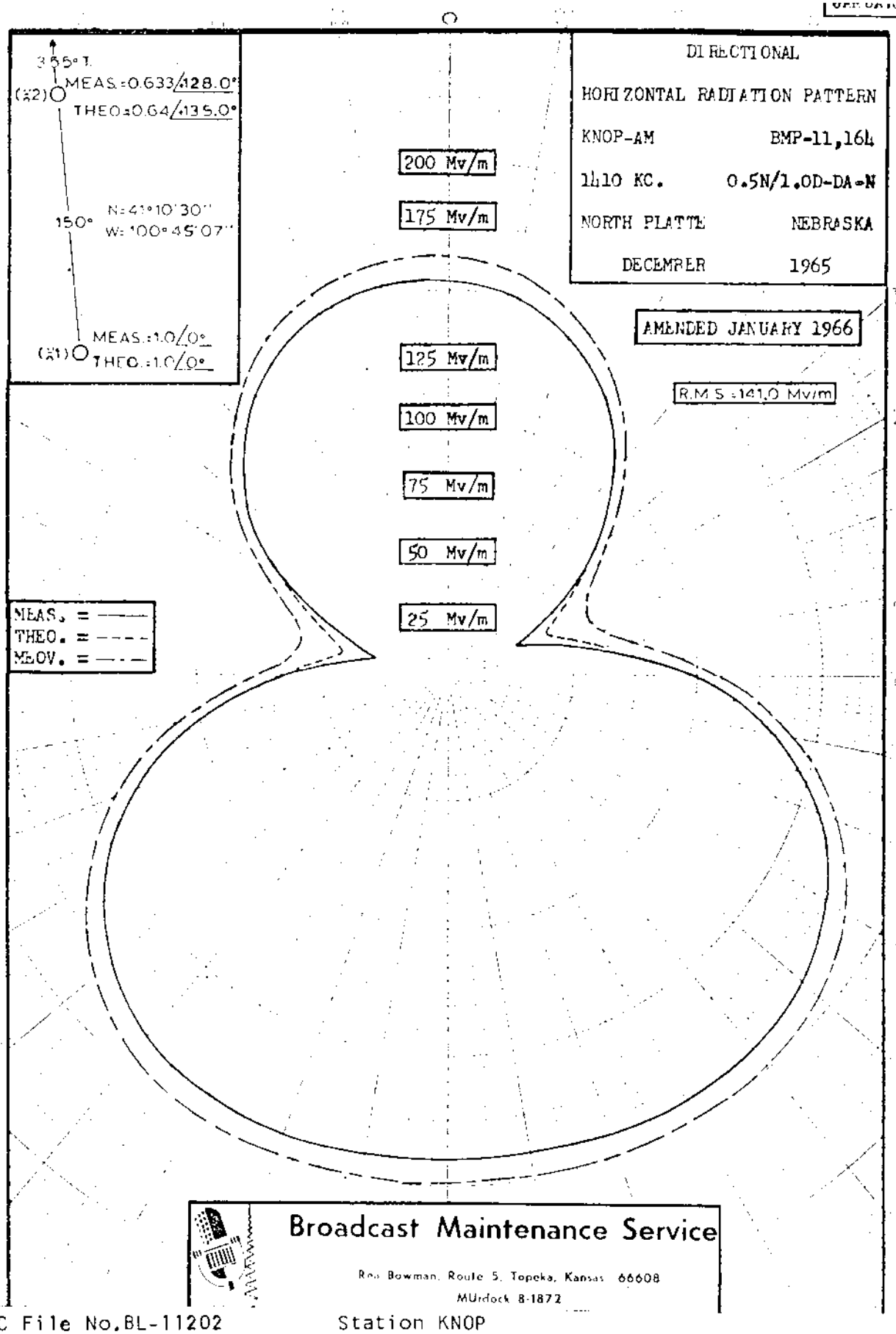
KAHL ~~KNOP~~

Measured Night
(2-28-66ct)

Station KNOP
North Platte, Nebraska

500w, 1kw-LS, DA-N, U
1410 kc

LIC. 3-15-66



FCC File No.BL-11202
Accepted 2-9-66

Station KNOP
North Platte, Nebraska

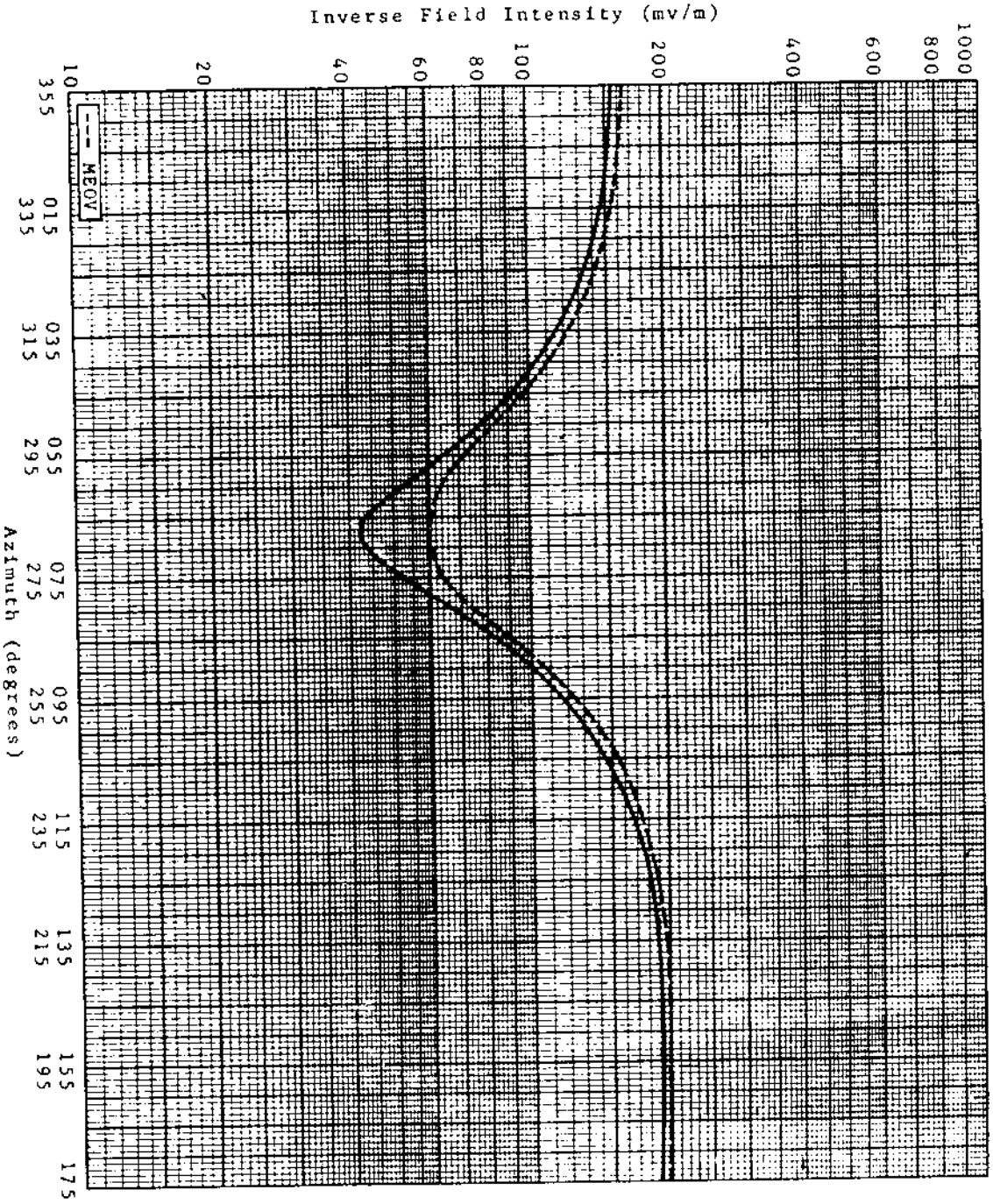
1410 kc

KAHL ~~KNOP~~

Proposed Night Nulls
(2-28-64ct)

Station KNOP
North Platte, Nebraska

500w,1kw-LS,DA-N,U
1410 kc



PROPOSED NIGHT HORIZONTAL PLANE RADIATION PATTERN
RADIO STATION KNOP
1410 KC 0.5 KW, 1 KW-LS U DA-N
NORTH PLATTE TELEVISION, INC NORTH PLATTE, NEBRASKA

Figure 6A
Sheet 2

FCC File No.BMP-11164
Accepted 2-13-64

Station KNOP
North Platte, Nebraska

1410 kc

KAHL

SUPPLEMENTAL DIRECTIONAL ANTENNA
DESCRIPTION SHEET

Station: KAHL

Main Studio: North Platte, Nebraska

Frequency: 1410 kHz

Power: 0.5 kW Night 5 kW DAY

Notification List No. 1699

Date: August 24, 1976 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: North Latitude: 41° 10' 30"

West Longitude: 100° 45' 07"

Authorized for Night operation (DA-N).

Predicted effective Day Field: (omnidirectional) 436 mV/m at rated power.

Note: Please retain the description sheet and directional antenna radiation patterns notified for station KNOP in United States Change List Number 1076, dated September 2, 1964 and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only an increase in daytime power from 1 kW with nighttime operation continued as previously notified.

CTR NO 31097A

Bowie, Texas

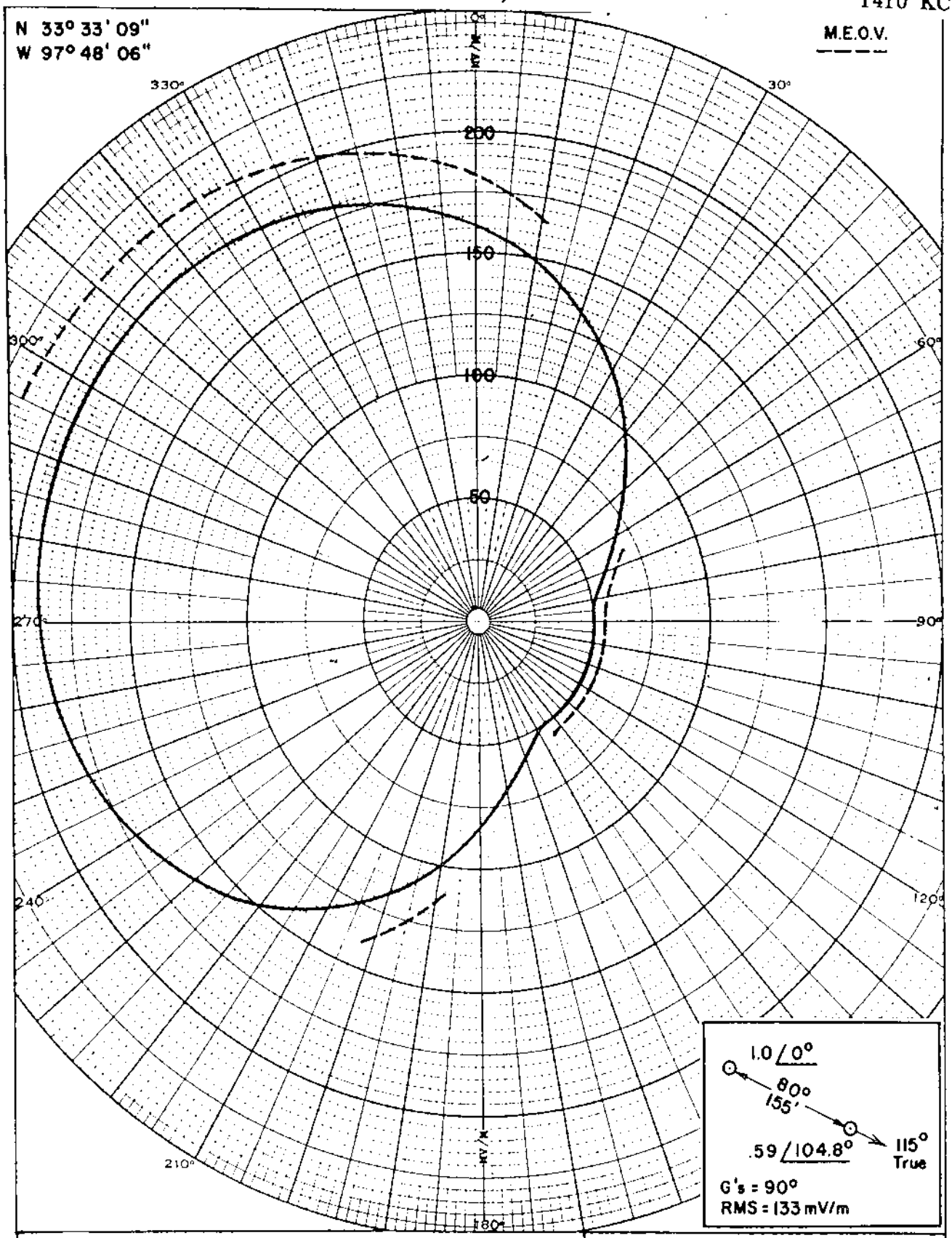
KBAN

PROPOSED DAY
(7/19/57g)

New, Bowie-Nocona Bcstng. Co.
Bowie, Texas

500w, DA-D,D
1410 KC

Granted CP 2/3/59 for a new station



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

PATTERN: PROPOSED DAYTIME
FOR: BOWIE, TEXAS
POWER: 500 Watts FREQ: 1410 KC
DATE: 7/1/57

FCC File No. BP-11,241
Accepted 7/15/57 (Amended)

Bowie-Nocona Bcstng. Co.
Bowie, Texas

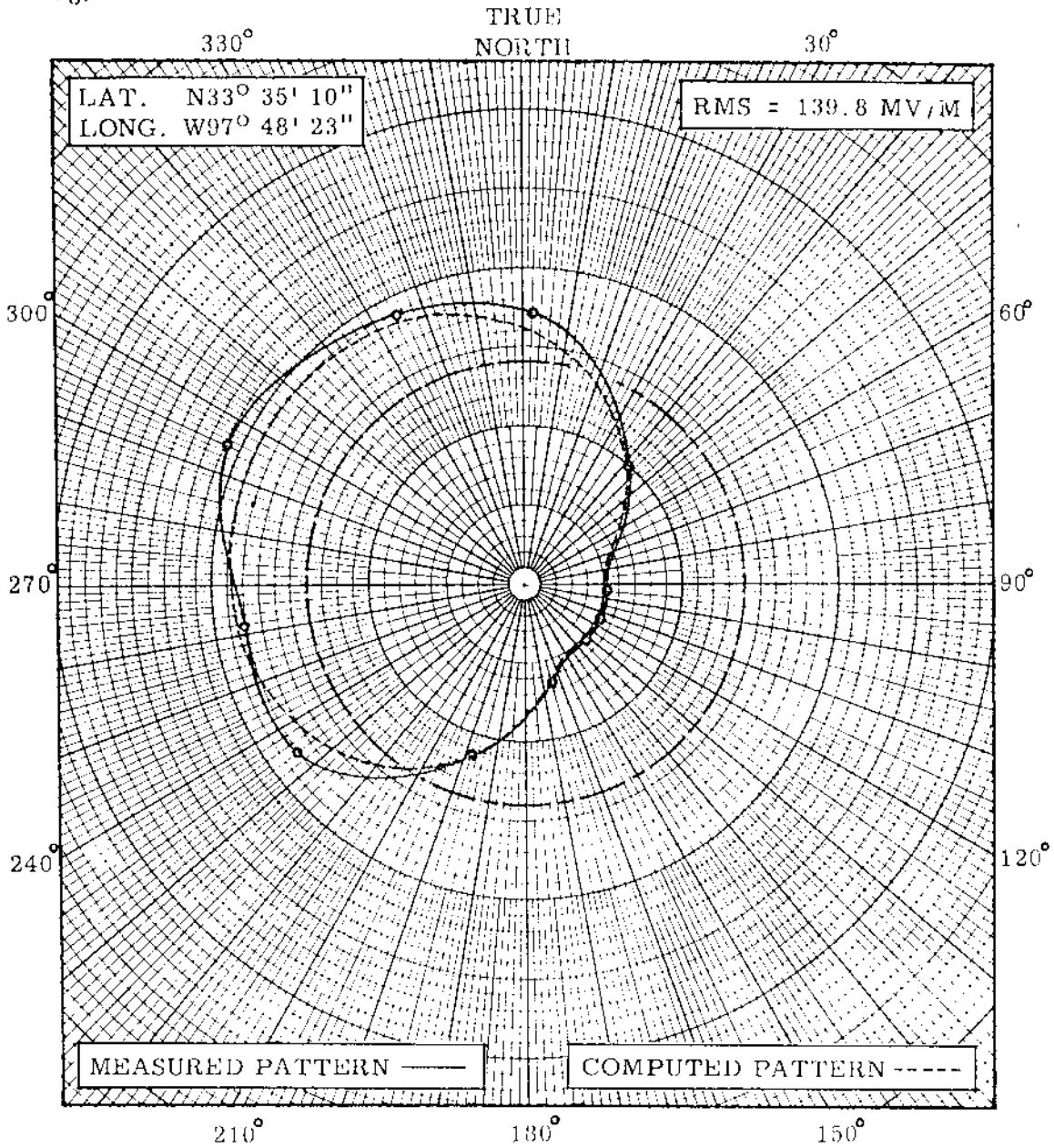
1410 KC

Final

MEASURED DAY
(7-8-59g)

Station KBAN
Bowie, Texas

500w, DA-D, D
1410 KC



Graded for new station 11-18-59

Theoretical Values	RADIO STATION KBAN BOWIE, TEXAS MEASURED DIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN 1410 KC DA-D 500 WATTS	
0.59/0° (1) — S — 1.0/104.8° (2) → 115°T G = 90° = 175' S = 80° = 155.1'	051659-3 FIGURE 3	MERL SAXON CONSULTING RADIO ENGINEER LUFKIN, TEXAS

FCC File No. BL-7515
Accepted 6-30-59

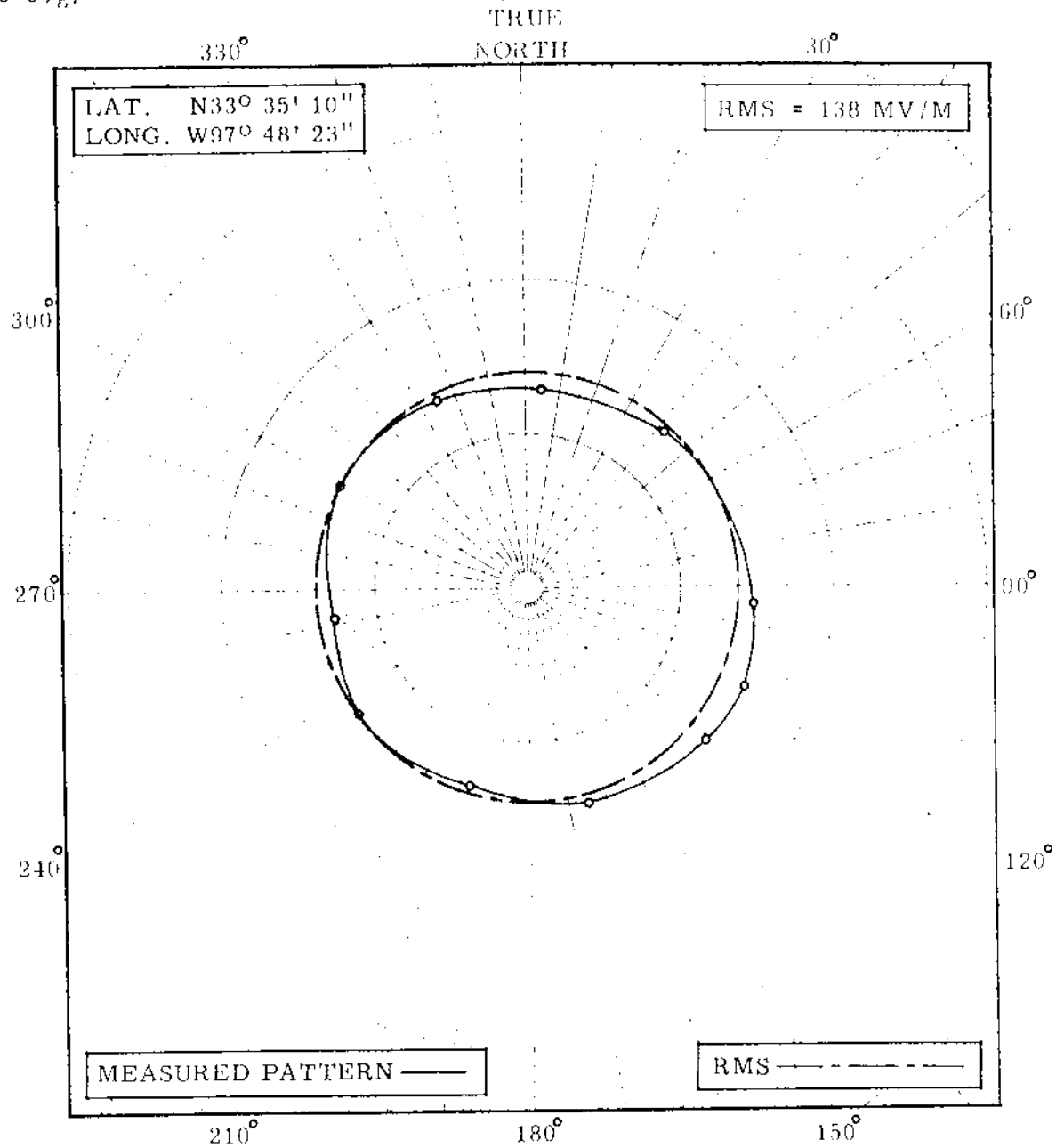
KBAN
Bowie, Texas

1410 KC

MEASURED NON-DA
(7-8-59g)

Station KBAN
Bowie, Texas

500w, DA-D, D
1410 KC



11-18-57 granted L for new antenna

0.5 KW
(1)
Isolated
(2)

G = 90° = 175'
S = 80° = 155.1'

RADIO STATION KBAN
BOWIE, TEXAS

MEASURED NON-DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
1410 KC 500 WATTS

051659-2

FIGURE 2

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No. BL-7515
Accepted 6-30-59

KBAN
Bowie, Texas

1410 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET KBCC

Station: (New) Main Studio: Cuba, Missouri

Frequency: 1410 kHz Power: 1 kW

Notification List No. 1736 Date: June 2, 1977 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 38° 05' 06"
West Longitude: 91° 18' 40"

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:	SW(#3)	C(#1)	NE(#2)
HEIGHT ABOVE INSULATORS:	100'	100'	100' (51.6°)
PHASING:	-128.4°	0°	+92.3°
FIELD RATIO:	0.5	1	0.5

SPACING AND ORIENTATION: From reference tower #1, tower #2 is spaced 174.5' (90°) on a line bearing 47° true, and tower #3 is spaced 174.5' (90°) on a line bearing 207° true.

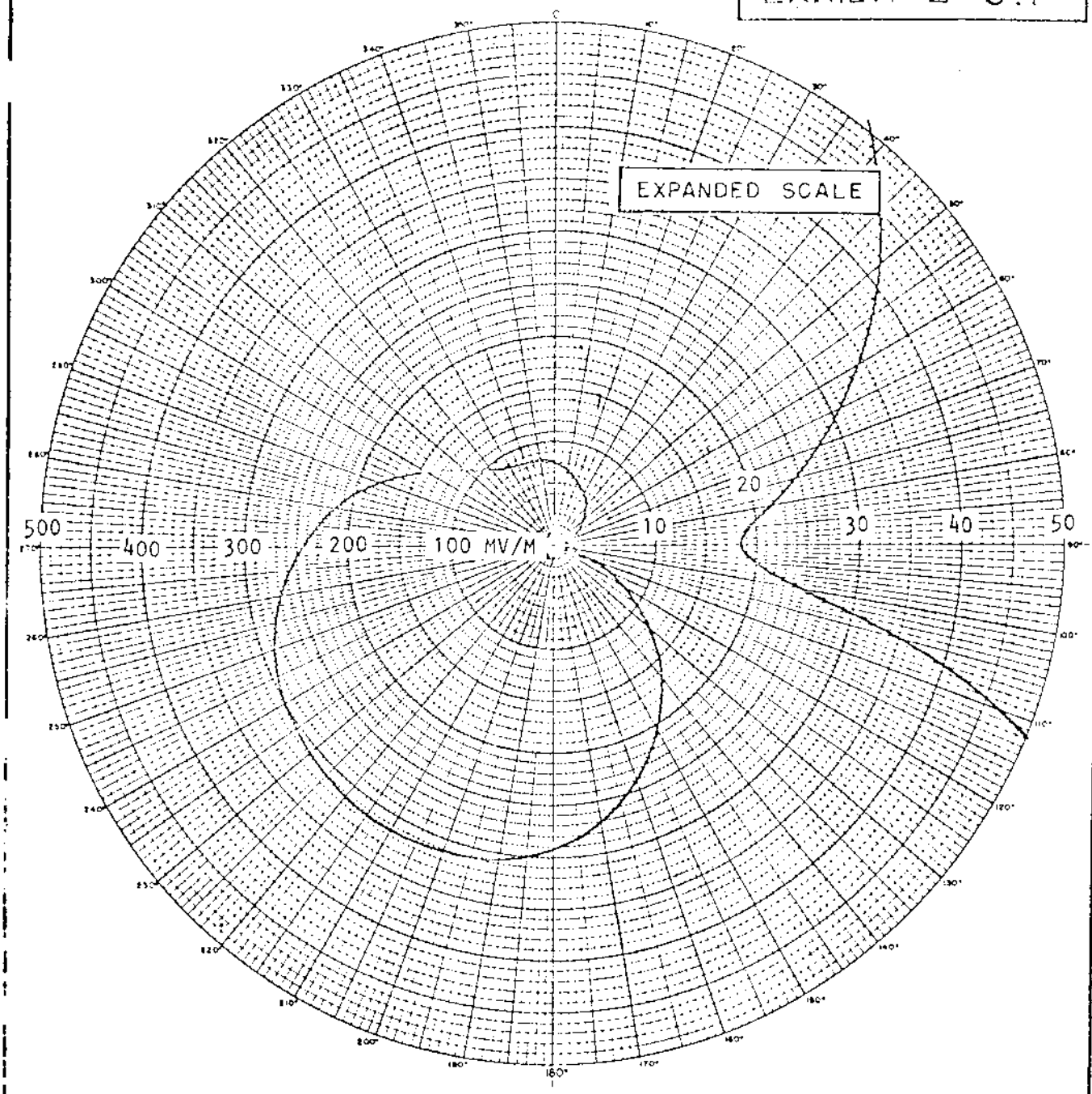
GROUND SYSTEM: 120-174.5' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

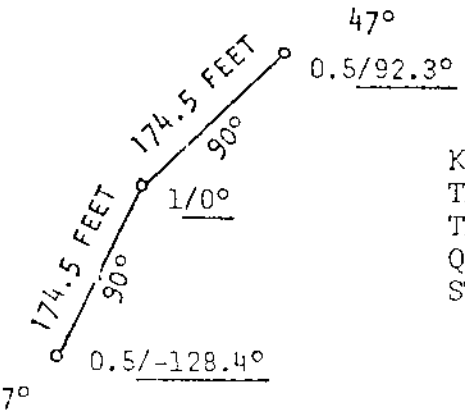
	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	178.779 mv/m	192.196 mv/m	187.723 mv/m

Standard Pattern KBCC

EXHIBIT E-5.1



STANDARD HORIZONTAL RADIATION PATTERN



K-FACTOR	156.927 mv/m
THEO RMS	178.779 mv/m
THEO RSS	192.196 mv/m
Q FACTOR	6
STD RMS	187.723 mv/m

ELECTRICAL HEIGHT

51.6° 100 Feet

APPLICANT	Crawford B'd Co.Inc.
LOCATION	Cuba, Missouri
FREQUENCY	1410 KC/S
POWER	1 KW
LATITUDE	38 DEG 05 MIN 05.9 SEC
LONGITUDE	91 DEG 18 MIN 40 SEC
WHEN USED	Daytime
R.M.S. FIELD	
DATE	September 1975

ROBERT L. MIERS
CONSULTING RADIO ENGINEER
ROLLA, MISSOURI 65401

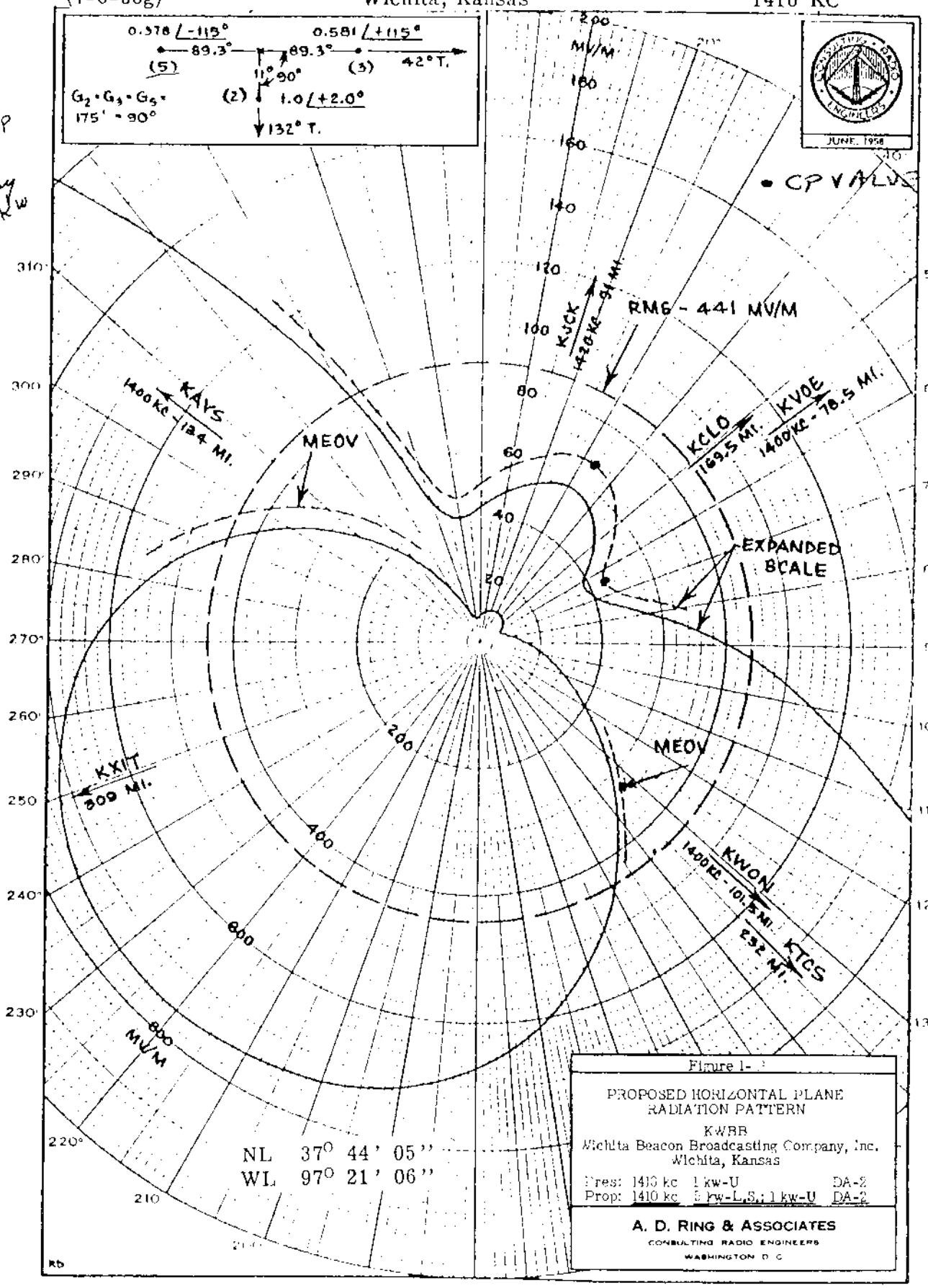
KBUL KWBB

PROPOSED DAY
(7-8-58g)

Station KWBB
Wichita, Kansas

1kw,5kw-LS, DA-2,U
1410 KC

Granted CP 2/3/59 to increase day power to 5 Kw DA-D



FCC File No. BP-11,207
Accepted 6-19-58

KWBB
Wichita, Kansas

1410 KC

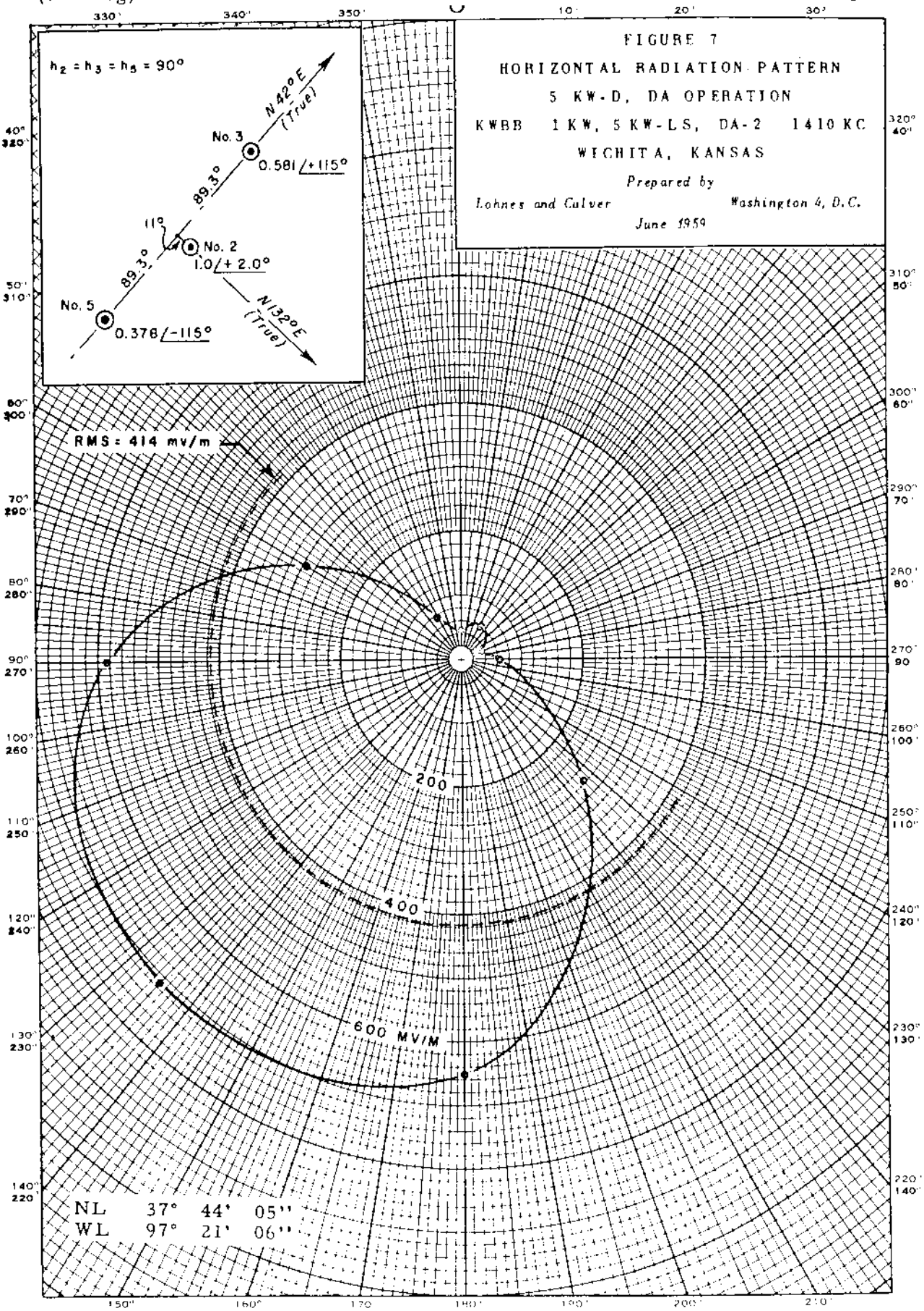
Wichita Kansas KWBB

granted for change in DA 11-18-59

MEASURED DAY
(9-4-59g)

Station KWBB
Wichita, Kansas

1kw,5kw-LS,DA-2,U
1410 KC



FCC File No. BL-7547
Accepted 8-20-59

KWBB
Wichita, Kansas

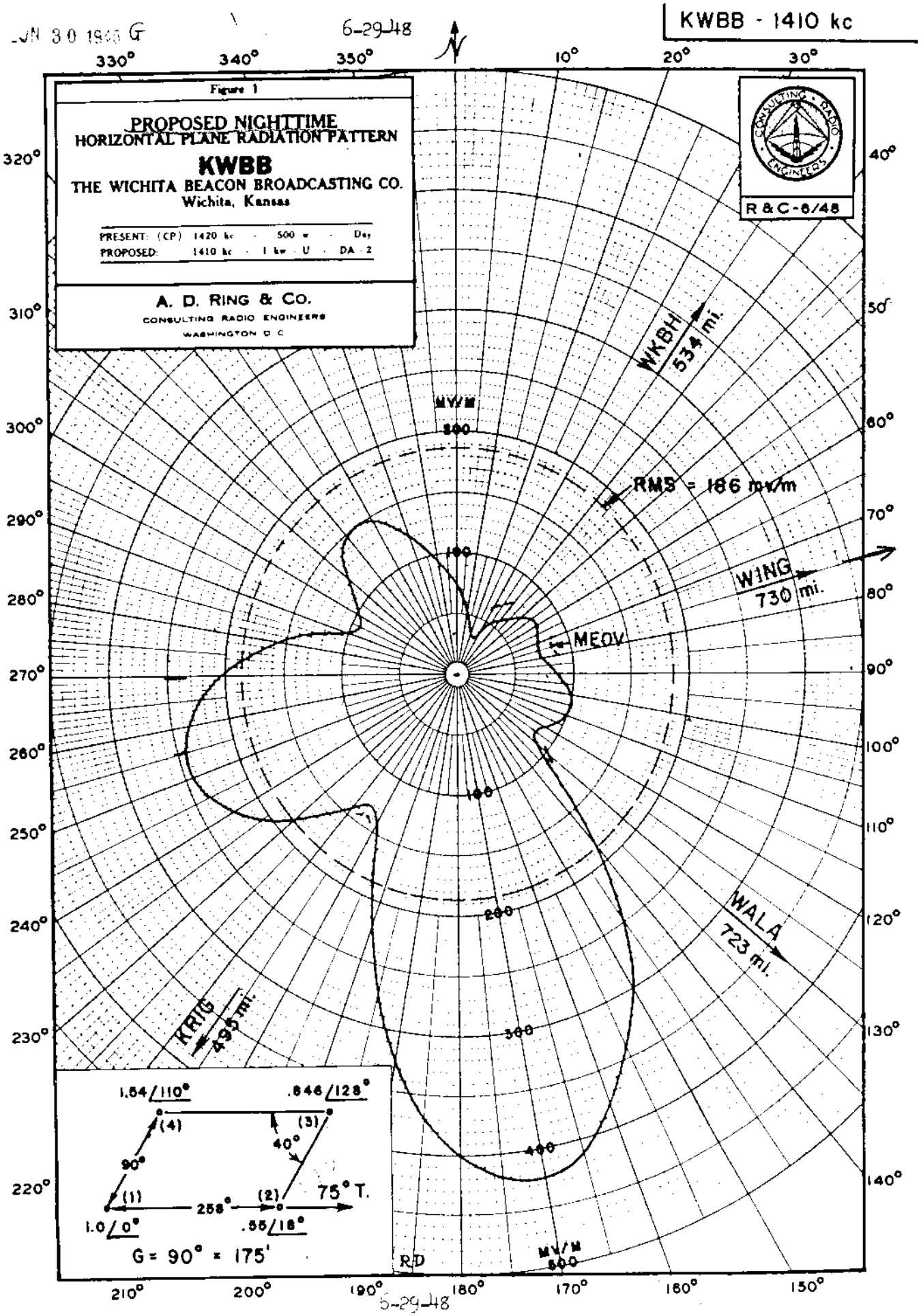
1410 KC

KBUL ~~KWBB~~

JUN 30 1948 G

6-29-48

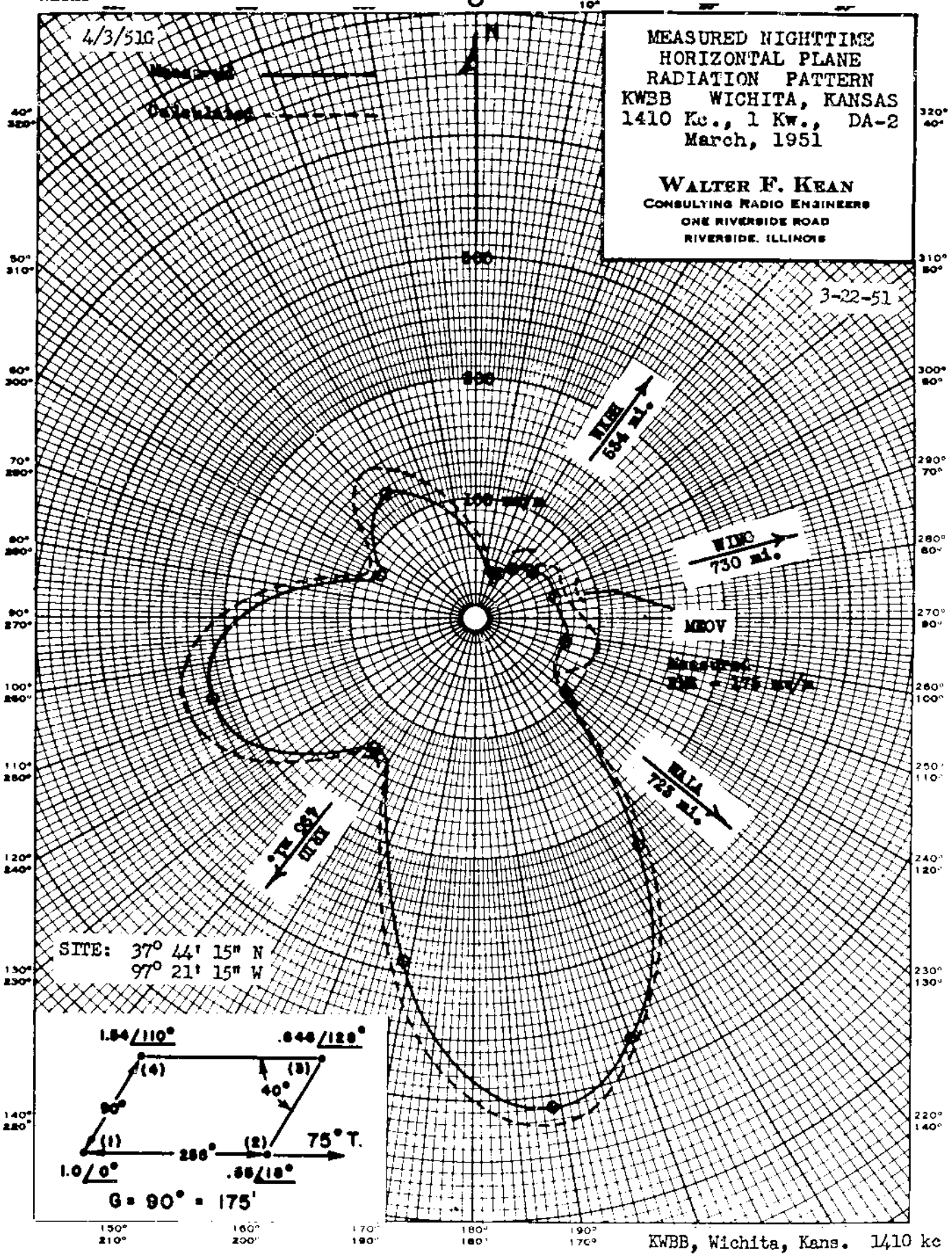
KWBB - 1410 kc



6-29-48

KBUL KWBB

MEASURED NIGHT KWBB, WICHITA, KANS. 1kw, DA-2 1410 kc



KWBB, Wichita, Kans. 1410 kc

KBUL KWBB

granted L for change in DA
11-18-59

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

Station KWBB
Wichita, Kansas

1kw,5kw-LS,DA-2,U
1410 KC

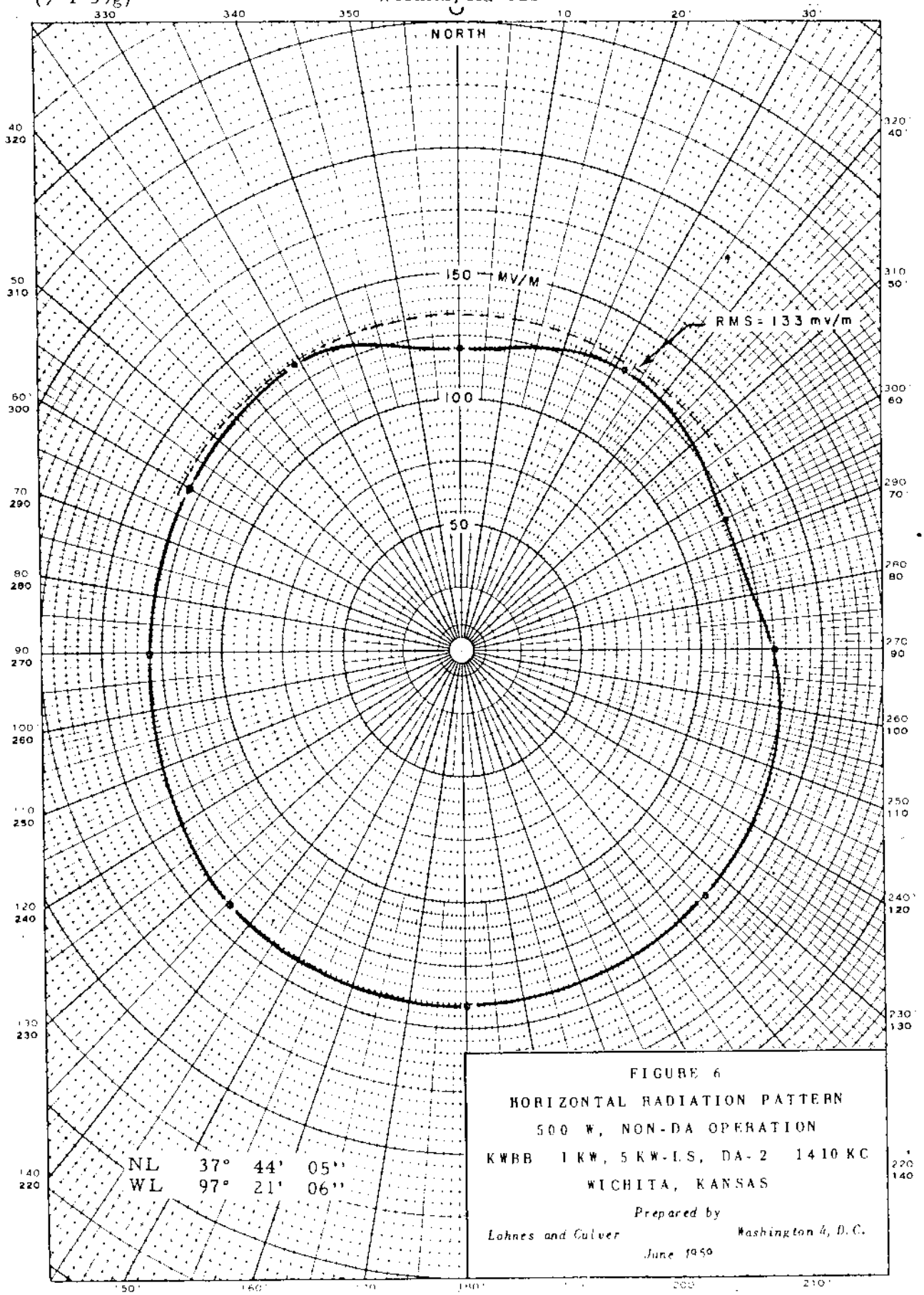


FIGURE 6
HORIZONTAL RADIATION PATTERN
500 W, NON-DA OPERATION
KWBB 1 KW, 5 KW-LS, DA-2 1410 KC
WICHITA, KANSAS
Prepared by
Lohnes and Culver *Washington 4, D.C.*
June 1959

FCC File No. BL-7547
Accepted 8-20-59

KWBB
Wichita, Kansas

1410 KC

KCAL

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KCAL | Main Studio: Redlands, California

Frequency: 1410 kc/s | Power: 0.5 kw Night 5 kw Day

Notification List No. 1635 | Date: June 3, 1975 | Class: III

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

Daytime		Nighttime	
North Latitude:	34° 04' 08"	North Latitude:	34° 06' 40"
West Longitude:	117° 12' 06"	West Longitude:	117° 09' 10"

NIGHTTIME 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:	S(#3)	C(#1)	N(#2)
HEIGHT ABOVE INSULATORS:	213'	213'	213' (110°)
NIGHT PHASING:	-153°	0°	+153°
NIGHT FIELD RATIO:	0.5	1.0	0.5

SPACING AND ORIENTATION: Adjacent elements are spaced 174.2' (90°) on a line bearing 20° true.

GROUND SYSTEM: 120-175' 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 Night Field: 145.4 mv/m at rated power.

DAYTIME ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (ND-D)
Number of elements: 1
Type of element: Series-excited, uniform cross-section, guyed, vertical steel tower.

HEIGHT ABOVE INSULATOR: 186' (95.9°)

contd.

KCAL

GROUND SYSTEM: 120-150' to 200' equally spaced copper radials plus 120-50' interspaced radials about the tower.

Predicted effective Day Field: (omnidirectional) 392 mv/m at rated power by adjustment of input power.

Note: Please retain the Nighttime directional antenna radiation pattern notified for Station KCAL in United States Change List Number 978 dated October 3, 1962, and attach to this Revised Description Sheet. This notification conerns only a change in the Daytime operation of the station with Nighttime operation continued as previously notified.

CTR NO 30643A3

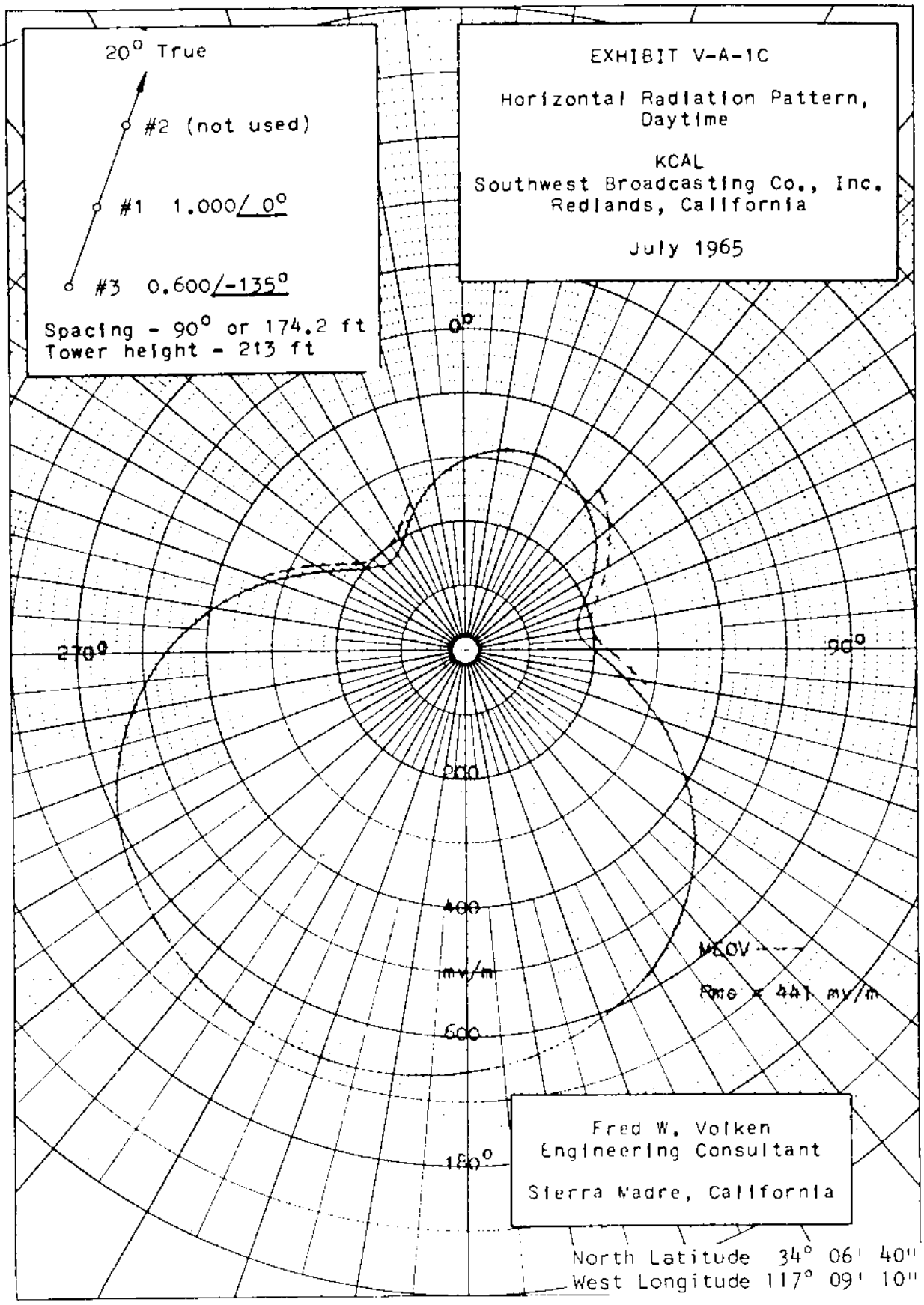
KCAL

Proposed Day
(9-28-65ct)

Station KCAL
Redlands, California

500w,5kw-LS,DA-2,U
1410 kc

MCP 8-30-65
CHG. DAY DA
PA 8-3-66
DA-N



FCC File No. BMP-11578
Accepted 8-26-65

Station KCAL
Redlands, California

1410 kc

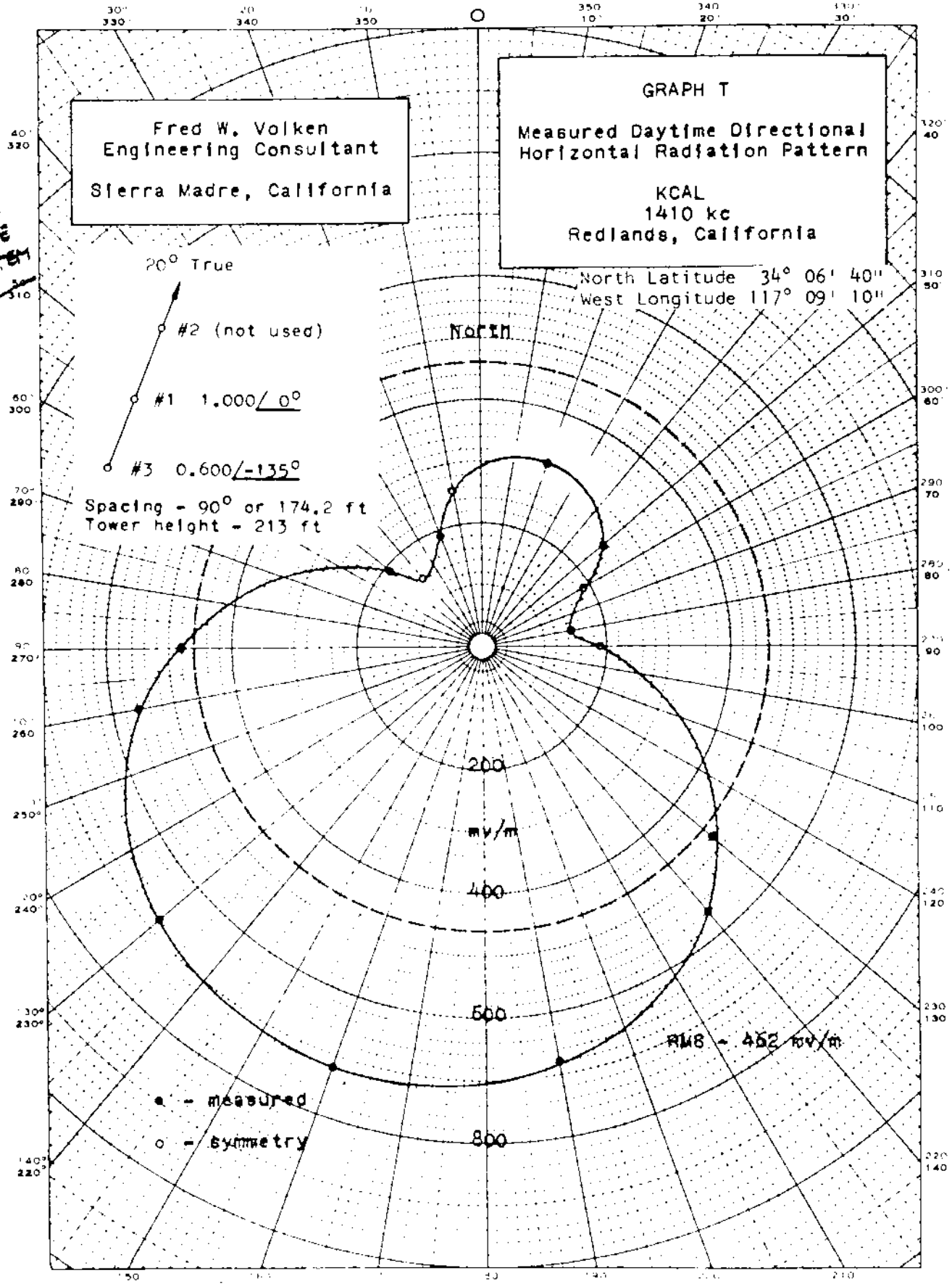
KCAL

Measured Day
(7-28-66ct)

Station KCAL
Redlands, California

500w,5kw-LS,DA-2,U
1410 kc

RA. DA-N
8-3-66
6-7-67
GRANTED
REVISE
CHANGE
SYSTEM



FCC File No. BL-11341
Accepted 6-30-66

Station KCAL
Redlands, California

1410 kc

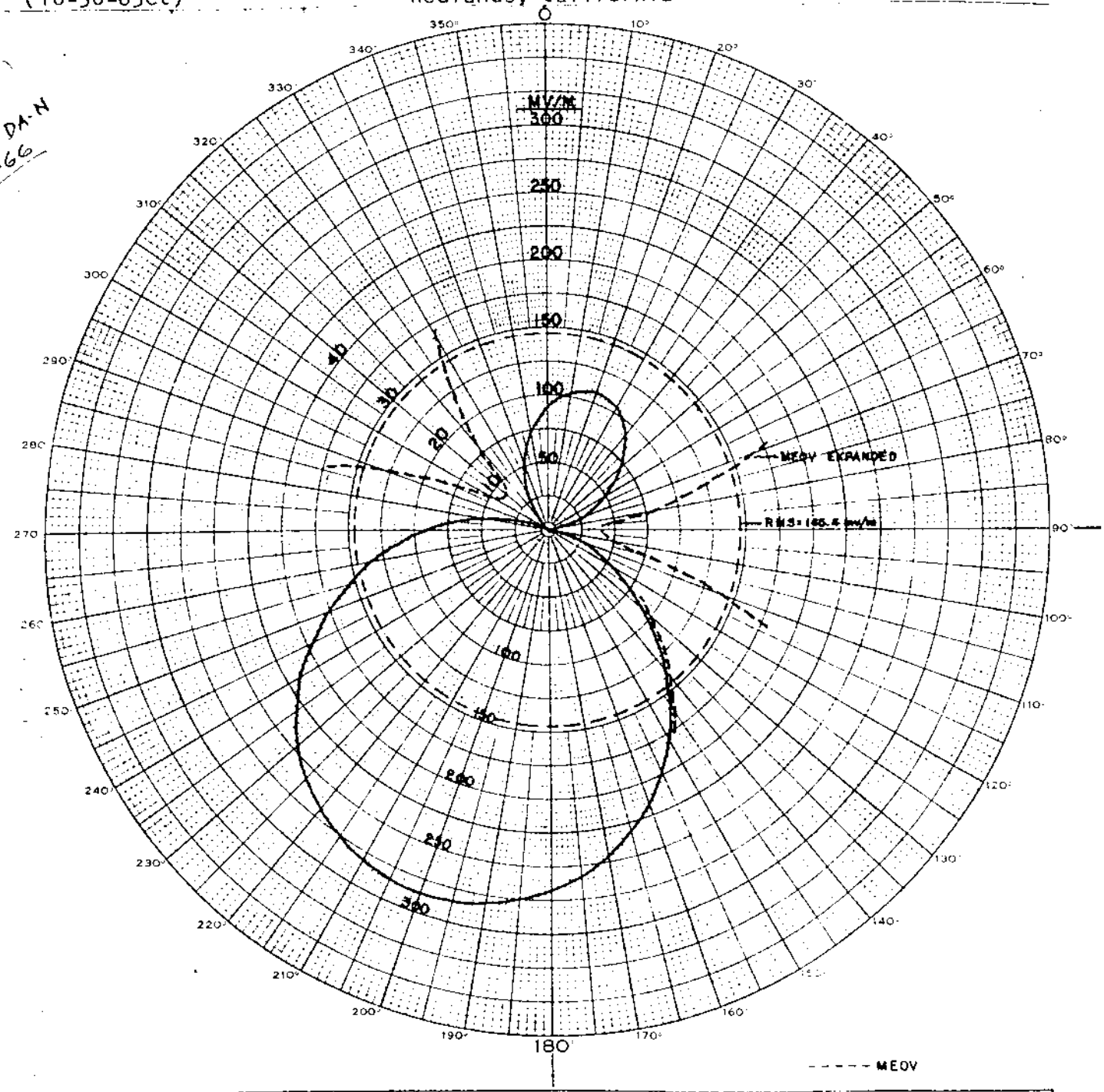
KCAL

Proposed Night
(10-30-63ct)

Station KCAL
Redlands, California

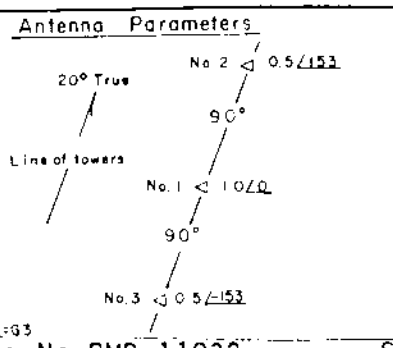
500w,5kw-LS,DA-2,U
1410 kc

P.A. DA-N
8-3-66



HORIZONTAL RADIATION PATTERN — FIGURE No. 4

Antenna Parameters



Floyd Hall
Radio Engineering
Consultant

Club San Moritz
Crestline,
California

APPLICANT:	KCAL
LOCATION:	REDLANDS, CALIFORNIA
FREQ.: 1410 KC/S	POWER: 0.5 KW
LAT.: 34° 06' 39" N	LONG.: 117° 09' 02" W
TIME OF OPERATION	NIGHT
TYPE OF OPERATION:	DA-2
RMS FIELD:	145.4 MV/M
PATTERN No. 620524-R1	SUPERSEDES 620524-R
DATE: 8-27-63	BY:

FCC File No.BMP-11032
Accepted 10-23-63

Station KCAL
Redlands, California

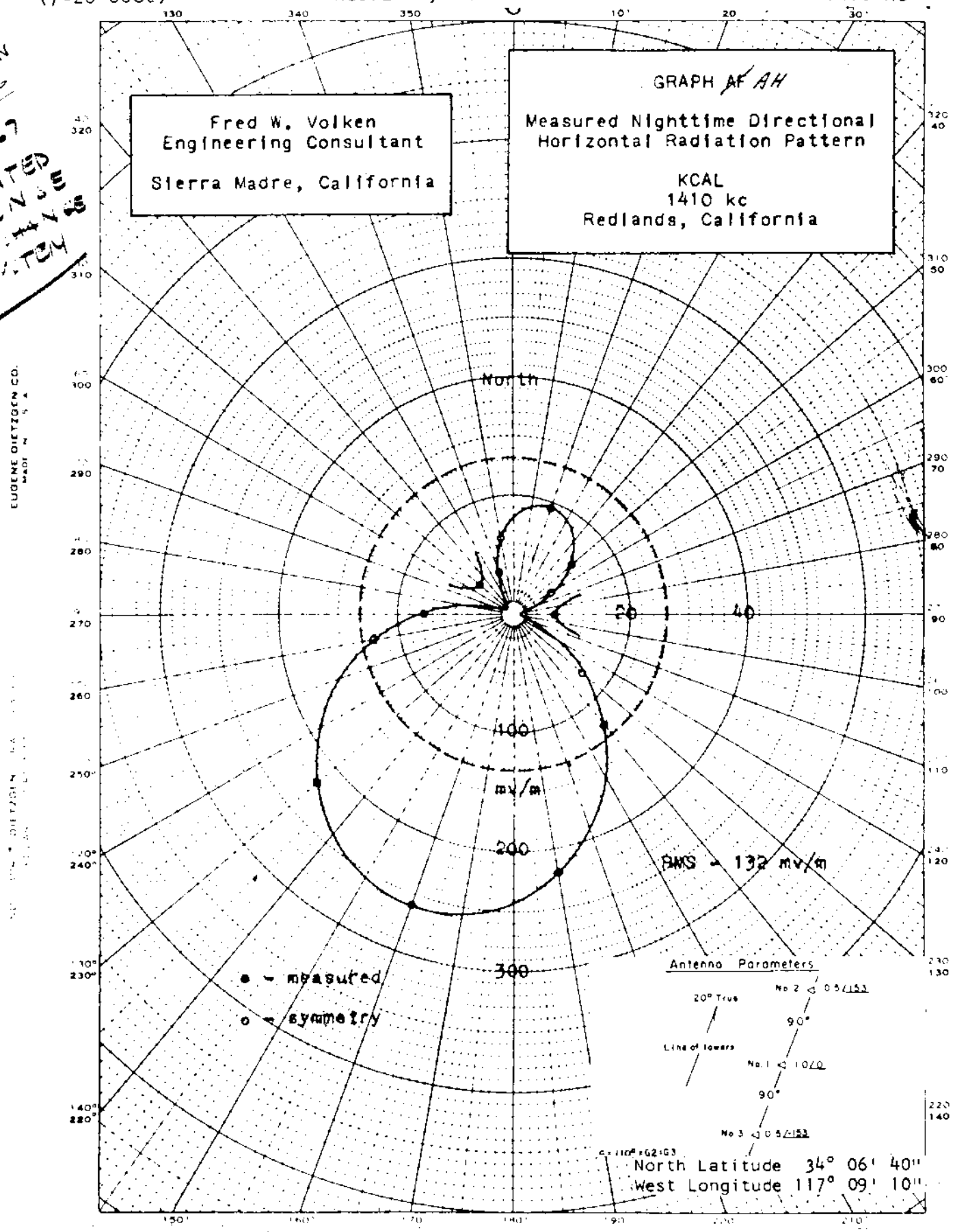
1410 kc

KCAL

Measured Night
(7-28-66ct)

Station KCAL
Redlands, California

500w,5kw-LS,DA-2,U
1410 kc



FCC File No. BL-11341
Accepted 6-30-66

Station KCAL
Redlands, California

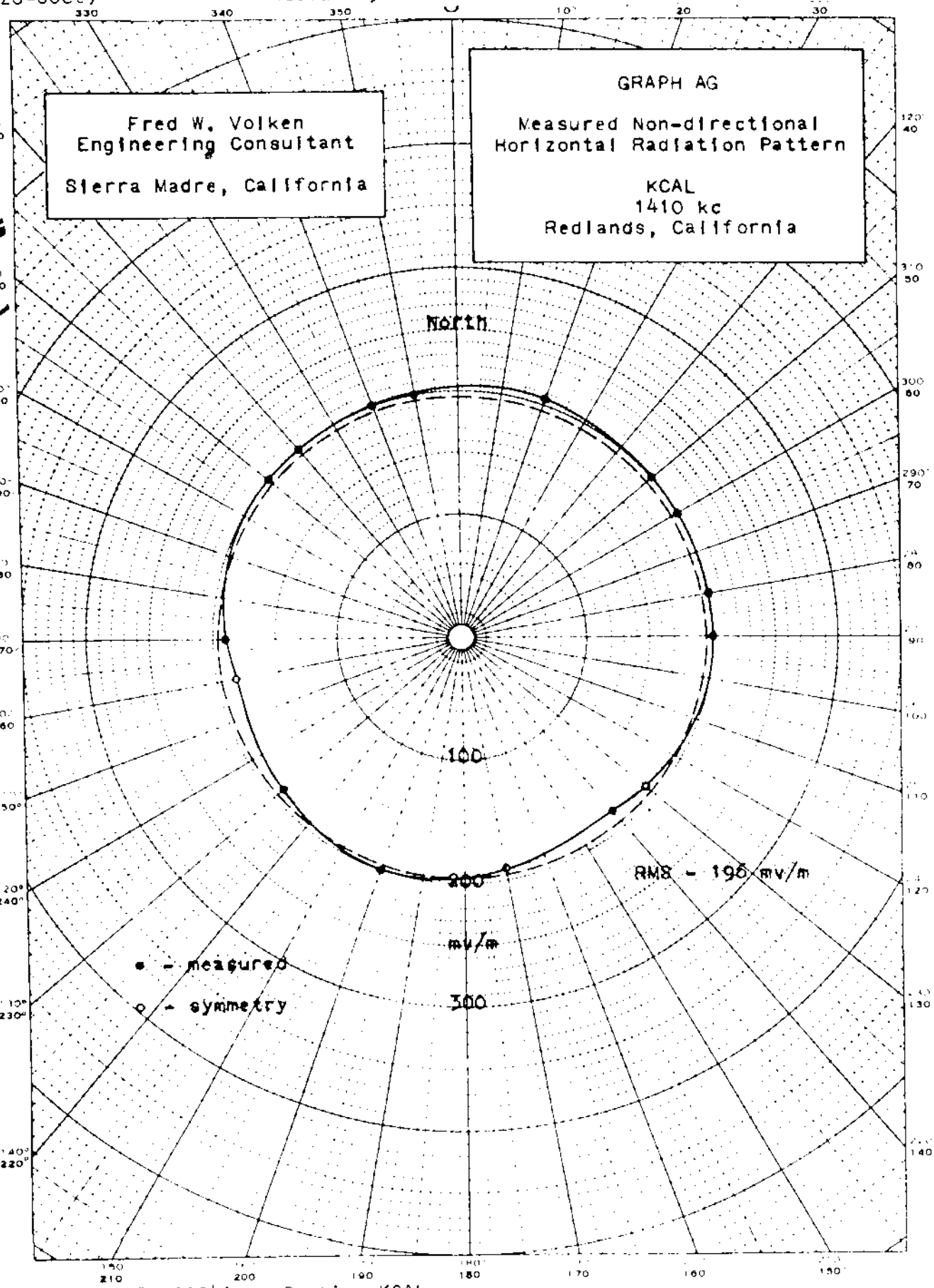
1410 kc

KCAL

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

Station KCAL
Redlands, California

500w,5kw-LS,DA-2,U
1410 kc



FCC File No. BL-11341
Accepted 6-30-66

Station KCAL
Redlands, California

1410 kc

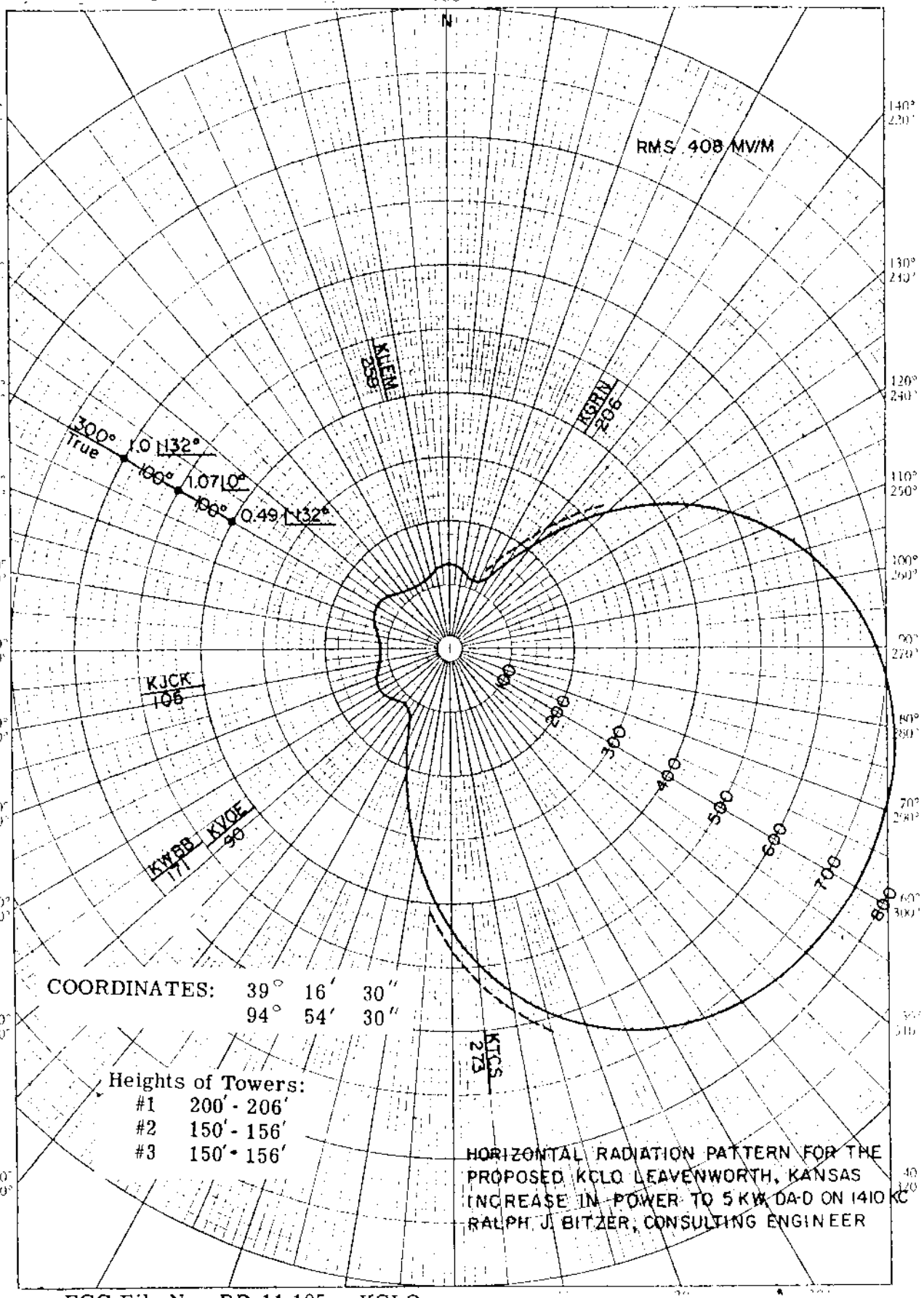
KCLO

PROPOSED DAY
(4/24/57g)

Station KCLO
Leavonworth, Kansas

5kw, DA-D,D
1410 KC

Granted CP 2-3-59 to increase day power to 5 KW DA-D



FCC File No. BP-11,195
Accepted 4/17/57

KCLO
Leavonworth, Kansas

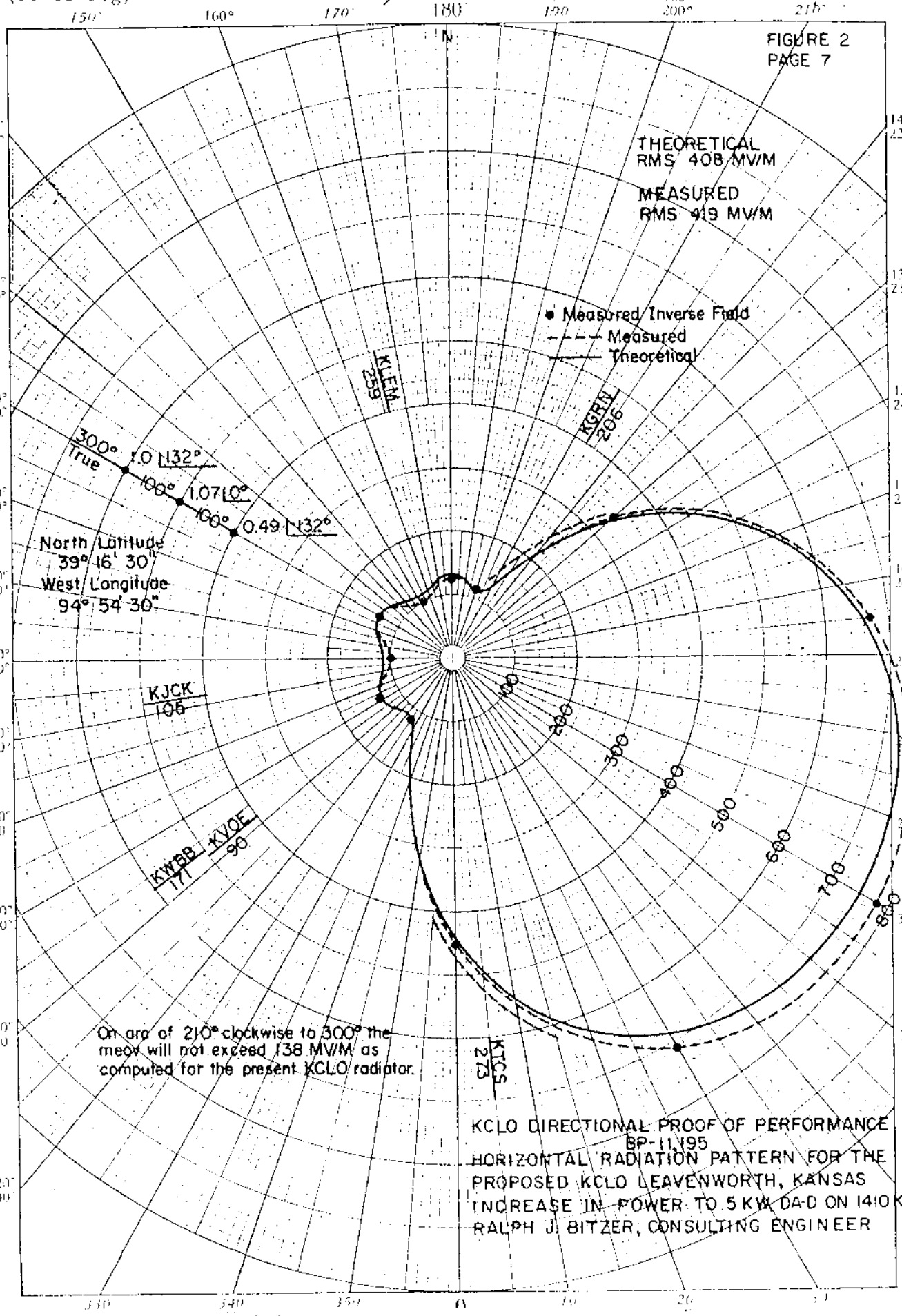
1410 KC

KCLO

MEASURED DAY
(11-16-59g)

Station KCLO
Leavenworth, Kansas

5kw, DA-D,D
1410 KC



Granted for increase in power
Indicated by DA - 12-31-59

FCC File No. BL-7636
Accepted 10-28-59

KCLO
Leavonworth, Kansas

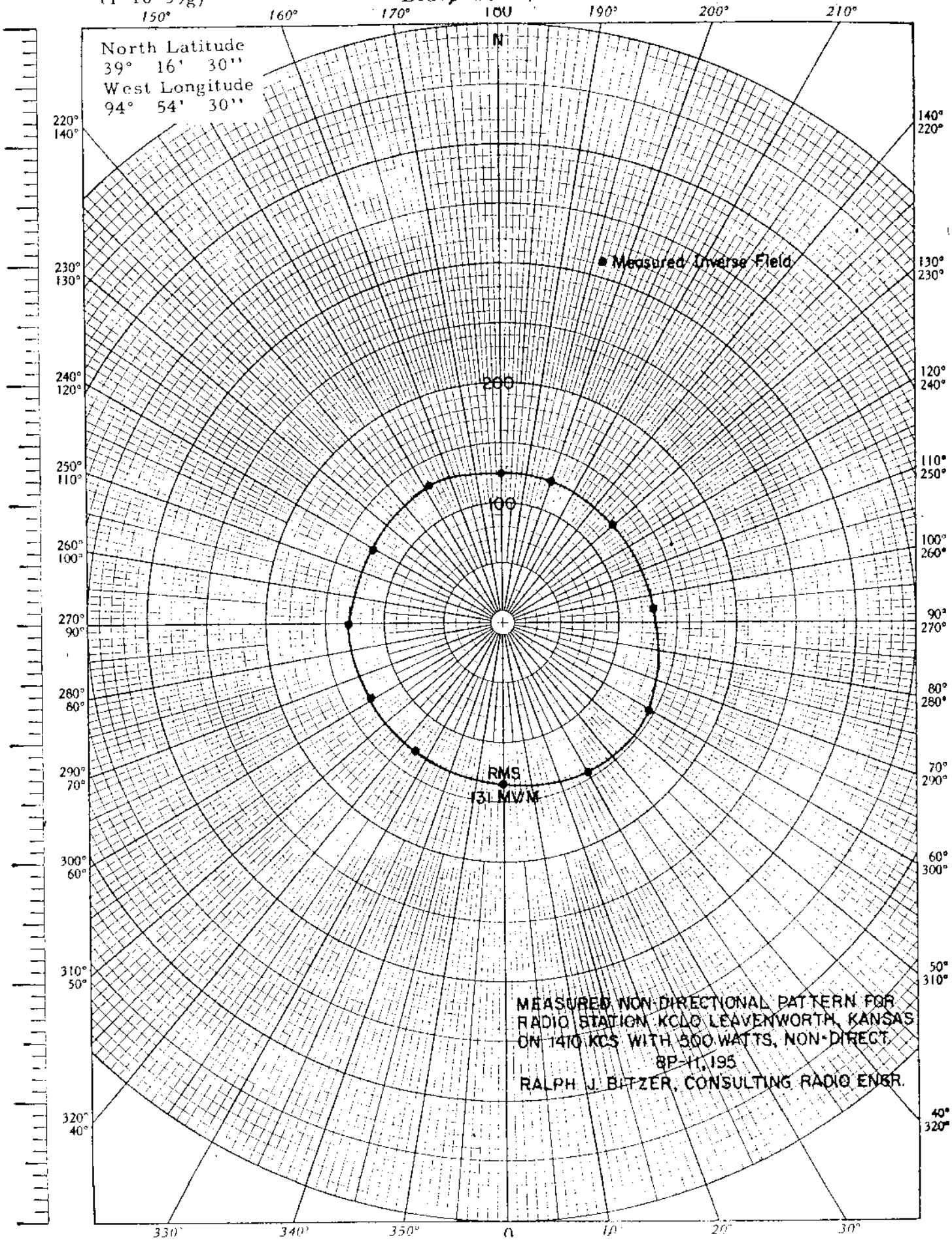
1410 KC

KCLO

MEASURED NON-DA
(11-16-59g)

Station KCLO
Leavenworth, Kansas

5kw, DA-D,D
1410 KC



Attach for inverse inform and installation of DA 12-31-59

FCC File No. BL-7636
Accepted 10-28-59

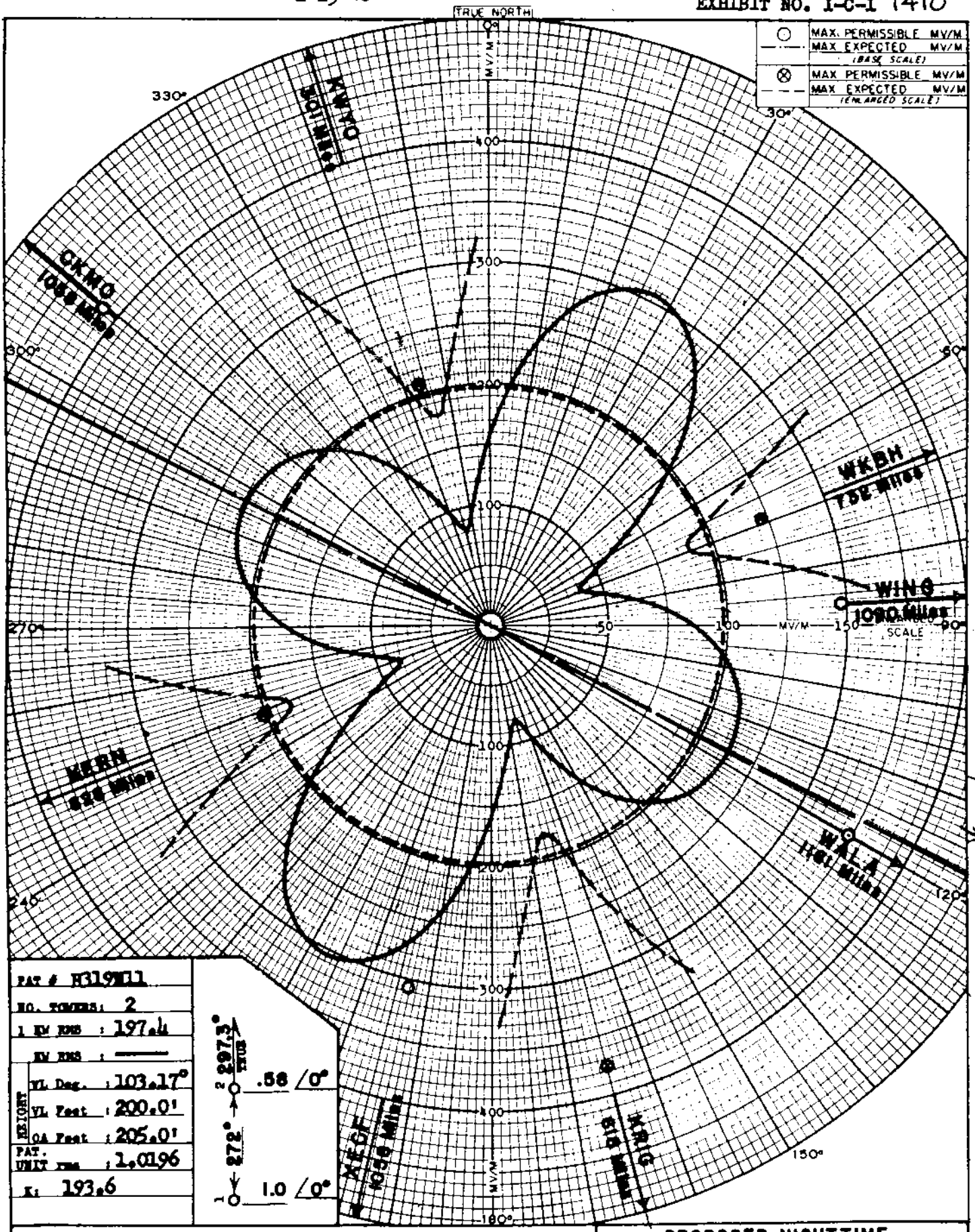
KCLO
Leavonworth, Kansas

1410 KC

2-25-48

KCOL

EXHIBIT NO. I-C-1 1410



PAT #	H319W11
NO. TOWERS:	2
1 EM RMS	197.4
EM RMS	—
HEIGHT VL Deg.	103.17°
HEIGHT VL Feet	200.0'
HEIGHT OA Feet	205.0'
PAT. UNIT RMS	1.0196
K:	193.6

2 297.3° EMUD .58 /0°

1 272° 1.0 /0°

COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

PATTERN **PROPOSED NIGHTTIME**

FOR **KCOL, FORT COLLINS, COLO.**

POWER **1000 Watts** FREQ **1410 KCS.**

DATE **August 19, 1947** BY **EFL**

2-25-48

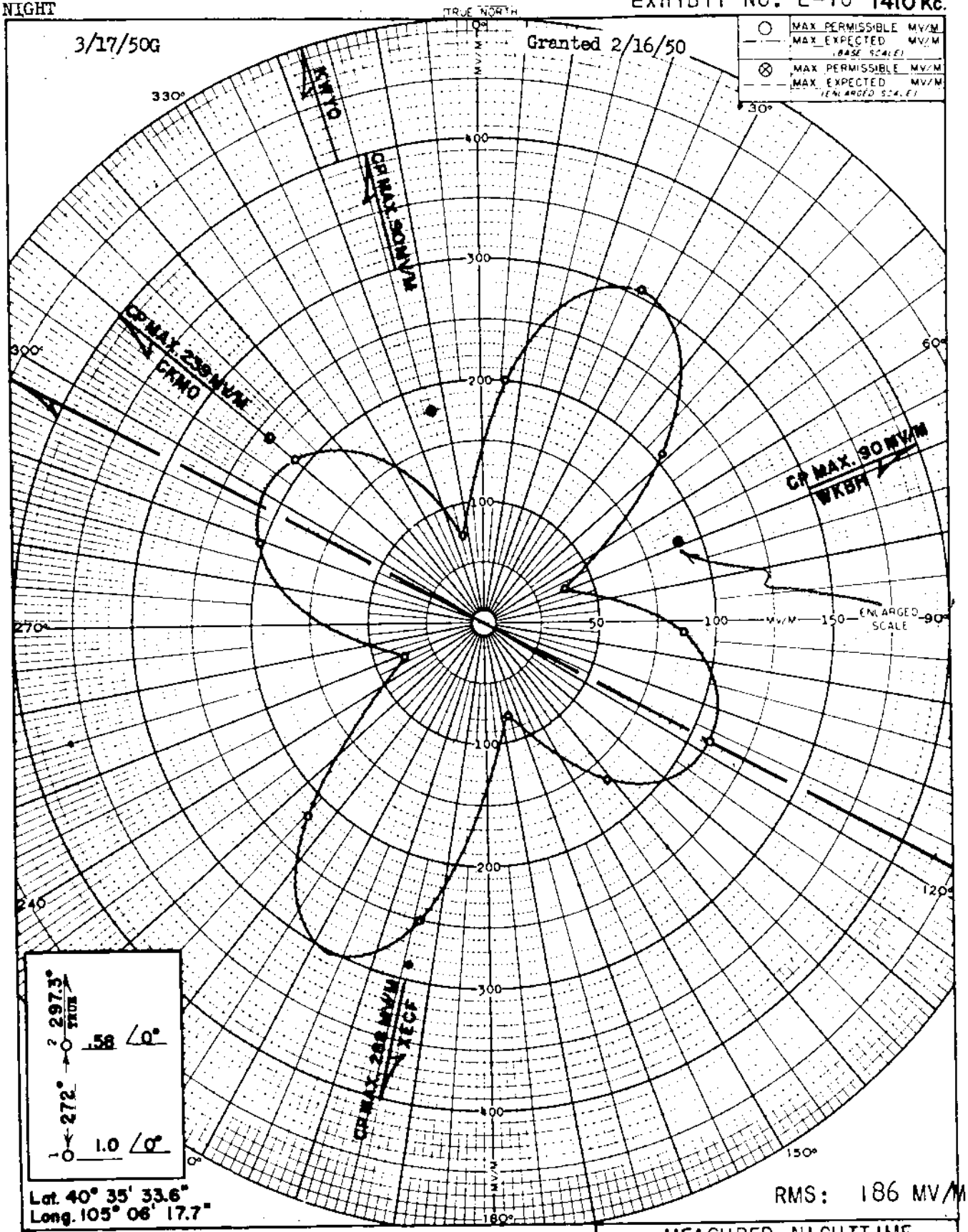
KCOL

MEASURED NIGHT

KCOL, FORT COLLINS, COLO. 1kw, DAN

CORRECTED EXHIBIT NO. E-10

KCOL 1410 Kc.



COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

PATTERN MEASURED NIGHTTIME

FOR KCOL, FORT COLLINS, COLO

POWER 1 KW FREQ 1410 KC

DATE JANUARY 30, 1950 BY TTN

AMENDMENT RECD 1-31-50 BL-3923

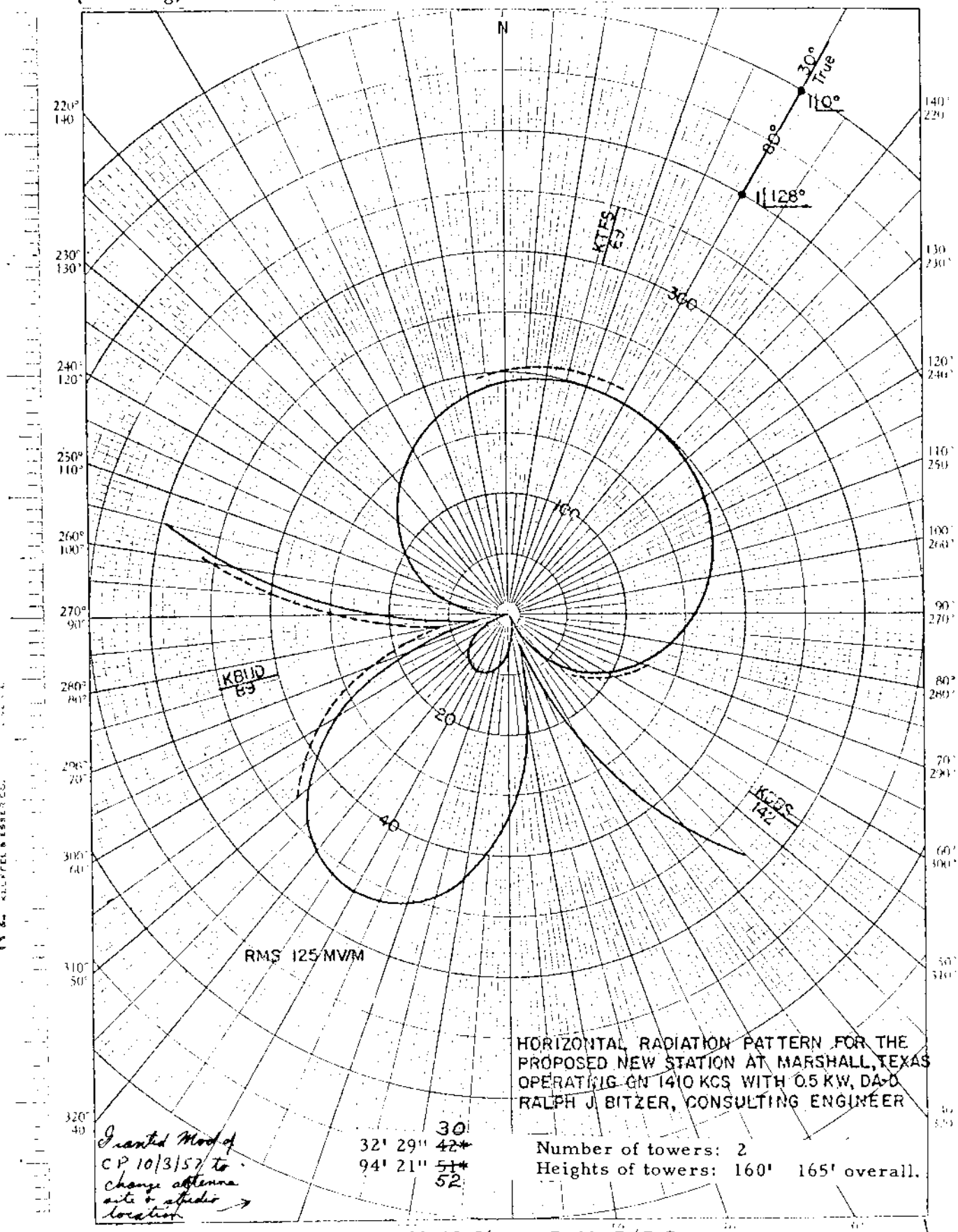
KCOL, Fort Collins, Colo. 1410 kc

~~HARRISON, TEX~~

KDOX

PROPOSED DAY Caddo B/C Company 500 KW, DA-D, D
(12-3-56g) ~~Harrison~~, Texas

Granted CP 2/7/57



HORIZONTAL RADIATION PATTERN FOR THE PROPOSED NEW STATION AT MARSHALL, TEXAS OPERATING ON 1410 KCS WITH 0.5 KW, DA-D
RALPH J. BITZER, CONSULTING ENGINEER

Granted Mod of CP 10/3/57 to change antenna site & studio location

32' 29" ~~42*~~ 30
94' 21" ~~51*~~ 52

Number of towers: 2
Heights of towers: 160' 165' overall.

FCC File No. BP-10,320(Amended) Accepted 11-19-56 Caddo B/C Company Harrison, Texas 1410 KC

KDOX

MEASURED DAY
(8-18-58g)

Station KADO
Marshall, Texas

500w, DA-D,D
1410 KC

granted license 1/10/58 for new station

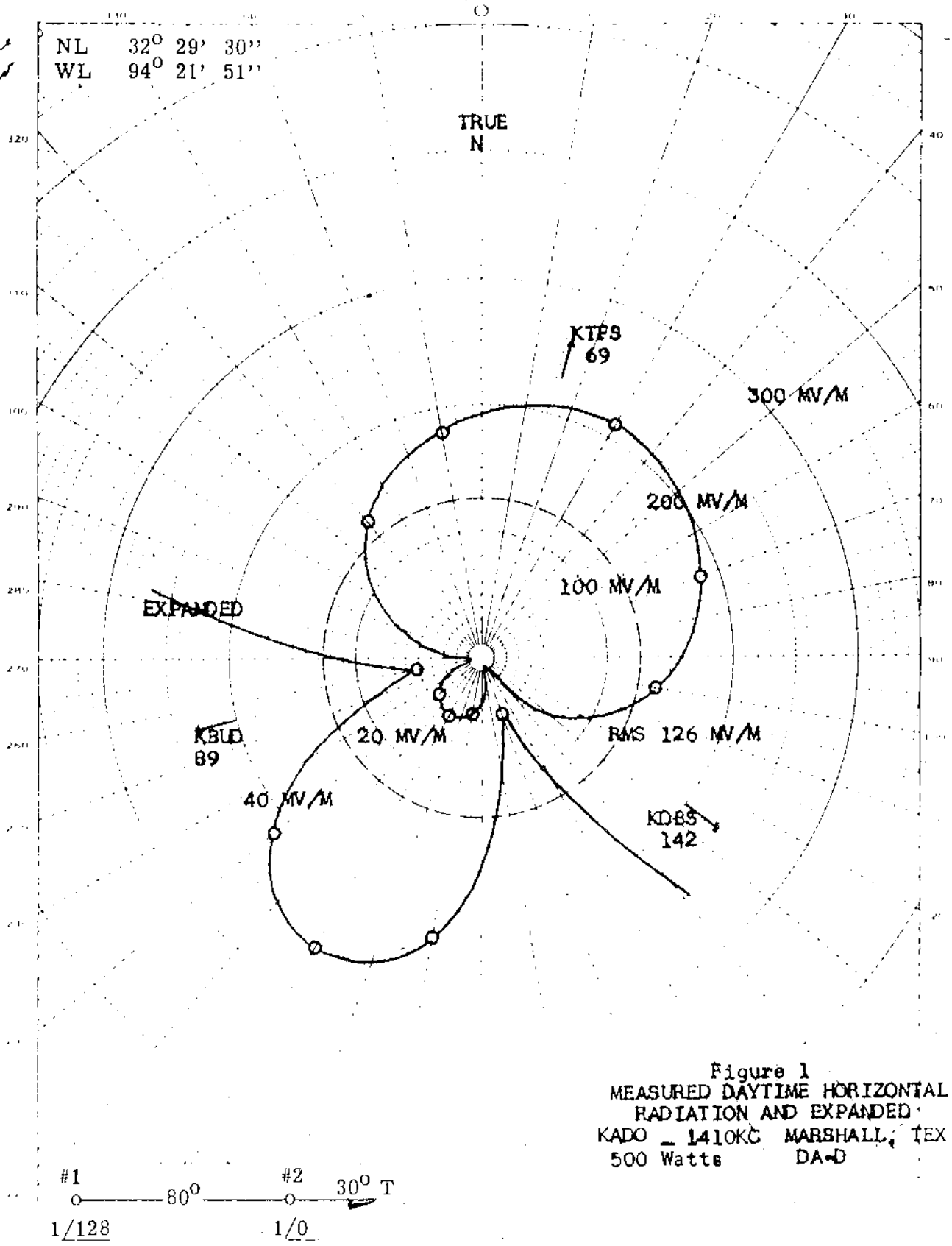


Figure 1
MEASURED DAYTIME HORIZONTAL RADIATION AND EXPANDED
KADO _ 1410KC MARSHALL, TEX
500 Watts DA-D

G = 160/165 ft.

FCC File No. BL-6928
Accepted

KADO
Marshall, Texas

1410 KC

KDOX

MEASURED NON-DA
(8-18-58g)

Station KADO
Marshall, Texas

500w, DA-D,E
1410 KC

granted license 1/10/58 for new station

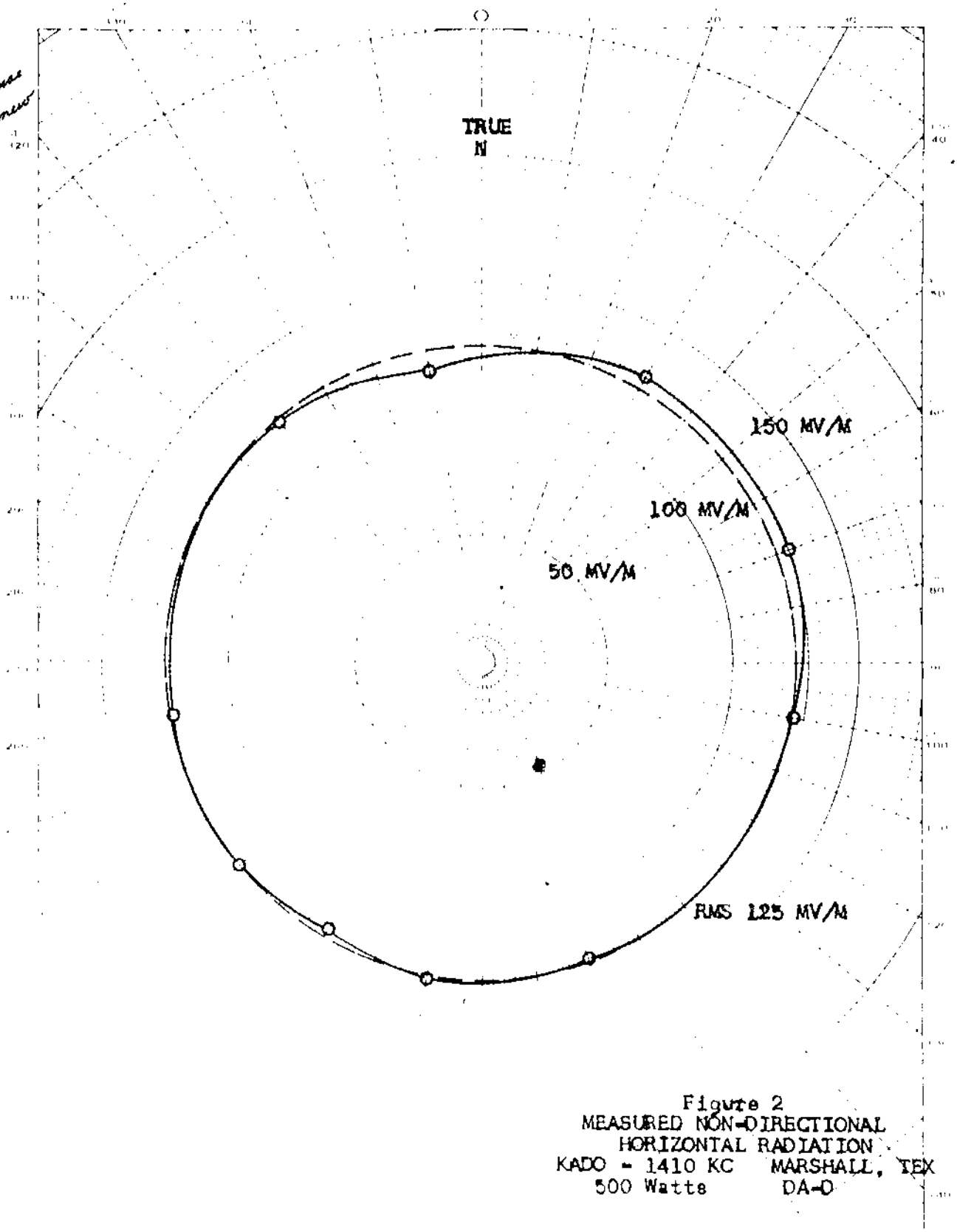


Figure 2
MEASURED NON-DIRECTIONAL
HORIZONTAL RADIATION
KADO - 1410 KC MARSHALL, TEX
500 Watts DA-D

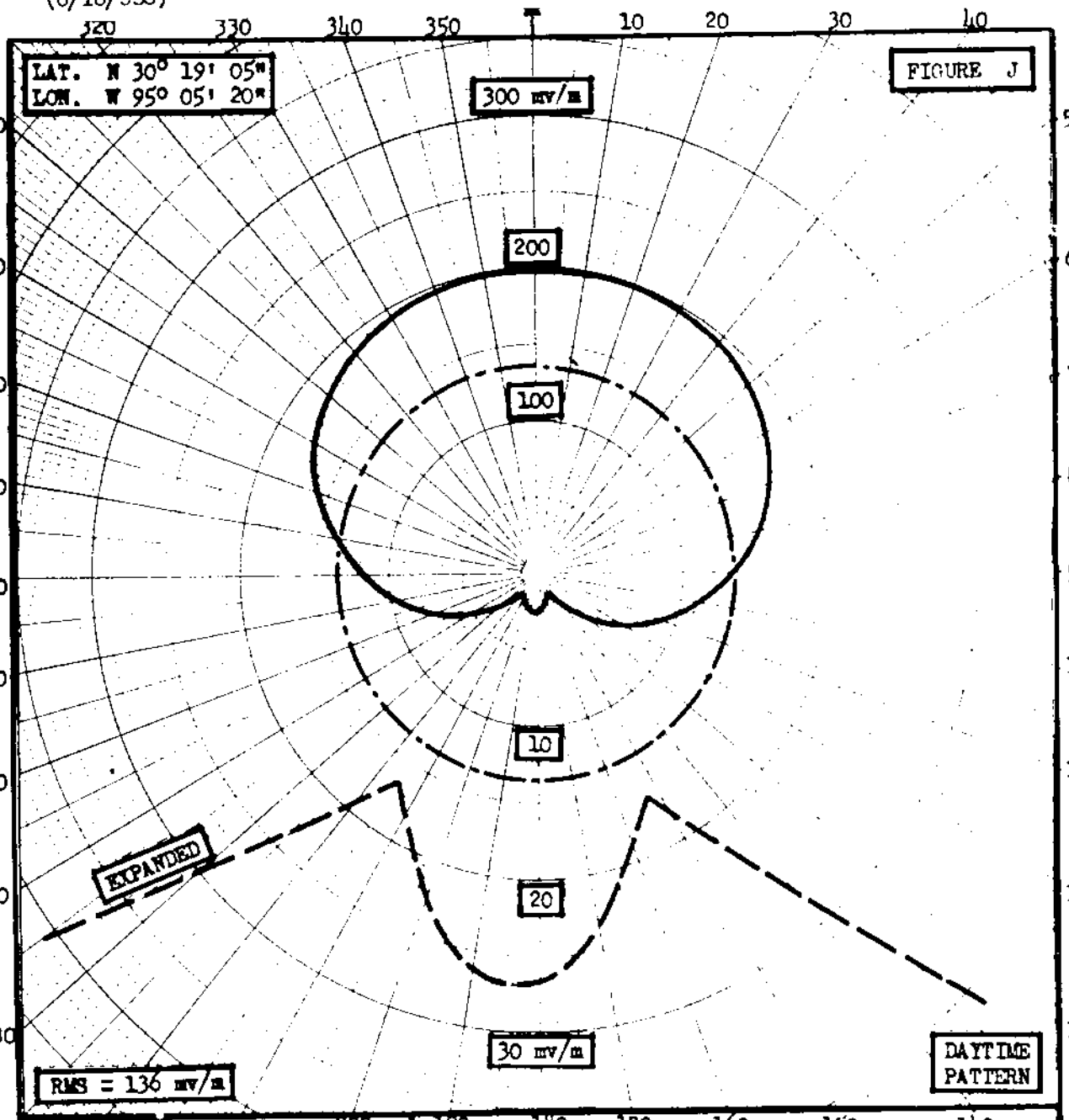
FCC File No. BL-6928
Accepted

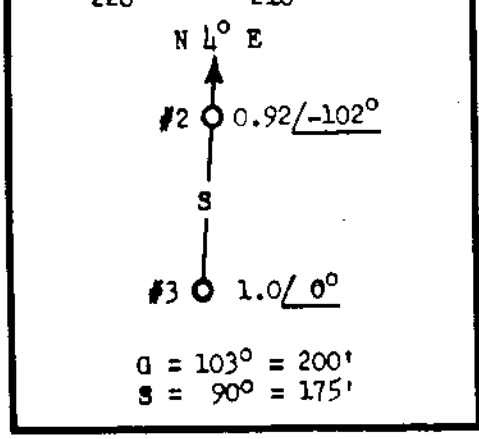
KADO
Marshall, Texas

1410 KC

KJCH CLEVELAND B/C CO.
~~KVLB~~

PROPOSED CLEVELAND BROADCASTING CO. CLEVELAND, TEXAS 500w,U,DA-2 1410 kc
DAY (6/18/53G)



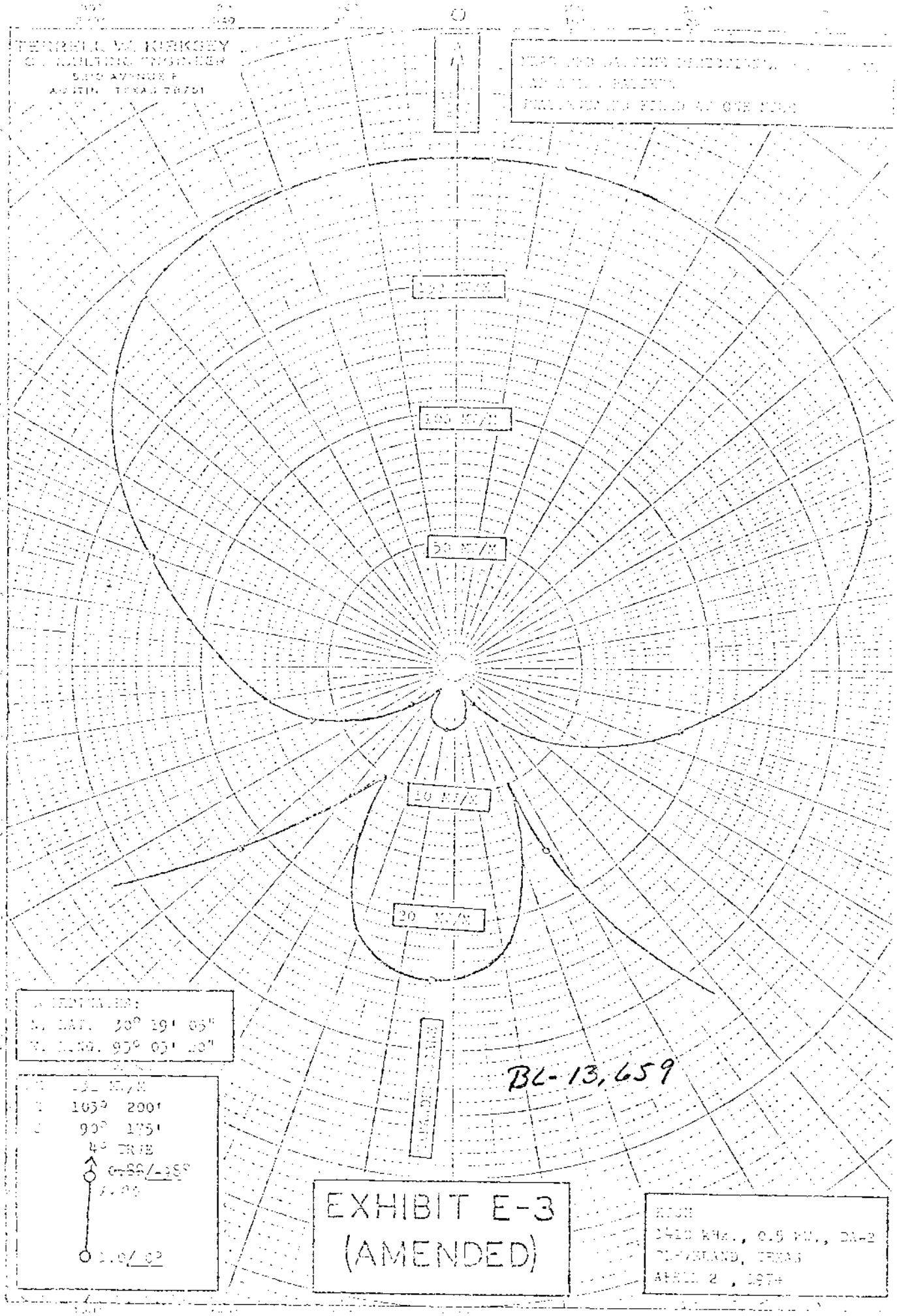


CLEVELAND BROADCASTING COMPANY
HORIZONTAL PLANE RADIATION PATTERN
PROPOSED RADIO STATION
CLEVELAND, TEXAS
1410 KC DA-2 500 WATTS

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No. BP-8298 Amended Accepted 6/8/53 CLEVELAND B/c Co., CLEVELAND, TEXAS 1410 k

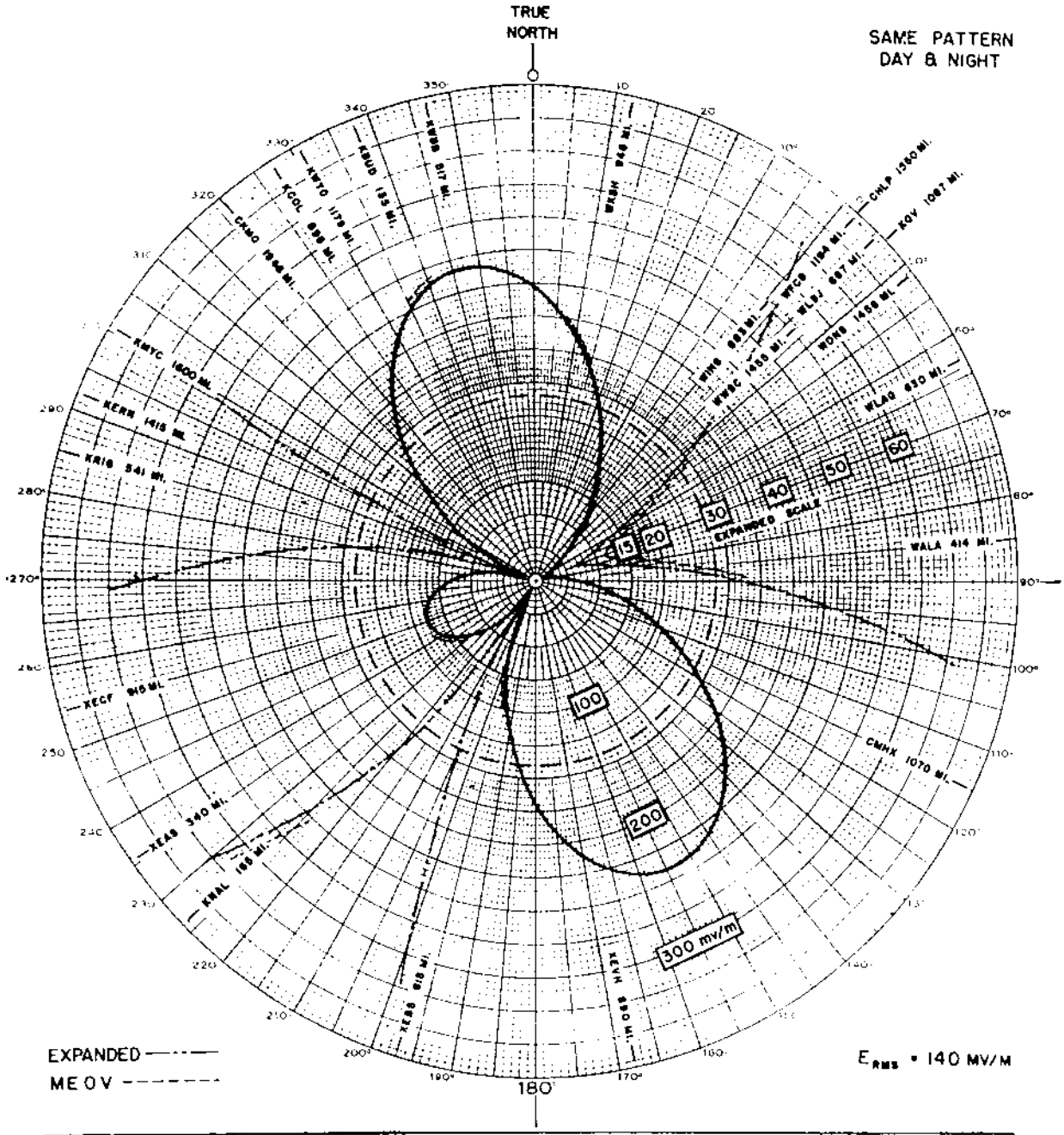
KJCH


TERRELL W. KIRKSEY
CONSULTING ENGINEER
5310 AVENUE F
AUSTIN, TEXAS 78751
122 MV/M
100 MV/M
50 MV/M
10 MV/M
20 MV/M
BL-13,659
EXHIBIT E-3
(AMENDED)
1410 KHz., 0.5 KW., DA-2
CLEVELAND, TEXAS
APRIL 2, 1974

Station [redacted]B

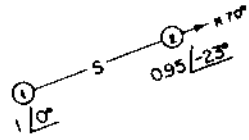
KJCH ~~KVEB~~

PROPOSED [redacted] NIGHT | NEW, CLEVELAND, TEXAS (Cleveland B/cg Co.) | 500W, U, DA-1 11/14/51 | 1410 KC



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	STATION DATA

G = 103° = 200'
S = 200° = 388'



Tower No.	Electrical Height (°)	True Tower Orientation (°)	Spacing (°)	Phasing (°)	Horizontal Field (mv/m)	Field Ratio	Elev. Angle (°)	Elevation RMS Field (mv/m)
1	103	Ref.	Ref.	0		1.00	0	140
2	103	70	200	-23		0.95	10	
3							20	
4							30	
5							40	
6							50	
7							60	
8							70	
9								
10								

Daytime Operation [X] Nighttime Operation [X]

Call	New
Frequency	1410 kc
Power	0.5-U DA-1 kw
Time of Operation	Unl.
Type of Operation	DA-1
Daytime Towers	1 & 2
Nighttime Towers	1 & 2
No. Radials per Tower	120
Length of Radials	103' 200'
Ground Screen Dimensions	
Lat.	N 30° 19' 05"
Long.	W 95° 05' 20"
Superposes	
Pattern No.	510627-3

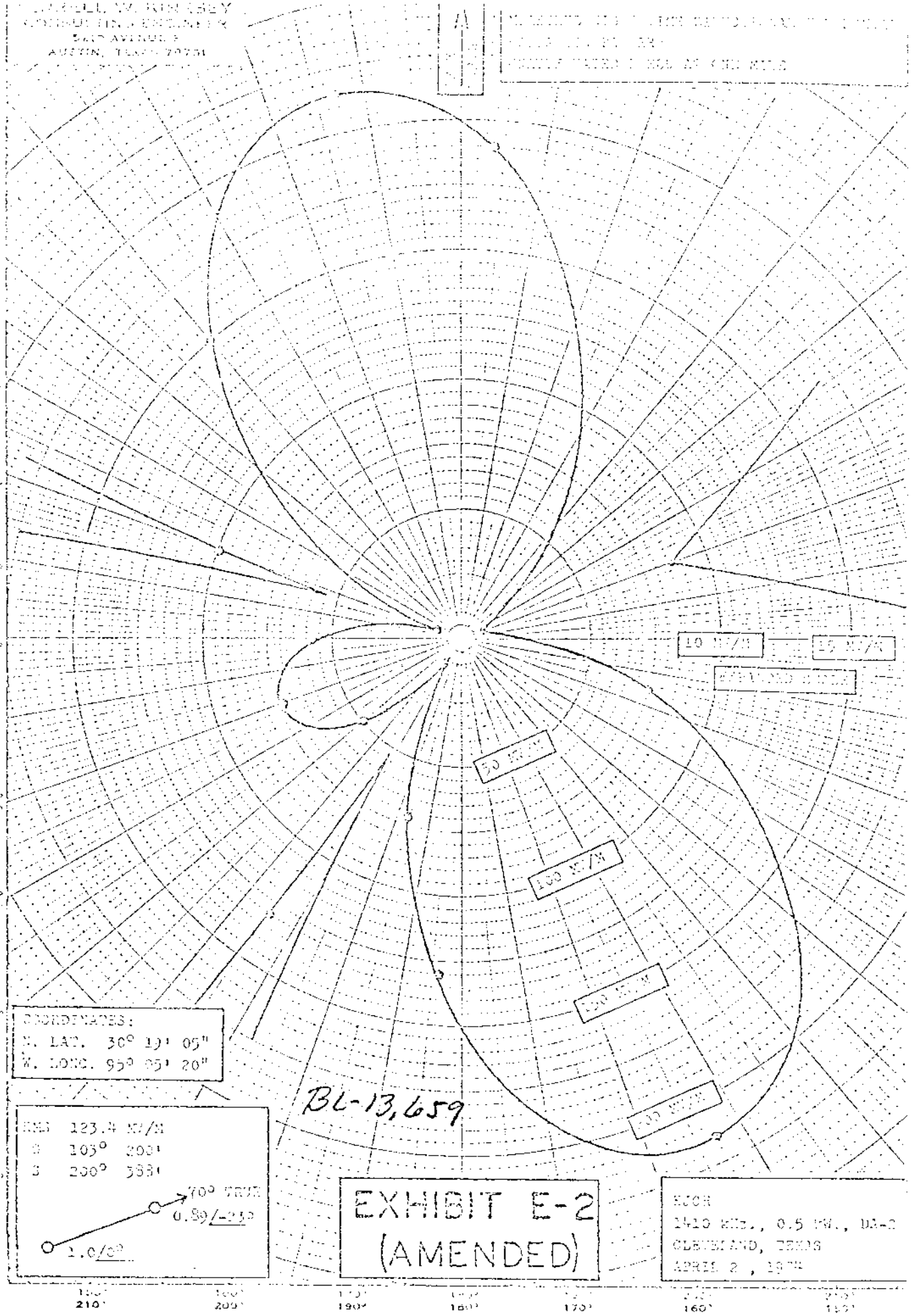
MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

HORIZONTAL PLANE RADIATION PATTERN
PROPOSED RADIO STATION
CLEVELAND, TEXAS
1410 KC 500 W - U DA-1

APPL RECD 10/31/51 ACC 11/9/51 BP-8298 | NEW, CLEVELAND, TEXAS (Cleveland B/cg Co.) | 1410 KC

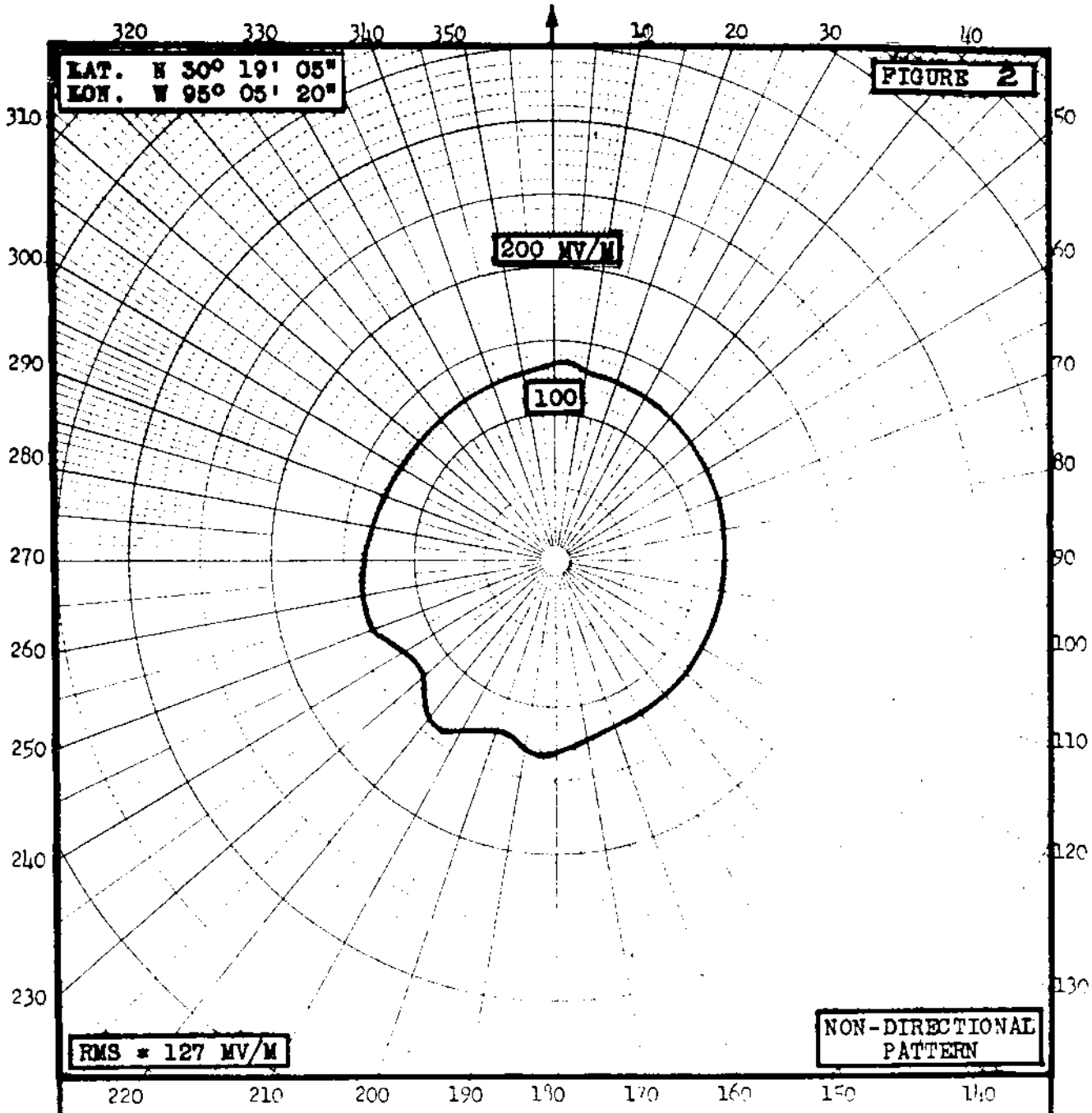
FIGURE 13

KJCH


10 MV/M
25 MV/M
50 MV/M
100 MV/M
250 MV/M
500 MV/M
COORDINATES:
N. LAT. 30° 19' 05"
W. LONG. 95° 05' 20"
RMS 123.4 MV/M
N 105° 200'
S 200° 533'
70° TRUE
0.59/-25°
1.0/0°
BL-13,659
EXHIBIT E-2
(AMENDED)
KCOR
1410 KHz., 0.5 KW., DA-2
CLEVELAND, TEXAS
APRIL 2, 1974

KJCH ~~KVLB~~

MEASURED ~~KVLB~~, Cleveland, Texas 500W, DA-2 1410 kc
NON-DA (3/1/54G)



Tower No. 2 Used for Non-Directional

Tower No. 1 and No. 3 Isolated

CLEVELAND BROADCASTING COMPANY
MEASURED
HORIZONTAL PLANE RADIATION PATTERN
RADIO STATION KVLB
CLEVELAND, TEXAS
1410 KC DA-2 500 WATTS

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

KKOK

PROPOSED DAY #156 amended
(10-2-59g)

New; Ison, McCulla and Masterson
Lompoc, California

500w, DA-D,D
1410 KC

granted cp for new station 7-18-61

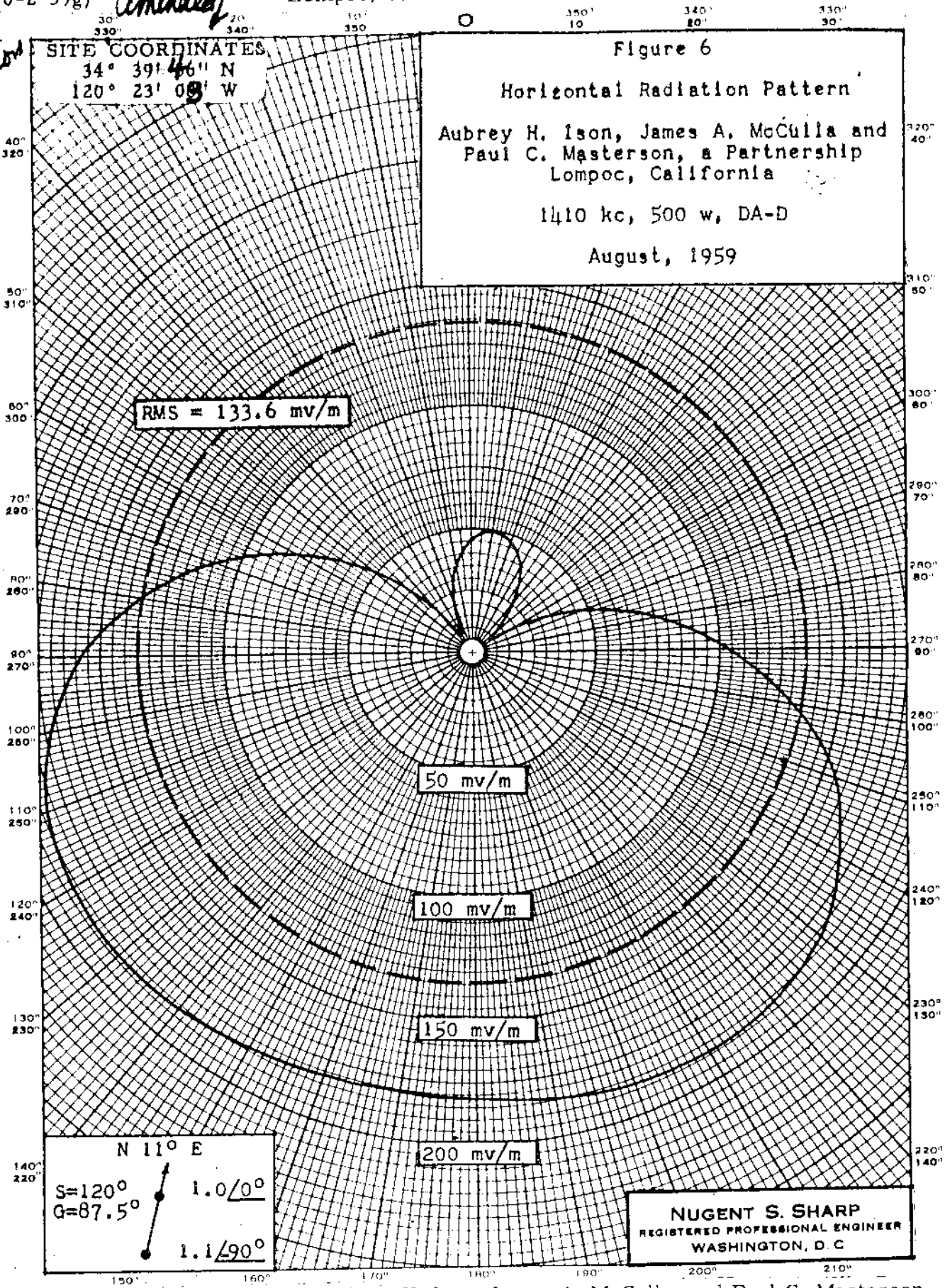


Figure 6

Horizontal Radiation Pattern

Aubrey H. Ison, James A. McCulla and Paul C. Masterson, a Partnership
Lompoc, California

1410 kc, 500 w, DA-D

August, 1959

FCC File No. BP-13445
Accepted 9-24-59

Aubrey H. Ison, James A. McCulla, and Paul C. Masterson
Lompoc, California

1410 KC

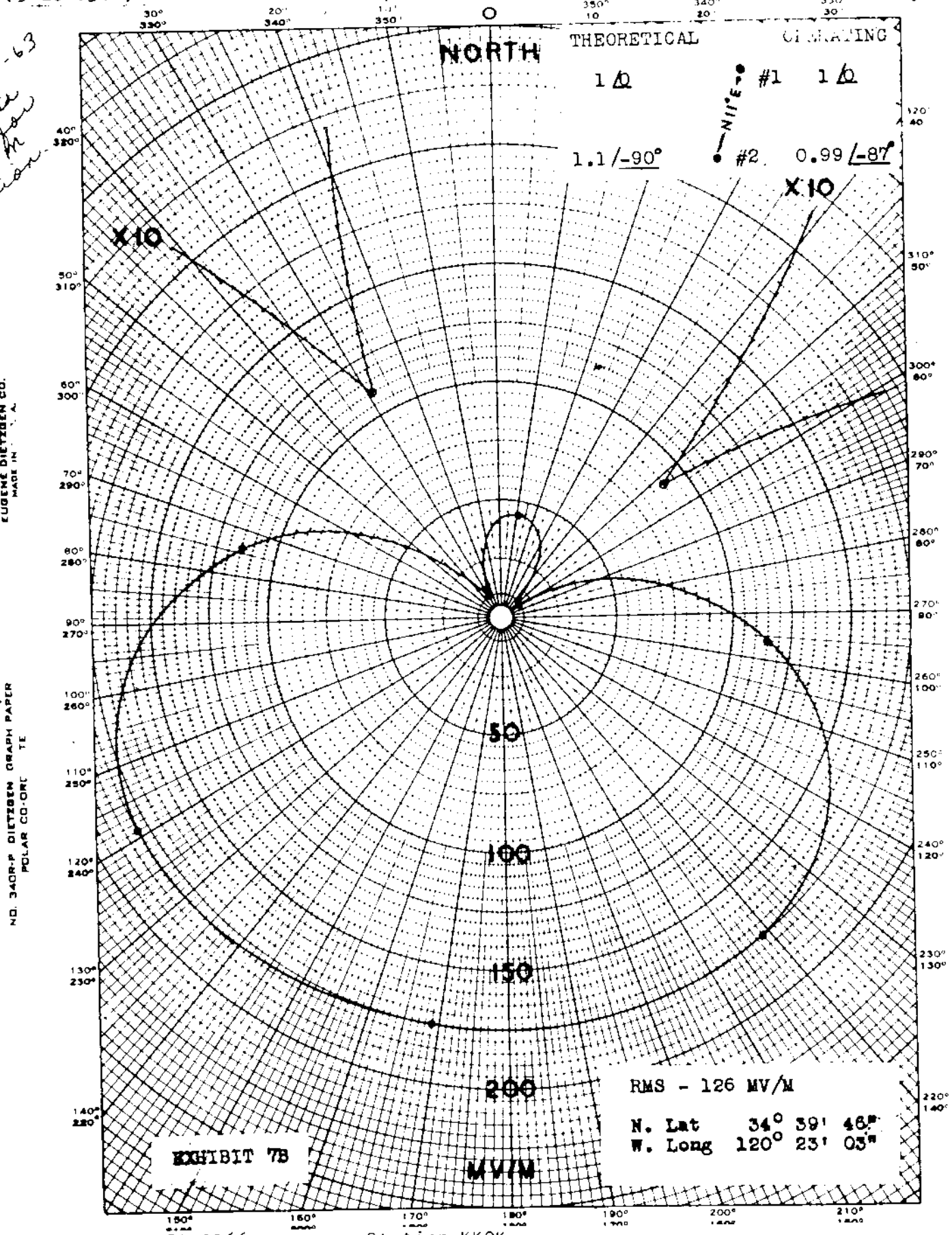
KKOK

Measured Day
(5-28-63ct)

Station KKOK
Lompoc, California

500w,DA-D,D
1410 kc

8-5-63
Greater range than A M station



FCC File No.BL-9966
Accepted 5-1-63

Station KKOK
Lompoc, California

1410 kc

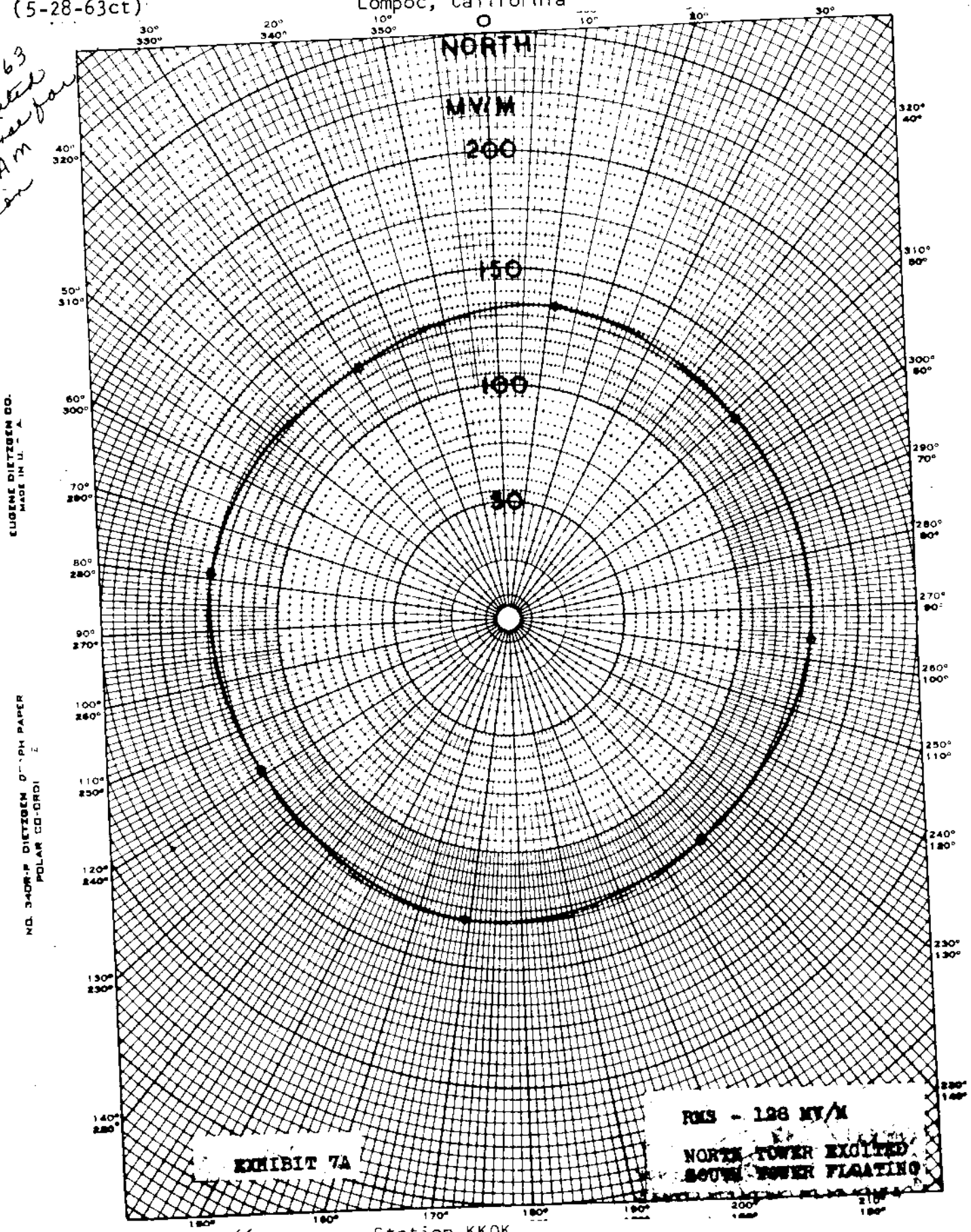
KKOK

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

Station KKOK
Lompoc, California

500w,DA-D,D
1410 kc

8-5-63
Granted license for new AM station



FCC File No.BL-9966
Accepted 5-1-63

Station KKOK
Lompoc, California

1410 kc

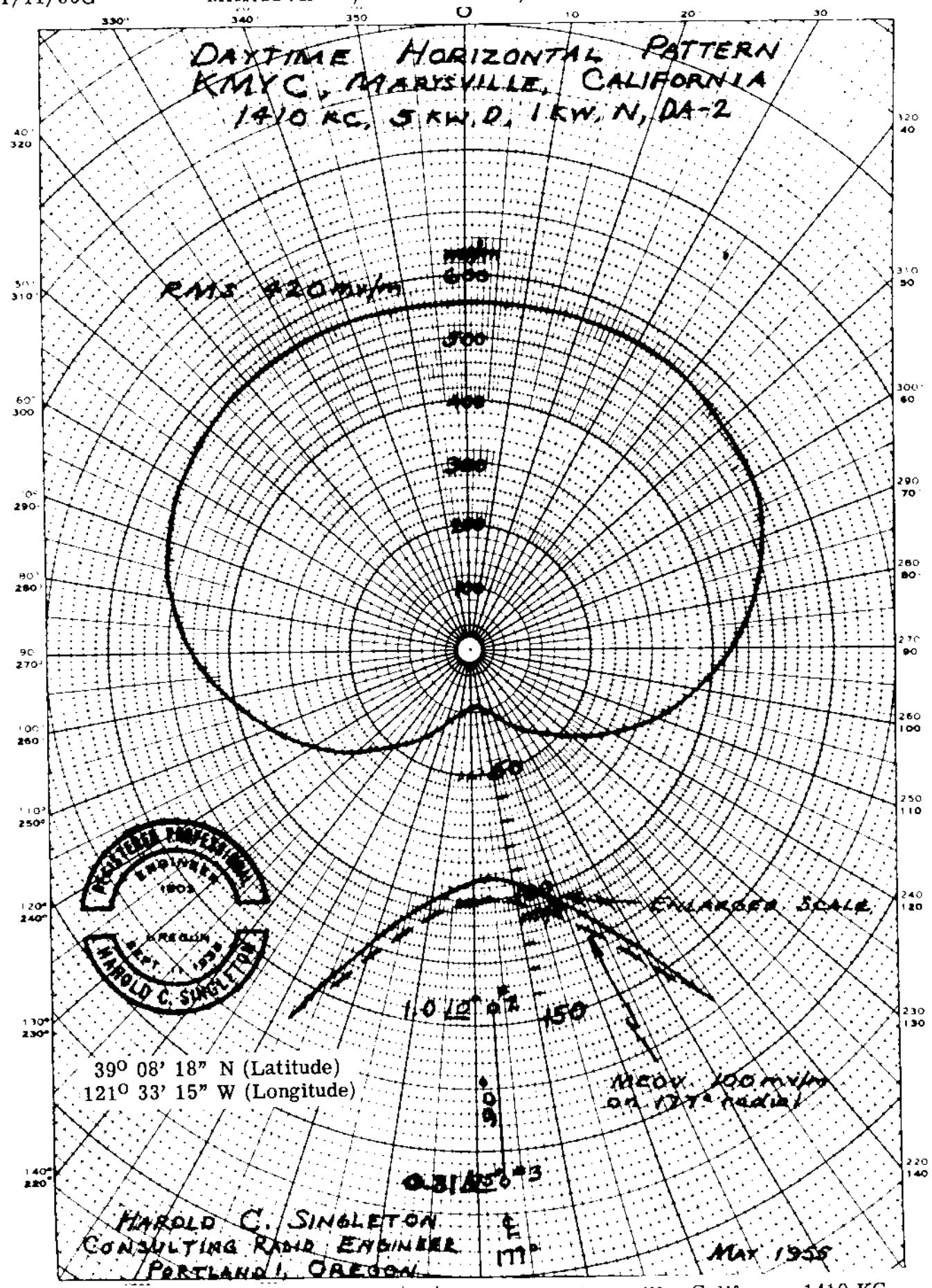
KMYC

PROPOSED
DAY 1/11/56G

STATION ~~KYMC~~ KMYC
MARYSVILLE, CALIF.

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

1410 KC



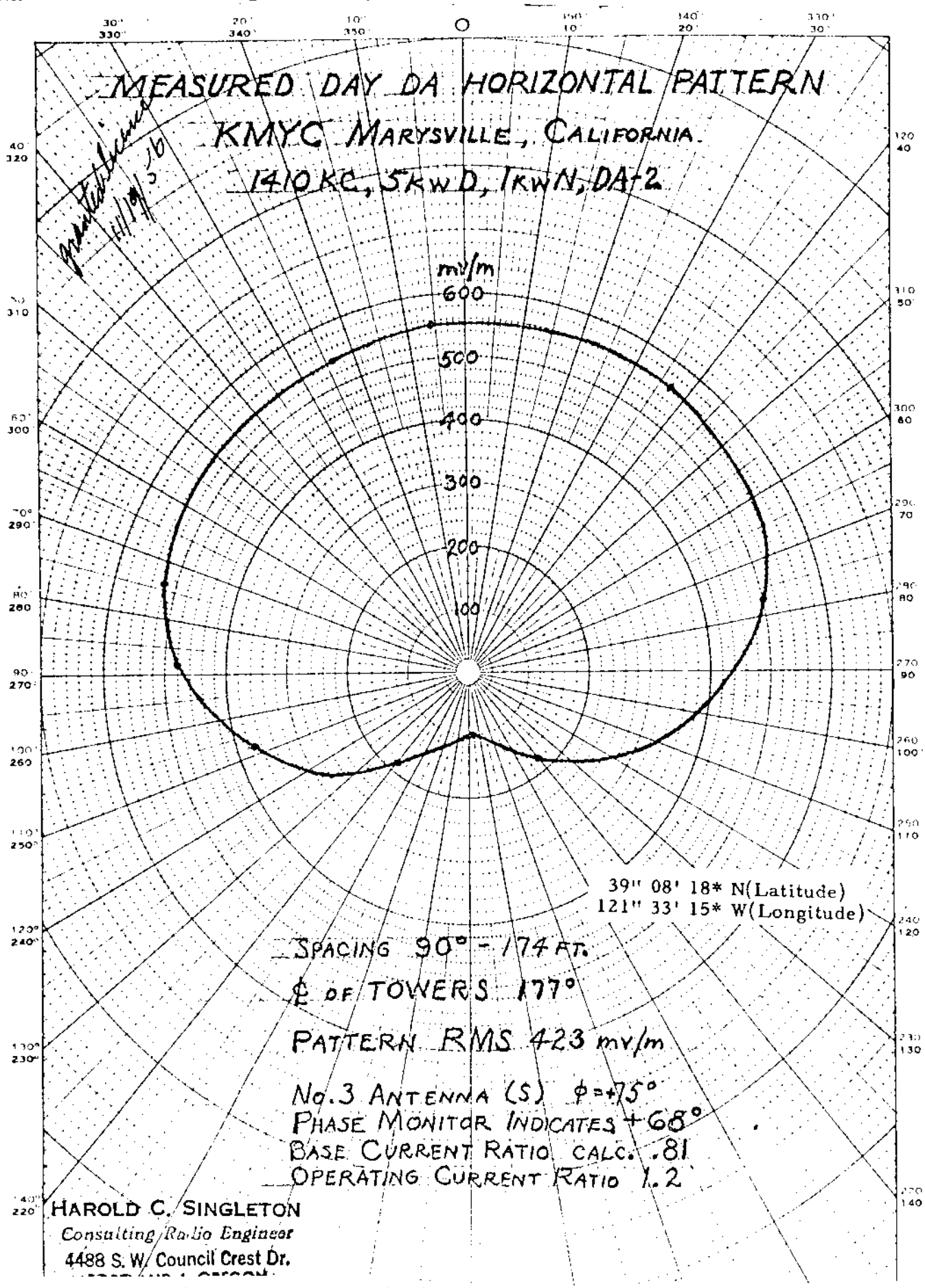
FCC File No. BMP--7032 Accepted 11/30/55 KMYC, Marysville, Calif. 1410 KC

KMYC

MEASURED
DAY (9-14-56g)

STATION K M Y C 5 KW, D-1KW, N, U
Marysville, California DA-2

1410 KC



FCC File
BL-6286

Accepted 9-6-56

Station KMYC
Marysville, Calif.

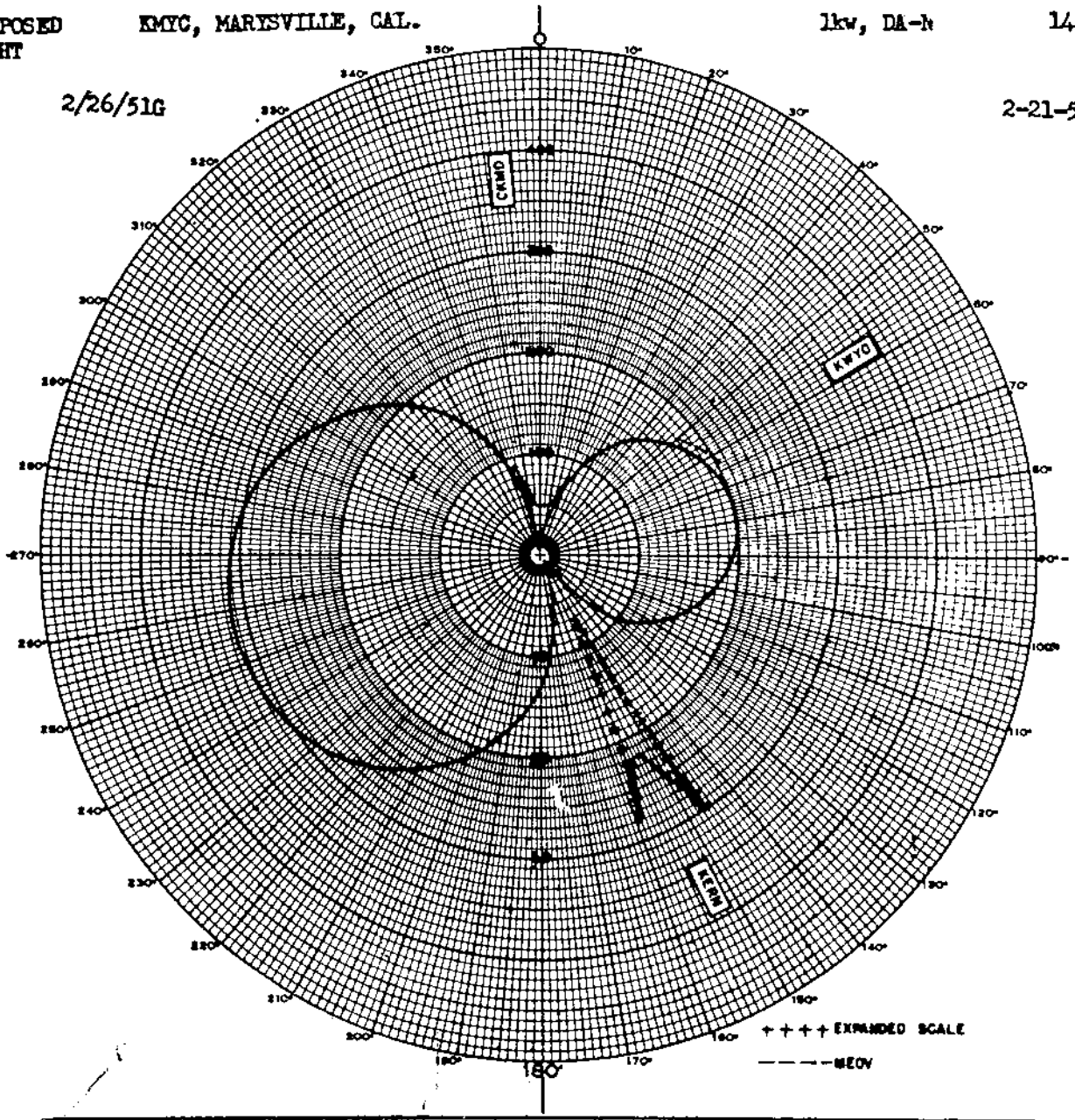
1410 KC

POLAR CO-ORDINATE NO. 10HP — CLEVELAND INSTITUTE OF RADIO ELECTRONICS, CLEVELAND, OHIO

KMYC

PROPOSED NIGHT — KMYC, MARYSVILLE, CAL. — 1kw, DA-N — 1410 kc

2/26/51G — 2-21-51



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS									STATION DATA
	TOWER No.	ELECTRICAL HEIGHT	TRUE TOWER HEIGHT	SPACING	PHASING	HORIZONTAL FIELD	FIELD RATIO	ELEV. ANGLE	ELEVATION HORIZ. FIELD	CALL KMYC
		°	°	°	°			°		FREQUENCY 1410 kc
	1	[illegible]	[illegible]	70°	[illegible]		1.00	0	[illegible]	POWER 1 kw
	2	90°		0°	0°		1.00	10		TIME OF OPERATION U
	3							20		TYPE OF OPERATION DA-N
	4							30		DAYTIME TOWERS 1
	5							40		NIGHTTIME TOWERS 2
	6							50		No. RADIALS PER TOWER 120
	7							60		LENGTH OF RADIALS 180 ft
	8							70		DRAWN BY SCALE DIMENSION 80X120
	9							80		LAT. 39° 08' 10"
	10							E_d °	mv/m	LONG. 121° 23' 15"
	DAYTIME OPERATION ☐			NIGHTTIME OPERATION ☒				E_n °	mv	SUPERSEDES
										PATTERN No. 51010Y

1 — 70° — 2 — N77°E

MARYSVILLE-YUBA CITY BROADCASTERS
MARYSVILLE, CALIFORNIA

1-7-61

PAGE 9

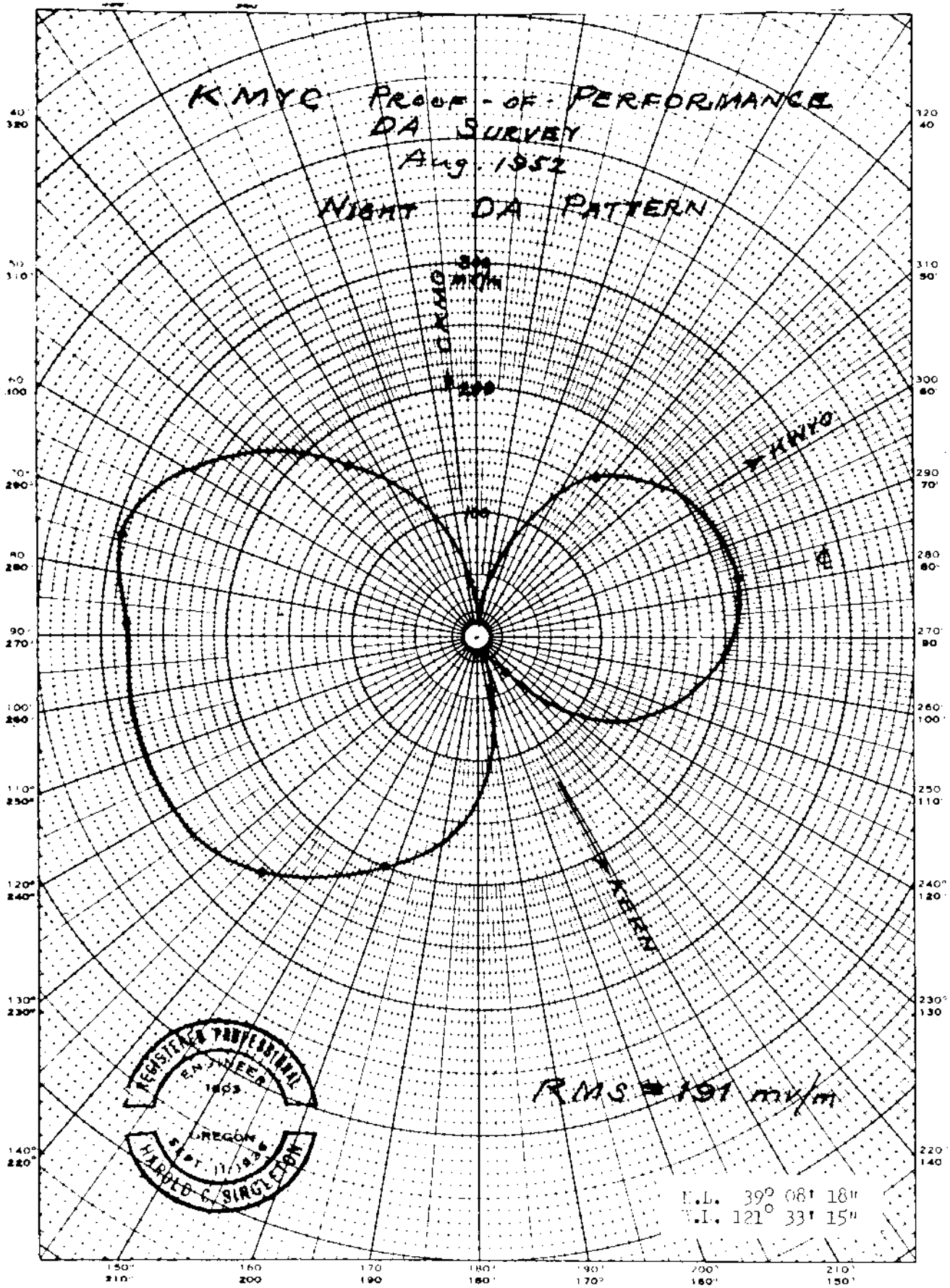
FIGURE 1 A

GEORGE P. ADAIR
Radio Engineering Consultants
WASHINGTON, D. C.

KMYC, Marysville, Cal. 1410 kc

KMYC

MEASURED KMYC, MARYSVILLE, CALIF. 1 KW, U, DA-N 1410 KC
NIGHT 10/20/52G



APPL RECD FCC 8/26/52 ACC 10/8/52 BL-4785 KMYC, MARYSVILLE, CALIF. 1410 KC

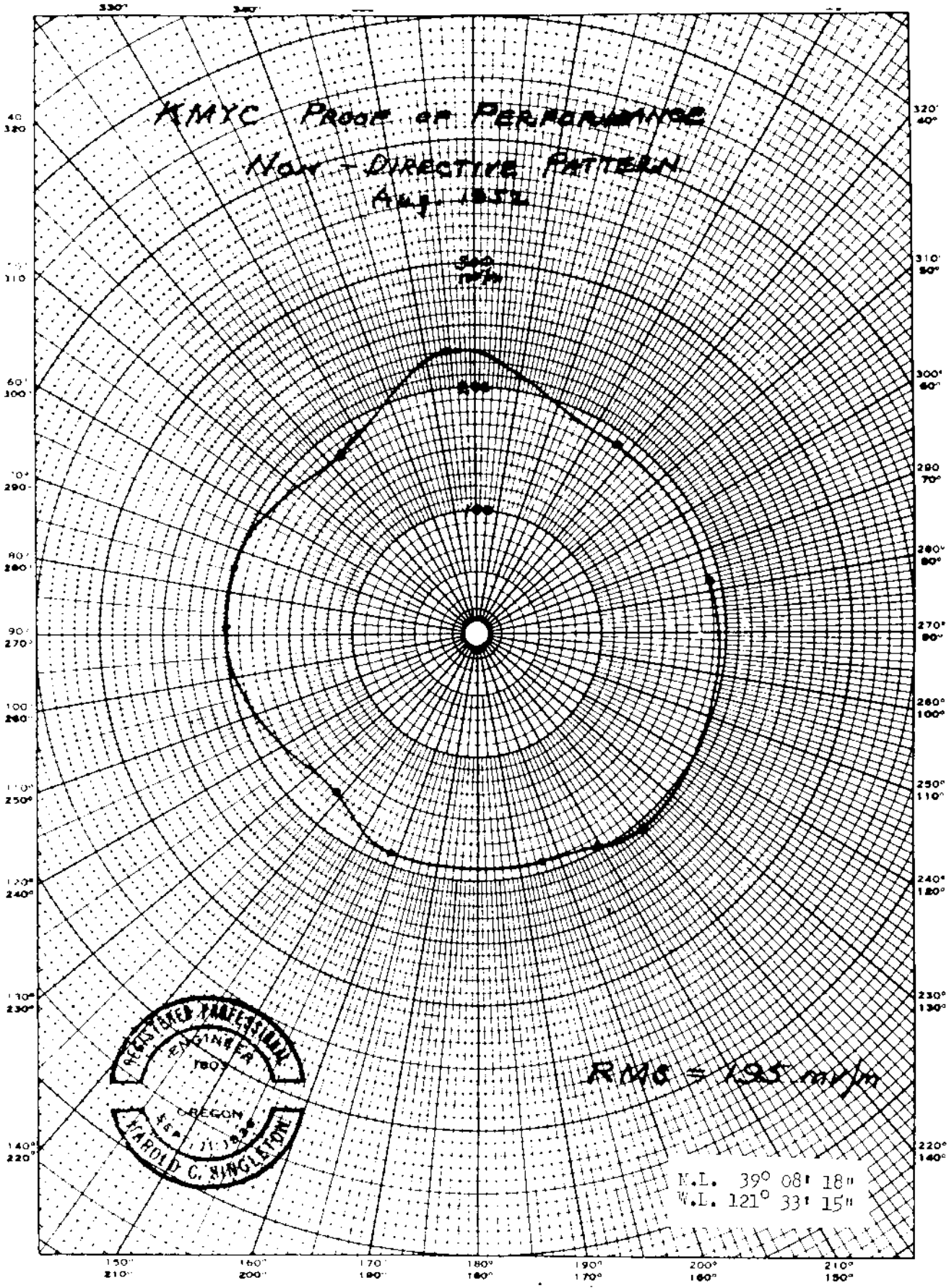
KMYC

MEASURED
NON-DA

KMYC, MARYSVILLE, CALIF.
10/20/52G

1 KW, U, DA-N

1410 KC



APPL RECD FCC 8/26/52 ACC 10/8/52 BL-4785 KMYC, MARYSVILLE, CALIF. 1410 KC

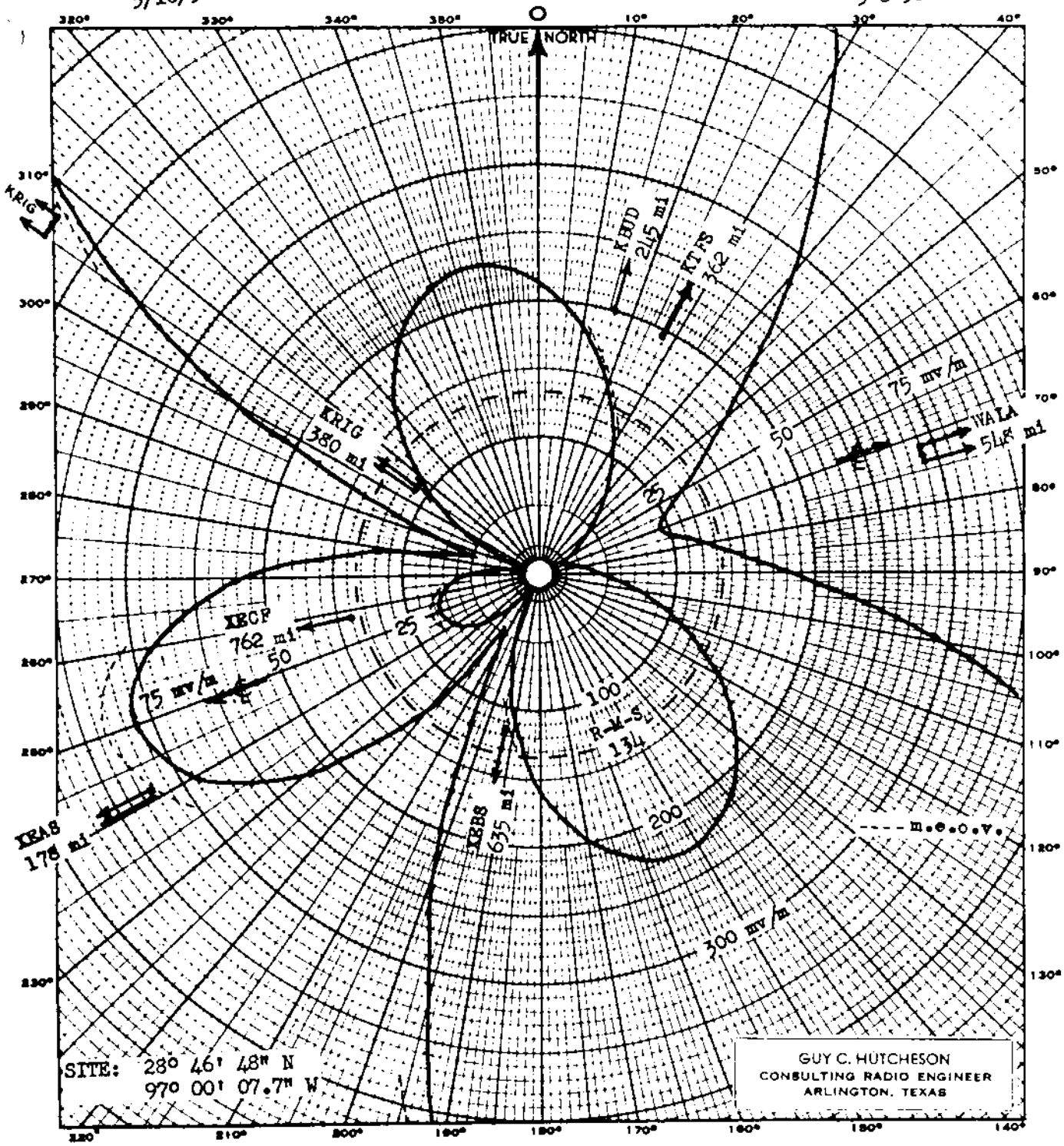
KNAL

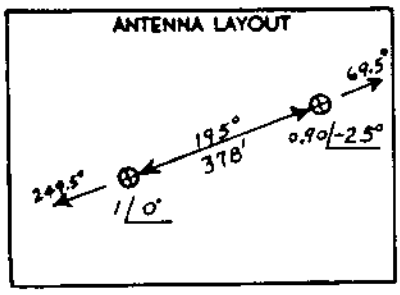
PROPOSED NIGHT — KNAL, VICTORIA, TEXAS — 500w, DAN — 1410 kc

5/10/50G

HORIZONTAL RADIATION PATTERN

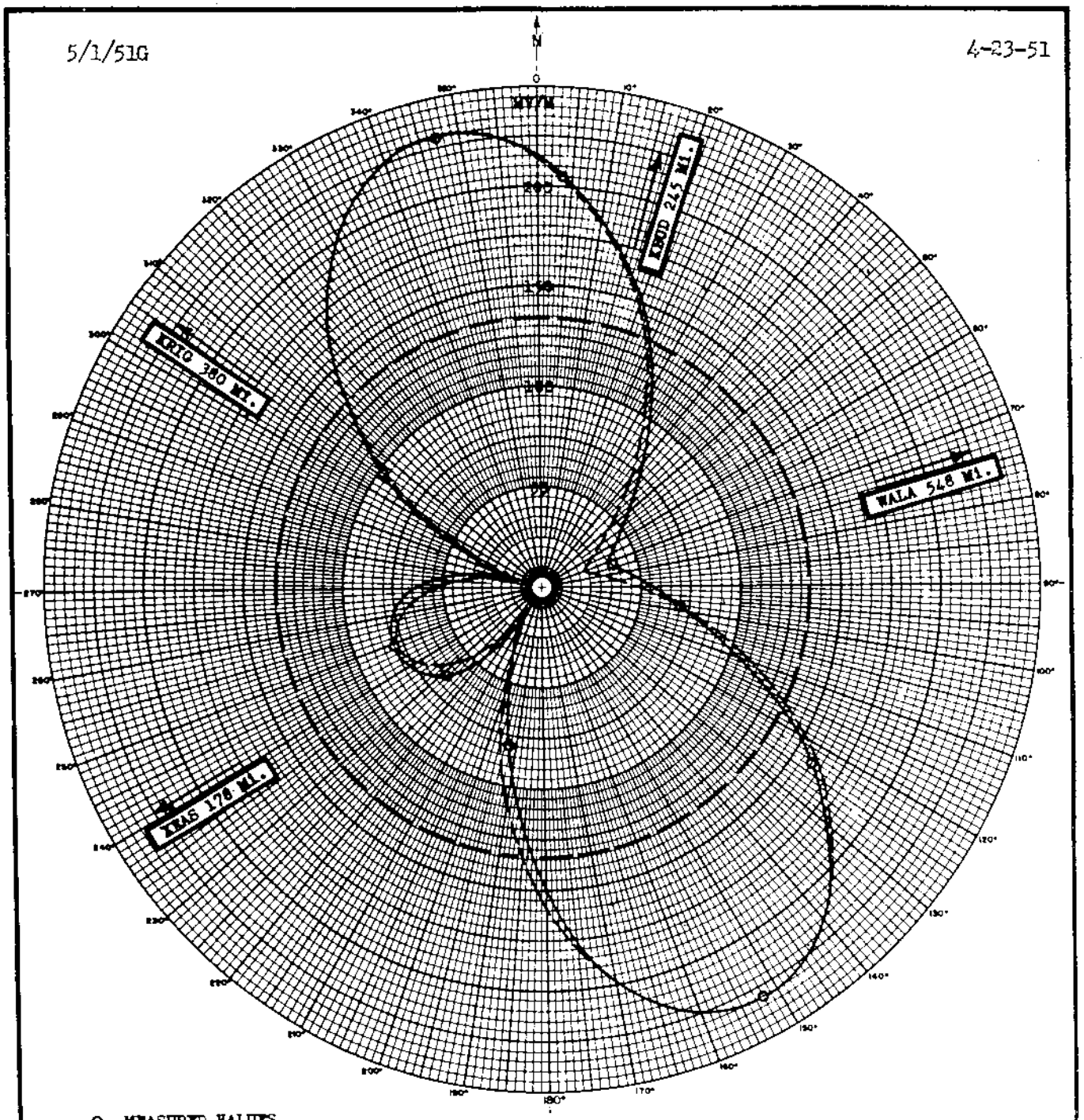
5-8-50





KNAL	Victoria, Texas	
Station		Location
1410 kc	0.5 kw	134 mv/m (190/kw)
Frequency	Power	R-M-S Field
2	200 ft., 0.286 λ or 103°	
No. of Elements	Height of Antenna	
MEASURED ☐	CALCULATED ☒	500418.1
Pattern		No.
PROPOSED NIGHTTIME PATTERN		Fig. 1
Remarks		

KNAL, Victoria, Tex. 1410 kc



O MEASURED VALUES

KNAL

HORIZONTAL RADIATION PATTERN

CALCULATED — — — — MEASURED ———

FREQUENCY:	1410 KC.
ASSIGNMENT:	0.5 Kw.-U(DA-N)
LONGITUDE:	97 DEG. 00 MIN. 08 SEC.
LATITUDE:	28 DEG. 46 MIN. 48 SEC.
WHEN USED:	Nighttime
R.M.S. FIELD:	134 MV/M (Measured)
DATE:	April 1951

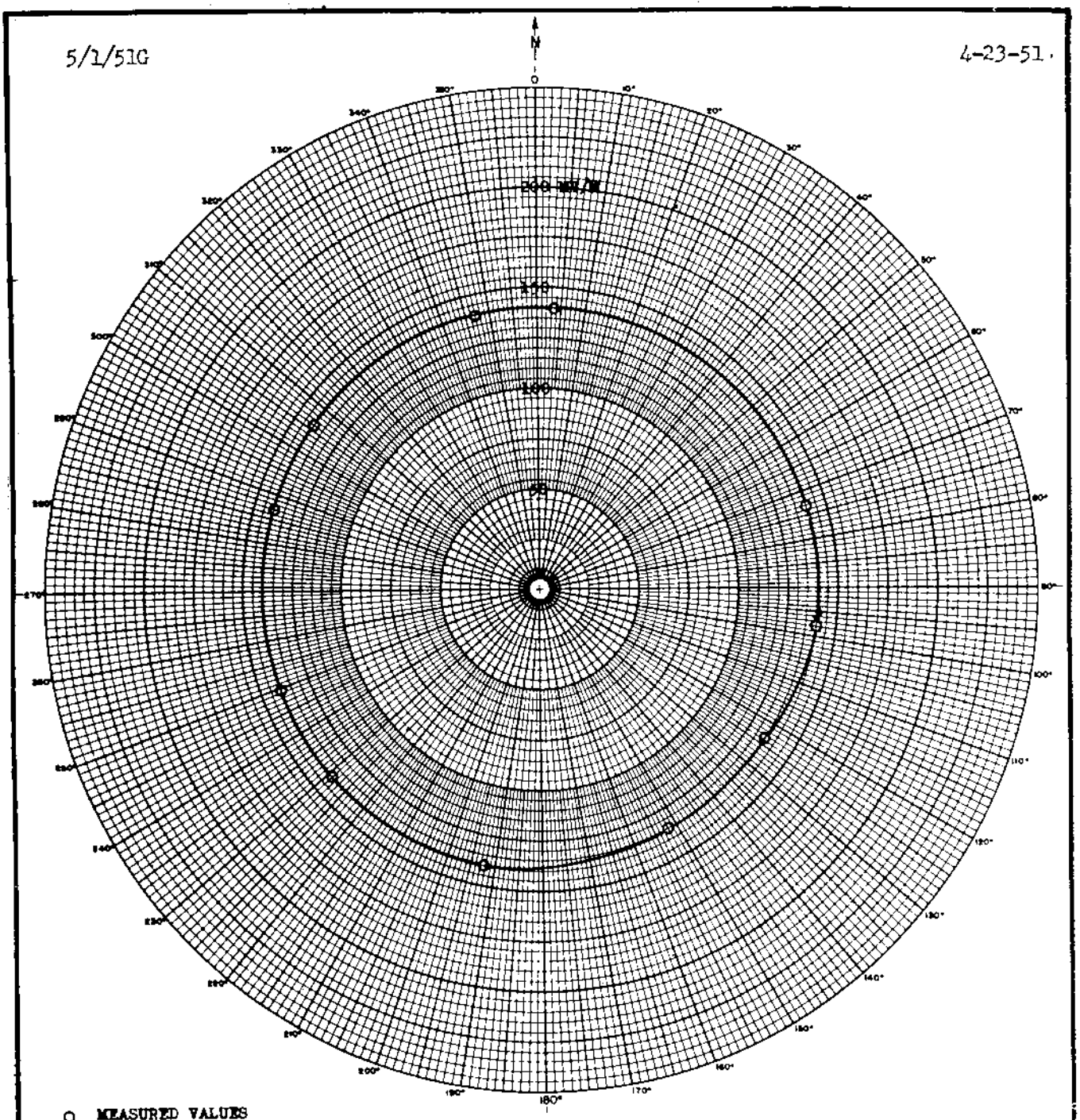
ANTENNA	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6
PHASE DEG.	0°	-25°				
HEIGHT DEG.	103°	103°				
FIELD RATIO	1.00	0.90				
NON-DA ANT.	*					

ROBERT M. SILLIMAN

CONSULTING RADIO ENGINEERS

WASHINGTON, D. C.

5/1/51G 4-23-51



○ MEASURED VALUES

KNAL

HORIZONTAL RADIATION PATTERN

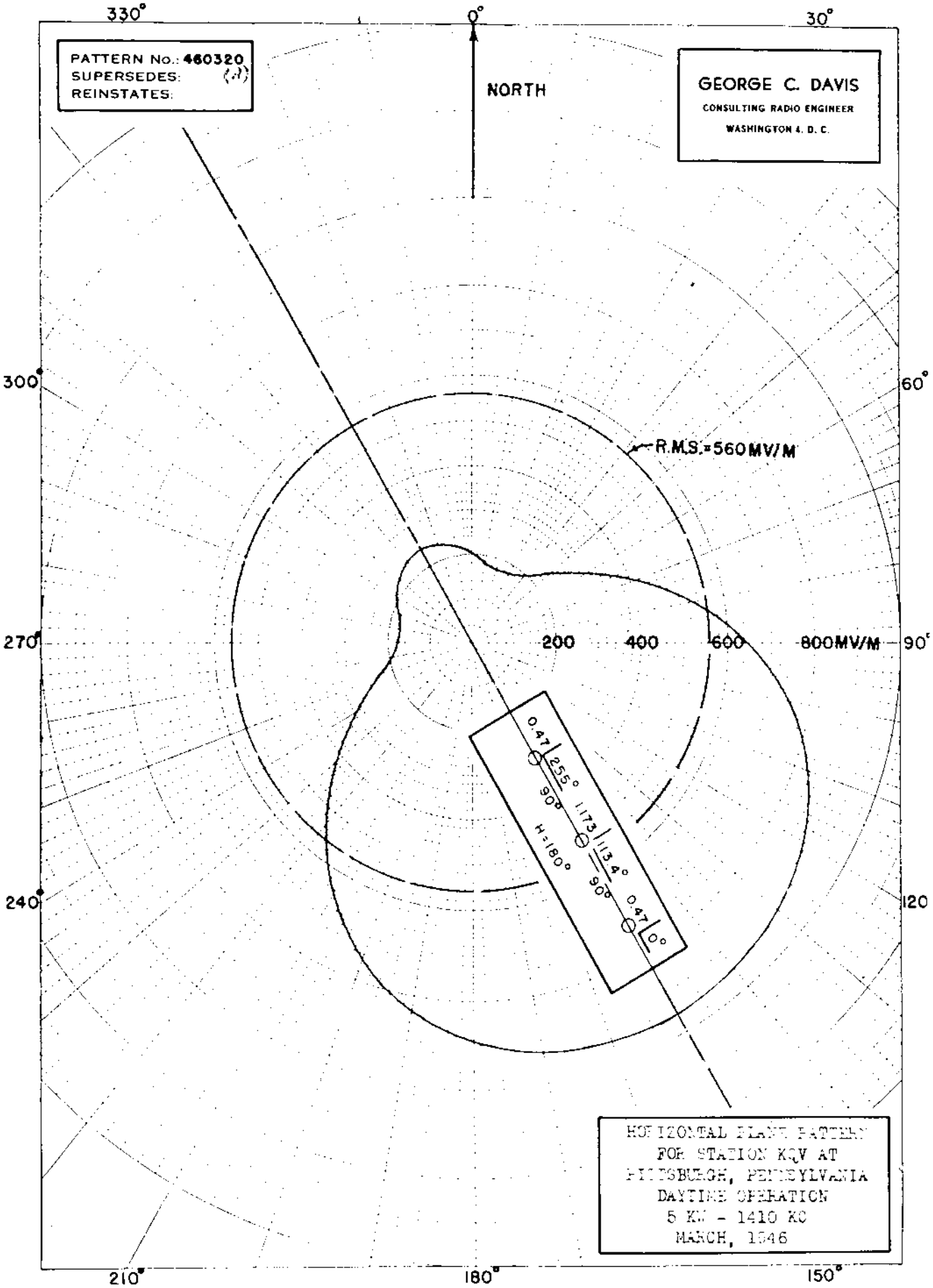
NON-DIRECTIONAL OPERATION

FREQUENCY:	1410 KC.
ASSIGNMENT:	0.5 Kw.-U(DA-N)
LONGITUDE:	97 DEG. 00 MIN. 08 SEC.
LATITUDE:	28 DEG. 46 MIN. 48 SEC.
WHEN USED:	Daytime
R.M.S. FIELD:	139.5 MV/M (Measured)
DATE:	April 1951

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

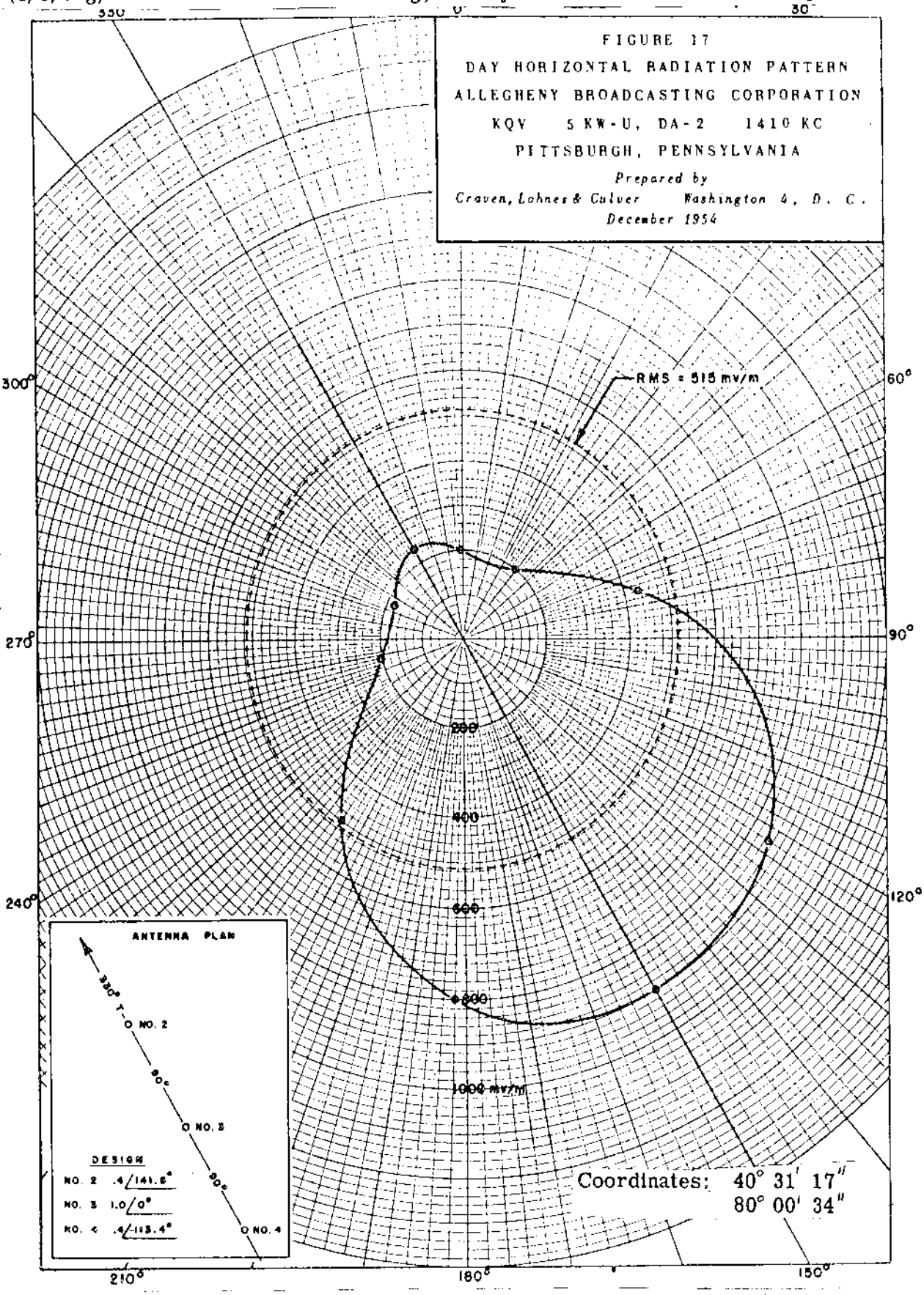
ROBERT M. SILLIMAN
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

KQV-1410 KC


330°
0°
30°
PATTERN No.: 460320
SUPERSEDES:
REINSTATES:
NORTH
GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON 4, D. C.
300°
60°
R.M.S.=560MV/M
270°
200
400
600
800MV/M
90°
0.47 ∠255° 90°
1.73 ∠113.4° 90°
0.47 ∠0°
H=180°
240°
120
HORIZONTAL PLANE PATTERN
FOR STATION KQV AT
PITTSBURGH, PENNSYLVANIA
DAYTIME OPERATION
5 KW - 1410 KC
MARCH, 1946
210°
180°
150°

KQV

MEASURED DAY (4/5/57g) | Station KQV Pittsburg, Pennsylvania | 5kw, DA-2,U 1410 KC



FCC File No. BZ-3637 Accepted 1/7/55 | KQV Pittsburg, Pennsylvania | 1410 KC

EXHIBIT 1

DESCRIPTION OF DAY AND NIGHT ANTENNA SYSTEM
KQV, INCORPORATED
KQV 5 KW-U DA-2 1410 KHz
PITTSBURGH, PENNSYLVANIA

(a)	Number Of Towers	3 day 5 night
(b)	Type Of Towers	Blaw-Knox Type SK Self-Supporting Tapered, series fed.
(c)	Height Of Towers	350 feet above insulators (180°) 355 feet above ground
(d)	Spacing & Orientation	Towers are spaced 90°, or 174' between adjacent towers and are on a line 330° true.
(e)	Ground System	120-174' minimum length buried copper radials equally spaced about each tower. The expanded mesh ground screen at the base of each tower is 48' square and is covered with 3/4" asphalt top. Between adjacent towers a 4" copper strap runs perpendicular to the line of towers for the purpose of termination intersecting radials.
(f)	Top Loading	None

(g) Relative Amplitude Phase Of The Theoretical Radiated Field With #3 Tower As Reference.

Tower	Daytime
1 (N.W.)	-
2	.4 /141/6°
3	1.0/0°
4	.4 /-113.4°
5 (S.E.)	-

Tower	Nighttime
1 (N.W.)	.422 /-46°
2	.955 /158.6°
3	1.0 /0°
4	.557 /-159.7°
5 (S.E.)	.128 /42°

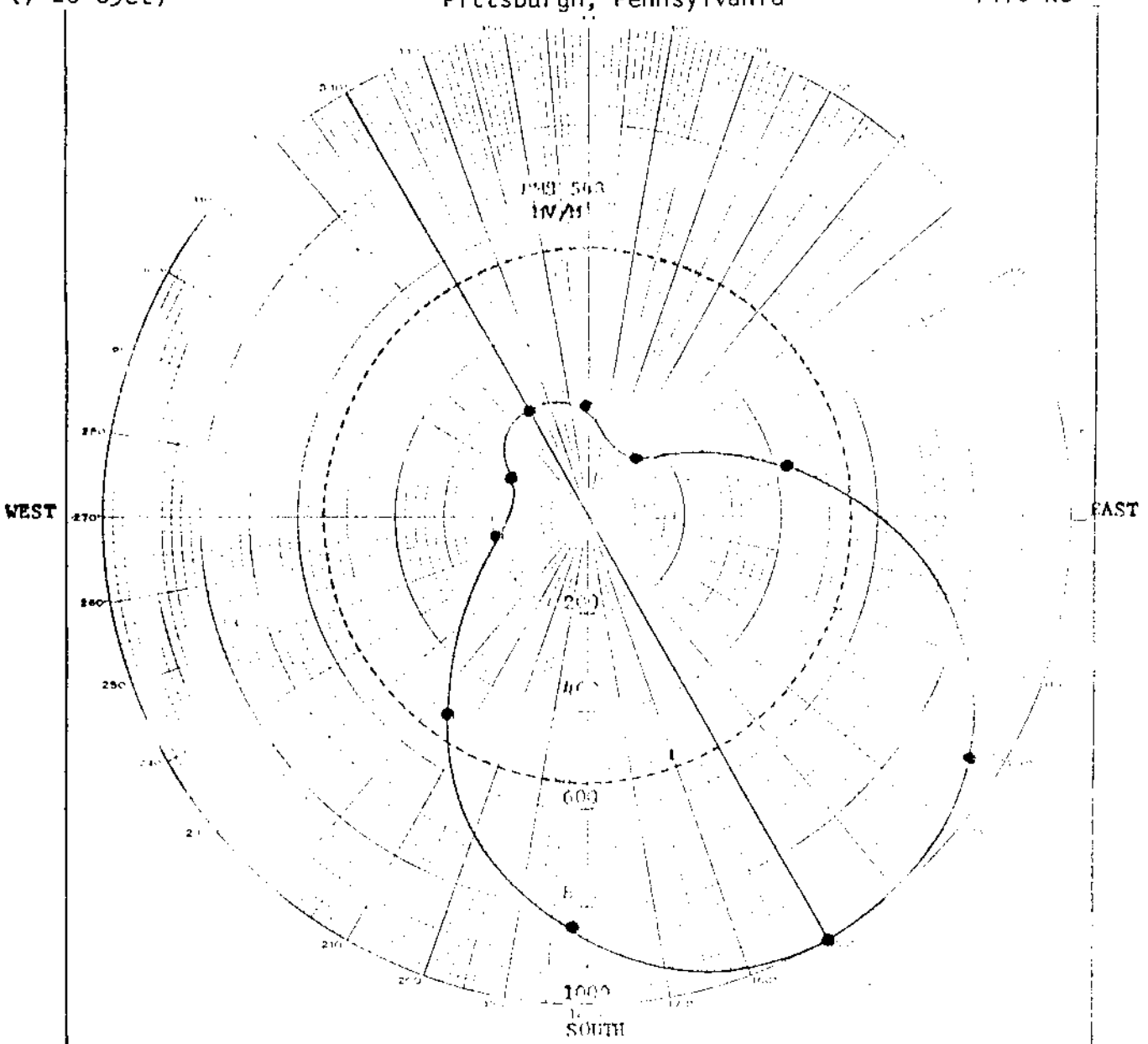
North Latitude 40° 31' 17"
West Longitude 80° 00' 34"

KQV

Measured Day
(7-28-69ct)

Station KQV
Pittsburgh, Pennsylvania

5kw,DA-2,U
1410 kc



DAYTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
KQV INCORPORATED

KQV 5 KW-U DA-2
1410 KHz
PITTSBURGH, PENNSYLVANIA

FCC File No.BZ-7235
Accepted 7-15-69

Station KQV
Pittsburgh, Pennsylvania

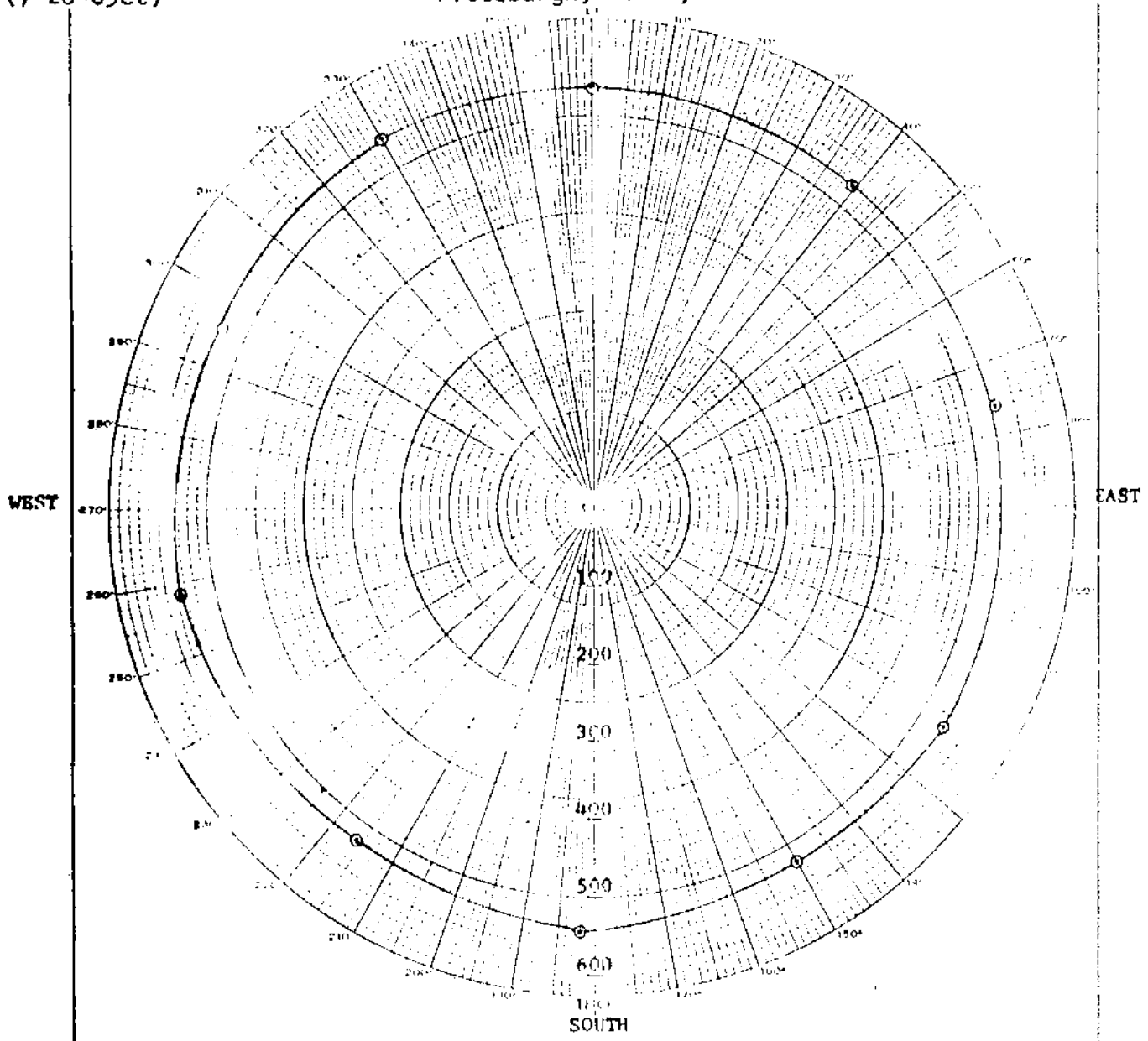
1410 kc

KQV

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

Station KQV
Pittsburgh, Pennsylvania

5kw, DA-2, U
1410 kc



NON-DIRECTIONAL
HORIZONTAL RADIATION PATTERN
KQV INCORPORATED

KQV 5 KW-U DA-2
1410 KHz
PITTSBURGH, PENNSYLVANIA

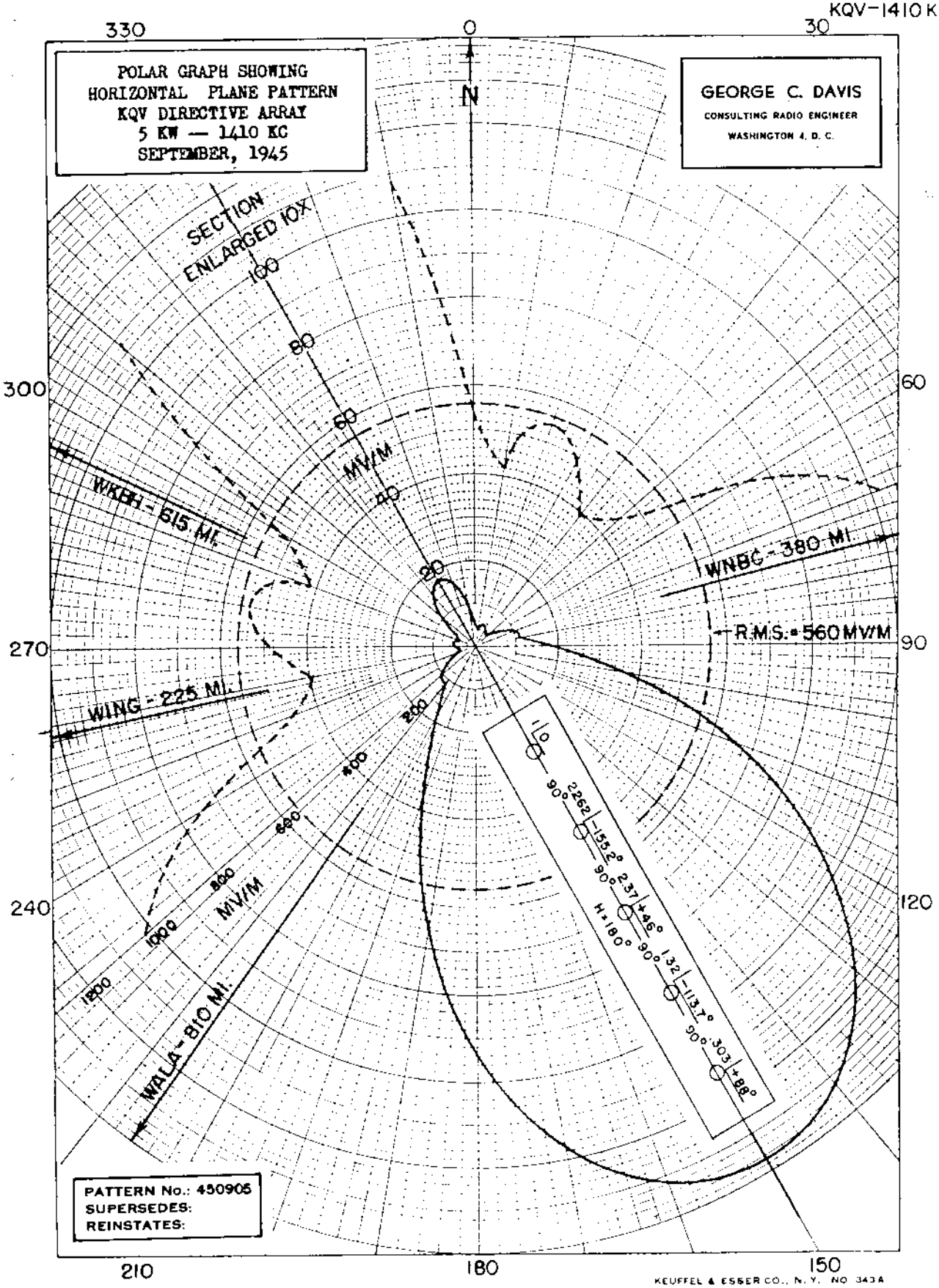
FCC File No.BZ-7235
Accepted 7-15-69

Station KQV
Pittsburgh, Pennsylvania

1410 kc

40-31-17
80-60-34

KQV-1410 K



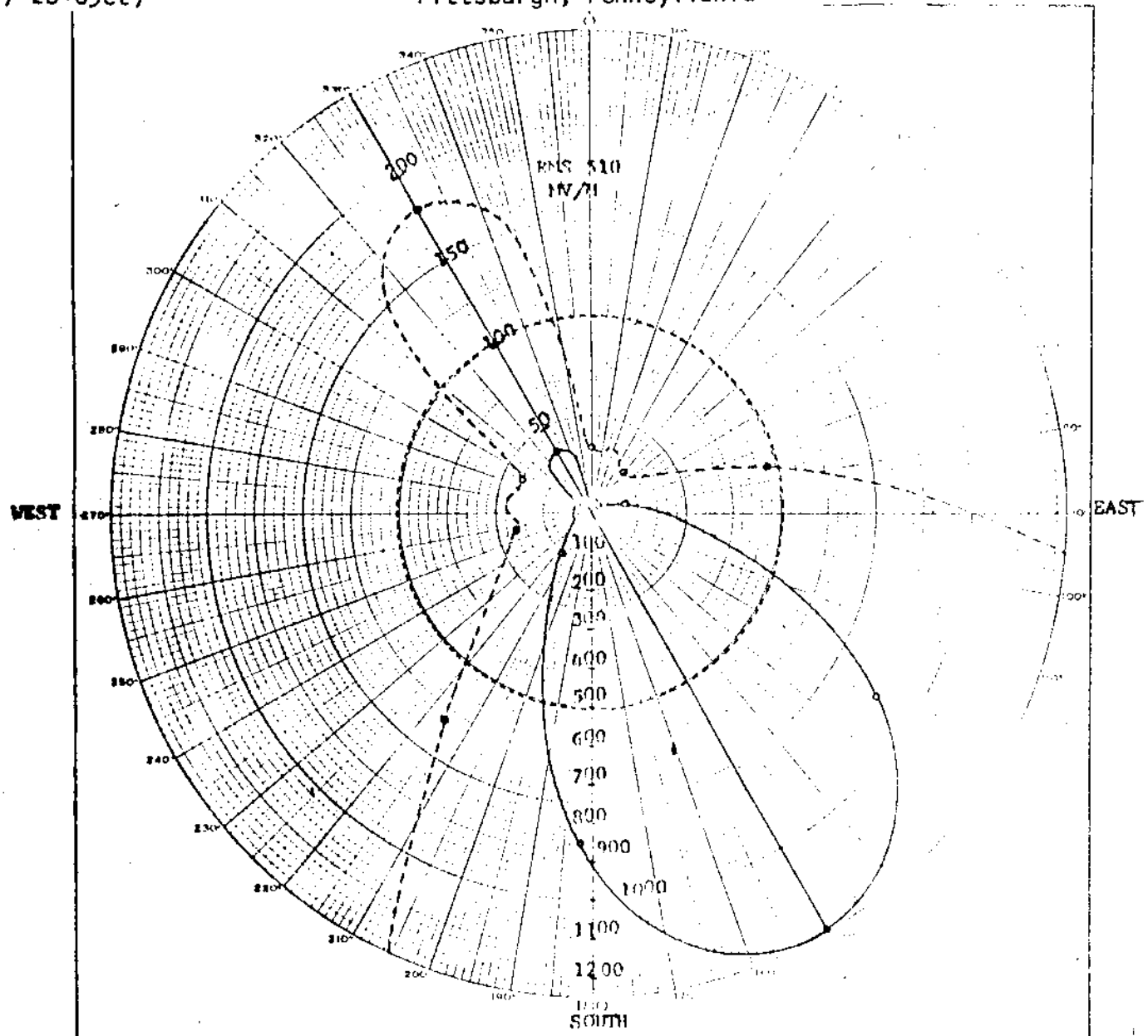
KEUFFEL & ESSER CO., N. Y. NO 343A

KQV

Measured Night
(7-28-69ct)

Station KQV
Pittsburgh, Pennsylvania

5kw,DA-2,U
1410 kc



NIGHTTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
KQV INCORPORATED

KQV 5 KW-U DA-2
1410 KHz
PITTSBURGH, PENNSYLVANIA

FCC File No.BZ-7235
Accepted 7-15-69

Station KQV
Pittsburgh, Pennsylvania

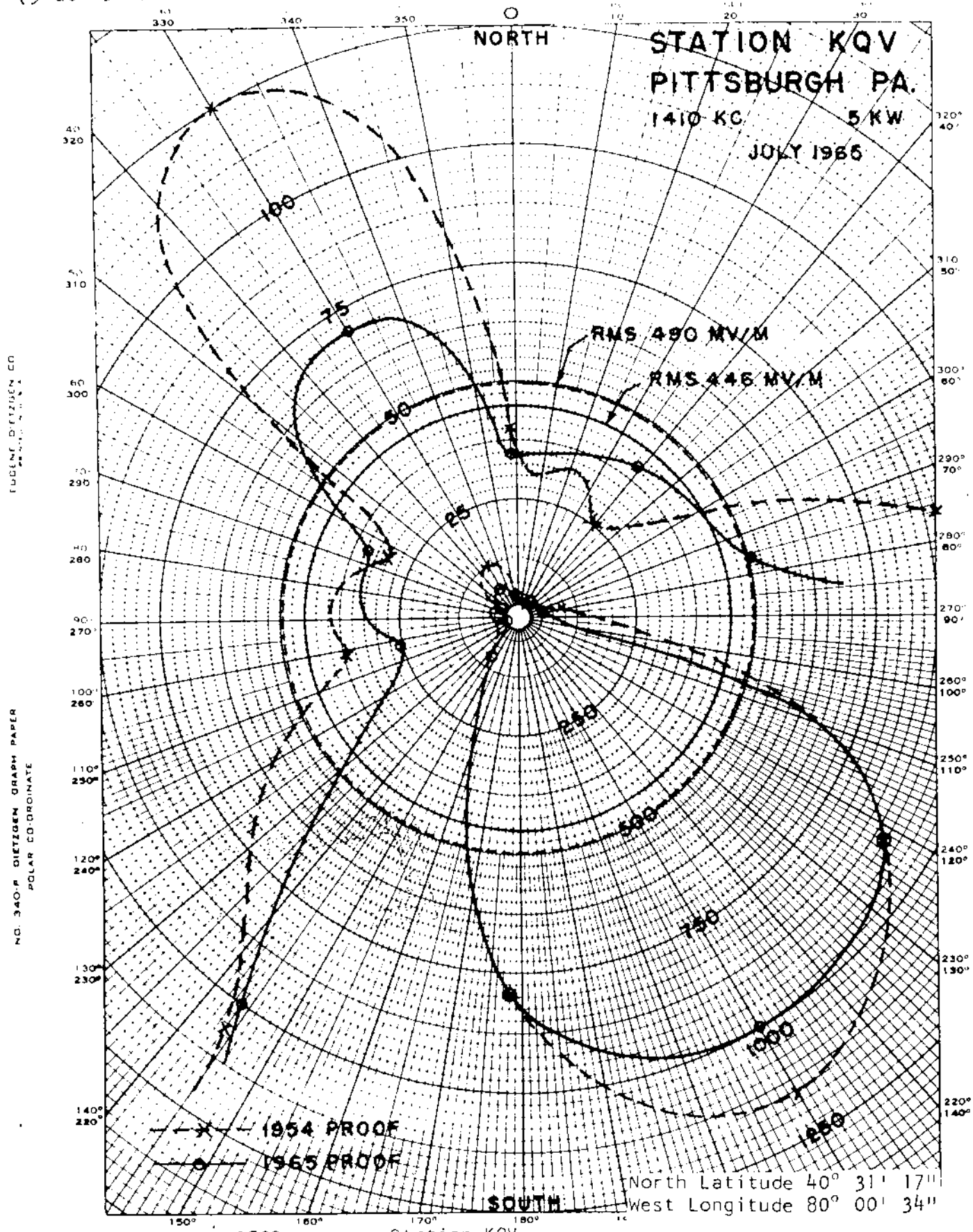
1410 kc

KQV

Measured Night
(9-28-65ct)

Station KQV
Pittsburgh, Pennsylvania

5kw,DA-2,U
1410 kc



North Latitude 40° 31' 17"
West Longitude 80° 00' 34"

FCC File No. BRC-2739
Accepted 9-17-65

Station KQV
Pittsburgh, Pennsylvania

1410 kc

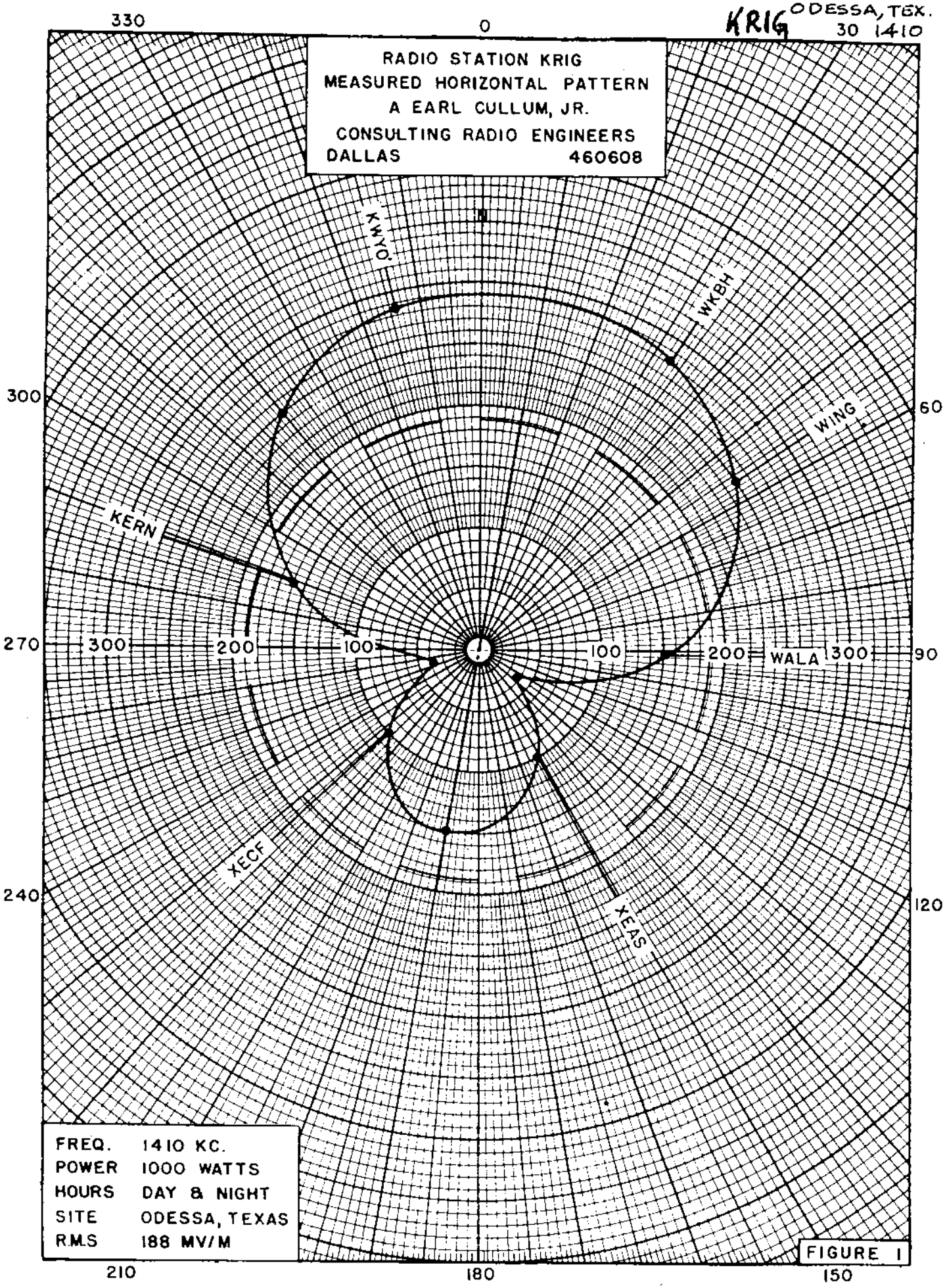
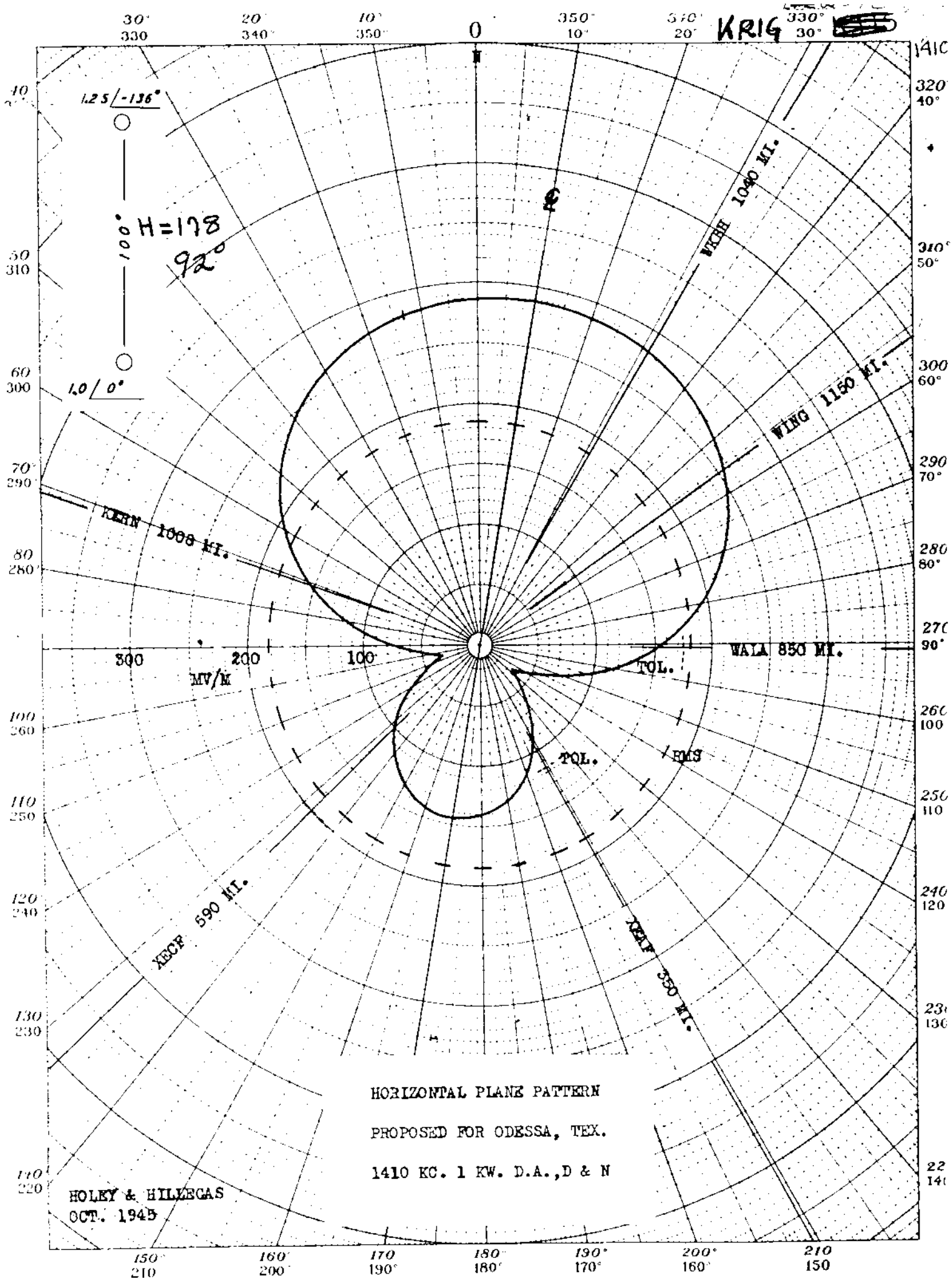

KRIG ODESSA, TEX.
30 1410
RADIO STATION KRIG
MEASURED HORIZONTAL PATTERN
A EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 460608
N
KWYO
WKBH
WING
KERN
WALA
XECF
XEAS
330
0
300
60
270
90
240
120
210
180
150
100
200
300
FREQ. 1410 KC.
POWER 1000 WATTS
HOURS DAY & NIGHT
SITE ODESSA, TEXAS
RMS 188 MV/M

FIGURE 1


KRIG
1.25/-136°
100°
H=178
92°
1.0/0°
WKBH 1040 MI.
WING 1150 MI.
KLHN 1008 MI.
WALA 850 MI.
TOL.
TOL.
KMS
KECR 590 MI.
KEAF 550 MI.
300
200
100
MV/M
HORIZONTAL PLANE PATTERN
PROPOSED FOR ODESSA, TEX.
1410 KC. 1 KW. D.A.,D & N
HOLEY & HILLEGAS
OCT. 1945

KRWB

Proposed Night
(4-24-64ct)

Station KRWB
Roseau, Minnesota

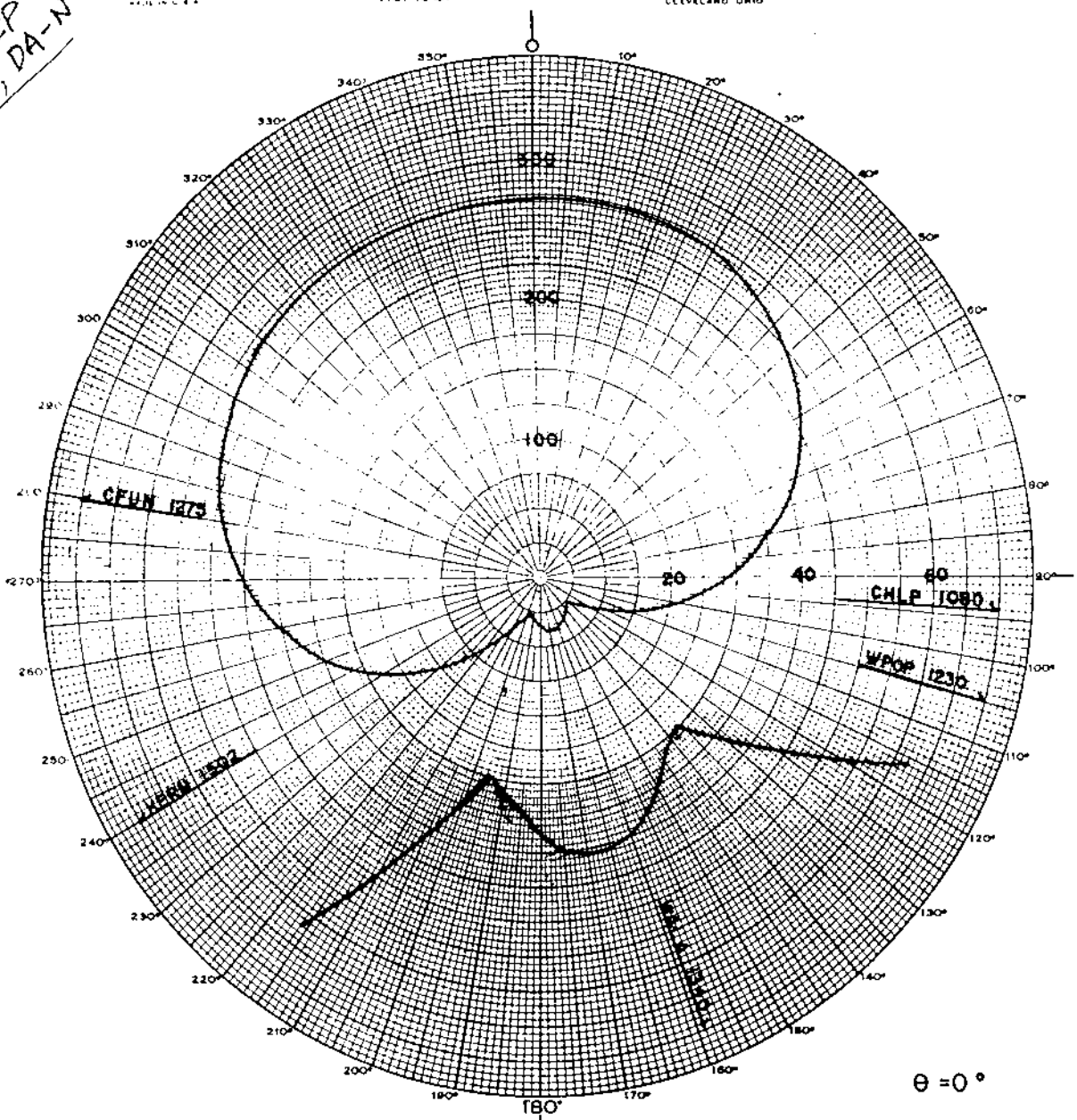
1kw,DA-N,U
1410 kc

BP-16134
4-19-65 CP
CHG. D TO U, DA-N

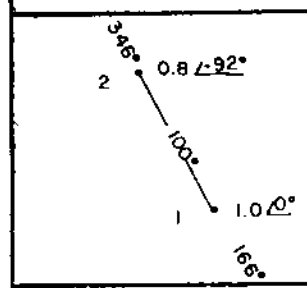
POLAR COORDINATE

NO. 15LP

CLEVELAND INSTITUTE OF ELECTRONICS
CLEVELAND OHIO



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS									STATION DATA
	TOWER No.	ELECTRICAL HEIGHT θ°	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 KRWB
	1	90	166	100	0		1.0	0	190.6	FREQUENCY 1410 kc
	2	90	346	100	-92		0.8	10		POWER 1.0 kw
	3							20		TIME OF OPERATION U
	4							30		TYPE OF OPERATION DA-N
	5							40		DAYTIME TOWERS 1, 2
	6							50		NIGHTTIME TOWERS 1, 2
	7							60		No. RADIALS PER TOWER 120
	8							70		LENGTH OF RADIALS *180 ft.
	9							80		GROUND SCREEN DIMENSION
	10							E_0 =	mv/m	LAT. 48° 51' 06"
	DAYTIME OPERATION ☐			NIGHTTIME OPERATION ☒				P_r =	kw	LONG. 95° 42' 52"
										SUPERSEDES
										PATTERN No. 531212



FCC File No. BP-16134
Accepted 4-10-64

Station KRWB
Roseau, Minnesota

1410 kc

KRWB

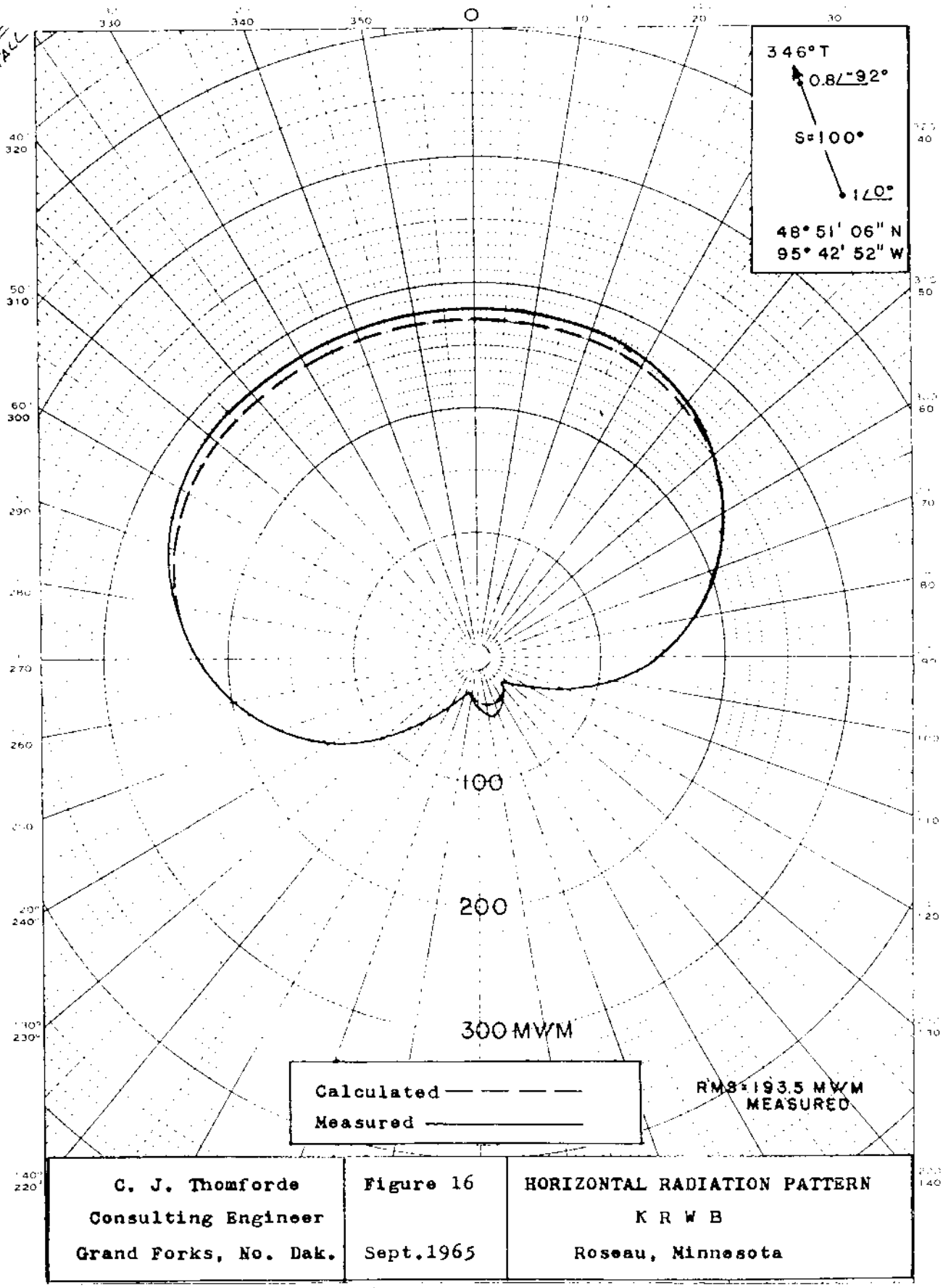
MEASURED

~~Proposed~~ Night
(12-29-65ct)

Station KRWB
Roseau, Minnesota

1kw,DA-N,U
1410 kc

TRANSFERRED 8/18/68 LICENSE COVERING AUG EIN HOURS OF OPERATION AND DA-N INSTALL



C. J. Thomforde Consulting Engineer Grand Forks, No. Dak.	Figure 16 Sept.1965	HORIZONTAL RADIATION PATTERN K R W B Roseau, Minnesota

FCC File No.BL-11153
Accepted 12-15-65

Station KRWB
Roseau, Minnesota

1410 kc

KVEG
1410 kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KVEG

Main Studio: North Las Vegas, Nevada

Frequency: 1410 kHz

Power: 5kw Night 5kw Day

Notification List No. 1788

Date: August 22, 1980 Class: III

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

DAYTIME	NIGHTTIME
North Latitude: 36° 05' 04"	North Latitude: 36° 00' 53"
West Longitude: 115° 00' 34"	West Longitude: 115° 09' 35"

NIGHTTIME ANTENNA CHARACTERISTICS

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

TOWERS:	#1	#2	#3	#4	#5	#6
HEIGHT ABOVE INSULATORS:	160'	160'	160'	160'	160'	160' (82.6°)
NIGHT PHASING:	+23.5°	-21.1°	0°	-19.7°	-6.5°	-23.5°
NIGHT FIELD RATIO:	1.0	1.461	1.09	1.392	0.654	0.569

SPACING AND ORIENTATION: Adjacent towers in a row are spaced 281' (145°) on a line bearing 94° true.

GROUND SYSTEM: 120 - 170' equally spaced copper radials plus 120-49' 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-482#)
Number of elements: 1
Type of elements: Series excited,uniform cross-section, guyed, vertical steel towers.

HEIGHT ABOVE INSULATORS: 430'

GROUND SYSTEM: 120 - 200' equally spaced copper radials about the tower.

KVEG
KIC KIR.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day 1/	482 mv/m		
Night	399.9 mv/m		420.2 mv/m

1/ By adjustment of input power.

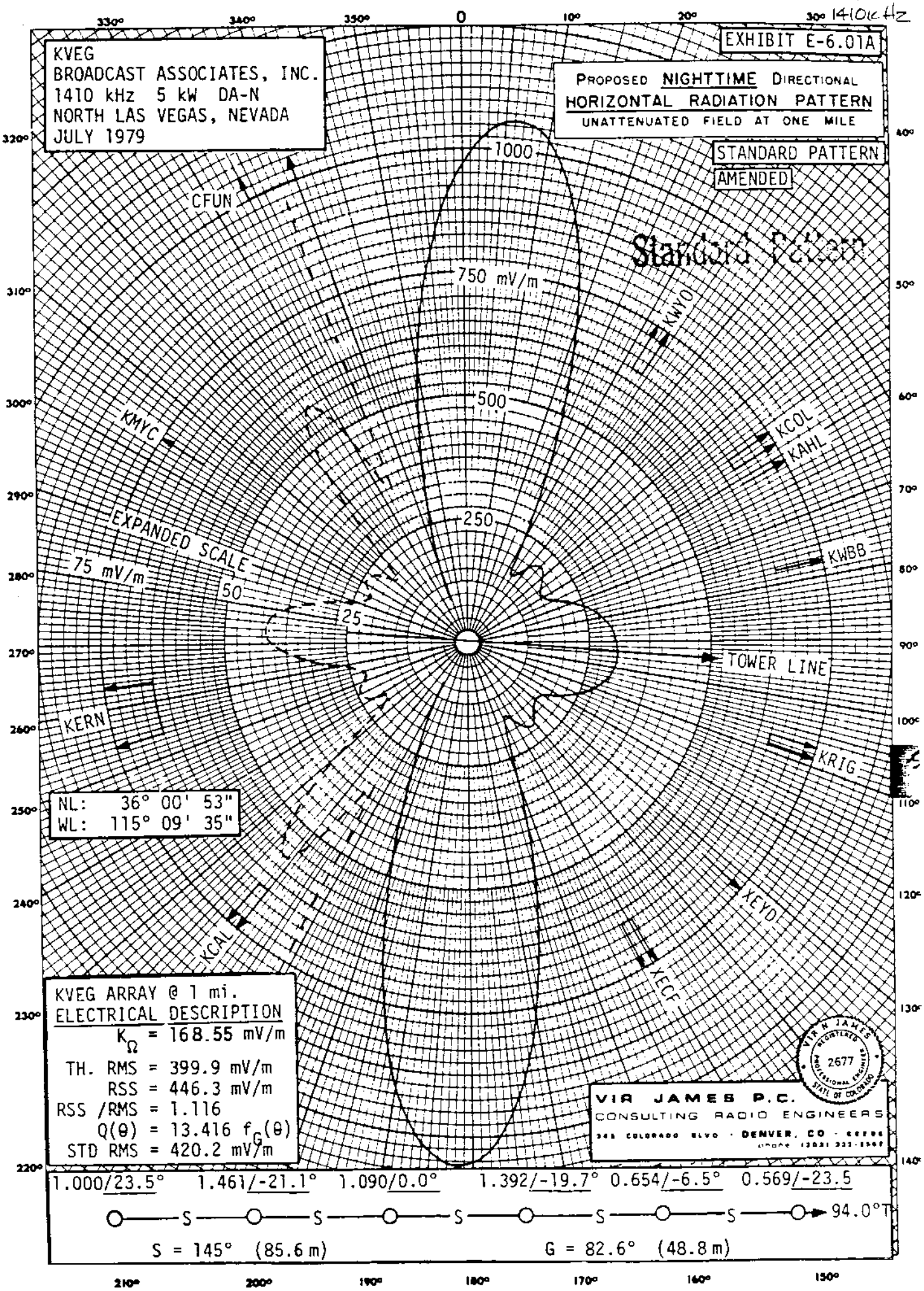
1410 kHz

EXHIBIT E-6.01A

KVEG
BROADCAST ASSOCIATES, INC.
1410 kHz 5 kW DA-N
NORTH LAS VEGAS, NEVADA
JULY 1979

PROPOSED NIGHTTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

STANDARD PATTERN
AMENDED



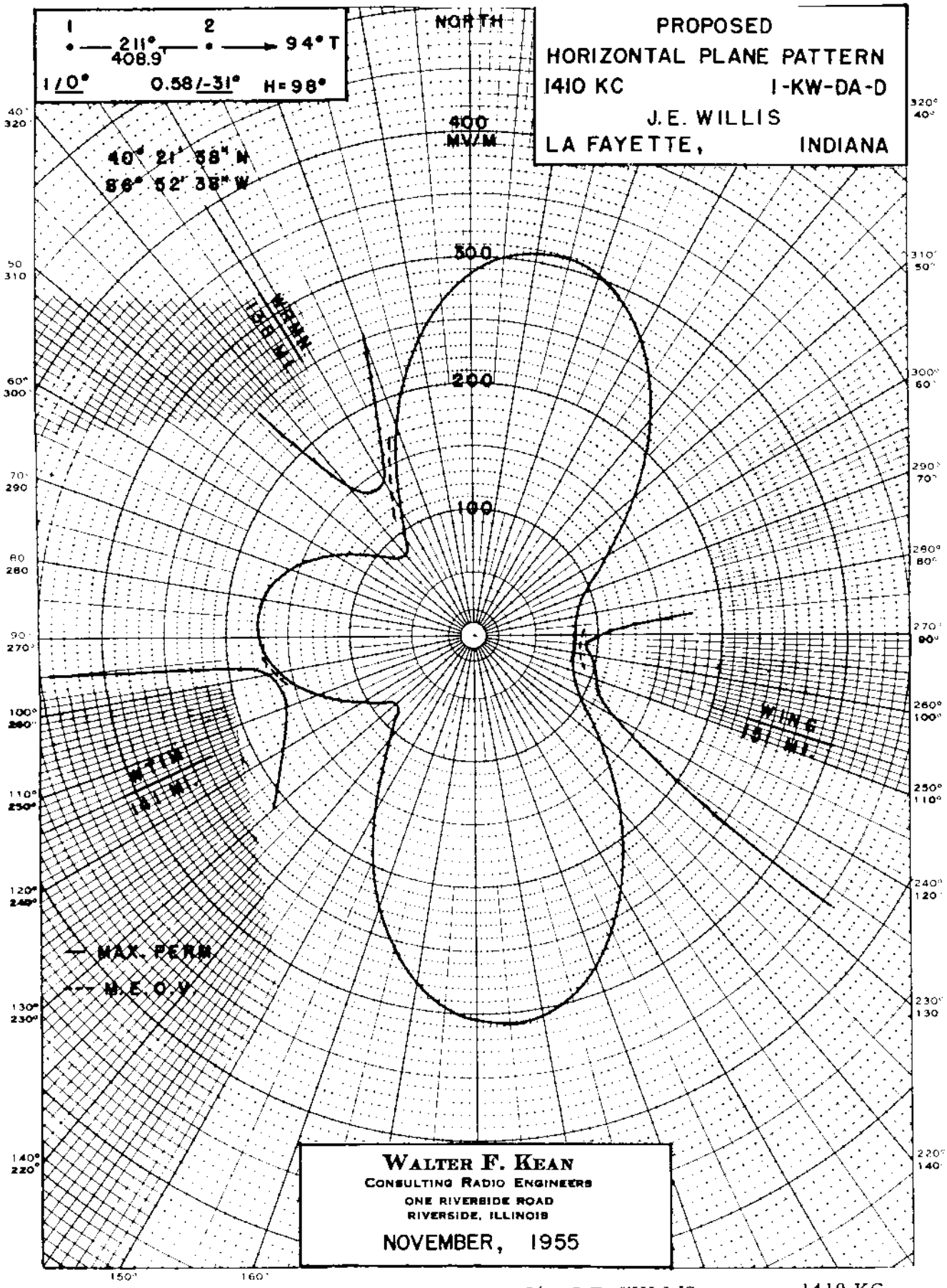
LAF WAZY

PROPOSED
DAY (2/21/56G)

J.E. WILLIS
LAFAYETTE, IND.

1 KW
DA-D

1410 KC



granted CP 6-24-59

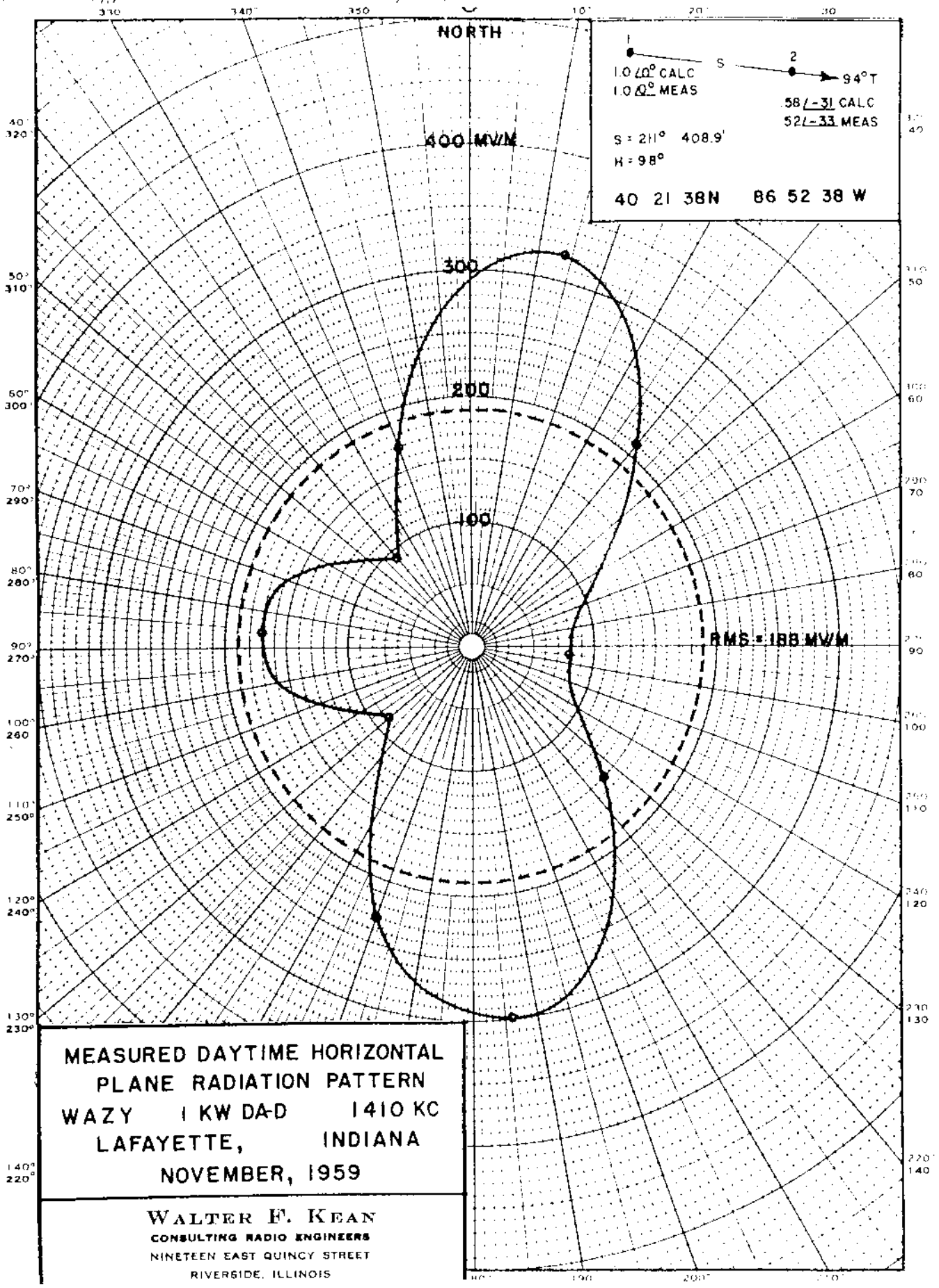
FCC FILE NO. BP-10,253 DATE ACCEPTED 1-3-56 J.E. WILLIS LAFAYETTE, IND. 1410 KC

WAZY

MEASURED DAY
(12-21-59p)

Station WAZY
Lafayette, Indiana

1kw, DA-D, D
1410 KC



FCC File No. BL-7736
Accepted 12-1-59

WAZY
Lafayette, Indiana

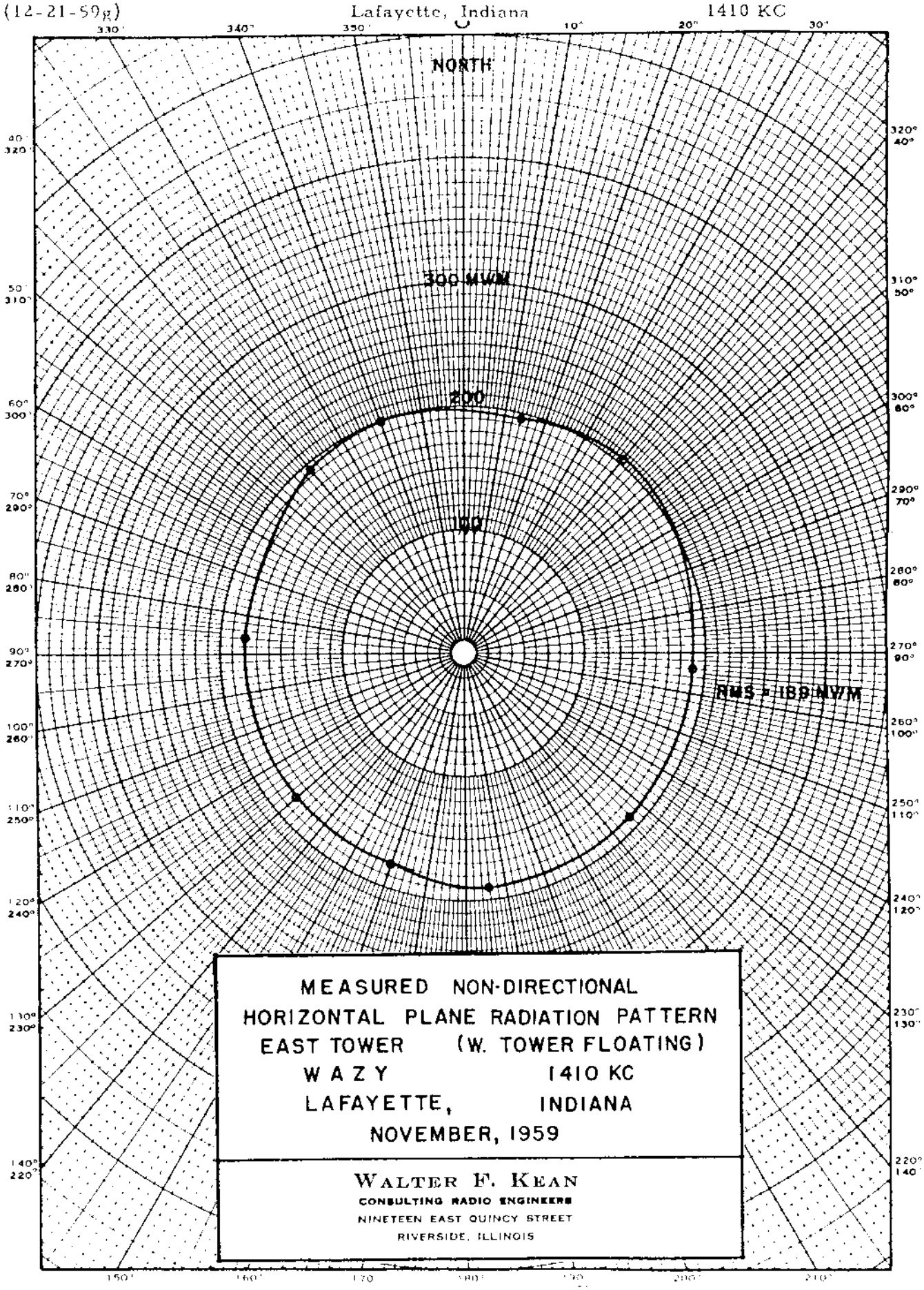
1410 KC

Permits - for mail during 6-22-60

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

Station WAZY
Lafayette, Indiana

1kw, DA-D, D
1410 KC



Planted for new station 6-22-60

FCC File No. BL-7736
Accepted 12-1-59

WAZY
Lafayette, Indiana

1410 KC

195° To KQV

Dunkirk - ~~Fredonia~~, N.Y.

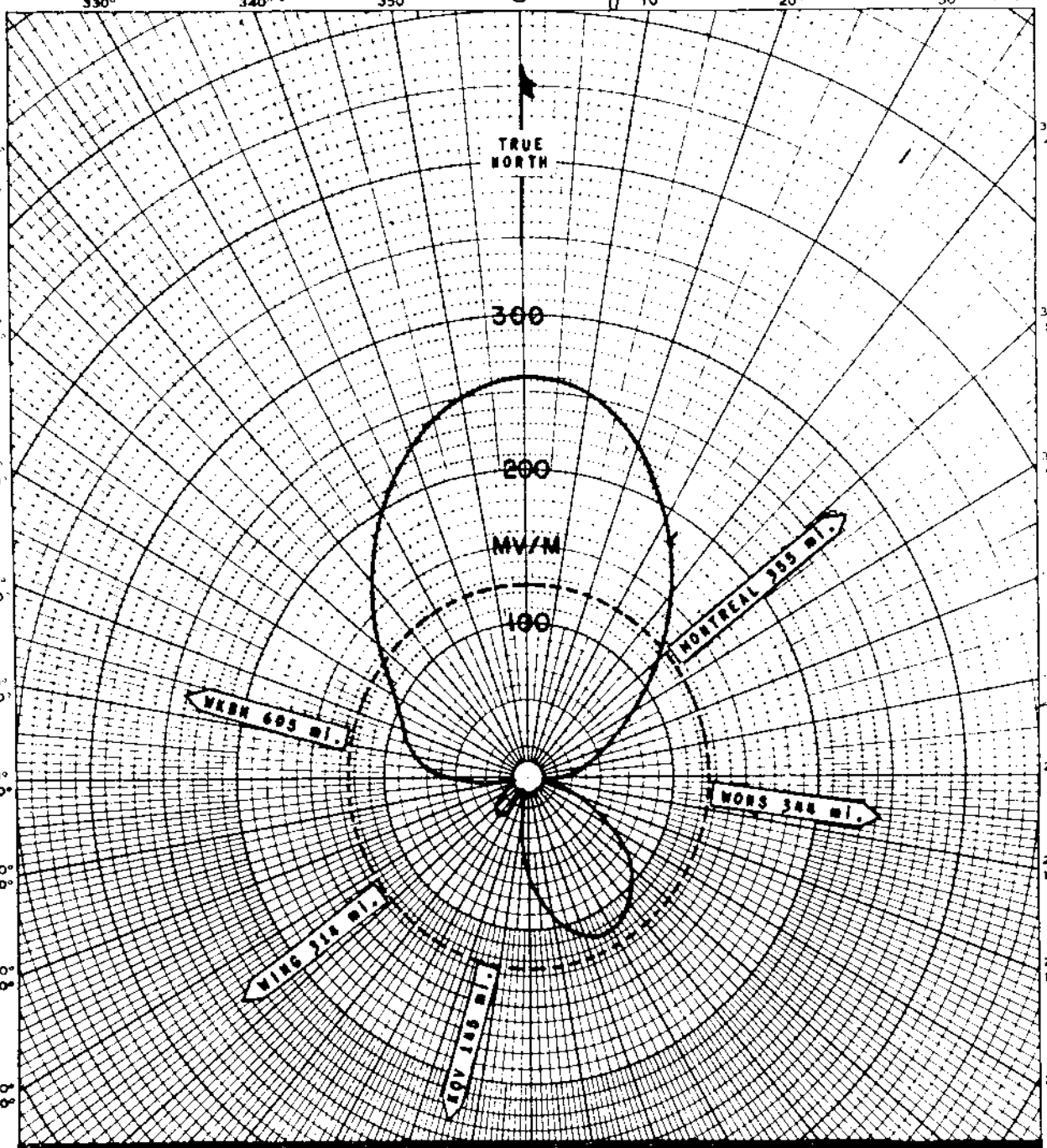
WDOE ~~WFRO~~

DUNKIRK, N.Y.

1410

Rec'd 12-1-47

Granted license 1/9/59 for change from DA-2 to DA-N



.713 /225

#2

75°

90°

#1

180°

#3

83°T

.931 /0

.848 /-50

G = 101°

DUNKIRK BROADCASTING CORP.
AMENDMENT OF PROPOSED
1410KC - 500W - U - DA(N)
DUNKIRK, NEW YORK
HORIZONTAL PLANE RADIATION

LAT: 42° 27' 51"
LONG: 79° 21' 21"

RMS = 125 MV/M

DEC. 1947

RUSSELL P. MAY
Consulting Radio Engineer
Washington 4, D. C.

FIG. NO. 2

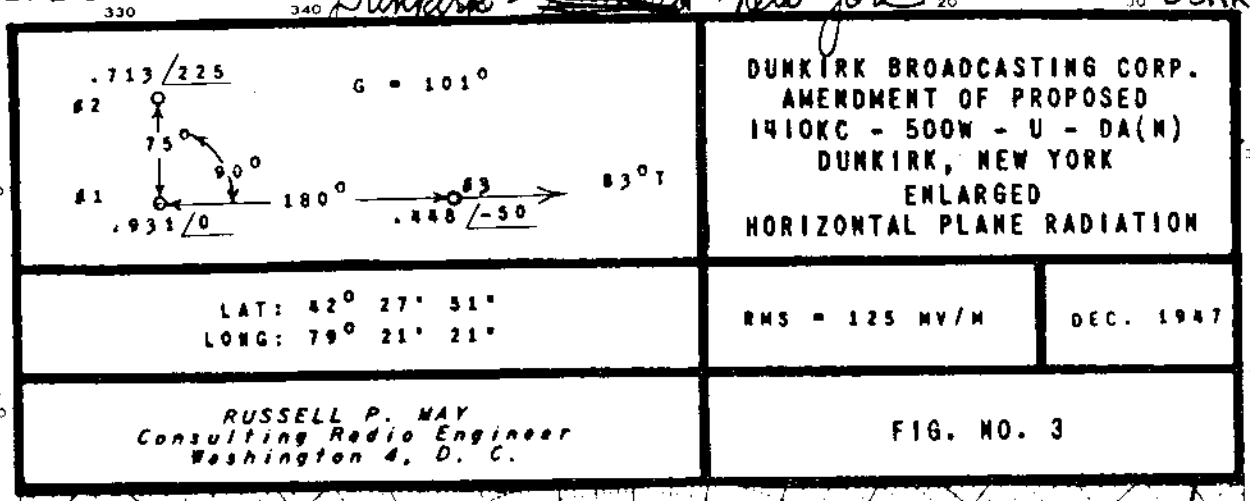
Rec'd 12-1-47

WDUE

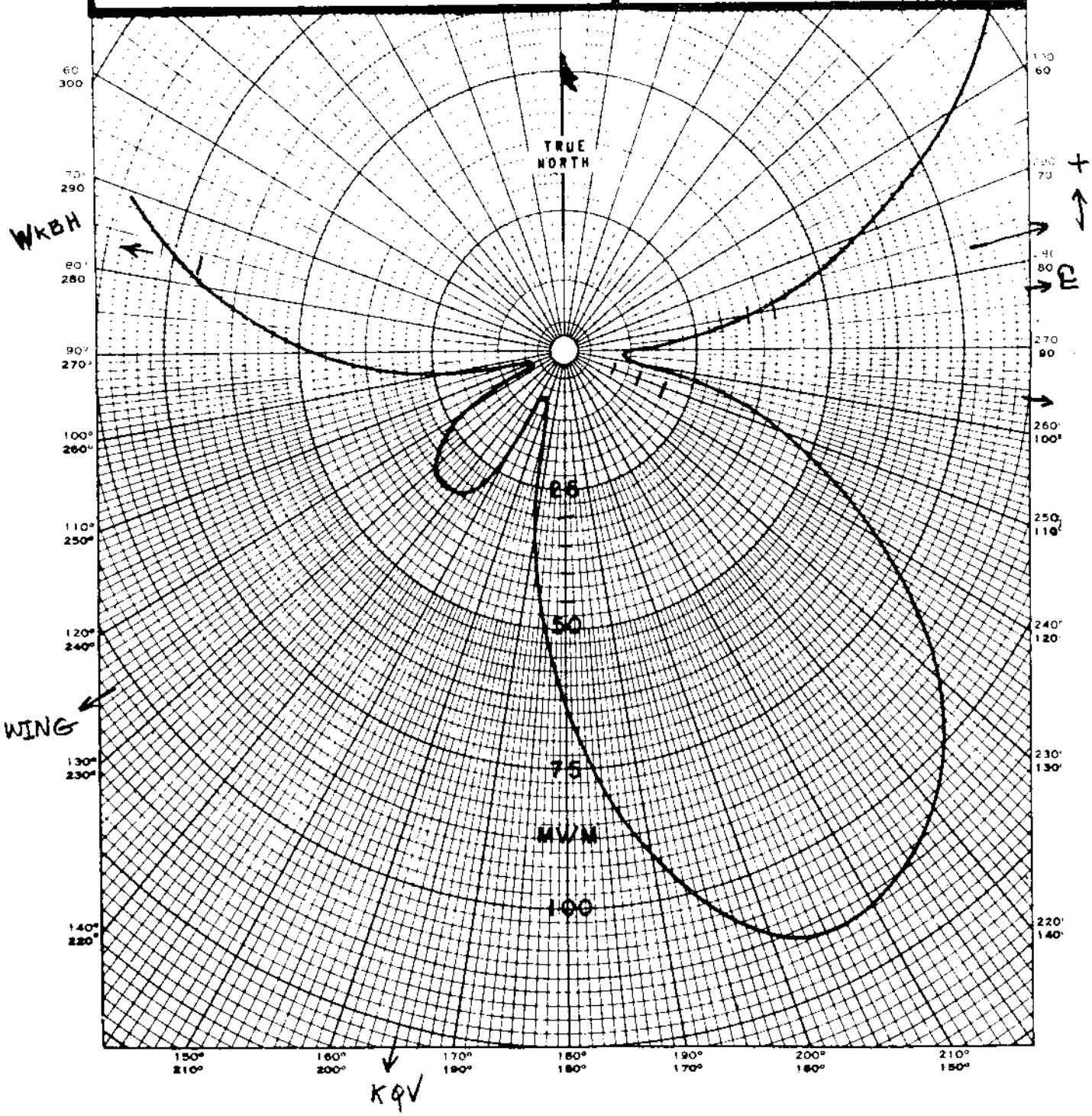
Dunkirk - [redacted] New York

DUNKIRK, N.Y.

1410

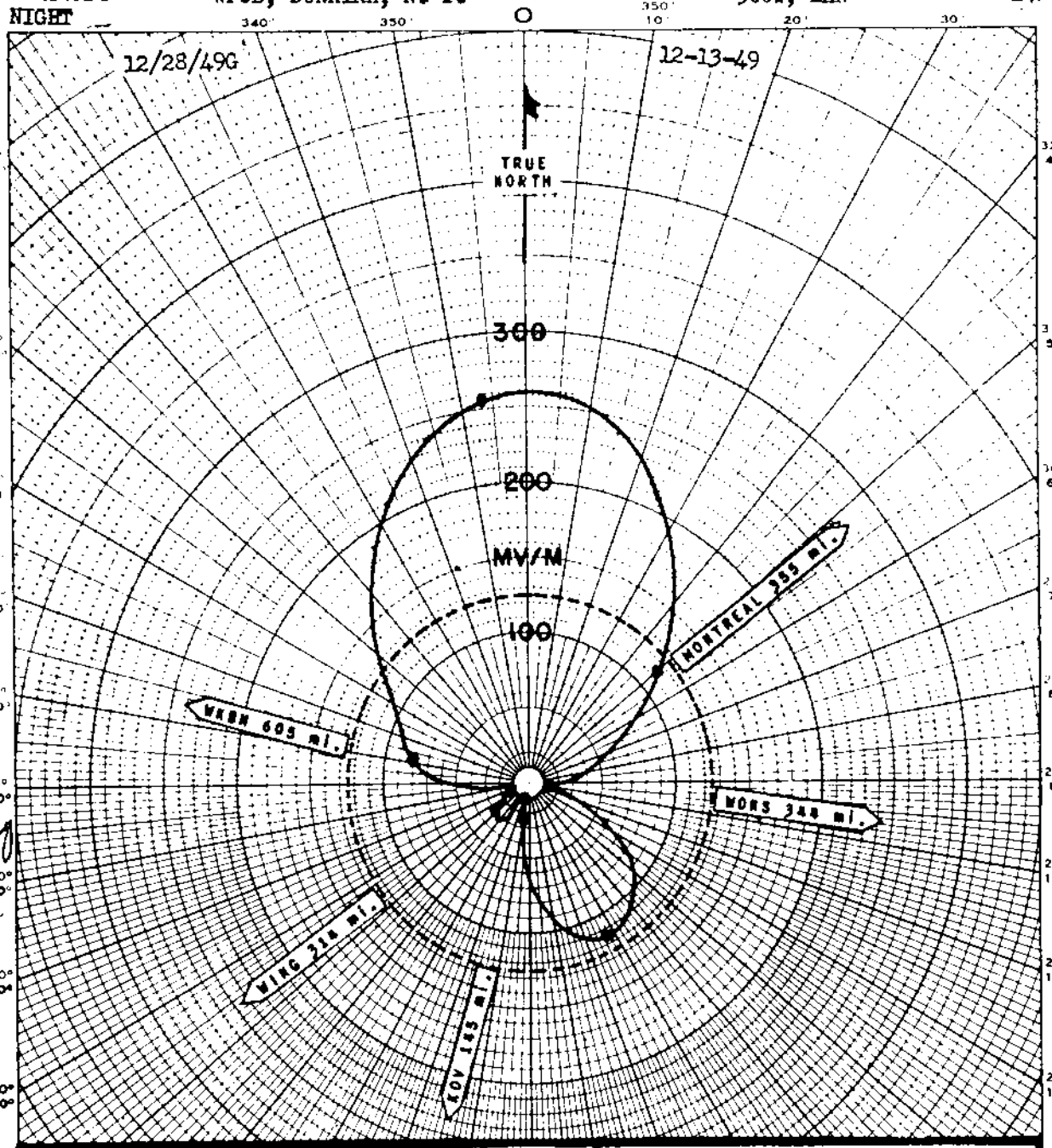


Granted license 1/9/59 for change from DA-2 to DA-N



WDOE

MEASURED NIGHT — WFCB, DUNKIRK, N. Y. — 500w, DAN — 1410 kc



Granted CP 10/1/58 to change from DA-2 to DA-N

Granted licence 1/9/57 ~~granted~~ increased ND-D power to 1 Kw

granted CP 2-23-62 to increase day ND power to 1 Kw

6-24-62 granted K for licence in ND-D power

.713 /225
62
75°
90°
61
180°
83
83°T
.931 /0
.448 /-50

G = 101°

Theoretical Values

DUNKIRK BROADCASTING CORP.
WFCB - 1410 KC - 500 W - DA(N) - U
DUNKIRK, NEW YORK

THEORETICAL AND MEASURED PATTERN

LAT: 42° 27' 51"
LONG: 79° 21' 21"

RMS = 125 MV/M

12/9/49

RUSSELL P. MAY
Consulting Radio Engineer
Washington 4, D. C.

EXHIBIT NO. 5

WFCB, Dunkirk, N. Y. 1410 kc

WDOE

MEASURED NIGHT NULLS — WFCB, DUNKIRK, N. Y. — 500w, DAN — 1410 kc

12/28/49G

G = 101°

Theoretical Values

.713 /225

82

75°

90°

81

180°

83

83°T

.931 /0

.848 /-50

12-13-49

DUNKIRK BROADCASTING CORP.

WFCB - 1410 KC - 500 W - DA(N) - U

DUNKIRK, NEW YORK

DETAIL IN NULLS

LAT: 42° 27' 51"

LONG: 79° 21' 21"

RMS = 125 MV/M

12/8/49

RUSSELL P. MAY
Consulting Radio Engineer
Washington 4, D. C.

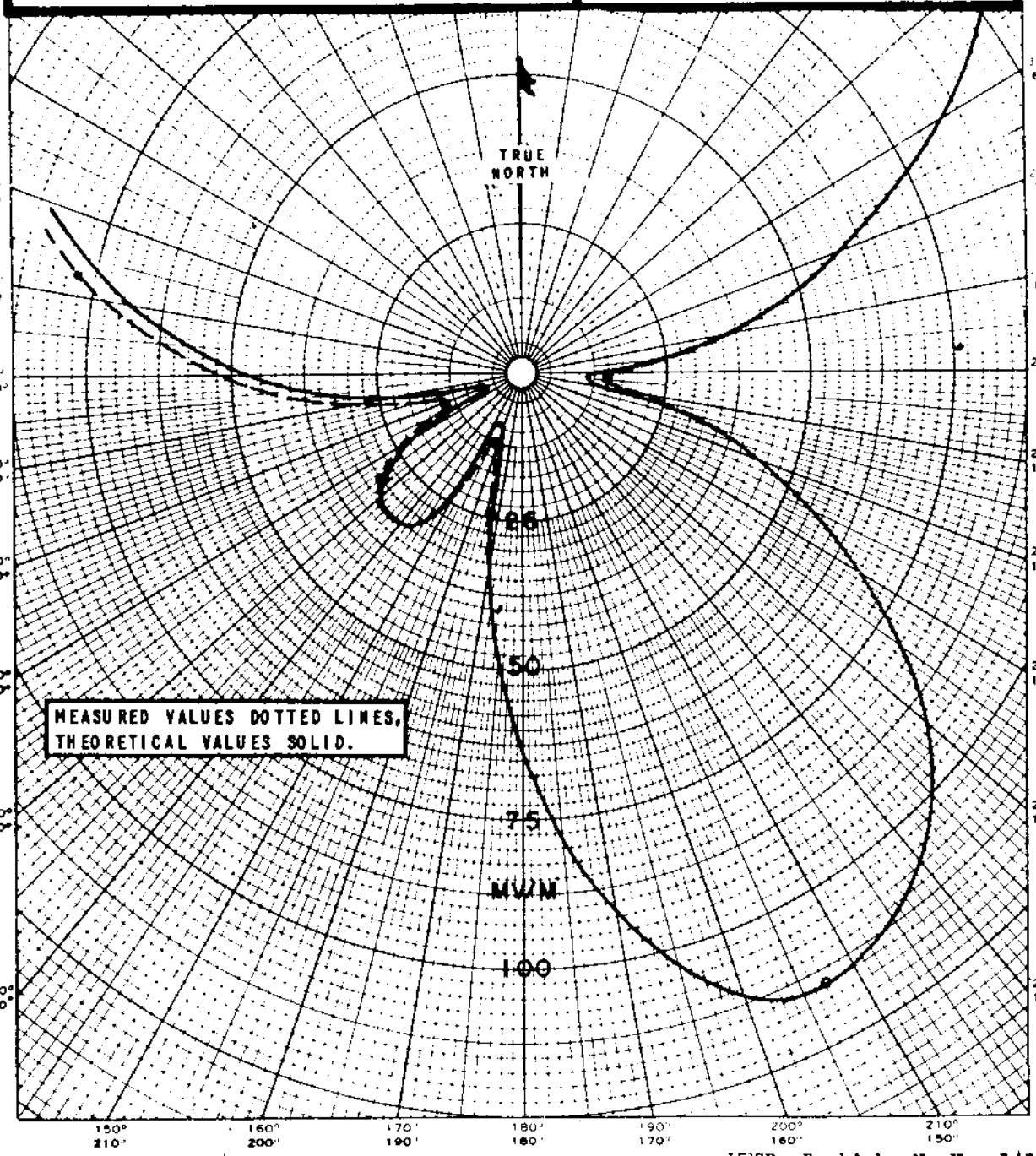
EXHIBIT NO. 6

Granted CP 10/1/58 to change from DA-2 to DA-N

Granted license 1/9/59

Application to increase day power to 1 KW 9-9-59

6-24-62 granted K for license in ND day power



WFCB, Dunkirk, N. Y. 1410 kc

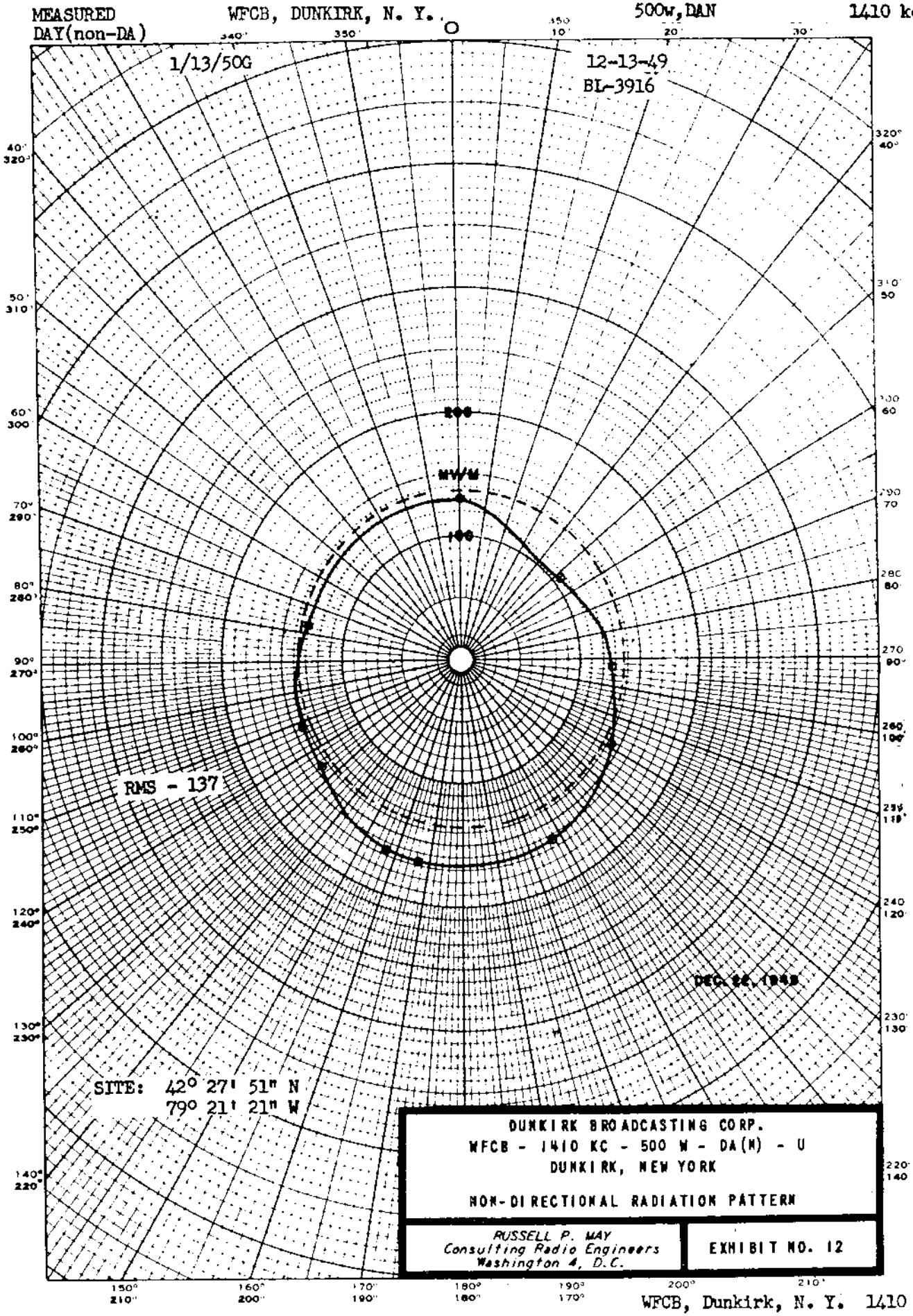
WDOE

MEASURED
DAY(non-DA)

WFCB, DUNKIRK, N. Y.

500w, DAN

1410 kc



WFCB, Dunkirk, N. Y. 1410 kc

W D O V

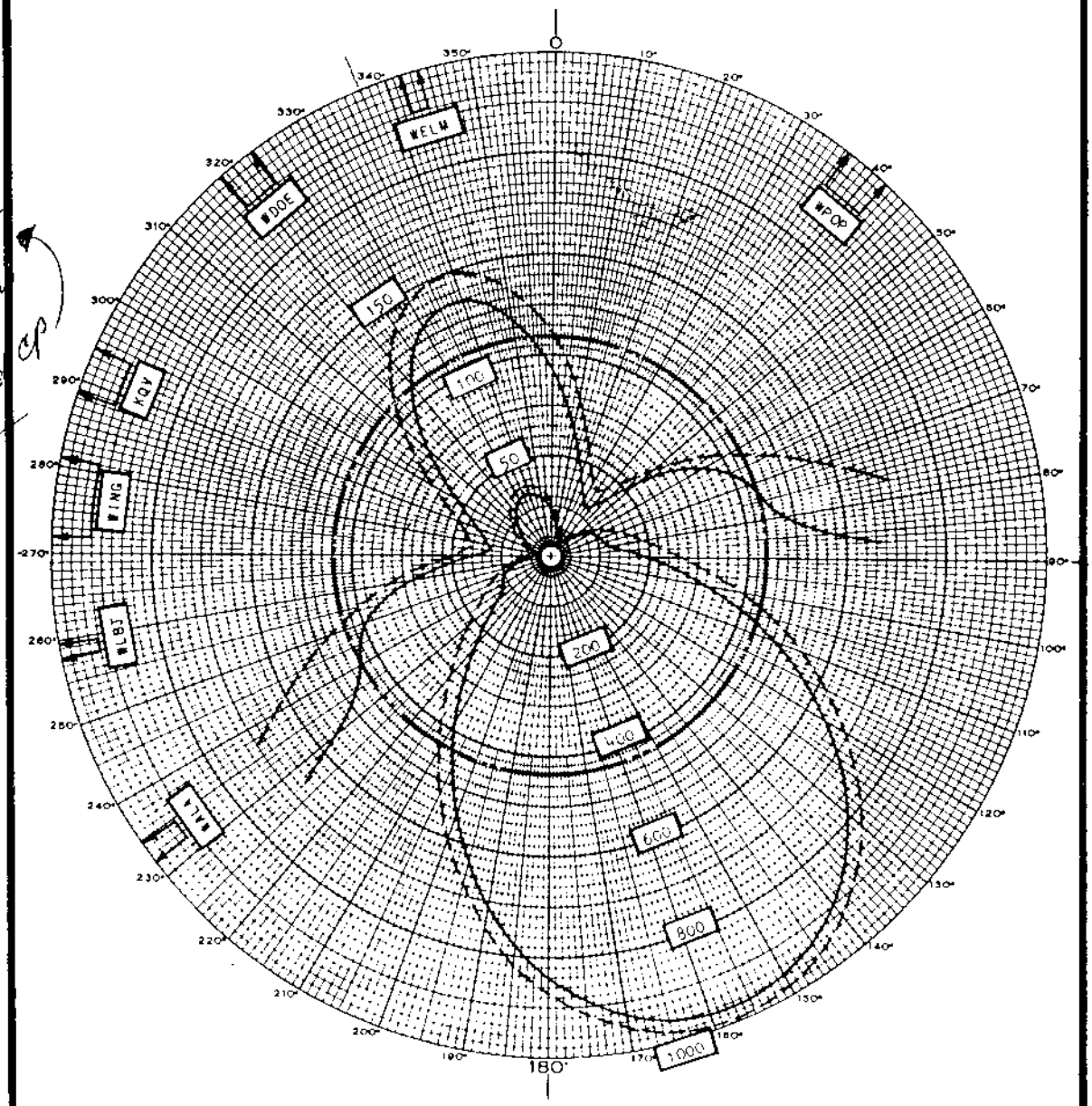
Proposed Night
(8-23-63ct)

Station WDOV
Dover, Delaware

5kw,DA-N,U
1410 kc

203-10-27-64
granted MCP
to increase #3
tower height
194' / 387

300-7-29-64
to change hours
of operation -
DA-N - granted CP



E_{RMS} = 436 MV/M (BY ADJUSTMENT)

—— CALCULATED PATTERN
----- MEOV

LATITUDE: 39° 12' 03"
LONGITUDE: 75° 33' 55"

JOHN H. MULLANEY
AND
ASSOCIATES
A DIVISION OF MULTRONICS INC

ANTENNA PARAMETERS

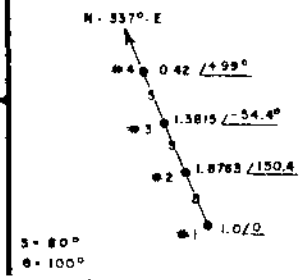


FIGURE 4

NIGHTTIME HORIZONTAL
POLAR PATTERN

RADIO STATION WDOV
DOVER, DELAWARE

1410 KC 5 KW, DA-N,U

FCC File No.BP-15456
Accepted 7-30-63 Amended

Station WDOV
Dover, Delaware

1410 kc

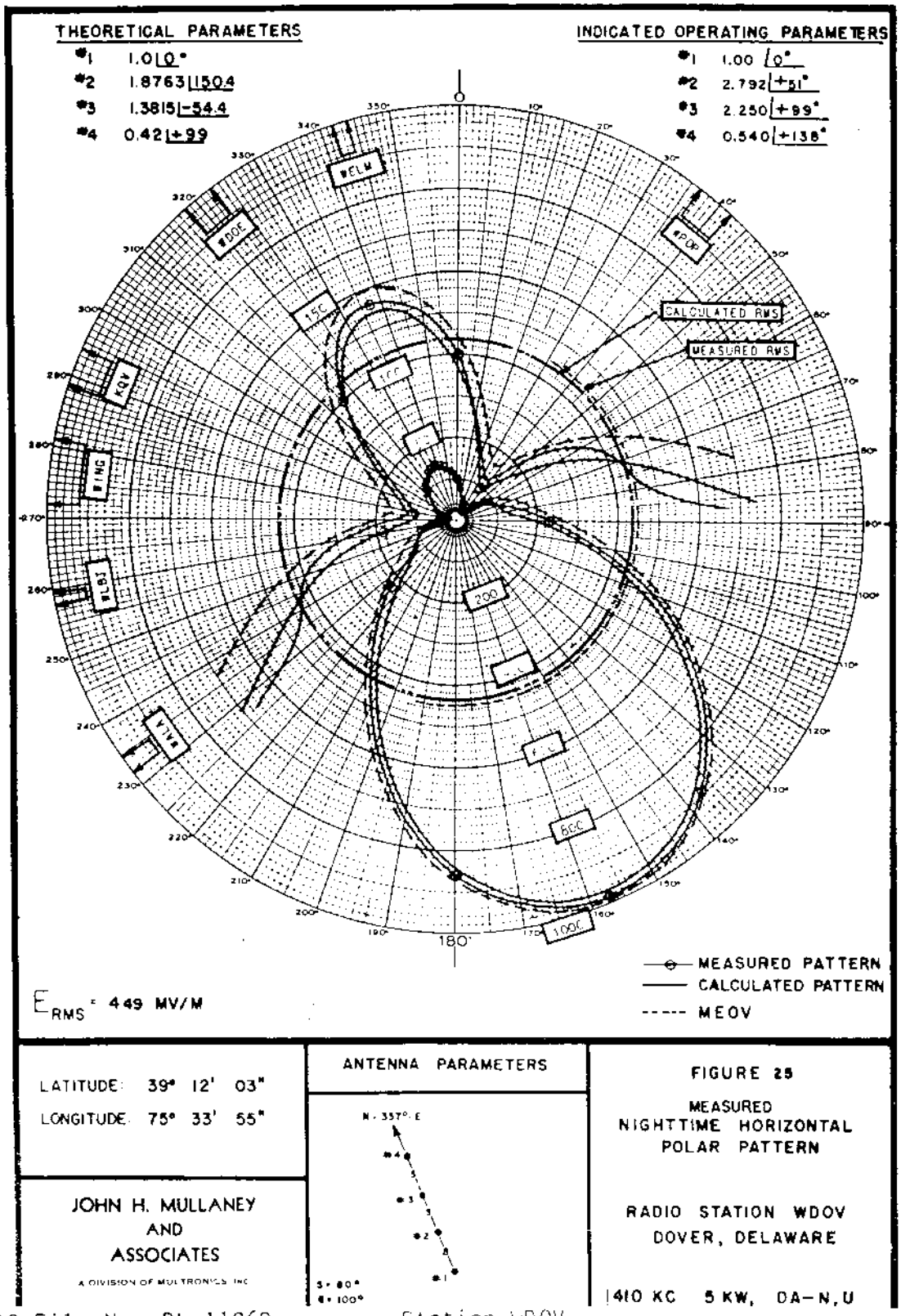
WDOV

Measured Night
(11-29-65ct)

Statioh WDOV
Dover, Delaware

5kw,DA-N,U
1410 kc

-16.12-28-65



LATITUDE: 39° 12' 03"
LONGITUDE: 75° 33' 55"

JOHN H. MULLANEY
AND
ASSOCIATES
A DIVISION OF MULTRONICS, INC

ANTENNA PARAMETERS

FIGURE 25

MEASURED
NIGHTTIME HORIZONTAL
POLAR PATTERN

RADIO STATION WDOV
DOVER, DELAWARE

1410 KC 5 KW, DA-N,U

FCC File No. BL-11069
Accepted 10-27-65

Station WDOV
Dover, Delaware

1410 kc

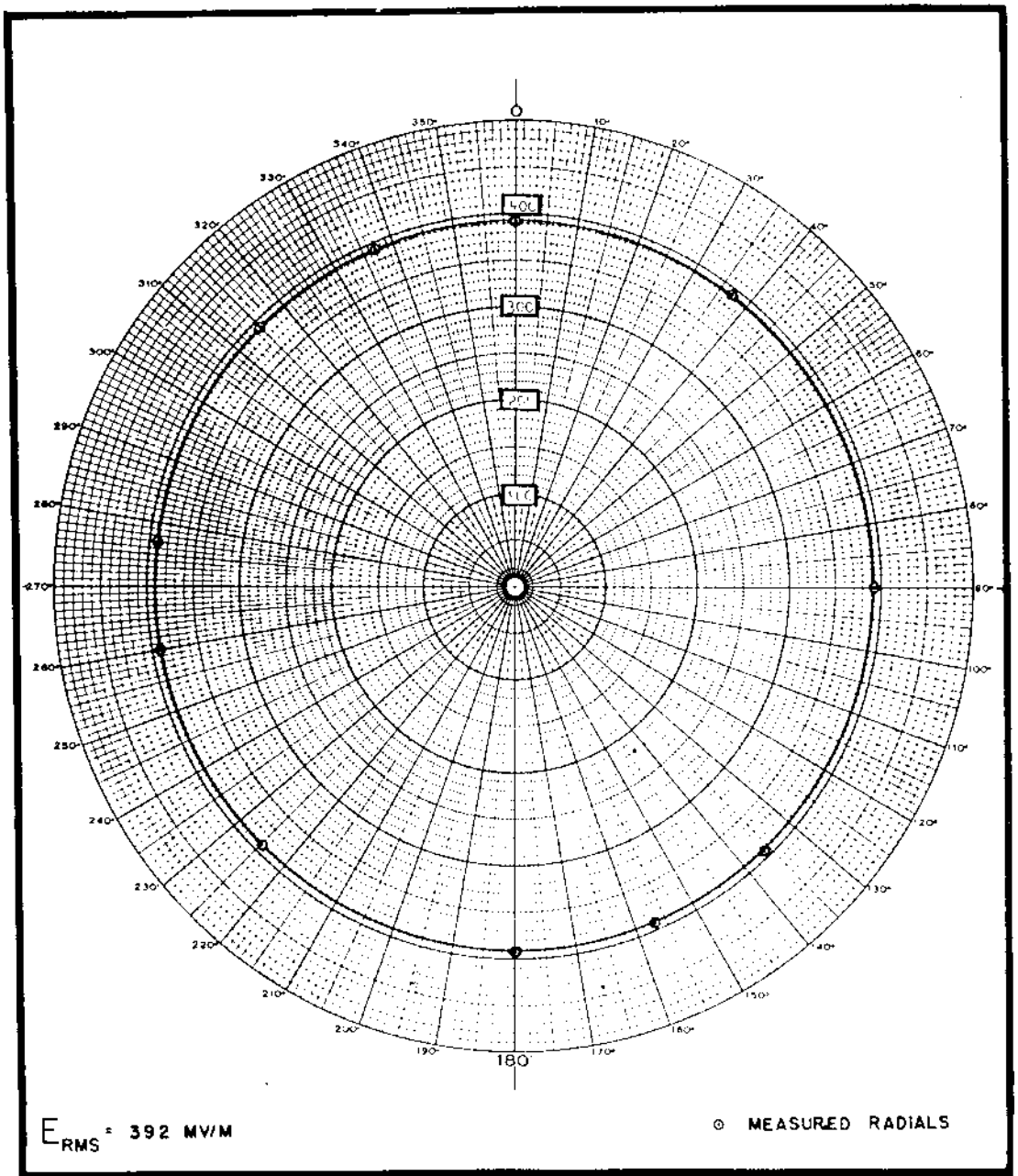
WDOV

Measured Non-DA
(11-29-65ct)

Station WDOV
Dover, Delaware

5kw,DA-N,U
1410 kc

-IC 12-28-65



LATITUDE: 39° 12' 03" LONGITUDE: 75° 33' 55"	ANTENNA PARAMETERS	FIGURE 24
JOHN H. MULLANEY AND ASSOCIATES A DIVISION OF MULTRONICS, INC	TOWER #1 G=100° RESISTOR CONTROLLED RADIATION	MEASURED NON-DIRECTIONAL POLAR PATTERN RADIO STATION WDOV DOVER, DELAWARE 1410 KC 5 KW,DA-N,U

FCC File No. BL-11069
Accepted 10-27-65

Station WDOV
Dover, Delaware

1410 kc

WELM

PROPOSED NIGHT
(5-28-59g)

Station WELM
Elmira, New York

500w, 1kw-LS, DA-N,U
1410 KC

(Amended)

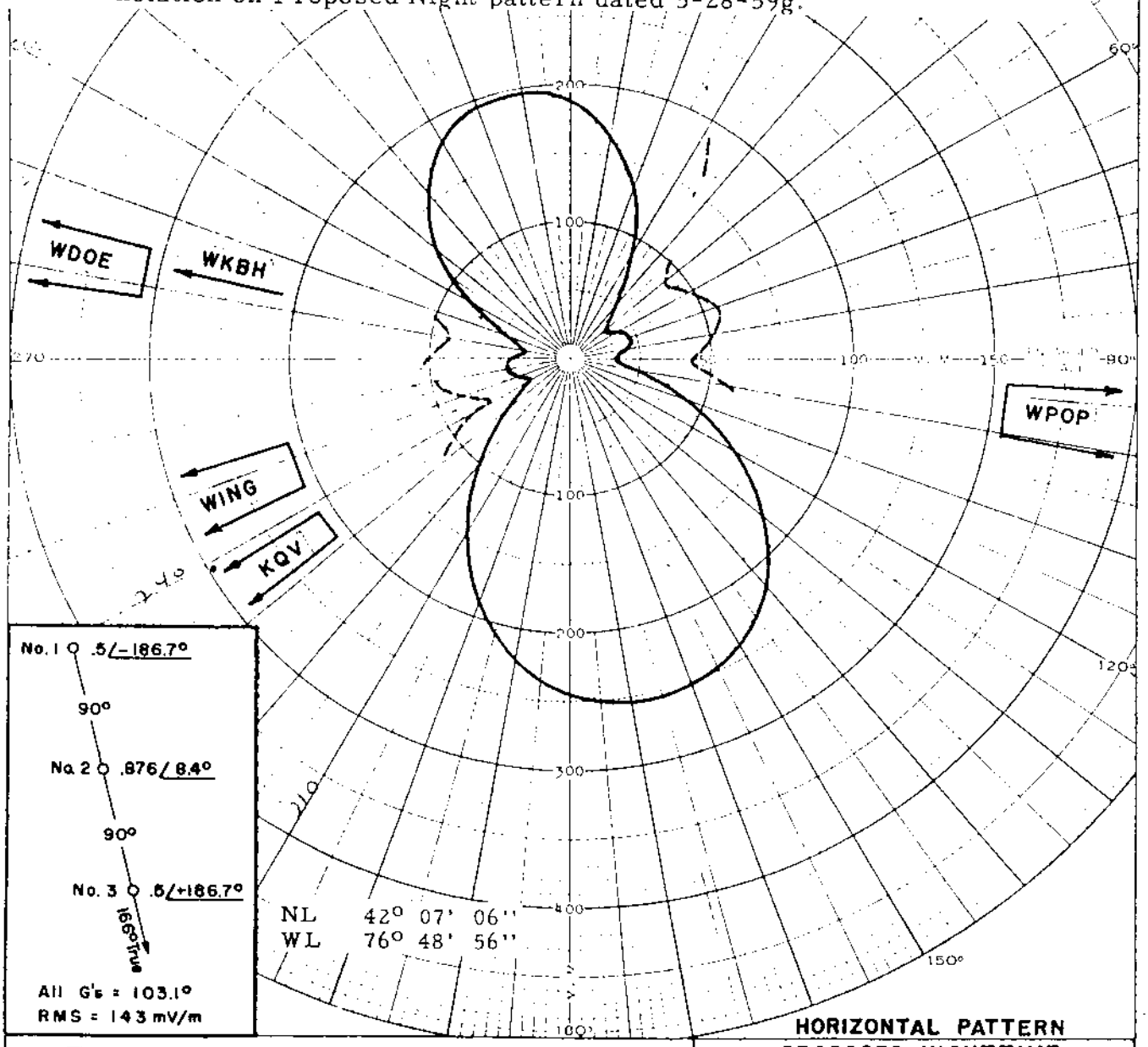
M. E. O. V.
(Enlarged Scale)

1410 KC WELM - Elmira, New York; BMP-8752. Granted (11-2-59) modification of CP to change transmitter location. New coordinates are:

North Latitude 42° 07' 11''
West Longitude 76° 48' 37''

(This application was accepted for filing on October 23rd.) Make notation on Proposed Night pattern dated 5-28-59g.

Granted - 1-22-57 - for change and DA-N



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

HORIZONTAL PATTERN
PROPOSED NIGHTTIME
WELM, Elmira, N. Y.
1-D/0.5-N 1410 KC
4-20-59

FCC File No. BP-12063
Accepted 5-6-59

WELM
Elmira, New York

1410 KC

MEASURED NIGHT
(7-29-60g)

Station WELM
Elmira, New York

500w,1kw-LS, DA-N,U
1410 kc

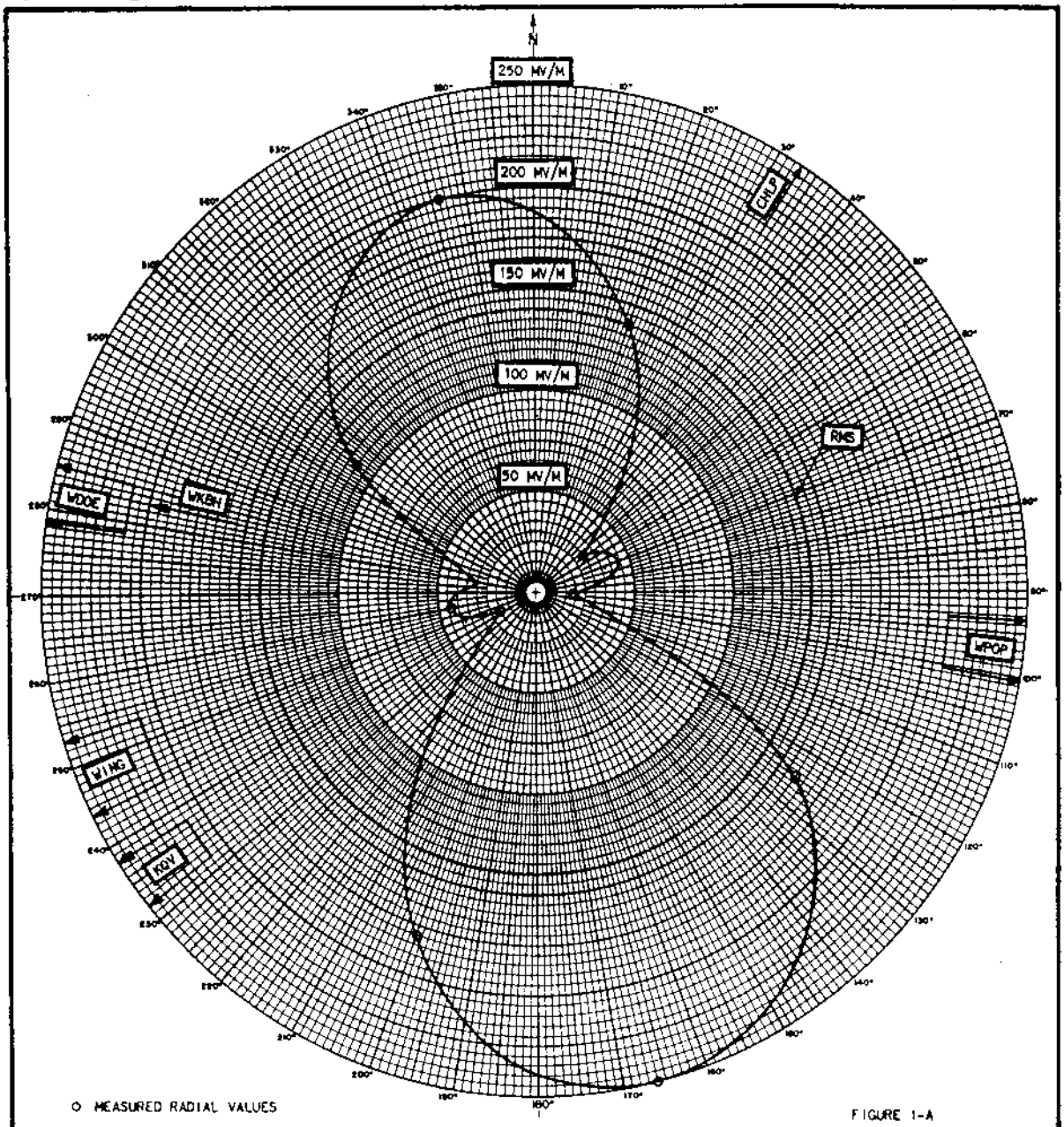
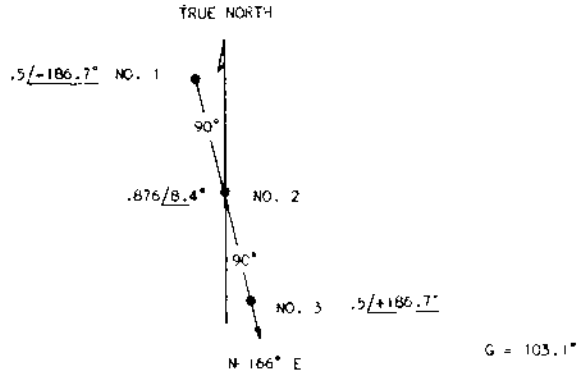


FIGURE 1-A

HORIZONTAL RADIATION PATTERN

SPACING AND ORIENTATION



APPLICANT	WELM
LOCATION	ELMIRA, NEW YORK
FREQUENCY	1410 KC/S
POWER	1 KW-LS; 0.5 KW-N(DA-N)
LATITUDE	42 DEG 07 MIN. 11 SEC
LONGITUDE	76 DEG 48 MIN 37 SEC.
WHEN USED	NIGHTTIME
R.M.S. FIELD	140 MV/M
DATE	JUNE 1960

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

FCC File No. BL-8003
Accepted 7-20-60

WELM
Elmira, New York

1410 kc

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

Station WELM
Elmira, New York

500w, 1kw-LS, DA-N,U
1410 kc

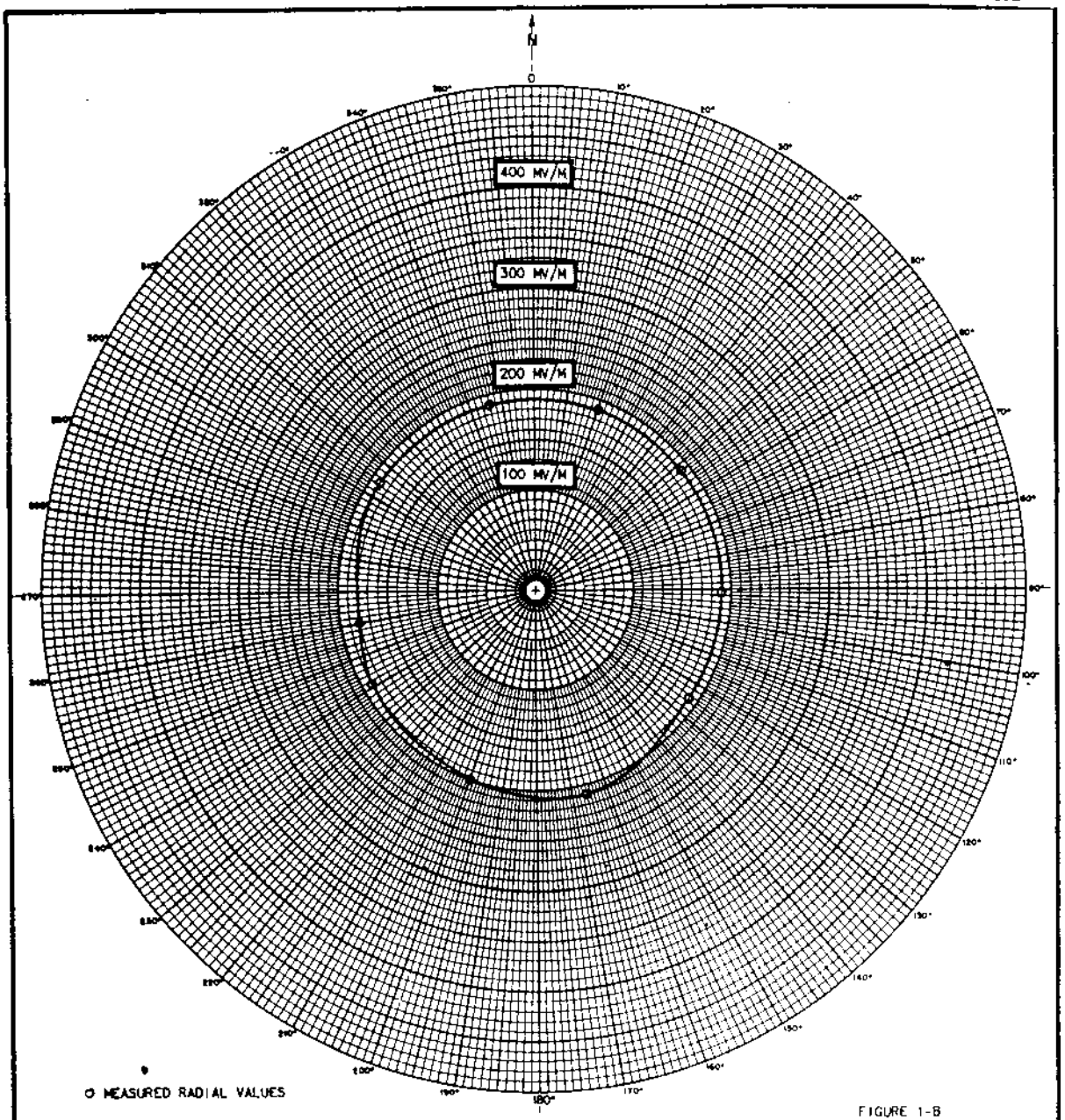


FIGURE 1-B

HORIZONTAL RADIATION PATTERN

NON - DIRECTIONAL SURVEY

APPLICANT :	WELM
LOCATION	ELMIRA, NEW YORK
FREQUENCY :	1410 KC/S
POWER :	1 KW-LS; 0.5 KW-N(DA-N)
LATITUDE :	42 DEG 07 MIN 11 SEC.
LONGITUDE :	76 DEG 48 MIN 37 SEC
WHEN USED	DAYTIME
R M S FIELD:	192 MV/M
DATE	JUNE 1960

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

NOTE: No.2 TOWER USED FOR DAYTIME NON- DIRECTIONAL OPERATION

FCC File No. BL-8003
Accepted 7-20-60

WELM
Elmira, New York

1410 kc

Halfway-Funks. Md.

WHAG

PROPOSED DAY
(6-20-58g)

New; Regional B/C Co. 1kw, DA-D,D
Halfway-Funkstown, Maryland 1410 KC

10-13-61 granted off for a new station over

10-26-62 granted for new station

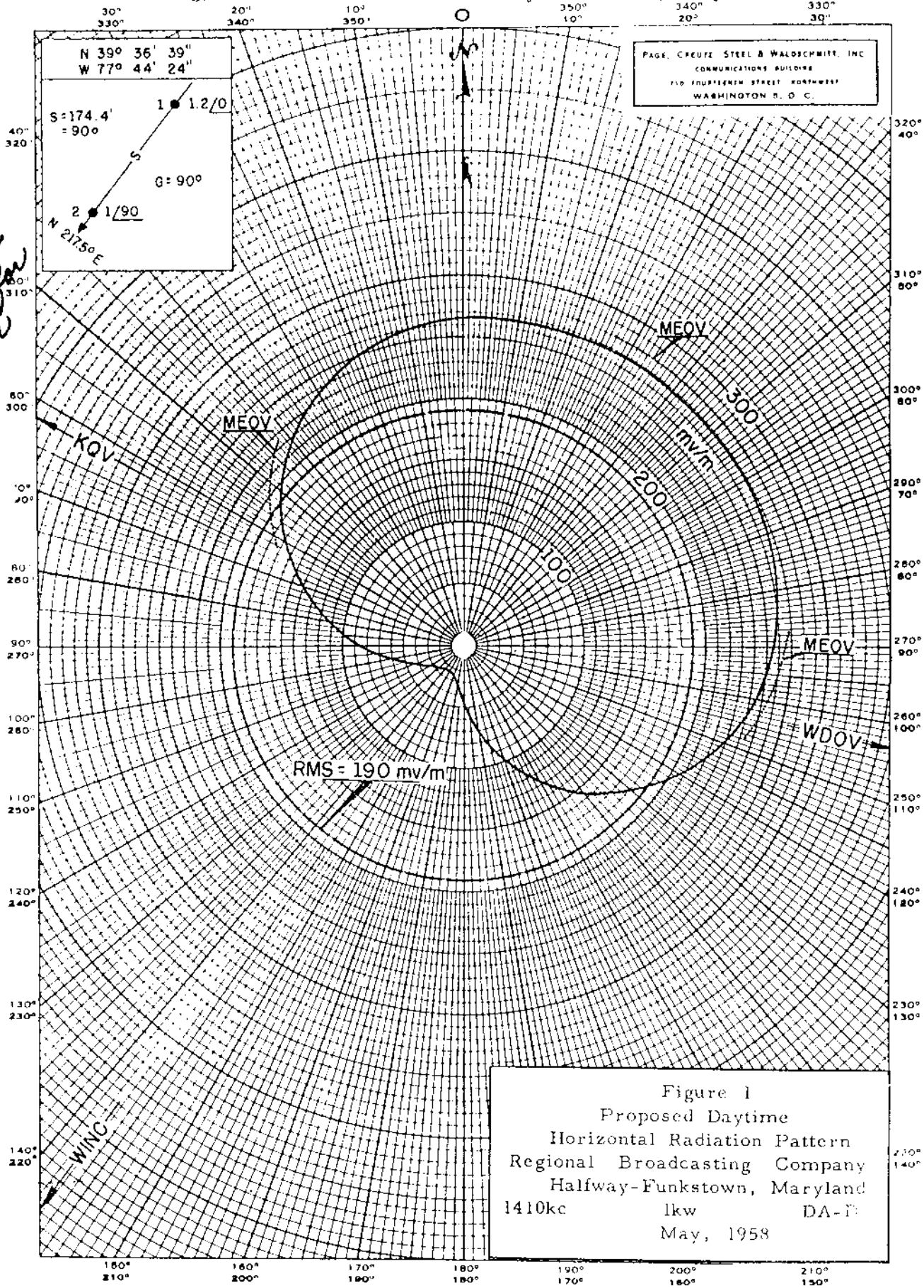


Figure 1
Proposed Daytime
Horizontal Radiation Pattern
Regional Broadcasting Company
Halfway-Funkstown, Maryland
1410kc 1kw DA-D
May, 1958

FCC File No. BP-11,646
Accepted 6-4-58 (Amended)

Regional Broadcasting Company
Halfway-Funkstown, Maryland 1410 KC

WHAG

Measured Day
(8-28-67ct)

Station WHAG
Halfway, Maryland

1kw, DA-D, D
1410 kc

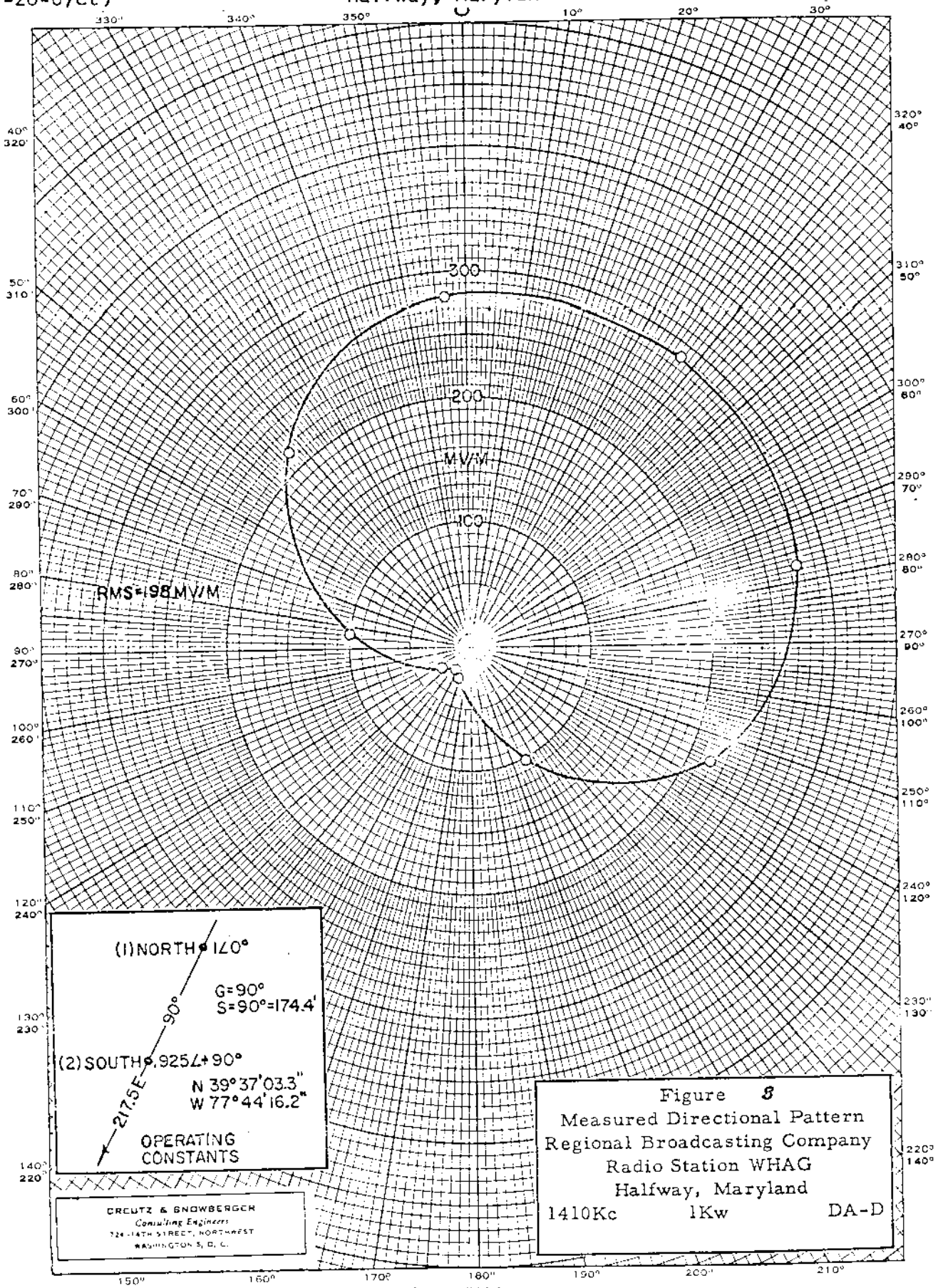


Figure 8
Measured Directional Pattern
Regional Broadcasting Company
Radio Station WHAG
Halfway, Maryland
1410Kc 1Kw DA-D

FCC File No. BRC-3165
Accepted 8-25-67

Station WHAG
Halfway, Maryland

1410 kc

WHAG

Measured Day
(7-27-62ct)

Station WHAG
Halfway, Maryland

1kw,DA-D,D
1410 kc

0-26-62
granted L for
new station

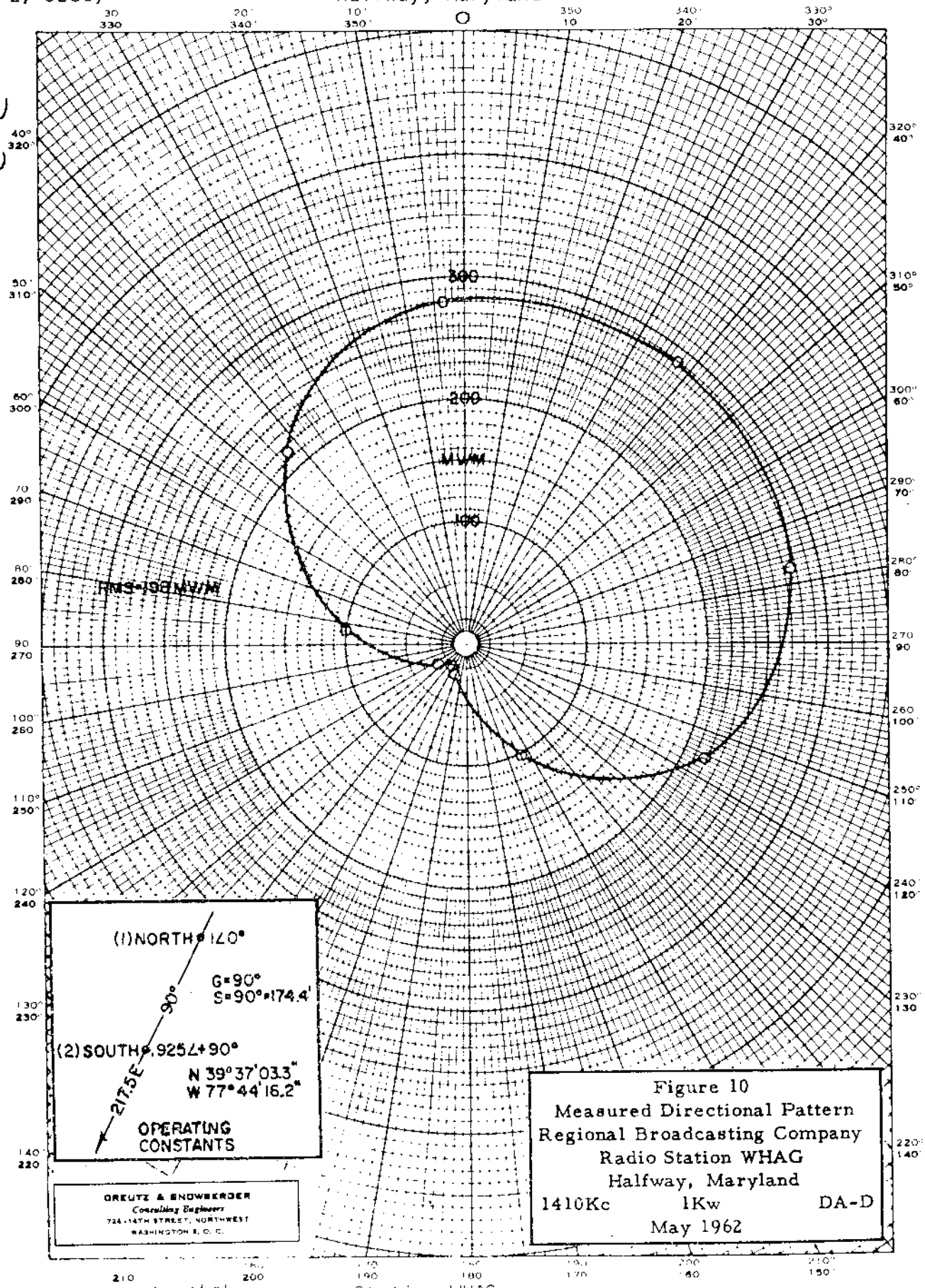


Figure 10
Measured Directional Pattern
Regional Broadcasting Company
Radio Station WHAG
Halfway, Maryland
1410Kc 1Kw DA-D
May 1962

FCC File No. BL-9404
Accepted 6-22-62

Station WHAG
Halfway, Maryland

1410 kc

Halfway - Funk, Md

WHAG

PROPOSED DAY NULLS (6-20-58g)

New; Regional B/C Co. Halfway-Funkstown, Maryland

1kw, DA-D,D 1410 KC

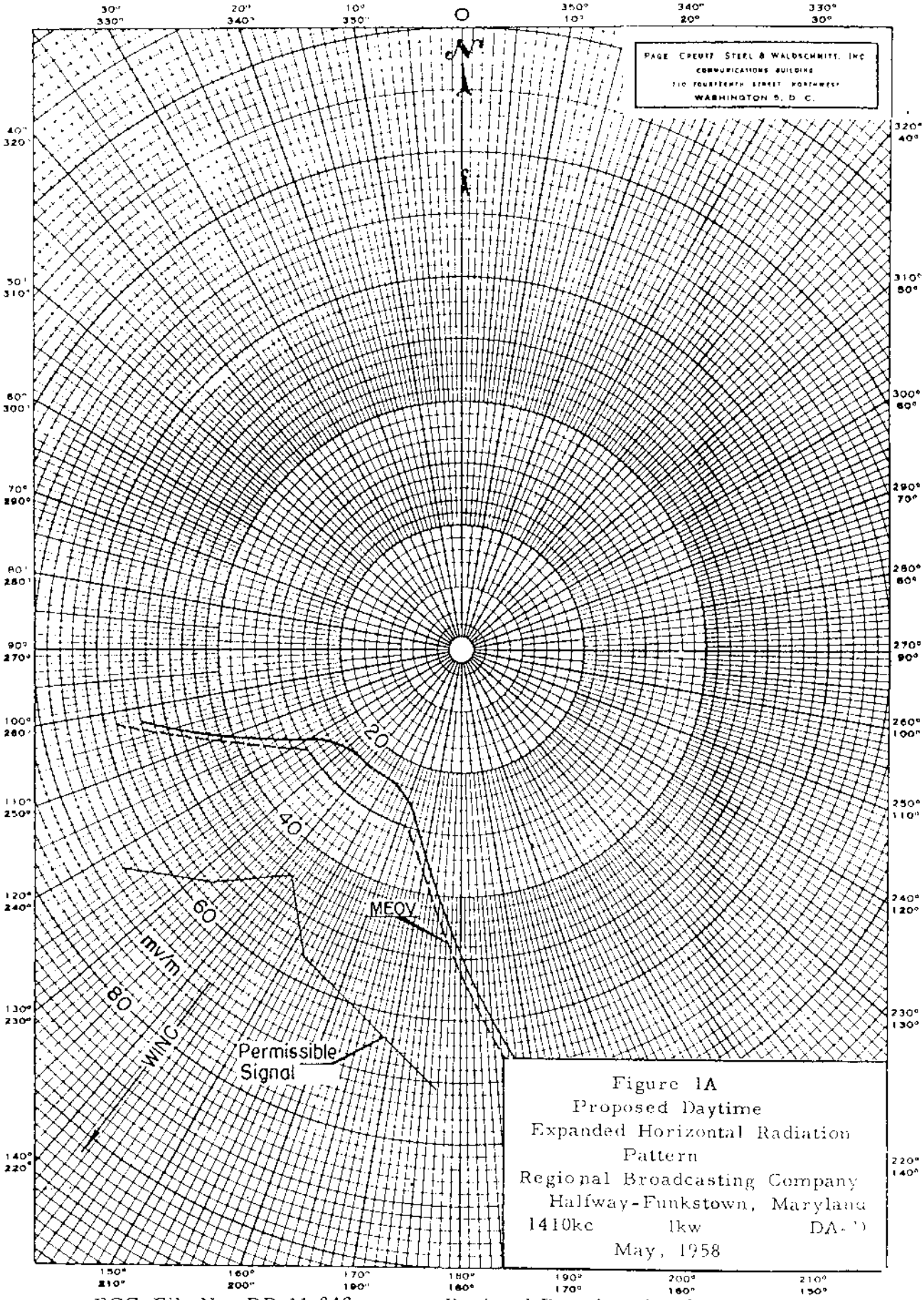


Figure 1A
Proposed Daytime
Expanded Horizontal Radiation
Pattern
Regional Broadcasting Company
Halfway-Funkstown, Maryland
1410kc 1kw DA-D
May, 1958

FCC File No. BP-11,646
Accepted 6-4-58 (Amended)

Regional Broadcasting Company
Halfway-Funkstown, Maryland 1410 KC

WHAG

Measured Non-DA
(7-27-62ct)

Station WHAG
Halfway, Maryland

1kw,DA-D,D
1410 kc

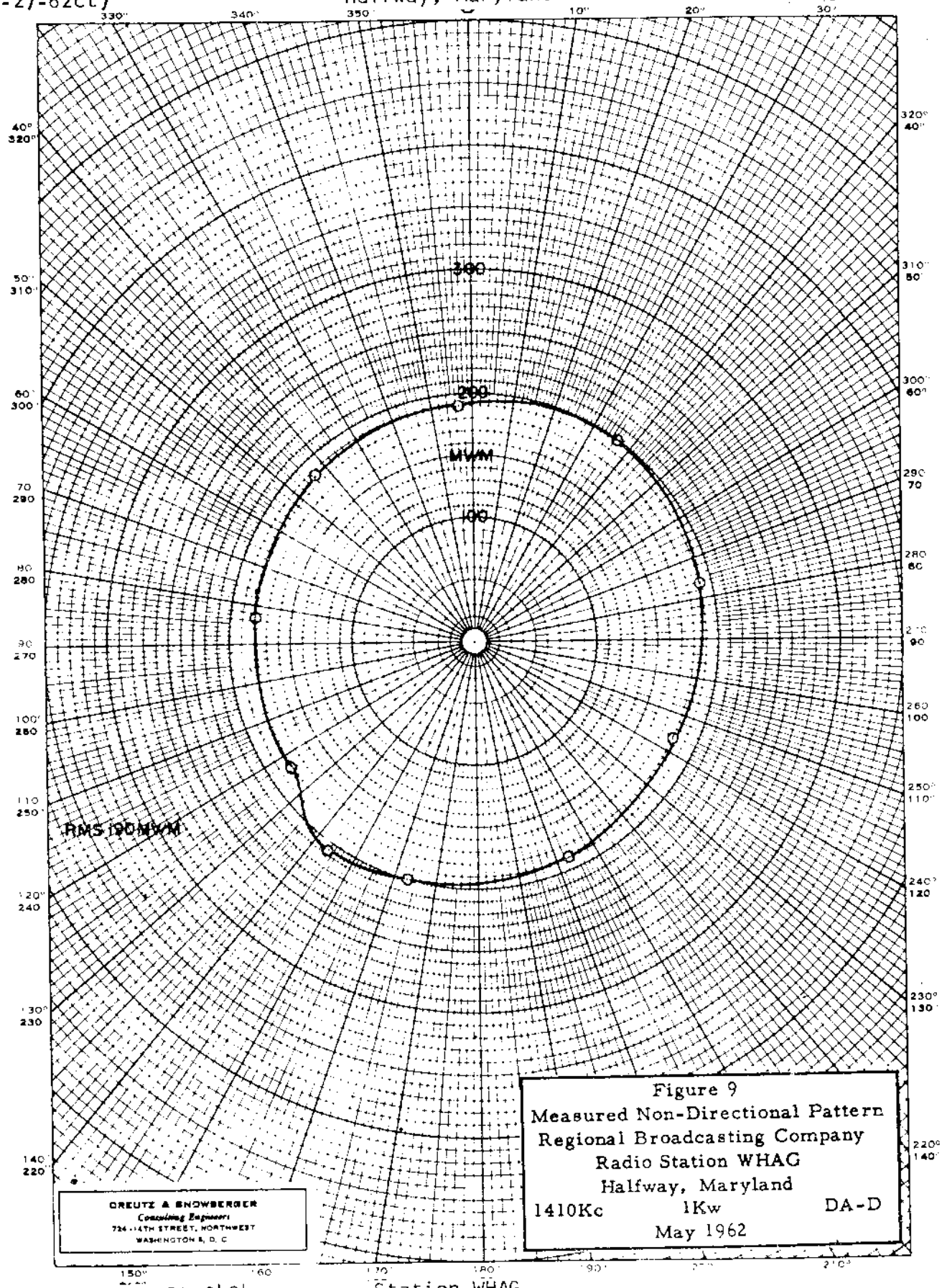


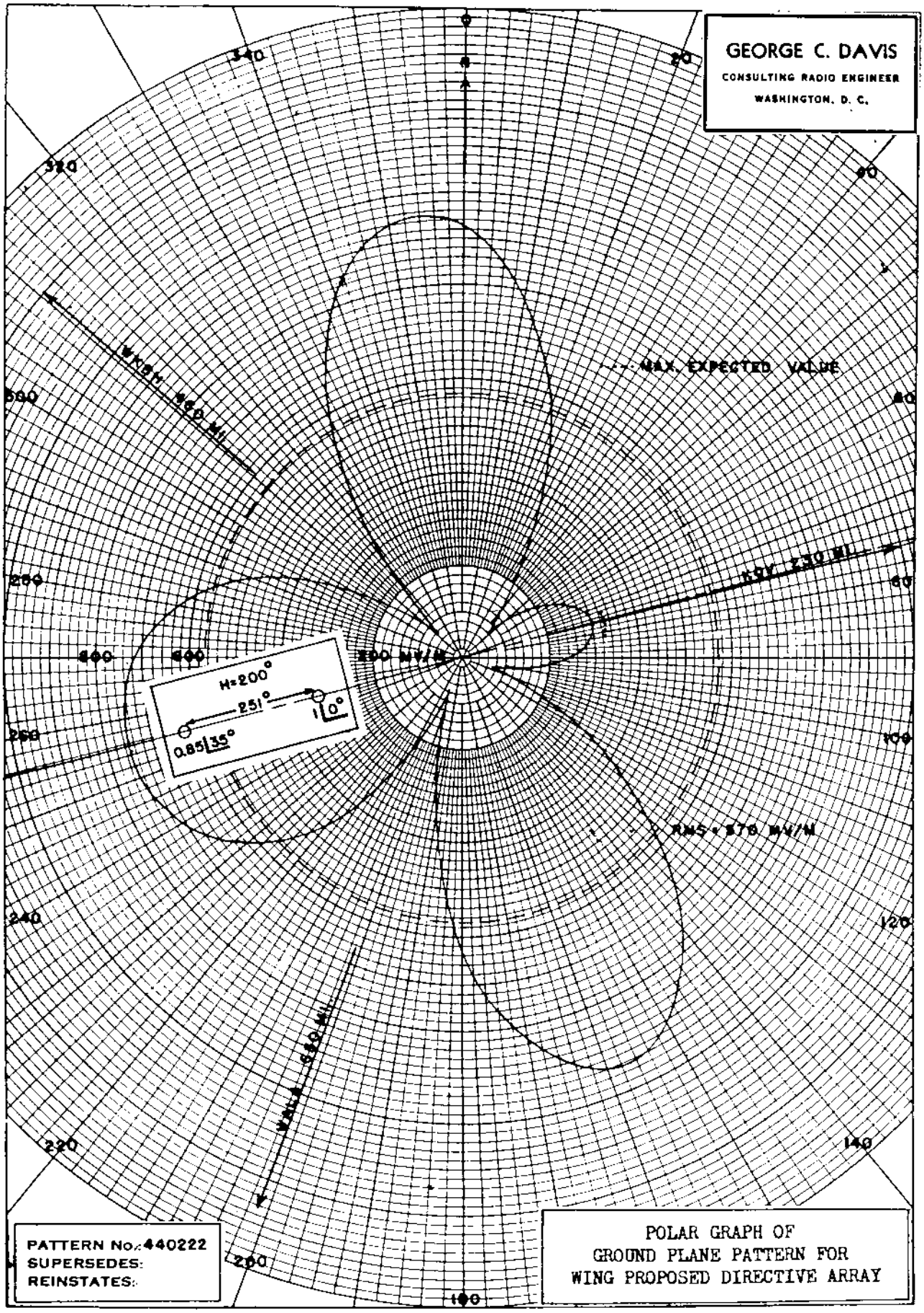
Figure 9
Measured Non-Directional Pattern
Regional Broadcasting Company
Radio Station WHAG
Halfway, Maryland
1410Kc 1Kw DA-D
May 1962

FCC File No. BL-9404
Accepted 6-22-62

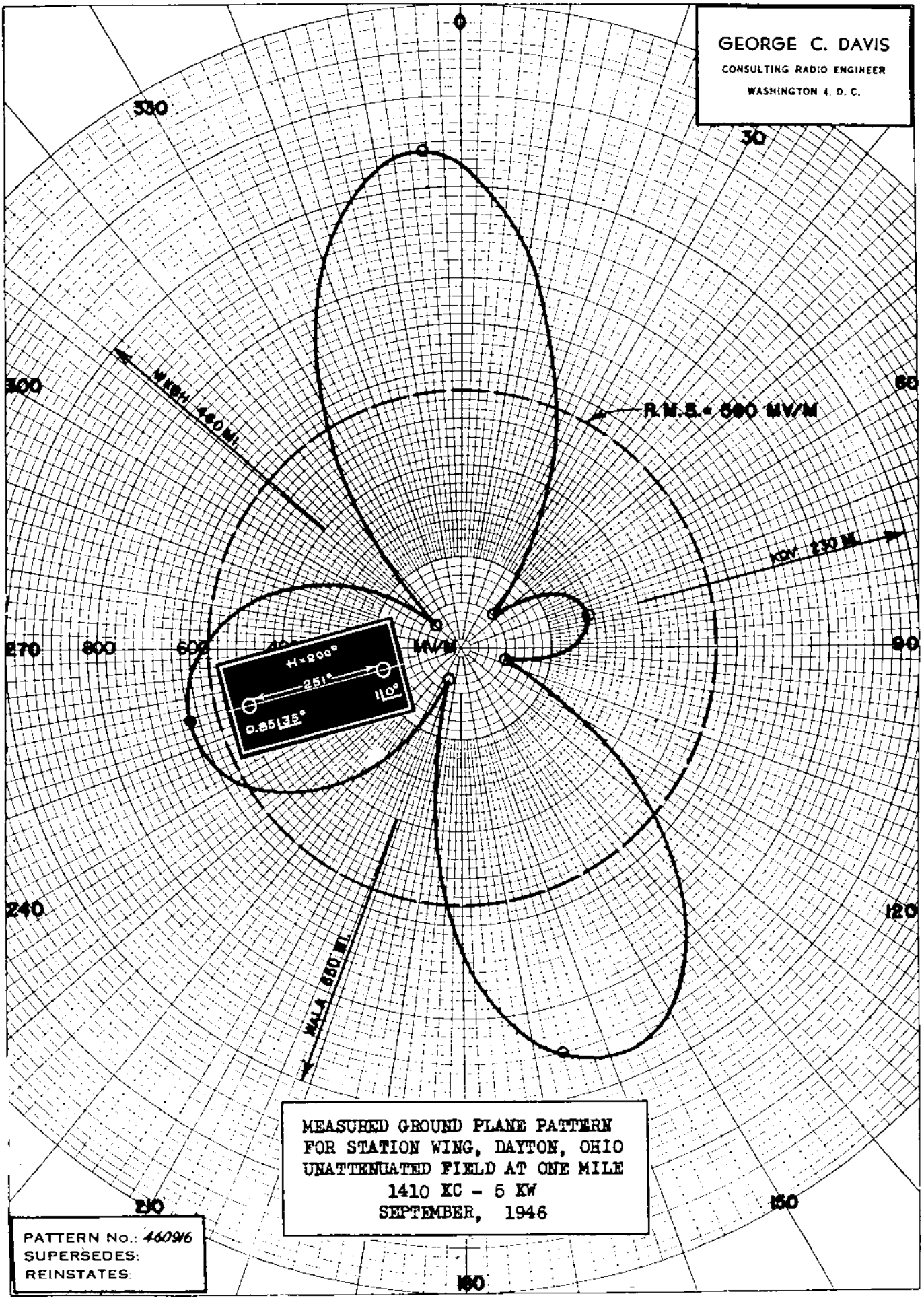
Station WHAG
Halfway, Maryland

1410 kc

WING 1410 K.C.



POLAR GRAPH OF
GROUND PLANE PATTERN FOR
WING PROPOSED DIRECTIVE ARRAY



MEASURED GROUND PLANE PATTERN
FOR STATION WING, DAYTON, OHIO
UNATTENUATED FIELD AT ONE MILE
1410 KC - 5 KW
SEPTEMBER, 1946

PATTERN No.: 460916
SUPERSEDES:
REINSTATES:

WIZM

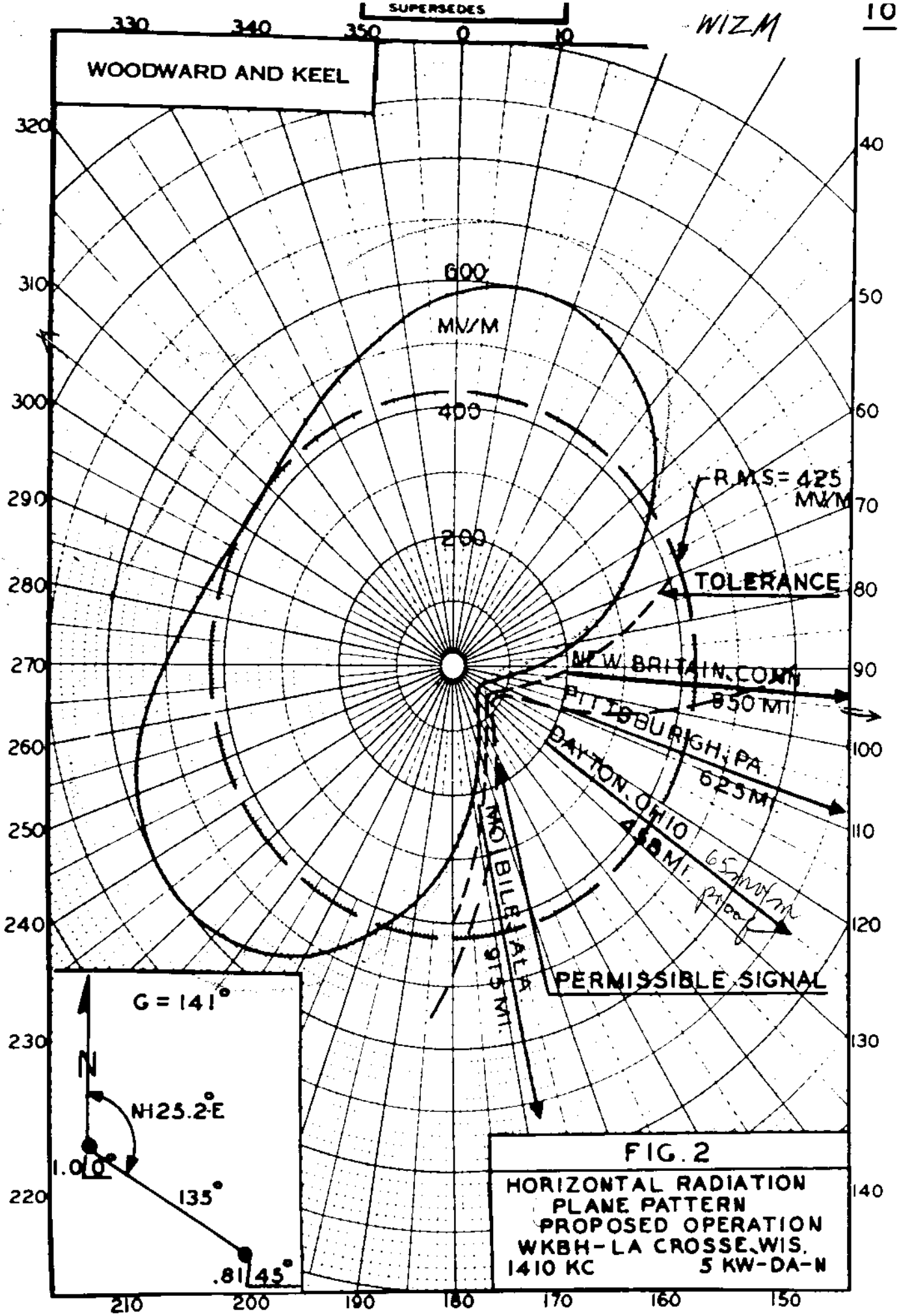


FIG. 2

HORIZONTAL RADIATION
PLANE PATTERN
PROPOSED OPERATION
WKBH-LA CROSSE, WIS.
1410 KC 5 KW-DA-N

MEASURED NIGHT Station WKBH 5kw, DA-N,U
La Crosse, Wisconsin 1410 KC

WIZM

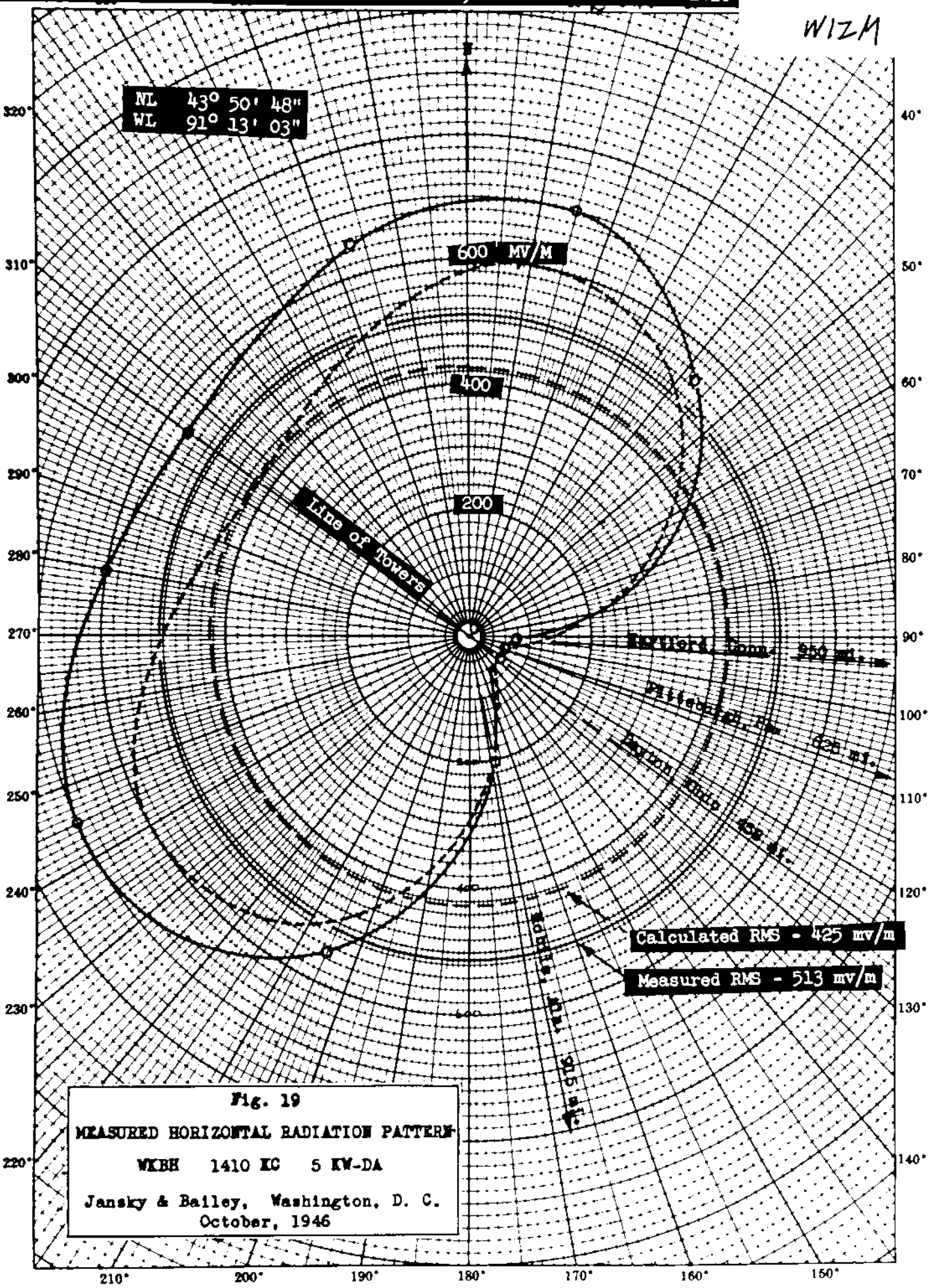


Fig. 19

MEASURED HORIZONTAL RADIATION PATTERN

WKBH 1410 KC 5 KW-DA

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

19

MEASURED NIGHT NULLS Station WKBH 5kw, D[redacted] WIZM
LaCrosse, Wisconsin [redacted]

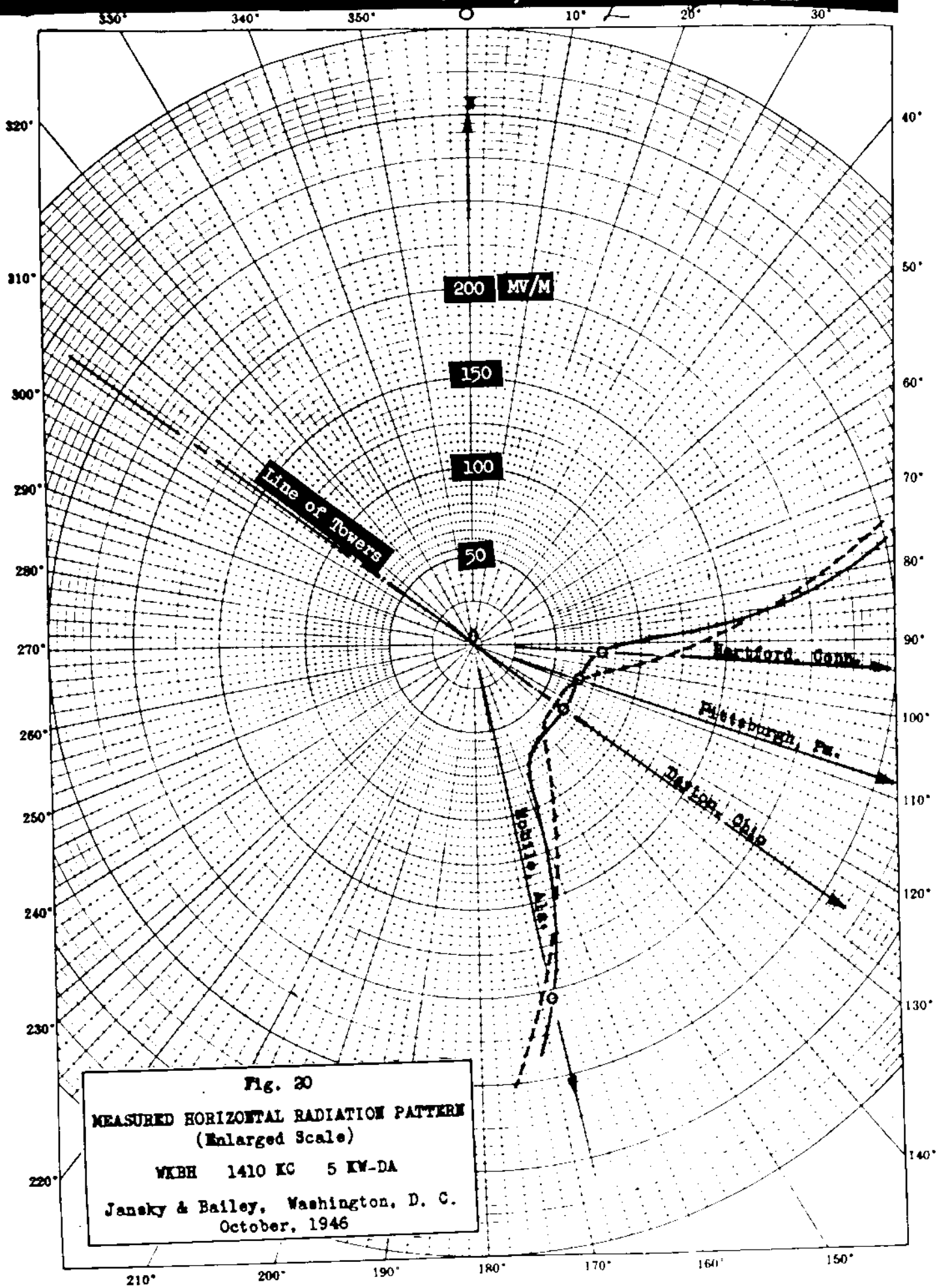


Fig. 20

MEASURED HORIZONTAL RADIATION PATTERN
(Enlarged Scale)

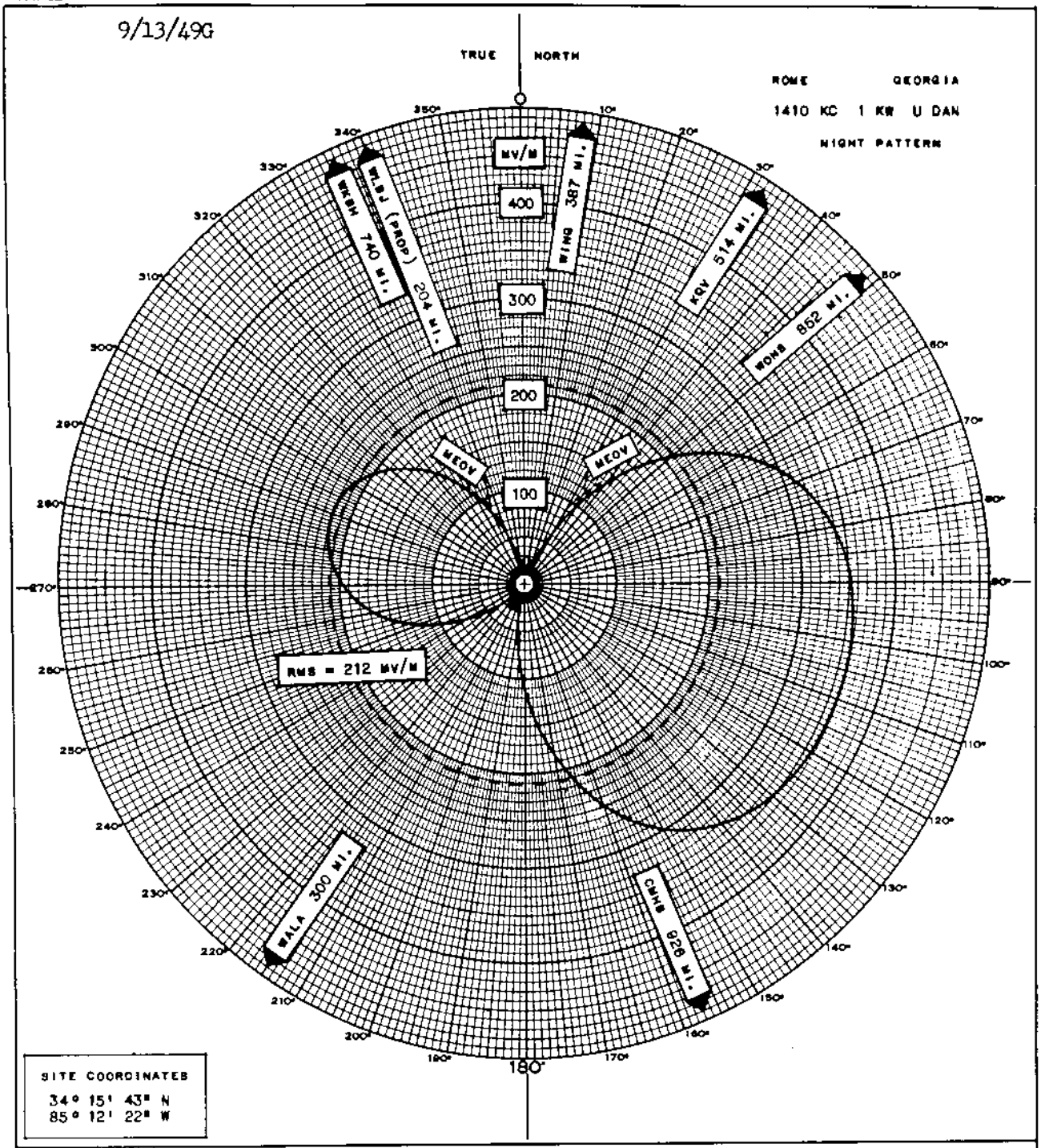
WKBH 1410 KC 5 KW-DA

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

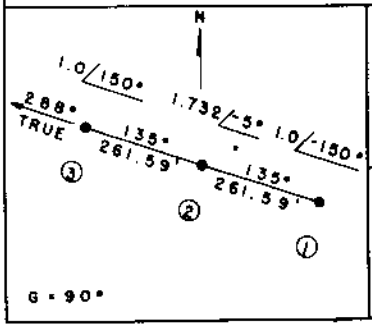
20

WLAQ

PROPOSED NIGHT | WLAQ, ROME, GA. | 1kw, DAN | FIGURE 10 | 1410 kc



CALCULATED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION



RADIO STATION WLAQ
NEWS PUBLISHING COMPANY
ROME GEORGIA

WELDON & CARR
CONSULTING RADIO ENGINEERS
WASHINGTON DC DALLAS TEXAS

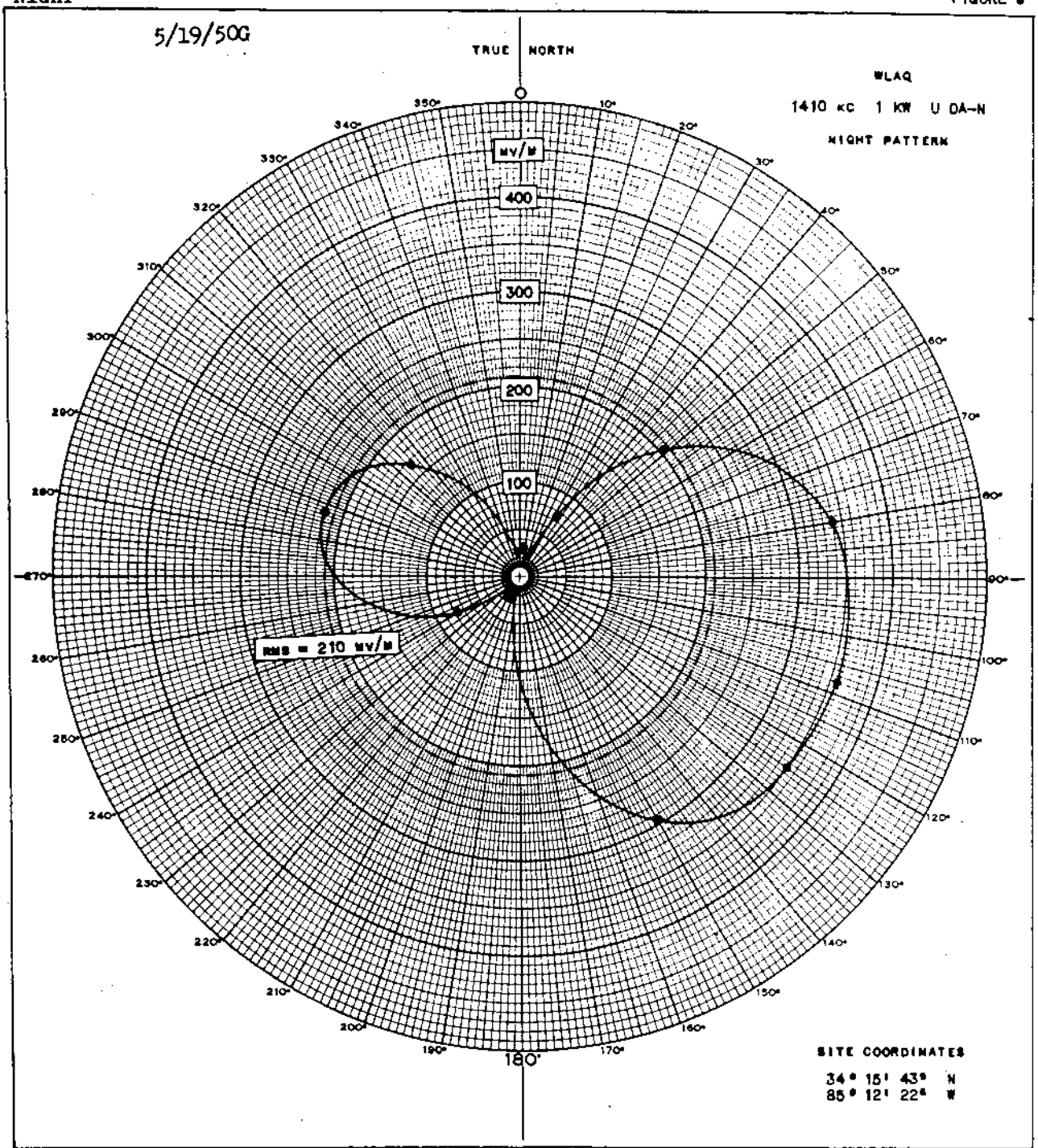
PROPOSED WLAQ OPERATION
ROME GEORGIA
1410 KC 1 KW U DAN
W 490702 A

AMENDMENT RECD 8-26-49 BP-6406

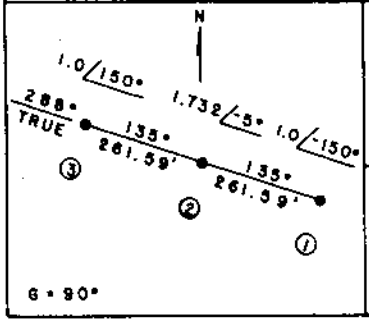
WLAQ

MEASURED NIGHT | WLAQ, ROME, GA. | 5-17-50 | 1kw, DAN | 1410 kc

FIGURE 9



MEASURED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION



WLAQ
NEWS PUBLISHING COMPANY
ROME GEORGIA

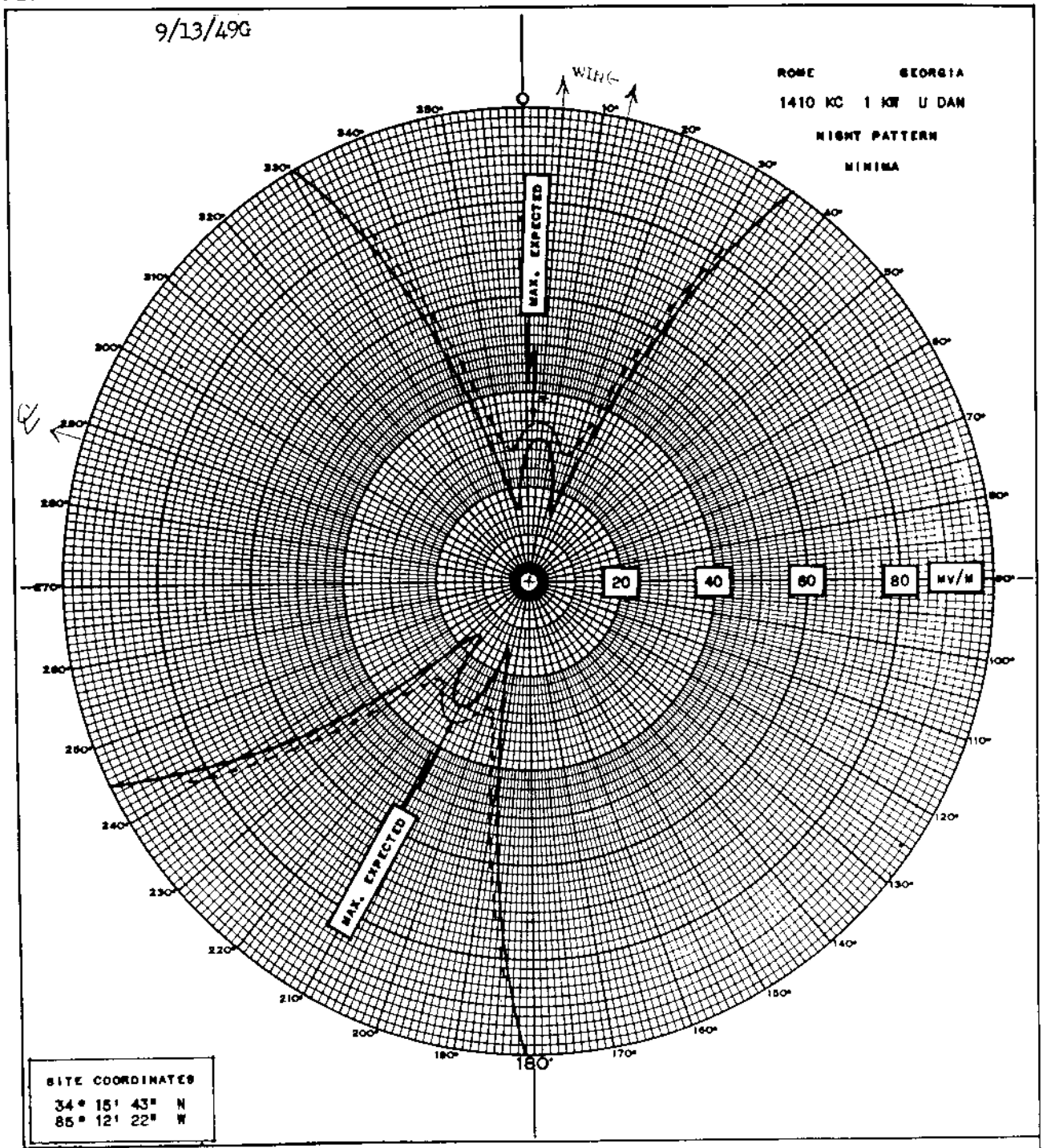
WELDON & CARR
CONSULTING RADIO ENGINEERS
WASHINGTON DALLAS SEATTLE

WLAQ
ROME GEORGIA
1410 KC 1 KW U DA-N
W 500506 B

WLAQ

PROPOSED NIGHT NULLS — WLAQ, ROME, GA. — 1kw, DAN — 1410 kc

FIGURE 11



CALCULATED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION

DETAILS IN MINIMA	RADIO STATION WLAQ NEWS PUBLISHING COMPANY ROME GEORGIA	PROPOSED WLAQ OPERATION ROME GEORGIA 1410 KC 1 KW U DAN
	WELDON & CARR CONSULTING RADIO ENGINEERS WASHINGTON DC DALLAS TEXAS	W 490702 B

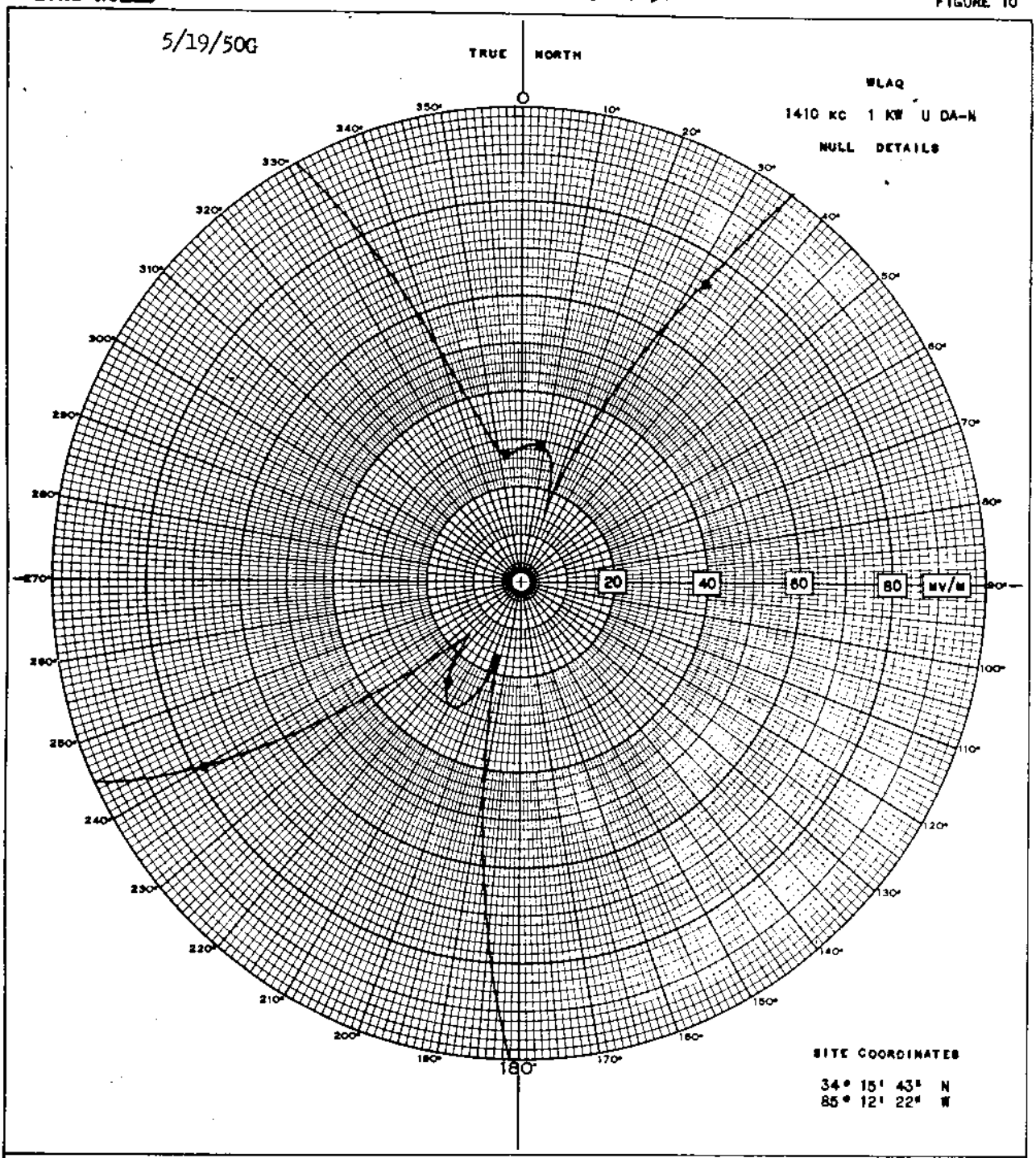
AMENDMENT RECD 8-26-49 BP-6406

WLAQ, Rome, Ga. 1410 kc

WLAQ

MEASURED NIGHT NULLS WLAQ, ROME, GA. 5-17-50 1kw, DAN 1410 kc

FIGURE 10



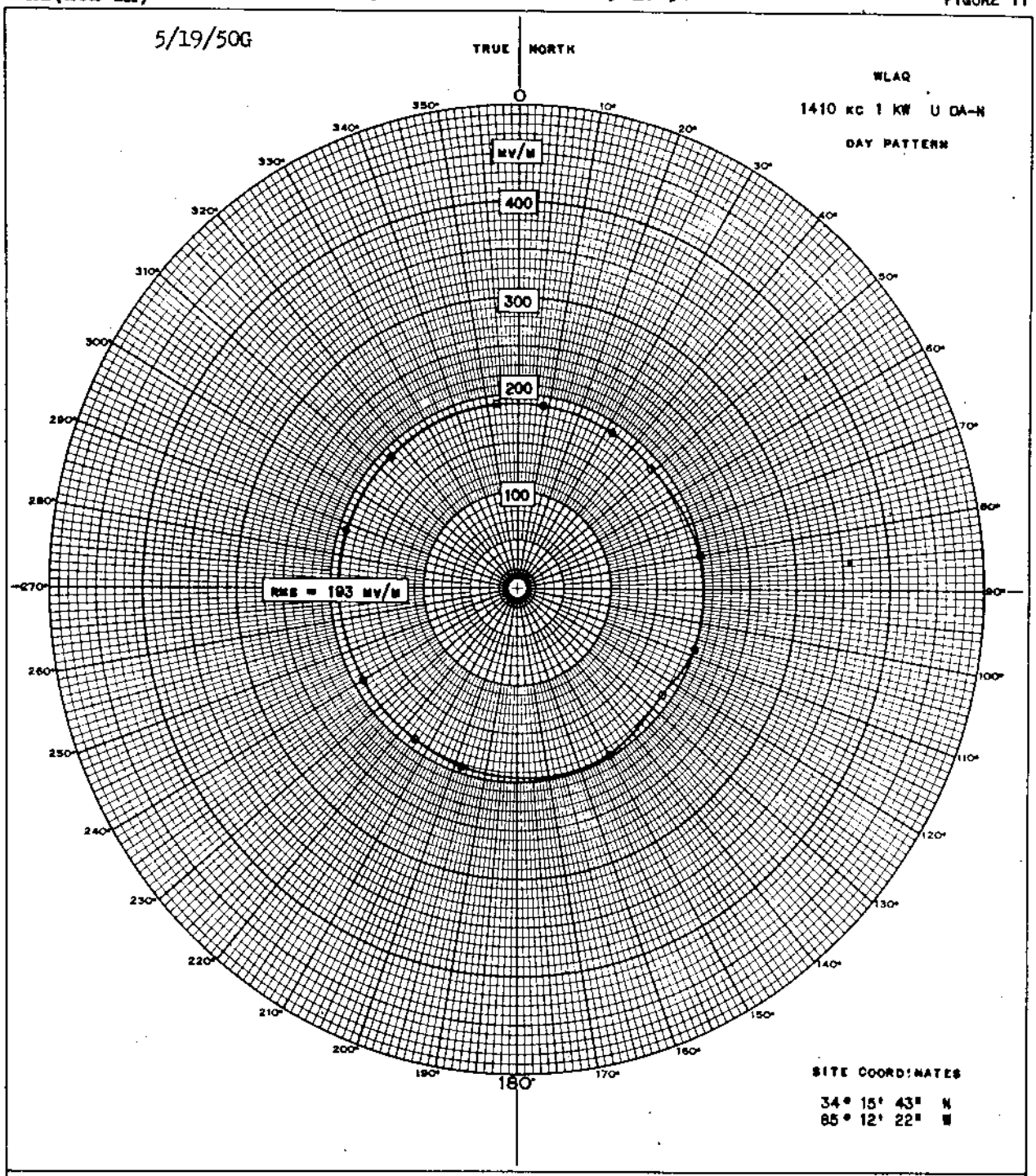
MEASURED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION

DETAIL IN MINIMA	WLAQ NEWS PUBLISHING COMPANY ROME GEORGIA	WLAQ ROME GEORGIA 1410 KC 1 KW U DA-N
	WELDON & CARR CONSULTING RADIO ENGINEERS WASHINGTON DALLAS SEATTLE	W 500606 A

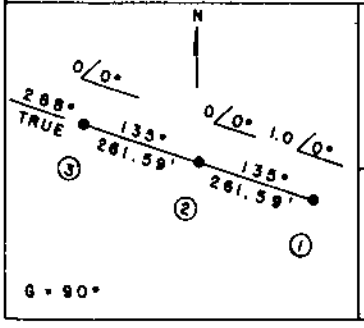
WLAQ

MEASURED DAY(non-DA) WLAQ, ROME, GA. 5-17-50 1kw, DAN 1410 kc

FIGURE 11



MEASURED NON-DIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN FOR DAYTIME OPERATION



WLAQ
NEWS PUBLISHING COMPANY
ROME GEORGIA

WELDON & CARR
CONSULTING RADIO ENGINEERS
WASHINGTON DALLAS SEATTLE

WLAQ
ROME GEORGIA
1410 KC 1 KW U DA-N
W 500606 C

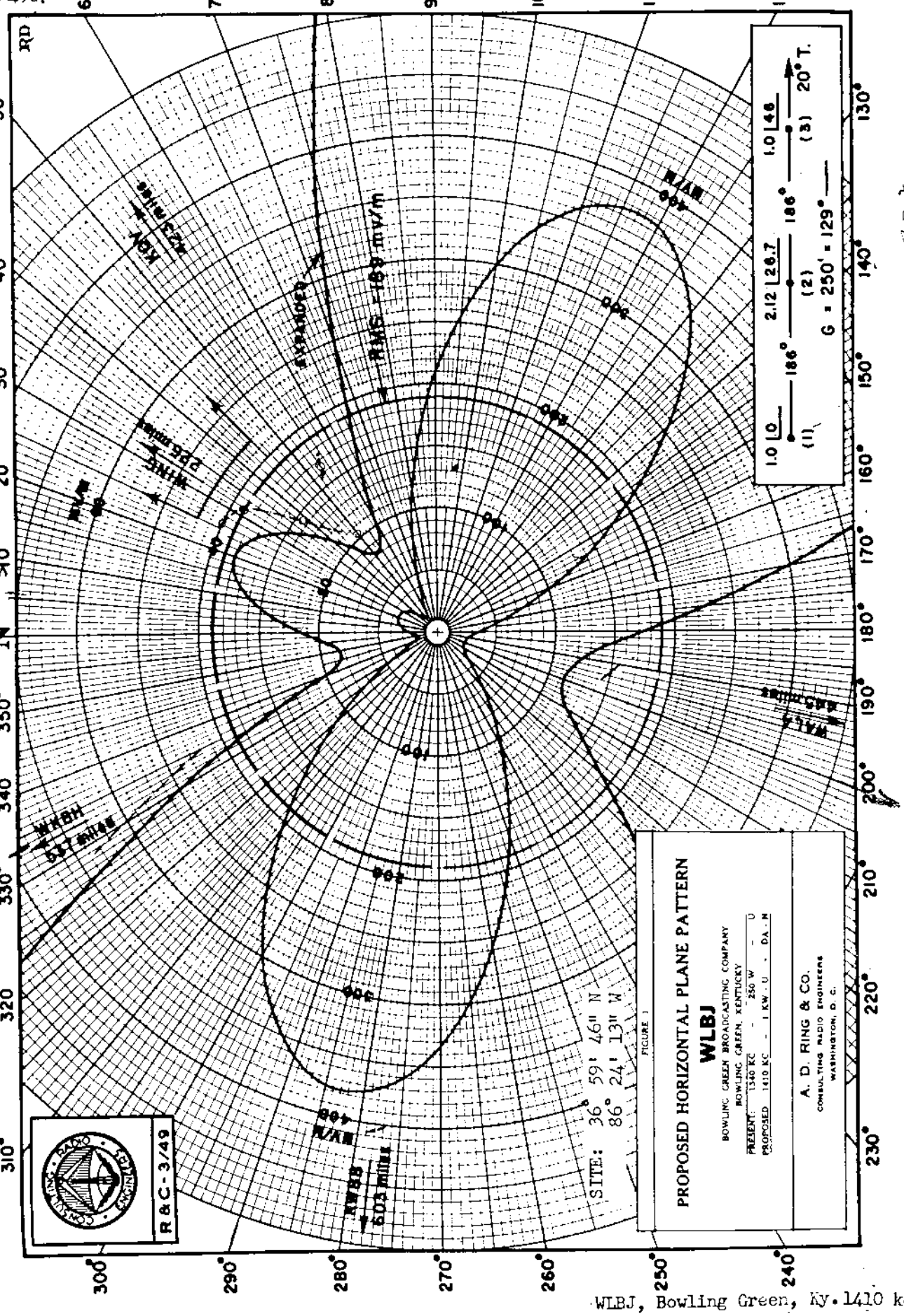
over WLBJ

PROPOSED NIGHT 3/23/49G. WLBJ, BOWLING GREEN, KY. 3-21-49 1kw, DAN 1410kc

application granted for change DA-2 to DA-N

2-26-62 granted L for DA-N operation

BL 9233 2-15-62 granted for DA-N operation

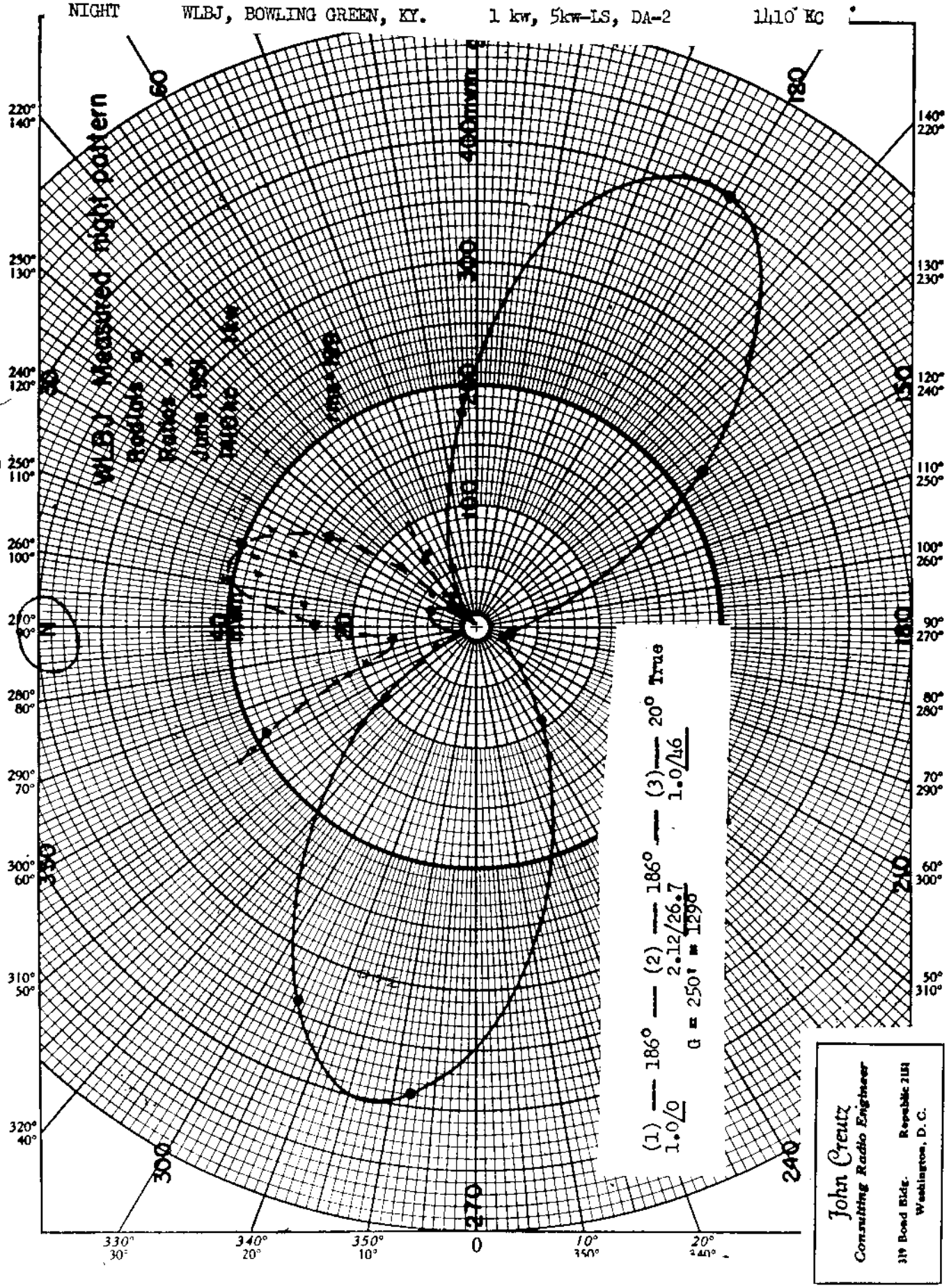


WLBJ, Bowling Green, Ky. 1410 kc

WLBJ

MEASURED
NIGHT

WLBJ, BOWLING GREEN, KY. 1 kw, 5kw-LS, DA-2 1410 KC



application sent to change DA-2 to DA-N

2-26-62 granted for DA-N operation

WLBJ, BOWLING GREEN, KY. 1410 kc

WLSH

PROPOSED DAY
(6-16-59g)

Station WLSH
Lansford, Pennsylvania

5kw, DA-D, D
1410 KC

91,461
wanted CP for DA-D

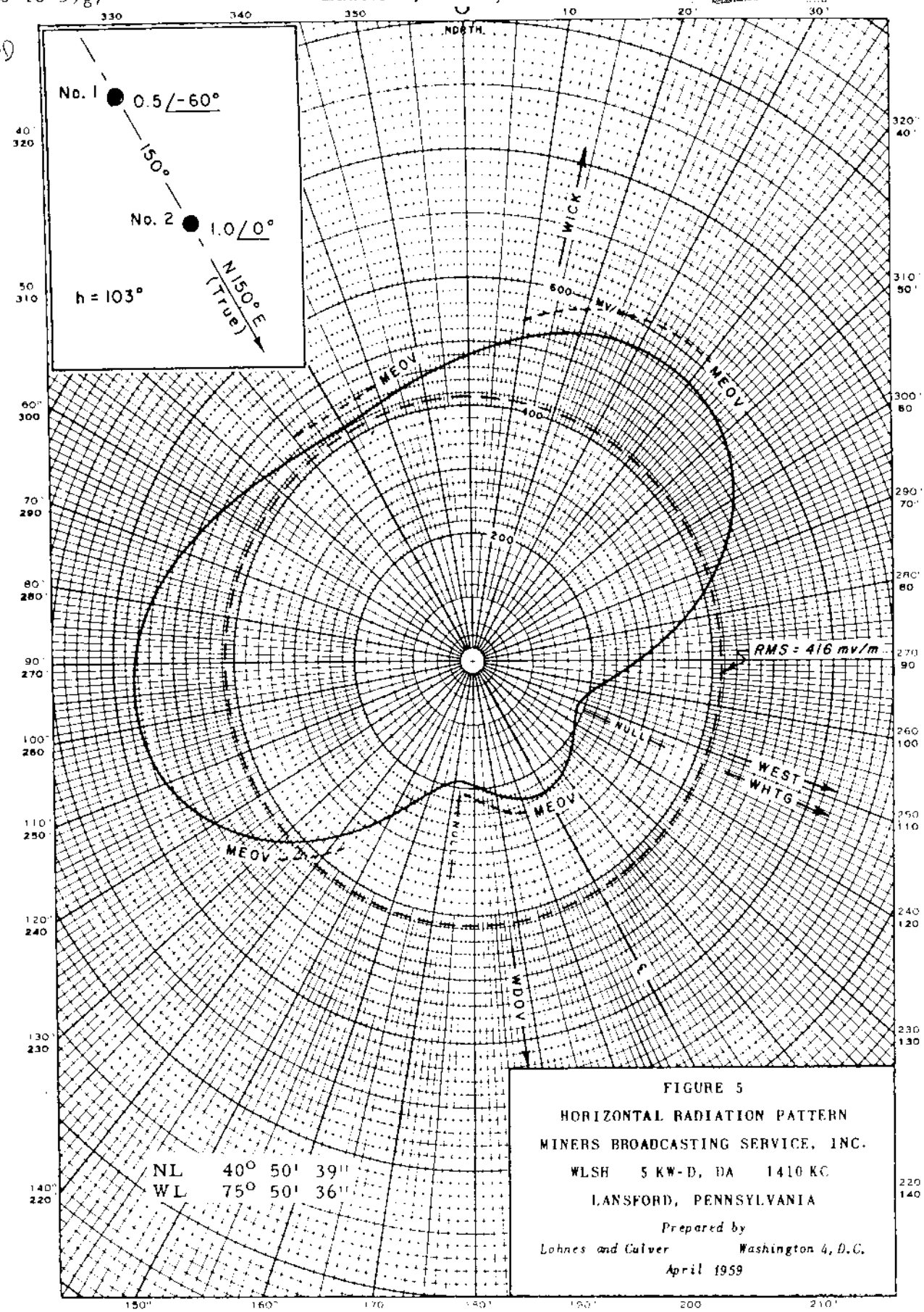


FIGURE 5
HORIZONTAL RADIATION PATTERN
MINERS BROADCASTING SERVICE, INC.
WLSH 5 KW-D, DA 1410 KC
LANSFORD, PENNSYLVANIA
Prepared by
Lohnes and Culver *Washington 4, D.C.*
April 1959

FCC File No. BP-13060
Accepted 6-3-59

WLSH
Lansford, Pennsylvania

1410 KC

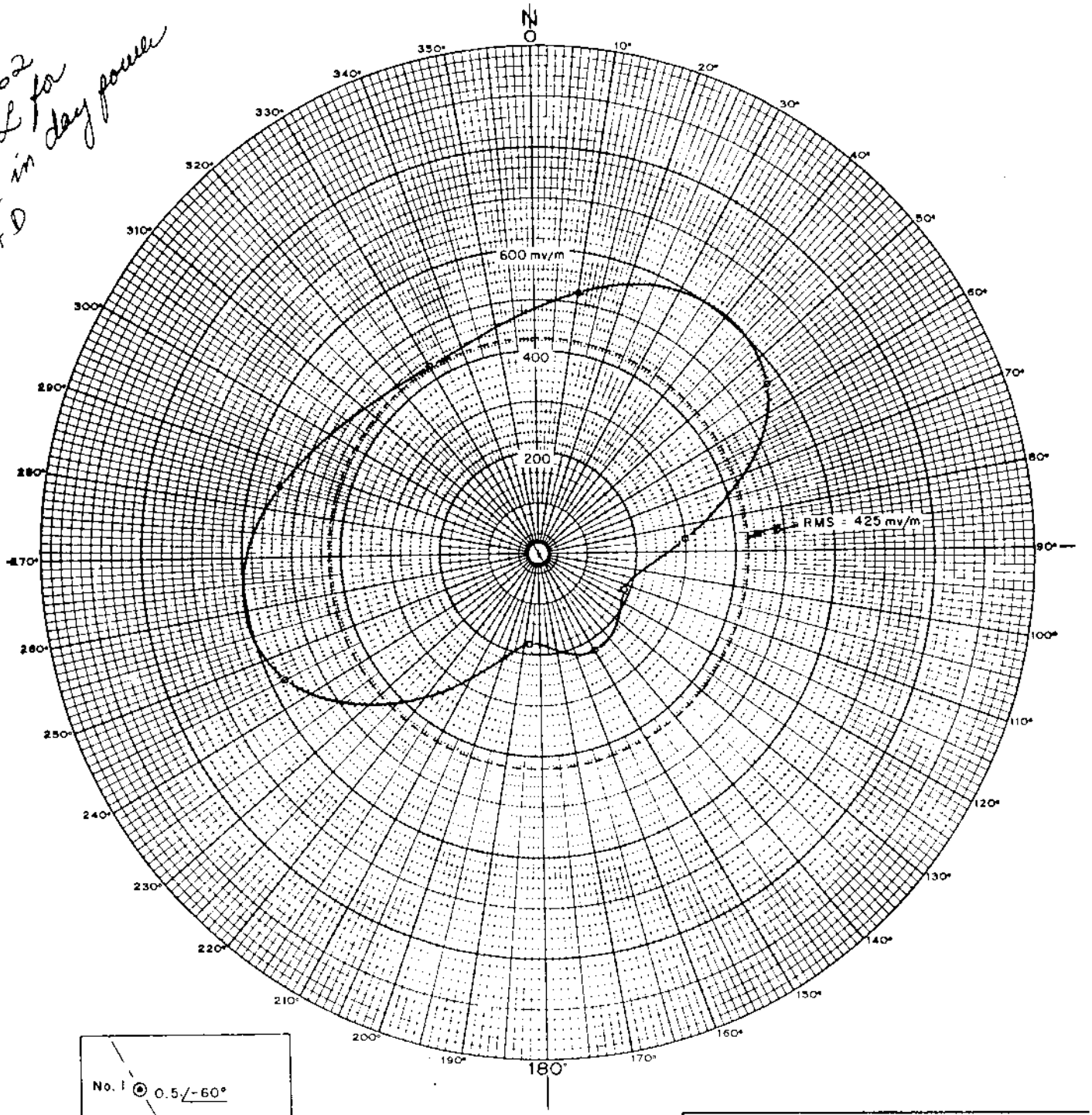
WLSH

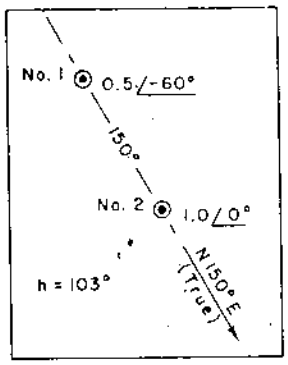
Measured Day
(5-25-62ct)

Station WLSH
Lansford, Pennsylvania

1kw,DA-D,D
1410 kc

8-13-62
Granted L for
increase in day power
and DAD





North Latitude 40° 50' 40"
West Longitude 75° 50' 37"

FIGURE 8
HORIZONTAL RADIATION PATTERN
(DIRECTIONAL OPERATION)
MINERS BROADCASTING SERVICE, INC.
WLSH 1KW-D, DA 1410KC
LANSFORD, PENNSYLVANIA

Prepared by
Lohnes and Culver *Washington 4, D.C.*
March 1962

FCC File No.BL-9273
Accepted 5-16-62

Station WLSH
Lansford, Pennsylvania

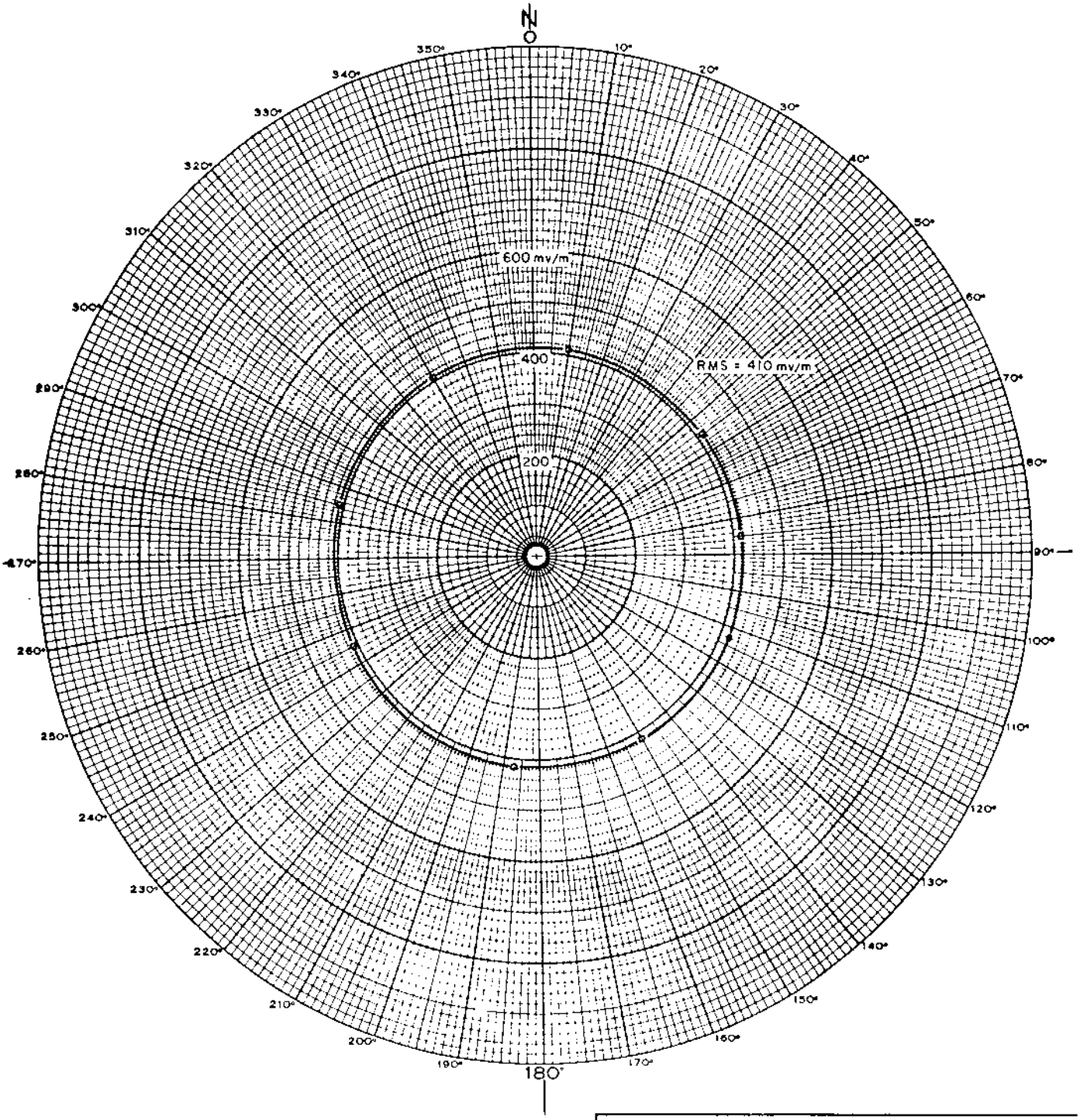
1410 kc

WLSH

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

Station WLSH
Lansford, Pennsylvania

1kw,DA-D,D
1410 kc



North Latitude 40° 50' 40"
West Longitude 75° 50' 37"

FIGURE 7
HORIZONTAL RADIATION PATTERN
(NON-DIRECTIONAL #1 TOWER TEST OPERATION)
MINERS BROADCASTING SERVICE, INC.
WLSH 1KW-D, DA 1410 KC
LANSFORD, PENNSYLVANIA

Prepared by
Lohnes and Culver *Washington 4, D.C.*
March 1962

FCC File No.BL-9273
Accepted 5-16-62

Station WLSH
Lansford, Pennsylvania

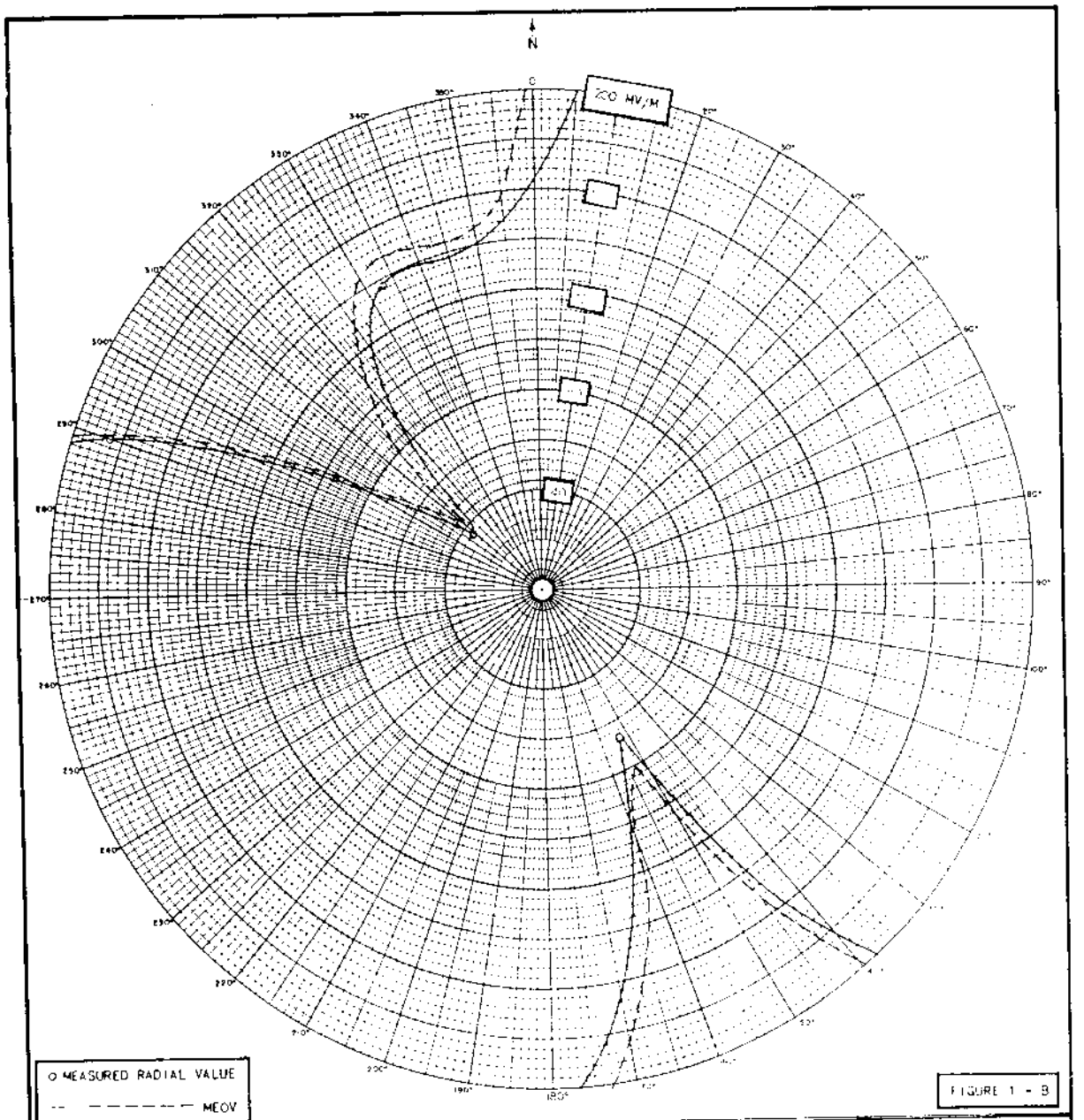
1410 kc

WMYR

Measured Night Nulls
(9-25-70ct)

Station WMYR
Ft. Myers, Florida

5kw, DA-N, U
1410 kc



HORIZONTAL RADIATION PATTERN

EXPANDED VIEW

APPLICANT ROBERT C. HECKSHER
LOCATION FORT MYERS, FLORIDA
FREQUENCY 1410 KC
POWER 5 KW
LATITUDE 26° 38' 33" N 33 SEC
LONGITUDE 81° 51' 51" W 15 SEC
WHEN USED NIGHTTIME
RMS FIELD 440 MV/M
DATE JANUARY 1970

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

FCC File No.BL-12718
Accepted 8-26-70

Station WMYR
Ft. Myers, Florida

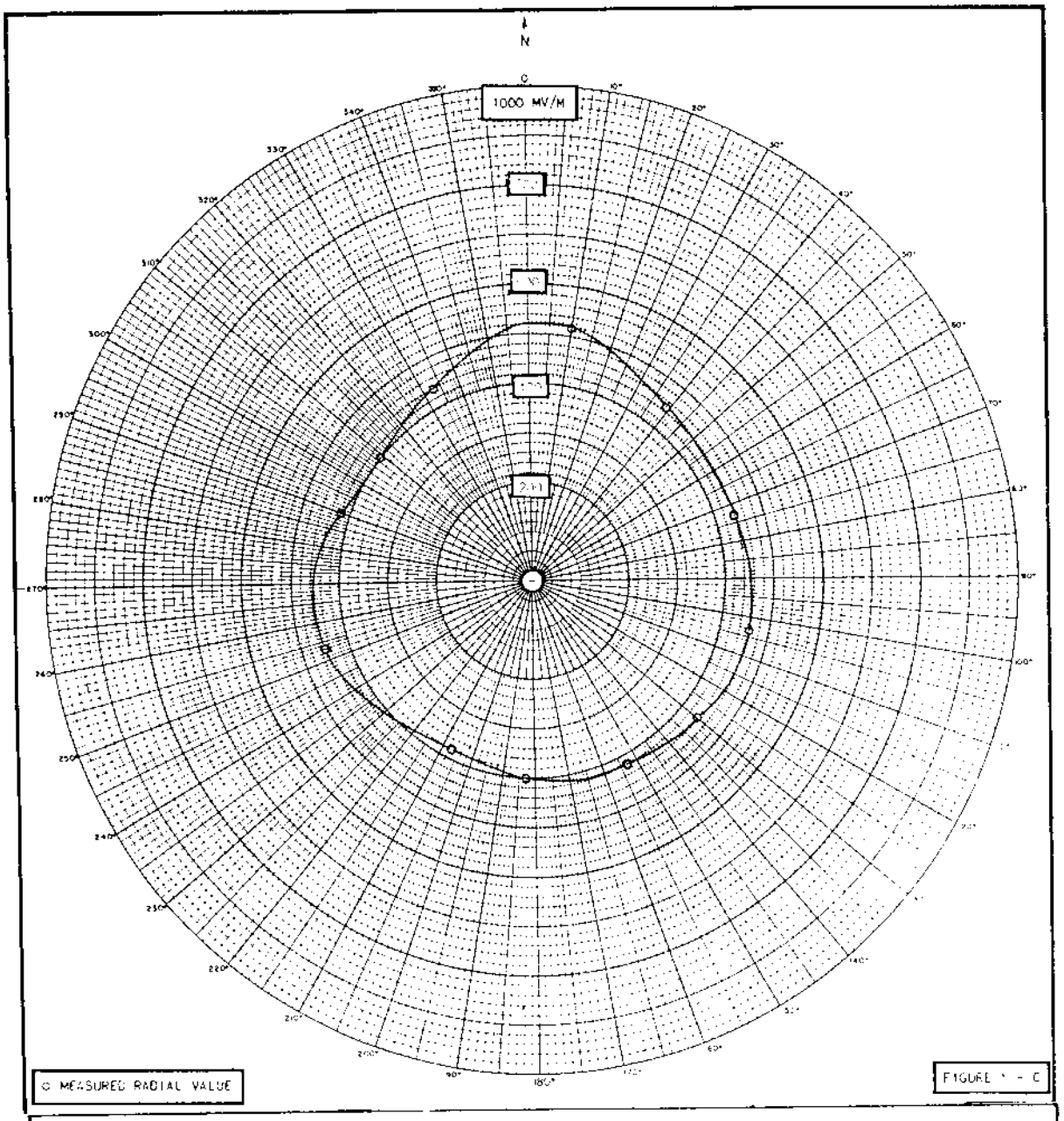
1410 kc

WMYR

Measured Non-DA
(9-25-70ct)

Station WMYR
Ft. Myers, Florida

5kw, DA-N, U
1410 kc



HORIZONTAL RADIATION PATTERN

NON-DIRECTIONAL SURVEY

APPLICANT	ROBERT C. HECKSHER
LOCATION	FORT MYERS, FLORIDA
FREQUENCY	1410 KHZ
POWER	5 KW
LATITUDE	26 DEG 37 MIN 25 SEC
LONGITUDE	81 DEG 51 MIN 18 SEC
WHEN USED	NIGHTTIME
RMS FIELD	438 MV/M
DATE	JANUARY 1970

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

FCC File No.BL-12718
Accepted 8-26-70

Station WMYR
Ft. Myers, Florida

1410 kc

WMYR

Proposed Night
(11-29-62ct)

Station WMYR
Fort Myers, Florida

5kw,DA-N,U
1410 kc

PL 9-29-65
N TO 5 KW
P-17943
RANTED
CP
12-28-67
O REPLACE
EXPIRED
PERMIT

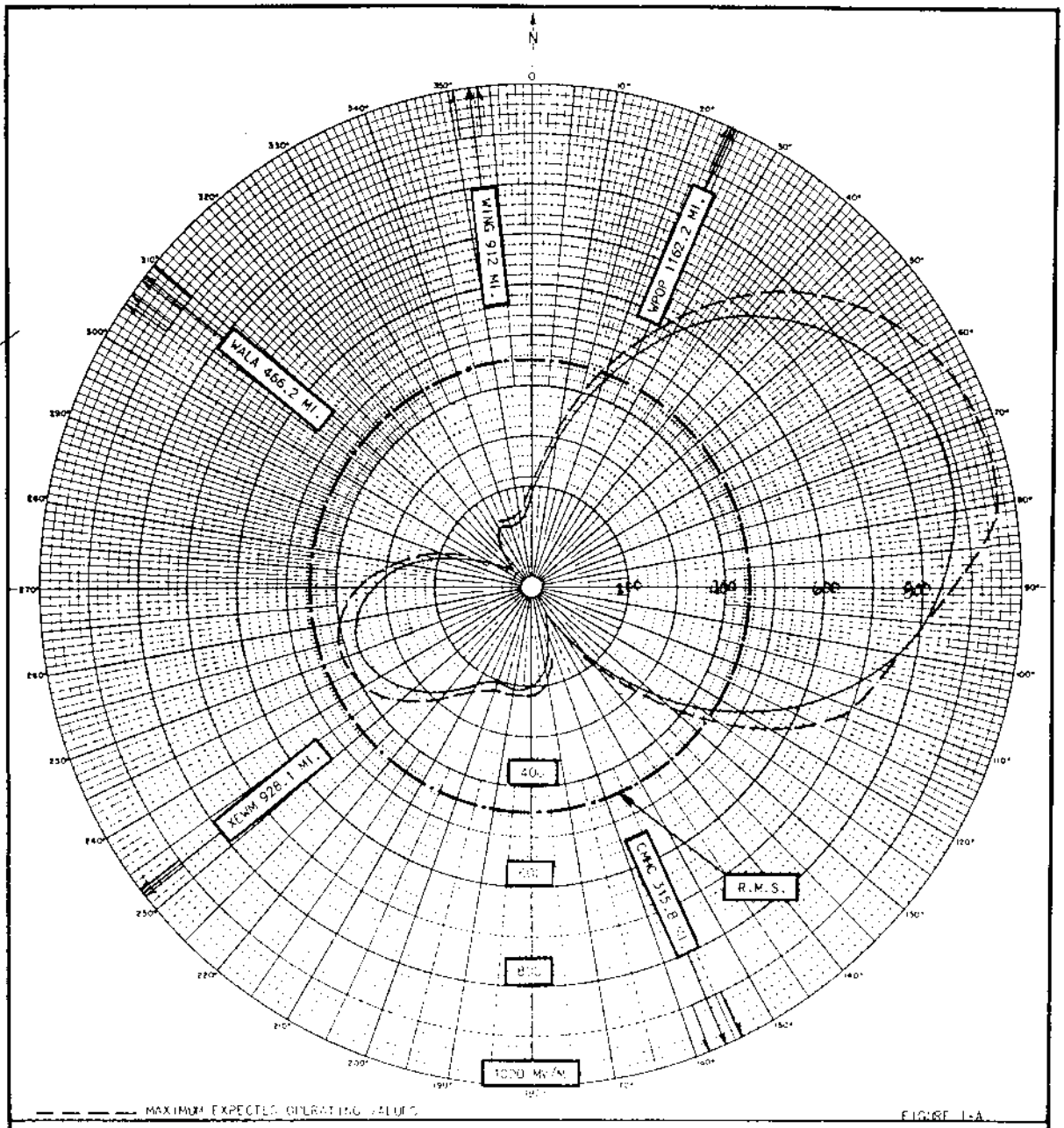
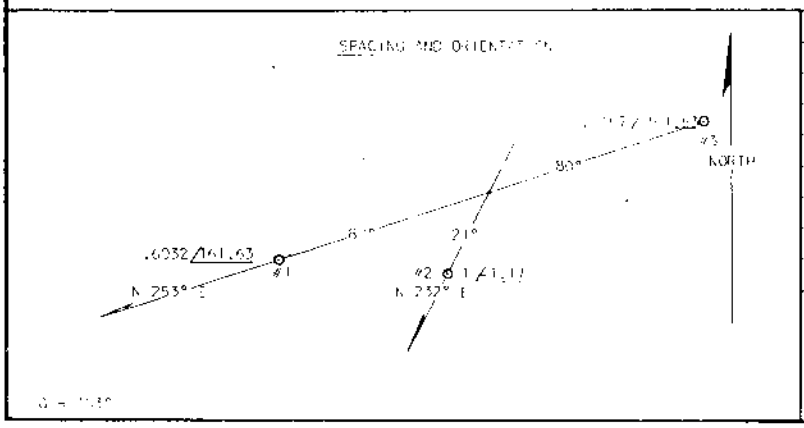


FIGURE 1-A.

HORIZONTAL RADIATION PATTERN

AMENDED



APPLICANT	ROBERT C. HECKSHER
LOCATION	FORT MYERS, FLORIDA
FREQUENCY	1410 KC/S
POWER	5 Kw
LATITUDE	26 DEG 32 MIN 23 SEC
LONGITUDE	81 DEG 51 MIN 18 SEC
WHEN USED	N. DAYTIME
RMS FIELD	442.9 MV/M
DATE	AUGUST 1962

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

FCC File No.BP-14378
Accepted 11-16-62 Amended

Station WMYR
Fort Myers, Florida

1410 kc

WMYR

Proposed Night Nulls
(11-29-62ct)

Station WMYR
Fort Myers, Florida

5kw,DA-N,U
1410 kc

APPL 9-29-65
N TO 5 KW
BP-17943
GRANTED
CP TO
REPLACE
EXPIRED
PERMIT.
12-28-62

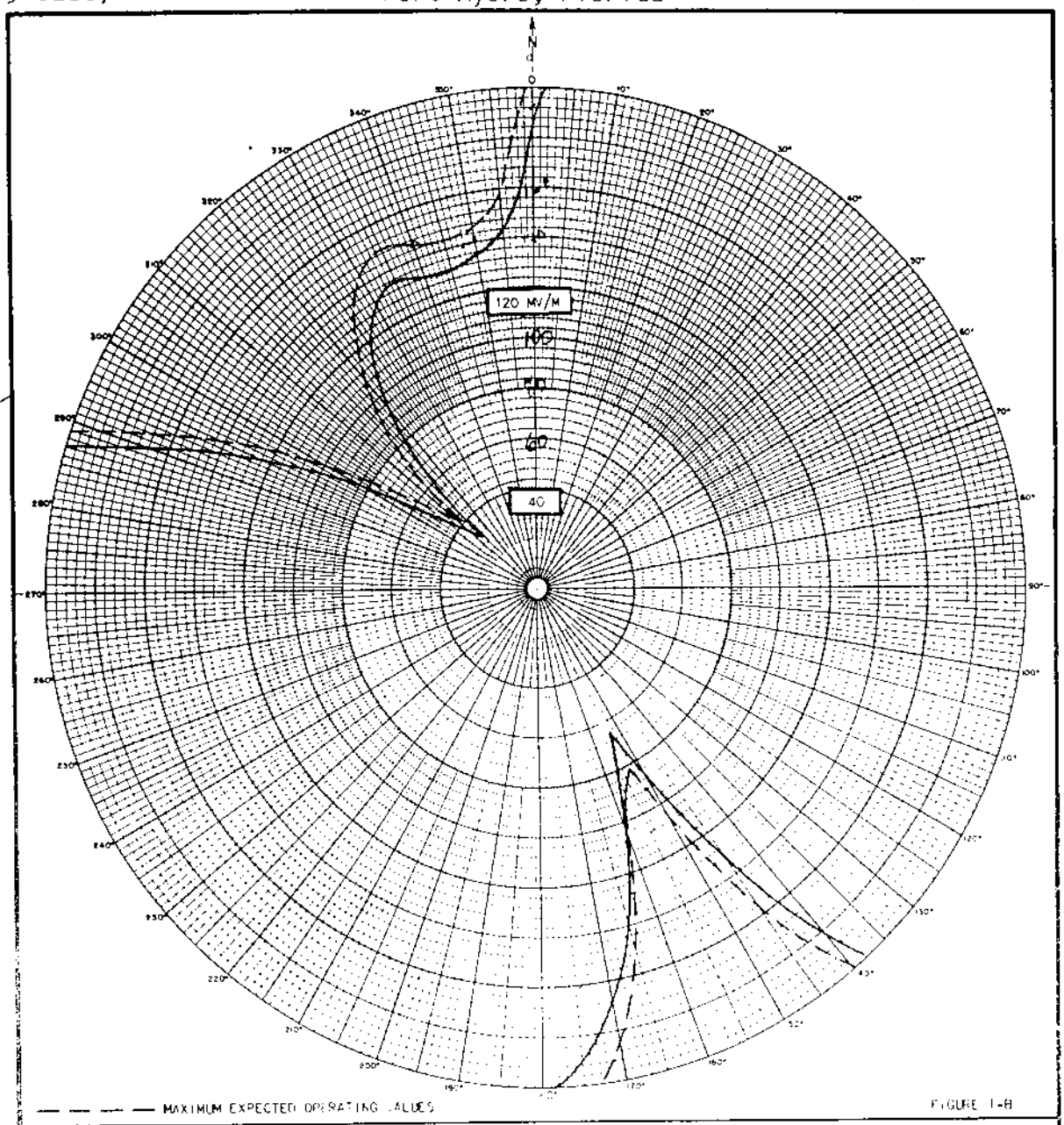


FIGURE 1-B

HORIZONTAL RADIATION PATTERN

AMENDED

WMYR - FORT MYERS, FLORIDA

EXPANDED VIEW

APPLICANT	ROBERT C. HECKSHER
LOCATION	FORT MYERS, FLORIDA
FREQUENCY	1410 KC/S
POWER	5 Kw
LATITUDE	26 DEG 37 MIN 23 SEC
LONGITUDE	81 DEG 51 MIN 18 SEC
WHEN USED	NIGHTTIME
R.M.S. FIELD	448.9 MV/M
DATE	AUGUST 1962

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

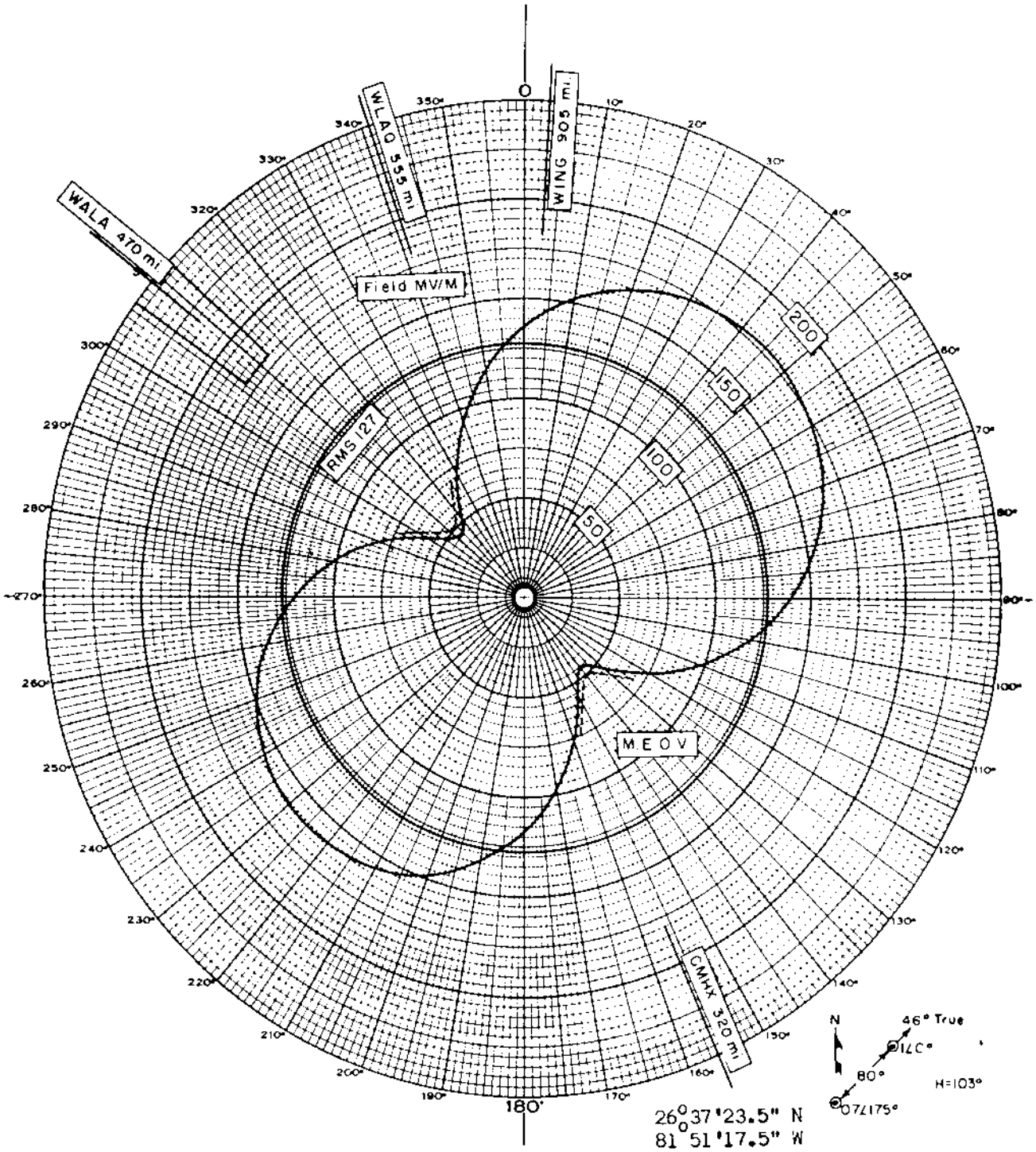
FCC File No.BP-14378
Accepted 11-16-62 Amended

Station WMYR
Fort Myers, Florida

1410 kc

WMYR

PROPOSED WMYR, FT. MYERS, FLORIDA 500W,1KW,-LS,U, DA-N 1410 kc
NIGHT (10/19/53G)



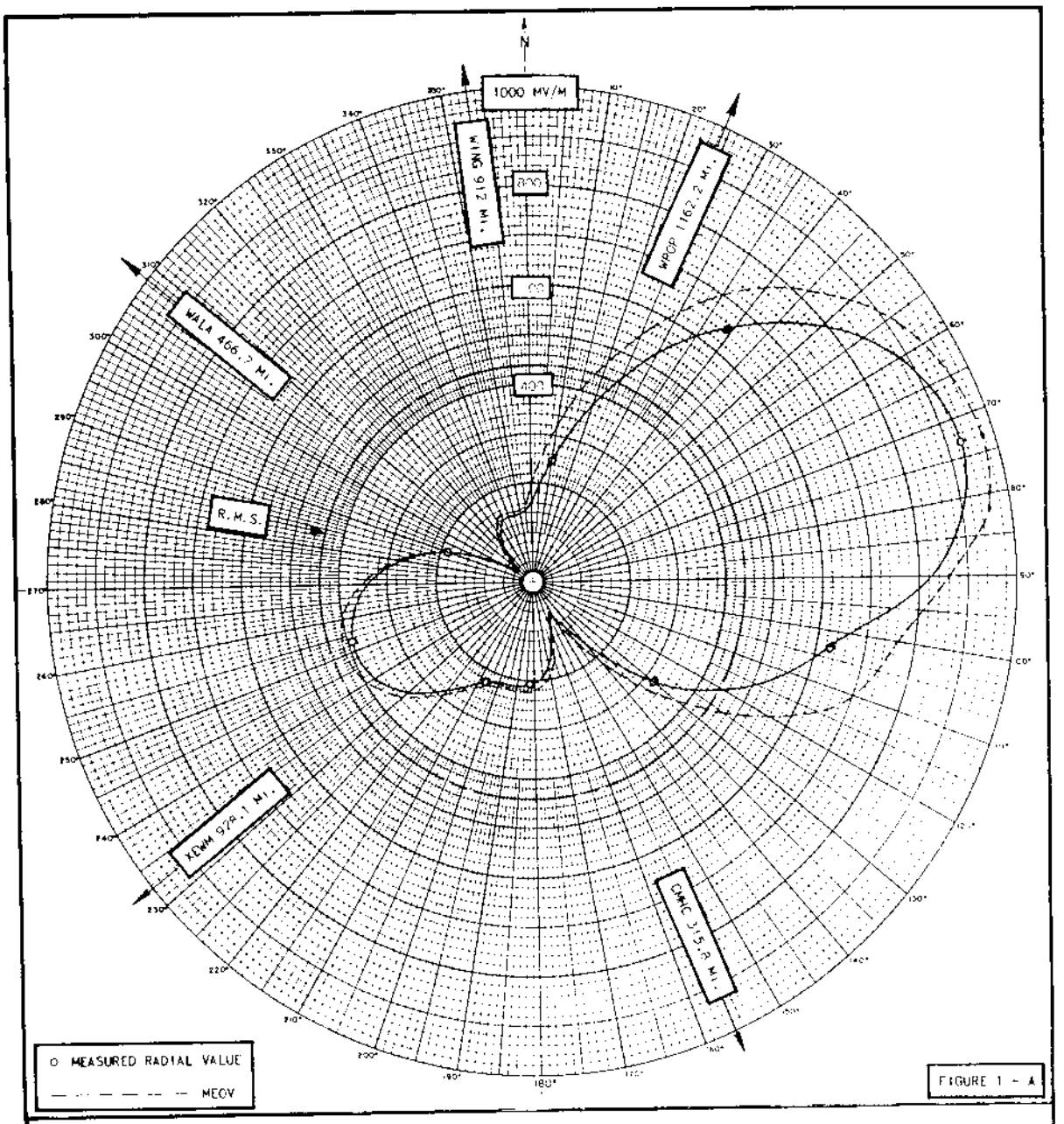
STATION WMYR FORT MYERS, FLORIDA	Figure 1 1410 KC 500 WATTS NIGHT
DIRECTIONAL ANTENNA PATTERN	FRANK H. McINTOSH Consulting Radio Engineer Wyatt Building Washington, D. C.

FCC File No. BP-8990 Accepted 9/8/53 WMYR, FT.MYERS, FLORIDA 1410 kc

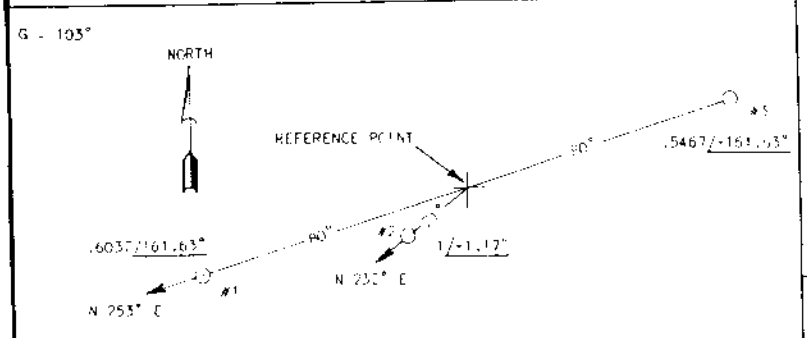
WMYR
5kw, DA-N, U
1410 kc

Measured Night
(9-25-70ct)

Station WMYR
Ft. Myers, Florida



HORIZONTAL RADIATION PATTERN



APPLICANT	ROBERT C. HECKSHER
LOCATION	FORT MYERS, FLORIDA
FREQUENCY	1410 KC/S
POWER	5 KW
LATITUDE	26 DEG 37 MIN 23 SEC
LONGITUDE	81 DEG 51 MIN 18 SEC
WHEN USED	NIGHTTIME
R.M.S. FIELD	440 MV/M
DATE	JANUARY 1970

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

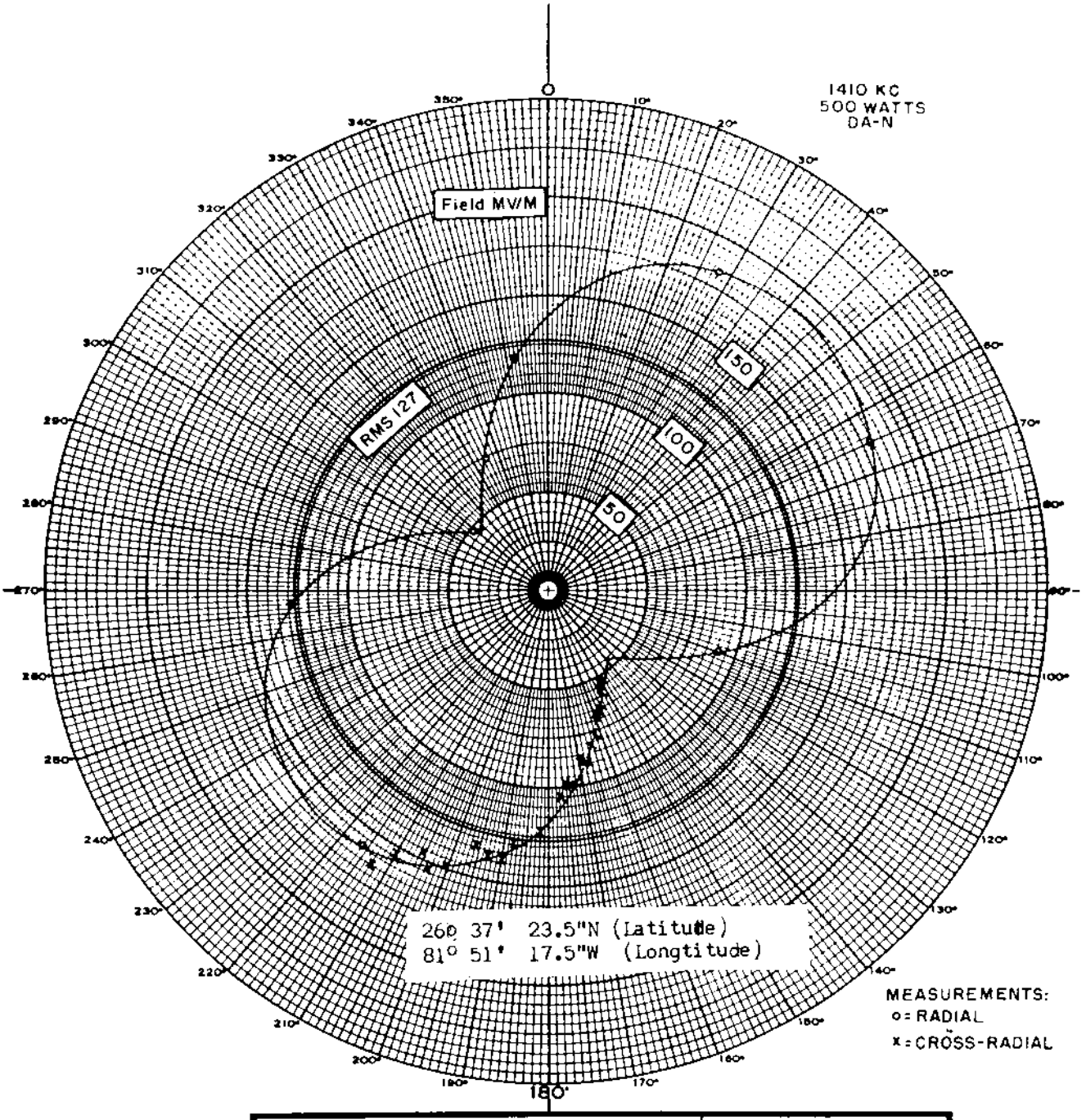
FCC File No.BL-12718
Accepted 8-26-70

Station WMYR
Ft. Myers, Florida

1410 kc

WMYR

MEASURED NIGHT (10/18/54G) | STATION WMYR, FORT MYERS, FLORIDA | 500 KW, 1KW-LS DA-N | 1410 KC



STATION WMYR FORT MYERS, FLORIDA	Figure 7
	1410 KC 500 WATTS DA-N
MEASURED DIRECTIONAL PATTERN	FRANK H. McINTOSH Consulting Radio Engineer Wyatt Building Washington, D. C.

File No. BL-5457 Accepted 10/11/54 WMYR, Fort Myers, Florida 1410 KC

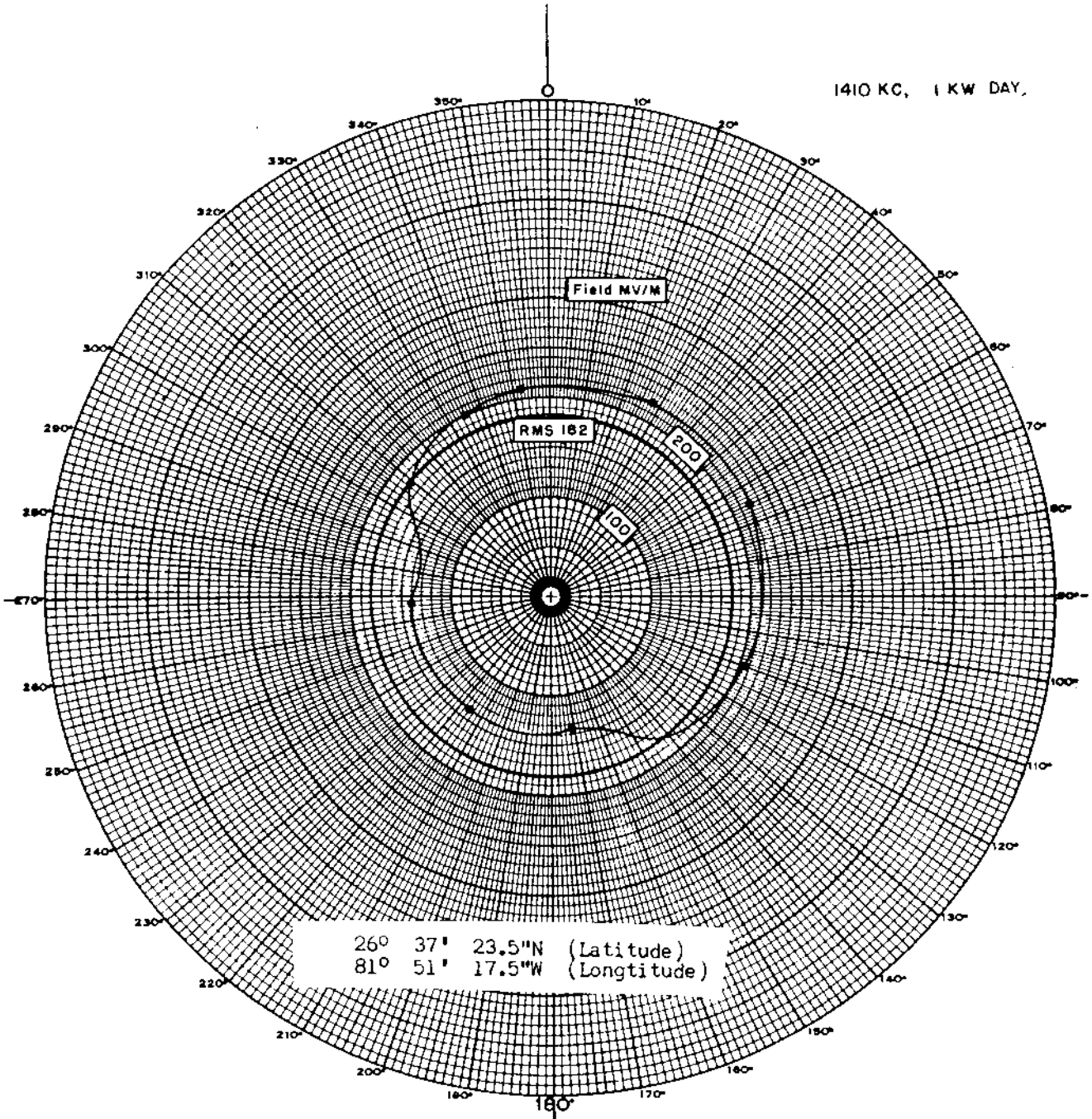
WMYR

MEASURED DAY
(10/18/54G)

STATION WMYR
FORT MYERS, FLORIDA

500 KW, 1KW-LS
DA-N

1410 KC



STATION WMYR FORT MYERS, FLORIDA	Figure 6 1410 KC 1000 WATTS DAY
MEASURED NON-DIRECTIONAL PATTERN	FRANK H. McINTOSH Consulting Radio Engineer Wyatt Building Washington, D. C.

File No. BL-5457 Accepted 10/11/54 WMYR, Fort Myers, Florida 1410 KC

Brockton, Mass.

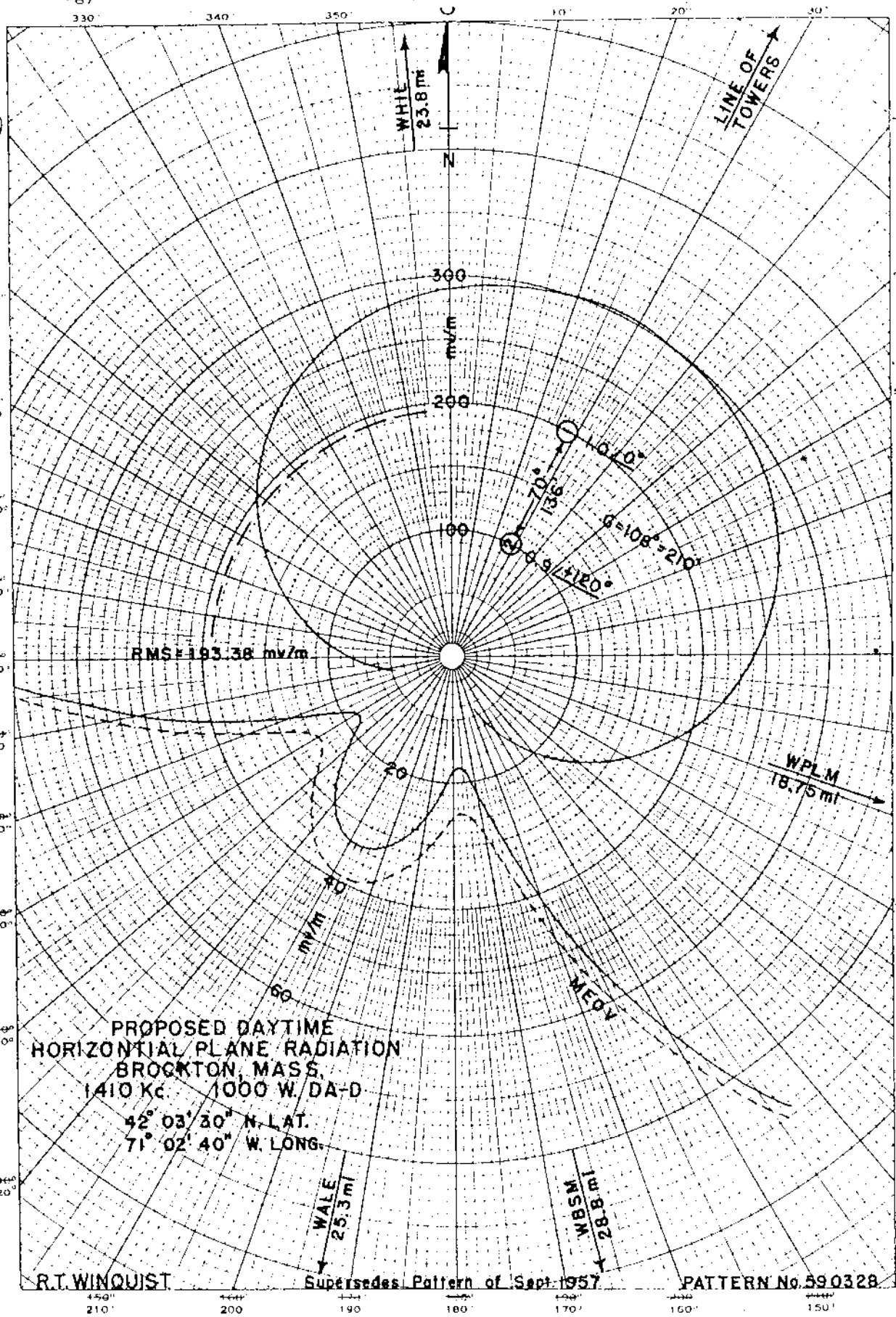
WOKW

PROPOSED DAY
(5-28-59g)

New; Associated Enterprises
Brockton, Massachusetts

1kw, DA-D,D
1410 KC

1-22-60 granted CP for new station
1-28-61 granted L for new station



FCC File No. BP-11630
Accepted 4-30-59 (Amended)

Associated Enterprises
Brockton, Massachusetts

1410 KC

WOKW

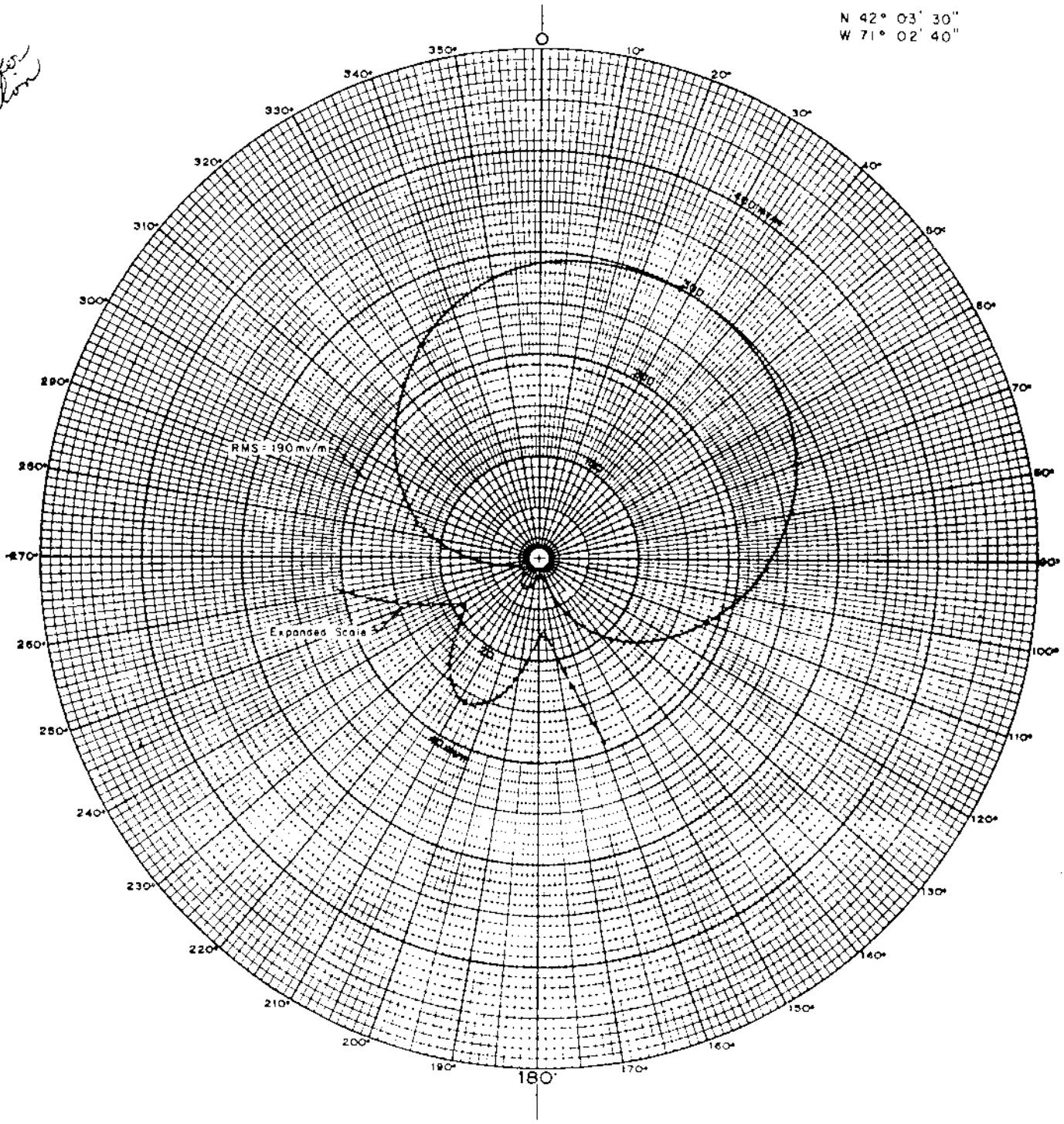
MEASURED DAY
(8-22-61ct)

WOKW
Brockton, Massachusetts

1kw, DA-D,D
1410 KC

N 42° 03' 30"
W 71° 02' 40"

11-28-61 [illegible] for new station



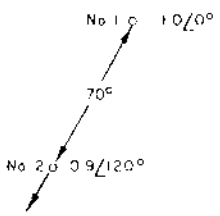


FIGURE 4
HORIZONTAL RADIATION PATTERN
WOKW, INC.
WOKW 1 KW-D, DA 1410 KC
BROCKTON, MASSACHUSETTS

Prepared by
Lohnes and Culver *Washington 4, D.C.*
1410 KC *June 1961*

FCC File No. BL-8601
Accepted 8-16-61

WOKW
Brockton, Massachusetts

FCC File Number BP-18236
August 10, 1971 K & E

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WOTT

Main Studio: Watertown, New York

Frequency: 1410 kHz

Power: 1kw Night 5kw Day

Notification List No. 1420

Date: April 14, 1971 Class: III

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

Daytime				Nighttime			
North Latitude:	44°	00'	11"	North Latitude:	43°	57'	08"
West Longitude:	75°	57'	00"	West Longitude:	75°	52'	33"

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:	NW(#1)	SW(#3)	NE(#2)	SE(#4)	
HEIGHT ABOVE INSULATORS:	387'	387'	387'	387'	(200°)
PHASING:	0°	+36°	+10°	+46°	
FIELD RATIO:	1.00	0.98	0.98	0.96	

SPACING AND ORIENTATION: The towers are located at the vertices of a parallelogram t[illegible] long sides of which are 402.6' (208°) in length on a line be[illegible]ing 174° true. The short sides are 387.2' (200°) in length on a line bearing 69° true.

GROUND SYSTEM: 120 - 162' to 348' equally spaced copper radials plus 120 [illegible] interspaced radials about each tower. Radials are shortene[illegible] and bonded to transverse straps along intersections between towers.

Predicted effective Night Field: 210.0 mv/m at rated power.

DAYTIME ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (ND-D)
Type of element: Series-excited, uniform cross-section, guyed, vertical steel tower.

WOTT (Cont'd.)

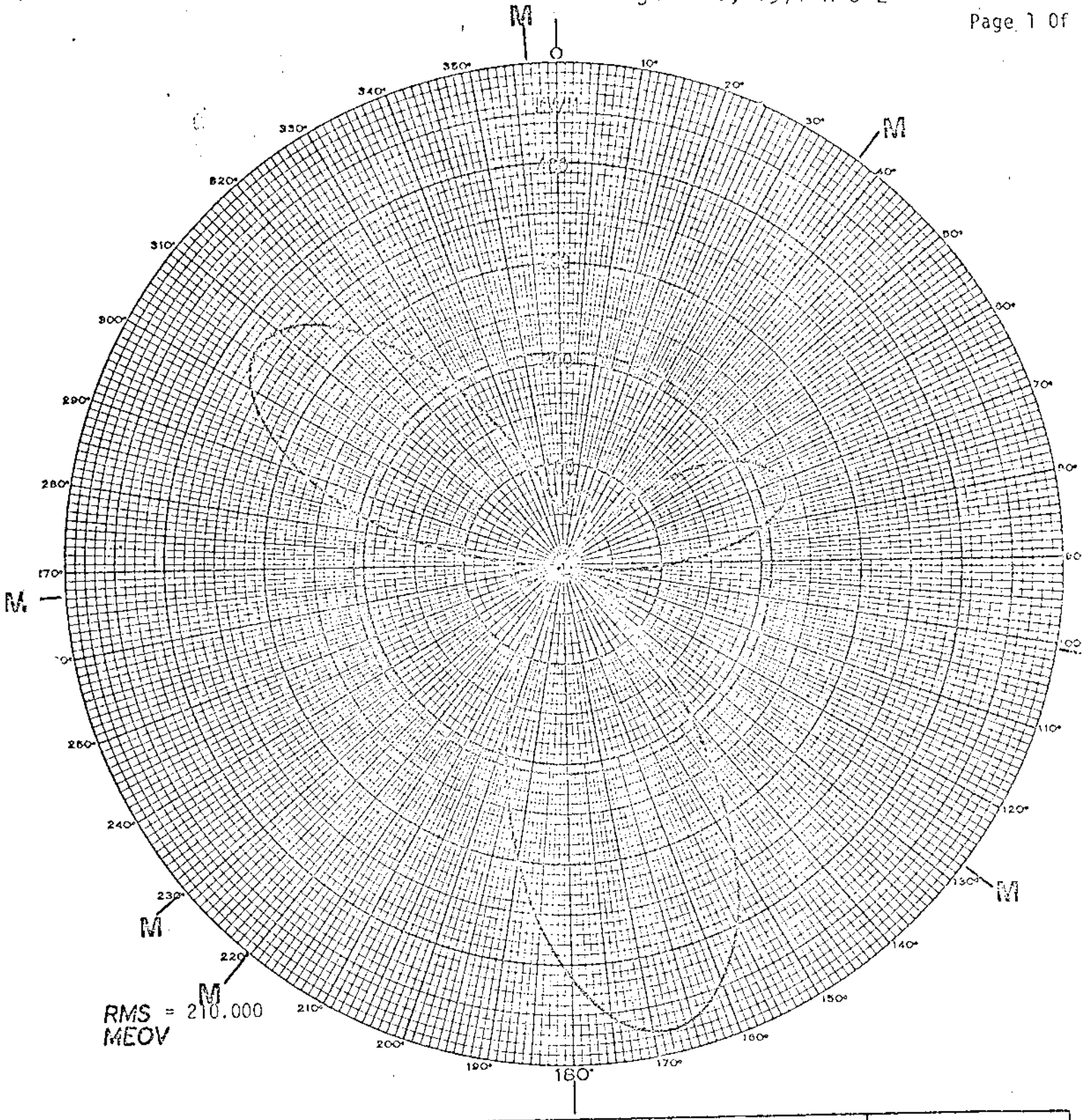
HEIGHT ABOVE INSULATOR: 175' (90.3°)

GROUND SYSTEM: 120 - 175' equally spaced copper radials plus 120 - 50' inter-spaced radials about the tower.

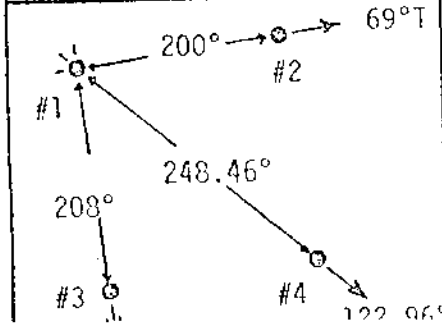
Predicted effective Day Field: (omnidirectional) 425 mv/m at rated power.

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

CTR NO 31301A3



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 8	STATION DATA



TOWER No.	ELECTRICAL HEIGHT G°	SPACING S°	PHASING V°	FIELD RATIO F
1	200		0.0	1.0
2	200		10.0	0.98
3	200		36.0	0.98
4	200		46.0	0.96
5				
6				
7				
8				
9				
10				

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒

PROPOSED NIGHTTIME DIRECTIONAL ANTENNA RADIATION PATTERN
*****
WOTT
Watertown, New York
*****
6/69

$\Theta^{\circ} = 0.0$

CALL WOTT
FREQ 1410 KHz
POWER 1.0 KW
TYPE DA-N
TIME NIGHT
LAT. N-43-57-08
LONG. W-75-52-33

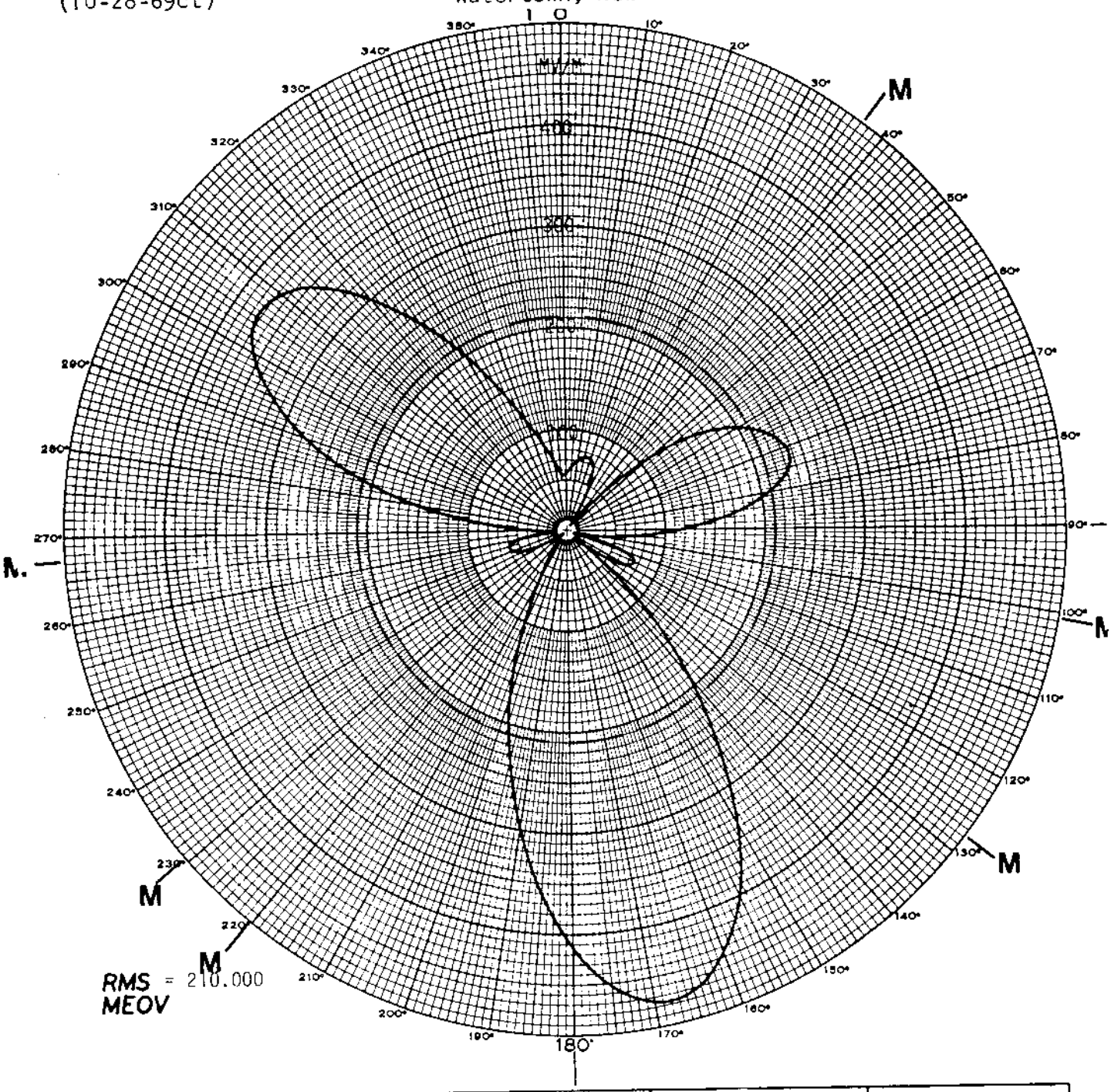
E.H.MUNN, JR.
RADIO ENGINEER
COLDWATER, MICH.

WOTT

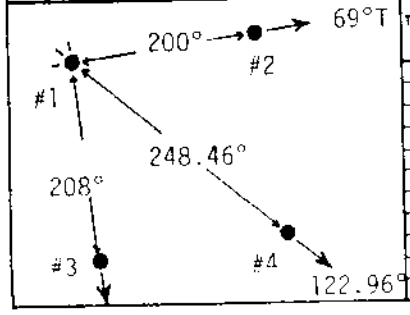
1kw,5kw-LS,DA-N,U
1410 kc

Proposed Night
(10-28-69ct)

Station WOTT
Watertown, New York



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 8	STATION DATA



TOWER No.	ELECTRICAL HEIGHT θ°	SPACING S°	PHASING ψ°	FIELD RATIO F
1	200		0.0	1.0
2	200		10.0	0.98
3	200		36.0	0.98
4	200		46.0	0.96
5				
6				
7				
8				
9				
10				

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒

PROPOSED NIGHTTIME DIRECTIONAL ANTENNA RADIATION PATTERN
*****
WOTT
Watertown, New York
*****
6/69

$\Theta^\circ = 0.0$

CALL WOTT
FREQ 1410 KHz
POWER 1.0 KW
TYPE DA-N
TIME NIGHT
LAT. N-43-57-08
LONG. W-75-52-33

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

FCC File No.BP-18236
Accepted 10-3-69 Amended

Station WOTT
Watertown, New York

1410 kc

Proposed Night Nulls
(10-28-69ct)

Station WOTT
Watertown, New York

1kw,5kw-LS,DA-N,U
1410 kc

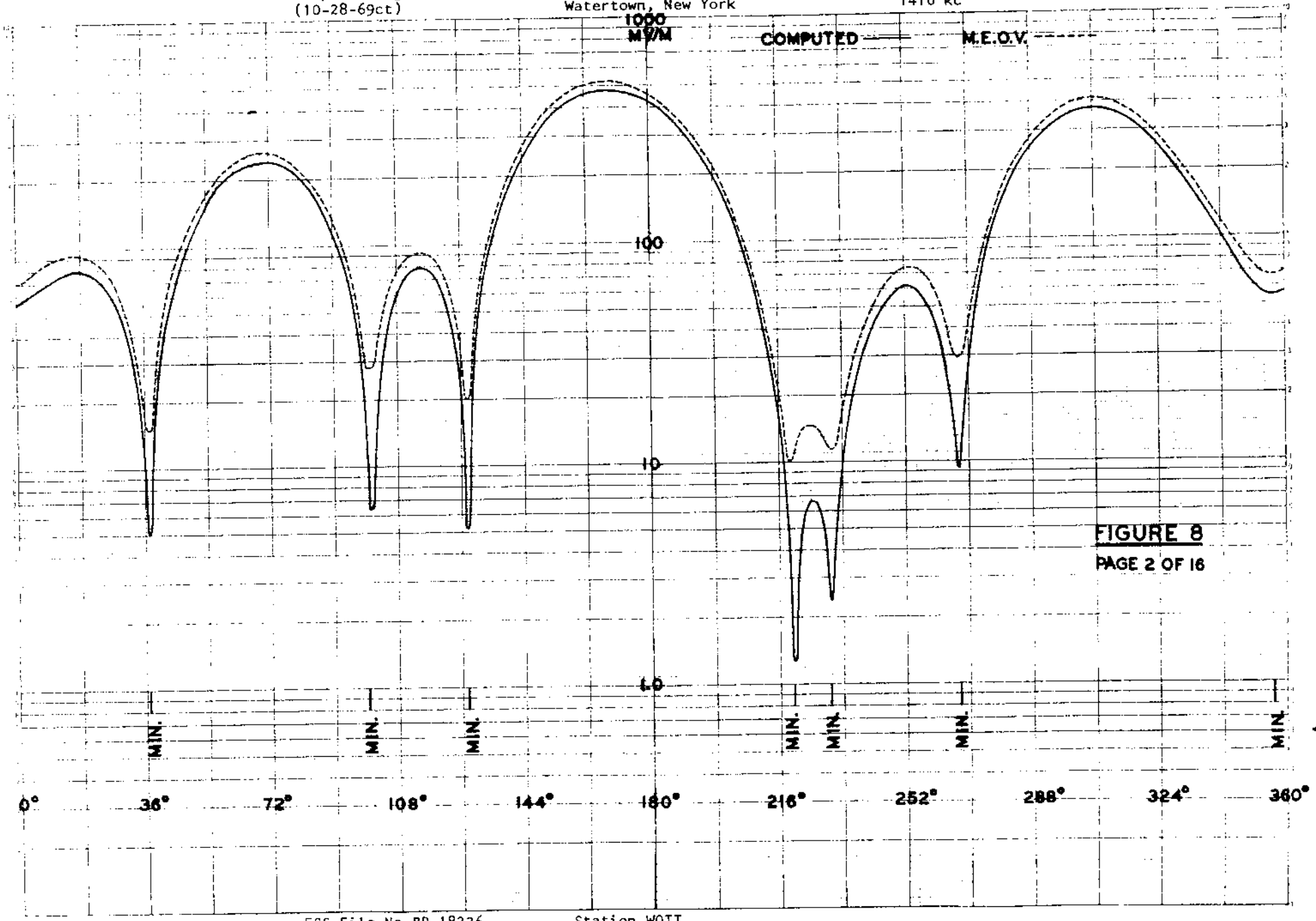


FIGURE 8
PAGE 2 OF 16

WOTT

FCC File No.BP-18236
Accepted 10-3-69 Amended

Station WOTT
Watertown, New York

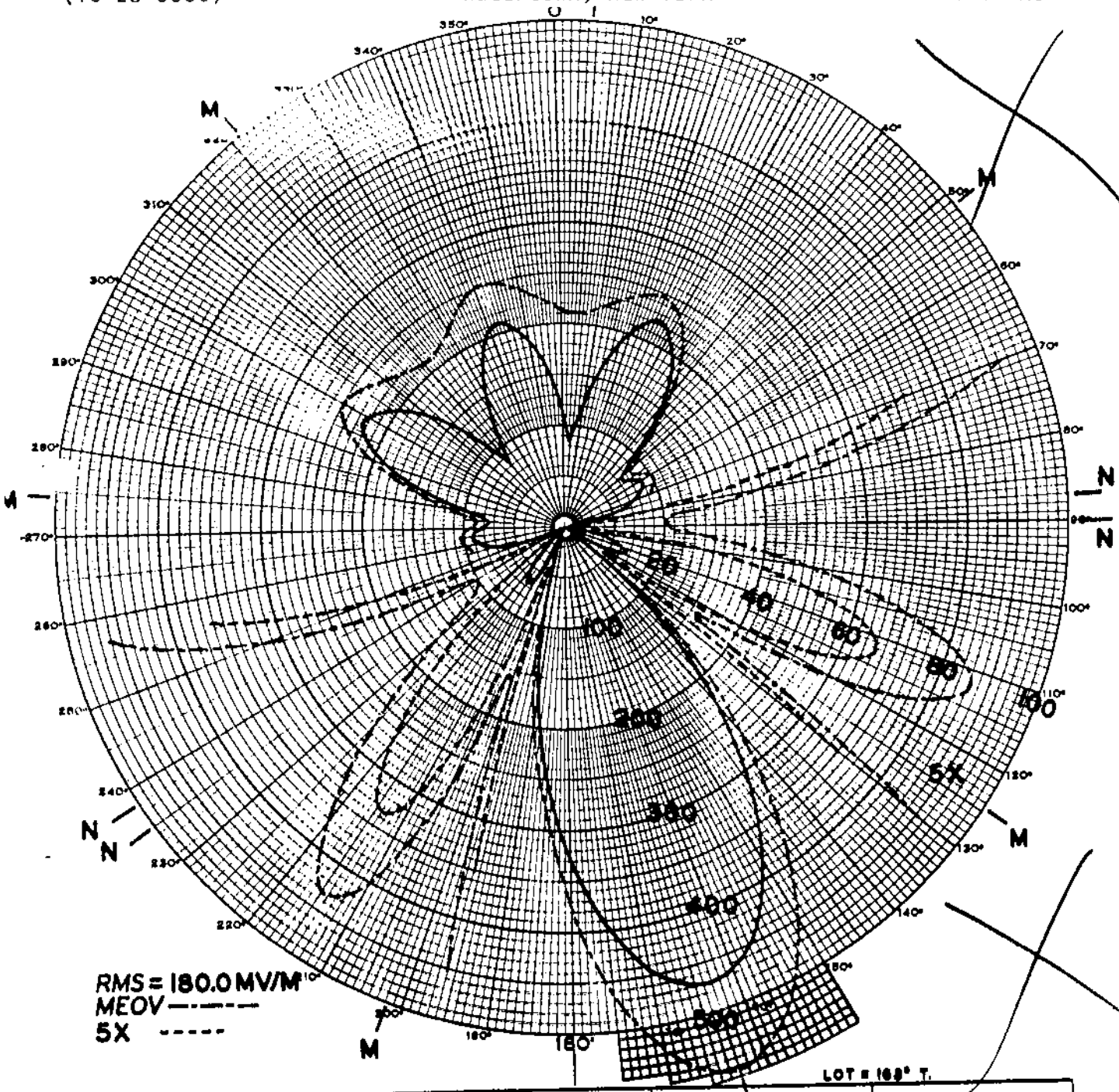
1410 kc

WOTT

Proposed Night
(10-28-68ct)

Station WOTT
Watertown, New York

1kw,5kw-LS,DA-N,U
1410 kc



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS				FIGURE 7	STATION DATA
NO. 1 NO. 2 NO. 3 NO. 4 NO. 5 NO. 6 163° T.	TOWER No.	ELECTRICAL HEIGHT °	SPACING °	PHASING °	FIELD RATIO	WOTT WATERTOWN, NEW YORK ********* MAY - 1968	CALL WOTT FREQ 1410 KHz. POWER 1.0 Kw TYPE DA-N TIME UNLIMITED LAT. 43-57-08 LONG. 75-52-33
	1	205.5	0	0	1.000		
	2	205.5	90	179.064	3.258		
	3	205.5	180	1.424	5.381		
	4	205.5	270	184.188	5.581		
	5	205.5	360	0.000	3.338		
	6	205.5	450	179.500	1.302		
	7						
	8						
	9						
	10						
	DAYTIME OPERATION ☐			NIGHTTIME OPERATION ☒		$\theta^\circ = 0^\circ$	E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BP-18236
Accepted 9-30-68

Station WOTT
Watertown, New York

1410 kc

WOTT

Prposed Night Nulls
(10-28-68ct)

Station WOTT
Watertown, New York

1kw,5kw-LS,DA-N,U
1410 kc

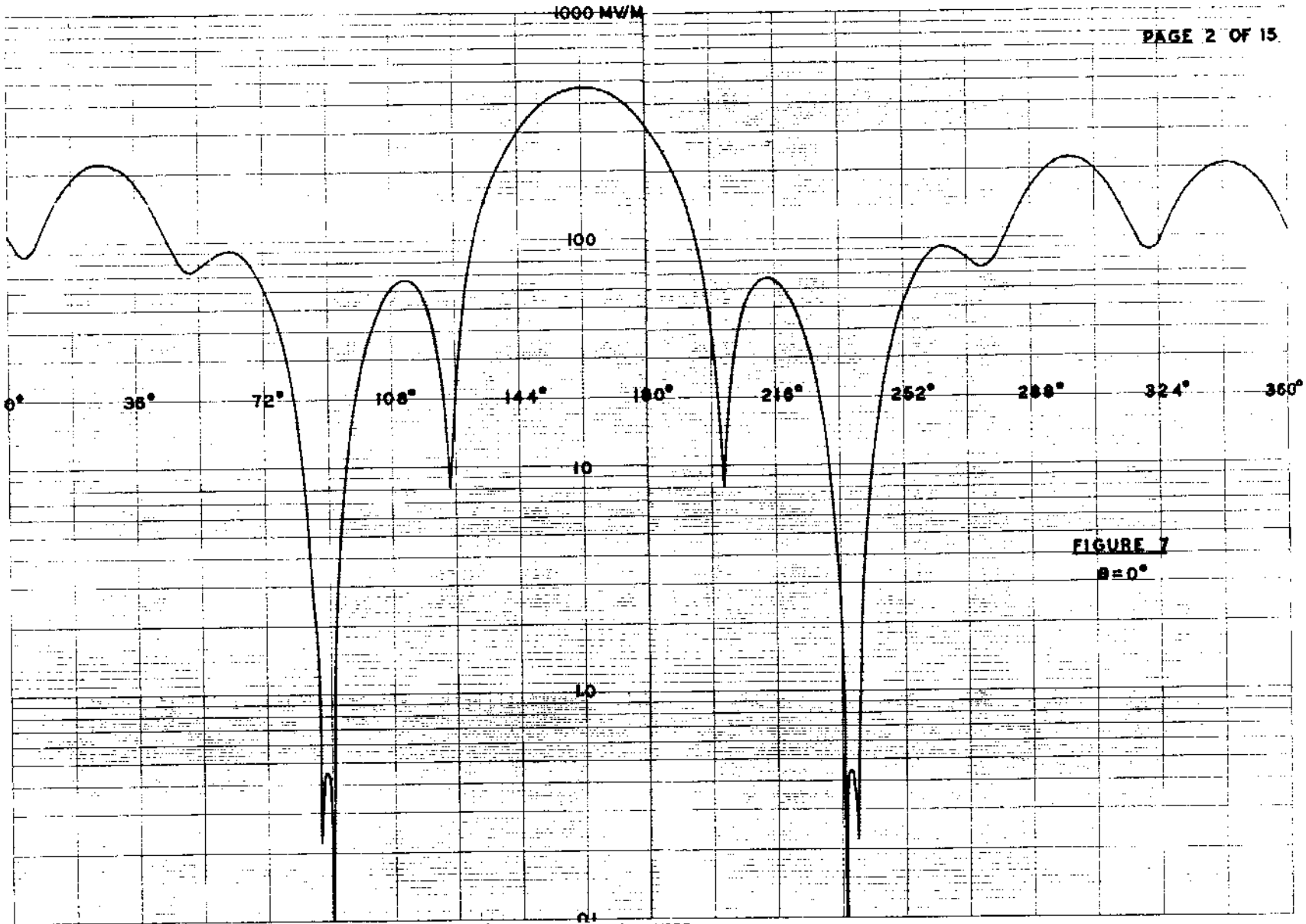


FIGURE 7
θ=0°

FCC File No.BP-18236
Accepted 9-30-68

Station WOTT
Watertowr New York

1410 kc

136

WPOP

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WPOP

Main Studio: Hartford, Connecticut

Frequency: 1410 kHz

Power: 5 kW

Notification List No. 1676

Date: March 19, 1976

Class:

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 41° 41' 35"
West Longitude: 72° 45' 30"

ANTENNA CHARACTERISTICS

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

TOWER:	NW(#1)	SE(#2)
HEIGHT ABOVE INSULATORS:	178'	178' (92°)
NIGHT PHASING:	0°	-17.5°
NIGHT FIELD RATIO:	1	0.96
DAY PHASING:	0°	-17.5°
DAY FIELD RATIO:	1.0	0.75

SPACING AND ORIENTATION: Elements are spaced 447' (230°) on a line bearing 124° true.

GROUND SYSTEM: 120-285' equally spaced copper radials plus a 24' square gro screen about each tower. Radials are shortened to a transve strap along intersections between towers. Centers of system are bonded together.

Predicted effective Night Field: 421 mv/m at rated power.

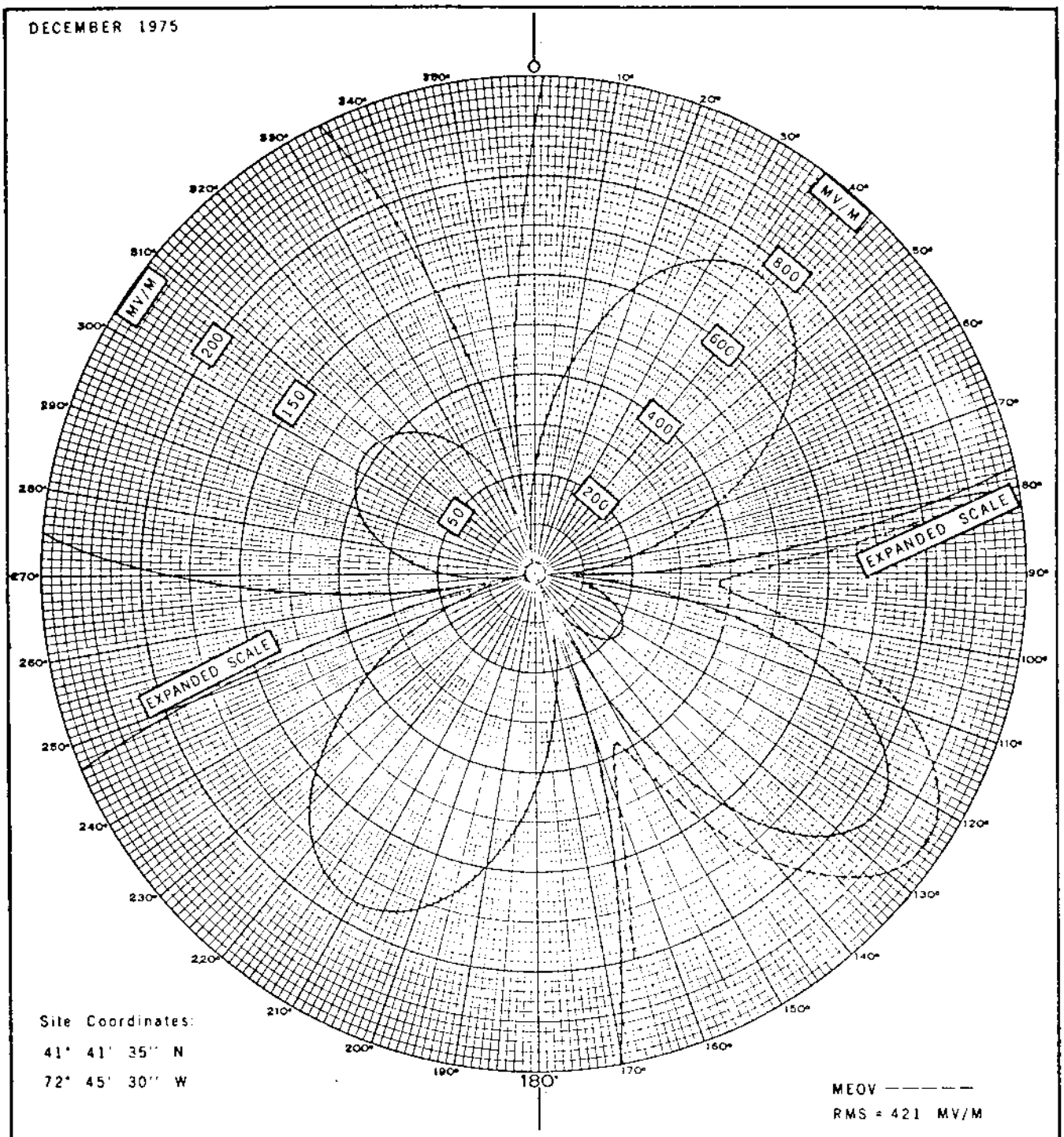
Predicted effective Day Field: 425 mv/m at rated power.

Note: Please retain the Daytime directional antenna radiation pattern notif for station WNBC (now WPOP) at New Britian, Connecticut, in the origin 1941 notification and attach to this Revised Description Sheet and Nighttime patterns. This notification concerns only changes in the M.E.O.V.s of radiation in the nighttime pattern with daytime operation continued as previously notified.

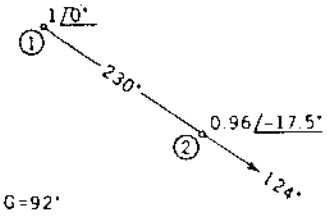
CTR NO 30616A3

WPOP

Figure 1
Sheet 1 of 13



CALCULATED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN



GREATER CONNECTICUT
BROADCASTING, INC.
HARTFORD, CONNECTICUT

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION WPOP
1410 KHZ
5 KW U DA-2

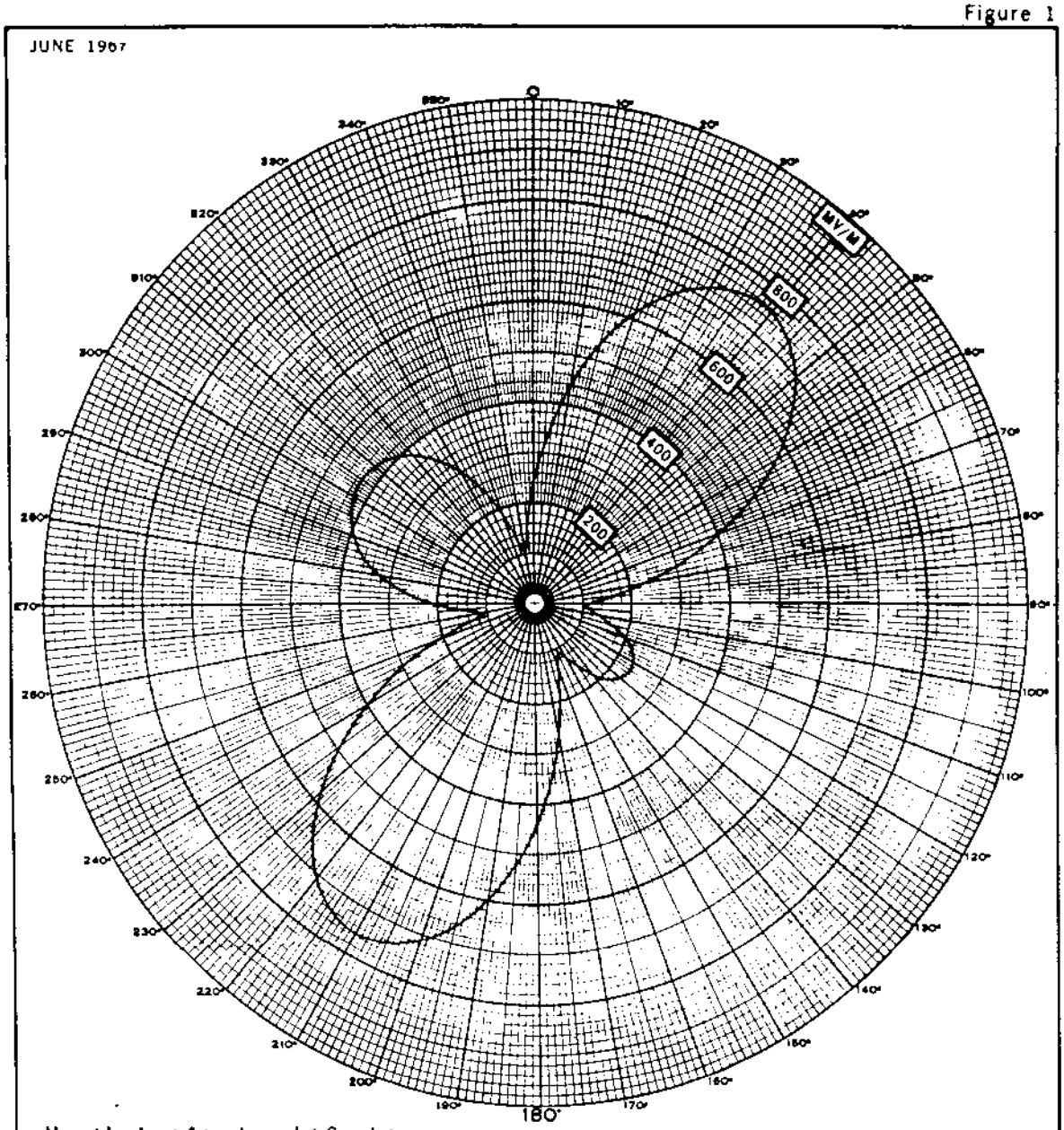
WPOP

Proposed Day
(8-28-67ct)

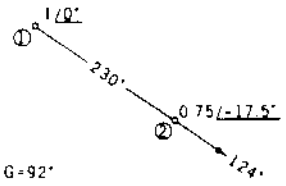
Station WPOP
Hartford, Connecticut

5kw,DA-2,U
1410 kc

Figure 1



CALCULATED DAYTIME HORIZONTAL PLANE RADIATION PATTERN



WPOP, INC.
HARTFORD, CONNECTICUT

Jules Cohen & Associates
Consulting Electronics Engineers

1410 KHZ

5 KW U DA-2

FCC File No.BZ-6493
Accepted 8-15-67

Station WPOP
Hartford, Connecticut

1410 kc

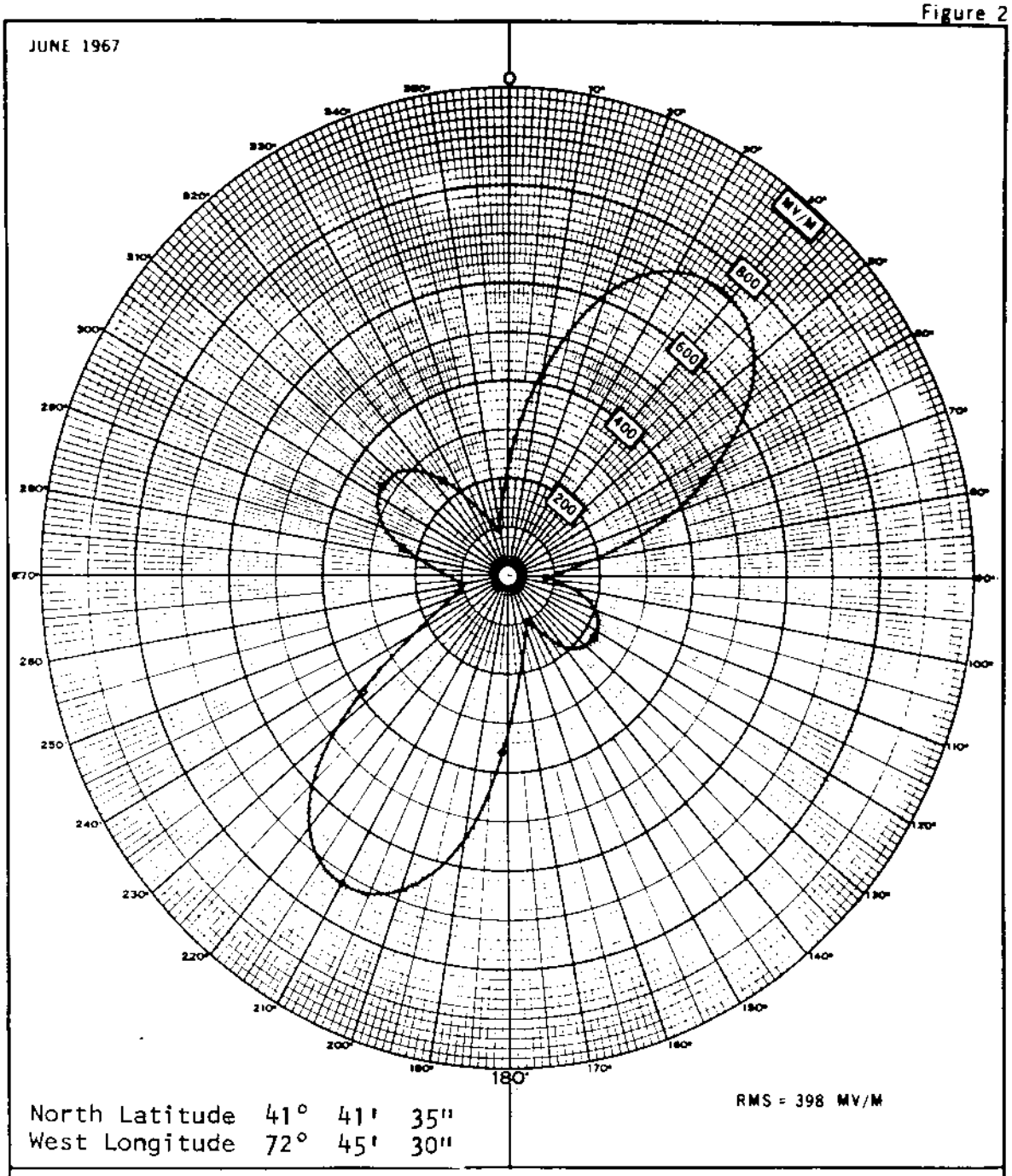
WPOP

Measured Day
(8-28-67ct)

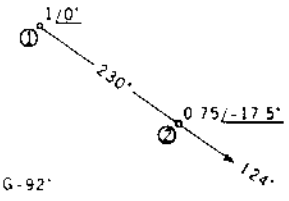
Station WPOP
Hartford, Connecticut

5kw,DA-2,U
1410 kc

Figure 2



MEASURED DAYTIME HORIZONTAL PLANE RADIATION PATTERN



WPOP, INC.
HARTFORD, CONNECTICUT

Jules Cohen & Associates
Consulting Electronics Engineers

1410 KHZ

5 KW U DA-2

FCC File No.BZ-6493
Accepted 8-15-67

Station WPOP
Hartford, Connecticut

1410 kc

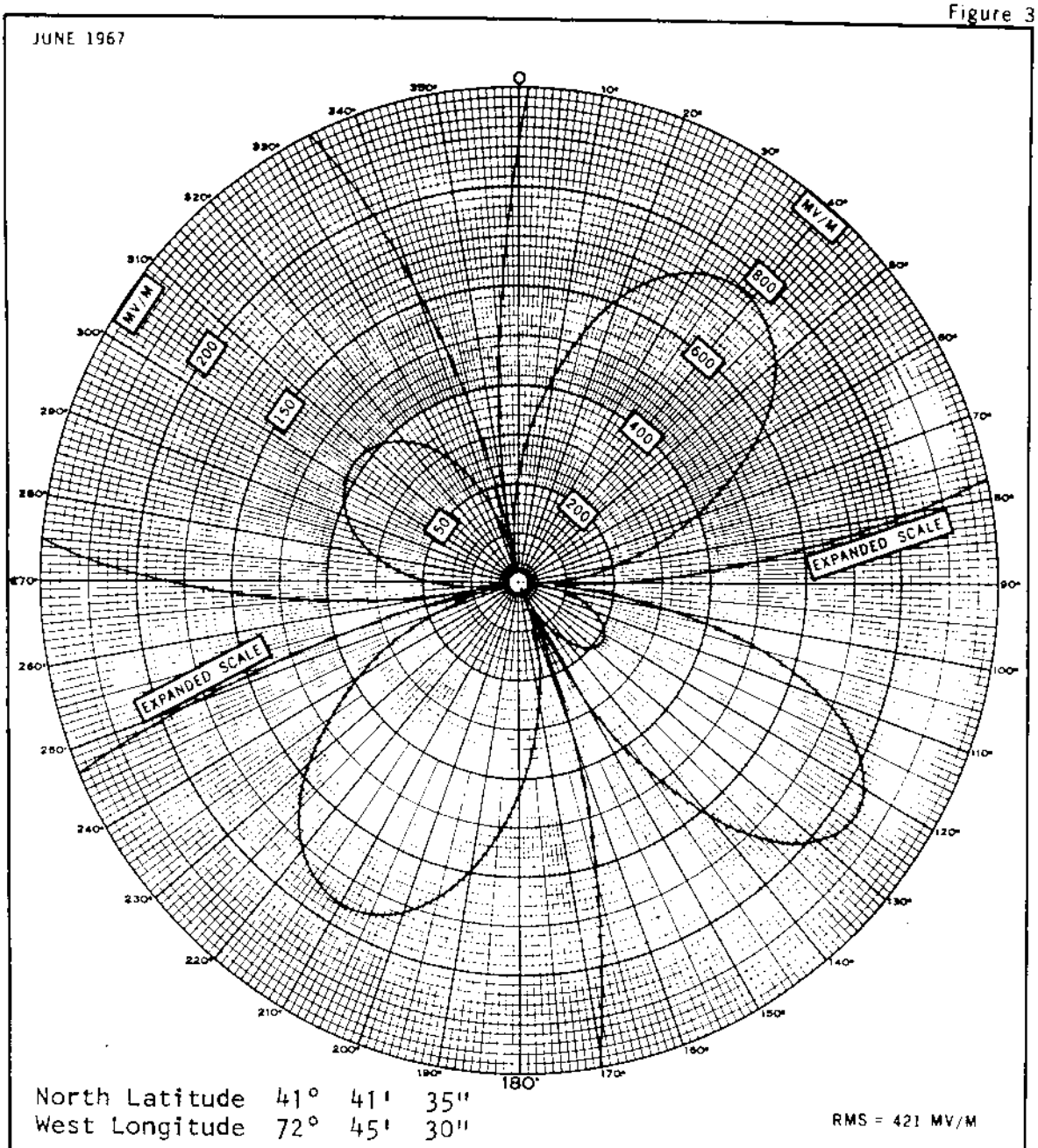
WPOP

Proposed Night
(8-28-67ct)

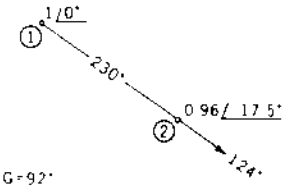
Station WPOP
Hartford, Connecticut

5kw,DA-2,U
1410 kc

Figure 3



CALCULATED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN



WPOP, INC.
HARTFORD, CONNECTICUT

Jules Cohen & Associates
Consulting Electronics Engineers

1410 KHZ

5 KW U DA-2

FCC File No.BZ-6493
Accepted 8-15-67

Station WPOP
Hartford, Connecticut

1410 kc

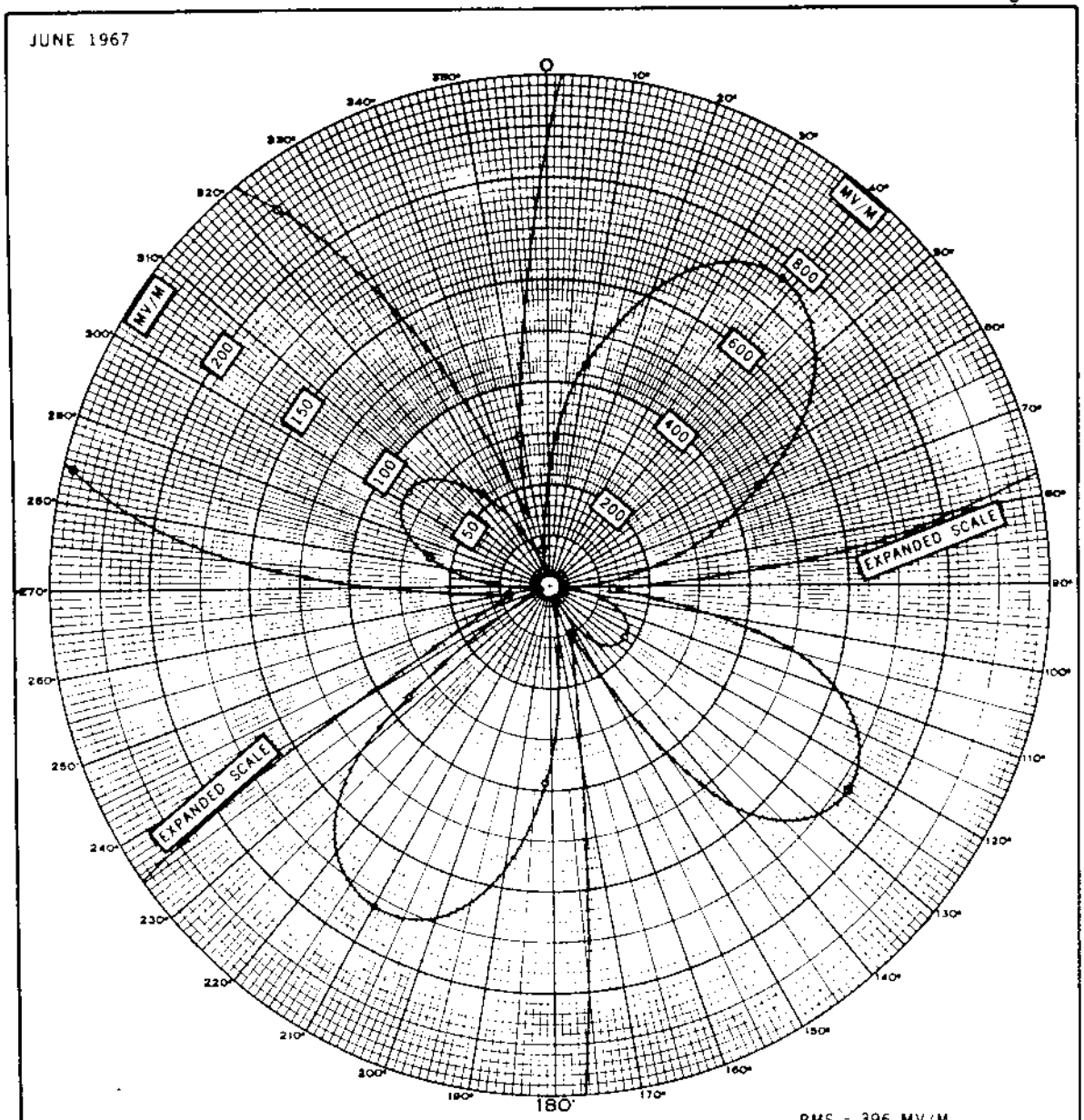
WPOP

Measured Night
(8-28-67ct)

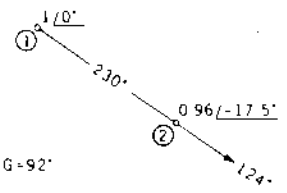
Station WPOP
Hartford, Connecticut

5kw, DA-2, U
1410 kc

Figure 4



MEASURED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN



WPOP, INC.

HARTFORD, CONNECTICUT

Jules Cohen & Associates
Consulting Electronics Engineers

1410 KHZ

5 KW U DA 2

FCC File No. BZ-6493
Accepted 8-15-67

Station WPOP
Hartford, Connecticut

1410 kc

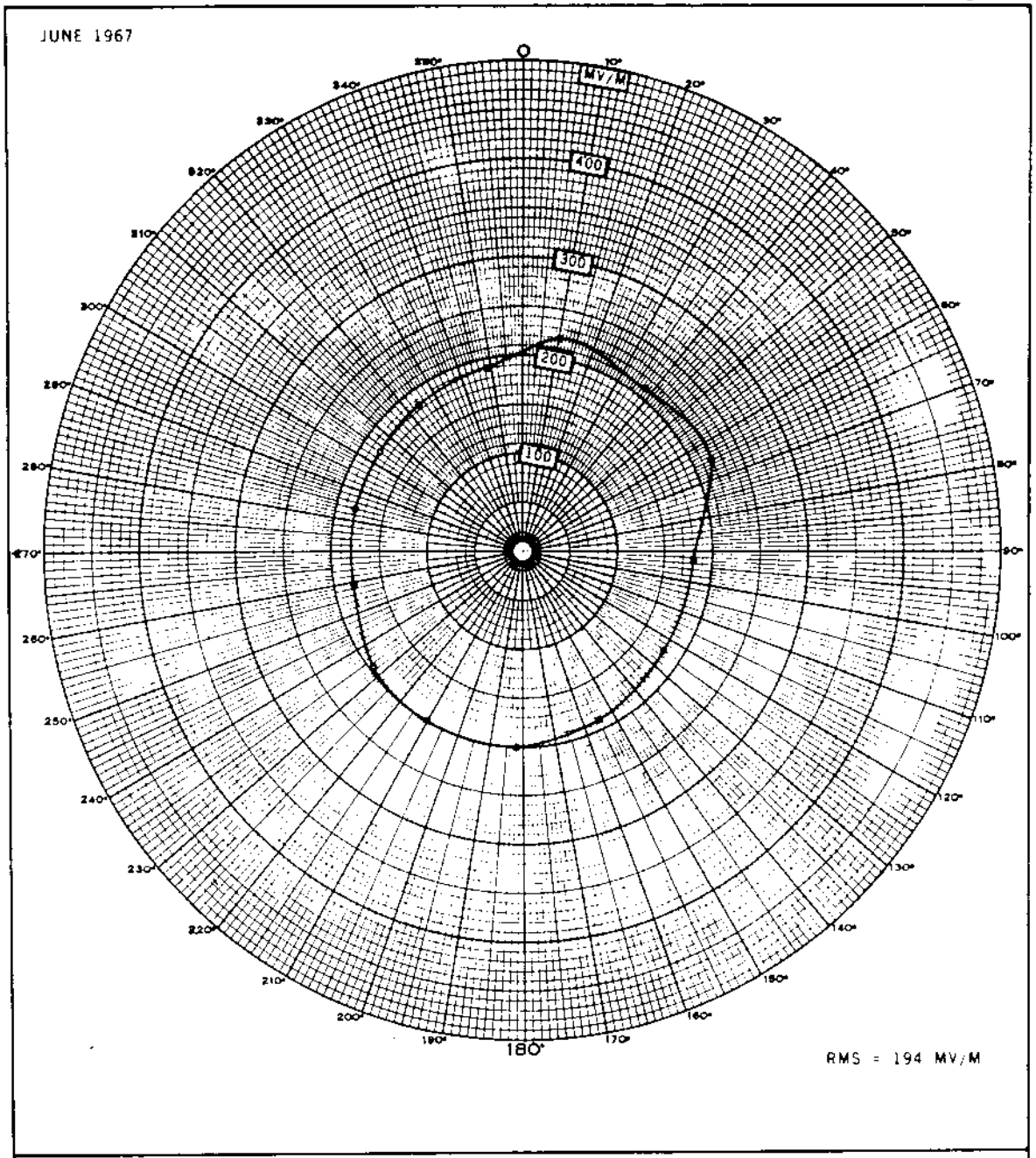
WPOP

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

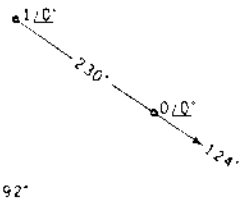
Station WPOP
Hartford, Connecticut

5kw,DA-2,U
1410 kc

Figure 5



MEASURED NONDIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN



WPOP, INC.
HARTFORD, CONNECTICUT

Jules Cohen & Associates
Consulting Electronics Engineers

1410 KHZ
5KW U DA 2

FCC File No.BZ-6493
Accepted 8-15-67

Station WPOP
Hartford, Connecticut

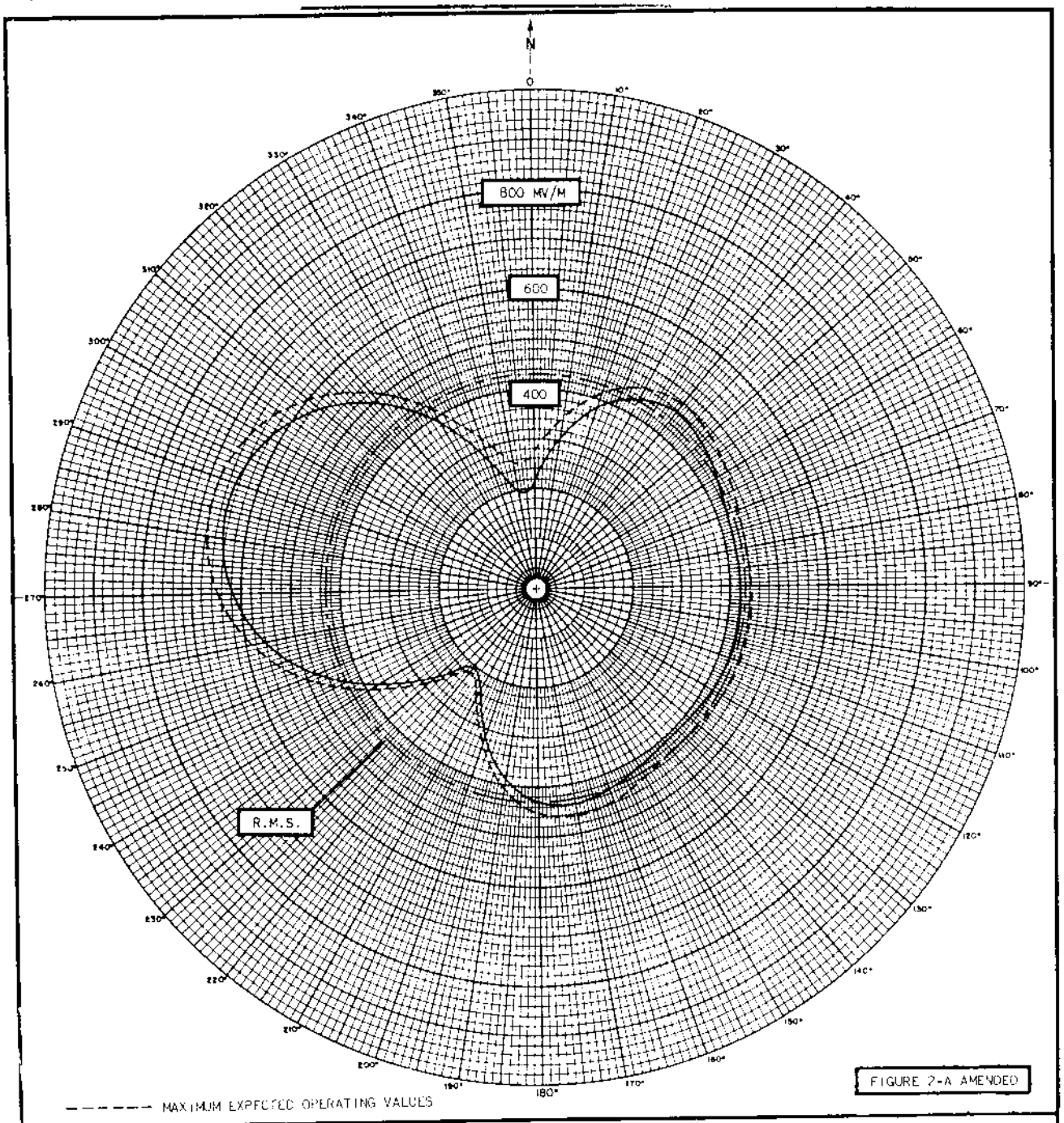
1410 kc

WPXC

Proposed Day
(9-28-67ct)

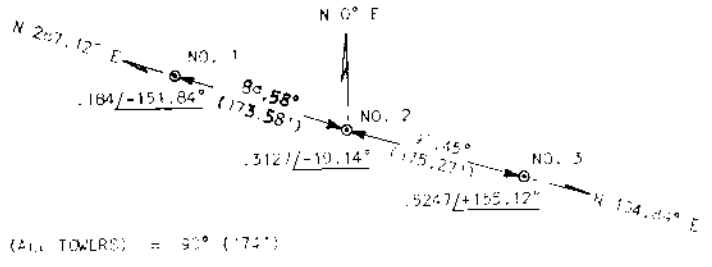
New; Prattville Radio, Inc.
Prattville, Alabama

1kw,5kw-LS,DA-2,U
1410 kc



HORIZONTAL RADIATION PATTERN

SPACING AND ORIENTATION



APPLICANT	RADIO PRATTVILLE, INC.
LOCATION	PRATTVILLE, ALABAMA
FREQUENCY	1410 KC/S
POWER	5 KW-LS, 1 KW-N (DA-2)
LATITUDE	32 DEG 28 MIN 54.4 SEC.
LONGITUDE	86 DEG. 31 MIN 53.3 SEC.
WHEN USED	DAYTIME
R.M.S FIELD	432.666 MV/M (CALCULATED)
DATE	JULY 1967

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

FCC File No. BP-17842

New; Prattville Radio, Inc.

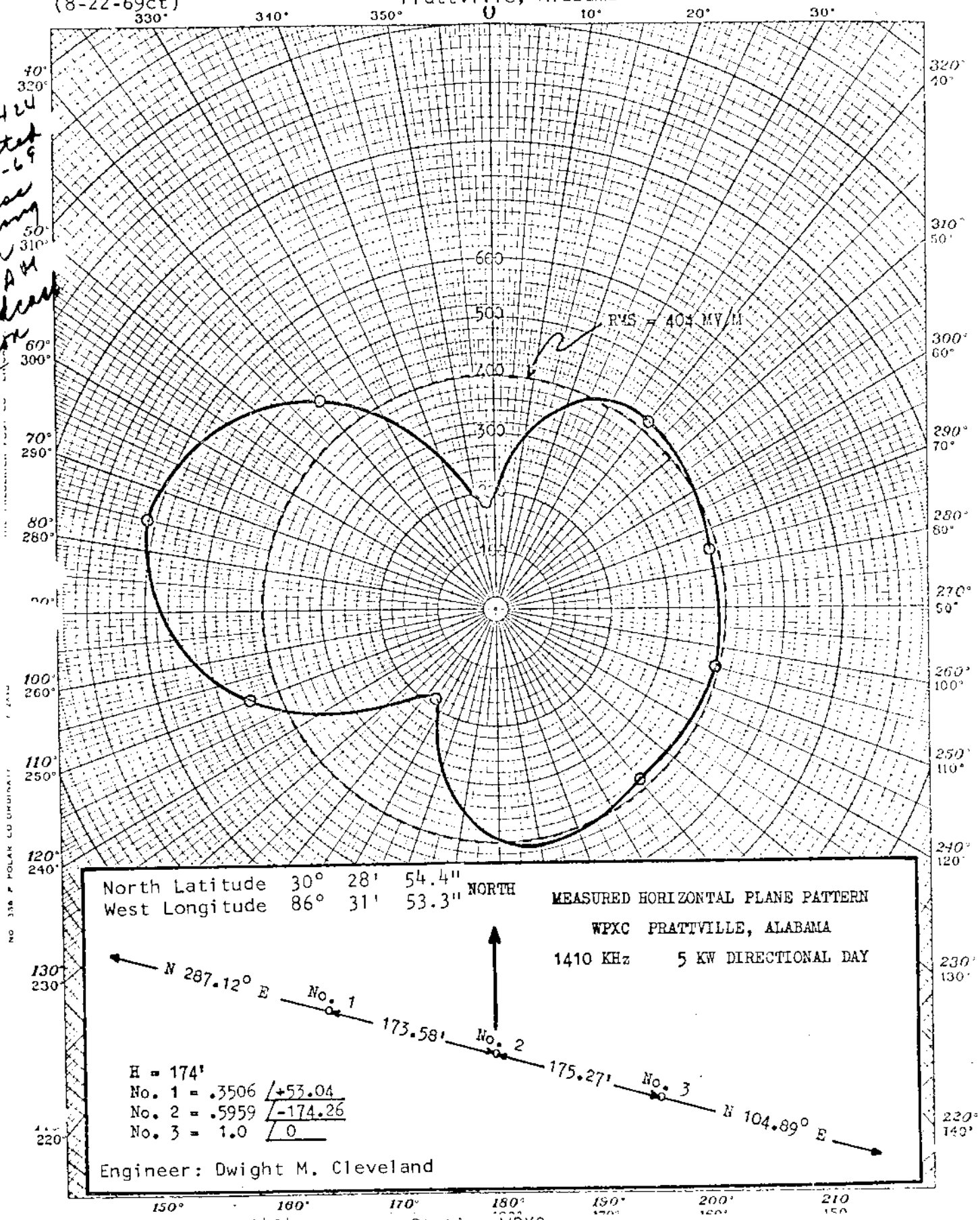
WPXC

Measured Day
(8-22-69ct)

Station WPXC
Prattville, Alabama

1kw,5kw-LS,DA- 2,U
1410 kc

L12424 granted 8-24-69 since serving P for new AM broadcast station



North Latitude 30° 28' 54.4"
West Longitude 86° 31' 53.3"

NORTH

MEASURED HORIZONTAL PLANE PATTERN
WPXC PRATTVILLE, ALABAMA
1410 KHz 5 KW DIRECTIONAL DAY

N 287.12° E — No. 1 — 173.58' — No. 2 — 175.27' — No. 3 — N 104.89° E

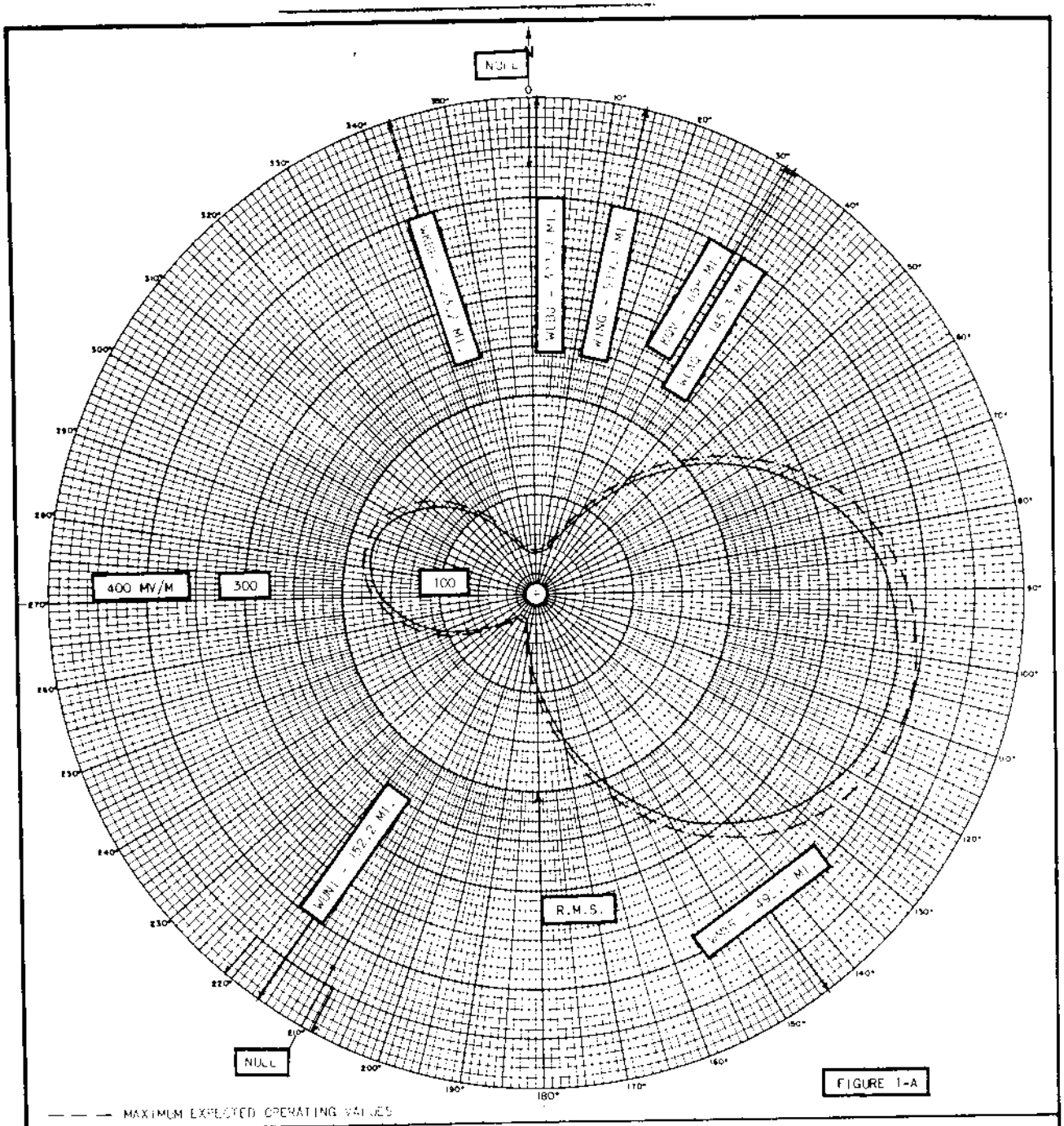
H = 174'
No. 1 = .3506 /+53.04
No. 2 = .5959 /-174.26
No. 3 = 1.0 /0

Engineer: Dwight M. Cleveland

FCC File No.BL-12424
Accepted 8-15-69

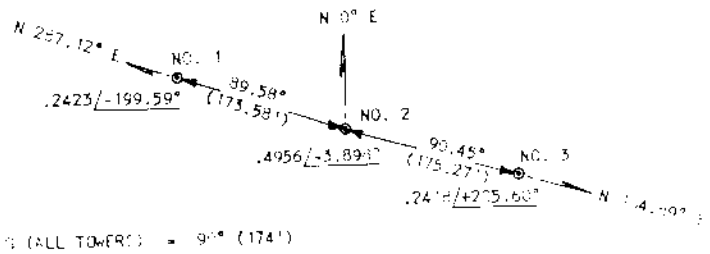
Station WPXC
Prattville, Alabama

1410 kc



HORIZONTAL RADIATION PATTERN

SPACING AND ORIENTATION



APPLICANT	RADIO PRATTVILLE, INC.
LOCATION	PRATTVILLE, ALABAMA
FREQUENCY	1410 KC/S
POWER	5 KW-LS, 1 KW-N (DA-2)
LATITUDE	32 DEG 28 MIN. 54.4 SEC
LONGITUDE	86 DEG 31 MIN 53.3 SEC
WHEN USED	NIGHTTIME
R.M.S FIELD	200.377 MV/M (CALCULATED)
DATE	DECEMBER 1966

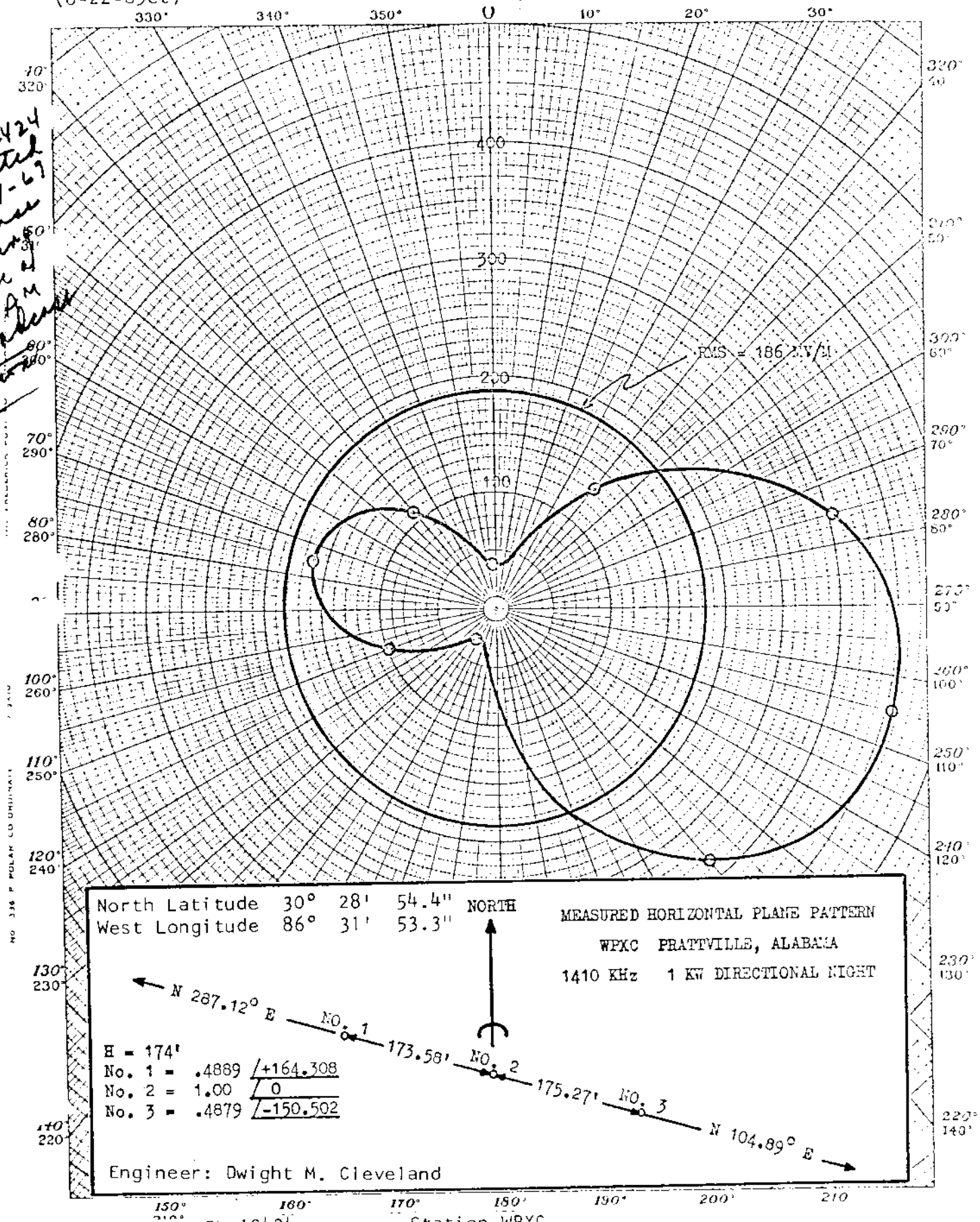
SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

WPXC

Measured Night
(8-22-69ct)

Station WPXC
Prattville, Alabama

1kw,5kw-LS,DA-2,U
1410 kc



FCC File No.BL-12424
Accepted 8-15-69

Station WPXC
Prattville, Alabama

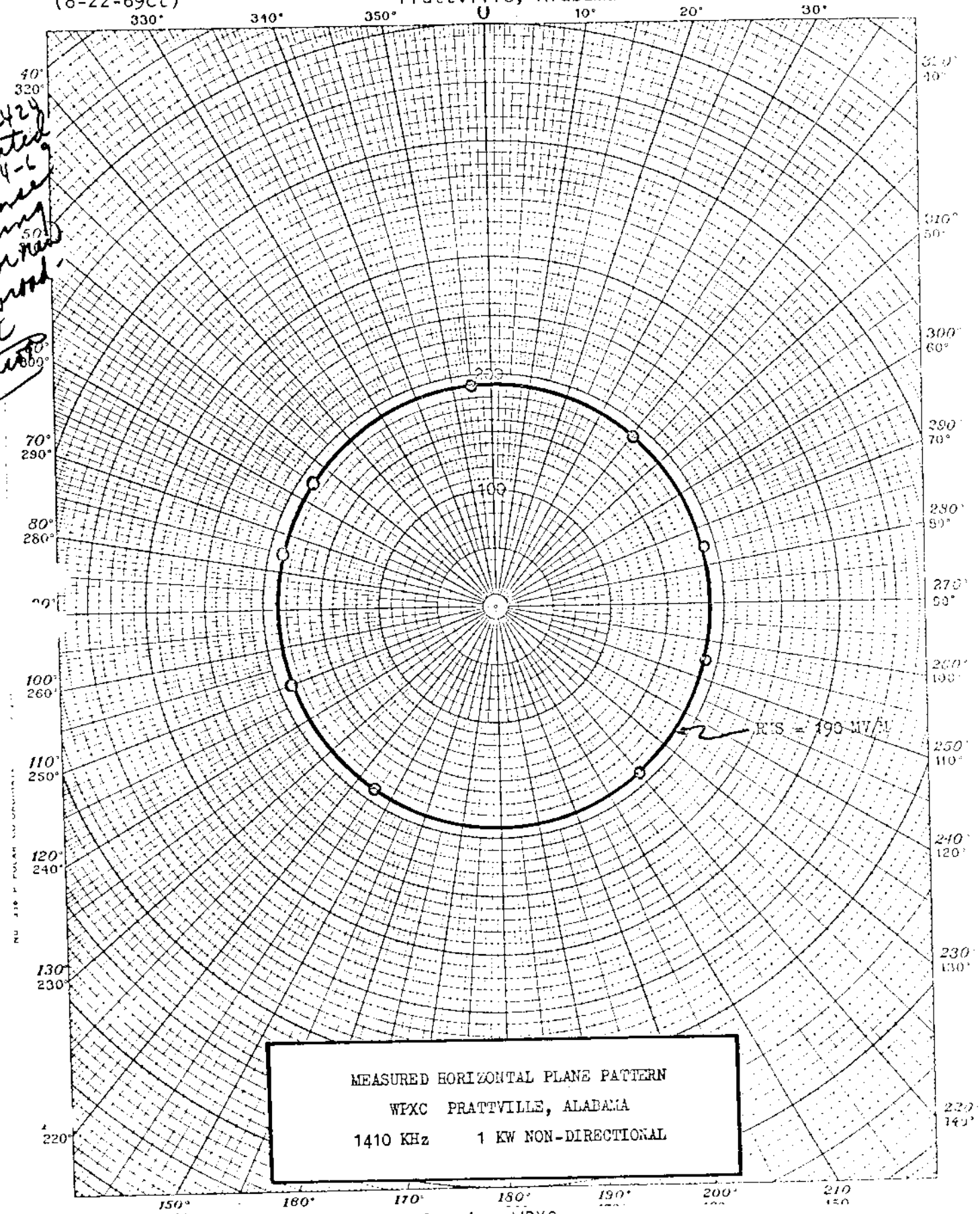
1410 kc

WPXC

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

Station WPXC
Prattville, Alabama

1kw,5kw-LS,DA-2,U
1410 kc



FCC File No.BL-12424
Accepted 8-15-69

Station WPXC
Prattville, Alabana

1410 kc

WRMN

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : WRMN Main Studio: Elgin, Illinois

Frequency : 1410 KHz Power : .5 kW Night 1 kW Day

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

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

DAYTIME				NIGHTTIME			
North Latitude:	42°	02'	43"	North Latitude:	42°	00'	21"
West Longitude:	88°	15'	35"	West Longitude:	88°	17'	55"

NIGHTTIME ANTENNA CHARACTERISTICS

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

TOWER :	S(#1)	SC(#2)	NC(#3)	N(#4)		
HEIGHT ABOVE INSULATORS :	140'	140'	140'	140'(72°)		
NIGHT PHASING :	-101°	85.62°	-85.62°	101°		
NIGHT FIELD RATIO:	1.0	2.498	2.498	1.0		

SPACING AND ORIENTATION: The towers in a row are spaced 174.52' (90°) on a line bearing 35° true.

GROUND SYSTEM: 120 - 150' 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.

WRMN

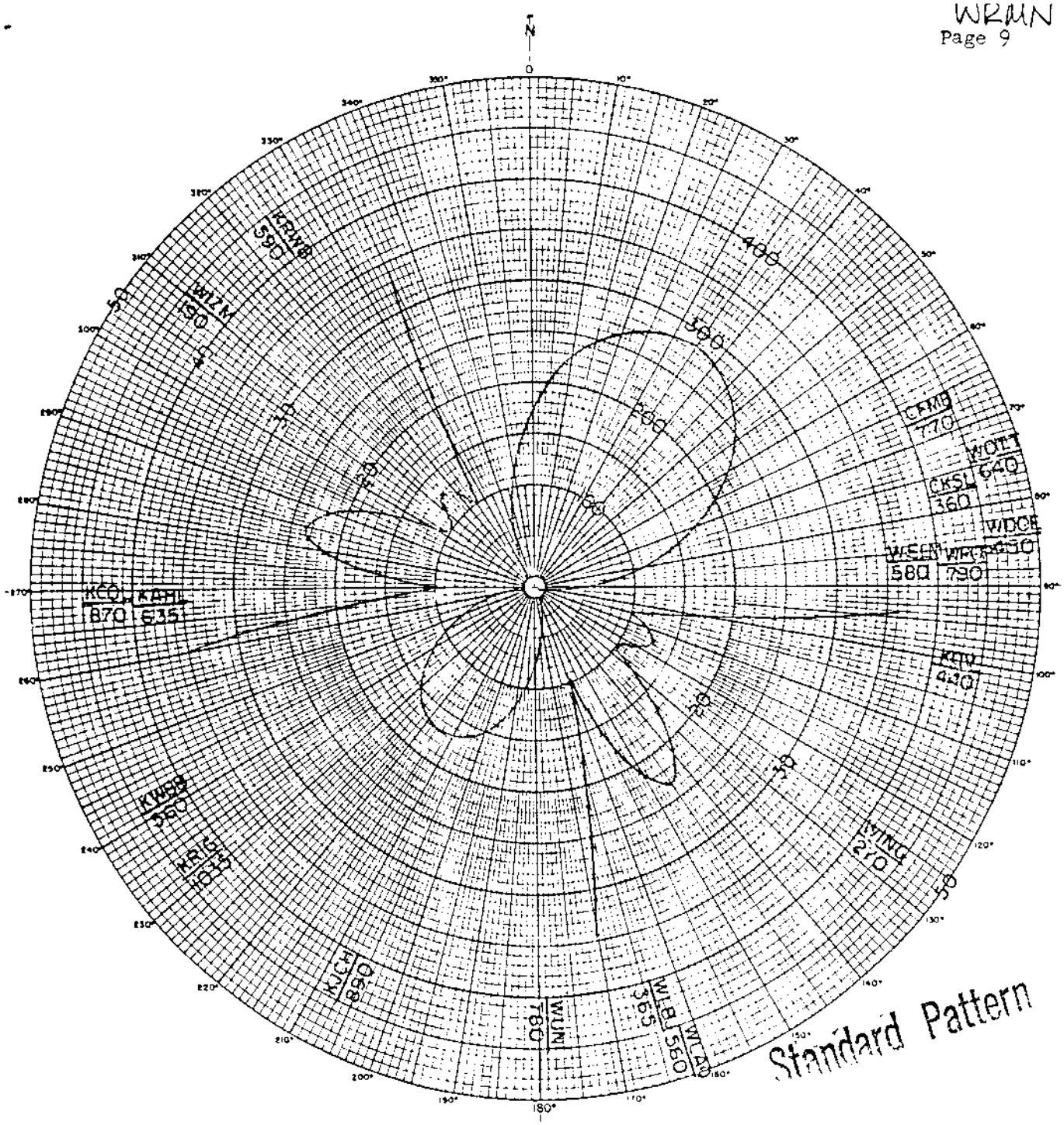
DAYTIME ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (ND-D)
Number of elements: 1
Type of elements : Vertical steel tower, folded unipole.

HEIGHT ABOVE INSULATORS : 253'

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

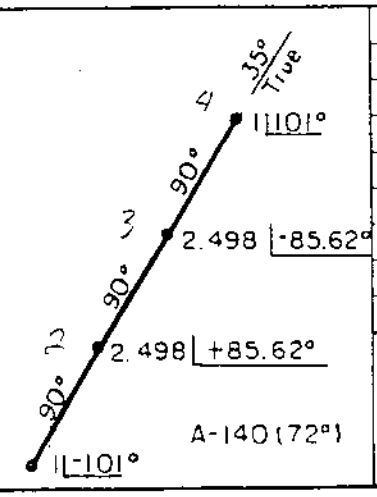
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	189 mV/m	mV/m	mV/m
Night	130 mV/m	399 mV/m	137 mV/m



HORIZONTAL RADIATION PATTERN — 0° Standard Pattern

Theoretical Pattern RMS - 130 MV/M
Standard Pattern RMS - 137 MV/M
RSS - 385 MV/M

this plot isn't accurate



APPLICANT	WRMN
LOCATION	Elgin, Illinois
FREQUENCY	1410 KC/S
POWER	500 Watts
LATITUDE	42 DEG 00 MIN. 21 SEC.
LONGITUDE	88 DEG 17 MIN. 55 SEC.
WHEN USED	Nighttime
R.M.S. FIELD	136.9 MV/M
DATE	June 1st, 1976

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

WSRC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : WSRC

Main Studio: Durham, North Carolina

Frequency : 1410 kHz

Power: 5 kW Day

Notification List No. 1776

Date : June 28, 1978

Class: III

GEORGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 36 ° 01 ' 46 "
West Longitude: 78 ° 51 ' 03 "

ANTENNA CHARACTERISTICS

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

TOWER :	S(#1)	NE(#2)	NW(#3)
HEIGHT ABOVE INSULATORS :	174'	174'	174' (89.8°)
PHASING:	0	+45.55	+82.25
FIELD RATIO:	1.000	0.703	0.820

SPACING AND ORIENTATION: With the S(#1) tower as reference the NE)#2) tower is spaced 410.08' (211.63°) on a line bearing 37.93° true and the NW(#3) tower is spaced 225.43' (116.34°) on a line bearing 312.97° true.

GROUND SYSTEM: 120-170'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:

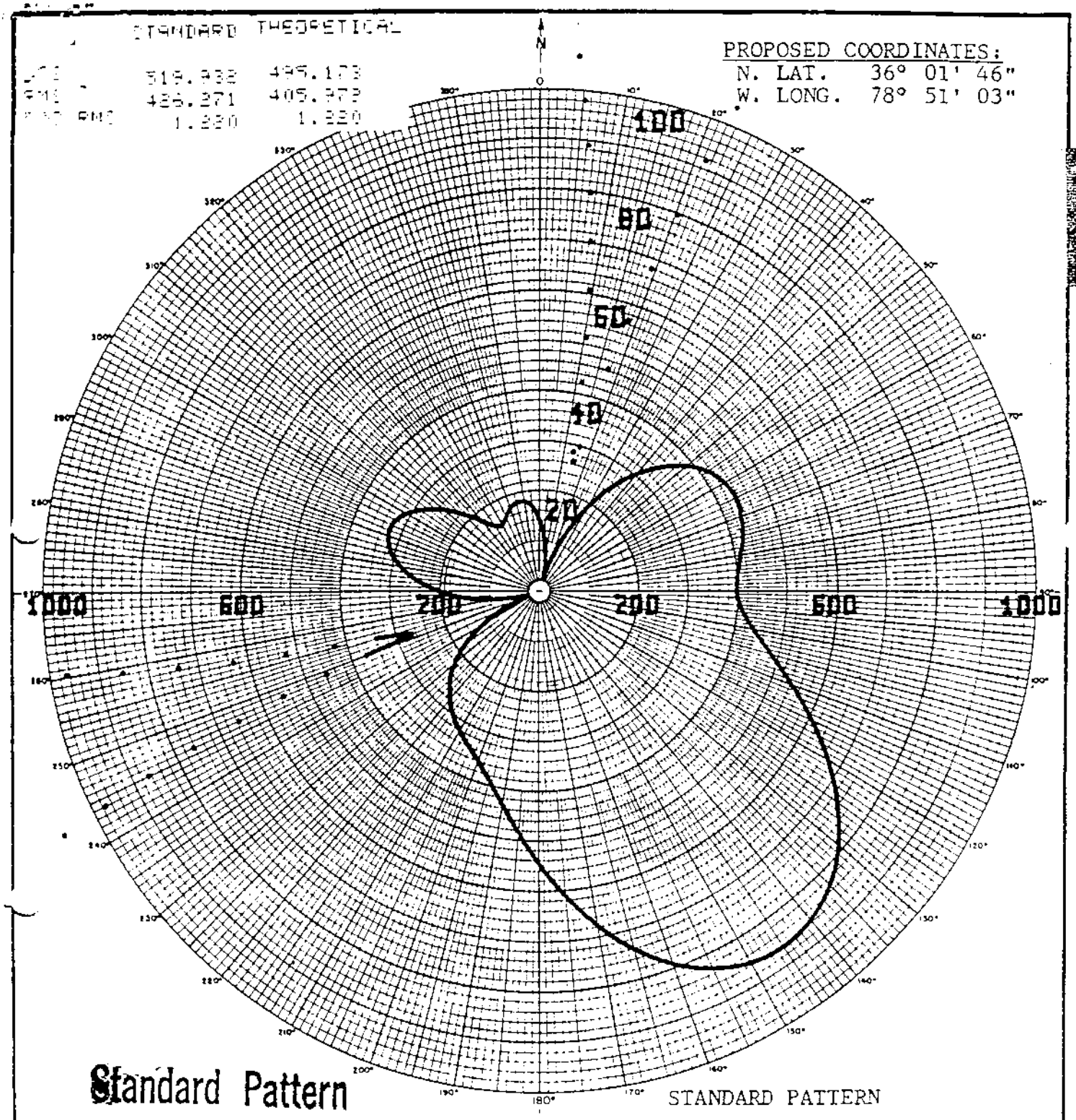
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
DAY	405.97 mV/m	495.17 mV/m	426.27 mV/m

WSRC

NOTE:

This notification concerns an increase in the Daytime power of the station, a change in site and the use of a directional antenna system.

WSRC



TOWER NUMBER	ORIENTATION DEGREES	SPACING DEGREES	SPACING FEET	FIELD RATIO	PHASING DEGREES	HEIGHT DEGREES
1	0.000	0.000	0.000	1.000	0.000	90.000
2	37.933	211.632	410.077	0.703	45.550	90.000
3	319.973	116.338	335.427	0.820	88.250	90.000

JOHN H. MULLANEY

CONSULTING
RADIO ENGINEER

RADIO STATION WSRC
DURHAM, NORTH CAROLINA
1410 KHz. 5 KW DA-D

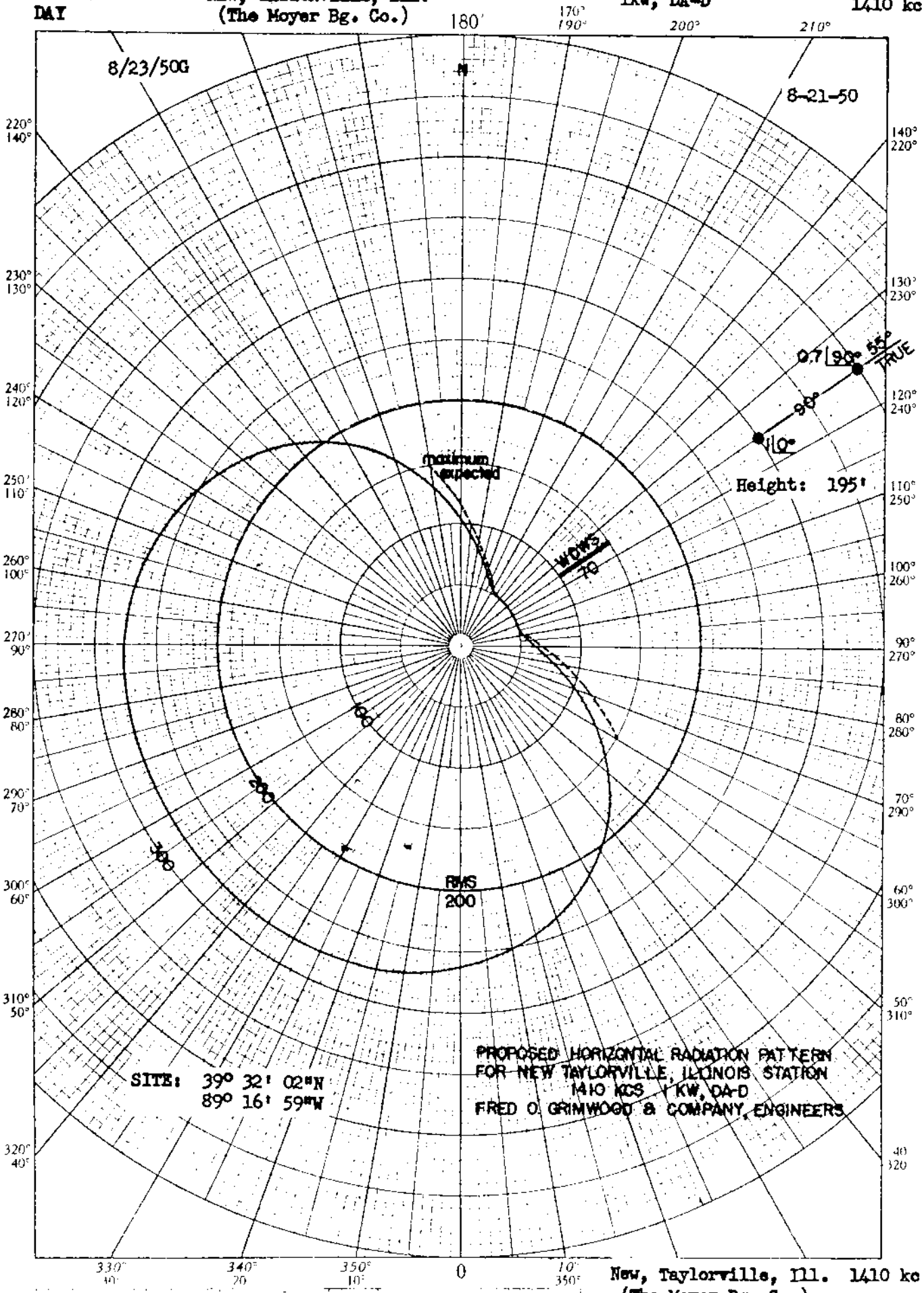
FIGURE 3

W7IM
TAYLORVILLE, ILL.
1410 kc

PROPOSED
DAY

NEW, TAYLORVILLE, ILL.
(The Moyer Bg. Co.)

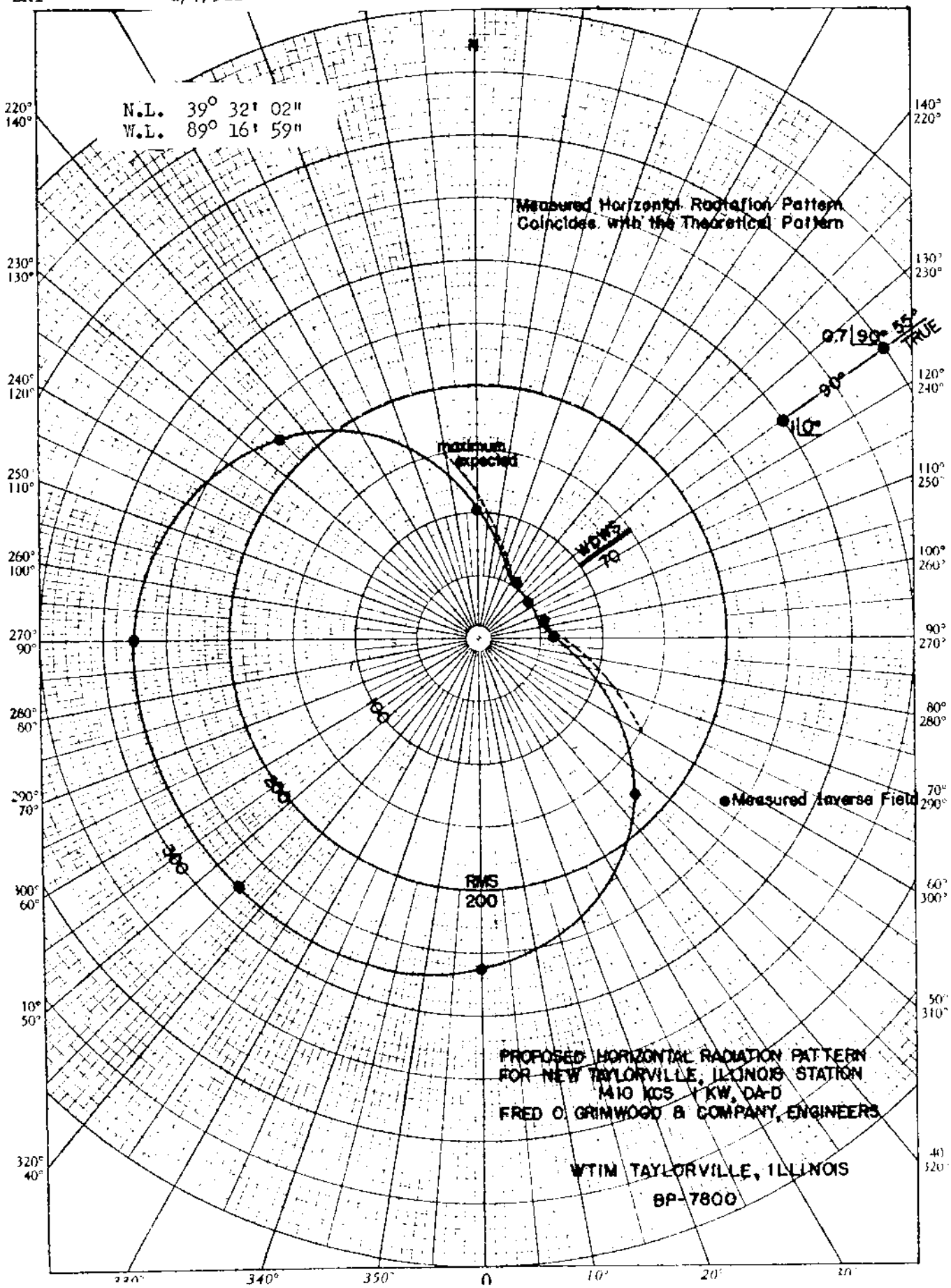
1kw, DA-D



New, Taylorville, Ill. 1410 kc
(The Moyer Bg. Co.)

WTIM

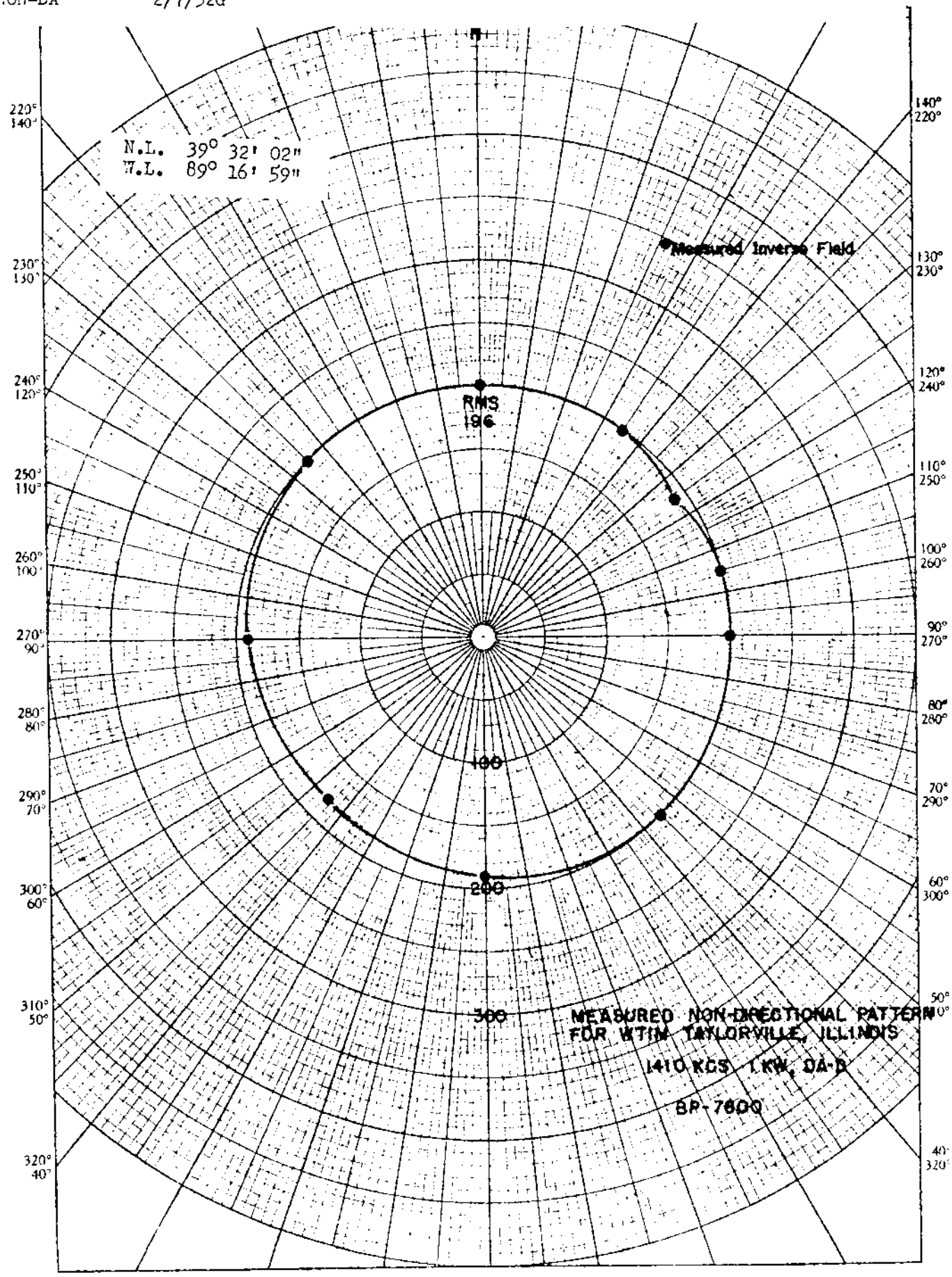
MEASURED WTIM, TAYLORVILLE, ILL. 1 KW, DAY, DA-D 1410 KC
DAY 2/7/52G



RECD FCC 1/14/52 ACC 1/29/52 BL-4655 WTIM, TAYLORVILLE, ILL. 1410 KC

WTIM

MEASURED WTIM, TAYLORVILLE, ILL. 1 KW, DAY, DA-D 1410 KC
NON-DA 2/7/52G



RECD FCC 1/14/52 ACC 1/29/52 BL-4655 WTIM, TAYLORVILLE, ILL. 1410 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WTIM

Main Studio: Taylorville, Illinois

Frequency: 1410 kHz

Power: 1 kw

Notification List No. 1755

Date: November 2, 1977

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 39° 32' 38"
West Longitude: 89° 16' 36"

ANTENNA CHARACTERISTICS

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

TOWER:	SW(#2)	NE(#1)	
HEIGHT ABOVE INSULATORS:	174' (90°)	325'	(167.7°)
PHASING:	0°	+90°	
FIELD RATIO:	1	0.7	

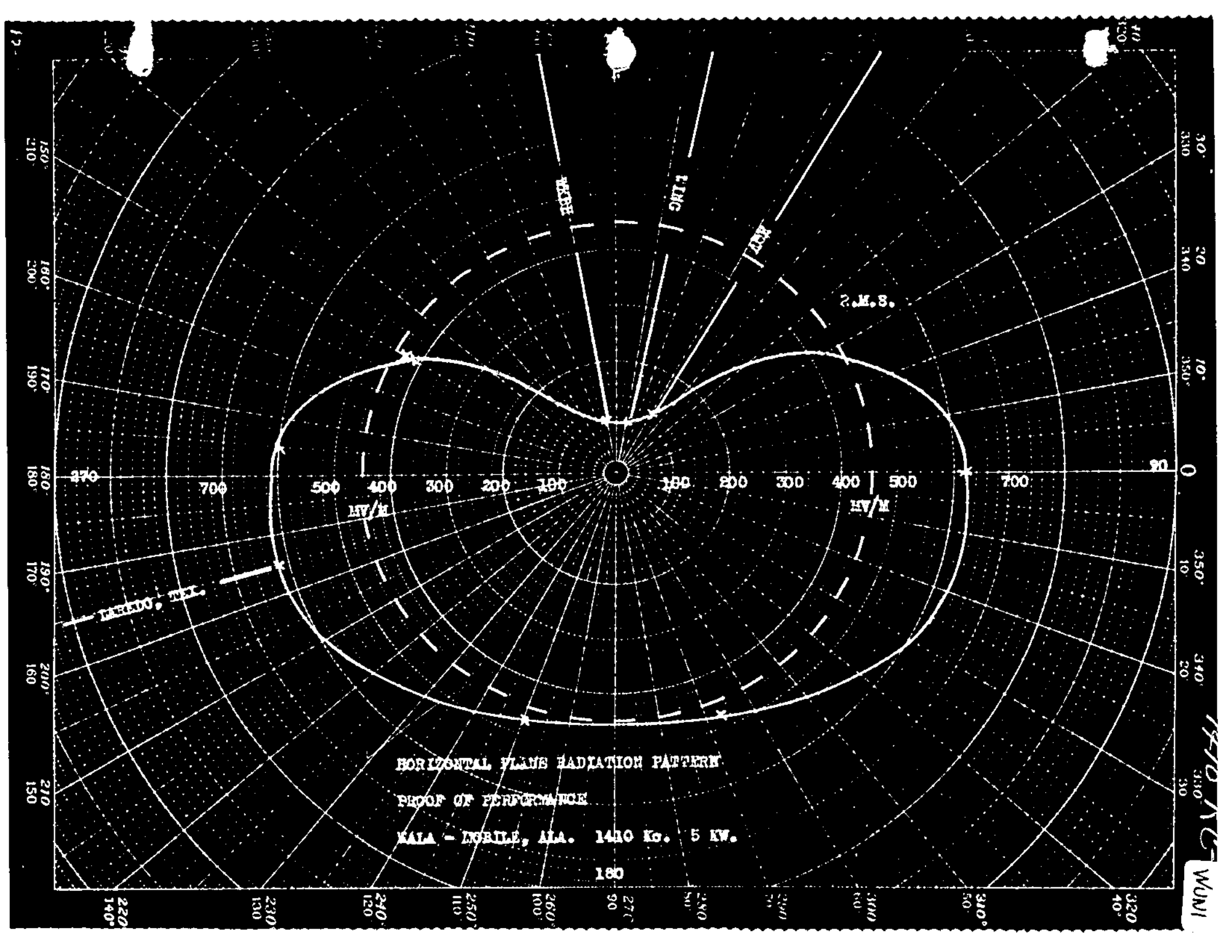
SPACING AND ORIENTATION: Towers are spaced 174.4' (90°) on a line bearing 235° true.

GROUND SYSTEM: 120-174' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of systems are bonded together.

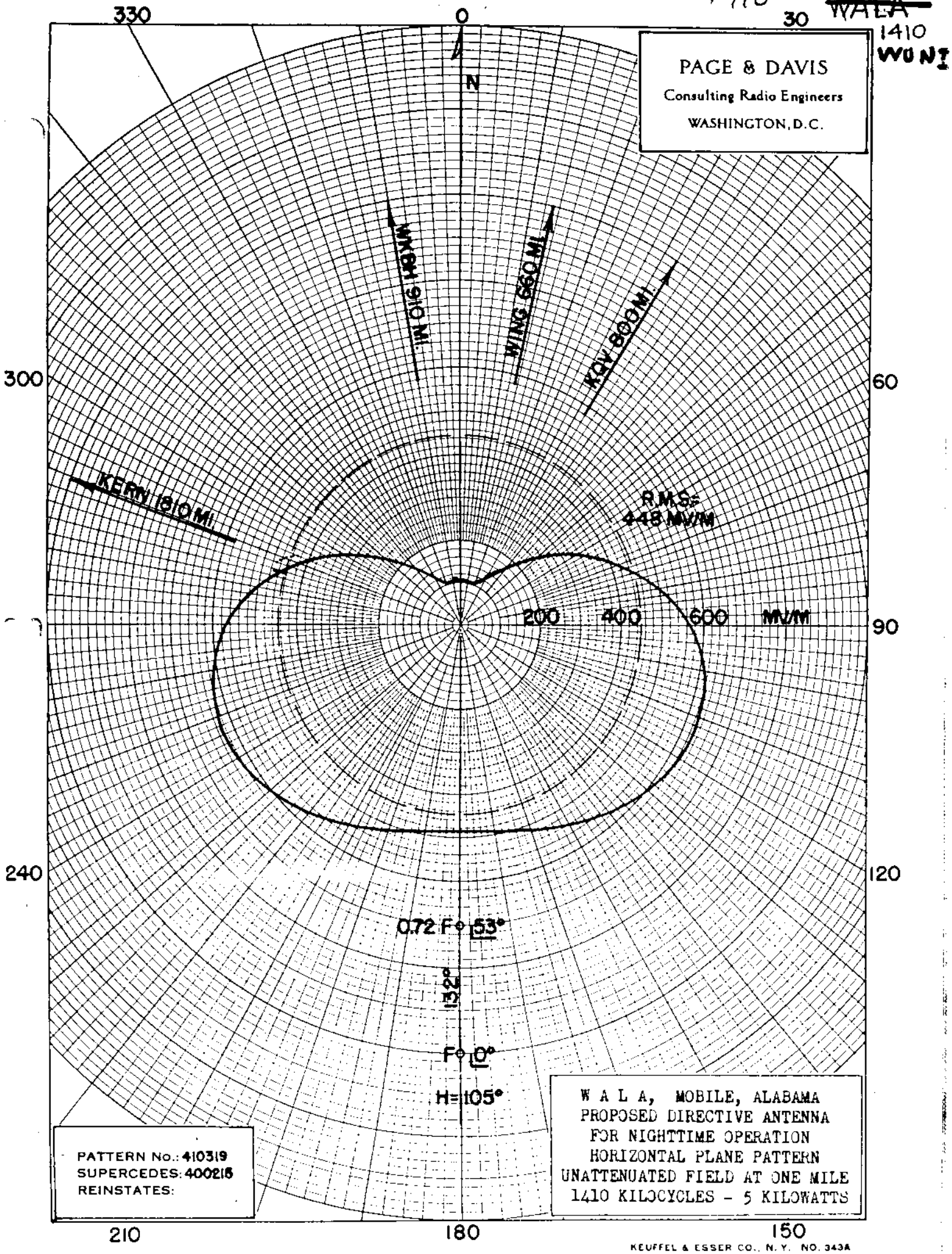
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS
Day	201.6 mv/m

Note: Please retain the Daytime directional antenna radiation pattern notified for a new station at Taylorville, Illinois in United States Change List Number 415 dated August 1, 1951 and attach to this Revised Description Sheet. This notification concerns changes in transmitter location, height of towers and ground system.


HORIZONTAL PLANE RADIATION PATTERN
PROOF OF PERFORMANCE
WALA - MOBILE, ALA. 1410 Kc. 5 KW.
LAREDO, TEX.
2.M.S.
MV/M
MV/M
700
500
400
300
200
100
100
200
300
400
500
700
270
90
0
180
WUNI

1410 ~~WALA~~ 1410 WUNI



NEW
1420

IFRB Serial No.

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

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

PART I GENERAL INFORMATION

(01) Administration: CANADA Sheet No.: 423 Date: 830907

Assigned frequency (kHz)		(02)	1420
Transmitting station	Name of the station	(03)	CALGARY AB
	Call sign	(04)	
	Additional identification	(05)	
	Station class	(06)	B
	Operational Status	(07)	P
Country		(08)	CAN
Geographical coordinates of the transmitting station		(09)	113W50'19" 50N58'11"

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

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

(13) Date of bringing into service or cessation of operation [ ] [ ] [ ] Year Month Day

STATION PARAMETERS	DAYTIME OPERATION		NIGHT-TIME OPERATION	
Station power (kW)	(21)	10.	(31)	10.
r.m.s. value of radiation for station power (mV/m at 1 km)	(25)	917.33	(35)	917.33
Antenna type	(26)	B	(36)	B
Simple vertical antenna electrical height (degrees)	(27)	.	(37)	.

(44) Remarks

COORDINATION UNDER ARTICLE 4:								
COUNTRY	USA							
IN PROGRESS	X							
ACCEPTANCE OBTAINED								

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

IFRB Serial No.

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No.: 423

Date: 830907

(01) Name of transmitting station: CALGARY AB

(02) Country: CAN

(03) Hours of operation: D

(04) Total number of towers: 3

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1	0	0	0		90	
2	2	-110	120	320		90	
3	1	80	240	320		90	

(14) r.m.s value of radiation: 917.33 mV/m at 1 km

(15) Type of pattern: E

(16) Special quadrature factor: mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

UEAU 1420

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

IFRB Serial No.

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 423

Date 330907

(01) CALGARY AB — Name of transmitting station

(02) CAN — Country

(03) N — Hours of operation

(04) 3 — Total number of towers

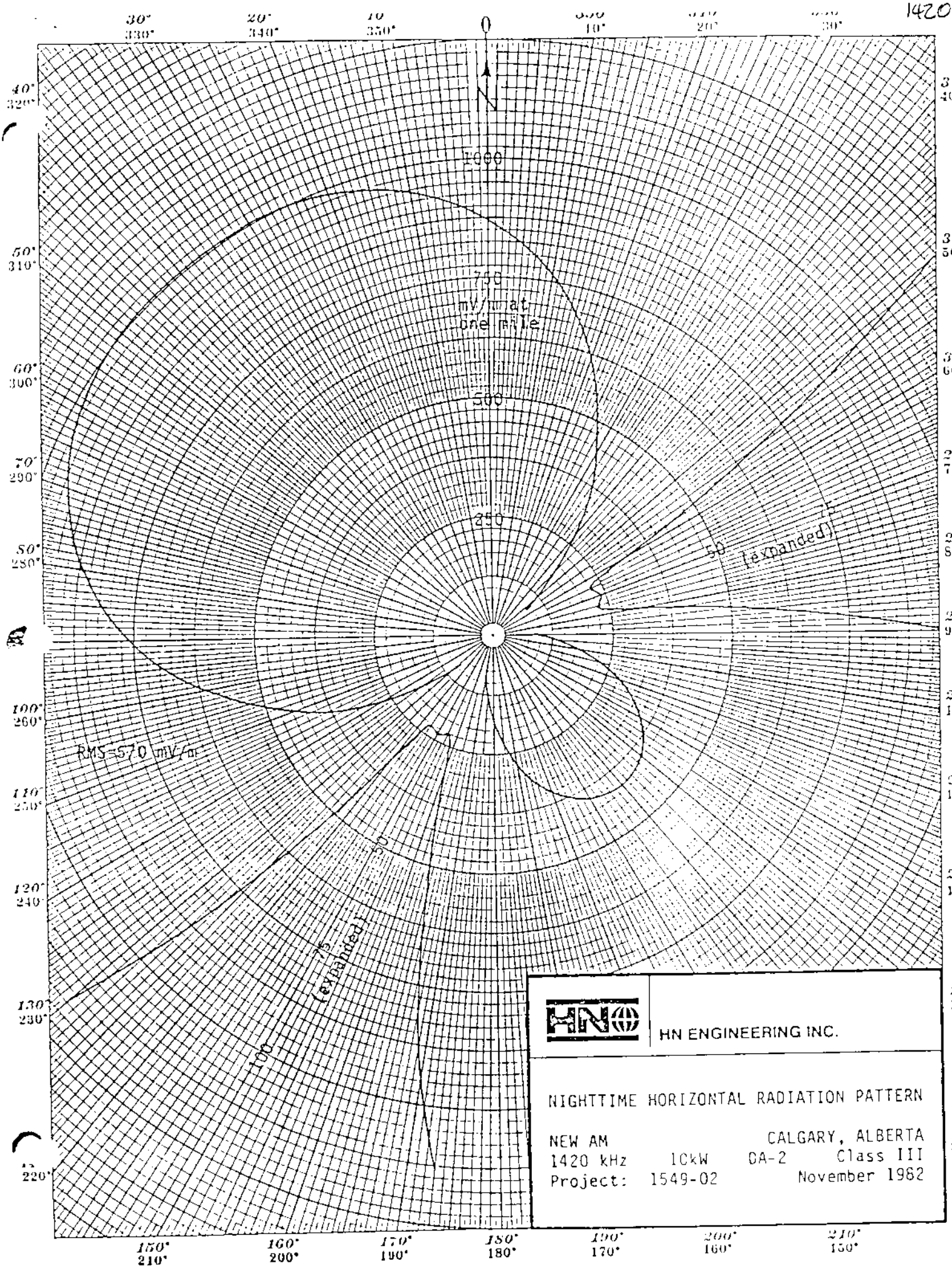
(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.0	0.0	0.0	0.0	—	90.0	—
2	1.97	-141.5	120.0	320.0		90.0	
3	1.0	82.0	240.0	320.0	—	90.0	

(14) r.m.s value of radiation	(15) Type of pattern	(16) Special quadrature factor
917.33 mV/m at 1 km	E	mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

NEW
1420

NEW
1420


0
N
1000
750
mV/m at
one mile
500
250
50 (expanded)
RMS=570 mV/m
50
75 (expanded)
100
HN ENGINEERING INC.
NIGHTTIME HORIZONTAL RADIATION PATTERN
NEW AM
CALGARY, ALBERTA
1420 kHz
10kW
DA-2
Class III
Project: 1549-02
November 1982

ANTENNA DESCRIPTION SHEET

CALL LETTERS: (new station)

STATION: Plessisville, Quebec.

FREQUENCY: 1420 KHz.

POWER: 1 KW D/0.5 KW N.

CLASS: III (U)

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

COORDINATES: North Latitude: 46° 12' 47"
West Longitude: 71° 44' 28"

ANTENNA SYSTEM:

a) Mode of Operation: DA-N

b) Type: two elements, guyed, triangular cross-section, series fed.

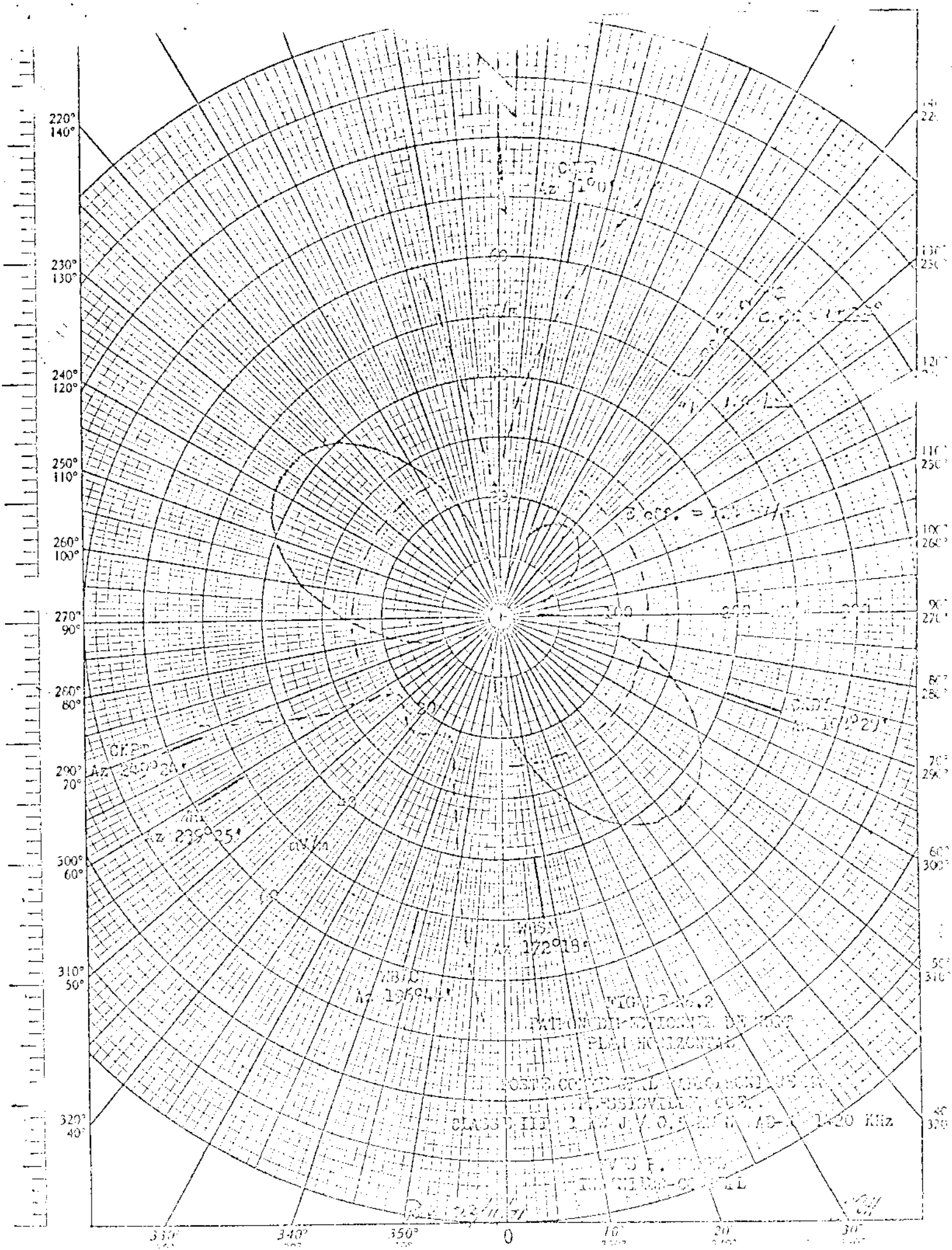
c) ground system: 120 No. 10 equally spaced radials of a length of 277' (0.4) with interconnected straps buried approximately 8 inches.

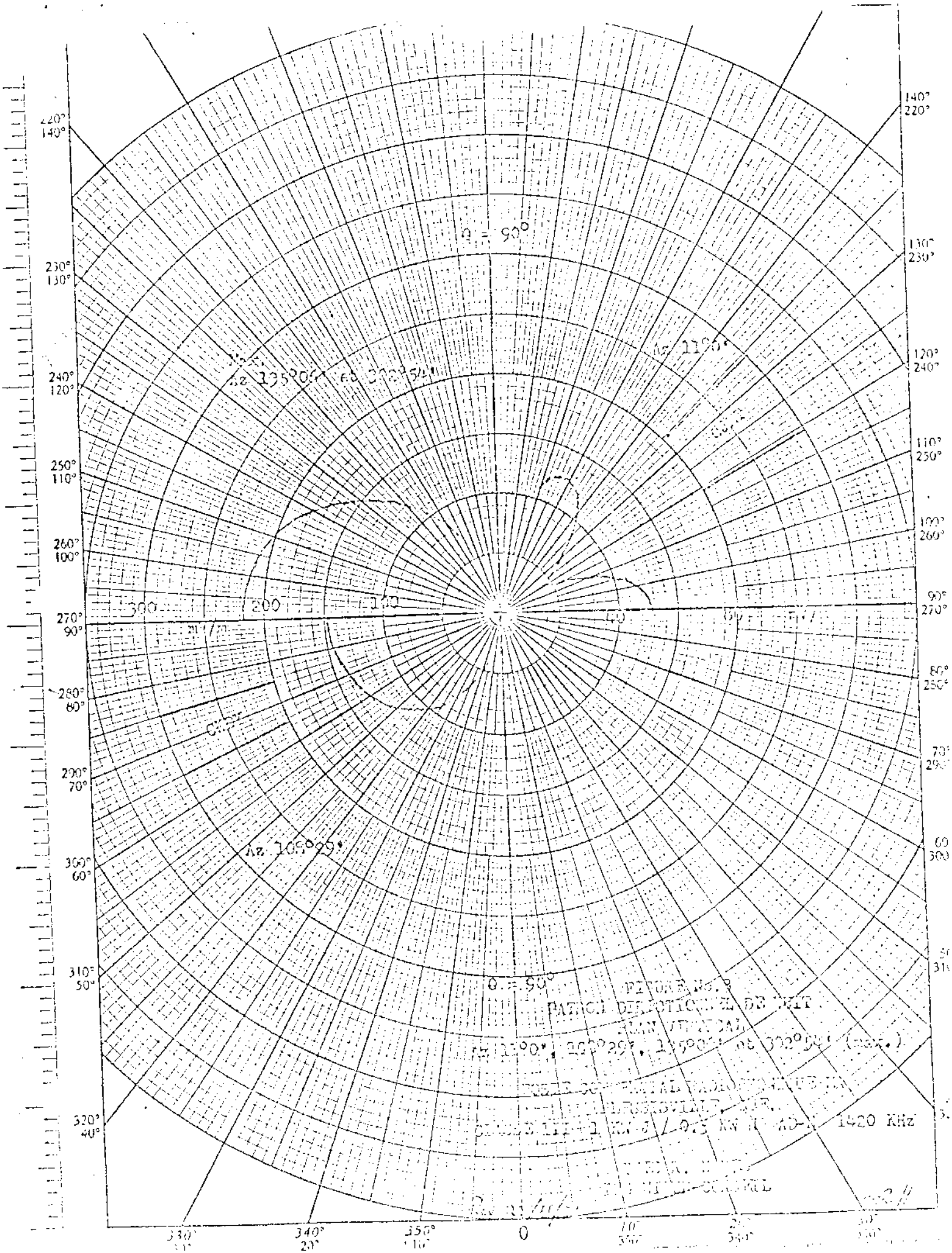
ANTENNA MASTS:

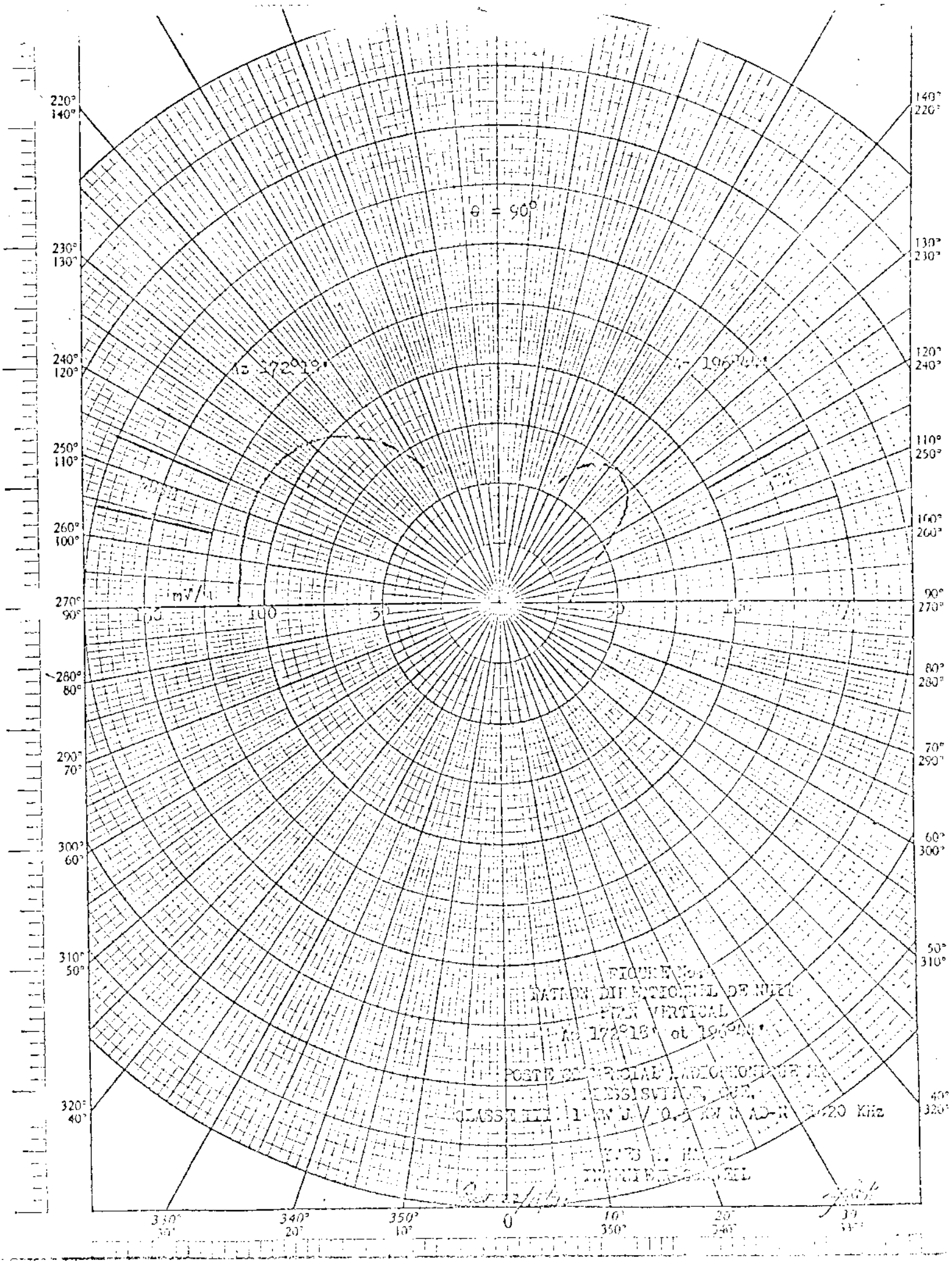
		No. 1 South West	No. 2 North East
Orientation (Az)		Ref.	39°
Height above insulator		93.7°	93.7° (180')
Spacing:		208° (400')	
Phase:	Night	0°	+22°
Night field ratio:		1.0	0.824

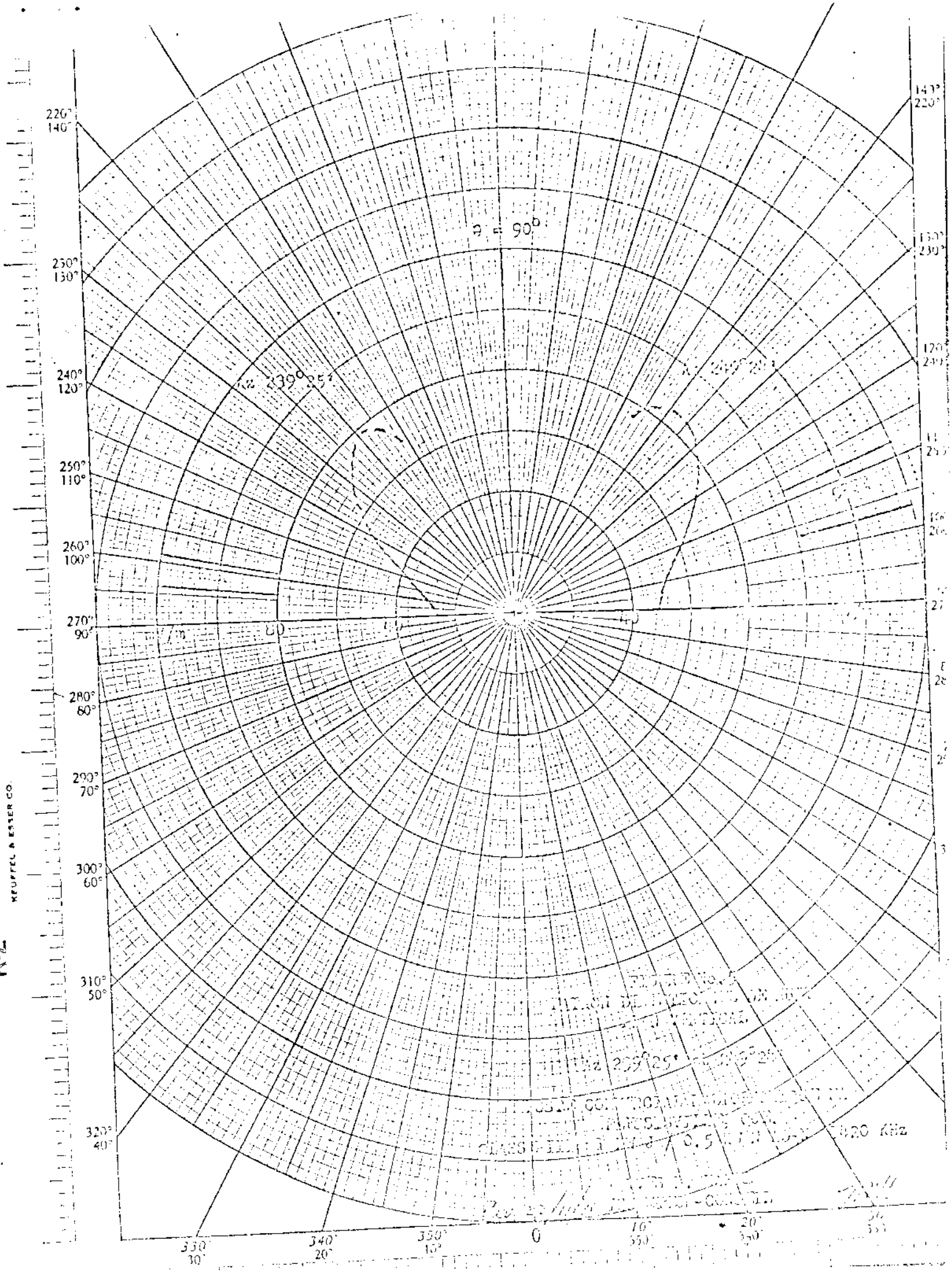
PREDICTED EFFECTIVE FIELD:

Day: 188 mV/m
Night: 124 mV/m


N
220°
140°
230°
130°
240°
120°
250°
110°
260°
100°
270°
90°
280°
80°
290°
70°
300°
60°
310°
50°
320°
40°
330°
340°
350°
0
10
20
30
Az 172°18'
Kliz


θ = 90°
Az 135°00'
Az 110°
Az 105°29'
300
200
100
40
0
140°
220°
130°
230°
120°
240°
110°
250°
100°
260°
90°
270°
80°
280°
70°
290°
60°
300°
50°
310°
40°
320°
330°
340°
350°
10°
20°
30°
1420 KHz


θ = 90°
As 172°19'
mV/m
100
50
FIGURE No.
STATION DIRECTIONNELLE DE NUIT
PIEU VERTICAL
As 172°19' et 196°41'
POSTE COMMERCIAL RADIODIFFUSION
CLASSE III. 1 kW D / 0.5 kW N AM-N 1220 KHz
220° 140°
230° 130°
240° 120°
250° 110°
260° 100°
270° 90°
280° 80°
290° 70°
300° 60°
310° 50°
320° 40°
140° 220°
130° 230°
120° 240°
110° 250°
100° 260°
90° 270°
80° 280°
70° 290°
60° 300°
50° 310°
40° 320°
350° 10°
340° 20°
350° 10°
0
10° 350°
20° 340°


θ = 90°
220°
140°
230°
130°
240°
120°
250°
110°
260°
100°
270°
90°
280°
80°
290°
70°
300°
60°
310°
50°
320°
40°
330°
30°
340°
20°
350°
10°
0
10°
350°
20°
340°
30°
KEUFFEL & ESSER CO.

CJMT

DESCRIPTION SHEET (10/11/57g)

Station CJMT Chicoutimi, Quebec, Canada

1kw, DA-1,U 1420 KC

DESCRIPTION OF ARRAY

STATION: C.J.M.T. MAIN STUDIO: Chicoutimi, Que.

POWER: 1 KW FREQUENCY: 1420 KC CLASS: III

NOTIFICATION LIST NO: 114 DATE: AUGUST 28, 1957

LOCATION:

NORTH LATITUDE: 48° 24' 17"

WEST LONGITUDE: 71° 05' 55"

ANTENNA:

MODE OF OPERATION: Directional full time. Same pattern day and night.

ELEMENTS: Two, guyed, uniform cross-section, series fed, no top loading.

TOWER:	#1 (N)	#2 (S)
HEIGHT ABOVE INSULATORS:	170' (88.3°)	170' (88.3°)
SPACING:	115.6' (60°)	
PHASING:	0	+132.5
FIELD RATIO:	1	1.5

GROUND SYSTEM: 120 equally spaced radials per mast extending to a maximum distance of 278' (0.4 w.l.), or to the limit of the property where applicable. In no case will the radials be less than 173.4' (0.25 w.l.). The radials will intersect and be bonded on a line equdistant between towers. Radials are No. 10 B & S bare copper wire buried 6 to 8 inches. The existing system will be extended as per Section 7.

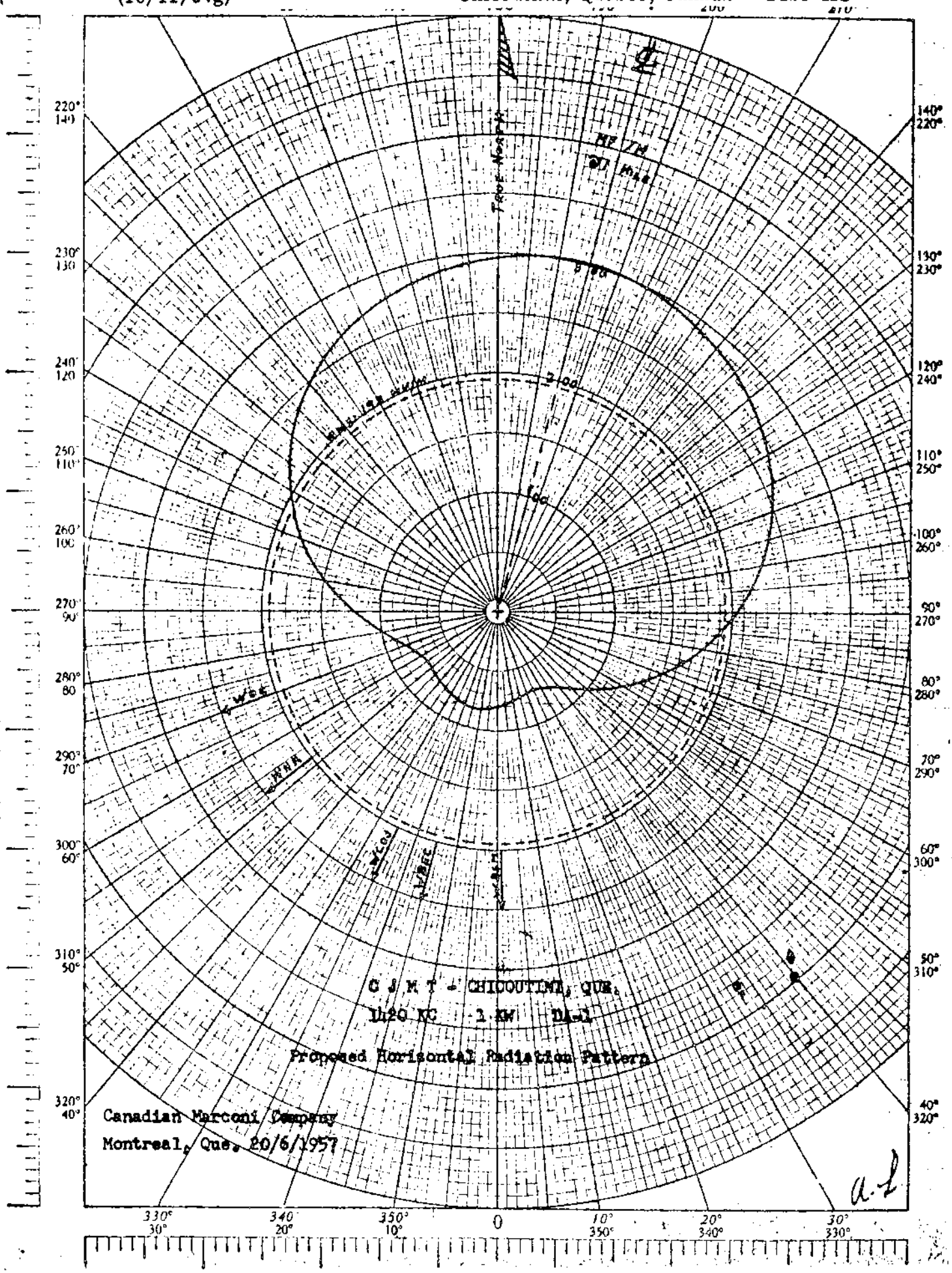
PREDICTED EFFECTIVE FIELD: 195 mv/m at 1 mile for 1 KW.

ORIENTATION: Line of towers 15° East of True North.

PROPOSED DAY & NIGHT
(10/11/57g)

Station CJMT 1kw, DA-1,U
Chicoutimi, Quebec, Canada 1420 KC

CJMI



CJVR

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-N

STATION CALL:	CJVR
MAIN STUDIO:	Melfort, Saskatchewan
FREQUENCY:	1420 kc/s
POWER:	10 kw
CLASS:	III
TIME:	Unlimited
NOTIFICATION REFERENCE: #203	Dated: August 13, 1965.
GEOGRAPHICAL LOCATION:	Lat 52°47'57", Lon 104°35'25"
ARRAY CHARACTERISTICS:	Two elements, guyed, uniform cross section, base insulated, series feed. Height 346.6 feet or 180 degrees. No top loading

ELEMENT	SOUTH	NORTH
bearing	ref	08°
spacing	ref	120° (231.1')
ratio	1.00	0.86
phase	00°	-104°

Ground system	120 radials per tower, #10 AWG bare soft copper wire, spaced uniformly, depth approximately 8 inches. Radials bonded along line between towers and bonded to soft copper strap at tower base. Maximum radial length 277 feet.
Predicted R M S	235 mv/m at 1 mile for 1 kw 743 mv/m at 1 mile for 10 kw

Revised: November, 1965
Mar 1965

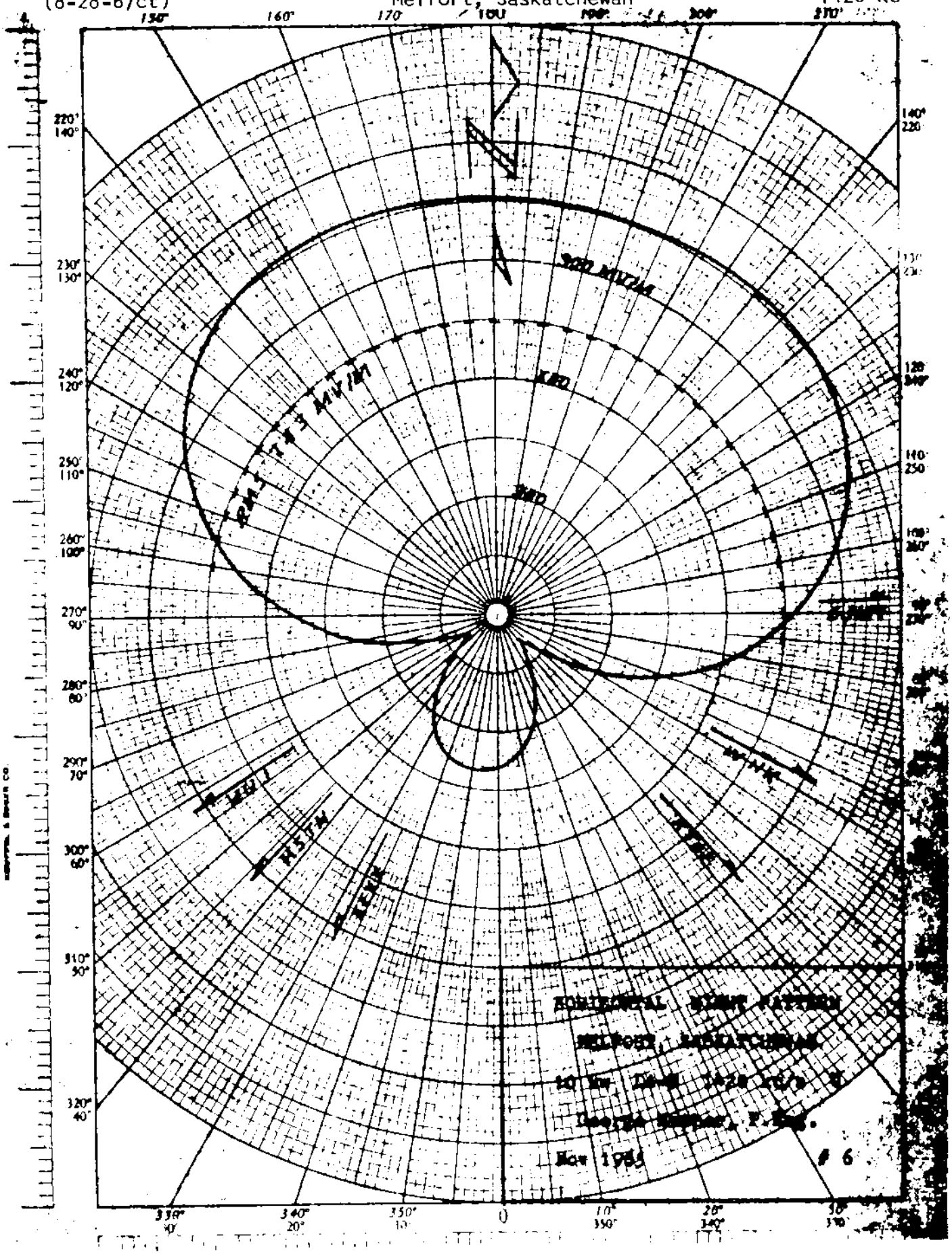
#5

CJVR

Proposed Night
(8-28-67ct)

Station CJVR
Melfort, Saskatchewan

10kw,DA-N,U,Class III
1420 kc



CKPT

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-2

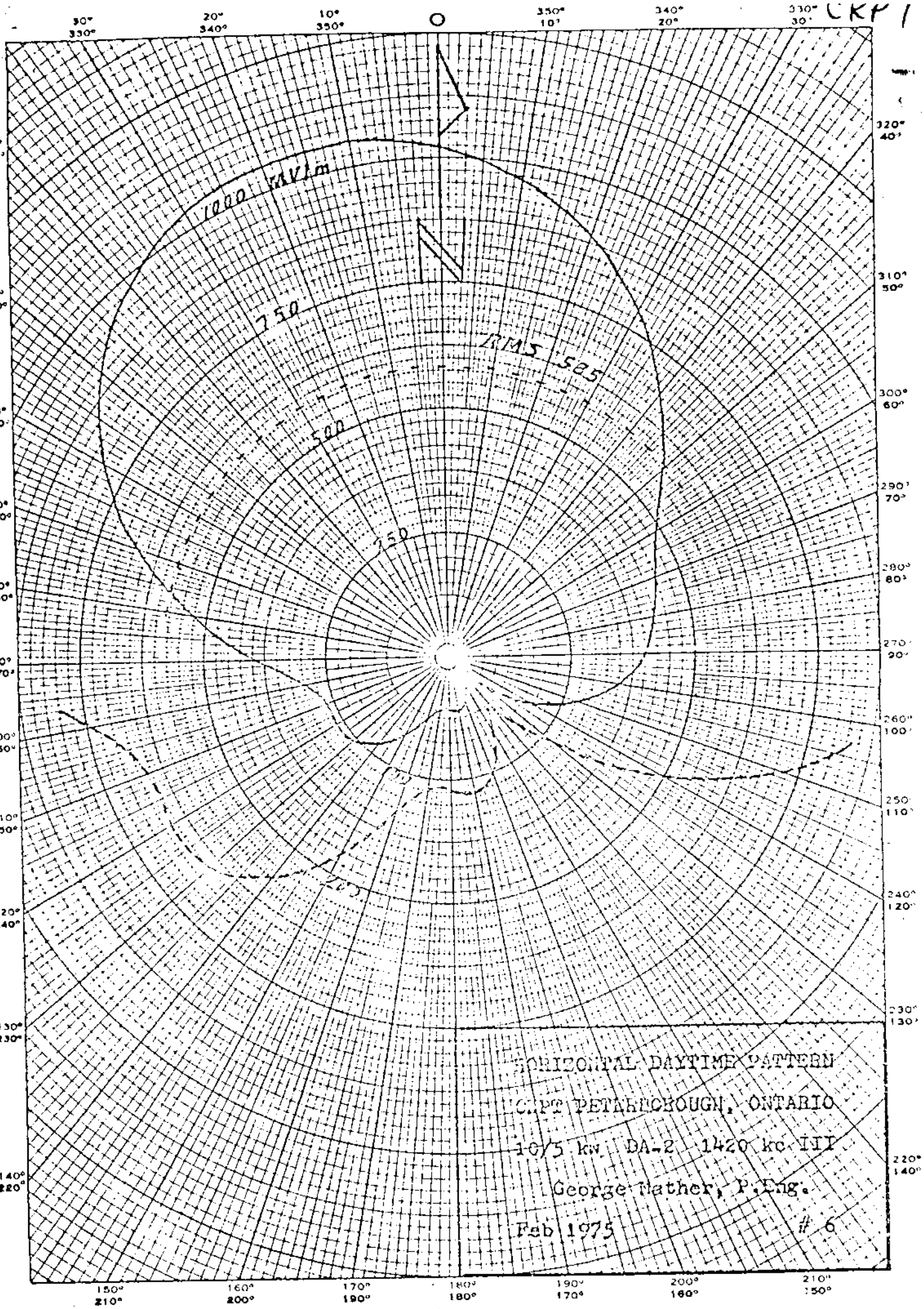
STATION CALL:	C K P T
LOCATION:	Peterborough, Ontario.
FREQUENCY:	1420 kc/s
POWER:	Day 10 kw, 5 kw Night
CLASS:	III
TIME:	Unlimited
NOTIFICATION REFERENCE	List No. 342, Dated: July 8, 1975
GEOGRAPHICAL COORDINATES:	Lat 44°16'13", Lon 78°17'23"
ARRAY CHARACTERISTICS:	Four elements, guyed, uniform cross section, base insulated, series feed. Height 173 feet or 90 degrees. No top loading.

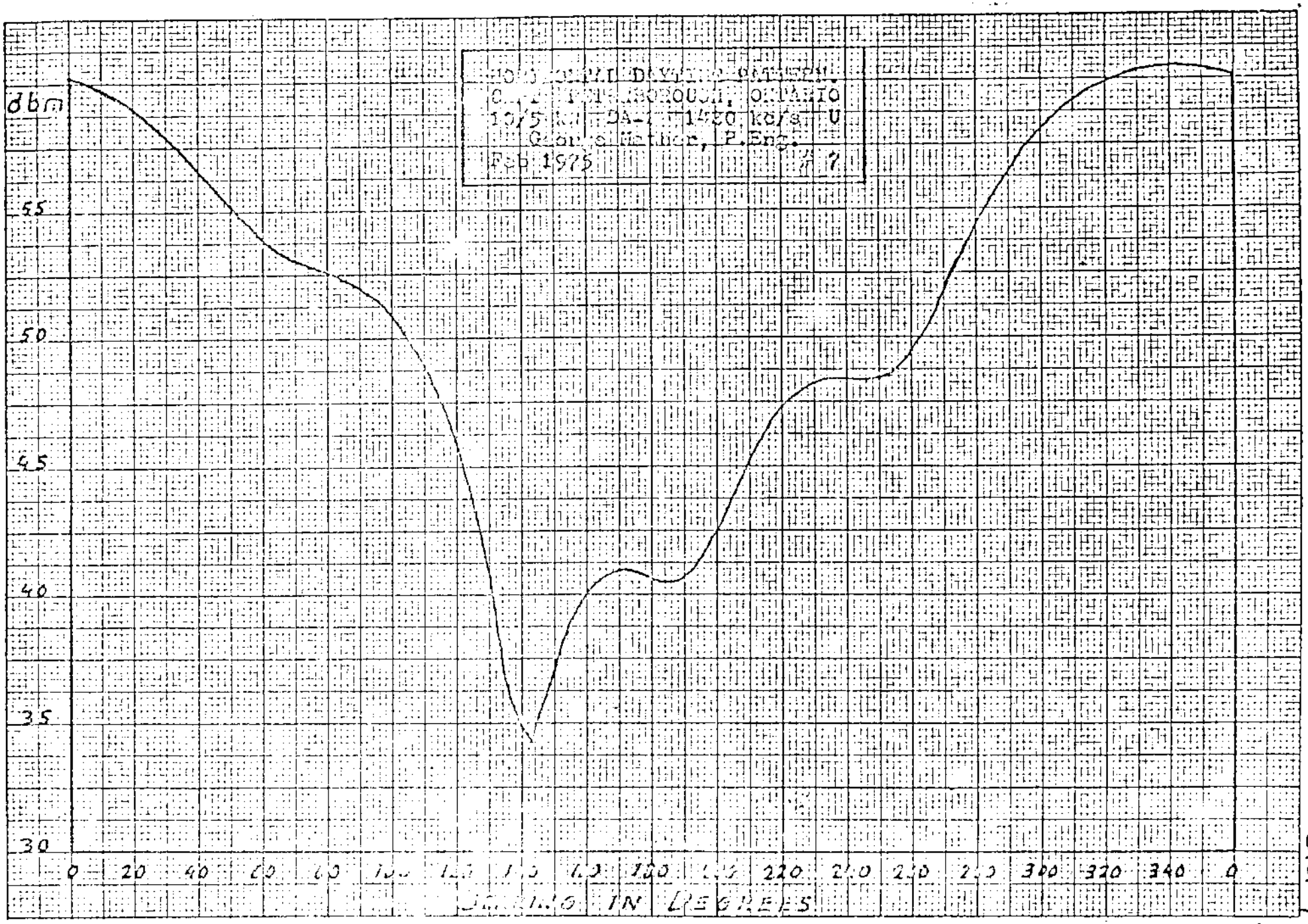
ELEMENT		ONE	TWO	THREE	FOUR
Bearing		ref	349°	343°	343°
Spacing		ref	174.26' 90.5°	346.6' 180°	519.9' 270°
Day	R	1.400	1.380	0.600	
	ø	00°	-126.5°	+74°	
Night	R	1.000	2.060	1.740	0.650
	ø	00°	-137°	+64°	-85°

Day RMS	585 mv/m at 1 mile for 10 kw 185 mv/m at 1 mile for 1 kw
Night RMS	411 mv/m at 1 mile for 5 kw 184 mv/m at 1 mile for 1 kw
Ground System	120 radials per tower, #10 AWG, bare, soft copper wire, spaced uniformly, depth 8 inches approximately. Radials bonded along lines between towers and bonded to soft copper straps at tower bases. Maximum radial length 277 feet

Feb 1975.

5


1000 mV/m
750
500
250
RMS 565
HORIZONTAL DAYTIME PATTERN
CAPE PETAREBOROUGH, ONTARIO
10/5 kw DA-2 1420 kc III
George Mather, P.Eng.
Feb 1975
6
POLAR CO-ORDINATE



#7

CKR1

206

CKPT

Description Sheet
(2-28-66ct)

Station CKPT
Peterborough, Ontario

5kw,DA-2,U,Class III
1420 kc

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-2

STATION CALL	C K P T
MAIN STUDIO	Peterborough, Ontario
FREQUENCY	1420 kc/s
POWER	5000 watts
CLASS	III
TIME	Unlimited
NOTIFICATION REFERENCE	206. December 14, 1965.
GEOGRAPHICAL LOCATION	Lat 44°16'13", Lon 78°17'23"
ARRAY CHARACTERISTICS	Four elements, guyed, uniform cross section, base insulated series feed. Height 173 feet or 90 degrees. No top loading.

ELEMENT	ONE	TWO	THREE	FOUR
Bearing	ref	349°	343°	343°
Spacing	ref	90.5° 174.26'	180° 346.6'	270° 519.9'
Day ratio	470	900	530	280
Day phase	00°	-111°	+122°	+03°
Night ratio	1000	2060	1740	650
Night phase	00°	-137°	+64°	-85°

Day R M S: 414 mv/m at 1 mile for 5 kw
185 mv/m at 1 mile for 1 kw

Night RMS: 411 mv/m at 1 mile for 5 kw
184 mv/m at 1 mile for 1 kw

Ground System: 120 radials per tower, #10 AWG bare, soft copper wire, spaced uniformly, depth 8 in approximately. Radials bonded on a line between towers and bonded to soft copper strap at tower base. Maximum length 277 ft

NOTE: Please retain daytime radiation pattern notified for CKPT Peterborough in Canadian Change List No. 206 dated December 14, 1965 and attach to this description sheetand nighttime patterns. Dec. 23, 1965.

Spt 1965

5

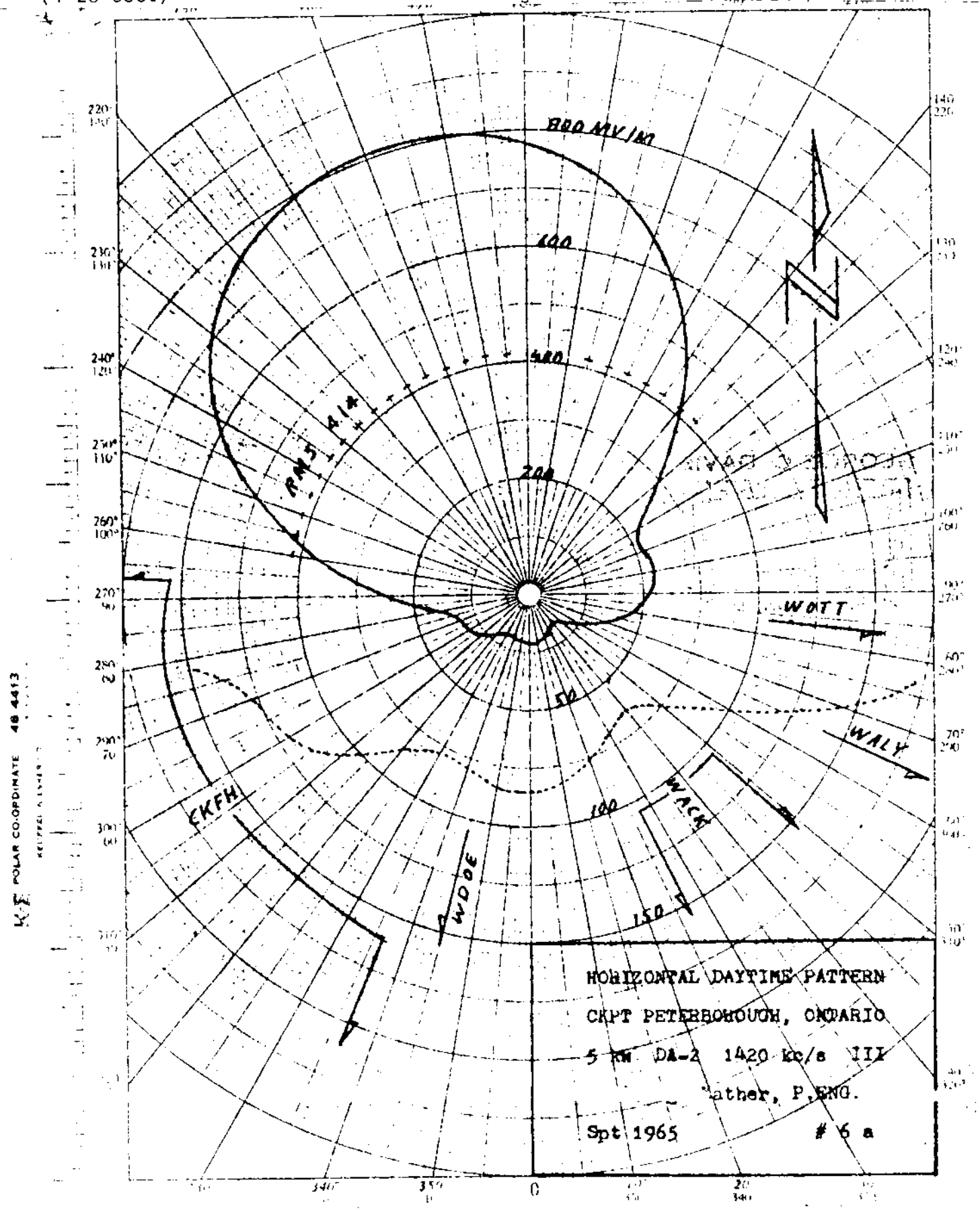
206

CKPT

Proposed Day
(1-28-66ct)

Station CKPT
Petersborough

5kw,DA-2,U,Class III
1420 kc

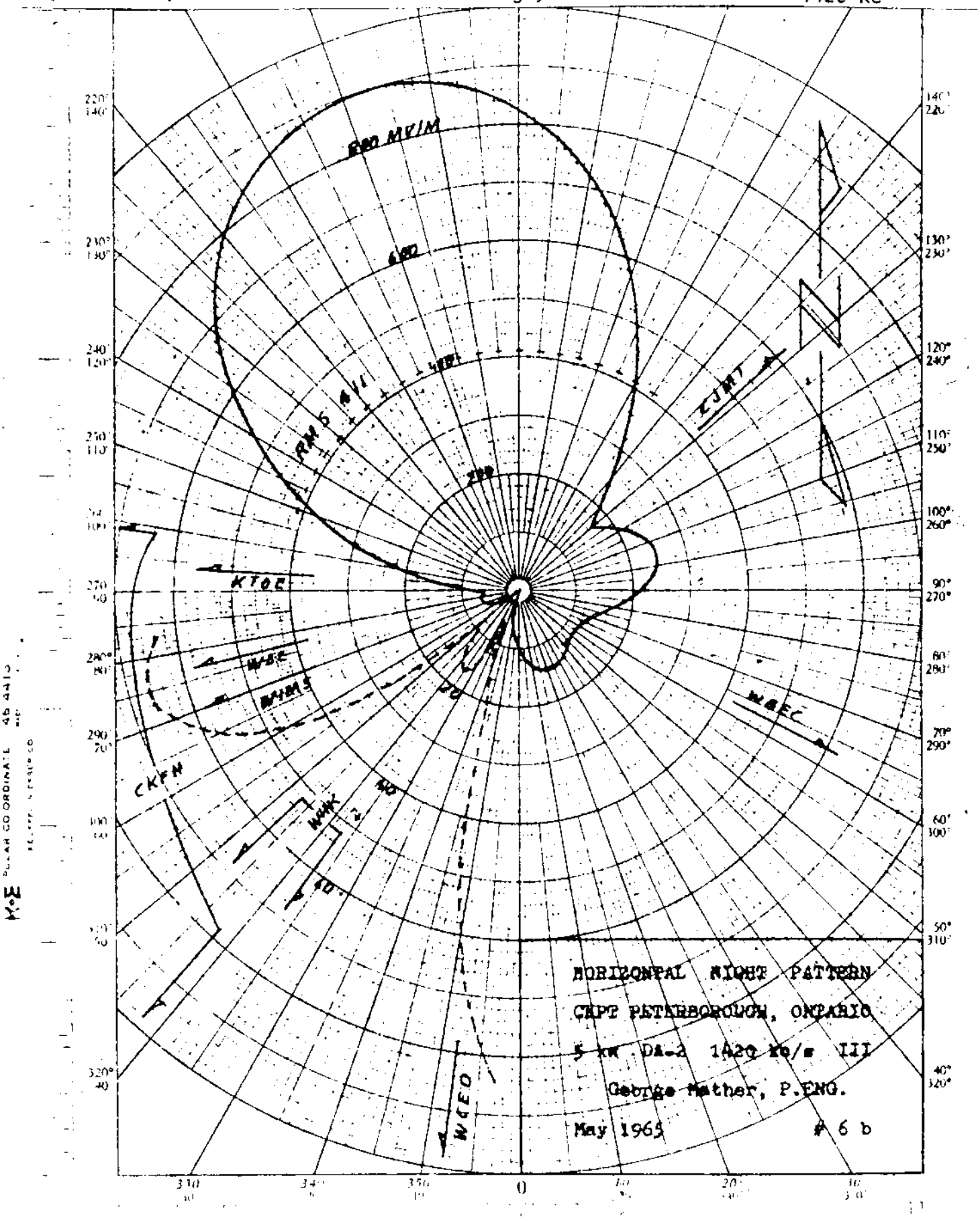


CKPT

Proposed Night
(2-28-66ct)

Station CKPT
Peterborough, Ontario

5kw,DA-2,U,Class III
1420 kc



HORIZONTAL NIGHT PATTERN
CKPT PETERBOROUGH, ONTARIO
5 kw DA-2 1420 Kc/s III
George Mather, P.ENG.
May 1965 # 6 b

#134

CKPT

PETERBOROUGH, ONTARIO

DESCRIPTION SHEET (7-8-59g) | New Station, Peterborough, Ontario, Canada | 500w, 1kw-LS, DA-2, U, Class III 1420 KC

Station: NEW

Main Studio: Peterborough

Frequency: 1420 Kc/s

Power: 1 KW D 0.5 KW N. Class: III

Notification List No.: 134

Date: June 5, 1959

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM: North Latitude: 44° 16' 33"

West Longitude: 78° 17' 31"

ANTENNA CHARACTERISTICS

Mode of Operation: DA-2

Number of Elements: 3

Type of elements: Guyed, uniform cross-section, base insulated, series fed.

TOWER		#1 South	#2 Centre	#3 North
HEIGHT ABOVE INSULATORS:		174'	174'	174(90°)
OVERALL HEIGHT:		178'	178'	178'
SPACING:		331'(172°)	331'(172°)	
PHASING:	Day	0°	308°	not used
	Night	65°	0°	-75°
FIELD RATIO:	Day	1.0	0.6	not used
	Night	1.0	1.4	0.6

ORIENTATION: Towers on a line bearing 13° east of true north.

GROUND SYSTEM: 120 radials #10 AWG copper wire spaced evenly around the base of each tower and of maximum length of 276.5 ft. (0.4λ). Radials intersecting each other between towers are bonded to a #4 AWG copper bus.

Predicted effective field Day RMS 185 mv/m (185 mv/m for 1Kw)
Night RMS 129 mv/m (182 mv/m for 1 Kw)

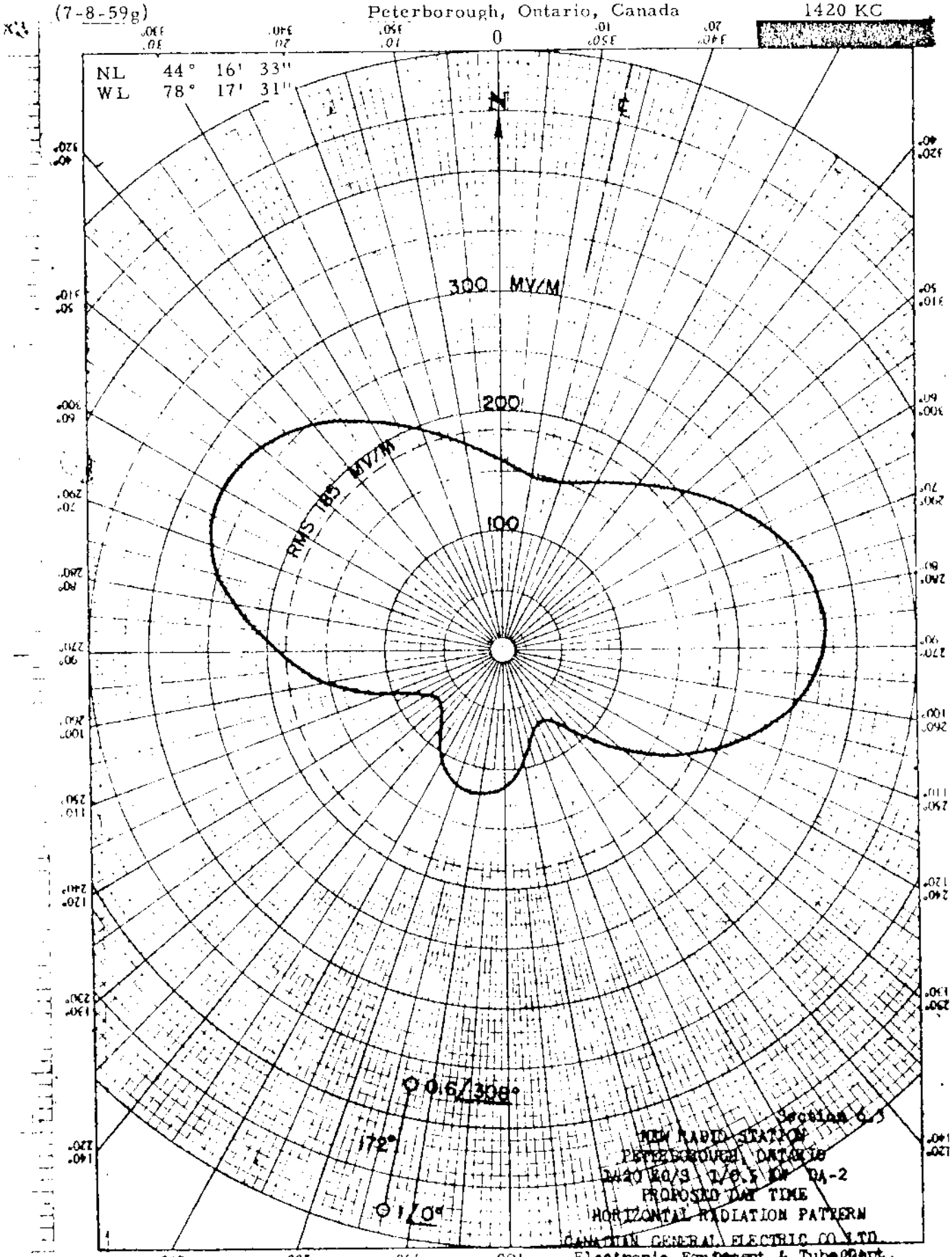
#13A

CKPT

PROPOSED DAY
(7-8-59g)

New Station
Peterborough, Ontario, Canada

500w, 1kw-LS, DA-2, U, Class III
1420 KC



Section 6.3
NEW RADIO STATION
PETERBOROUGH, ONTARIO
1420 KC/S 1/0.5 KW DA-2
PROPOSED DAY TIME
HORIZONTAL RADIATION PATTERN
CANADIAN GENERAL ELECTRIC CO. LTD.
Electronic Equipment & Tube Dept.
TORONTO CANADA

FGT Apr. 14. 1959 W.E.Wright, P.Eng.

#13A

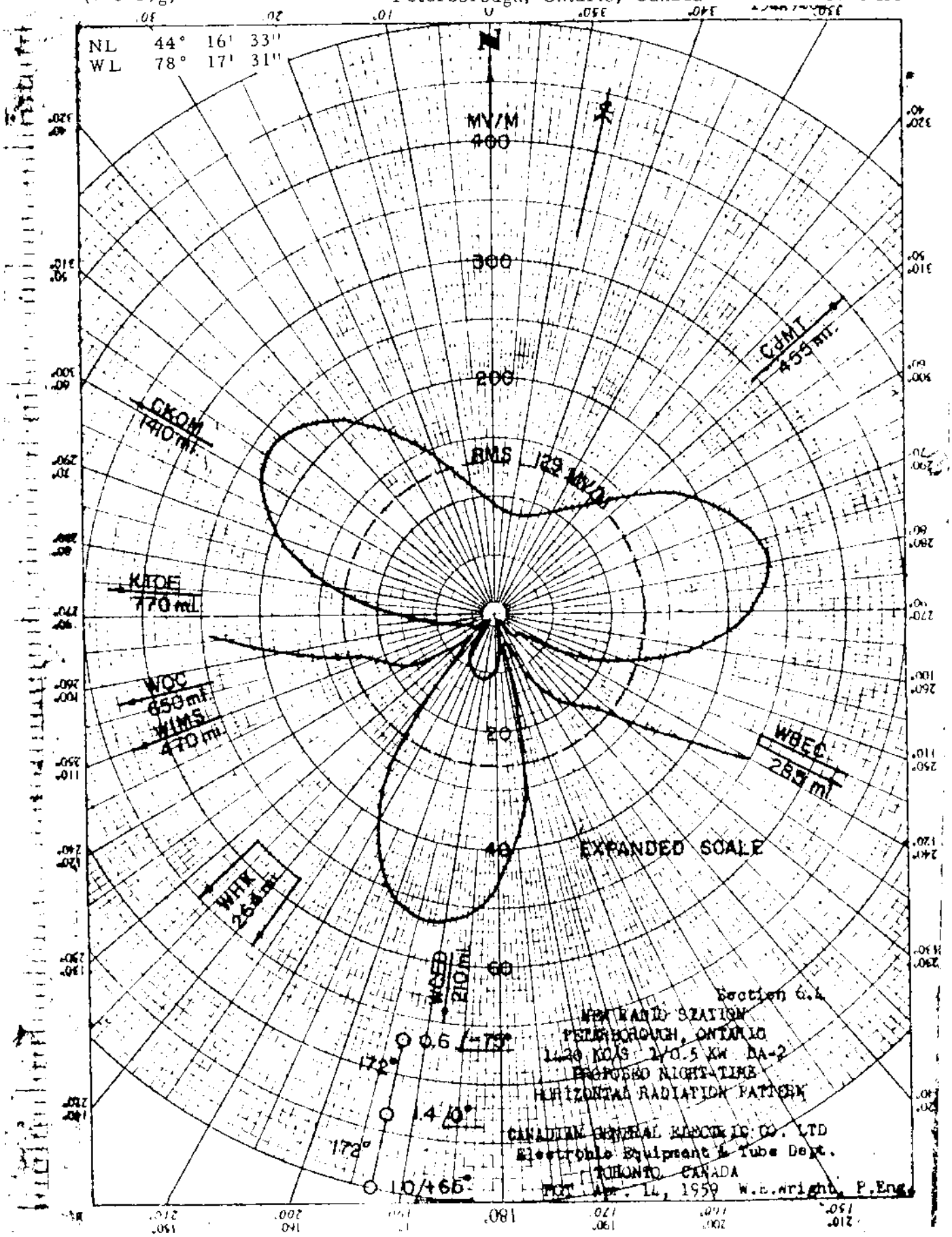
CKPT

PETERBOROUGH, ONTARIO

PROPOSED NIGHT
(7-8-59g)

New Station
Peterborough, Ontario, Canada

500w, 1kw-LS, DA-2, U, Class III
1420 KC



1420 kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (NEW)

Main Studio: Trenton, Georgia

Frequency: 1420 kHz

Power: 0.5kw Day

Notification List 1789

Date: September 12, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 34° 51' 52"
West Longitude: 85° 30' 00"

ANTENNA CHARACTERISTICS

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

TOWER:	S(#1)	NE(#2)
HEIGHT ABOVE INSULATORS	170'	170' (88.3°)
DAY PHASING:	0°	133°
DAY FIELD RATIO:	1.0	0.65

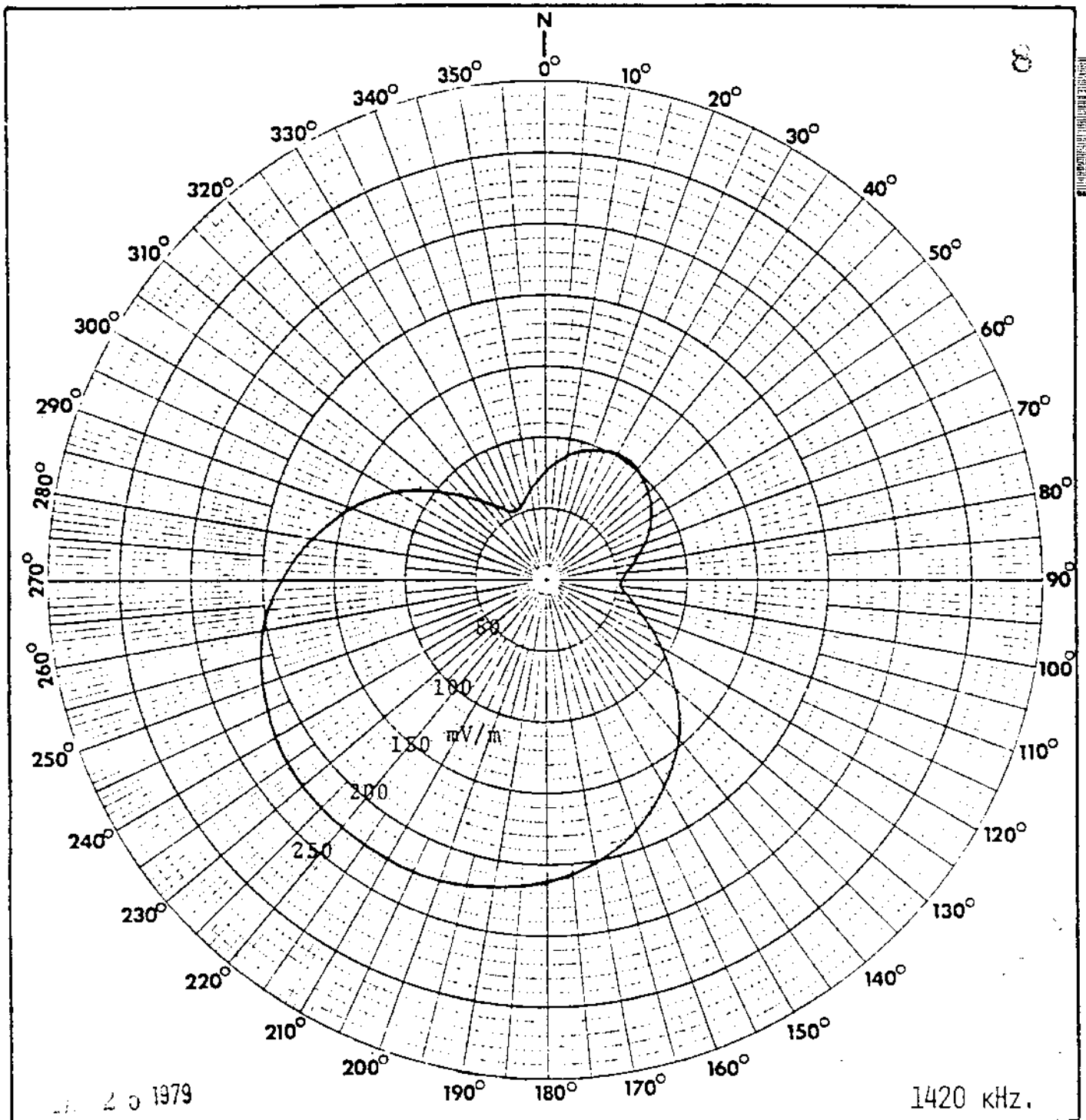
SPACING AND ORIENTATION: Towers in a row are spaced 173.3' (90°) on a line bearing 35° true.

GROUND SYSTEM: 120 - 173.3' equally spaced copper radials plus a 48' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	140.0 mv/m	166.6 mv/m	147.1 mv/m

1420 kHz



STANDARD HORIZONTAL PLANE PATTERN		
1420 kHz. 0.5 kW.		Theo: N-35°-E
N. Lat. 34°51'52" W. Lng. 85°30'00"		#2 0.65/133° S=90° #1 1/0° $G_1=G_2=88.3°$
Theo. RMS	140.0	
Theo. RSS	166.6	
E_1 Theo.	139.7	
Std. RMS	147.1	
FCC 'Q'	6.000	

EXHIBIT E-1 FIGURE 3

RA-AD of TRENTON

PROPOSED DAYTIME PATTERN

TRENTON, GEORGIA

B. SCOTT BAXTER
AND ASSOCIATES
P. O. BOX 413
BRENTWOOD, TENN 37027

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : (NEW) Main Studio: Granbury, Texas

Frequency : 1420 KHz Power: .5 kW Night 5 kW Day

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

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	32°	27'	43"
West Longitude:	97°	47'	19"

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	NE(#1)	EC(#2)	SE(#3)	W(#4)		
HEIGHT ABOVE INSULATORS	145'	145'	145'	145'(75.3°		
NIGHT PHASING:	--	-16°	--	0°		
NIGHT FIELD RATIO:	--	1.2	--	1.0		
DAY PHASING	240°	120°	0°	--		
DAY FIELD RATIO	1.0	1.56	1.0	--		

SPACING AND ORIENTATION: With the EC(#2) tower as reference, towers #1 and #3 are spaced 249 feet (145°) on bearing 347° true and 167° true respectively and tower #4 is spaced 456.2' (237°) on a bearing of 258° true.

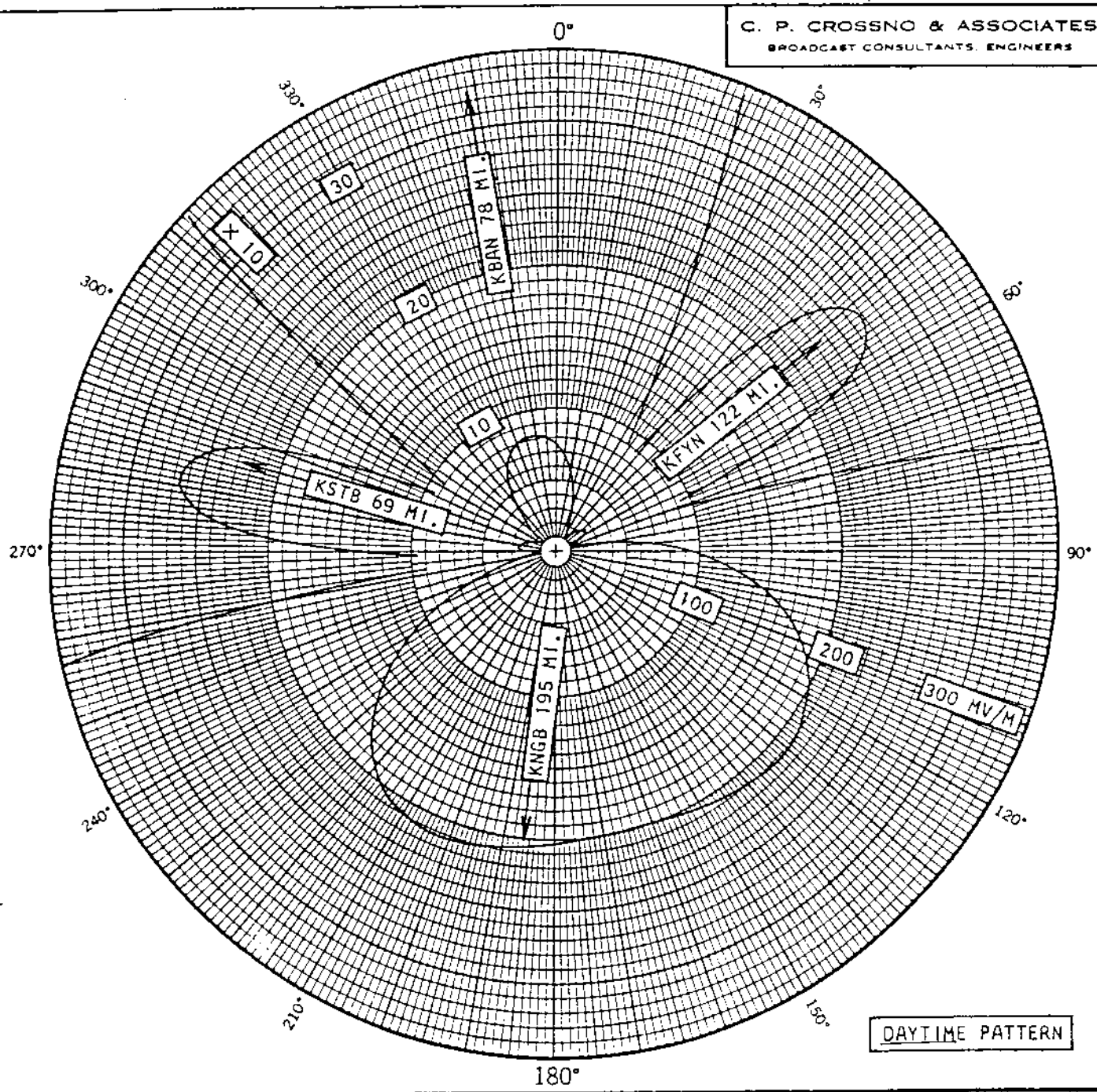
GROUND SYSTEM: 120 - 173' equally spaced copper radials plus a 20x20' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	124.06 mV/m	117.40 mV/m	131.05 mV/m
Night	125.7 mV/m	151.3 mV/m	132.1 mV/m

Note:

C. P. CROSSNO & ASSOCIATES
BROADCAST CONSULTANTS, ENGINEERS



DAYTIME PATTERN

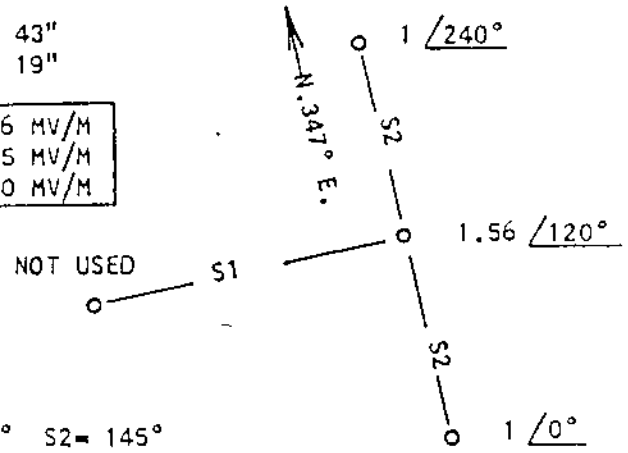
STANDARD RADIATION PATTERN

GRANBURY RADIO COMPANY
GRANBURY, TEXAS

1420 KHZ. 0.5 KW, DA-2, U

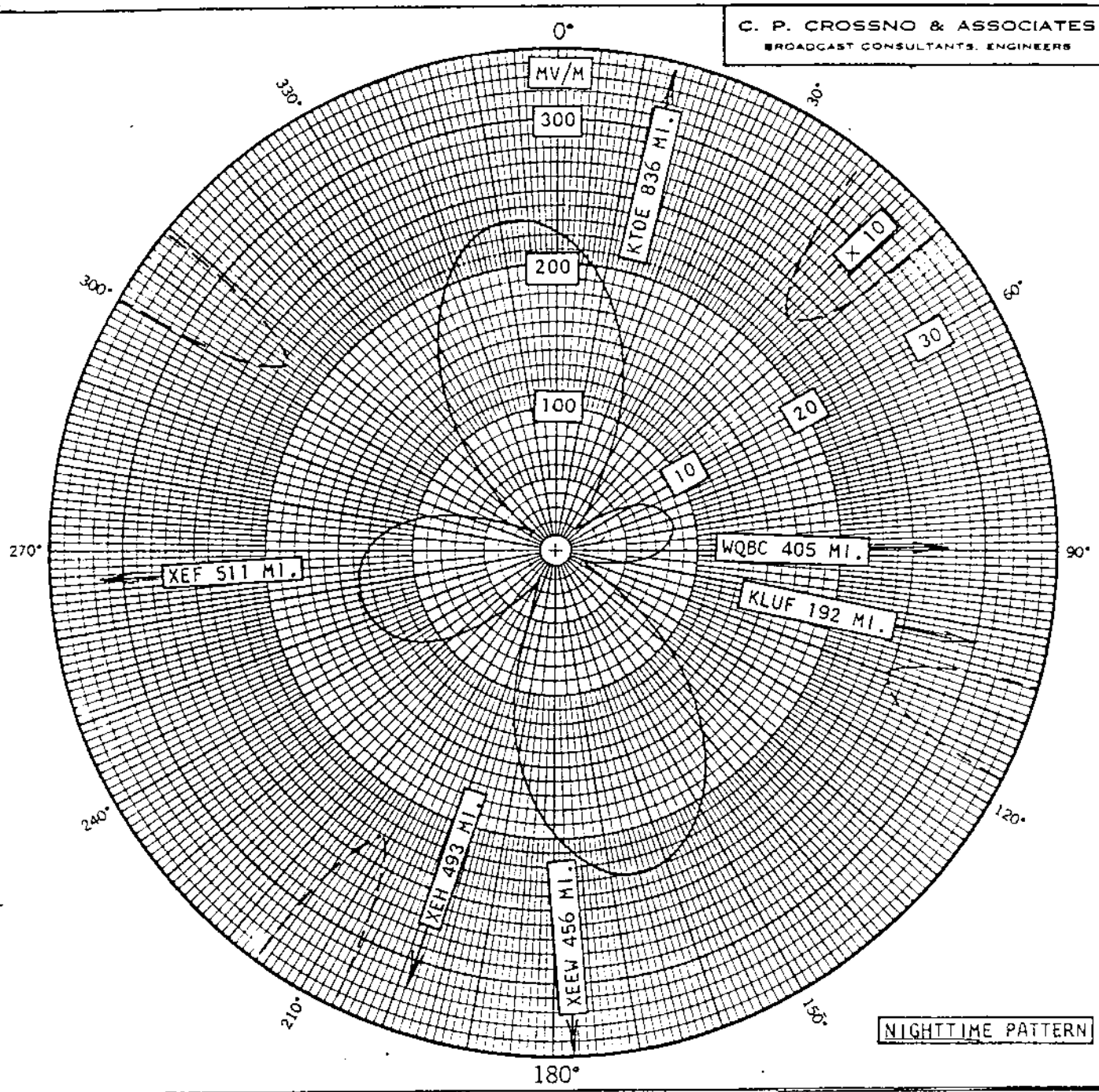
N. LAT. 32° 27' 43"
W. LNG. 97° 47' 19"

RMS (TH.)	= 124.06 MV/M
RMS (ST.)	= 131.05 MV/M
RSS (TH.)	= 117.40 MV/M



G = 76° S1 =237° S2= 145°

C. P. CROSSNO & ASSOCIATES
BROADCAST CONSULTANTS, ENGINEERS



NIGHTTIME PATTERN

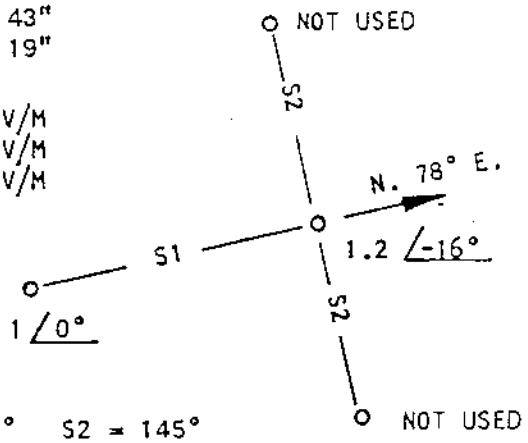
STANDARD RADIATION PATTERN

GRANBURY RADIO COMPANY
GRANBURY, TEXAS

1420 KHZ. 0.5 KW, DA-2, U

N. LAT. 32° 27' 43"
W. LNG. 97° 47' 19"

RMS (TH.) 125.7 MV/M
RMS (ST.) 132.1 MV/M
RSS (TH.) 151.3 MV/M



G = 76° S1 = 237° S2 = 145°

KBTN

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : KBTN Main Studio: Neosho, Missouri

Frequency : 1420 KHz Power : .5 kW Night .5 kW Day

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

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

DAYTIME				NIGHTTIME			
North Latitude:	36°	52'	34"	North Latitude:	36°	50'	52"
West Longitude:	94°	23'	07"	West Longitude:	94°	19'	12"

NIGHTTIME 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(#1)	E(#2)				
HEIGHT ABOVE INSULATORS :	173'	173(89.8'				
NIGHT PHASING :	0°	154°				
NIGHT FIELD RATIO:	1.0	0.87				

SPACING AND ORIENTATION: Adjacent towers in a row are spaced 115.5' (60°) on a line bearing 86° true.

GROUND SYSTEM: 120 - 173' equally spaced copper radials plus 120 - 58' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	134.4 mv/m		
Night	134.8 mv/m	231.9 mv/m	142.0 mv/m

KBTN

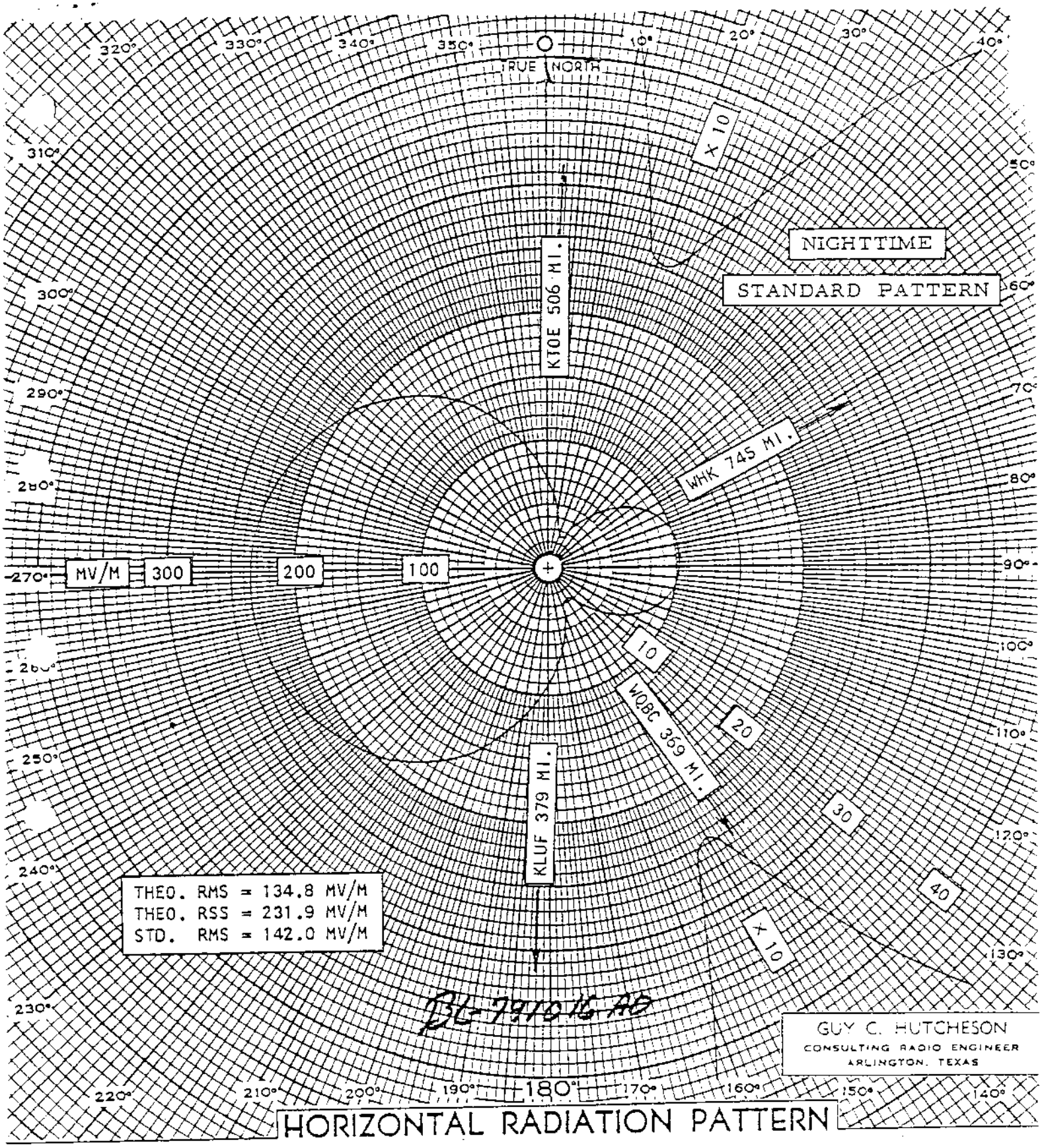
DAYTIME ANTENNA CHARACTERISTICS

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

HEIGHT ABOVE INSULATORS : 173'

GROUND SYSTEM: 120 - 170' equally spaced copper radials about the. tower.

KBTN



HORIZONTAL RADIATION PATTERN

KBTN NEOSHO MISSOURI
Station

Location

1420 KHZ. 0.5 KW DA-N
Frequency Power

N. LAT. 36° 50' 52"
W. LNG. 94° 19' 12"

G1 = G2 = 90° = 173.2 FT.
Height of Antennas

= 60° = 115.5 FT.

N. 86° E.

#1 WEST

S

.87 /154°

1 /0°

#2 EAST

KITI

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KITI

Main Studio: Chehalis-Centralia, Washington

Frequency: 1420

Power: 1 Kw Night 1 Kw Day

Notification: 1778

Date: August 30, 1978 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	46°	41'	24"
West Longitude:	122°	57'	23"

Predicted effective Daytime Field (omnidirectional) 190 $\frac{mv}{m}$ at rated power.

ANTENNA CHARACTERISTICS

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

TOWER	:	NW (#1)	SE (#2)				
HEIGHT ABOVE INSULATORS	:	170'	170'				
PHASING	:	0°	+38°				
FIELD RATIO	:	1.0	1.0				

SPACING AND ORIENTATION : Towers in a row are spaced 308' (160°) on a line bearing 99.6° true.

GROUND SYSTEM: 120 - 180' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

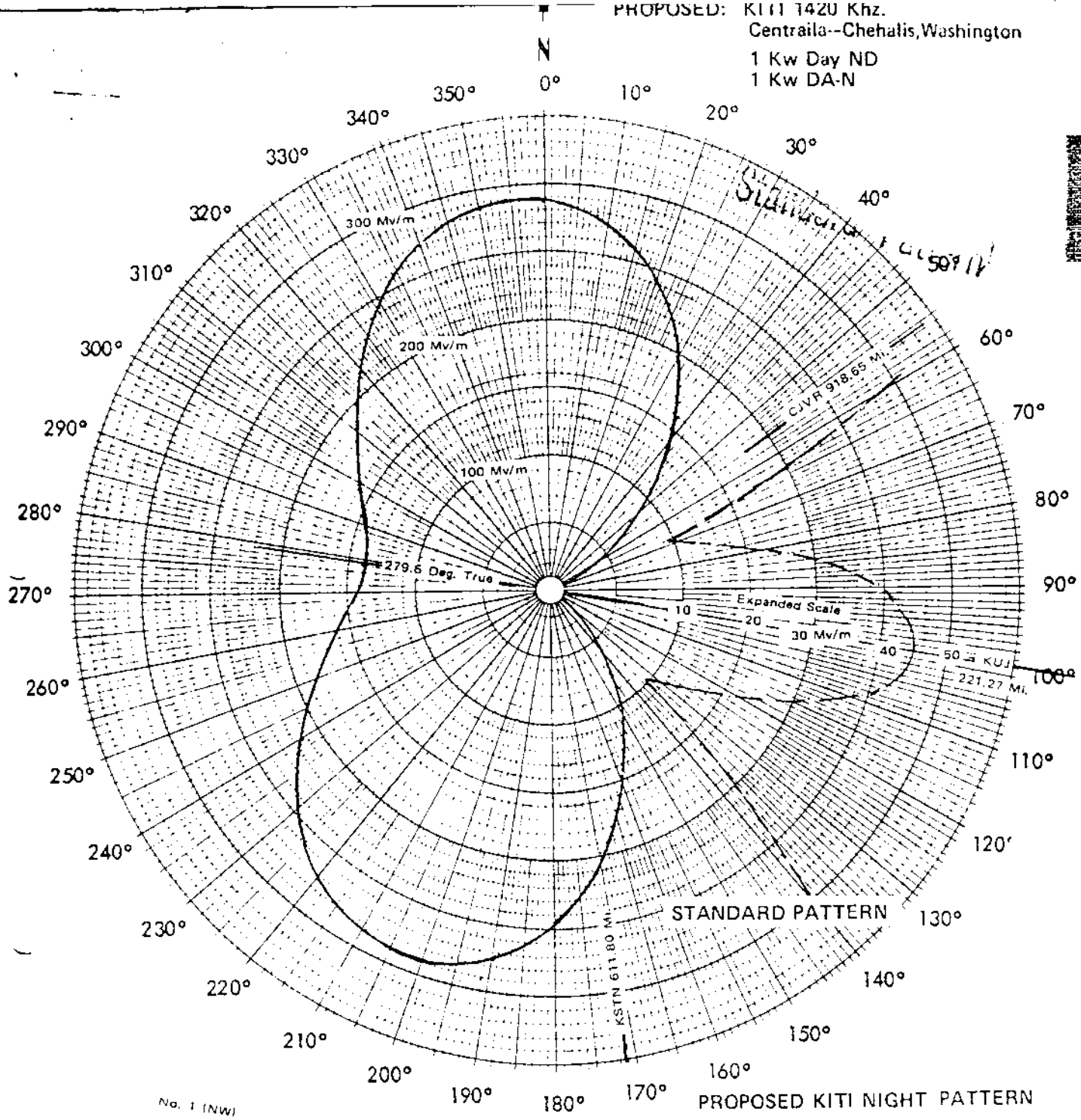
THEORETICAL		STANDARD
RMS	RSS	RMS
180.4 mv/m	194.93 mv/m	189.5 mv/m
_____ mv/m	_____ mv/m	_____ mv/m

Note: This notification concerns only an addition of Nighttime operation of the station with Daytime operation continued as previously notified.

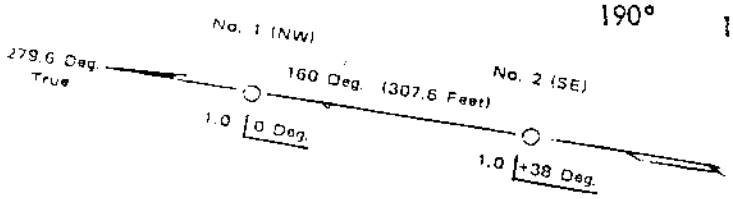
KITI

PROPOSED: KITI 1420 Khz.
Centraila--Chehalis, Washington

1 Kw Day ND
1 Kw DA-N



PROPOSED KITI NIGHT PATTERN



Tower Heights	= G 170 Feet (88.42 Deg.)
No. 1 tower inverse field in array	= 137.837 Mv/m
RSS value	= 194.93 Mv/m
RMS (Theo.)	= 180.4 Mv/m
RMS (Std.)	= 189.5 Mv/m

CONSULTING ENGINEER • KENNETH WILLIAMS, Jr. PE
ELECTRICAL • AM/FM BROADCAST • TELEVISION
321 SOUTH 11Th. St. • TACOMA, WASHINGTON 98402

EXHIBIT No. 7

KLFB
1420 kHz

SUPPLEMENTAL AND CORRECTED
DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KLFB

Main Studio: Lubbock, Texas

Frequency: 1420 kHz

Power: 0.5kw Night 0.5kw Day

Notification List No. 1788

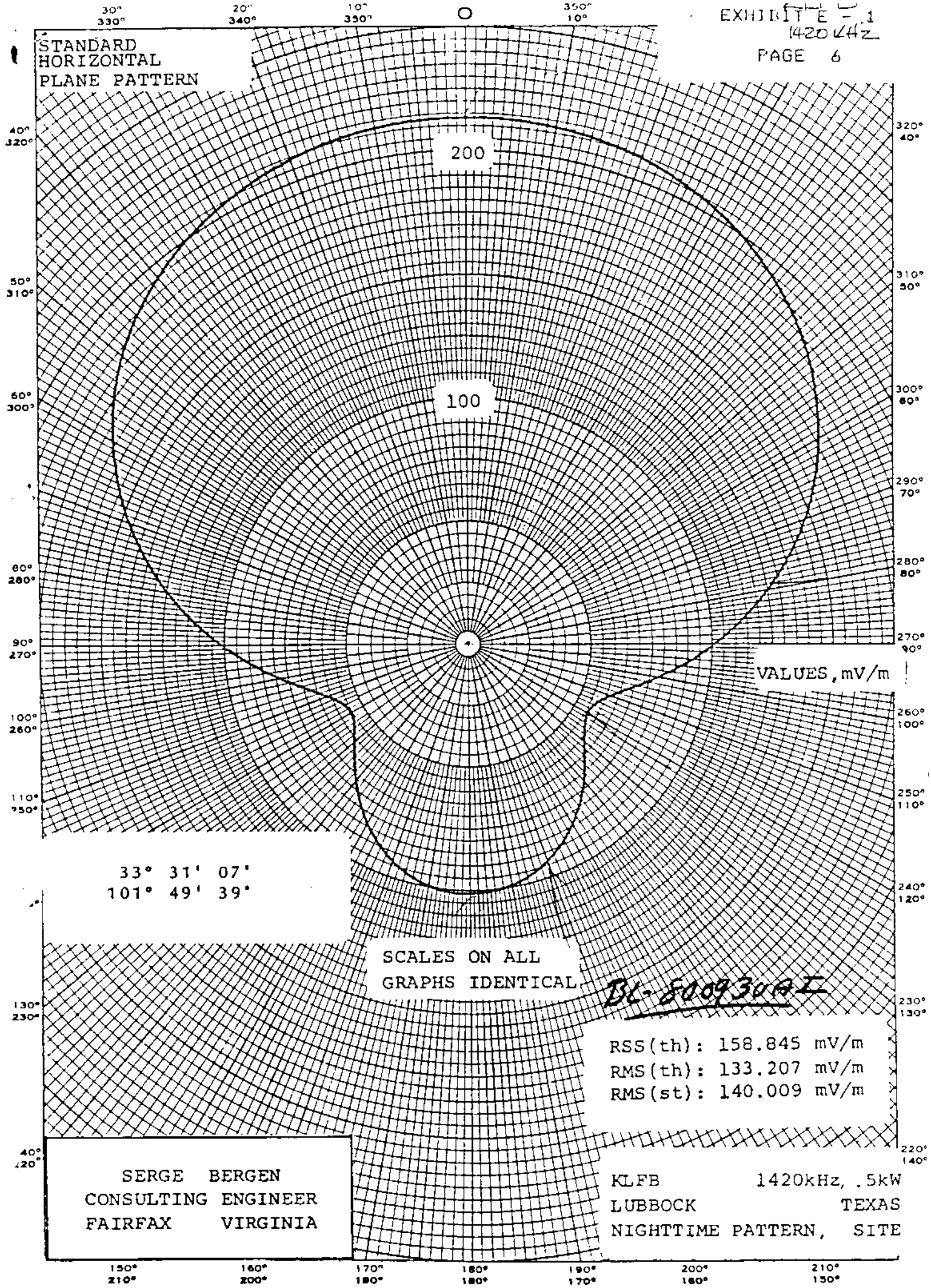
Date: August 22, 1980, Class: III

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

DAYTIME	NIGHTTIME
North Latitude: 33° 36' 49"	North Latitude: 33° 31' 07"
West Longitude: 101° 52' 30"	West Longitude: 101° 49' 39"

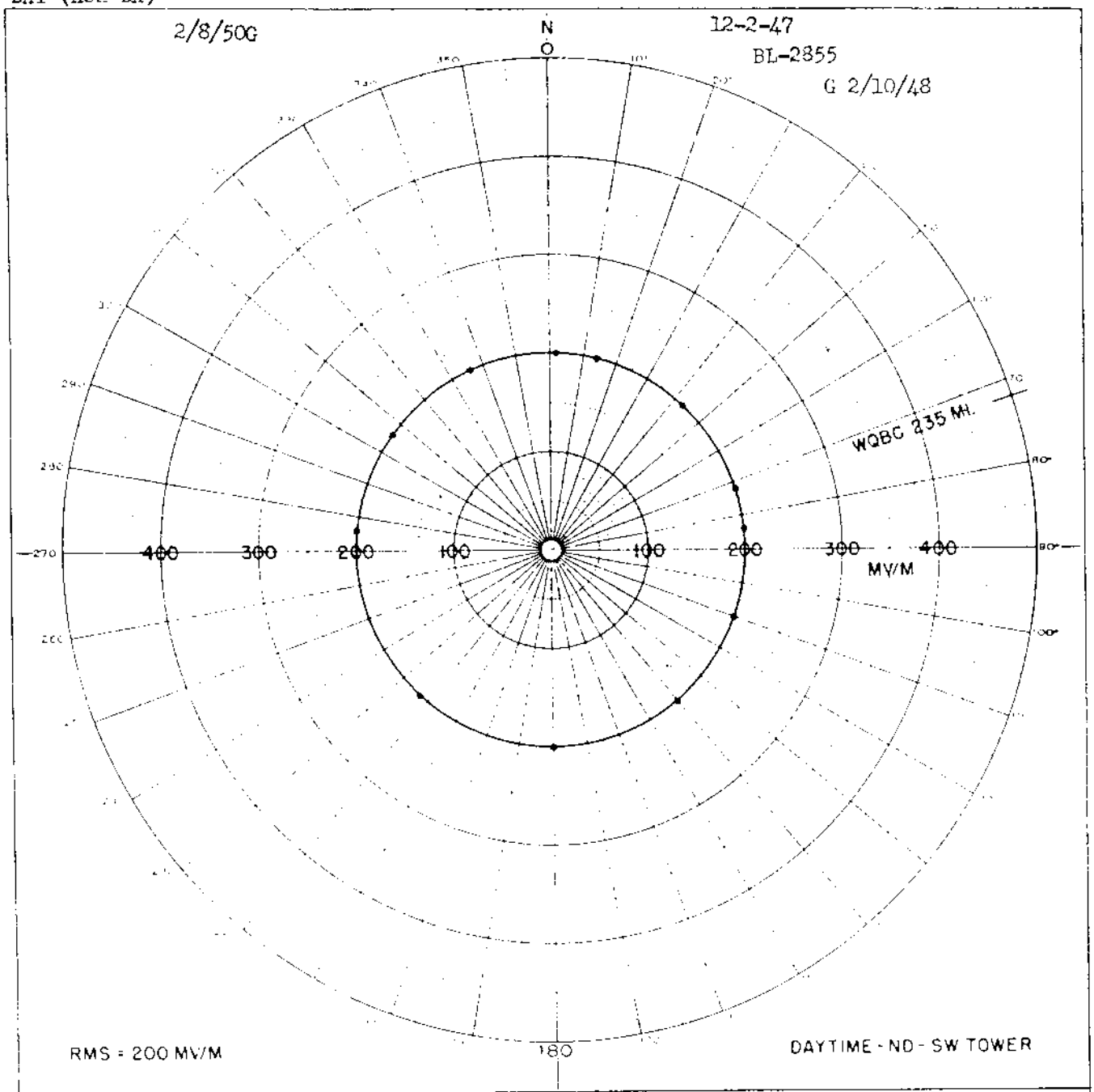
Note: Please retain the description sheet and directional antenna radiation patterns notified for station KLFB in United States Change List Number 1782, dated October 26, 1979 and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only a change in the geographical coordinates of the center of the nighttime antenna system.

EXHIBIT E - 1
1420 kHz
PAGE 6



KLUF

MEASURED KTRE, LUFKIN, TEX. 1kw, DAN
DAY (non-DA)



℄ = N 43° E (2) ○ 0.82 /+23°

S = 208° S G1 = G2 = 104°

(1) ○ 1.0 /0°

SITE: 31° 22' 12" N
94° 46' 19" W

PATTERN BASED ON
FIELD INTENSITY MEASUREMENTS

BROADCAST ENGINEERING SERVICE
Radio Engineering Consultants
SHREVEPORT, LA. 471124

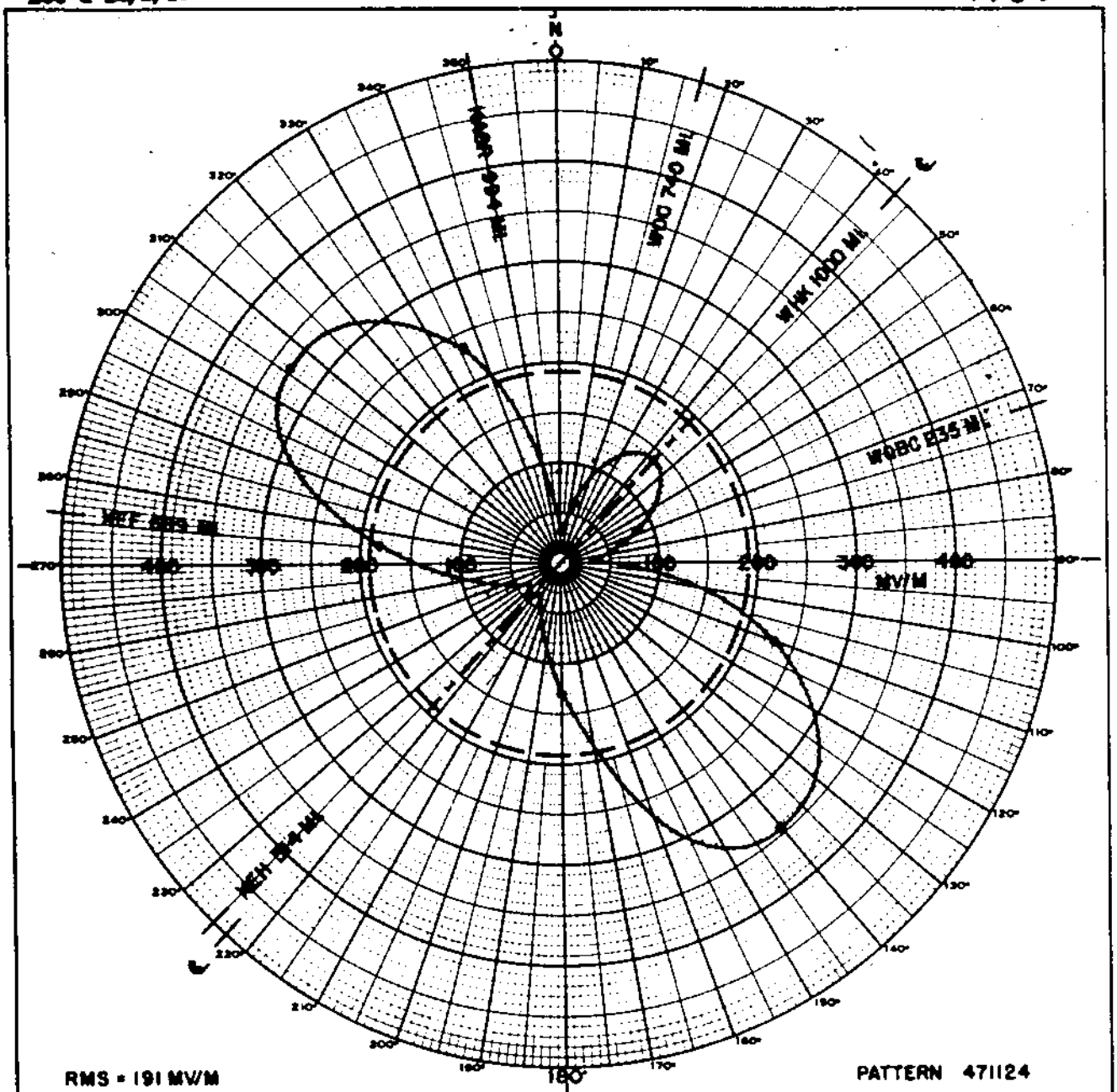
RADIO STATION KTRE
1420 KC 1,000 WATTS DA-N
FIGURE

KLUF

Rec'd 12/2/47

9-2-48-GO

L-2855



PATTERN 471124

℄ = N 43° E (2) 0.82 /423° S = 208° S G1 = G2 = 104° (1) 1.0 /0°	PATTERN BASED ON FIELD INTENSITY MEASUREMENTS
BROADCAST ENGINEERING SERVICE Radio Engineering Consultants SHREVEPORT, LA. 471124	RADIO STATION KTRE 1420 KC 1,000 WATTS DA-N FIGURE 1A LUFKIN, TEX.

KLUF

1kw

PROPOSED NIGHT

KTRE, LUFKIN, TEXAS

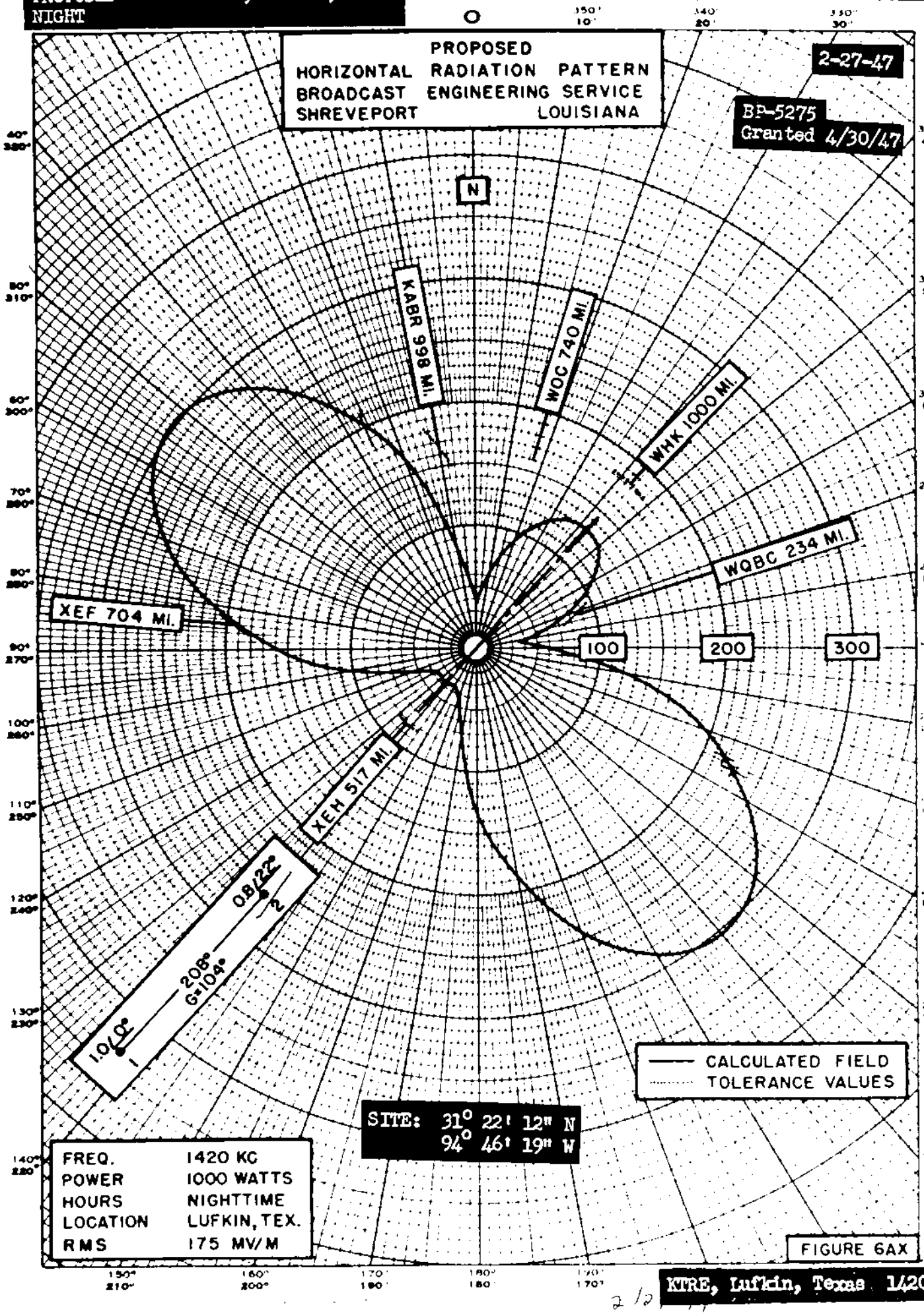


FIGURE 6AX

KTRE, Lufkin, Texas 1420 kc

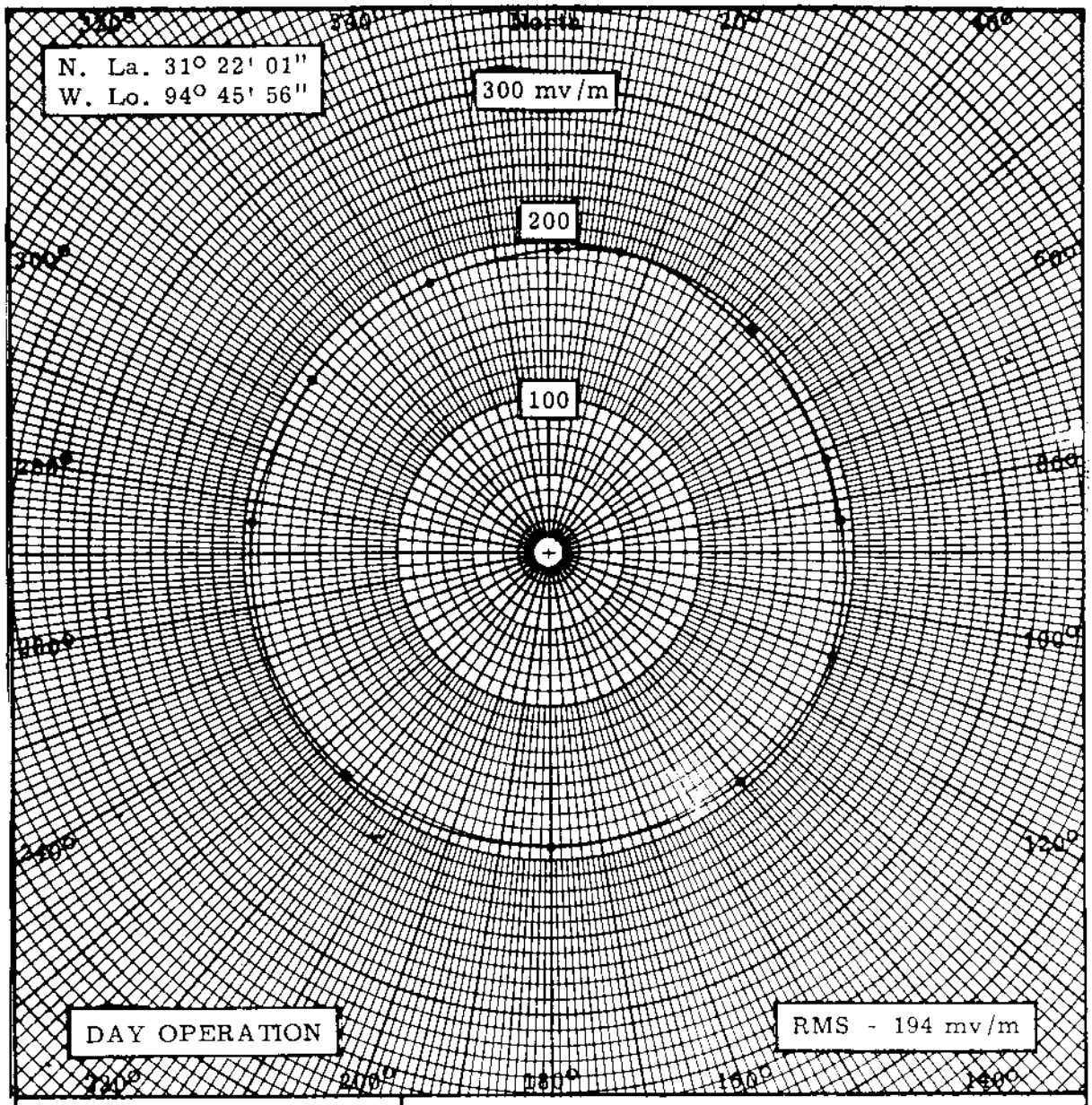
2/2

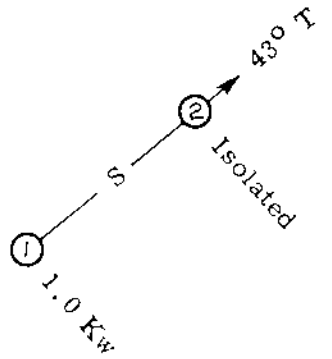
KLUF

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

Station KTRE
Lufkin, Texas

1kw, DA-N, U
1420 kc





G - 104°
S - 208°

RADIO STATION KTRE
LUFKIN, TEXAS

MEASURED NON-DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
1420 KHZ 1000 WATTS

102568-1

FIGURE 1

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No.BZ-7283
Accepted 9-18-69

Station KTRE
Lufkin, Texas

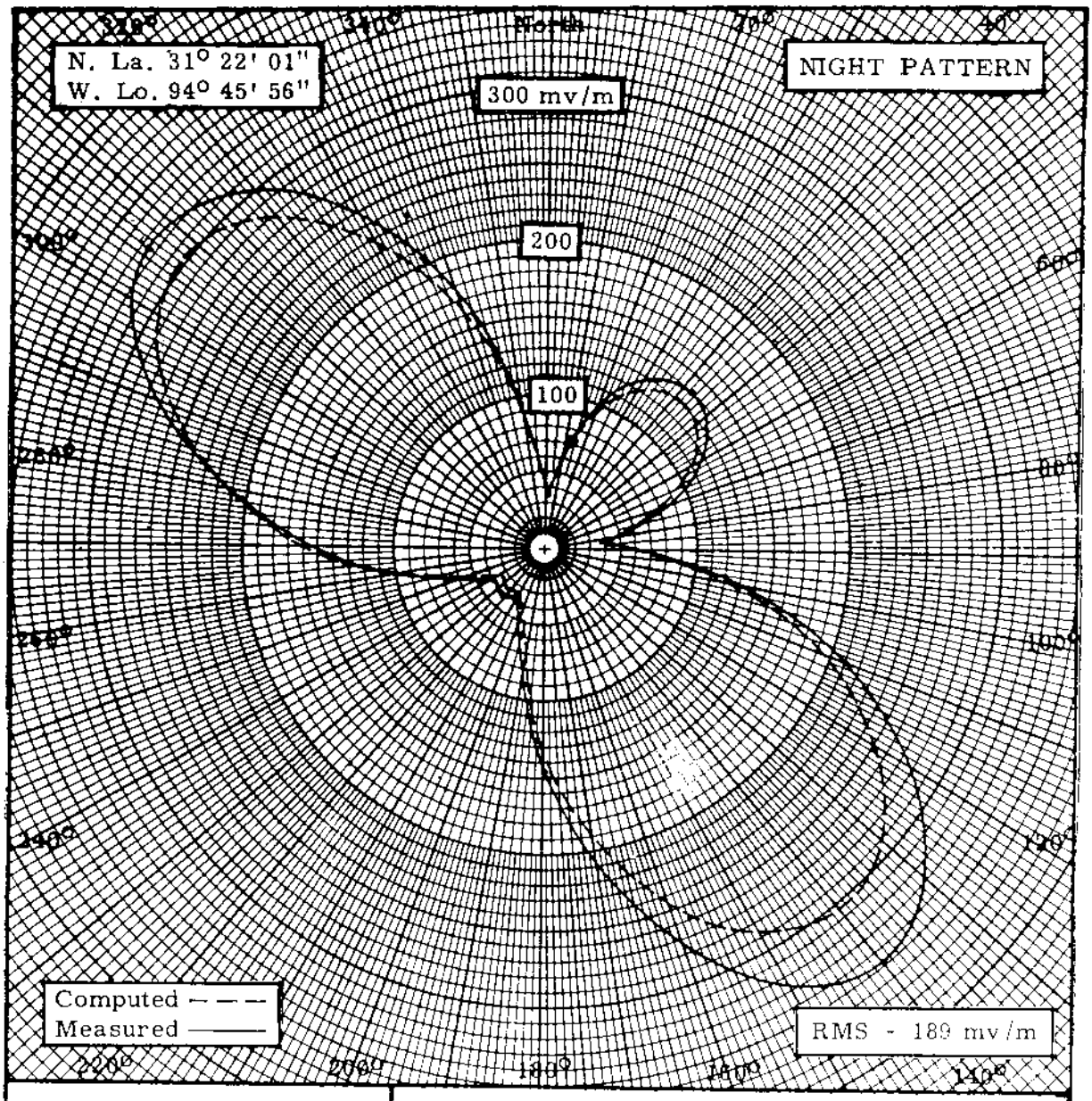
1420 kc

KLUF

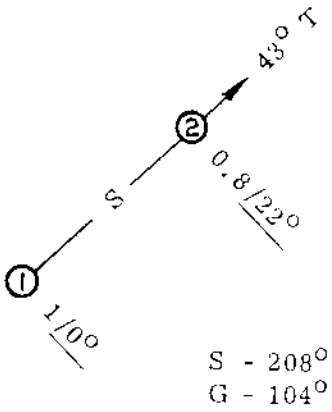
Measured Night
(9-26-69ct)

Station KTRE
Lufkin, Texas

1kw,DA-N,U
1420 kc



Theoretical



RADIO STATION KTRE
LUFKIN, TEXAS

MEASURED DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
1420 KHZ 1000 WATTS

102568-2

FIGURE 2

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No.BZ-7283
Accepted 9-18-69

Station KTRE
Lufkin, Texas

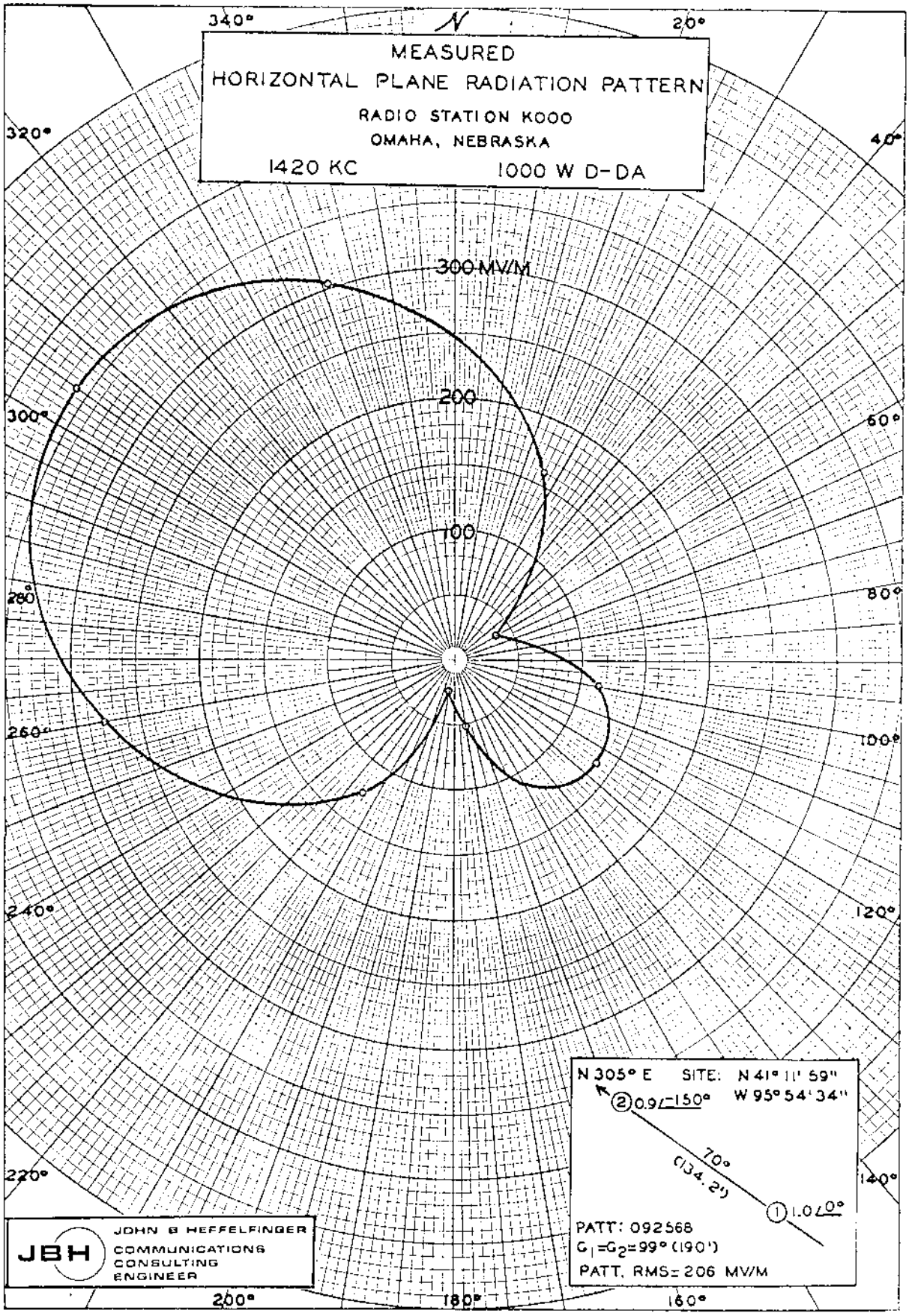
1420 kc

K000

Measured Day
(12-27-68ct)

Station K000
Omaha, Nebraska

1kw,DA-D,D
1420 kc



FCC File No.BZ-7012
Accepted 12-3-68

Station K000
Omaha, Nebraska

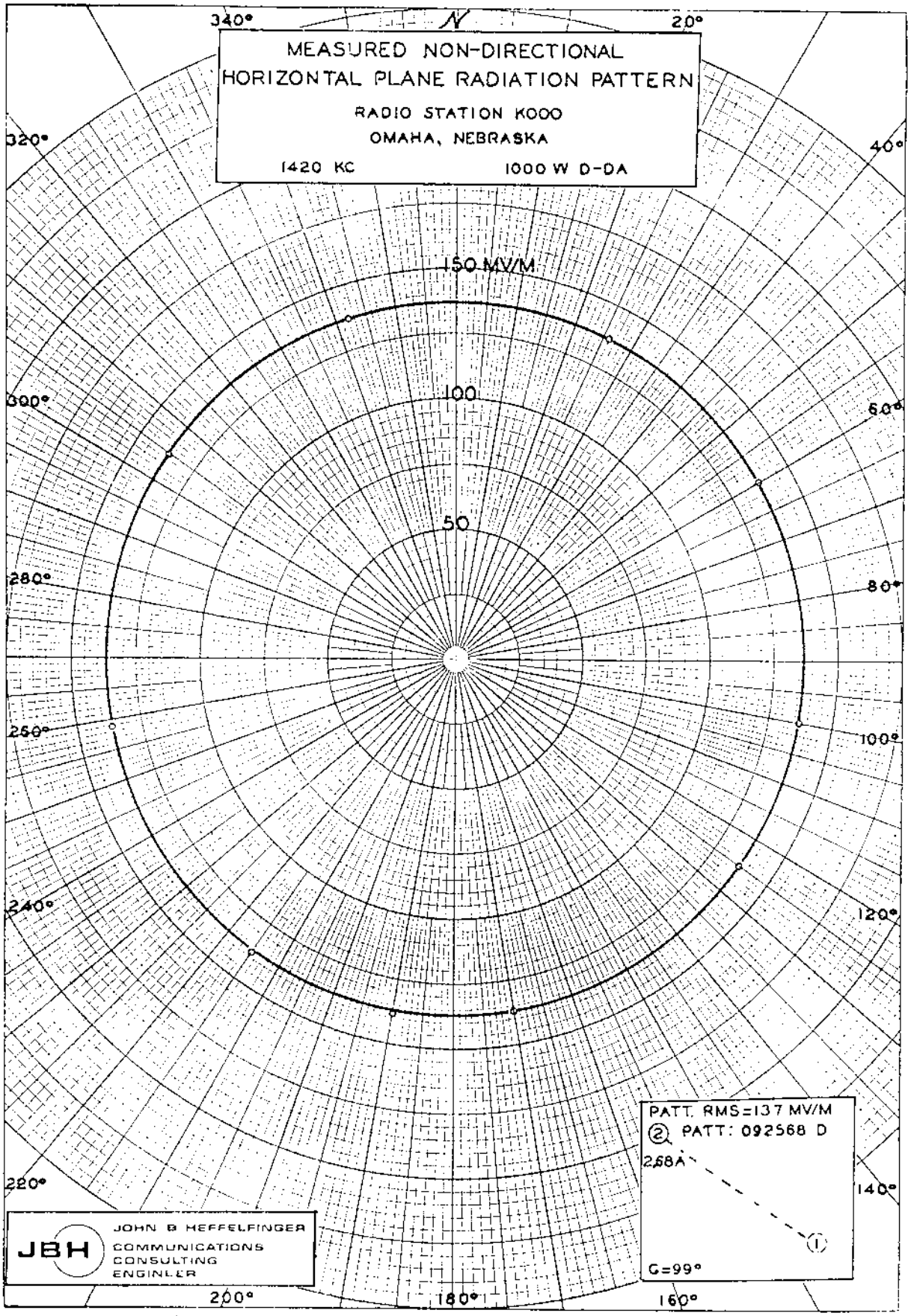
1420 kc

K000

Measured Non-DA
(12-27-68ct)

Station K000
Omaha, Nebraska

1kw,DA-D,D
1420 kc



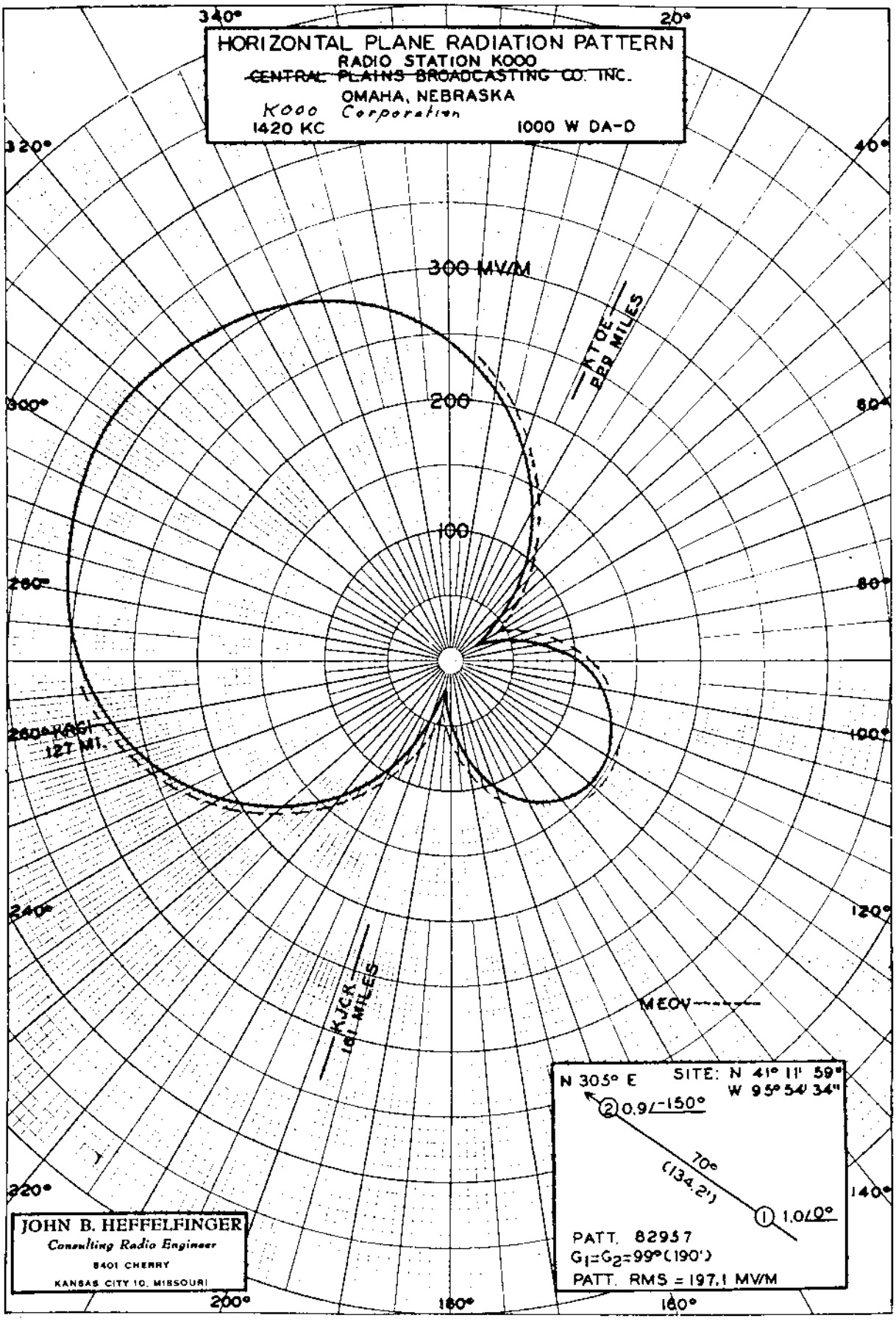
FCC File No.BZ-7012
Accepted 12-3-68

Station K000
Omaha, Nebraska

1420 kc

KOOO

PROPOSED DAY (10/30/57g) | Station KOOO Omaha, Nebraska | 1kw, DA-D,D 1420 KC



FCC File No. BP-~~11,568~~ 12,282 | KOOO Omaha, Nebraska | 1420 KC
Accepted 10-9-57

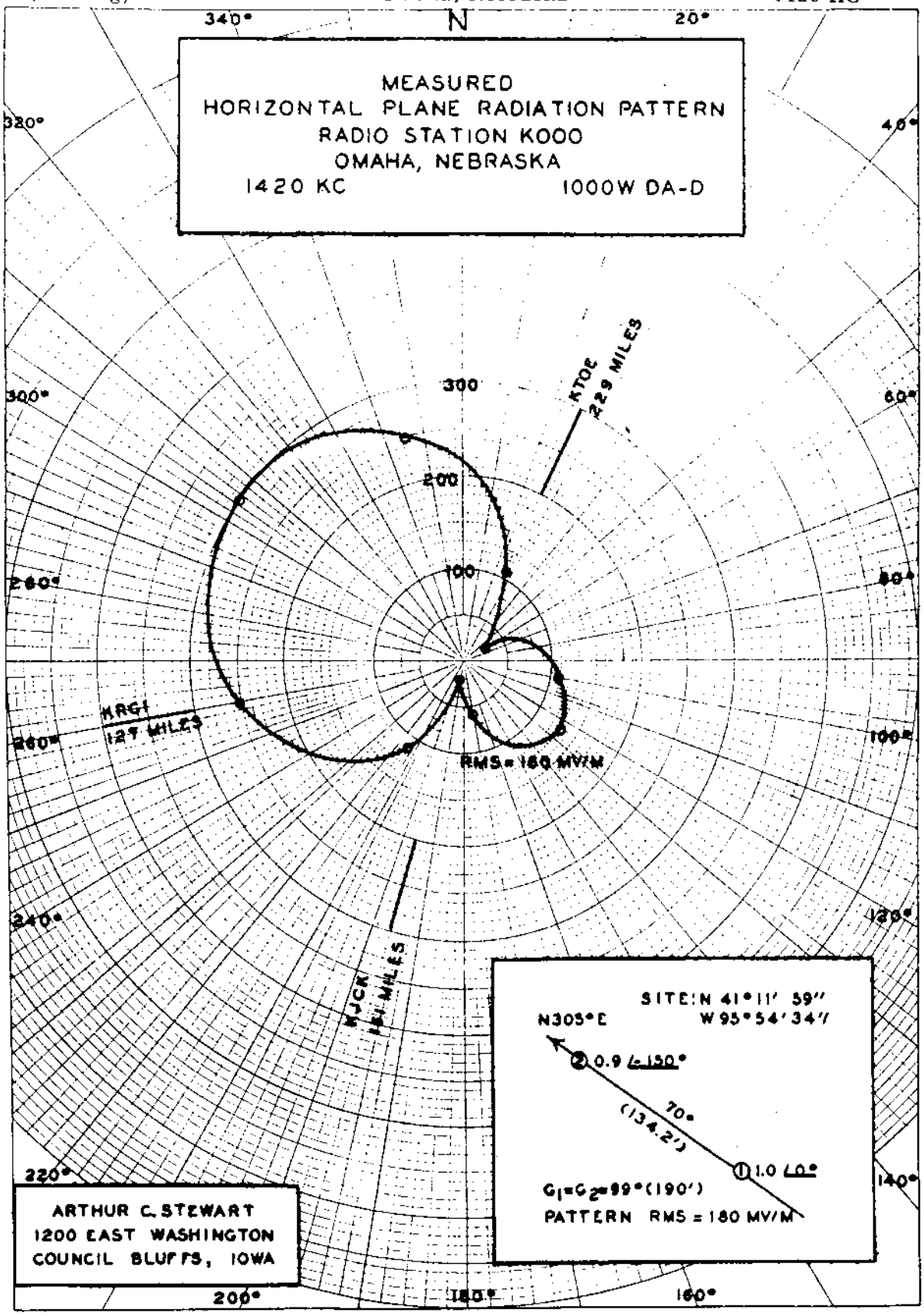
Granted for license in power 5-15-60

KOOO

MEASURED DAY
(7-7-60g)

Station KOOO
Omaha, Nebraska

1kw, DA-D,D
1420 KC



FCC File No. BL-7965
Accepted 7-6-60

KOOO
Omaha, Nebraska

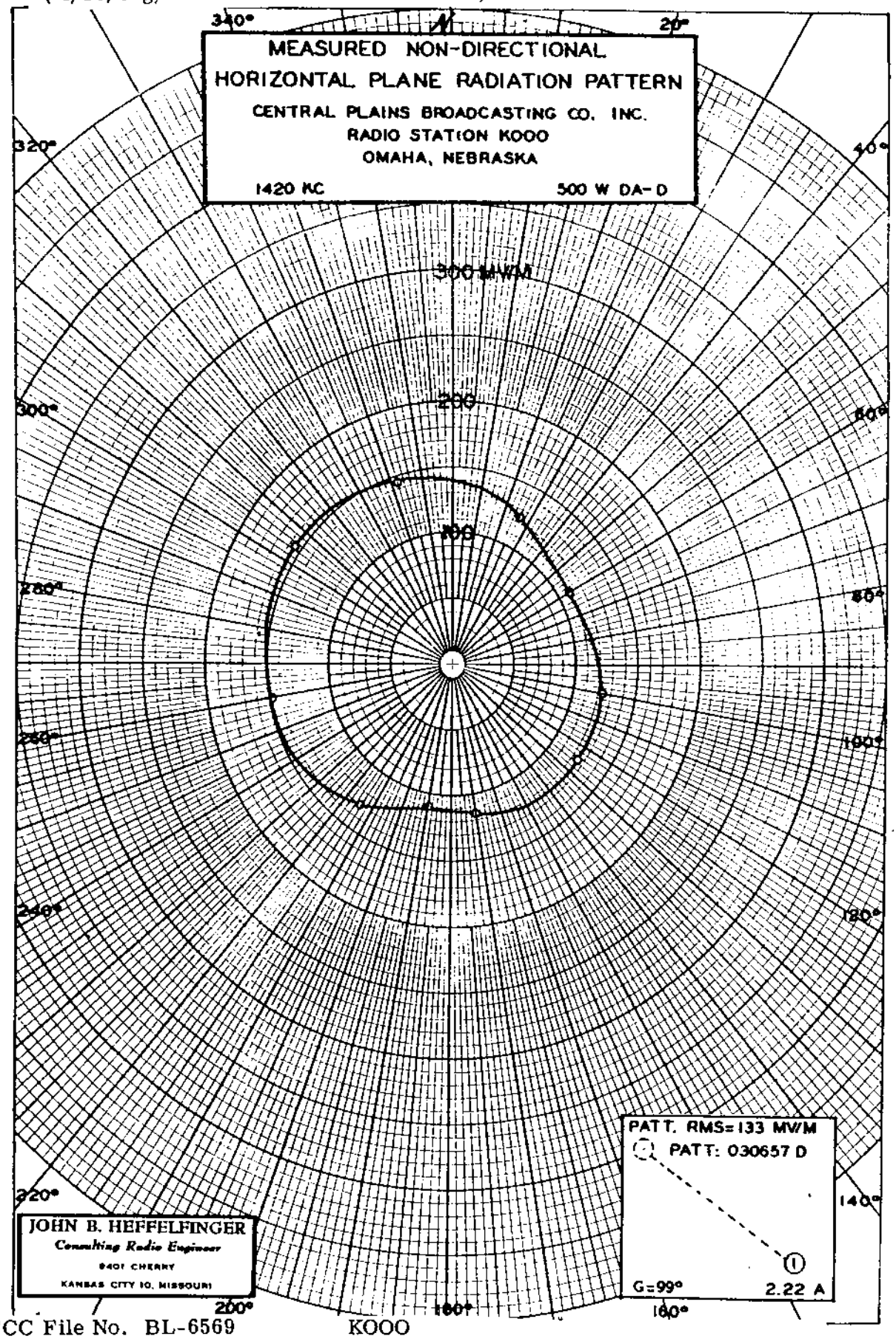
1420 KC

KOOO

MEASURED NON - DA
(4/16/57g)

Station KOOO
Omaha, Nebraska

1420 KC



FCC File No. BL-6569
Accepted 4/1/57

KOOO
Omaha, Nebraska

1420 KC

KPAR
1420kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KPAR

Main Studio: Granbury, Texas

Frequency: 1420 kHz

Power: 0.5kw Night 0.5kw Day

Notification List No. 1789

Date: September 12, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 32° 27' 43"
West Longitude: 97° 47' 19"

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:	NE(#1)	EC(#2)	SE(#3)	W(#4)
HEIGHT ABOVE INSULATORS:	145'	145'	145'	145' (75.4°)
NIGHT PHASING:	—	-16°	—	0°
NIGHT FIELD RATIO:	—	1.2	—	1.0
DAY PHASING:	+240°	+120°	0°	—
DAY FIELD RATIO:	1.0	1.56	1.0	—

SPACING AND ORIENTATION: With Tower #2 as reference Tower #1 and Tower #3 are spaced 249' (145°) on bearings of 347° true and 167° true respectively and Tower #4 is spaced 456' (237°) on a bearing 258° true.

GROUND SYSTEM: 120 - 173' equally spaced copper radials plus a 20' square ground screen about each tower. Radials bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS		THEORETICAL RSS		STANDARD RMS	
Day	124.06	mv/m	117.4	mv/m	131.05	mv/m
Night	125.7	mv/m	151.3	mv/m	132.1	mv/m

KKAK
1420kHz

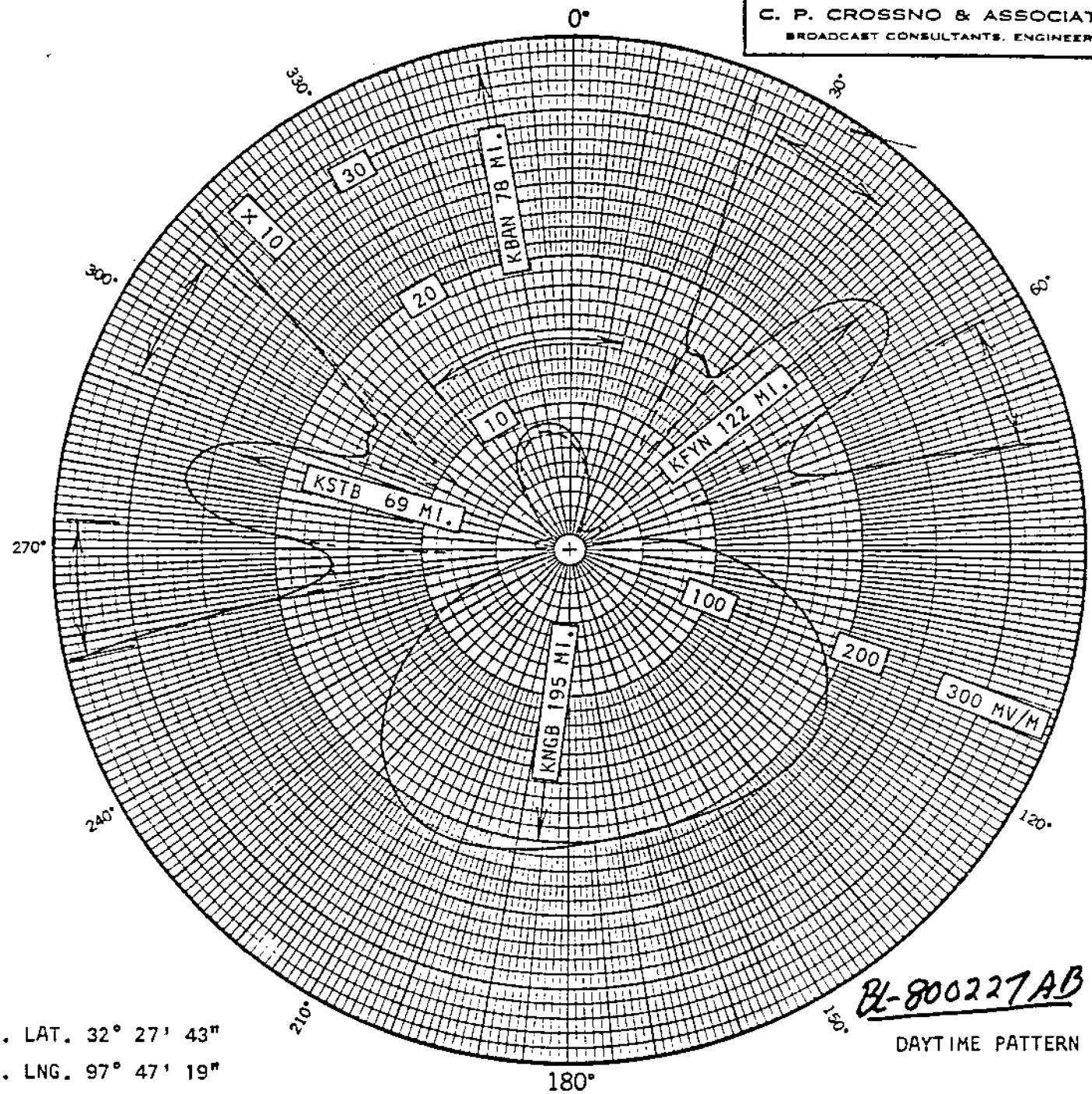
MODIFIED PATTERN AUGMENTATION

Azimuth at Maximum Augmentation	Augmented Radiation E_2	Span of Augmentation From	To
34.0°	16	26°	42°
68.5°	16	60.5°	76.5°
265.5°	16	257.5°	273.5°
300.0°	16	292°	308°
347.0°	88	320°	14°

Note: Please retain the Nighttime directional antenna radiation pattern notified for a new station in Granbury, Texas on 1420 kHz in United States Change List Number 1782 dated October 26, 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.

KPAR 1420 kHz

C. P. CROSSNO & ASSOCIATES
BROADCAST CONSULTANTS, ENGINEERS



BL-800227AB

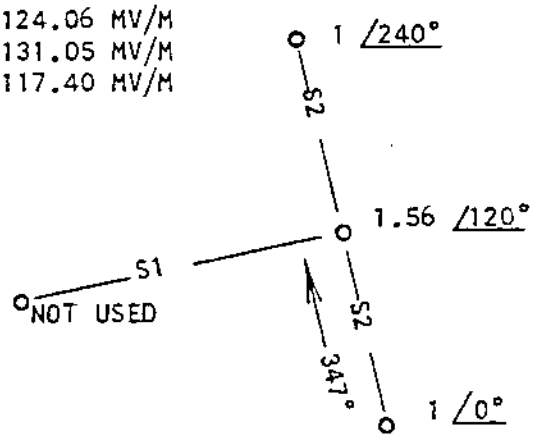
DAYTIME PATTERN

N. LAT. 32° 27' 43"
W. LNG. 97° 47' 19"

RMS (TH.) 124.06 MV/M
RMS (ST.) 131.05 MV/M
RSS (TH.) 117.40 MV/M

MODIFIED STANDARD RADIATION PATTERN

RADIO STATION KPAR
GRANBURY, TEXAS
1420 KHZ. 0.5KW,DA-2-U



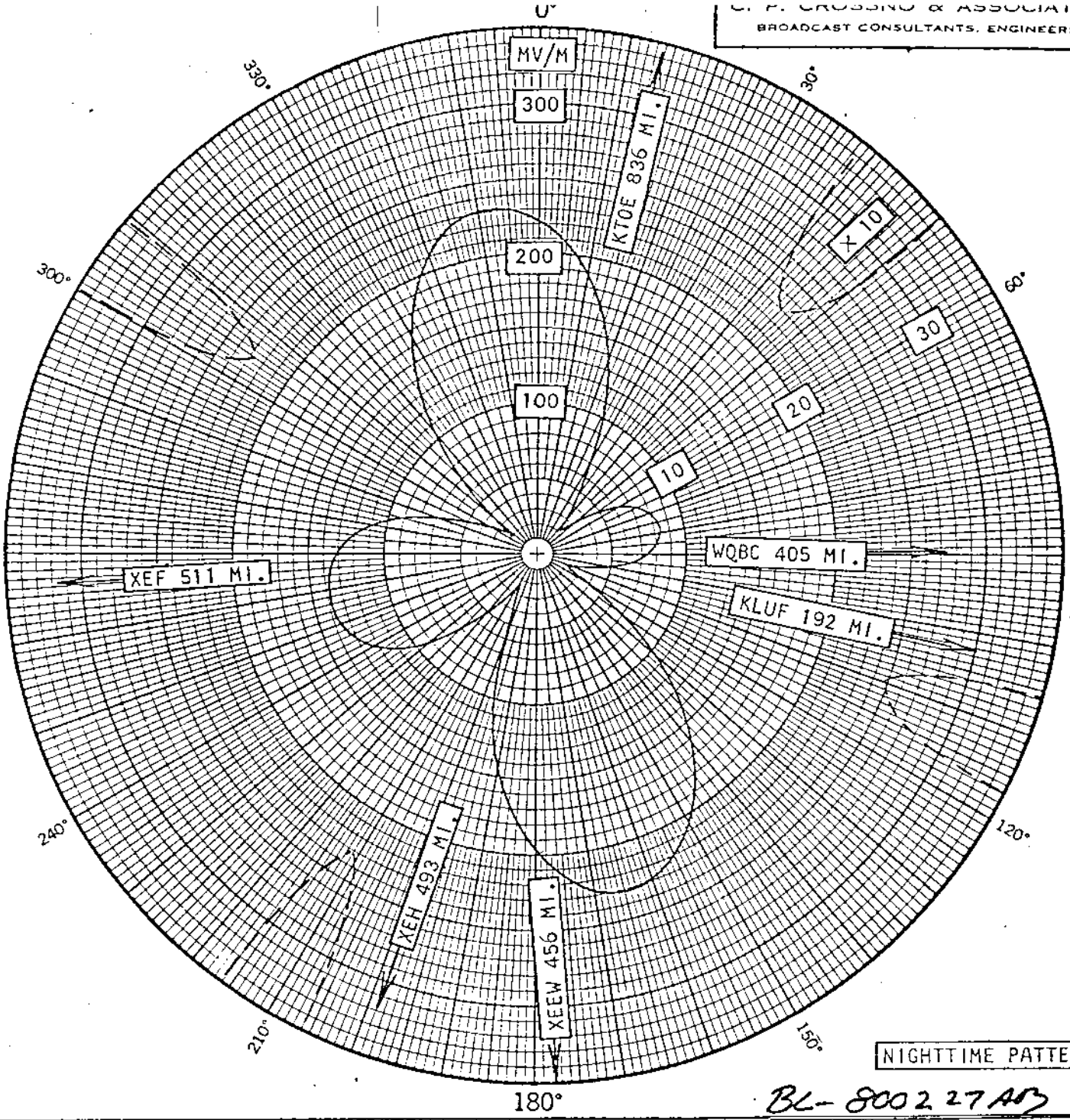
AUGMENTATION DATA

AZIMUTH	SPAN	MV/M
34.0°	16°	16
68.5°	16°	16
265.5°	16°	16
300.0°	16°	16
347.0°	54°	88

G=76° S1=237° S2=145°

FIG. 1

C. P. CROSSNO & ASSOCIATES
BROADCAST CONSULTANTS, ENGINEERS

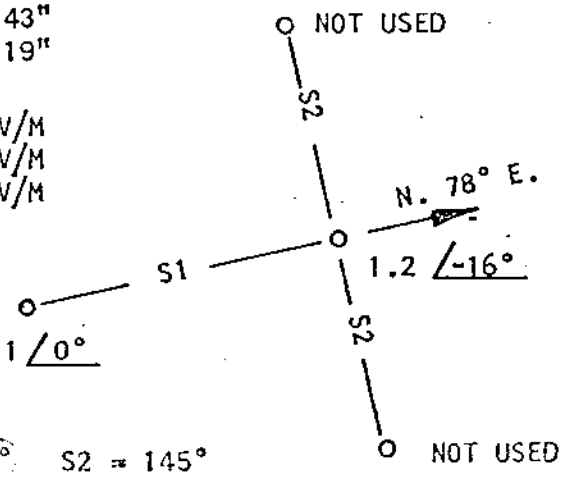


NIGHTTIME PATTERN

BL-800227AB

N. LAT. 32° 27' 43"
W. LNG. 97° 47' 19"

RMS (TH.) 125.7 MV/M
RMS (ST.) 132.1 MV/M
RSS (TH.) 151.3 MV/M



STANDARD RADIATION PATTERN

GRANBURY RADIO COMPANY
GRANBURY, TEXAS

1420 KHZ. 0.5 KW, DA-2, U

KPAR

G = 76° (75.36) S1 = 237° (237.1) S2 = 145°

KPEL

PROPOSED NIGHT KLFY, LAFAYETTE, LA. 500w, DA-N 1420 kc

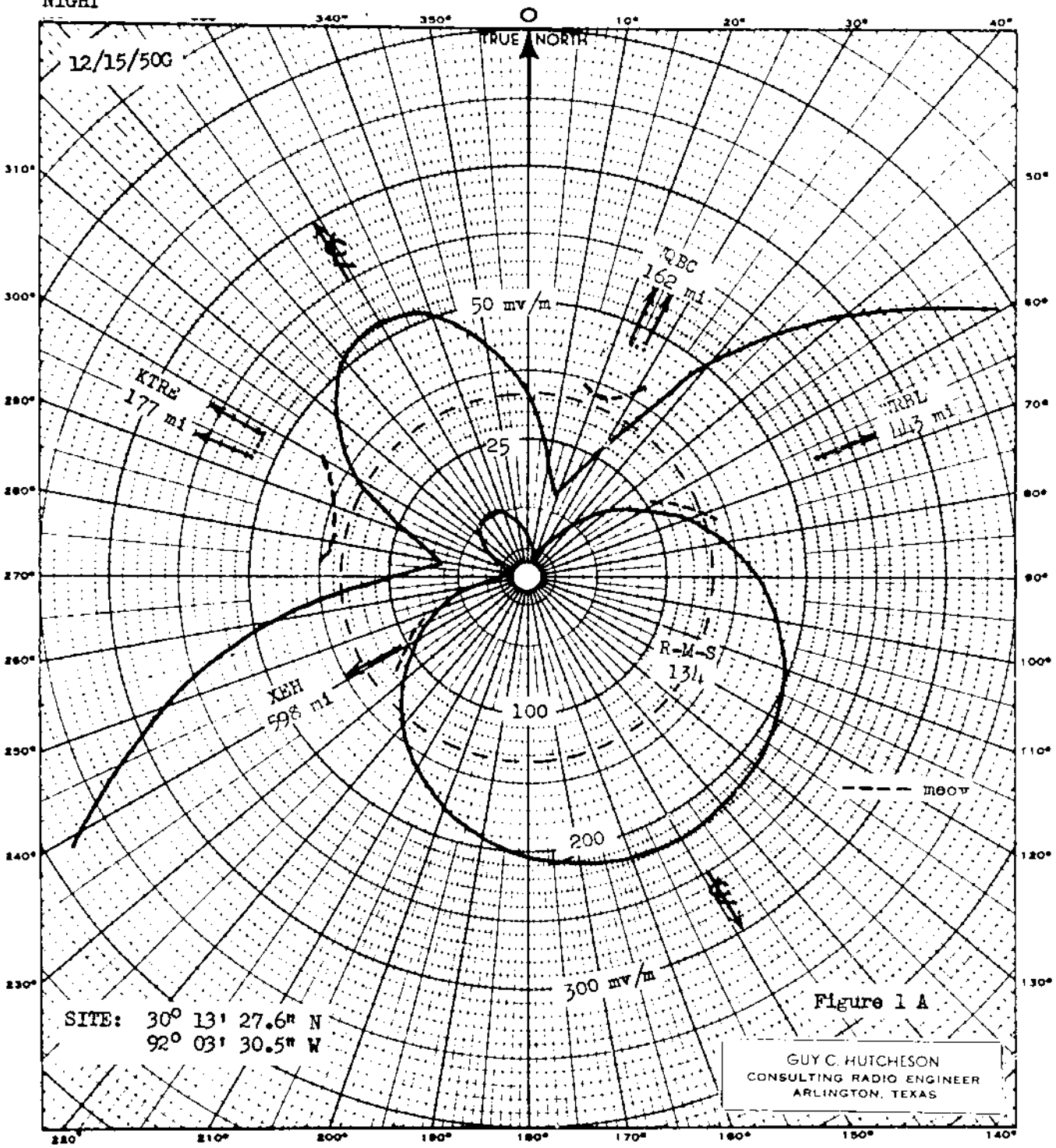
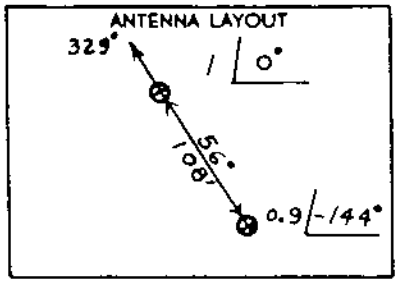


Figure 1 A



KLFY	Lafayette, La.	
Station: 1420 kc	Power: 0.5 kw	Location: 134 mv/m (190/kw)
Frequency: 2	Power: 194 ft., 0.28 λ	R-M-S Field: or 101°
No. of Elements	Height of Antenna	
MEASURED ☐	CALCULATED ☐	501117.1 supersedes 500504.1
Pattern: PROPOSED NIGHTTIME PATTERN		No.

Remarks

AMENDMENT RECD 11/30/50 ACC 12/8/50 BP-7666 KLFY, Lafayette, La. 1420 kc

KPEL

MEASURED
NIGHT
9/19/51G

KLFY, LAFAYETTE, LA. 500W, 1KW-LS, U, DA-N 1420 KC

HORIZONTAL RADIATION PATTERN

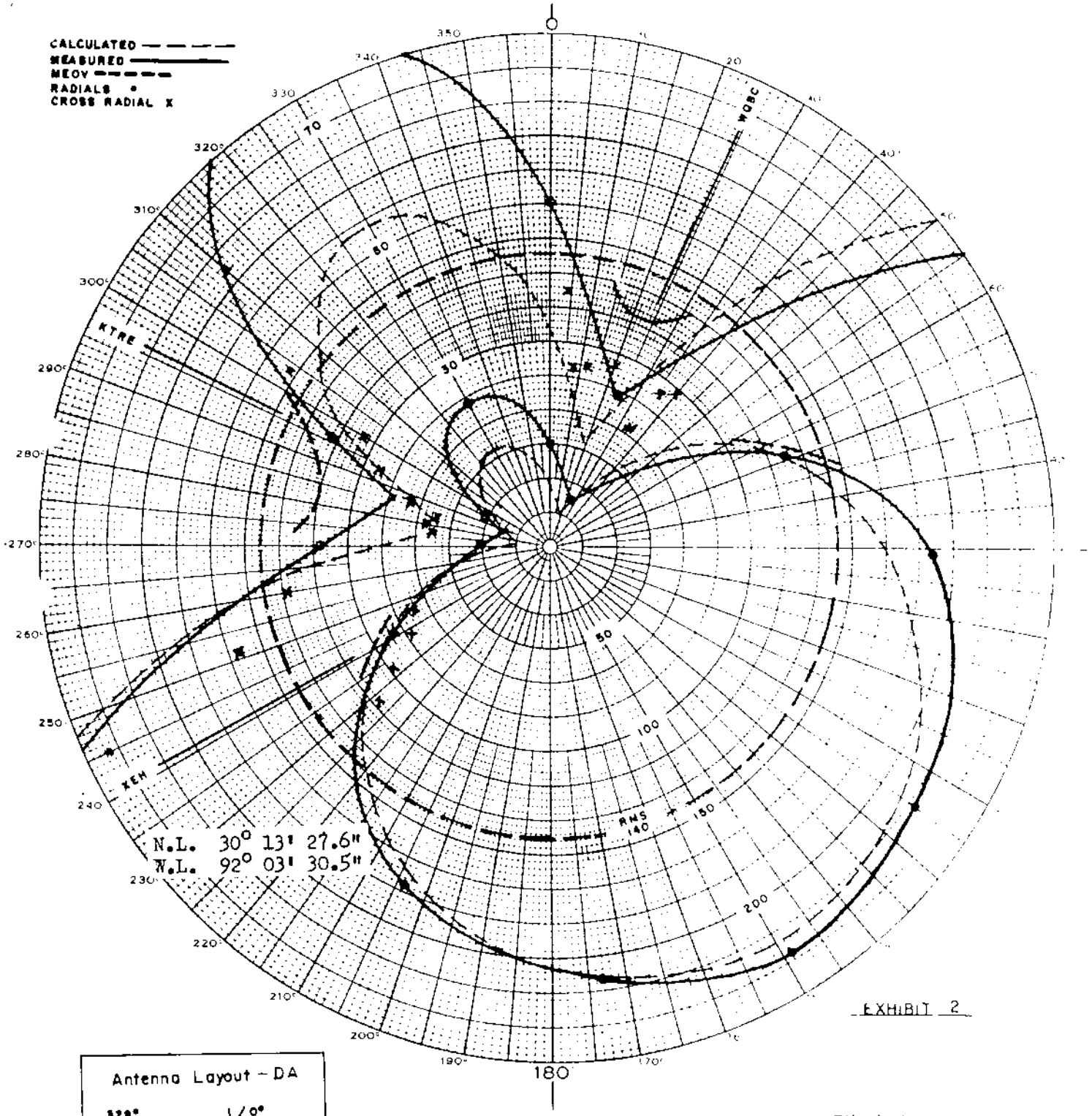
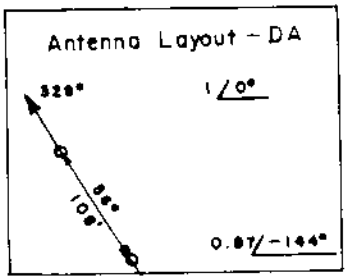


EXHIBIT 2



L. J. N. du Treil & Associates
CONSULTING RADIO ENGINEERS
204 Hibernia Avenue
NEW ORLEANS 10, LA

KLFY Lafayette, La.
1420 KC - 0.5 KW
2 Elements 194 ft
.28 λ or 101°
NIGHTTIME PATTERN

APPL RECD 8/27/51 BL-4529 KLFY, LAFAYETTE, LA. 1420 KC

KPEL

MEASURED
NON-DA
9/19/51G

KLFY, LAFAYETTE, LA. 500W, 1 KW-LS, U, DA-N 1420 KC

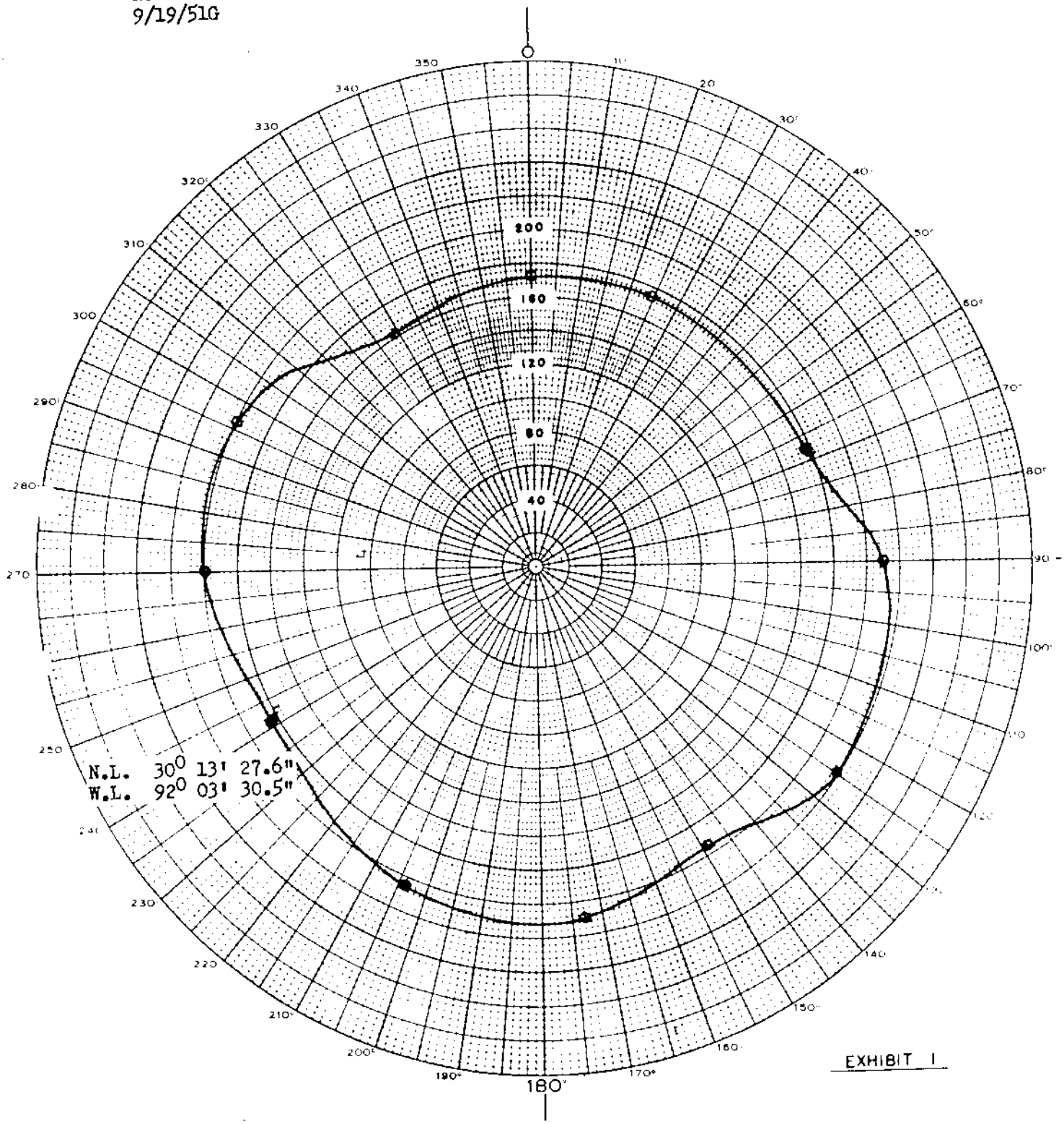


EXHIBIT I

RMS
200 MV/M
DAY TIME

L. J. N. du Treil & Associates
CONSULTING RADIO ENGINEERS
204 Homedale Avenue
NEW ORLEANS 19, LA.

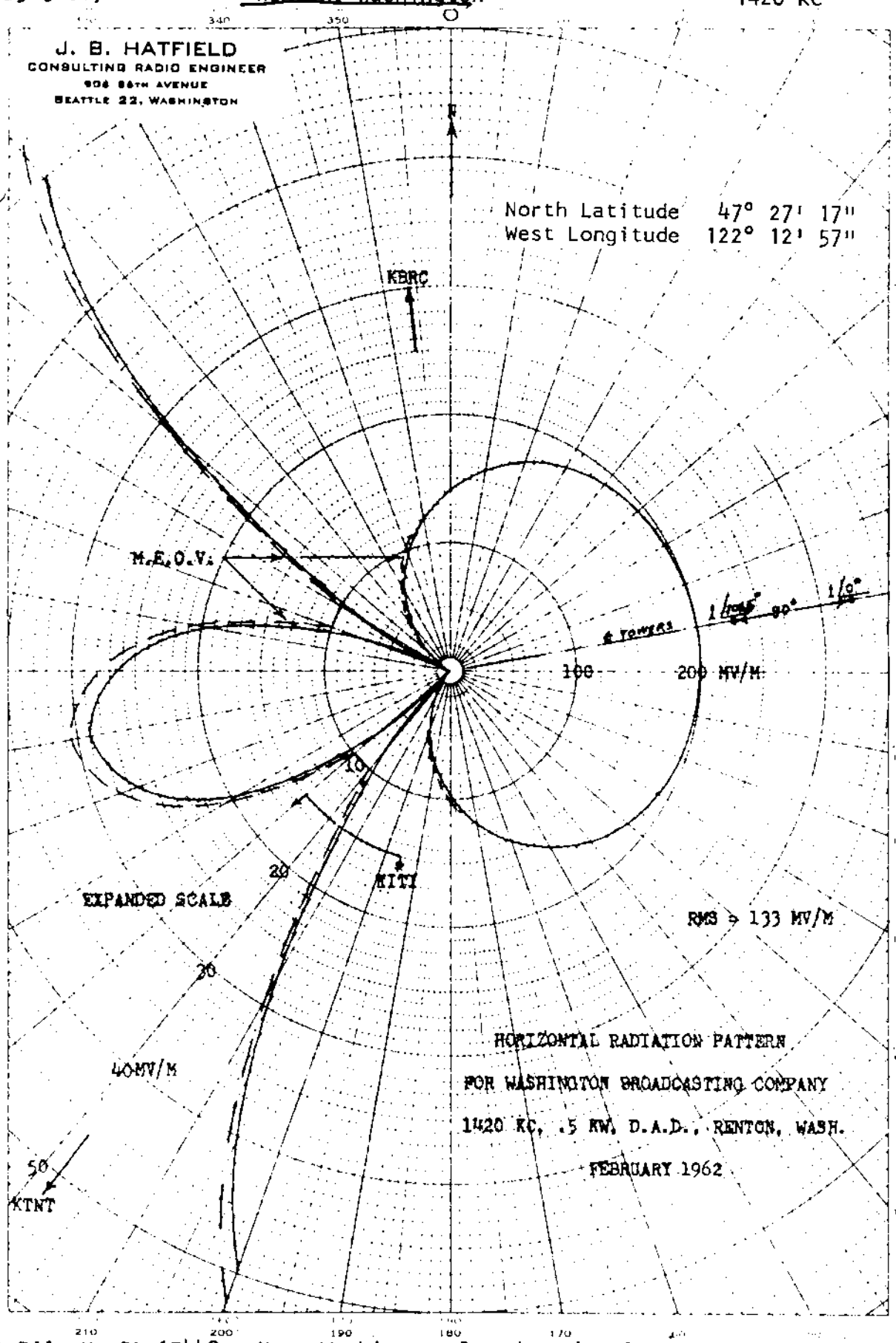
KLFY Lafayette, La.
1420 KC — 1.0 KW
Non Directional

APPL RECD 8/27/51 BL-4529 KLFY, LAFAYETTE, LA. 1420 KC

KREN

Proposed Day
(5-25-62ct)

New; Washington Broadcasting Co. 500w,DA-D,D
Renton, Washington 1420 kc



o-12-63
granted CP
for new station

FCC File No.BP-15448
Accepted 5-3-62

New; Washington Broadcasting Co.
Renton, Washington 1420 kc

KSCR

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : KSCR Main Studio: Renton, Washington

Frequency : 1420 KHz Power : _____ Night .5 kW Day

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

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 47 ° 28 ' 37 "
West Longitude: 122 ° 14 ' 30 "

ANTENNA CHARACTERISTICS

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

TOWER :	W(#1)	E(#2)				
HEIGHT ABOVE INSULATORS :	150'	150'(78.5°)				
DAY PHASING: :	106.5°	0.0°				
DAY FIELD RATIO:	1.0	1.0				

SPACING AND ORIENTATION: Adjacent towers in a row are spaced 173.2' (90°) on a line bearing 70° true.

GROUND SYSTEM: 120 - 170 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.

KSCR

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	135 mV/m	145 mV/m	141.8 mV/m

Note:

KSCR

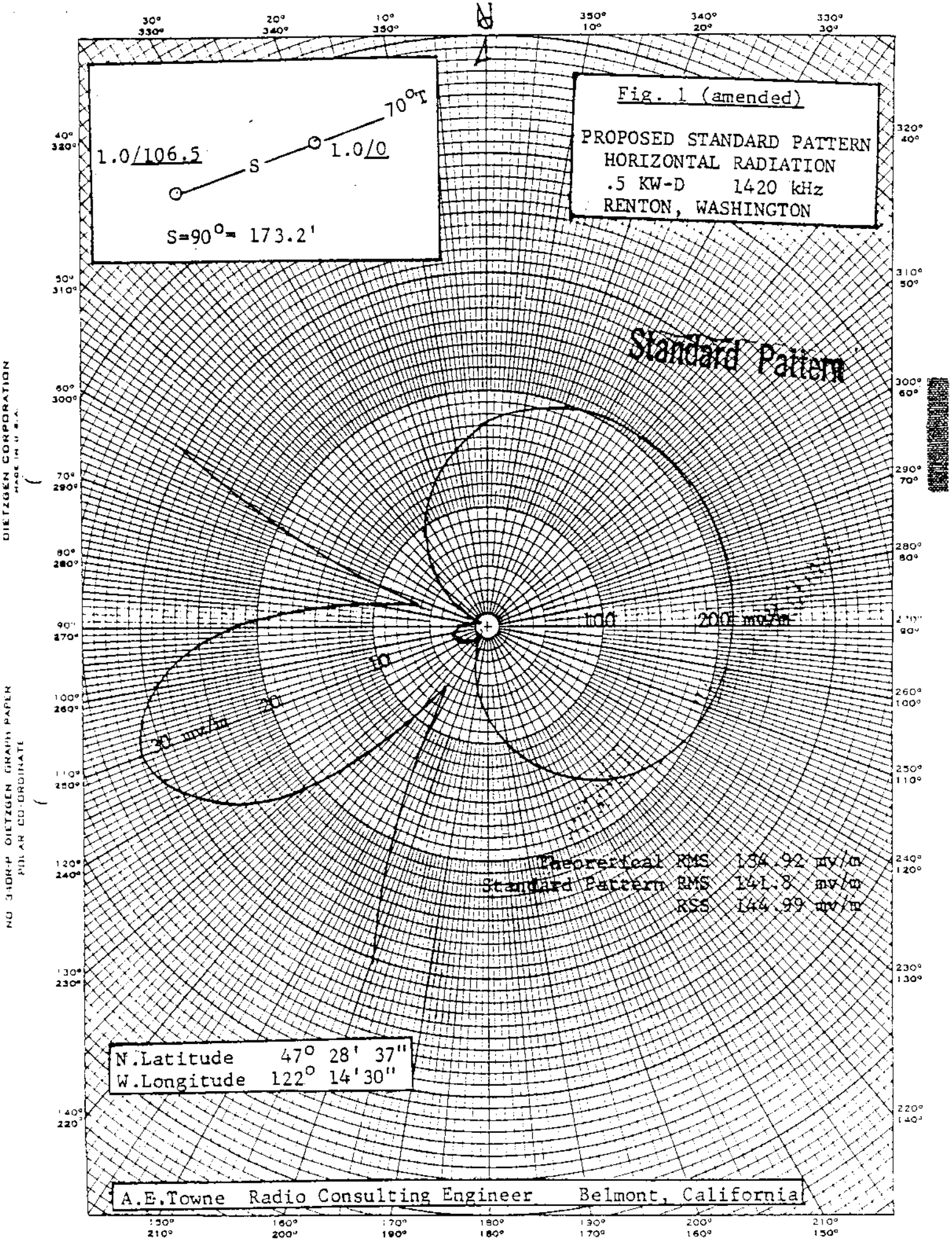


Fig. 1 (amended)
PROPOSED STANDARD PATTERN
HORIZONTAL RADIATION
.5 KW-D 1420 kHz
RENTON, WASHINGTON
70°T
1.0/106.5
S
1.0/0
S=90°= 173.2'
Standard Pattern
100
200 mv/m
50
20
30 mv/m
Theoretical RMS 134.92 mv/m
Standard Pattern RMS 141.8 mv/m
RSS 144.99 mv/m
N.Latitude 47° 28' 37"
W.Longitude 122° 14'30"
A.E.Towne Radio Consulting Engineer Belmont, California
DIETZGEN CORPORATION
NO. 310R-P DIETZGEN GRAPH PAPER
POLAR CO-ORDINATE

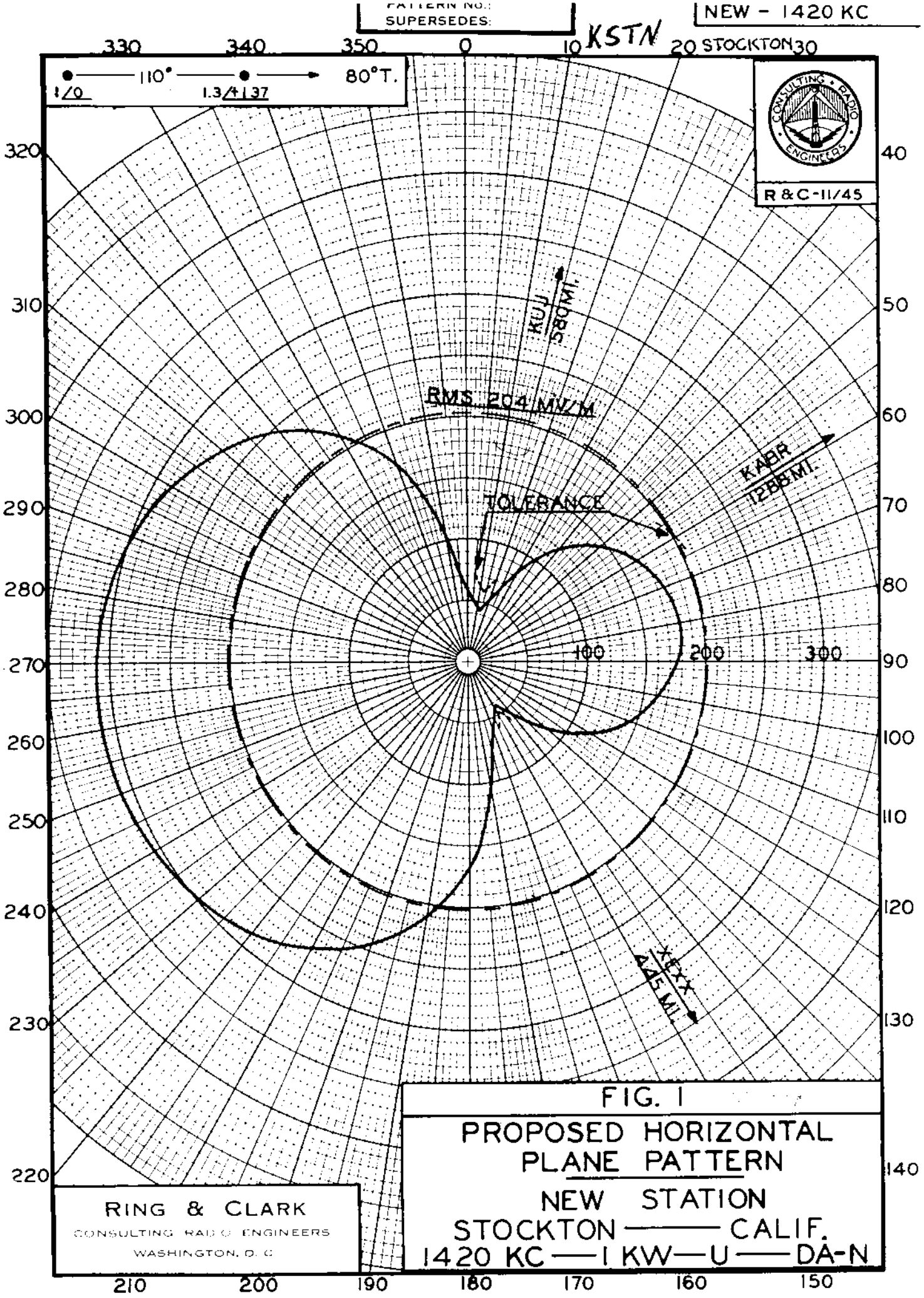


FIG. 1

PROPOSED HORIZONTAL PLANE PATTERN

NEW STATION

STOCKTON — CALIF.

1420 KC — 1 KW — U — DA-N

RING & CLARK

CONSULTING RADIO ENGINEERS

WASHINGTON, D. C.

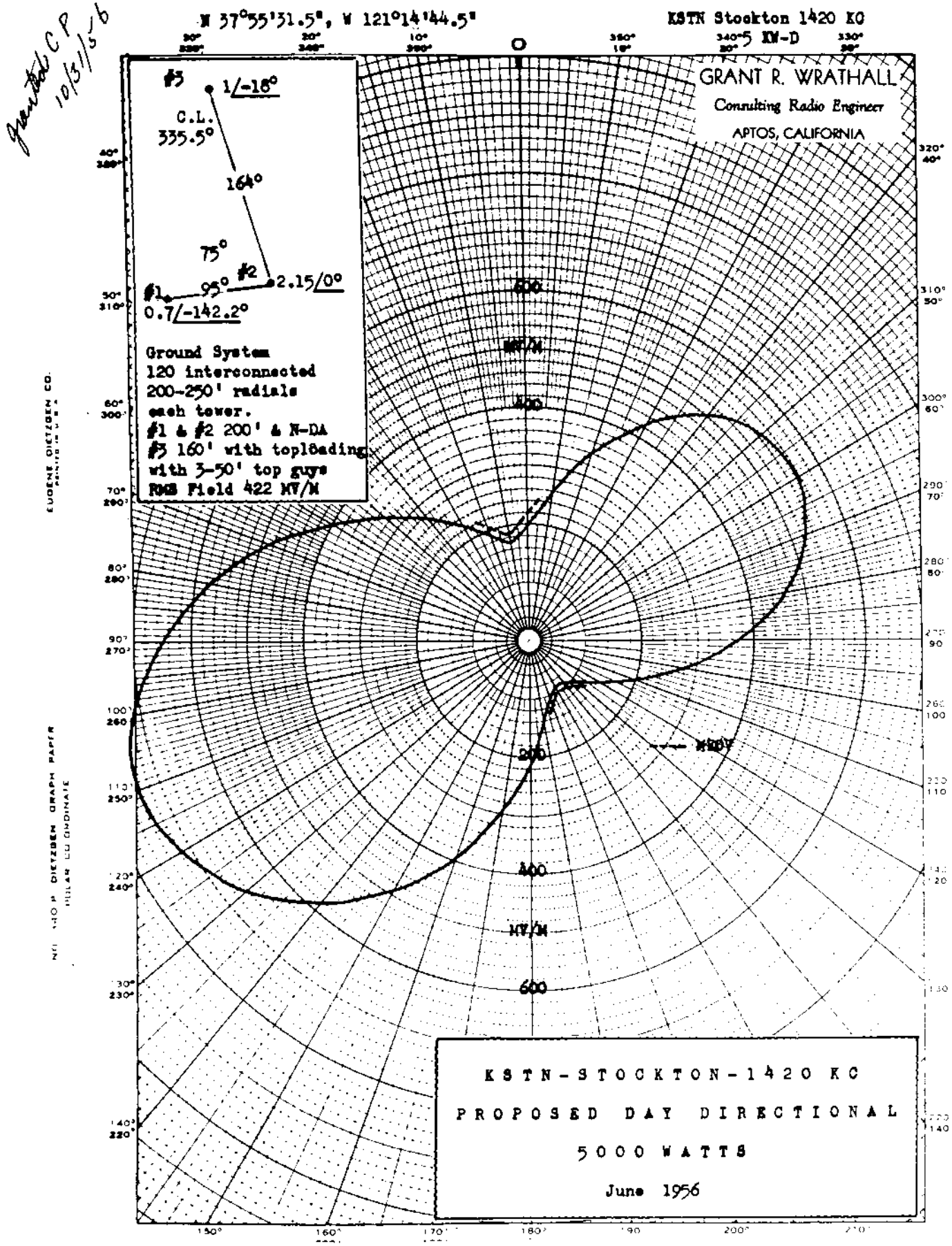
KSTN

PROPOSED
DAY (8-2-56g)

STATION KSTN
STOCKTON, CALIF

1 KW - 5 KW
DA-2, U

1420 KC



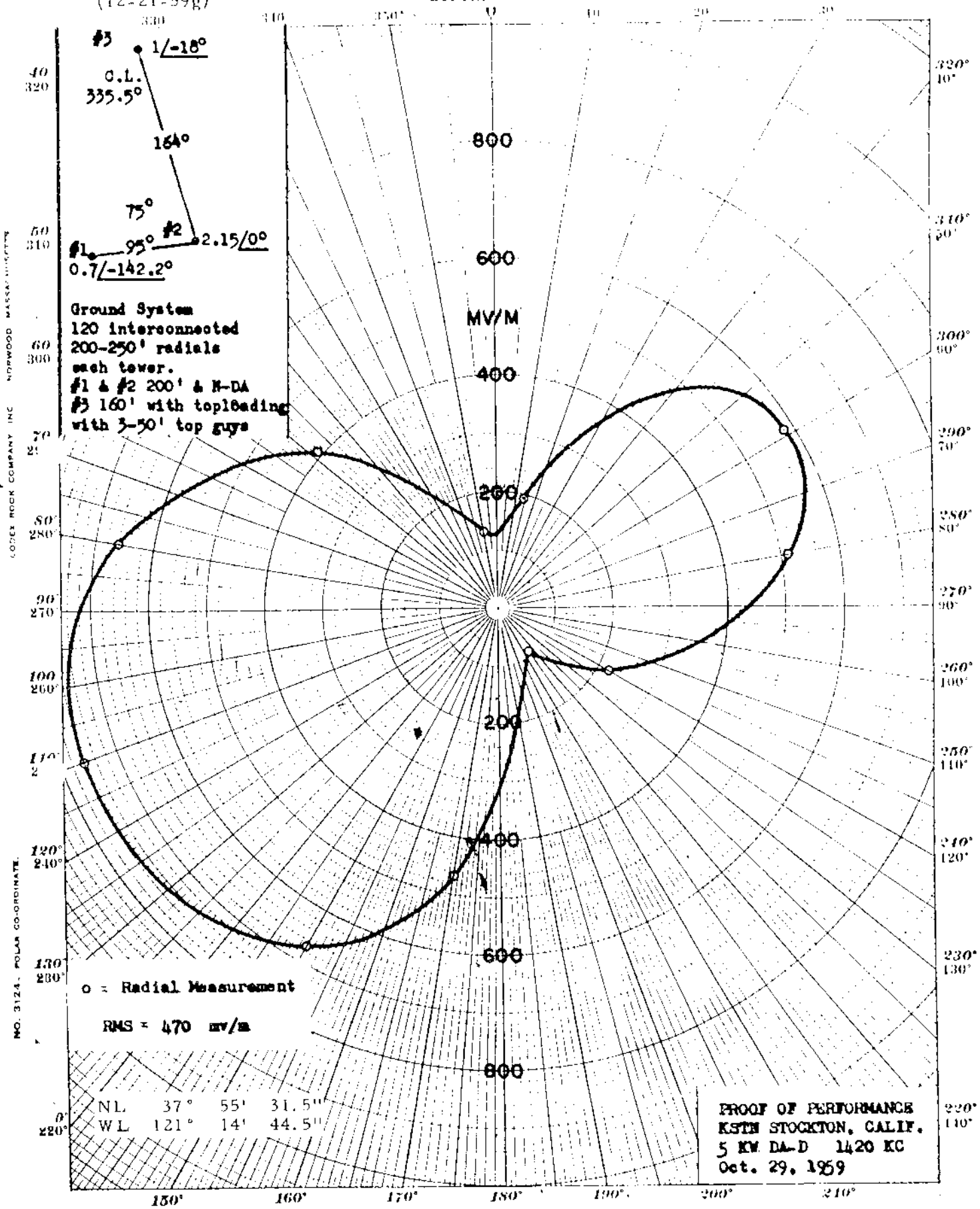
FCC File No. BP-10,208 (Amended) Accepted 7-23-56 KSTN, Stockton, Calif. 1420 KC

KSTN

MEASURED DAY
(12-21-59g)

Station KSTN
Stockton, California

1kw, 5kw-LS, DA-2, U
1420 KC



FCC File No. BL-7714
Accepted 11-18-59

KSTN
Stockton, California

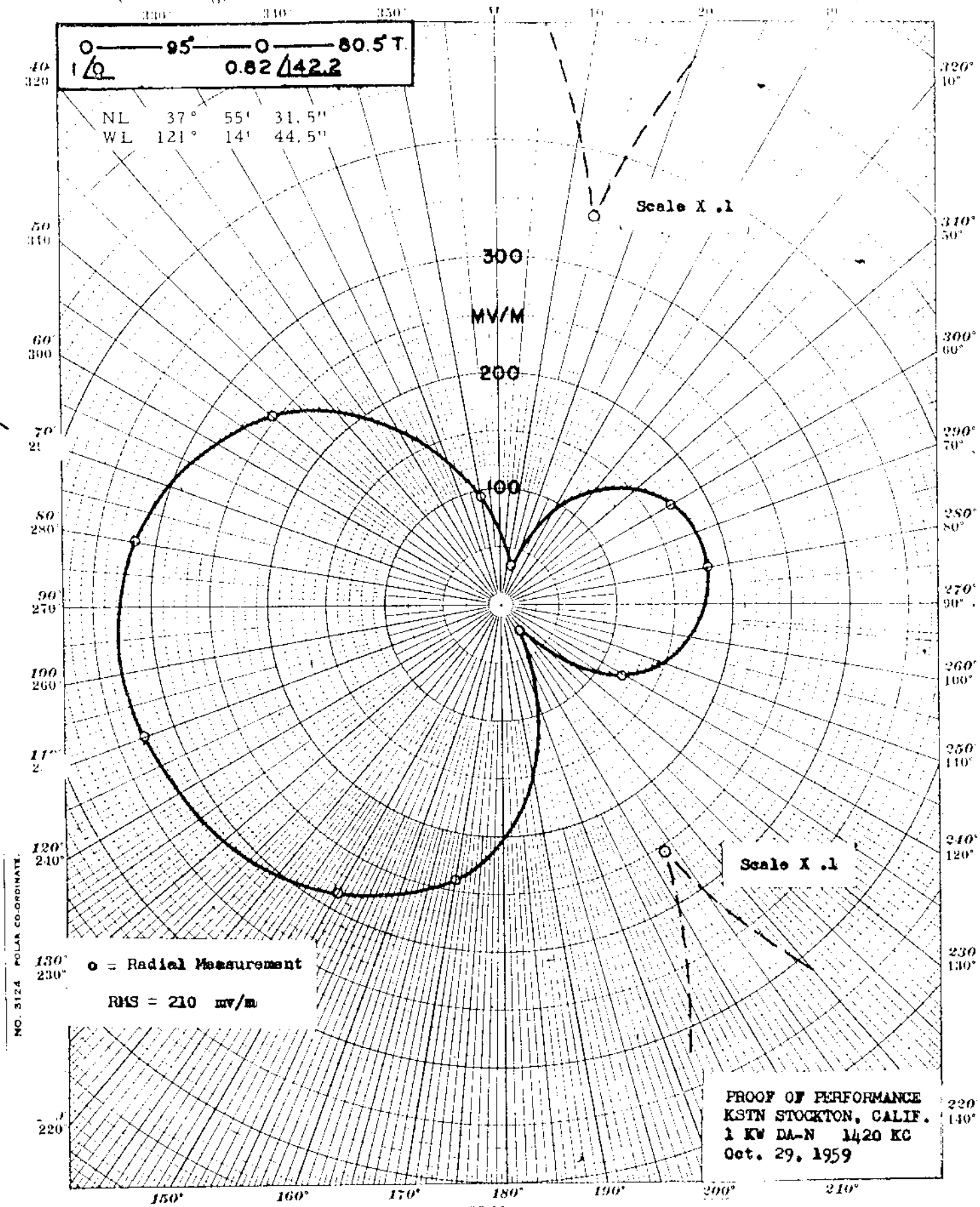
1420 KC

d 18 60 granted of, 10 change to DA-2 operation.

MEASURED NIGHT
(12-21-59g)

Station KSTN
Stockton, California

1kw, 5kw-LS, DA-2, U
1420 KC



S 18.60 granted 1/10 change to DA-2 operation.

FCC File No. BL-7714
Accepted 11-18-59

KSTN
Stockton, California

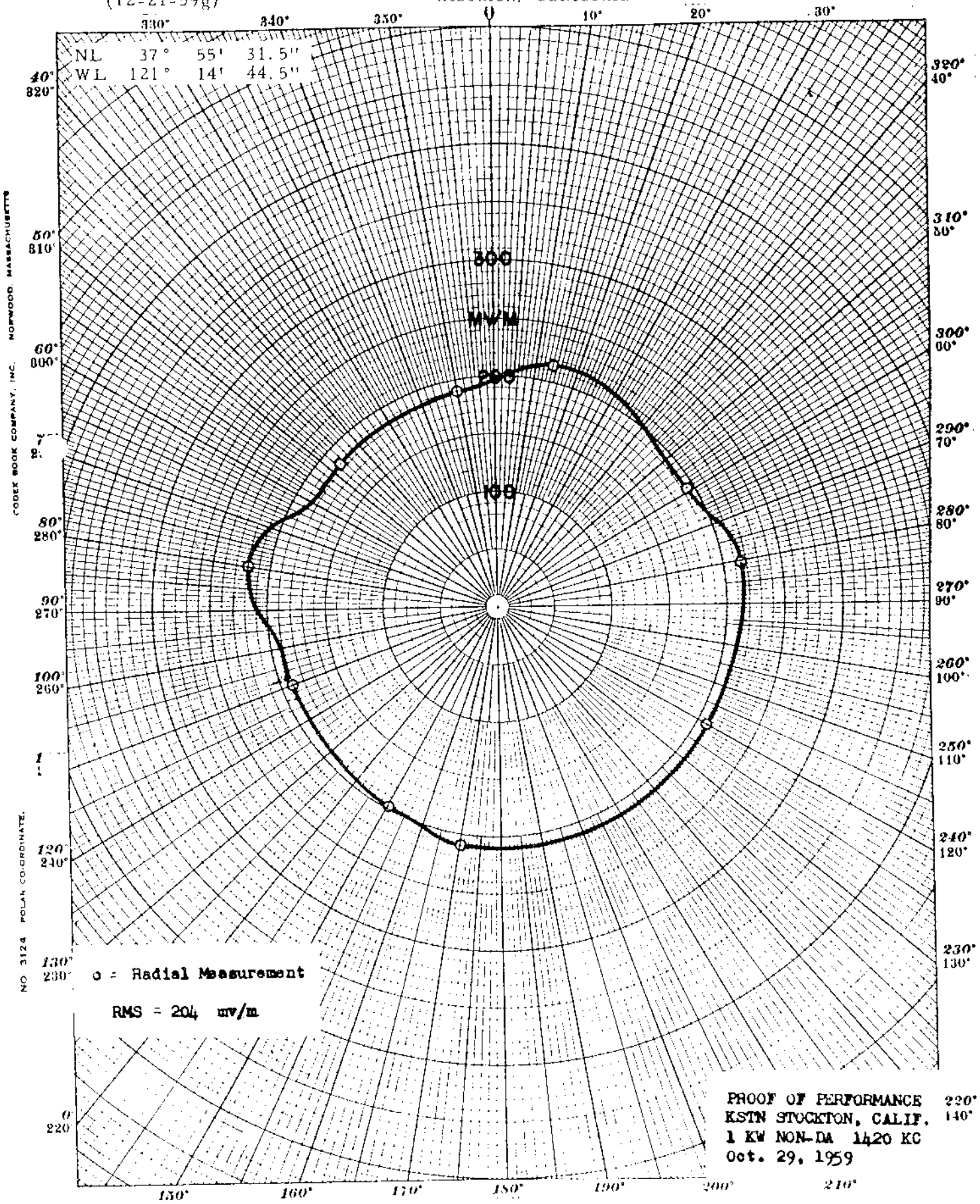
1420 KC

KSTN

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

Station KSTN
Stockton, California

1kw, 5kw-LS, DA-2, U
1420 KC



FCC File No. BL-7714
Accepted 11-18-59

KSTN
Stockton, California

1420 KC

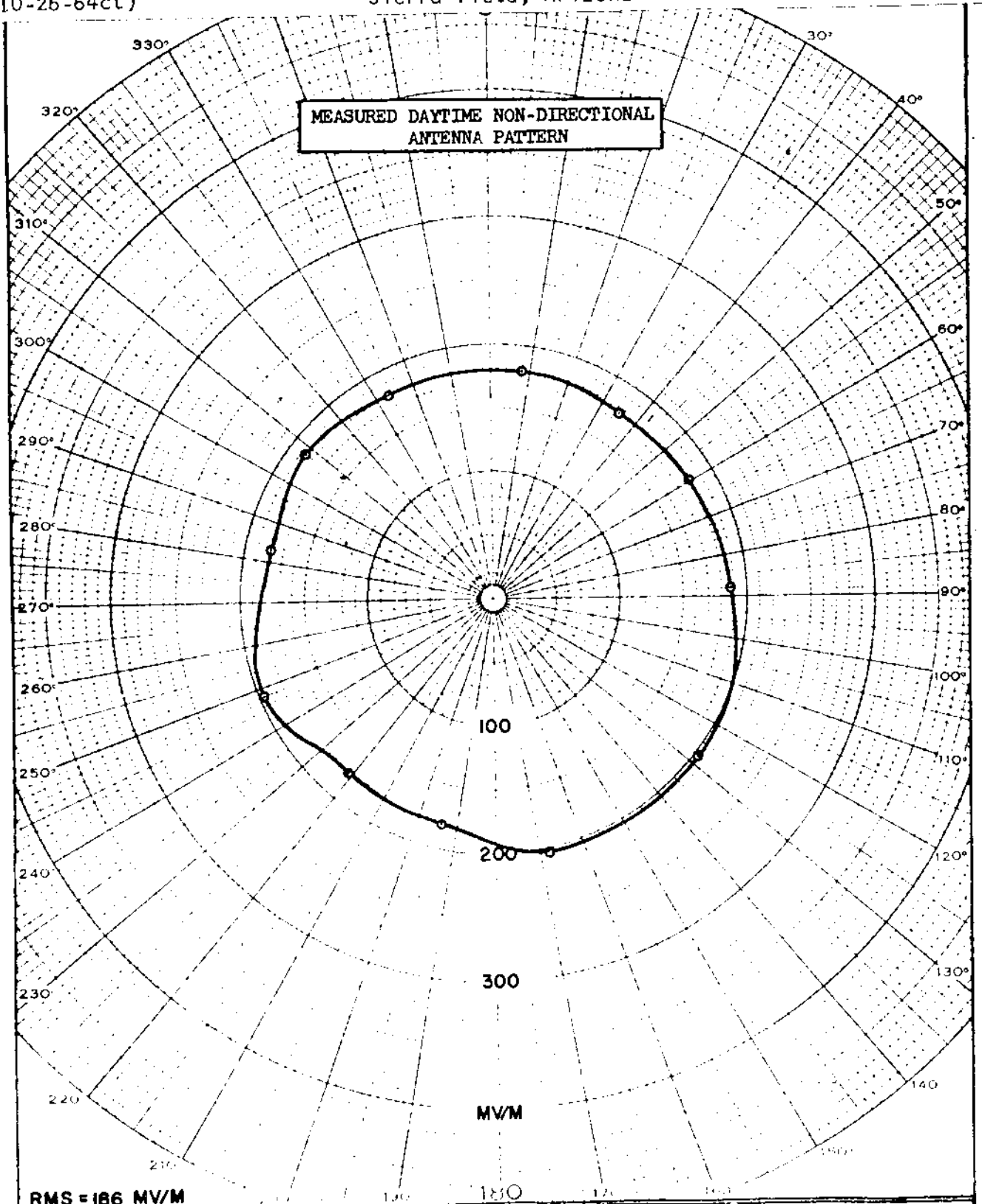
KTAN

Measured Non-DA
(10-26-64ct)

Station KHFH
Sierra Vista, Arizona

5C

1420 kc



OSCAR LEON CUELLAR
AM - FM - TV
TUCSON, ARIZONA

RADIO STATION KHFH
1420 KC, 1KW-D, 500W-N, DA-N
SIERRA VISTA, ARIZONA
ESTHER MORRIS

MAY 1964

FCC File No. BL-10644
Accepted 10-5-64

Station KHFH
Sierra Vista, Arizona

1420 kc

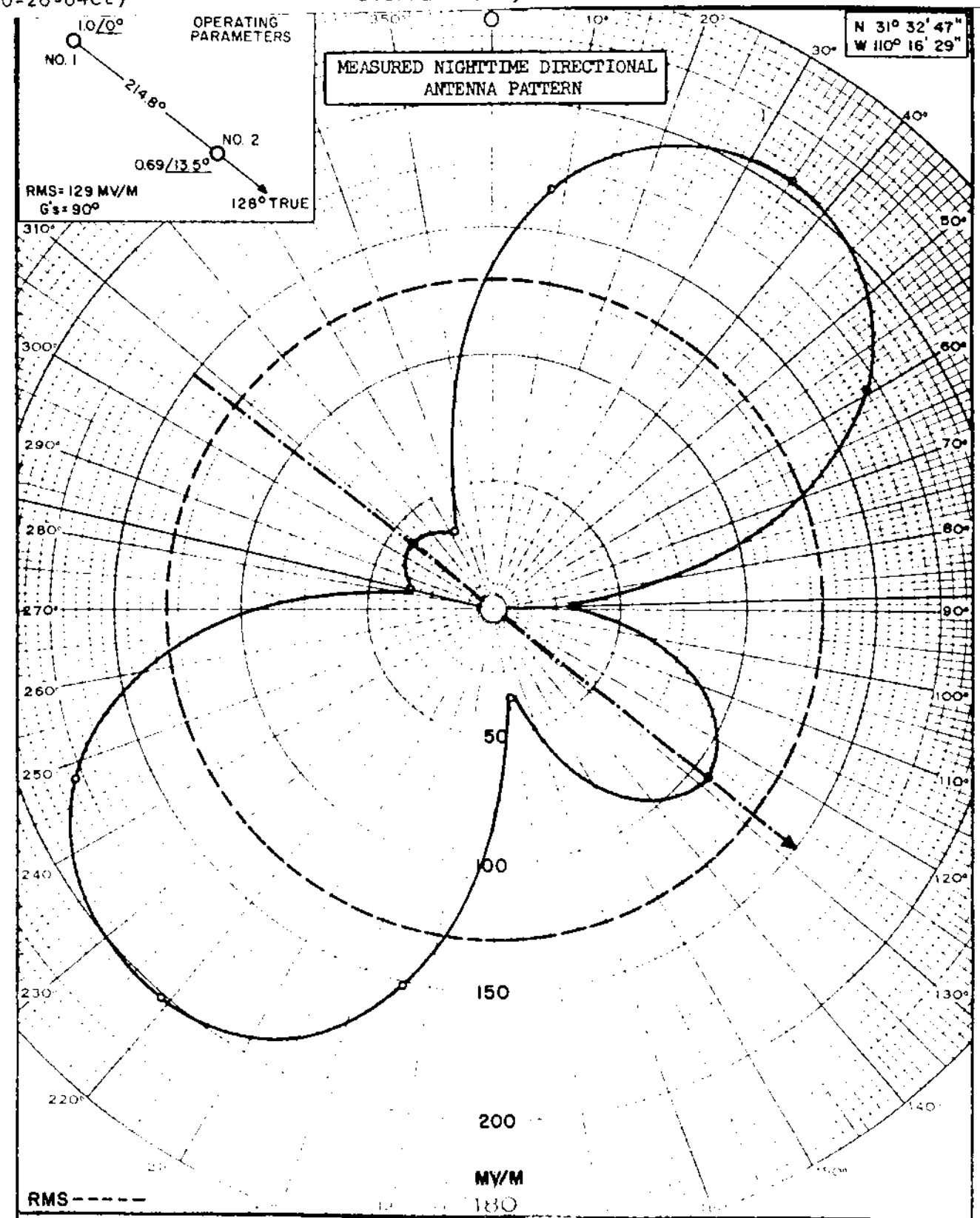
KTAN

Measured Night
(10-26-64ct)

Station KHFH
Sierra Vista, Arizona

5

1420 kc



F 302-
0-9-64
granted L
a DA-N

OSCAR LEON CUELLAR
AM - FM - TV
TUCSON, ARIZONA

RADIO STATION KHFH
1420 KC, 1KW-D, 500W-N, DA-N
SIERRA VISTA, ARIZONA
ESTHER MORRIS

MAY 1964

FCC File No. BL-10644
Accepted 10-5-64

Station KHFH
Sierra Vista, Arizona

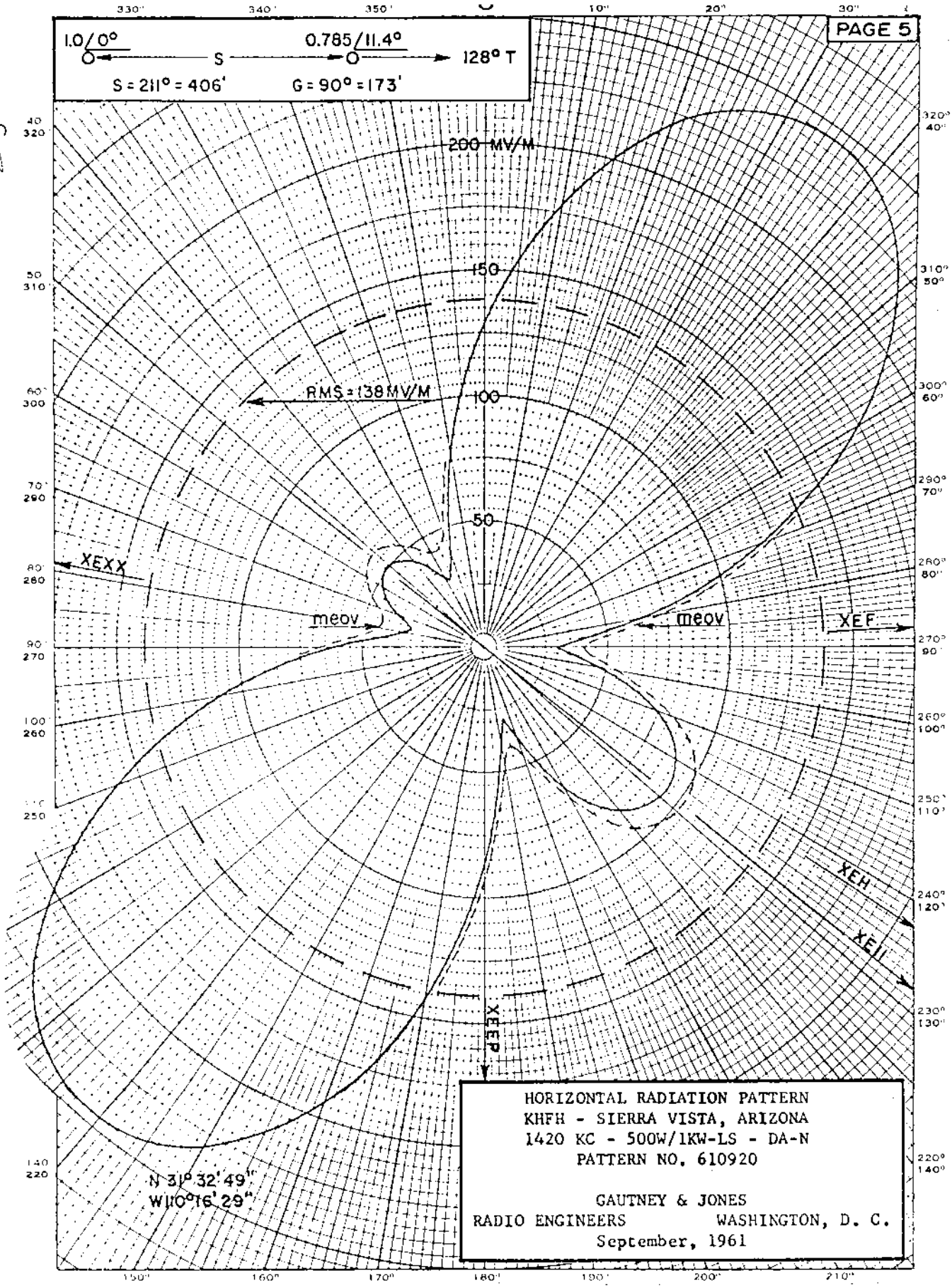
1420 kc

KTAN

PROPOSED NIGHT
(10-25-61ct)

Station KHFH
Sierra Vista, Arizona

500w,1kw-LS,DA-N,U
1420 kc



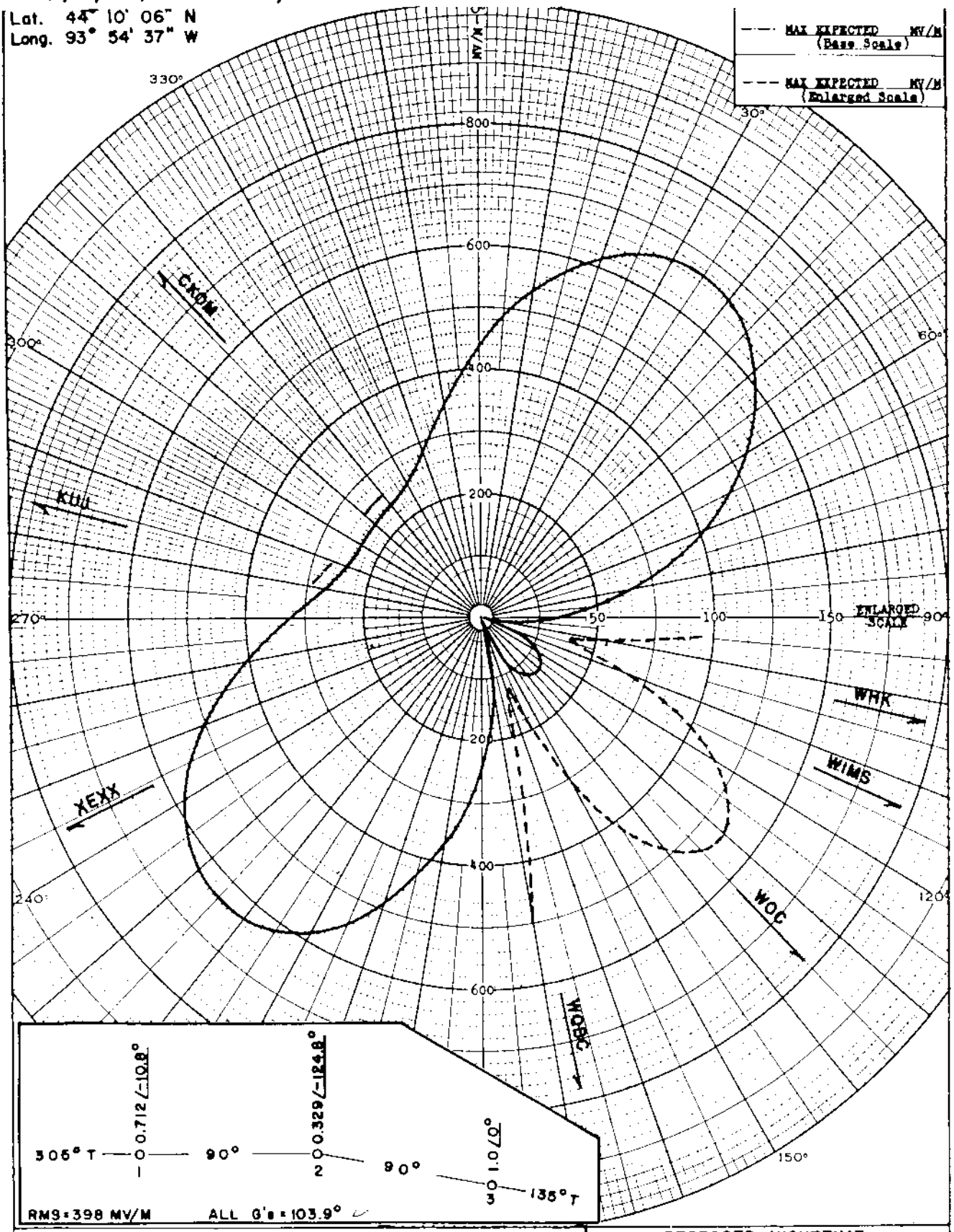
FCC File No. BP-14159
Accepted 10-17-61

Station KHFH
Sierra Vista, Arizona

1420 kc

KTOE

PROPOSED KTOE 5KW DA-n UNLIMITED
NIGHT (8/19/54G) MANKATO, MINNESOTA 1420kc



COMMERCIAL RADIO EQUIPMENT CO.
RADIO ENGINEERING CONSULTANTS

PATTERN: PROPOSED NIGHTTIME
FOR: KTOE, MANKATO, MINN.
POWER: 5 KW FREQ: 1420 KC

FCC FILE NO. BP-8702 (AMENDED) DATE ACCEPTED 7-16-54 1420kc
DOCKET NO. 10592

KTOE

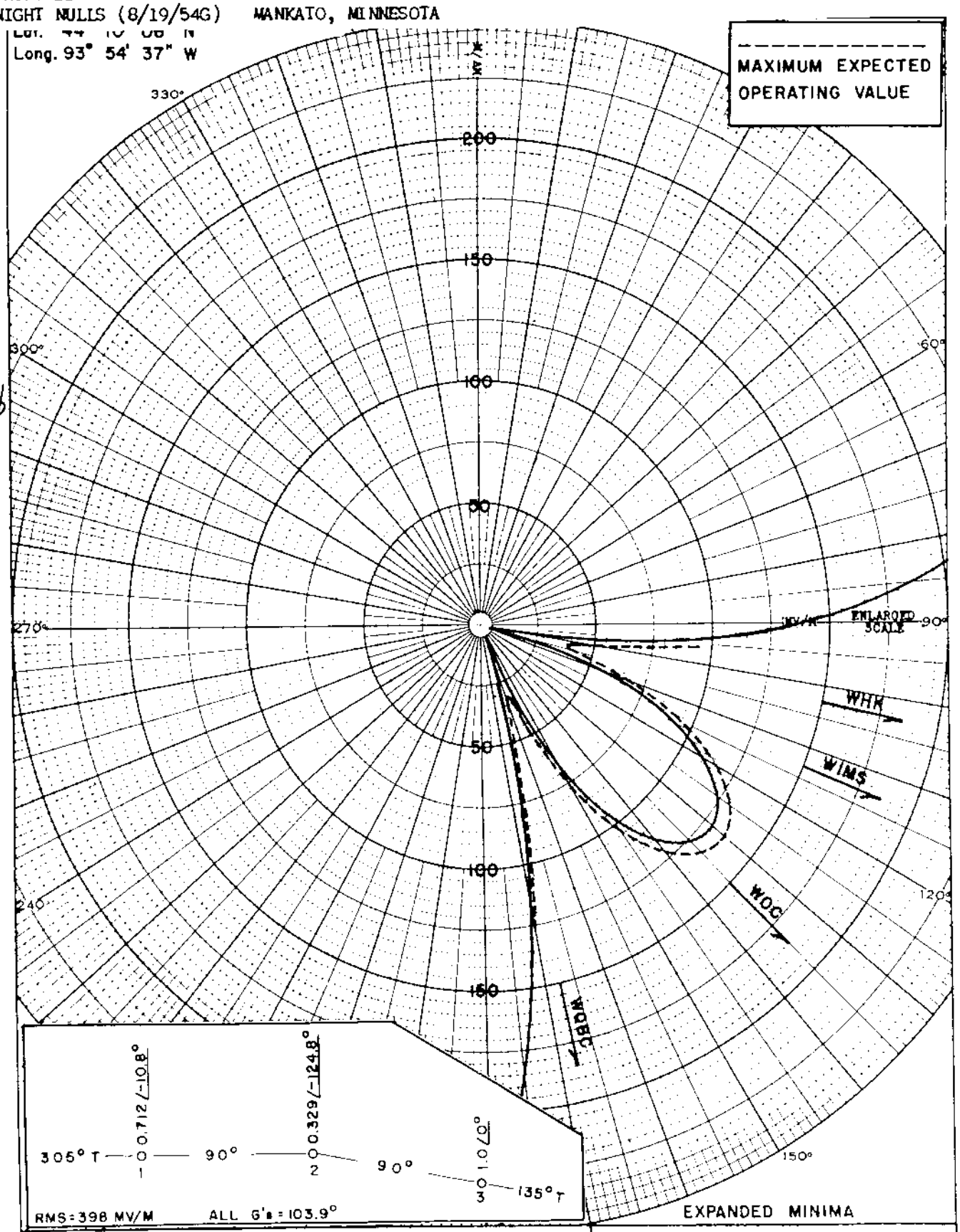
PROPOSED
NIGHT NULLS (8/19/54G)

KTOE
MANKATO, MINNESOTA

5KW DA-N UNLIMITED

1420kc

Lat. 44° 10' 06" N
Long. 93° 54' 37" W



limit 5.1 mv/m

WHK 4.35
WOC 2.68

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

PATTERN: PROPOSED NIGHTTIME
FOR: KTOE, MANKATO, MINN.
POWER: 5 KW FREQ: 1420 KC
DATE:

FCC FILE NO. BP-8702 (AMENDED) DATED ACCEPTED 7-16-54 1420 kc
DOCKET NO. 10592

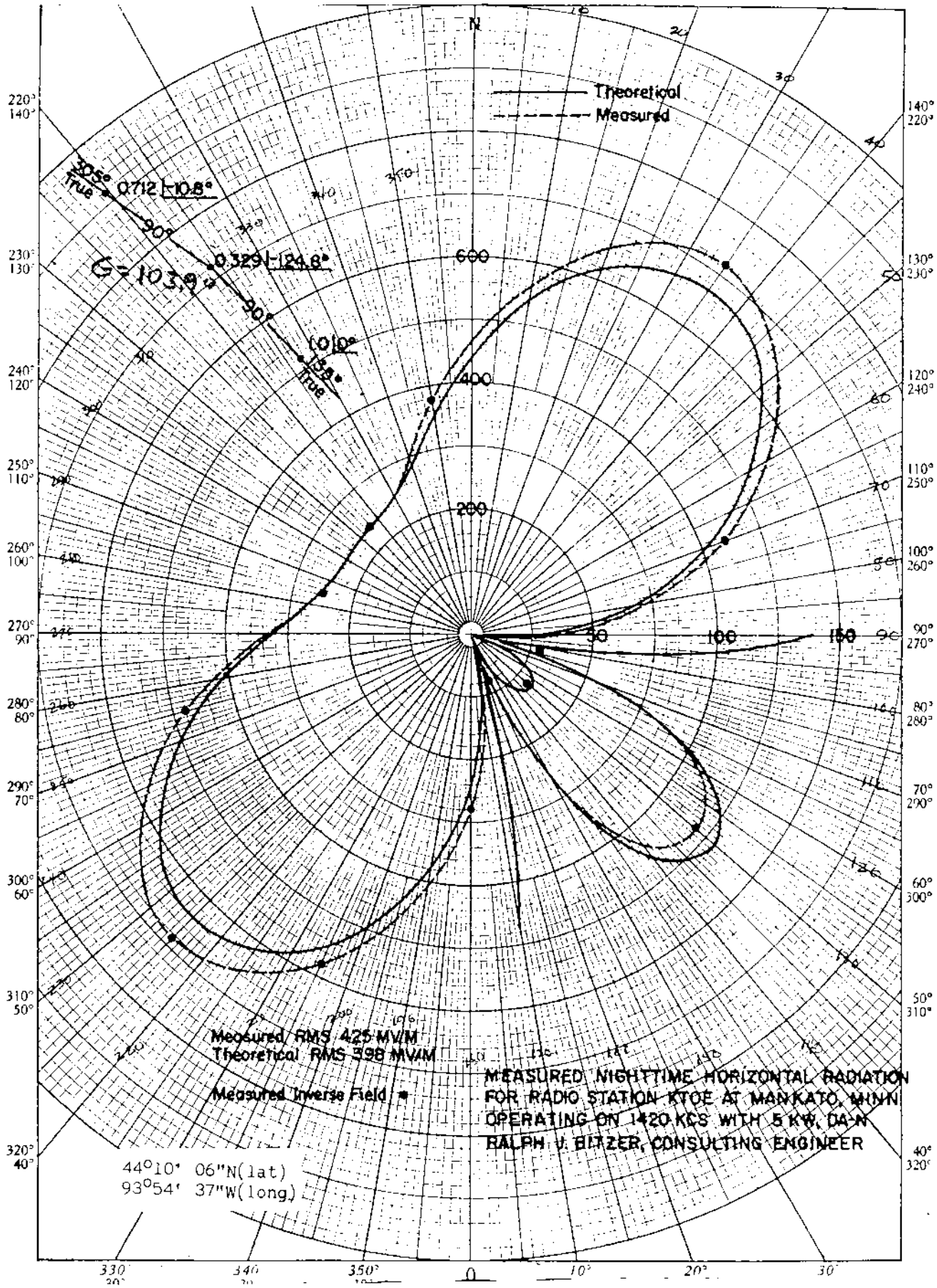
KTOE

MEASURED
NIGHT (2/21/56G)

STATION KTOE
MANKATO, MINN.

5 KW
DA-N, U

1420 KC



FCC File No. BL-5990 Accepted 12-20-55 KTOE, Mankato, Minn. 1420 KC

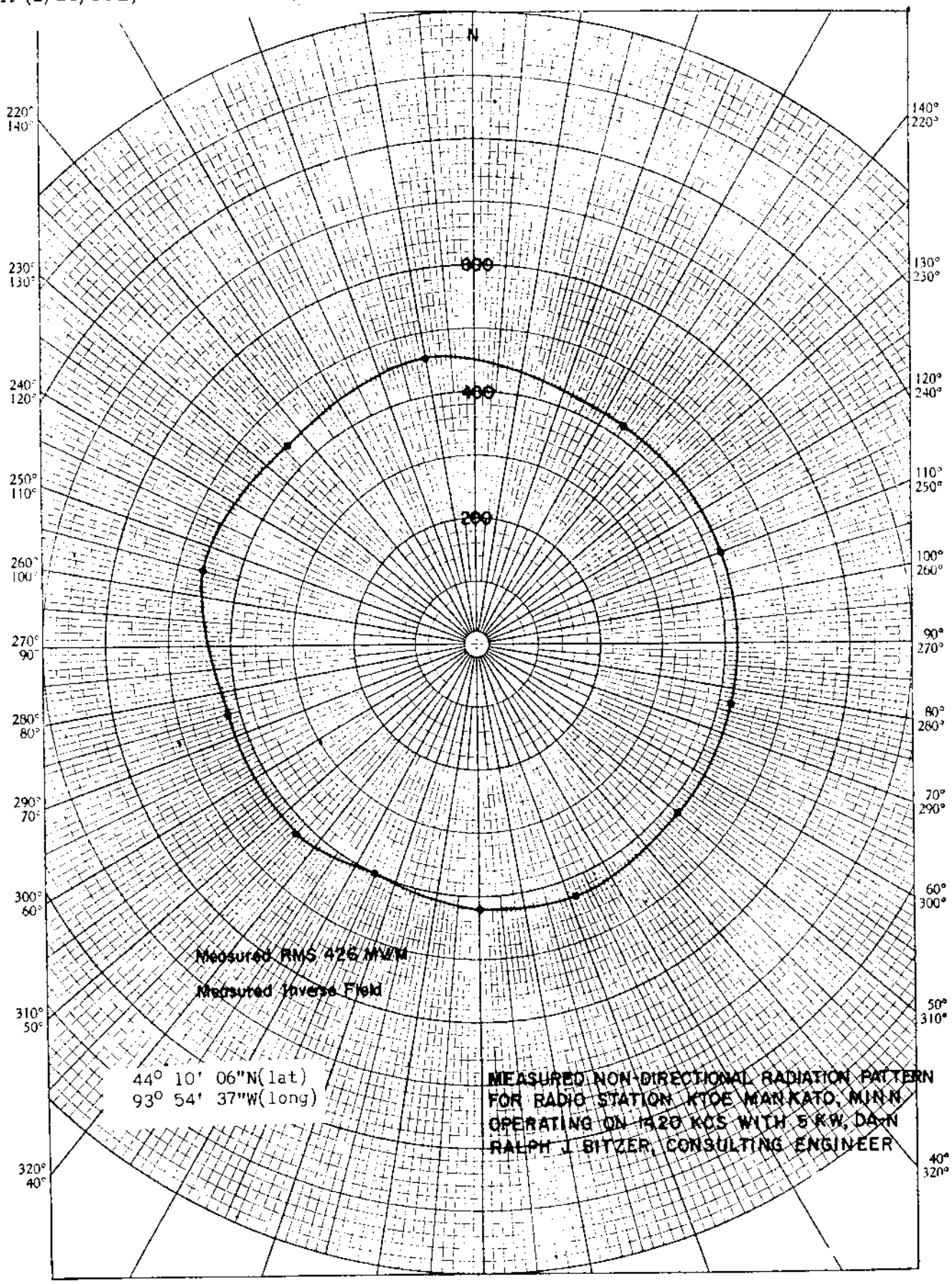
KTOE

MEASURED
NON-DA (2/21/56G)

STATION KTOE
MANKATO, MINN.

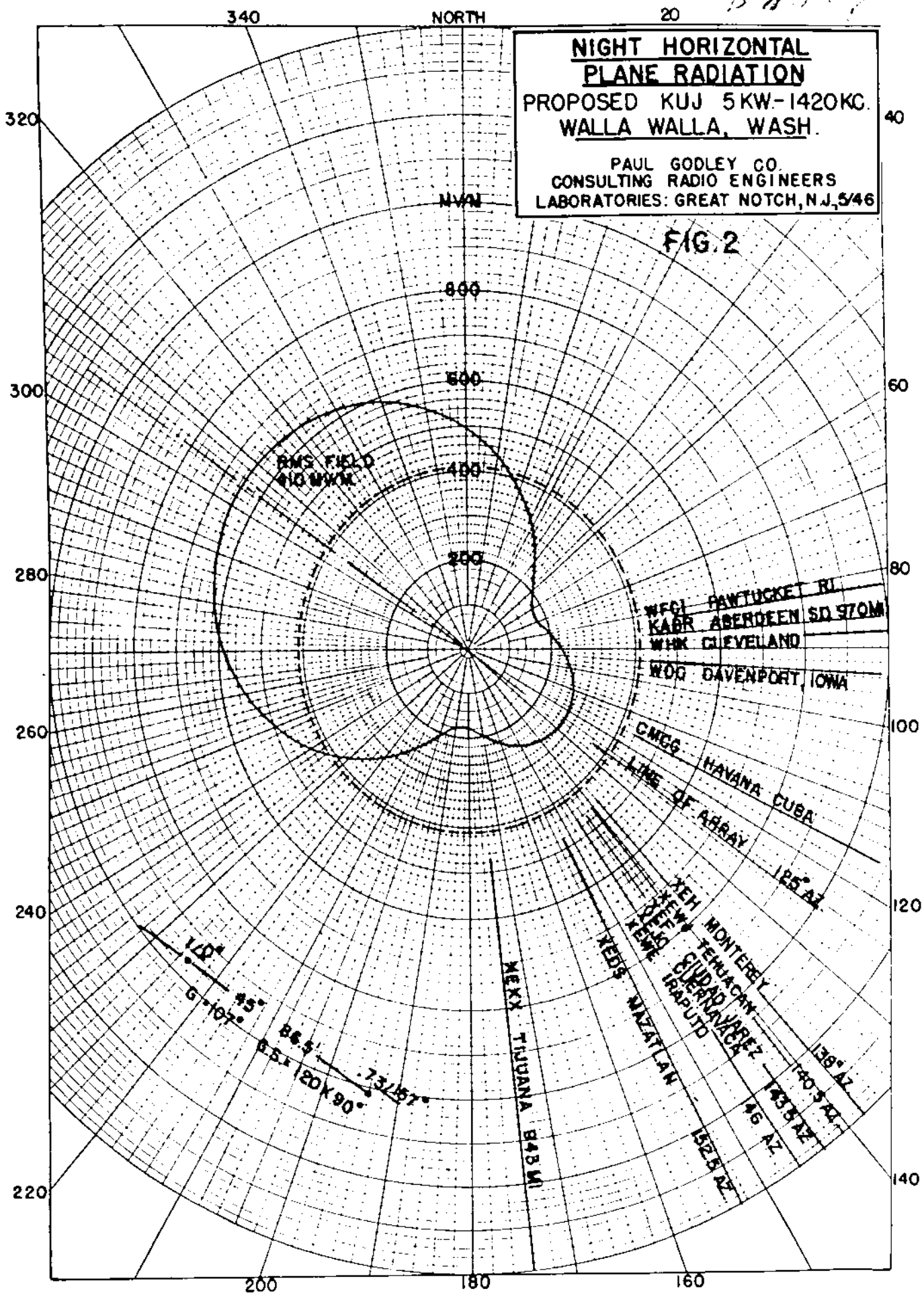
5 KW
DA-N, U

1420 KC



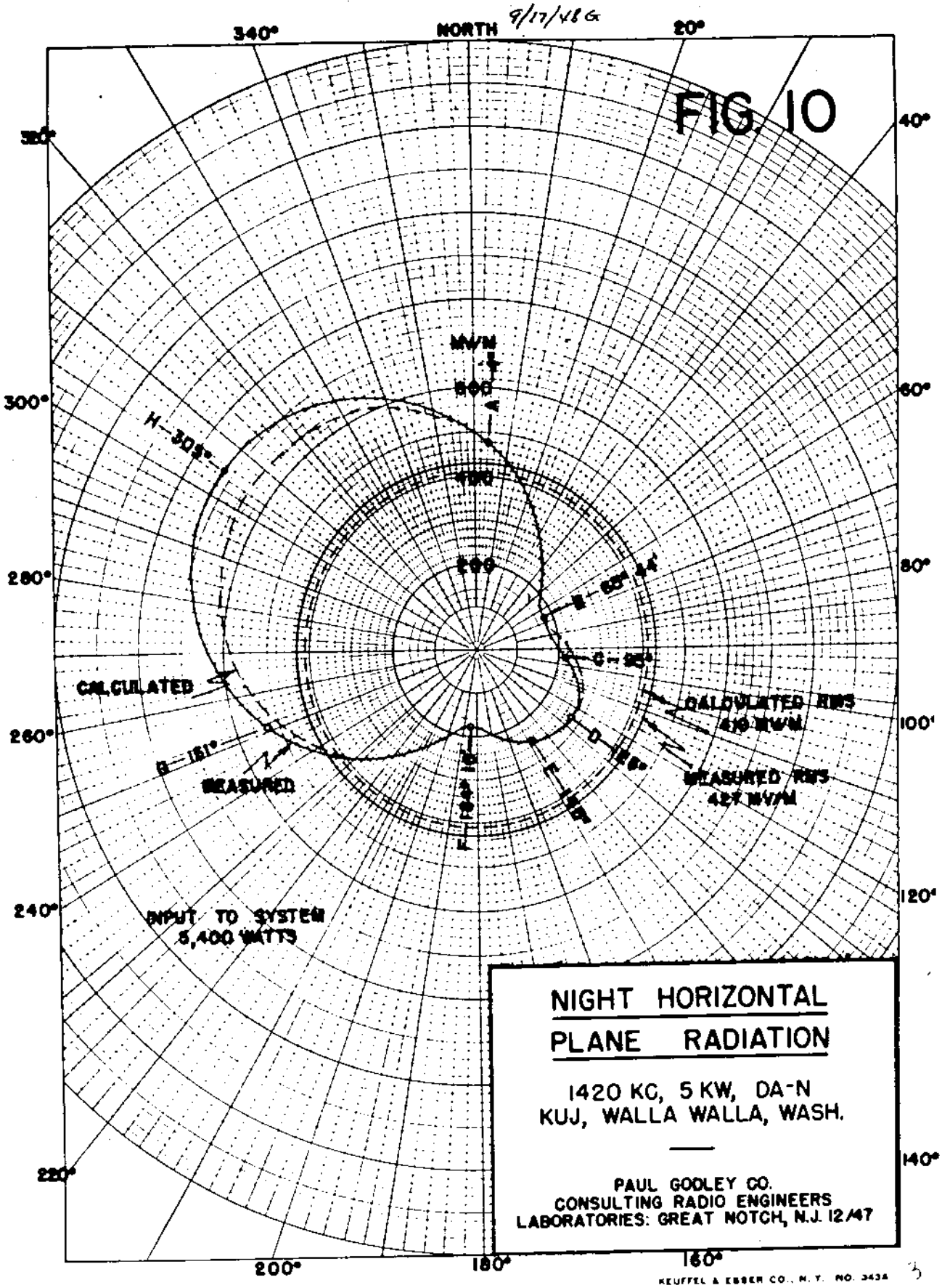
FCC File No. BL-5990 Accepted 12-20-55 KTOE, Mankato, Minn. 1420 KC

KUJ
1420

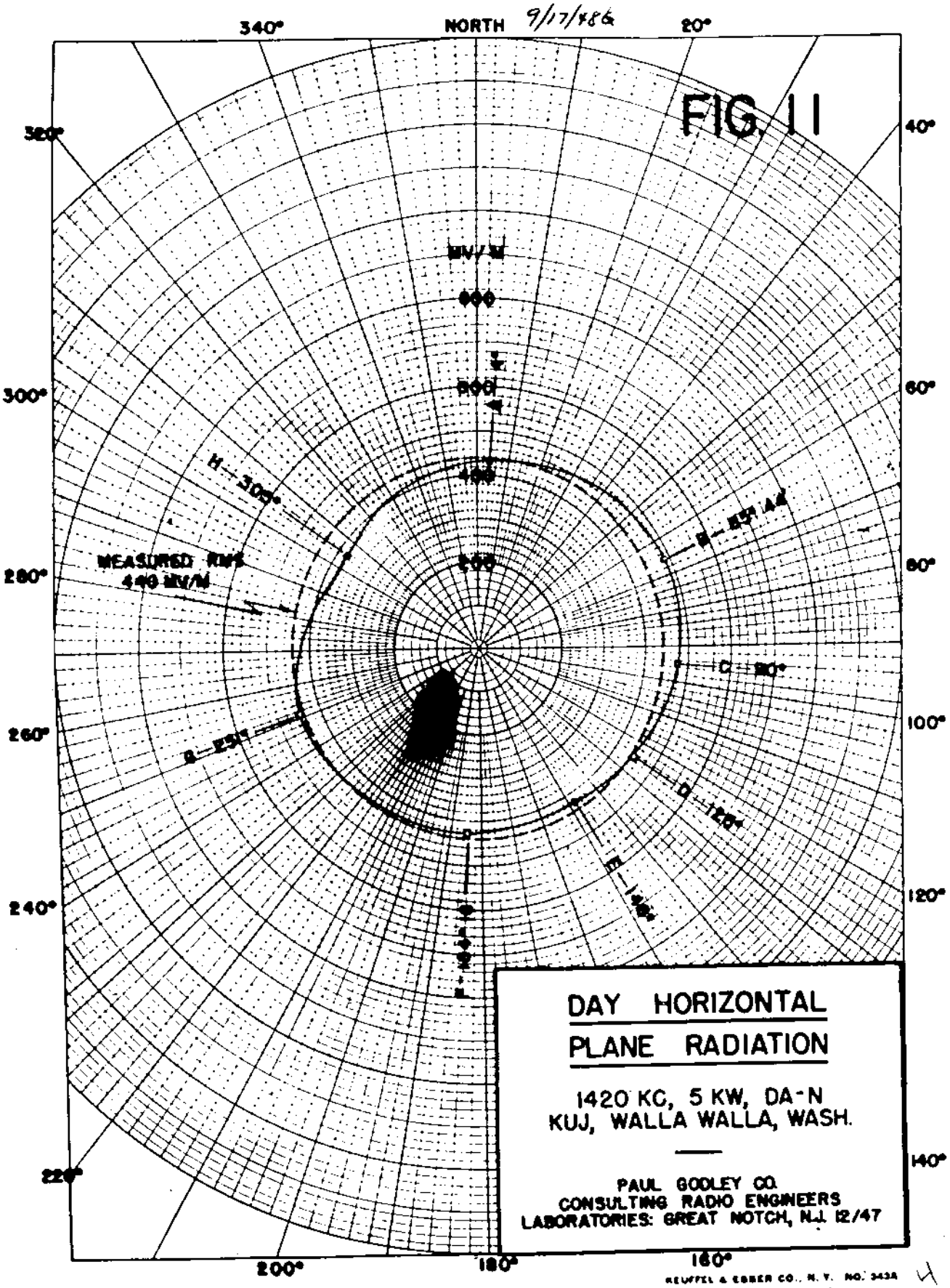


KEUFFEL & ESSER CO., N.Y. NO 343 A
POLAR CO-ORDINATE
MADE IN U.S.A.

KUJ
1420


9/17/48 G
FIG. 10
NORTH
340°
20°
320°
40°
300°
60°
280°
80°
260°
100°
240°
120°
220°
140°
200°
180°
160°
MV/M
500
400
300
200
H-305°
B-65°
C-95°
D-125°
E-145°
F-165°
G-181°
CALCULATED
MEASURED
CALCULATED RMS
410 MV/M
MEASURED RMS
427 MV/M
INPUT TO SYSTEM
5,400 WATTS
NIGHT HORIZONTAL
PLANE RADIATION
1420 KC, 5 KW, DA-N
KUJ, WALLA WALLA, WASH.
PAUL GODLEY CO.
CONSULTING RADIO ENGINEERS
LABORATORIES: GREAT NOTCH, N.J. 12/47
KEUFFEL & ESSER CO., N.Y. NO. 3434
POLAR COORDINATE
MADE IN U.S.A.

KUJ
1420


9/17/86
FIG. 11
NORTH
340°
20°
320°
40°
300°
60°
280°
80°
260°
100°
240°
120°
220°
140°
200°
180°
160°
mv/m
600
500
400
300
200
H-300°
MEASURED RMS
440 mv/m
B-250°
C-90°
D-120°
E-140°
DAY HORIZONTAL
PLANE RADIATION
1420 KC, 5 KW, DA-N
KUJ, WALLA WALLA, WASH.
PAUL GODLEY CO.
CONSULTING RADIO ENGINEERS
LABORATORIES: GREAT NOTCH, N.J. 12/47
REUFFEL & ESSER CO., N.Y. NO. 3438
POLAR CO-ORDINATE

4

KULY

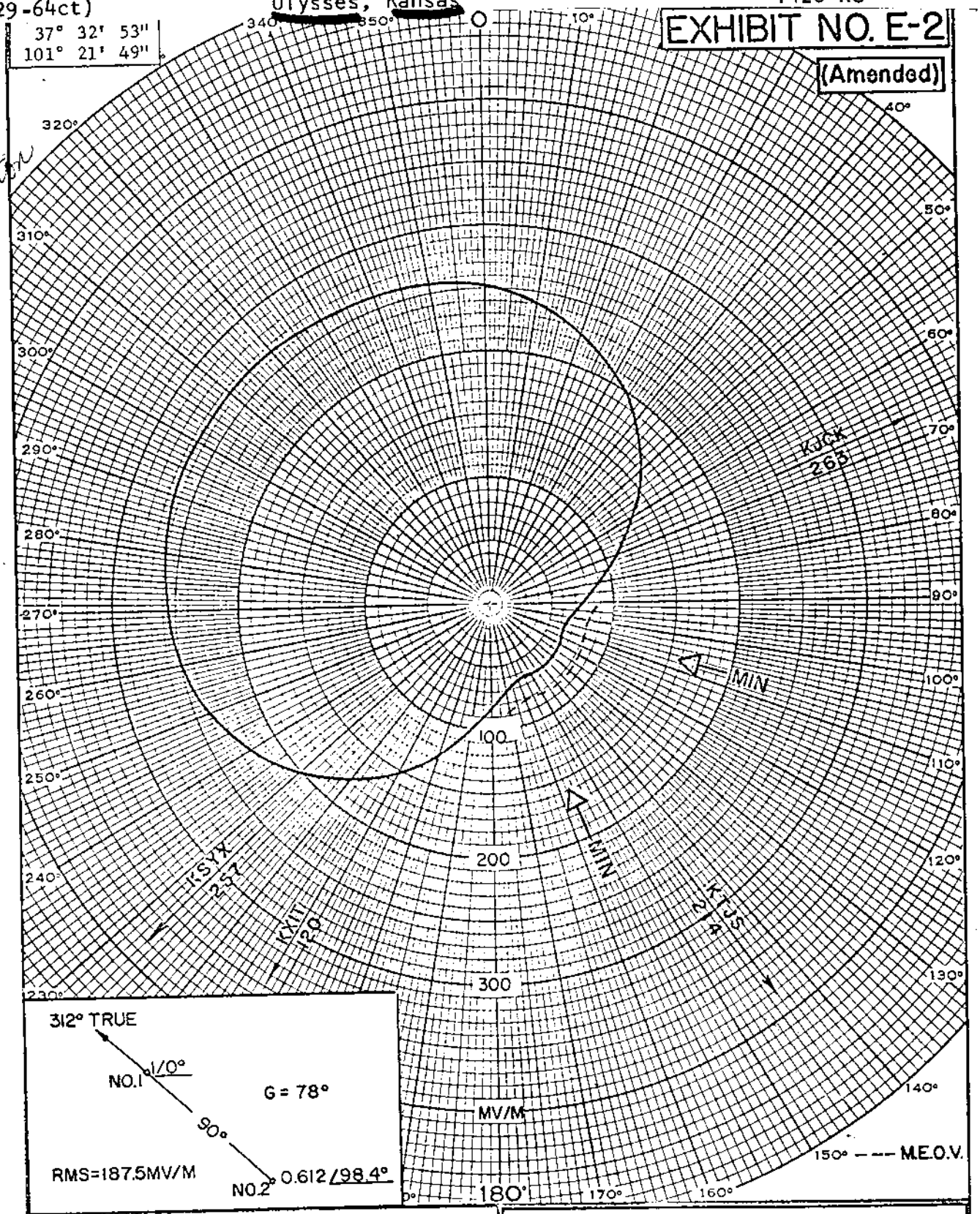
Proposed Day
(7-29-64ct)

New; Grant County B/cg Co., Inc.
Ulysses, Kansas

500w,1kw-LS,DA-2,U
1420 kc

37° 32' 53"
101° 21' 49"

8-21-64
#200
granted CP
formal dattern



COMMERCIAL RADIO EQUIPMENT CO.
Radio Engineering Consultants
WASHINGTON, D. C.
MAY 1964

PROPOSED DAYTIME
DIRECTIONAL PATTERN
ULYSSES, KANSAS
1420 KC, 1 KW-D, 500 W-N

FCC File No.BP-16076
Accepted 7-17-64Amended

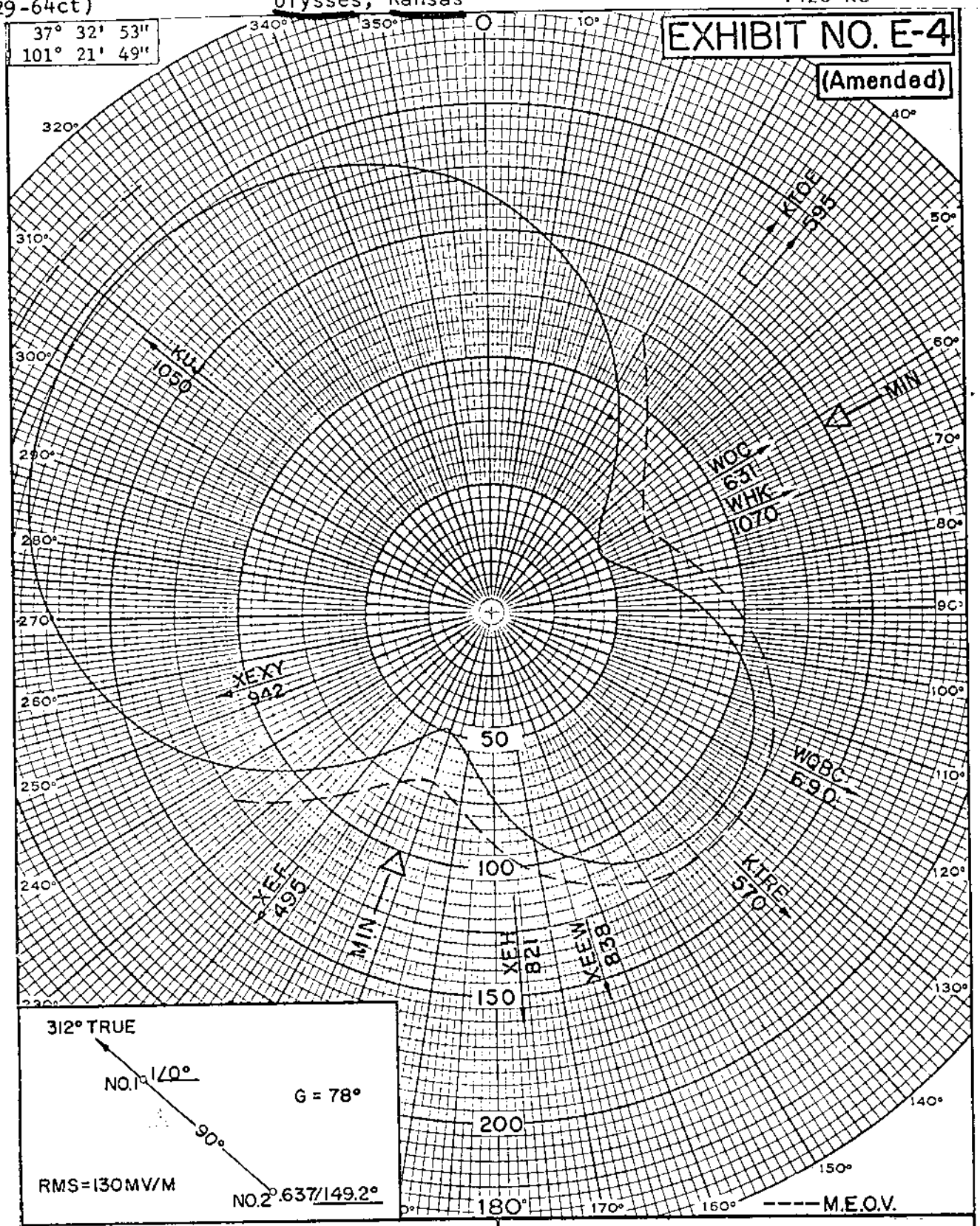
New; Grant County B/cg Co., Inc.
Ulysses, Kansas

1420 kc

Proposed Night
(7-29-64ct)

New; Grant County B/cg Co., Inc.
Ulysses, Kansas

500w,1kw-LS,DA-2,U
1420 kc



COMMERCIAL RADIO EQUIPMENT CO.
Radio Engineering Consultants
WASHINGTON, D. C.
MAY 1964

PROPOSED NIGHTTIME
DIRECTIONAL PATTERN
ULYSSES, KANSAS
1420 KC, 1 KW-D, 500 W-N

FCC File No.BP-16076
Accepted 7-17-64Amended

New; Grant County B/cg Co., Inc.
Ulysses, Kansas

1420 kc

KULY

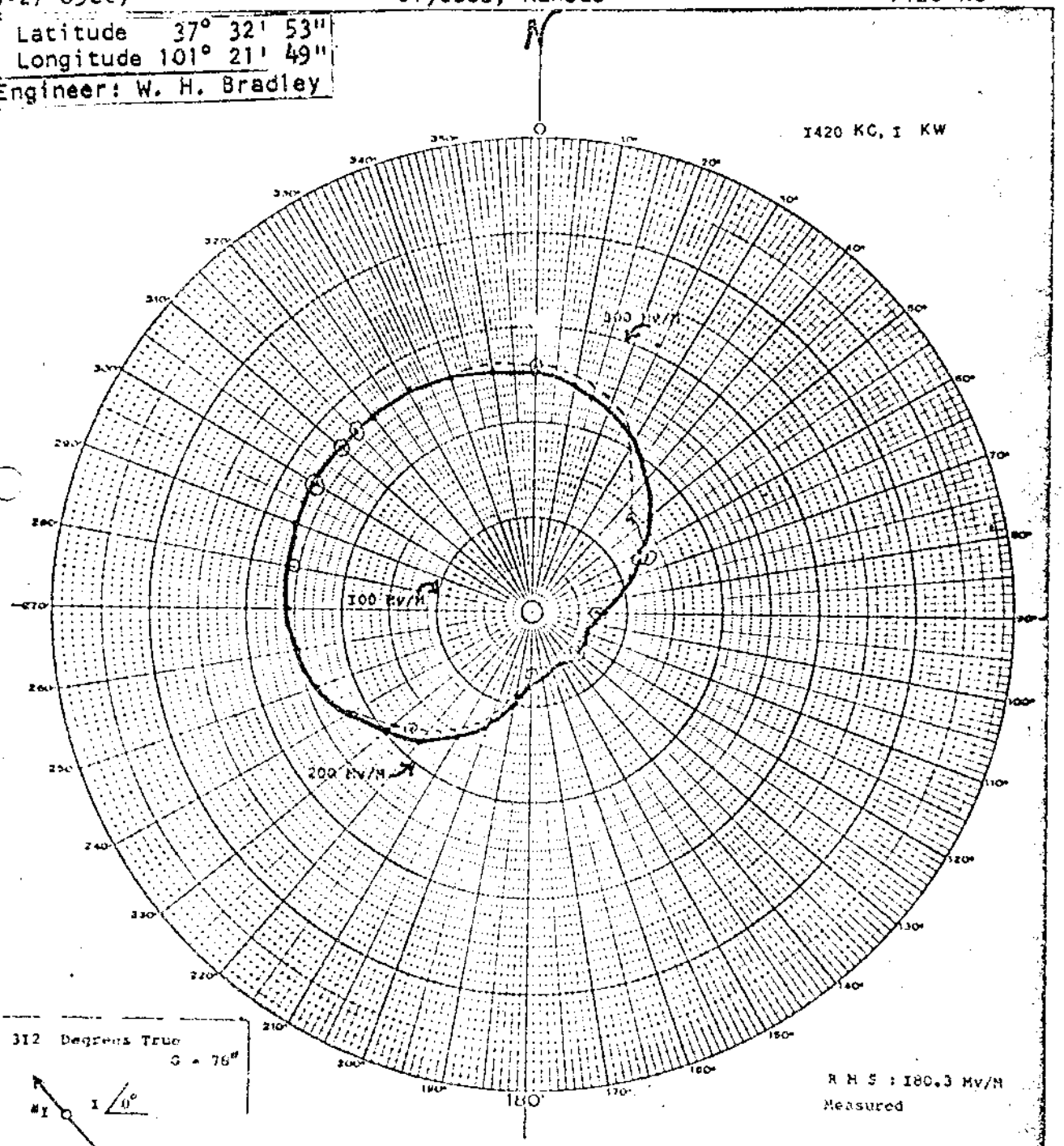
Measured Day
(5-27-65ct)

Station KULY
Ulysses, Kansas

500w,1kw-LS,DA-2,U
1420 kc

N. Latitude 37° 32' 53"
W. Longitude 101° 21' 49"
Engineer: W. H. Bradley

LIC, 6-7-65



FCC File No. BL-10877
Accepted 4-29-65

Station KULY
Ulysses, Kansas

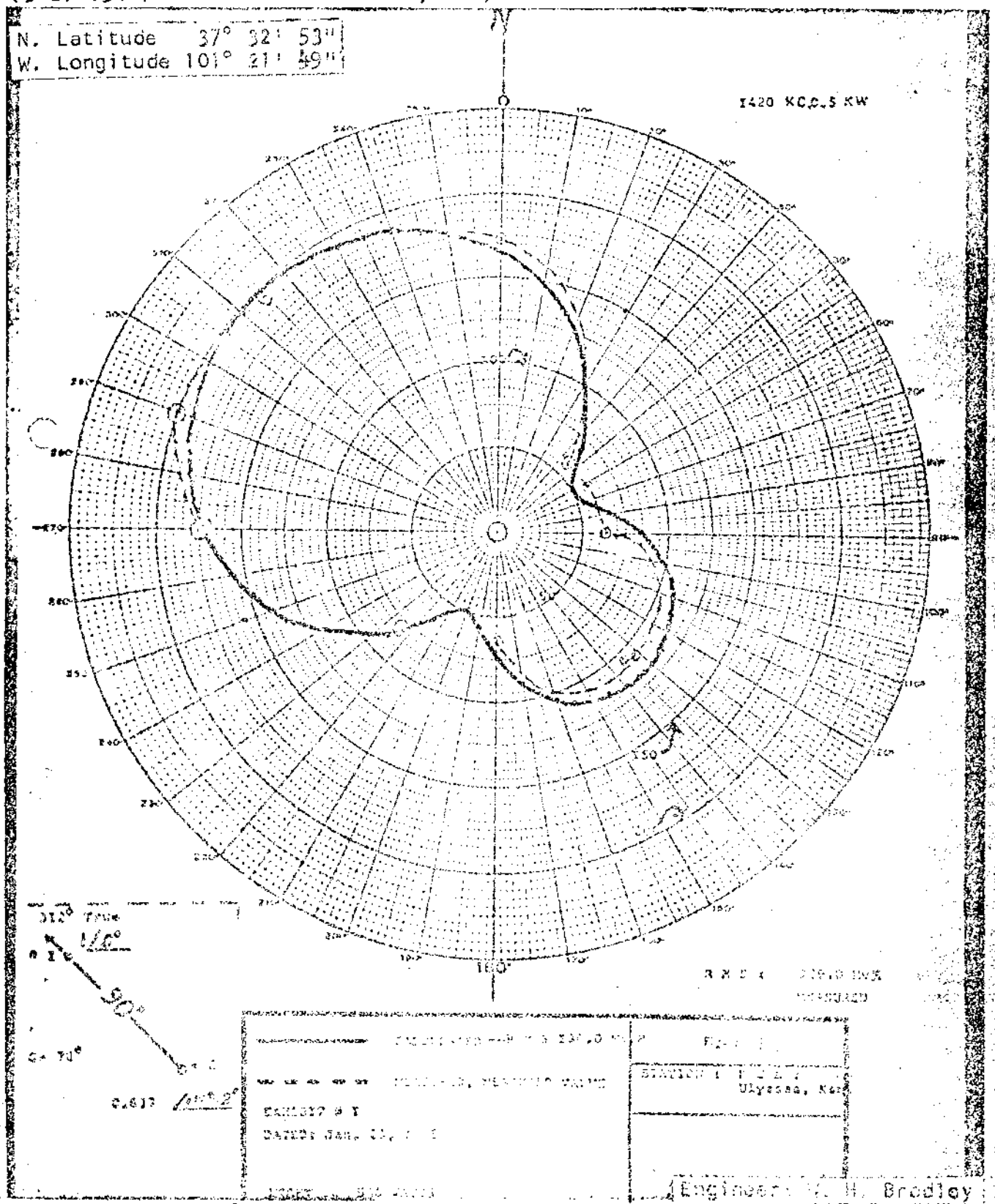
1420 kc

KULY

Measured Night
(5-27-65ct)

Station KULY
Ulysses, Kansas

500w, 1kw-LS, DA-2, U
1420 kc



FCC File No. BL-10877
Accepted 4-29-65

Station KULY
Ulysses, Kansas

1420 kc

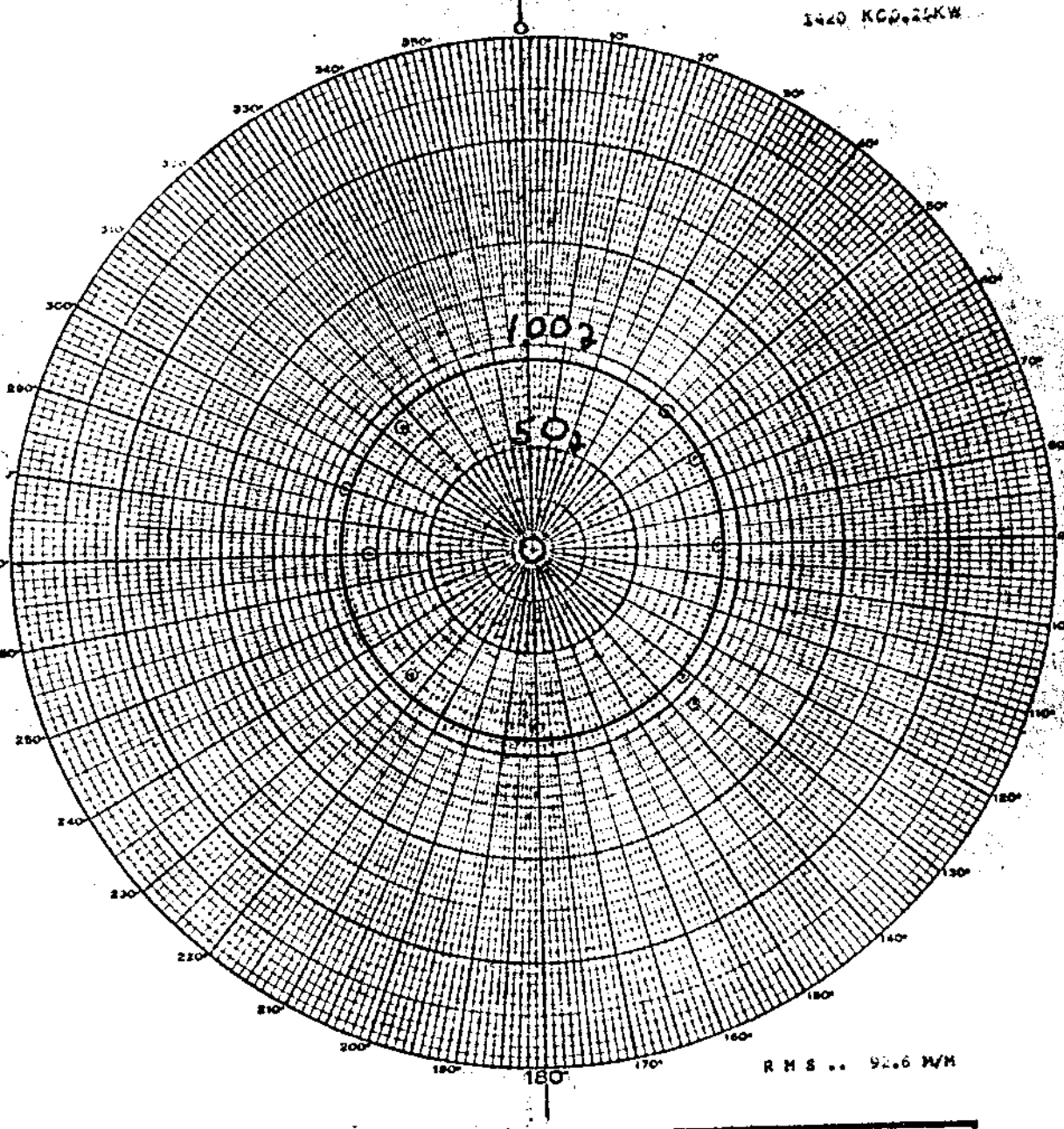
KULY

Measured Non-DA
(5-27-65ct)

Station KULY
Ulysses, Kansas

500w,1kw-LS,DA-2,U
1420 kc

-IC
-7-65



NON - DIRECTIONAL PATTERN MEASURED - -
POWER 250 WATTS
STATION : K U L Y
Ulysses, Kansas
1420 KC.

MEASURED VALUES ⊙

DATED: Jan. 23, 1965

Figure 1

EXHIBIT N I

FCC File No. BL-10877
Accepted 4-29-65

Station KULY
Ulysses, Kansas

1420 kc

WACK

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: W A C K

Main Studio: Newark, New York

Frequency: 1420 kHZ

Power: 0.5 kW Night 0.5 kW Day

Notification List No. 1776

Date: June 28, 1978 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 43° 01' 08"
West Longitude: 77° 04' 41"

ANTENNA CHARACTERISTICS

PREDICTED EFFECTIVE DAY FIELD (OMINIDIRECTIONAL) 190 mV/m AT THE RATED POWER

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

TOWER:	S(#3)	SC(#4)	NC(#1)	N(#2)
HEIGHT ABOVE INSULATORS:	173'	173'	173'	173'(90°)
NIGHT PHASING:	-20.5°	-177.2°	0°	-156.7°
NIGHT FIELD RATIO:	0.6689	0.6459	1.0000	0.9657

SPACING AND ORIENTATION: With the NC(#1) tower the N(#2) tower is spaced 173.2' (90°) a line bearing 355° true; the S(#3) tower is spaced 483.1'(251°) on a line bearing 188.5° true, and the SC(#4) tower is spaced 317.3'(164.9°).

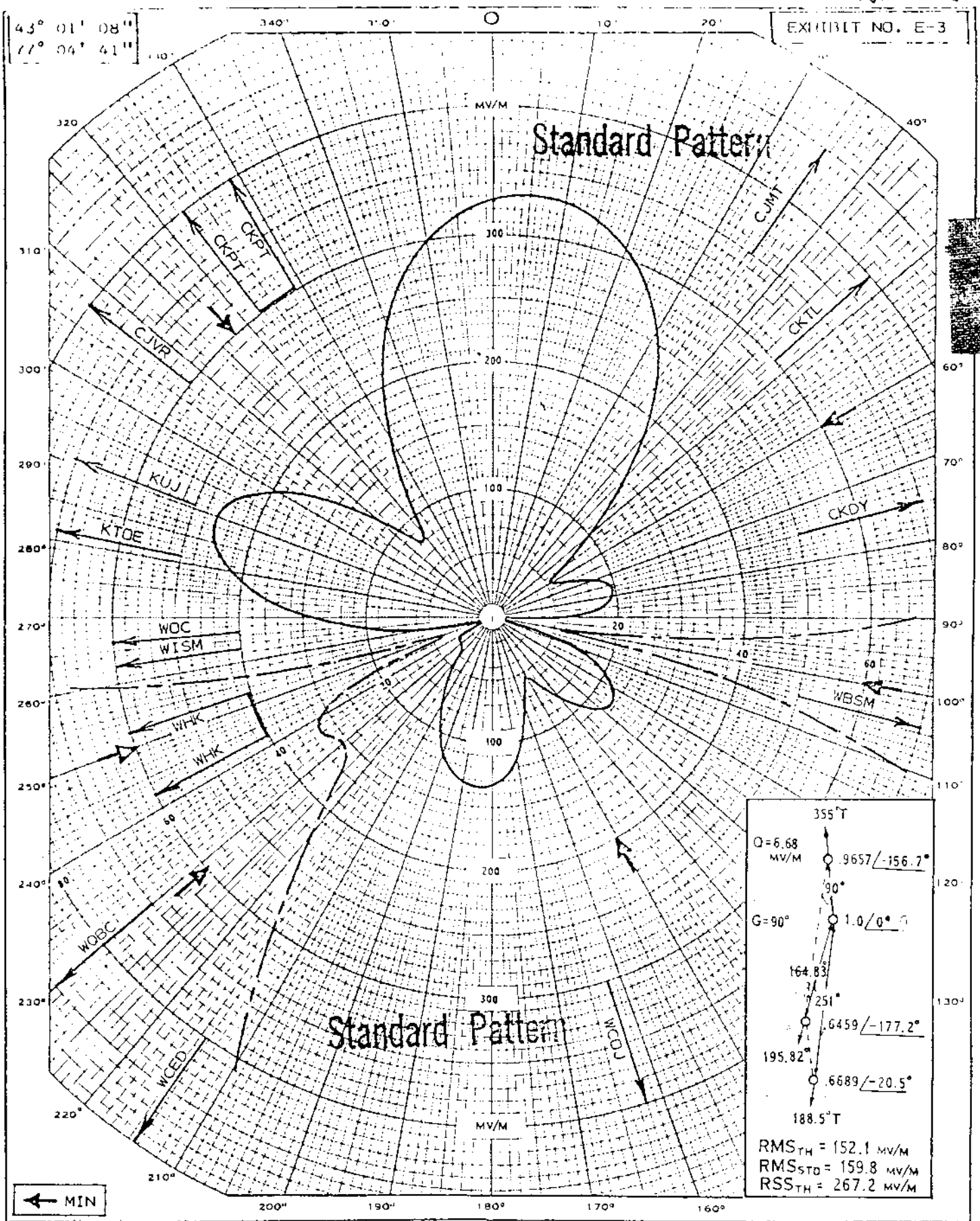
GROUND SYSTEM: 120-173' equally spaced copper radials tower. Radials are shortened and bonded to transverse along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Night	152.1 mV/m	267.2 mV/m	159.8 mV/m

Note: This notification concerns the addition of Nighttime operation to the station.

WACK



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

PROPOSED NIGHTTIME STANDARD HORIZONTAL PLANE PATTERN

WACK, NEWARK, NEW YORK
1420 KHZ, 500 W-D, DA-N

5-76

WAMM

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WAMM

Main Studio: Flint, Michigan

Frequency: 1420 kHz

Power: 0.5 kW

Notification List No. 1652

Date: October 1, 1975

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 43° 01' 15"
West Longitude: 83° 38' 36"

ANTENNA CHARACTERISTICS

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

TOWER:	NW(#2)	SE(#1)	
HEIGHT ABOVE INSULATORS:	196'	196'	(103°)
PHASING:	-100°	0°	
FIELD RATIO:	1	1	

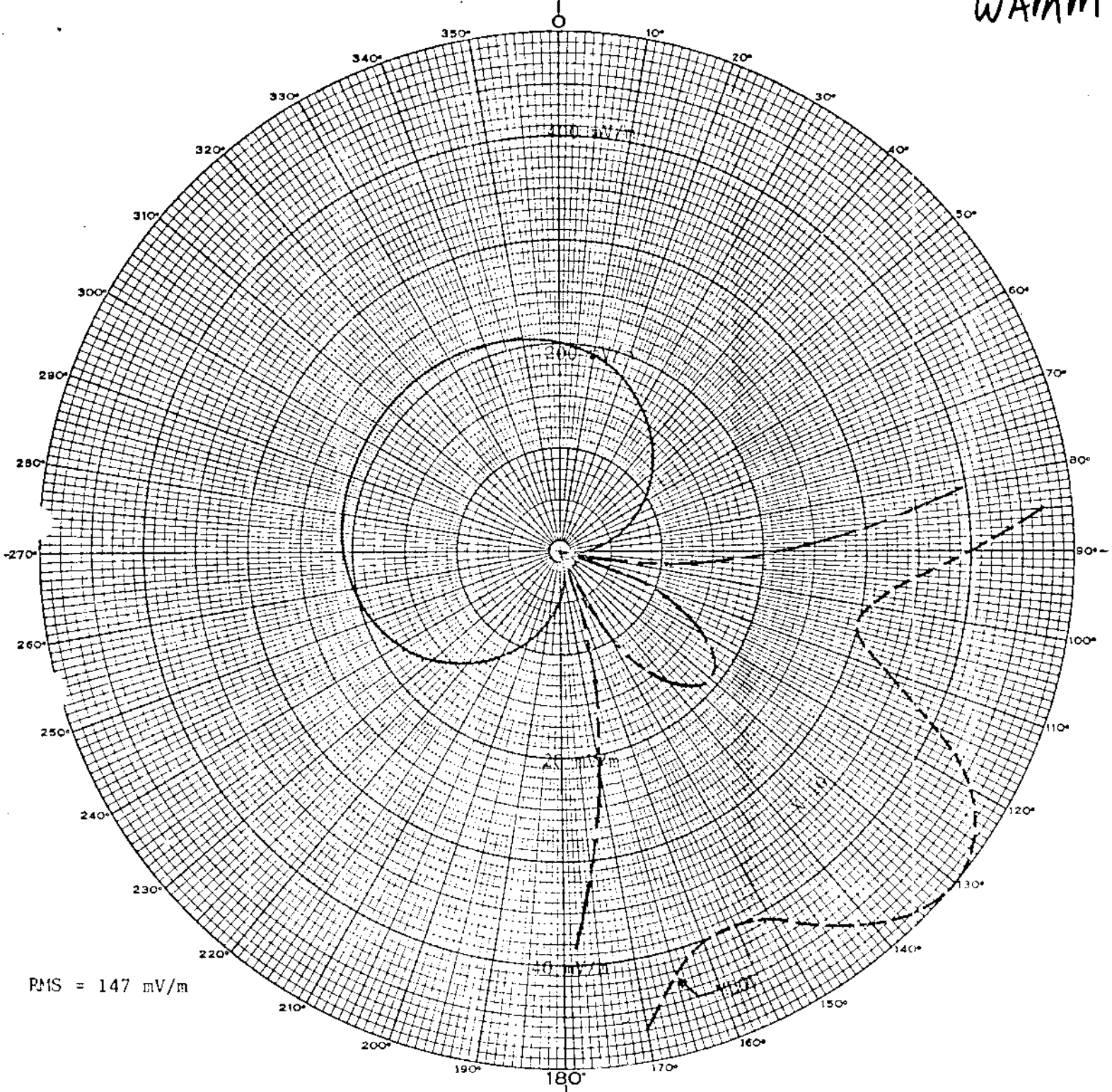
SPACING AND ORIENTATION: Elements are spaced 171'(90°) on a line bearing 130° true.

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

Predicted effective Field: 147 mv/m at rated power.

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

WAMM



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 3	STATION DATA
G=103° #2 1/-100° 90° #1 1/0° 130° T.		PROPOSED CHANGES IN MEO VALUES WAMM FEBRUARY, 1975	CALL WAMM FREQ 1420 kHz POWER 0.5 kW TYPE DA-D TIME DAY LAT. 43°01'15' LONG. 83°38'36"

TOWER No.	ELECTRICAL HEIGHT G°	SPACING S°	PHASING V°	FIELD RATIO F
1				
2				
3				
4				
5				
6				

DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐

θ° T

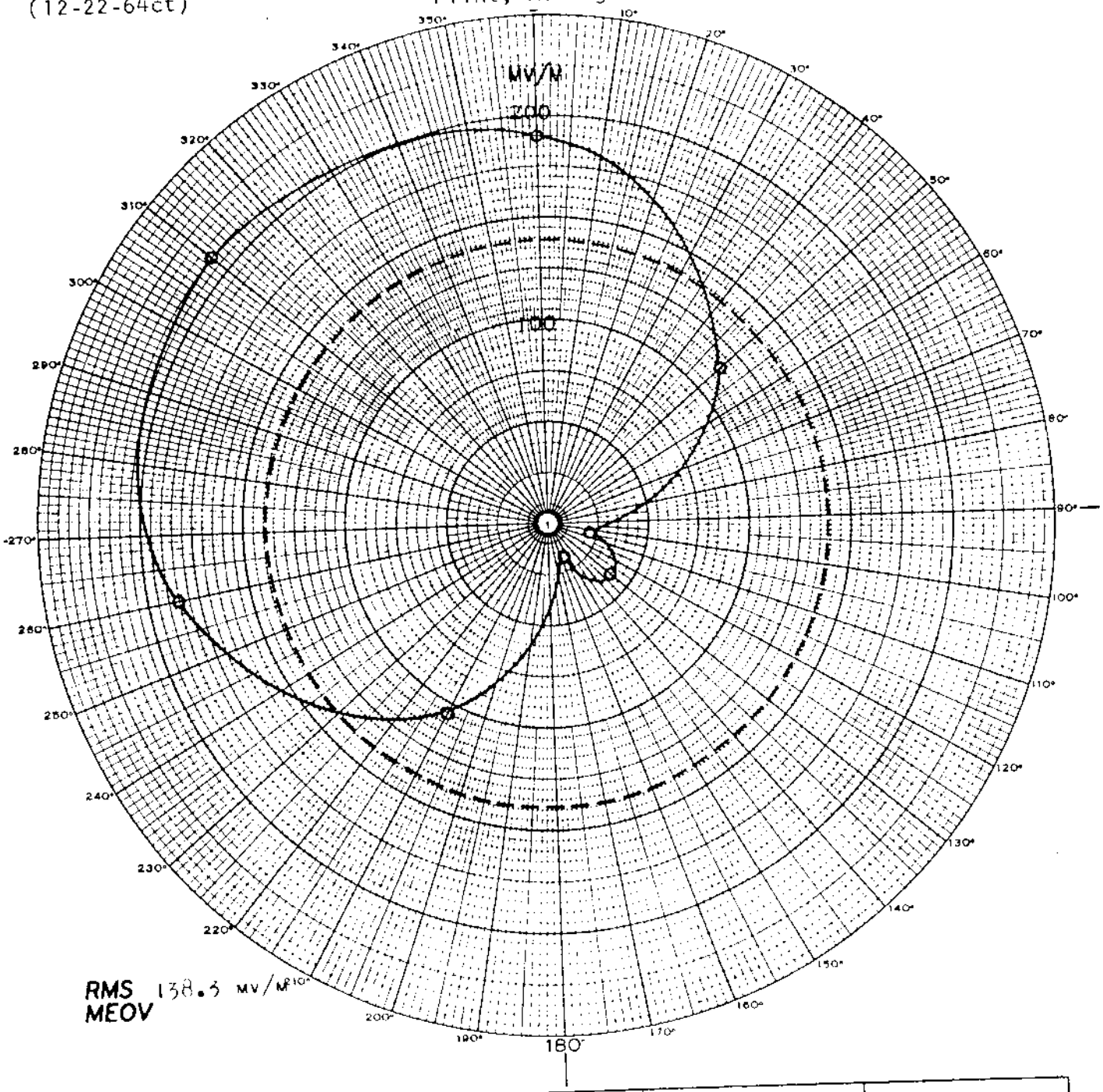
E. HAROLD MUNN, JR. & ASSOCIATES, INC.
COLDWATER, MICH.

WAMM

500w,DA-D,D
1420 kc

Measured Day
(12-22-64ct)

Station WAMM
Flint, Michigan



RMS 138.3 mv/m
MEOV

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 1	STATION DATA
G = 103° S = 90° 310° T. 0.967/-97.5° No. 2 S 1/0° No. 1	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 DAY DIRECTIONAL 5 - 64 θ° 0°	CALL WAMM FREQ 1420 kc/s POWER 0.5 Kw TYPE DA-D TIME DAYTIME LAT. 43-01-15 LONG. 83-38-36 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

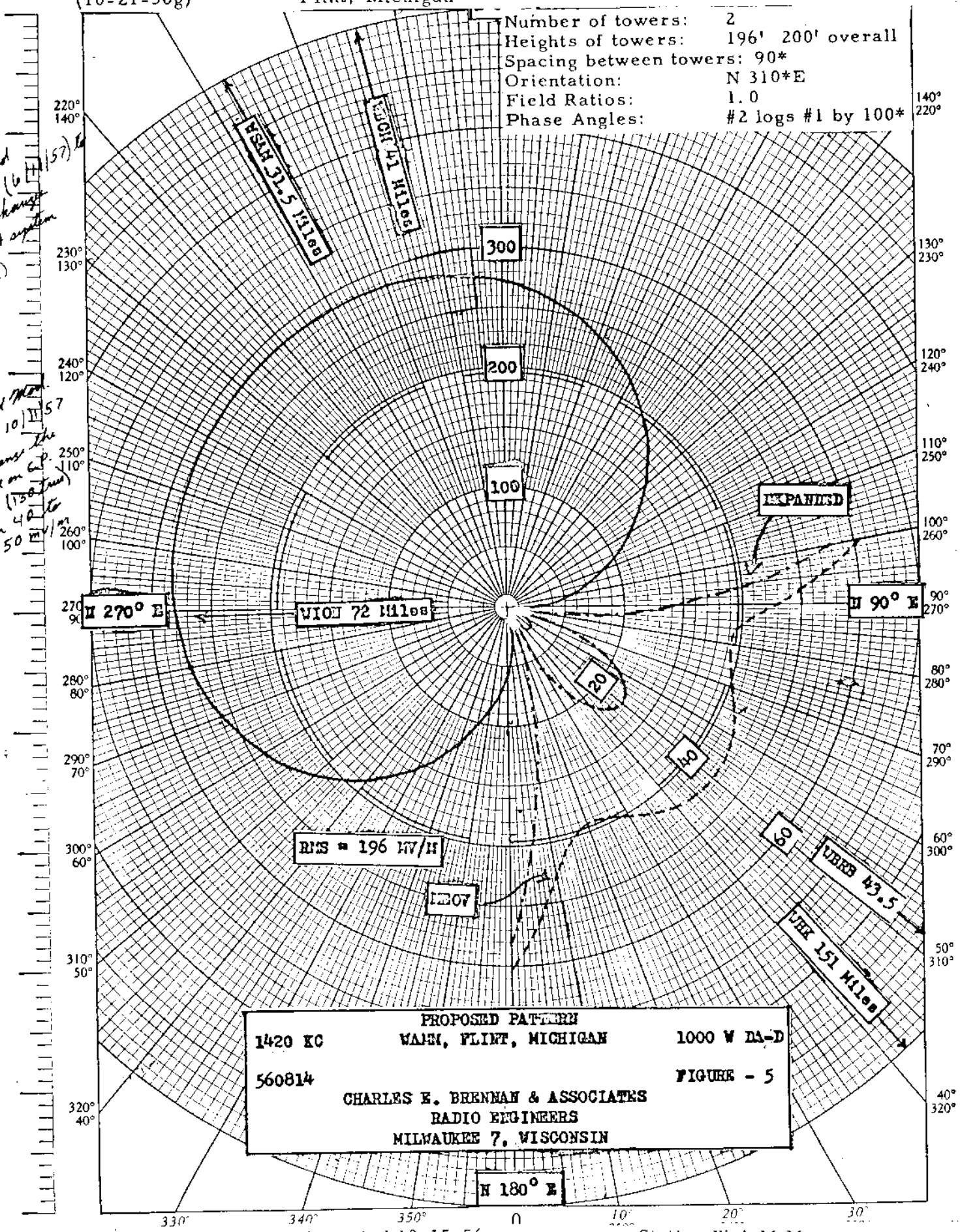
FCC File No. BZ-5318
Accepted 12-1-64

Station WAMM
Flint, Michigan

1420 kc

0.5 WAMM

PROPOSED DAY (10-21-56g) | Radio Station W A M M, Flint, Michigan | ~~1~~ KW, DA-D, D | 1420 KC

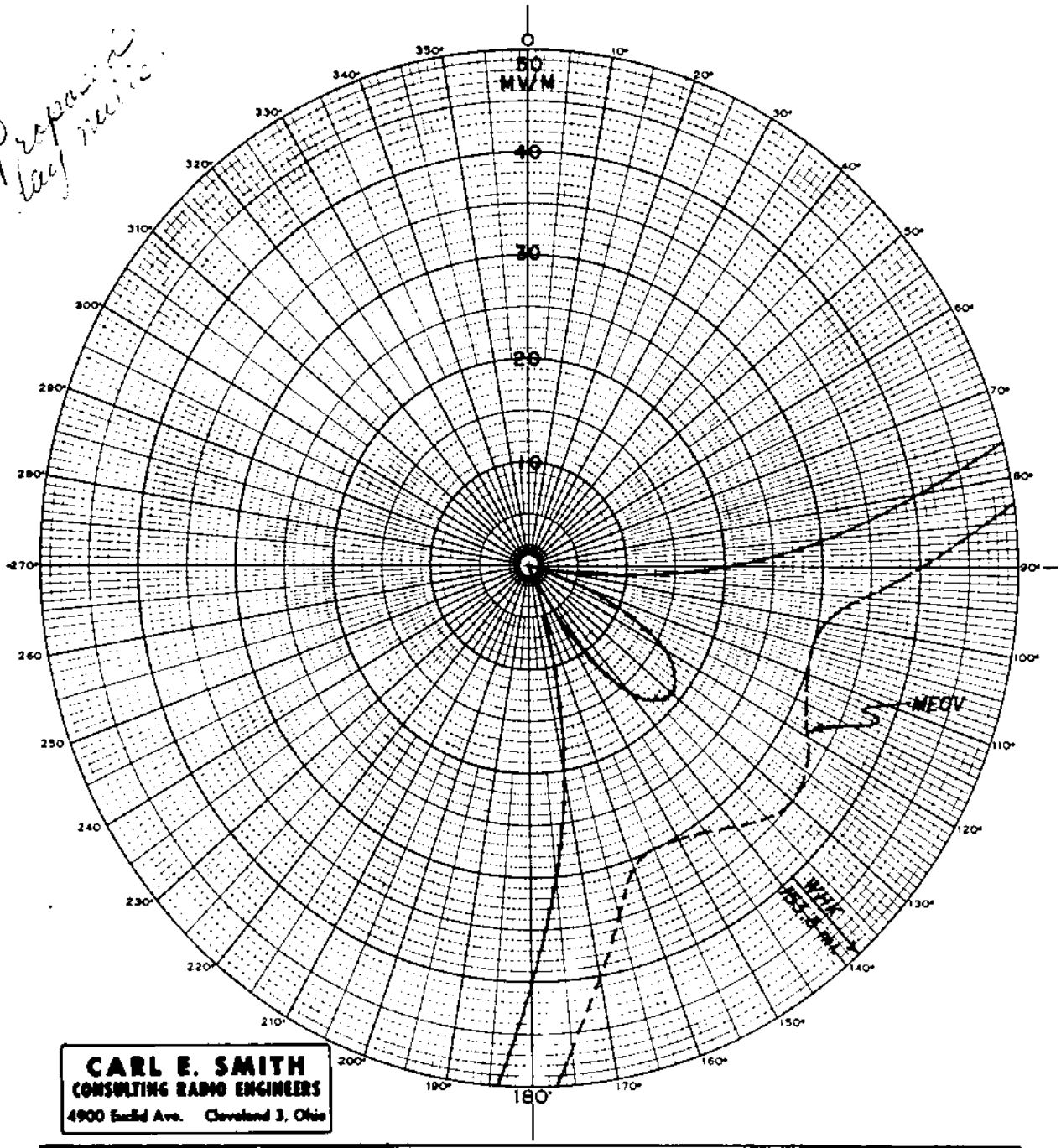


FCC File No. BP-10,839 | Accepted 10-15-56 | Station W A M M, Flint, Michigan | 1420 K C

WAMM

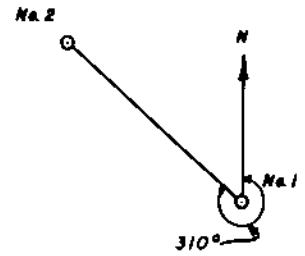
POLAR CO-ORDINATE NO. 10HP CLEVELAND INSTITUTE OF RADIO ELECTRONICS CLEVELAND, OHIO

Preparing lay-out



CARL E. SMITH
CONSULTING RADIO ENGINEERS
4900 Euclid Ave. Cleveland 3, Ohio

TOWER PLACEMENT SKETCH



PATTERN PARAMETERS

TOWER No.	ELECTRICAL HEIGHT θ°	TRUE TOWER ORIENTATION θ°	SPACING s°	PHASING ψ°	HORIZONTAL FIELD mv/m E	FIELD RATIO r	ELEV. ANGLE θ°	ELEVATION RMS FIELD mv/m E_θ
1	103	0	0	0	110	1.0	0	147
2	103	310	90	-100	110	1.0	10	
3							20	
4							30	
5							40	
6							50	
7							60	
8							70	
9							80	
10							E_θ =	mv/m
							E_ϕ =	mv

DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐

STATION DATA

CALL	WAMM
FREQUENCY	1420 kc
POWER	0.5 kw
TIME OF OPERATION	D
TYPE OF OPERATION	DA-O
DAYTIME TOWERS	1 & 2
NIGHTTIME TOWERS	-0-
No. RADIALS PER TOWER	120
LENGTH OF RADIALS	105 - 200 ft
GROUND SCREEN DIMENSION	-0-
LAT.	43° 01' 15"
LONG.	83° 38' 36"
SUPERSEDES	5/11/55 G
PATTERN No.	55 1125

BINDER – CARTER – DURHAM, INC.
3506 E. KEARSLEY ST.
FLINT, MICH

FIG. 7.10
EXPANDED
PROPOSED HORIZONTAL DAYTIME PATTERN

WAVO

CORRECTED DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WAVO

Main Studio: Decatur, Georgia

Frequency: 1420 kHz

Power: 1 kW

Notification List No. 1655

Date: October 22, 1975

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 33° 47' 13"

West Longitude: 84° 14' 53"

Authorized for Daytime operation (DA-D).

Predicted effective Day Field: 198.8 mv/m at rated power.

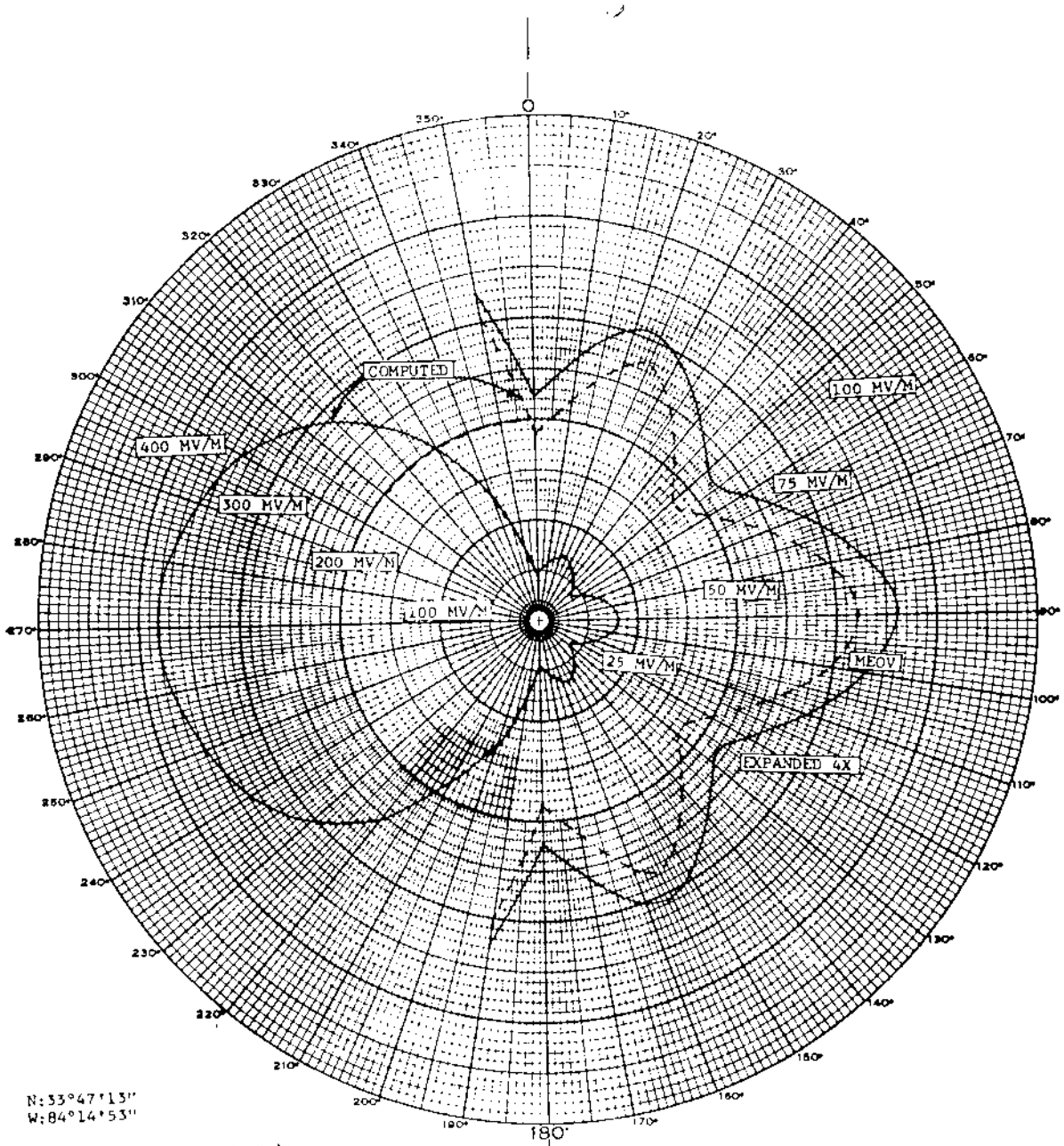
Note: Please retain the description sheet and directional antenna radiation patterns notified for station WAVO in United States Change List Number 872, dated July 27, 1960 and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only a correction in the location of the main studio.

WAVO

Proposed Day
(12-22-64ct)

Station WAVO
Decatur, Georgia

1kw,DA-D,D
1420 kc



N:33°47'13"
W:84°14'53"

COMPUTED RMS = 198.8 MV/M

ANTENNA PARAMETERS		
0.683/-139°	1.0/0°	0.497/+139°
← 270° — ○ 1 ←	100° — ○ 2 ←	100° — ○ 3
G=124.5°=240'		
S=100°=192.7'		

PALMER A. GREER
GREENVILLE, S.C.

FIGURE 2
BOB JONES UNIVERSITY INCORPORATED RADIO STATION WAVO DECATUR, GEORGIA.
1420 KCS. 1.0 KW. DA-D.
COMPUTED HORIZONTAL RADIATION PATTERN.

FCC File No. BZ-5311
Accepted 11-25-64

Station WAVO
Decatur, Georgia

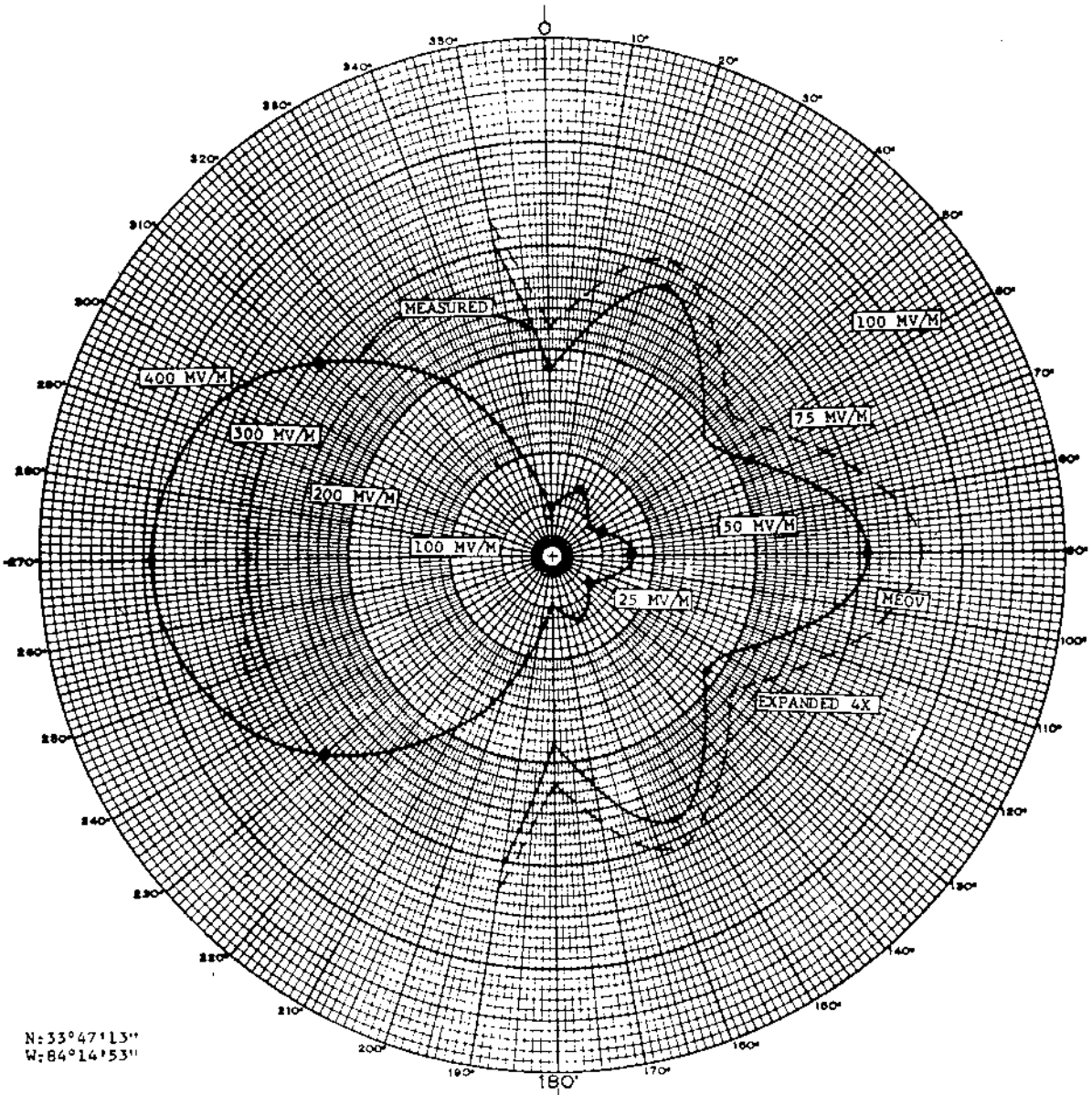
1420 kc

WAVO

Measured Day
(12-22-64ct)

Station WAVO
Decatur, Georgia

1kw,DA-D,D
1420 kc



N:33°47'13"
W:84°14'53"

MEASURED RMS = 200 MV/M

ANTENNA PARAMETERS		
0.588/-140°	1.0/0°	0.320/+140°

270° — 1 — 100° — 2 — 100° — 3

G=124.5°=240'
S=100°=192.7'

PALMER A. GREER
GREENVILLE, S.C.

FIGURE 3
BOB JONES UNIVERSITY INCORPORATED RADIO STATION WAVO DECATUR, GEORGIA.
1420 KCS. 1.0 KW. DA-D.
MEASURED HORIZONTAL RADIATION PATTERN

FCC File No. BZ-5311
Accepted 11-25-64

Station WAVO
Decatur, Georgia

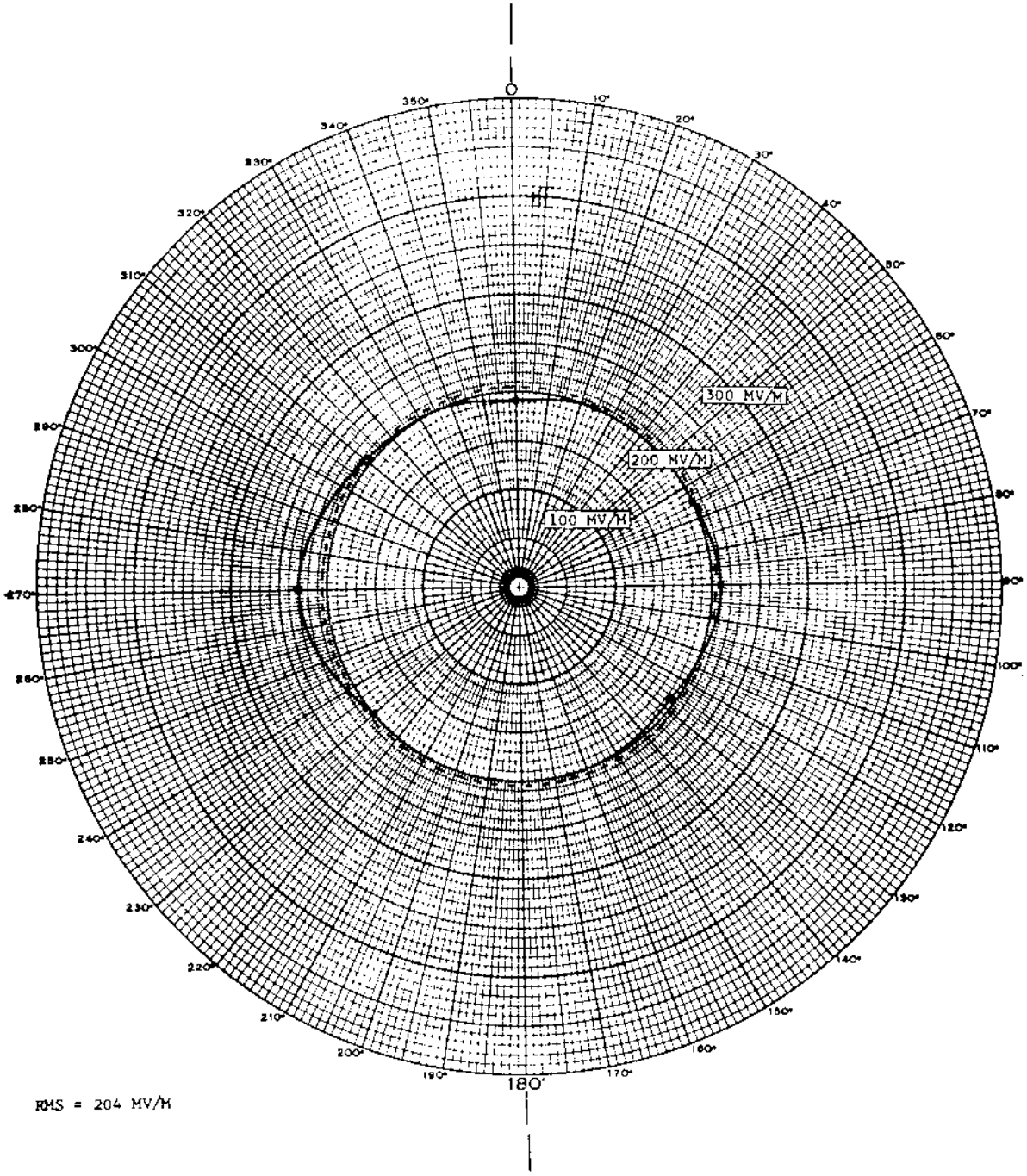
1420 kc

WAVO

Measured Non-DA
(12-22-64ct)

Station WAVO
Decatur, Georgia

1kw,DA-D,D
1420 kc



RMS = 204 MV/M

G=124.5°=240'

N:33°47'13"
W:84°14'53"

PALMER A. GREER
GREENVILLE, S.C.

FIGURE 1
BOB JONES UNIVERSITY INCORPORATED RADIO STATION WAVO DECATUR, GEORGIA.
1420 KCS. 1.0 KW. DA-D.
MEASURED NON-DIRECTIONAL RADIATION PATTERN (EAST) #3 ELEMENT, 1.0 KW.

FCC File No. BZ-5311
Accepted 11-25-64

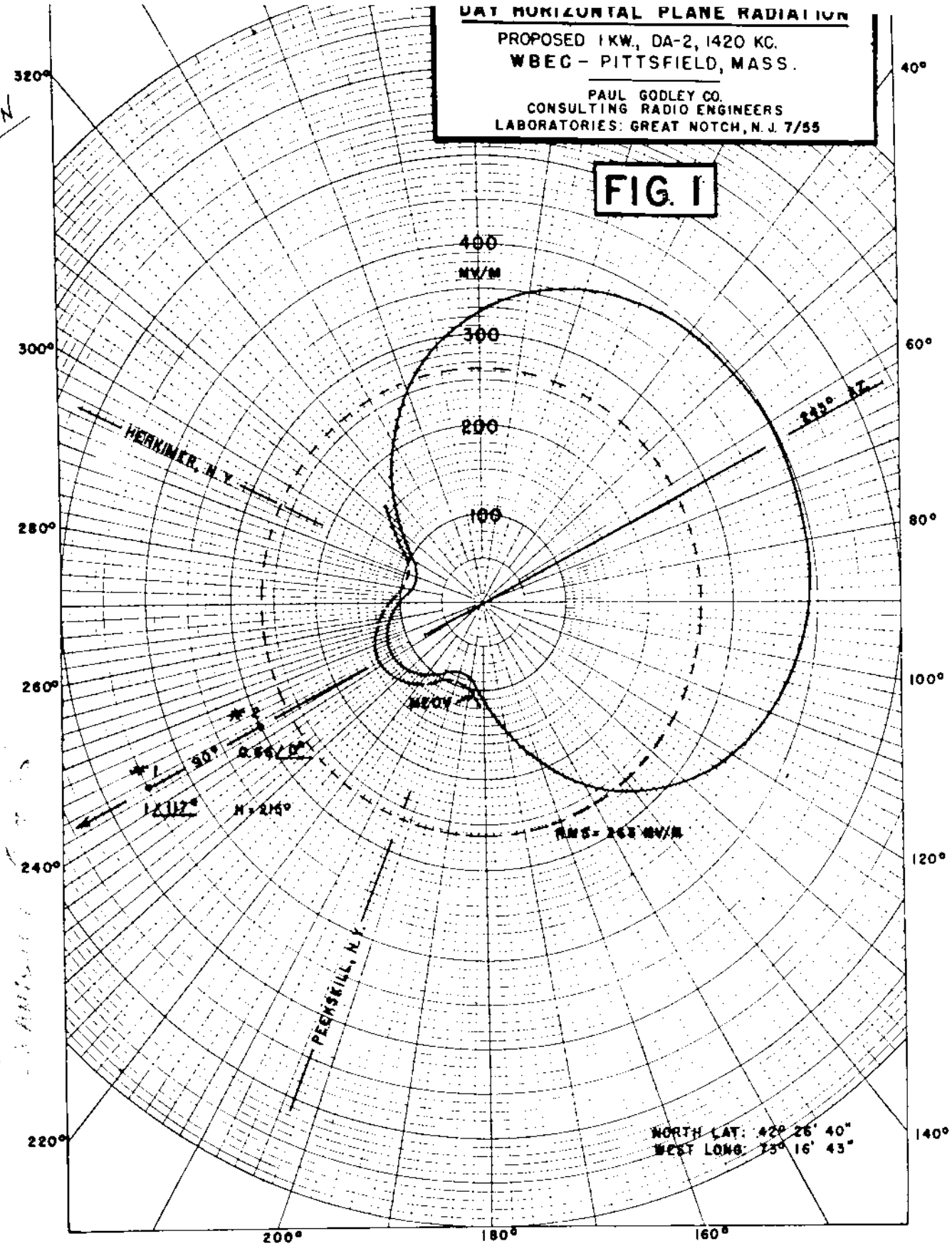
Station WAVO
Decatur, Georgia

1420 kc

WBEC

PROPOSED DAY (9/8/55G) | STATION WBEC PITTSFIELD, MASSACHUSETTS | 1 KW DA-2, U | 1420 KC

APPL. RCC. 4-20-66 CHG TO DA-N



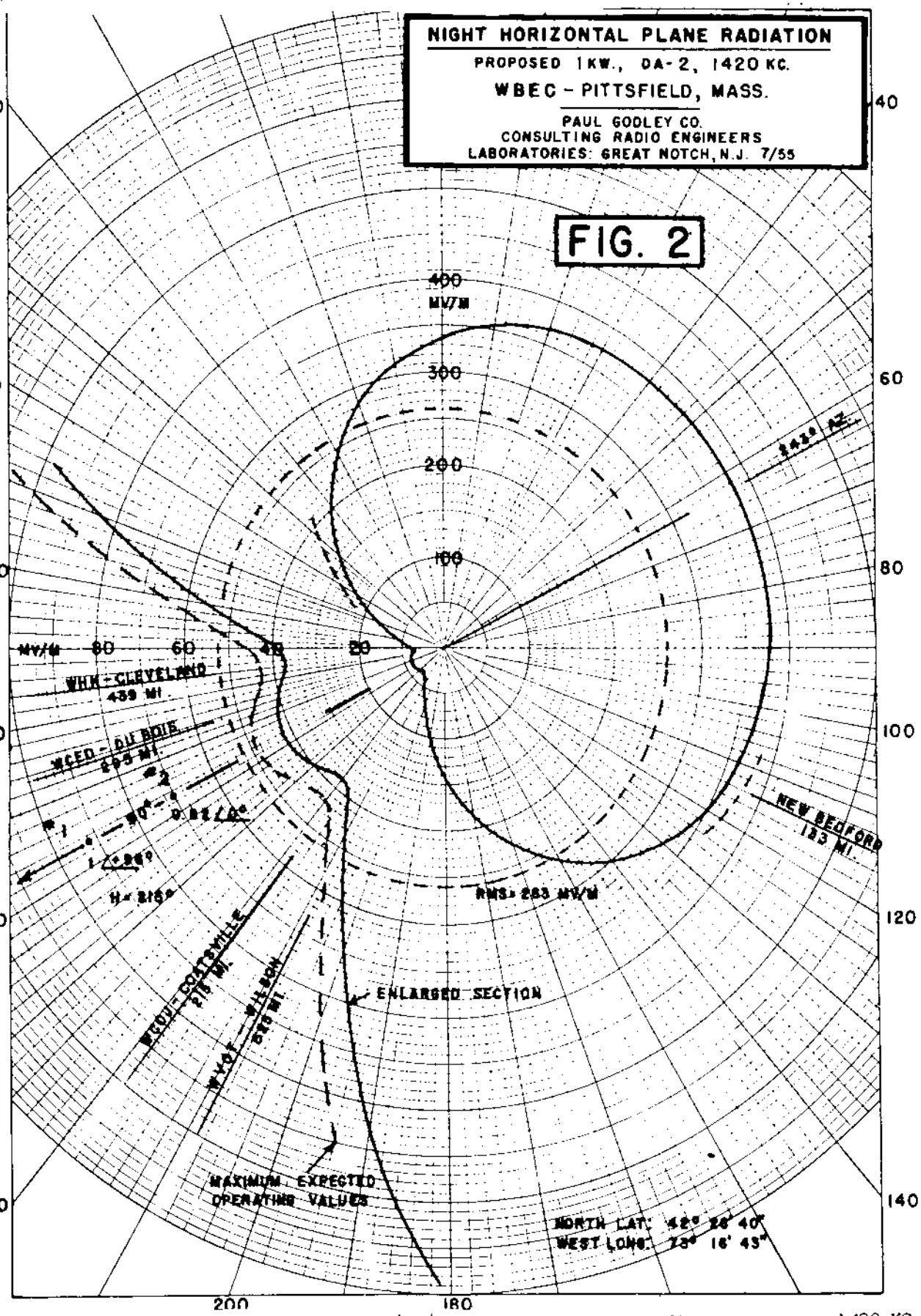
FILE NO. BP-9653(Amended) Accepted FCC 8/10/55 WBEC, Pittsfield, Mass. 1420 KC

~~BP 16857~~
BP 16865

WBEC

PROPOSED NIGHT (9/8/55G) | STATION WBEC PITTSFIELD, MASSACHUSETTS | DA-2, U 1 KW | 1420 KC

APP. ACC. 4-20-66 CHG TO DA-N



FILE NO. BP-9653 (Amended) ACCEPTED FCC 8/10/55 WBEC, Pittsfield, Mass. 1420 KC

BP 16865

WBEC

MEASURED DAY
(2/11/57g)

Station WBEC
Pittsfiels, Massachusetts

500W,1KW-LS,DA-2,U
1420 KC

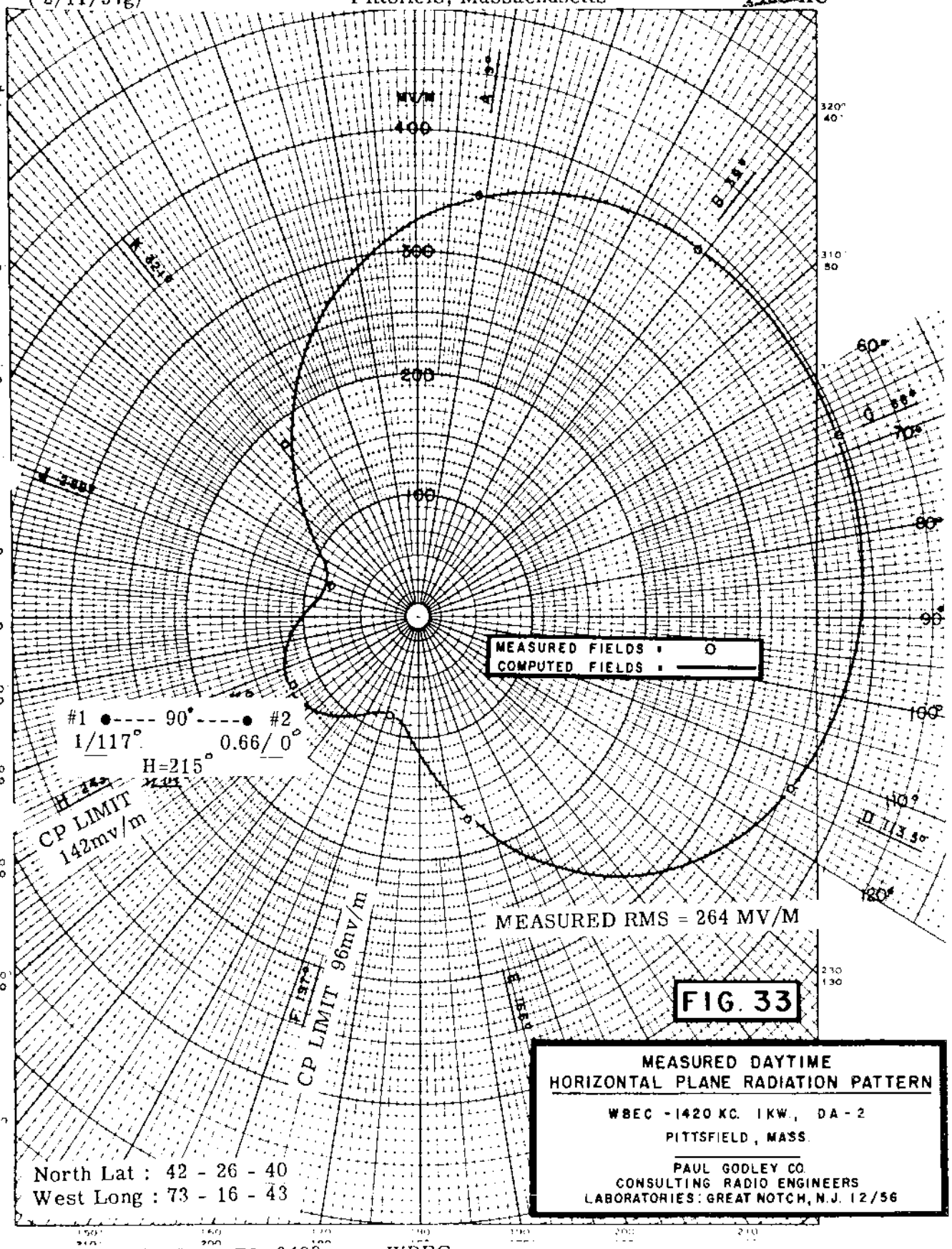


FIG. 33

MEASURED DAYTIME
HORIZONTAL PLANE RADIATION PATTERN

WBEC - 1420 KC. 1KW., DA - 2
PITTSFIELD, MASS.

PAUL GODLEY CO.
CONSULTING RADIO ENGINEERS
LABORATORIES: GREAT NOTCH, N.J. 12/56

FCC File No. BL-6498
Accepted 1/29/57
BP 16865

WBEC
Pittsfield, Massachusetts

1420 KC

WBEC

MEASURED NIGHT
(2/11/57g)

Station WBEC
Pittsfield, Massachusetts

500W,1KW-LS, DA-2,U
1420 KC

granted license 4/3/57
APPL. ACC. 4-20-66
CHG TO DA-N

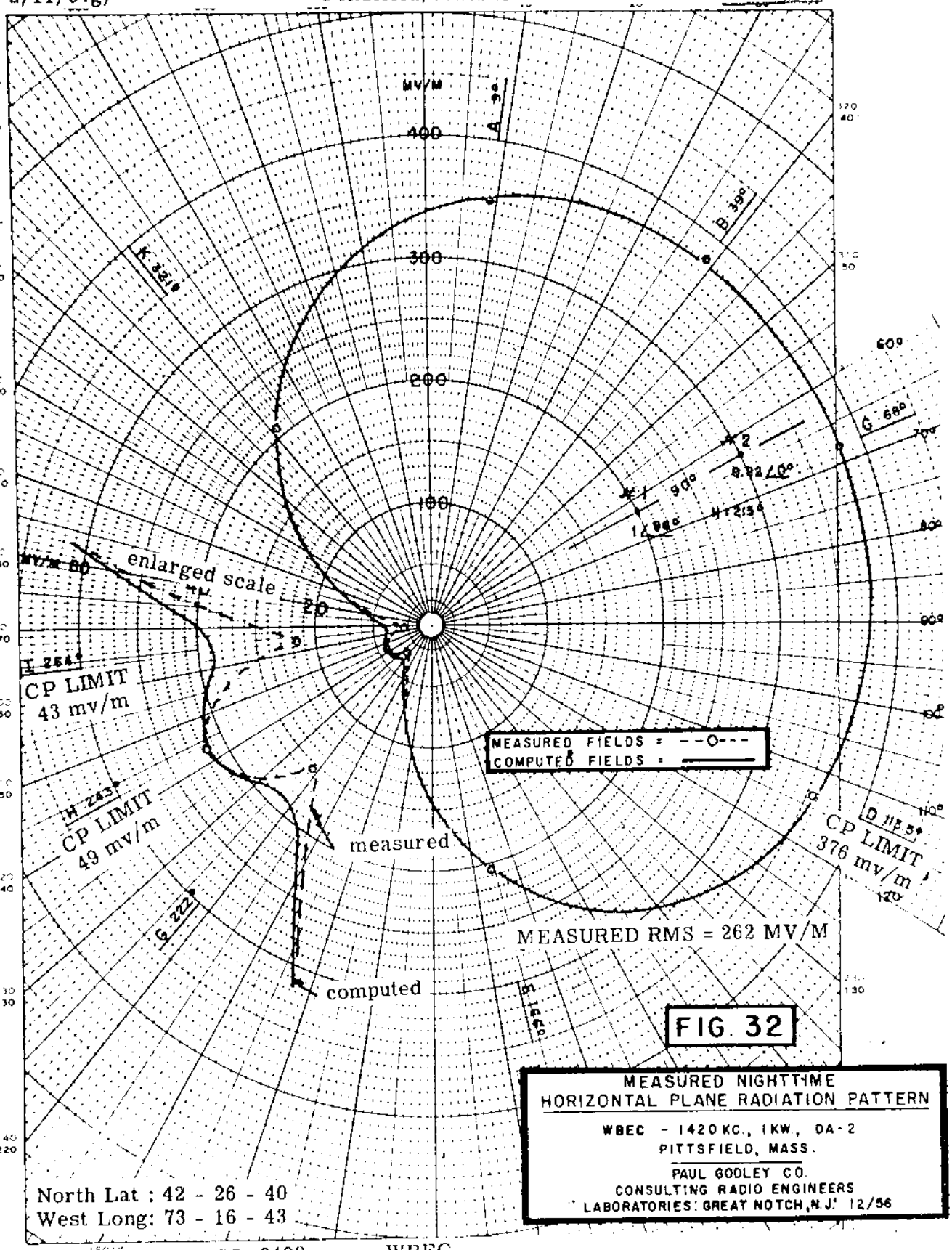


FIG. 32

MEASURED NIGHTTIME
HORIZONTAL PLANE RADIATION PATTERN

WBEC - 1420 KC., 1KW., DA-2
PITTSFIELD, MASS.

PAUL GODLEY CO.
CONSULTING RADIO ENGINEERS
LABORATORIES: GREAT NOTCH, N.J. 12/56

FCC File No. BL-6498
Accepted 1/29/57
BP 16 865

WBEC
Pittsfield, Massachusetts

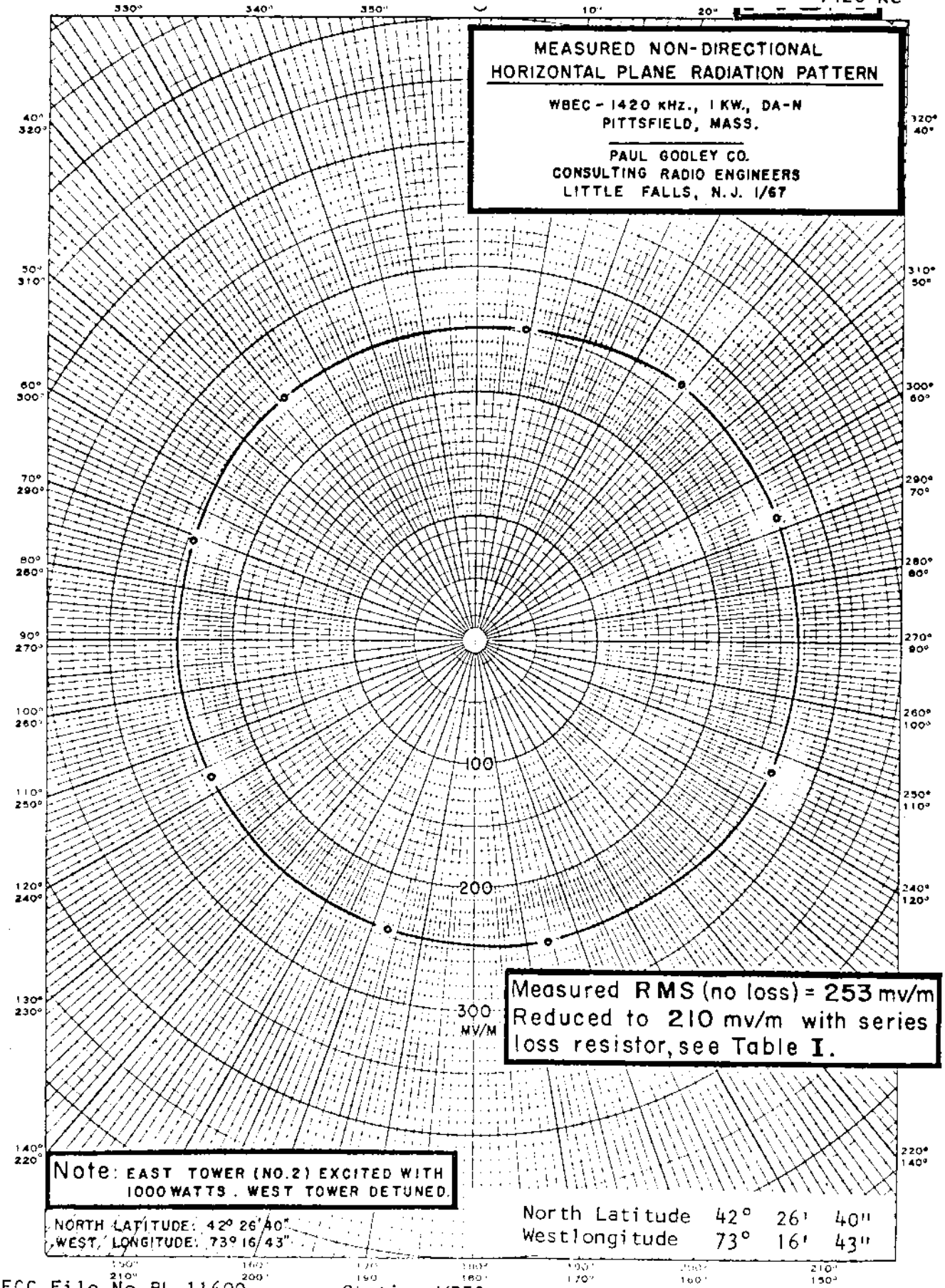
1420 KC

WBEC

Measured Non-DA
(4-28-67ct)

Station WBEC
Pittsfield, Massachusetts

1kw, DA-N, U
1420 kc



North Latitude 42° 26' 40"
Westlongitude 73° 16' 43"

FCC File No. BL-11600
Accepted 4-7-67

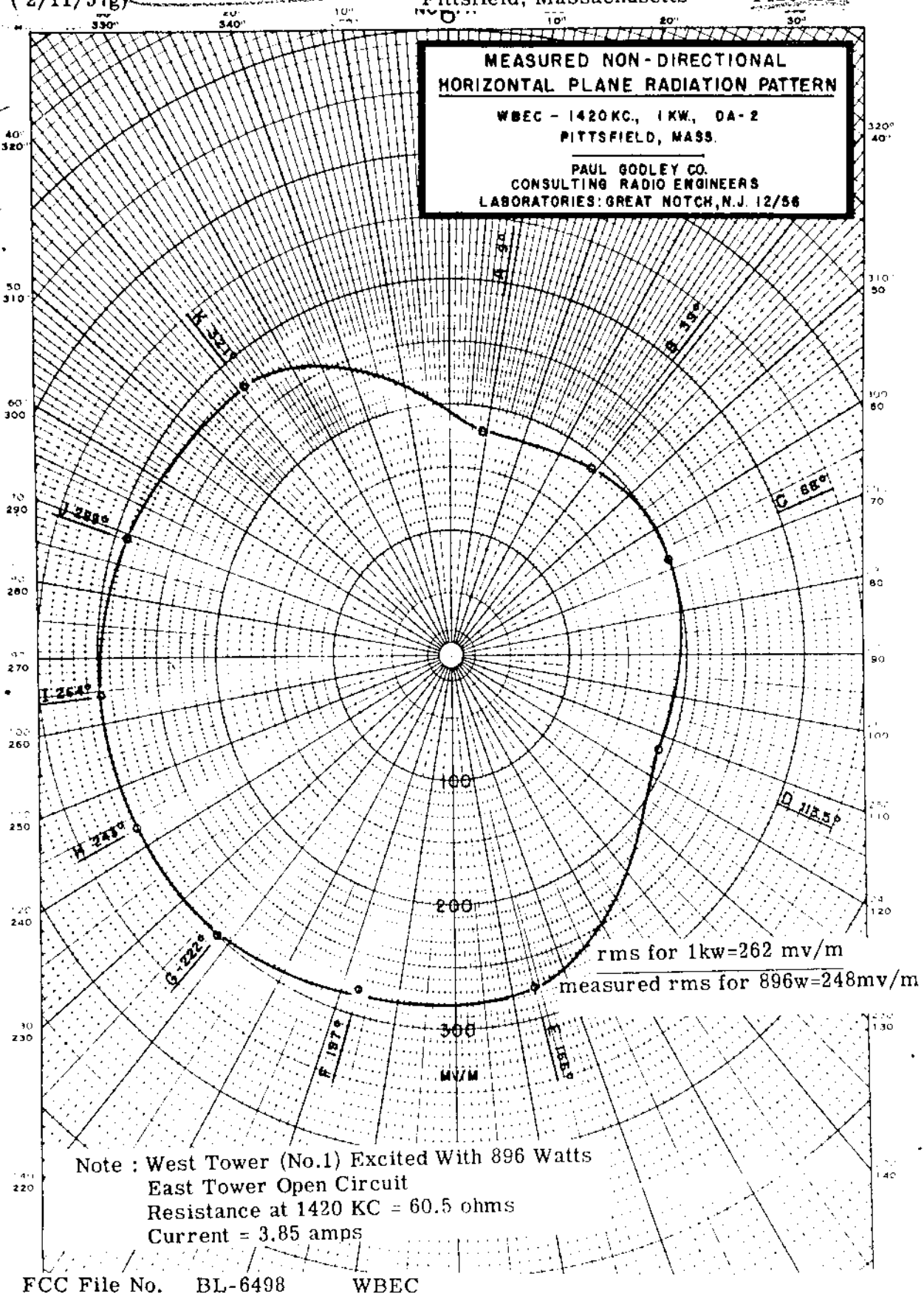
Station WBEC
Pittsfield, Massachusetts

1420 kc

WBEC

MEASURED NON-DIRECTIONAL
(2/11/57g)

Station WBEC 500w,1KW-LS,DA-2,U
Pittsfield, Massachusetts 1420 KC



FCC File No. BL-6498 WBEC
Accepted 1/29/57 Pittsfield, Massachusetts 1420 KC
BP 16 865

BRADENTON, FLA
WBRD

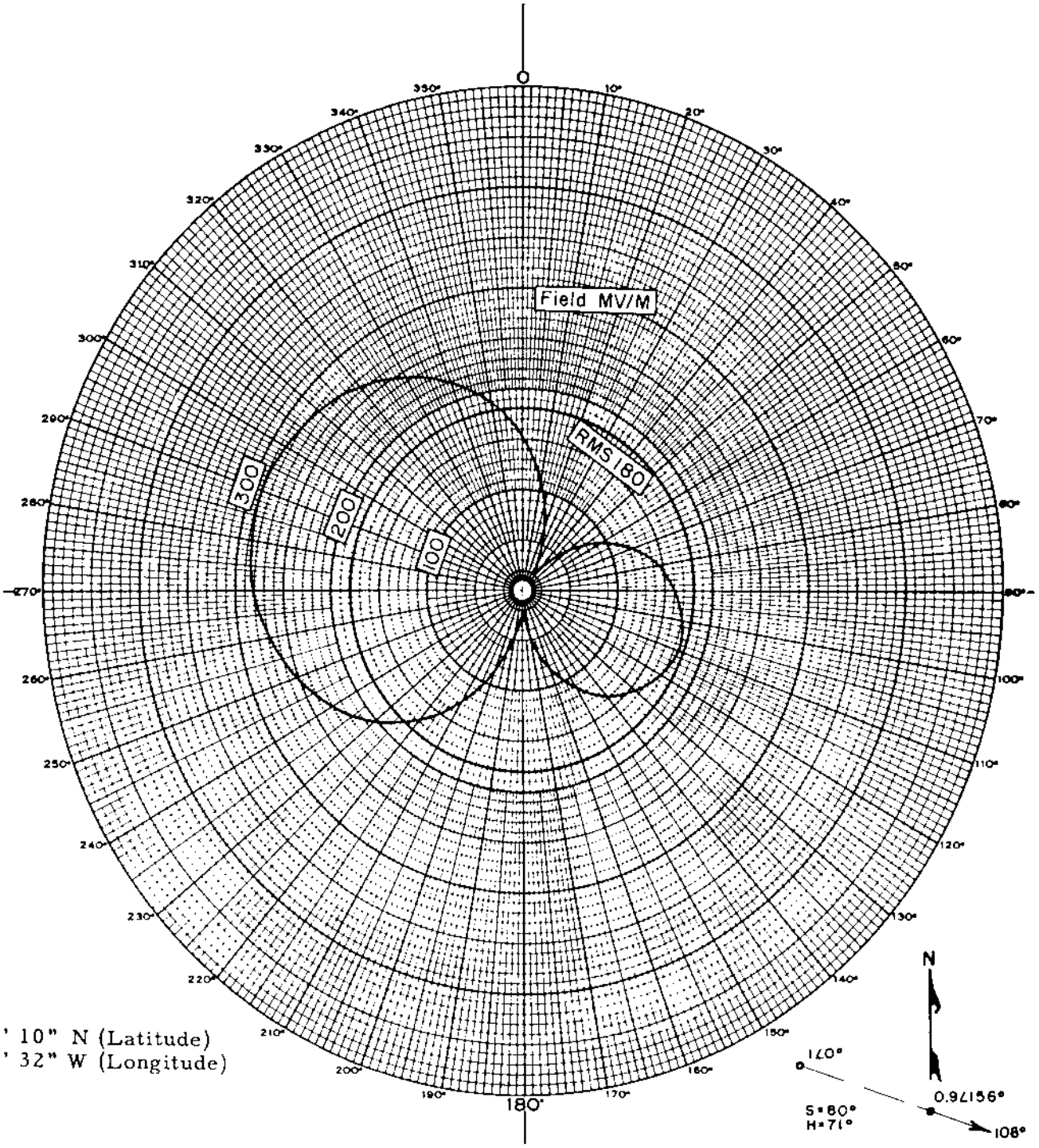
PROPOSED
DAY (7-11-56g)

SUNSHINE STATE B/C CO.
BRADENTON, FLA.

1 KW
DA-D, D

1420 KC

CP Granted 12/19/56



82° 32' 10" N (Latitude)
27° 28' 32" W (Longitude)

SUNSHINE STATE BROADCASTING CO. INC. BRADENTON, FLORIDA DIRECTIONAL ANTENNA PATTERN	Figure 1 1420 KC 500 WATTS DA-D FRANK H. McINTOSH & ASSOCIATES Consulting Radio Engineers Wyatt Building Washington, D. C.

FCC File No. BP-10,645 Accepted 7-2-56 Sunshine State B/ C Co. Bradenton, Fla. 1420 KC

WBRD

MEASURED DAY
(12-20-57g)

Station WBRD
Bradenton, Florida

1kw, DA-D,D
1420 KC

Granted license 1/31/58 for new station

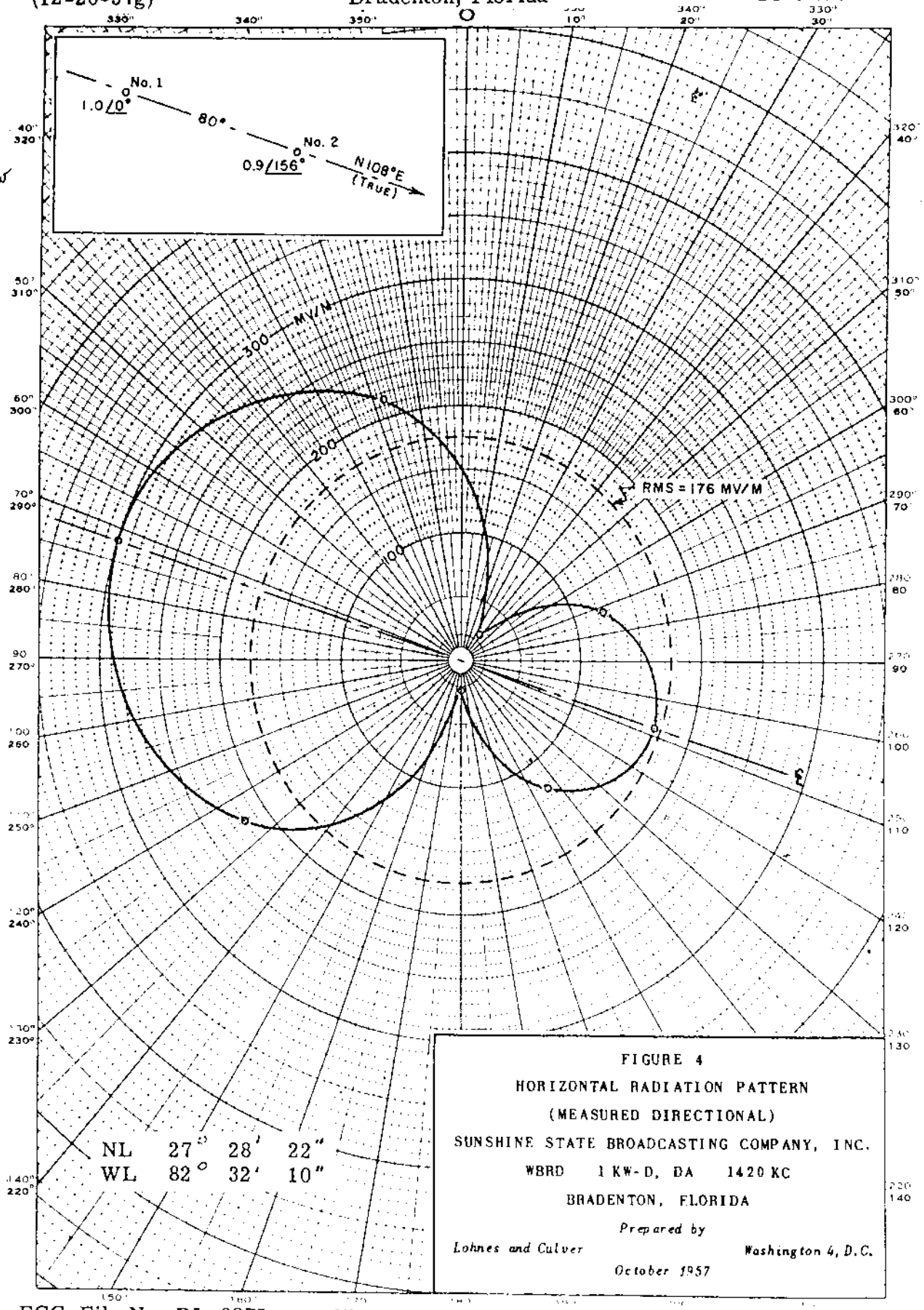


FIGURE 4
HORIZONTAL RADIATION PATTERN
(MEASURED DIRECTIONAL)
SUNSHINE STATE BROADCASTING COMPANY, INC.
WBRD 1 KW-D, DA 1420 KC
BRADENTON, FLORIDA
Prepared by
Lohnes and Culver *Washington 4, D.C.*
October 1957

FCC File No. BL-6875
Accepted 11-29-57

WBRD
Bradenton, Florida

1420 KC

WBRD

MEASURED NON-DA (12-20-57g) | Station WBRD Bradenton, Florida | 1kw, DA-D,D 1420 KC

Granted license 7/31/58 for new station

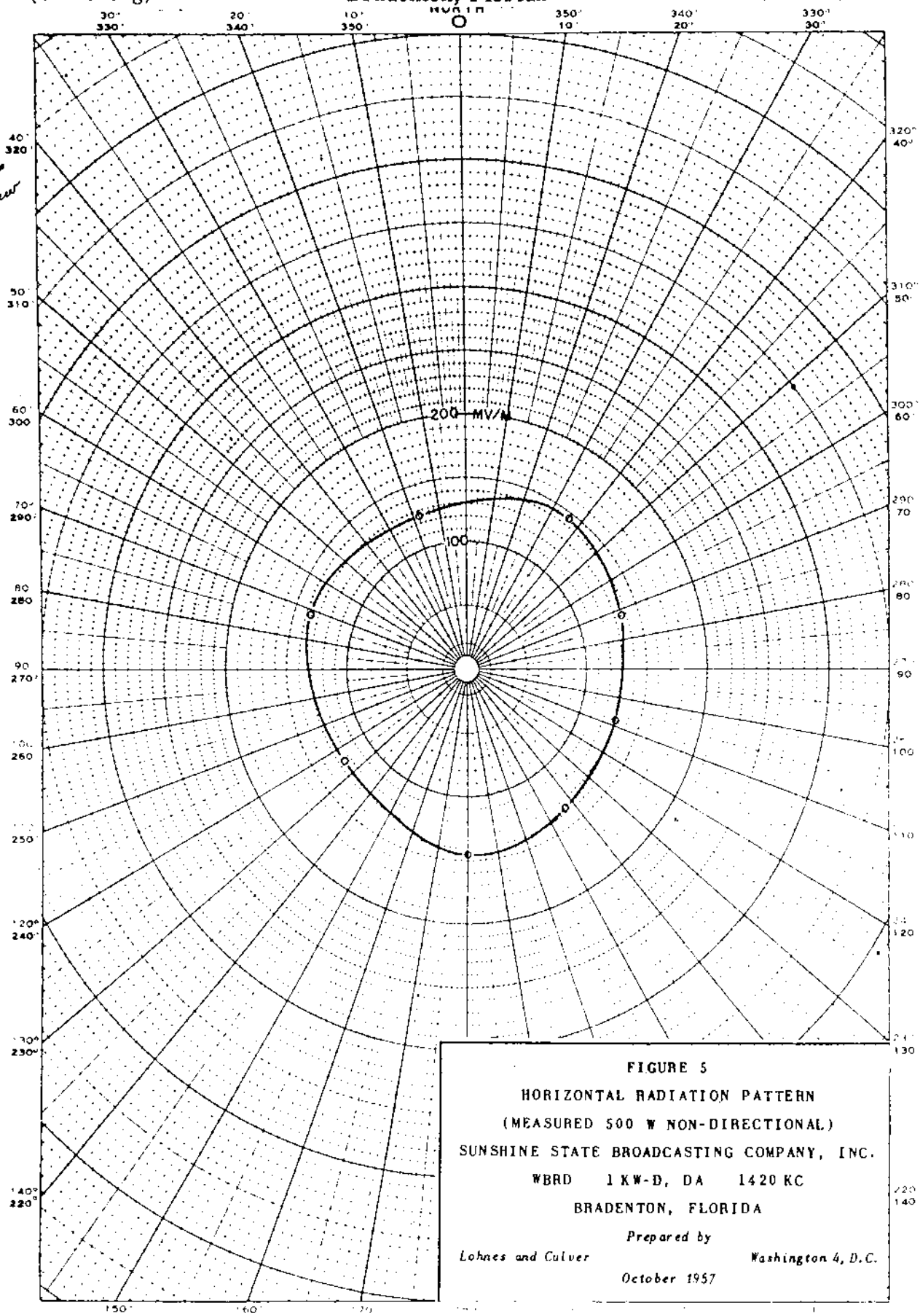


FIGURE 5
HORIZONTAL RADIATION PATTERN
(MEASURED 500 W NON-DIRECTIONAL)
SUNSHINE STATE BROADCASTING COMPANY, INC.
WBRD 1 KW-D, DA 1420 KC
BRADENTON, FLORIDA
Prepared by
Lohnes and Culver *Washington 4, D.C.*
October 1957

FCC File No. BL-6875 Accepted 11-29-57 | WBRD Bradenton, Florida | 1420 KC

WBSM

PROPOSED DAY & NIGHT (8/16/55G)

STATION WBSM
NEW BEDFORD, MASSACHUSETTS

1KW
DA-1, U

1420 KC

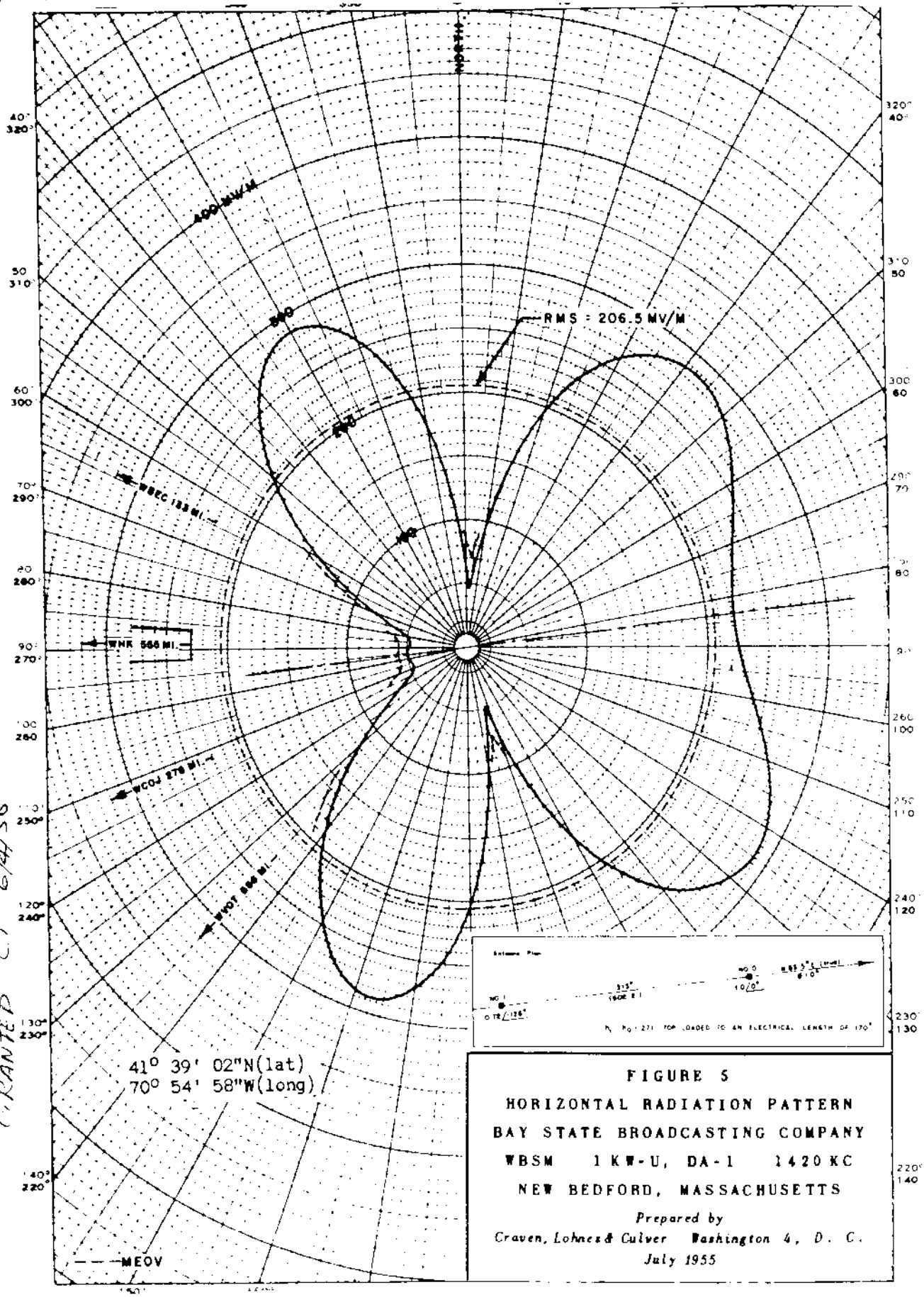


FIGURE 5
HORIZONTAL RADIATION PATTERN
BAY STATE BROADCASTING COMPANY
WBSM 1 KW-U, DA-1 1420 KC
NEW BEDFORD, MASSACHUSETTS
Prepared by
Craven, Lohnes & Culver Washington 4, D. C.
July 1955

granted for nondirectional power and DA-2 - 9-2-55

GRANTED CP 6/4/56

FILE NO. BP-9649(Amended) ACCEPTED 8/4/55 FCC WBSM, New Bedford, Mass. 1420 KC

WBSM

MEASURED NIGHT & DAY (1-29-57g)

Station W B S M 1 KW-D, 1KW-N, DA-1, U
New Bedford, Mass. 1420 K C

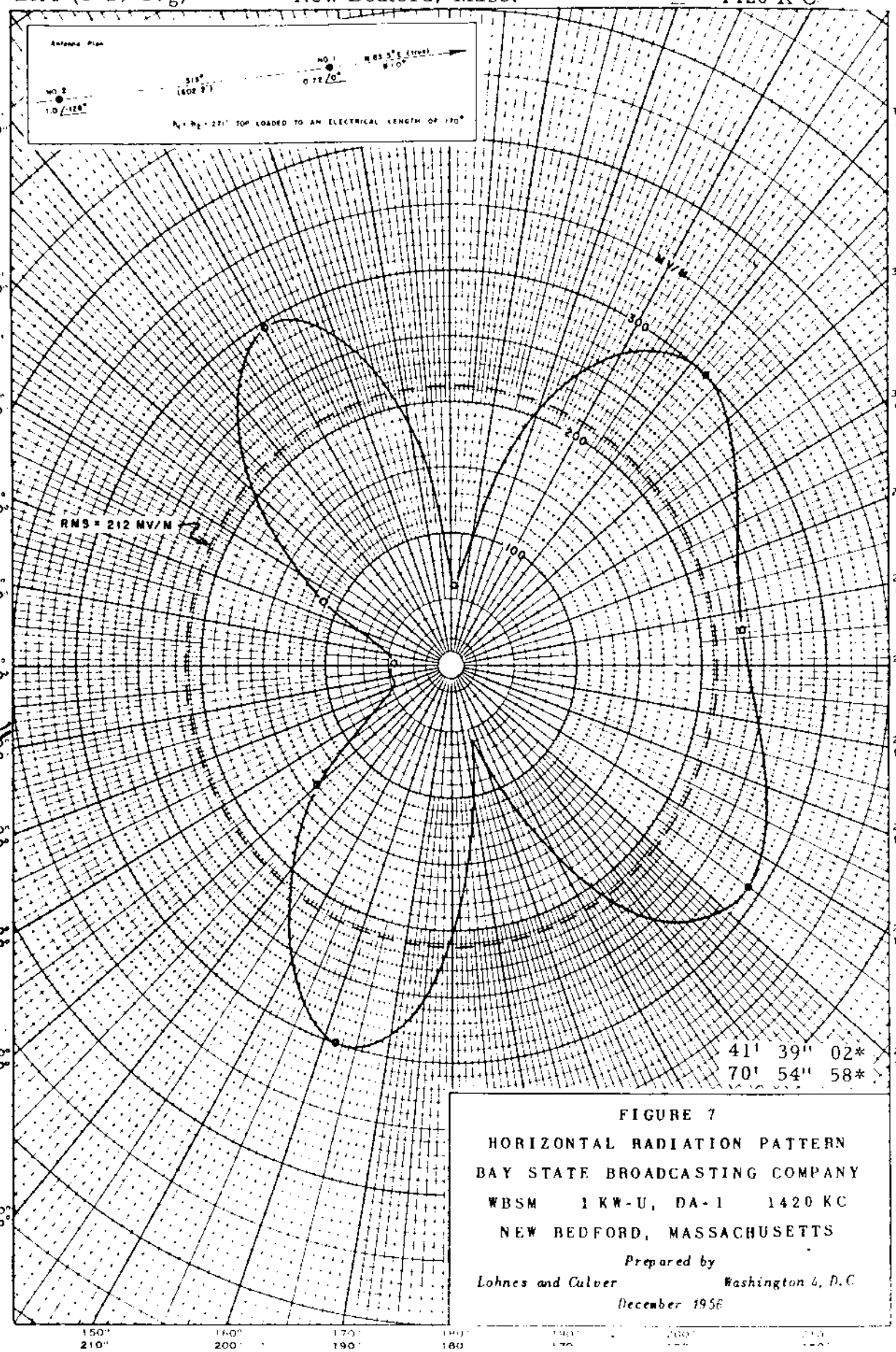


FIGURE 7
HORIZONTAL RADIATION PATTERN
BAY STATE BROADCASTING COMPANY
WBSM 1 KW-U, DA-1 1420 KC
NEW BEDFORD, MASSACHUSETTS
Prepared by
Lohnes and Culver *Washington 4, D.C.*
December 1956

granted license 4/1/57

granted for increase in day power and DA-2 9-2-59

-24-61 granted for range, tower DA-2

FCC File No. BL-6481 Accepted 1-14-57 Station W B S M New Bedford, Mass. 1420KC

WBSM

MEASURED NON-DA (1-29-57g)

Station W B S M 1 KW-N, 1KW-D, DA-1, U
New Bedford, Mass. 1420 K C

granted license 4/1/57

Turned up for increased in day power and DA 2 9-2-59

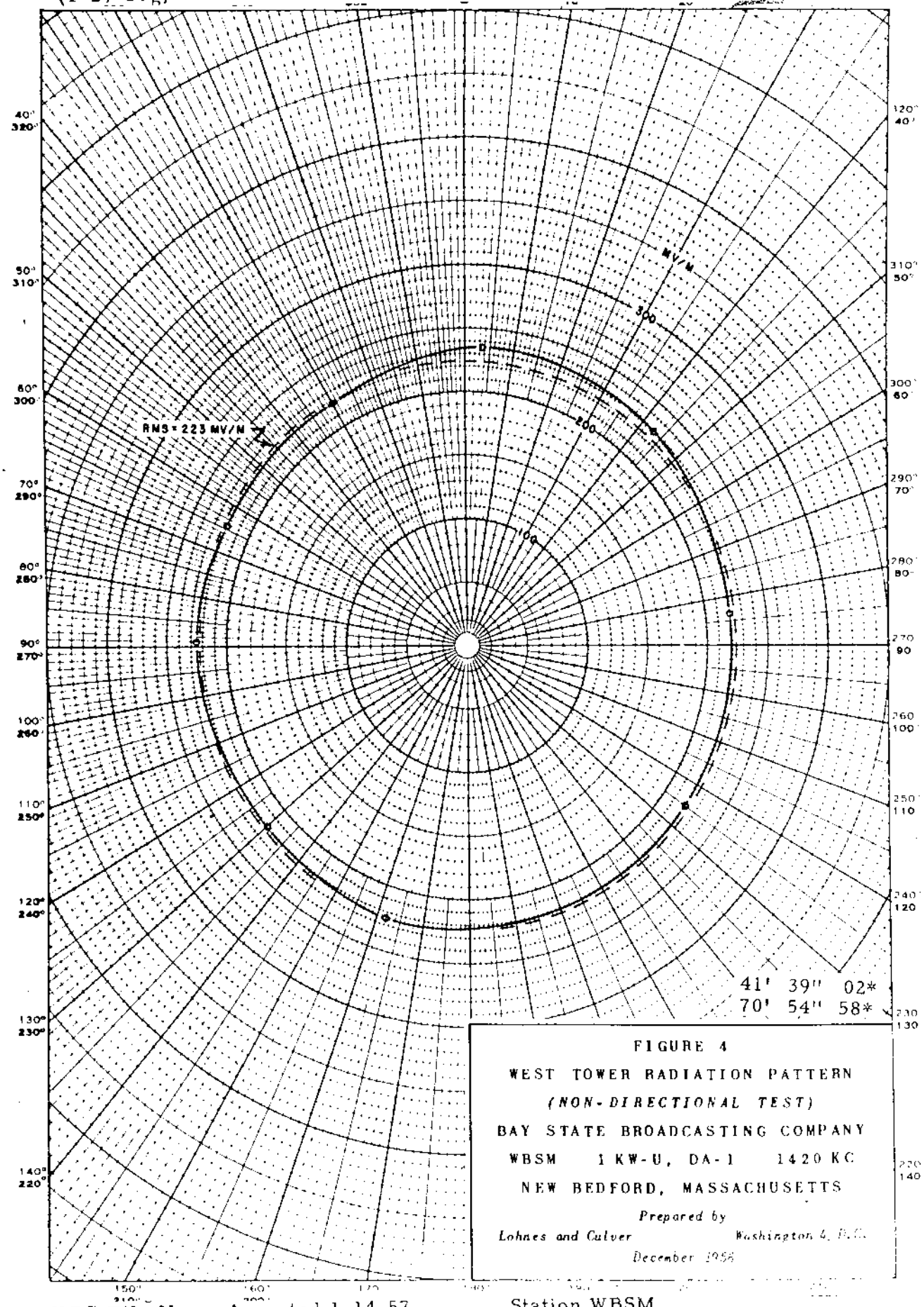


FIGURE 4
WEST TOWER RADIATION PATTERN
(NON-DIRECTIONAL TEST)
BAY STATE BROADCASTING COMPANY
WBSM 1 KW-U, DA-1 1420 KC
NEW BEDFORD, MASSACHUSETTS
Prepared by
Lohnes and Culver *Washington 4, D.C.*
December 1958

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

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

FCC File No. BL-6481 Accepted 1-14-57

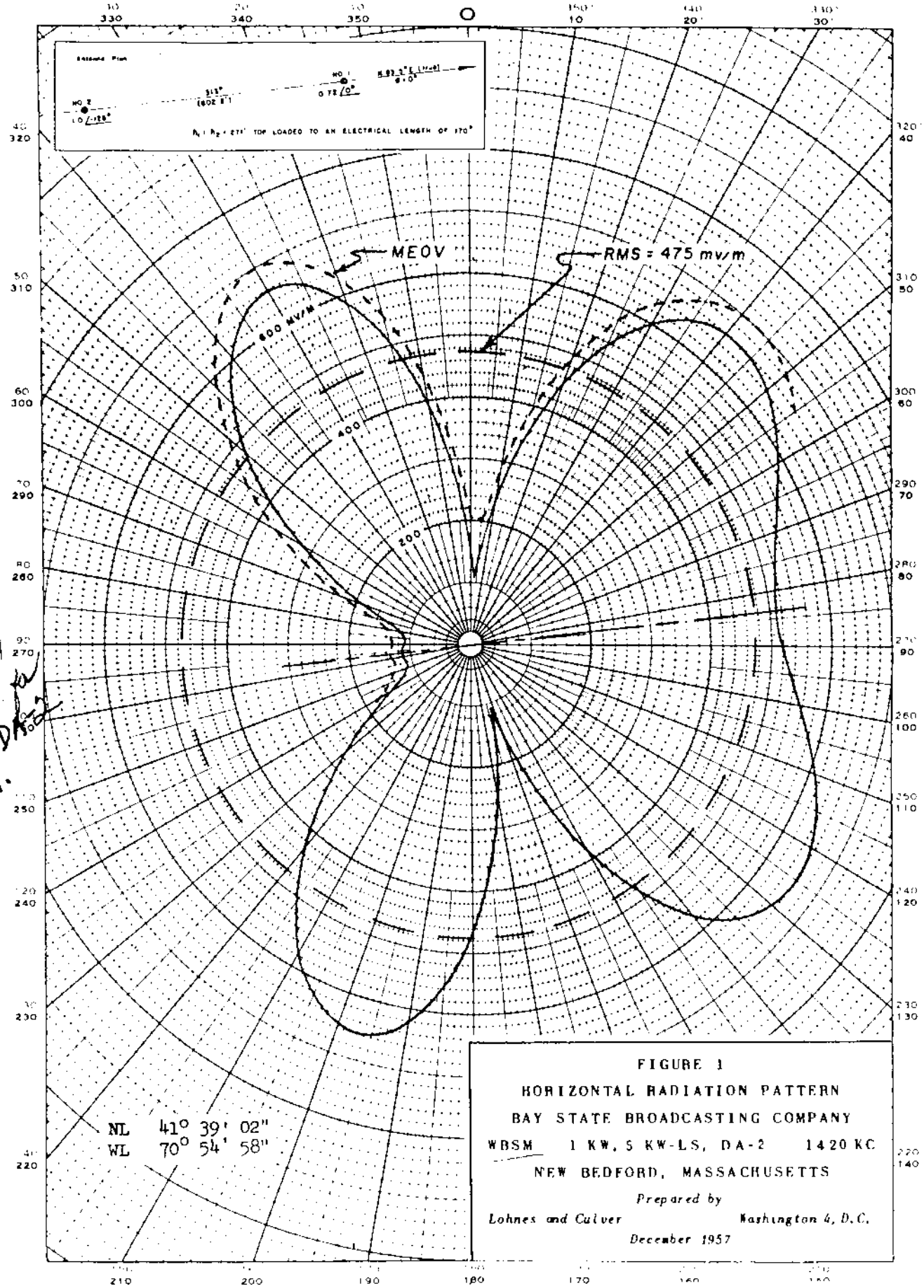
Station WBSM
New Bedford, Mass. 1420 KC

WBSM

PROPOSED DAY
(2-11-58g)

Station WBSM
New Bedford, Massachusetts

1kw,5kw-LS, DA-2,U
1420 KC



granted for increased day power and DA-2 - 9-2-59

2-24-61 granted to revert to DA-2 operation.

FCC File No. BP-11,766
Accepted 1-21-58

WBSM
New Bedford, Massachusetts

1420 KC

WBSM

MEASURED DAY
(2-26-60g)

Station WBSM
New Bedford, Massachusetts

1kw,5kw-LS, DA-2,U
1420 KC

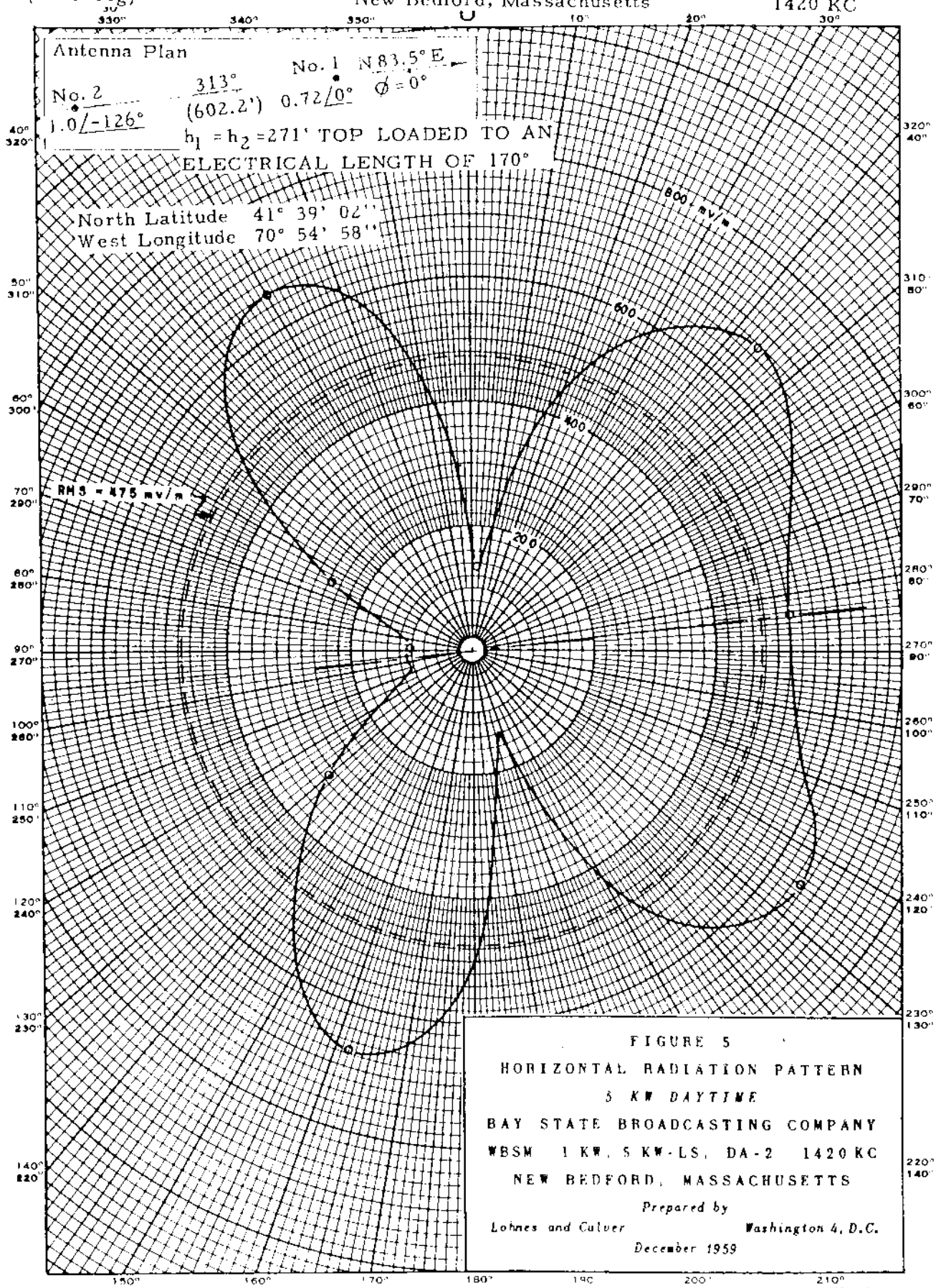


FIGURE 5
HORIZONTAL RADIATION PATTERN
5 KW DAYTIME
BAY STATE BROADCASTING COMPANY
WBSM 1 KW, 5 KW-LS, DA-2 1420 KC
NEW BEDFORD, MASSACHUSETTS
Prepared by
Lohnes and Culver *Washington 4, D.C.*
December 1959

FCC File No. BL-7819
Accepted 2-11-60

WBSM
New Bedford, Massachusetts 1420 KC

WCED

PROPOSED
NIGHT (7/21/54G)

WCED
DuBois, Pa.

500W,5KW-LS DA-2,U

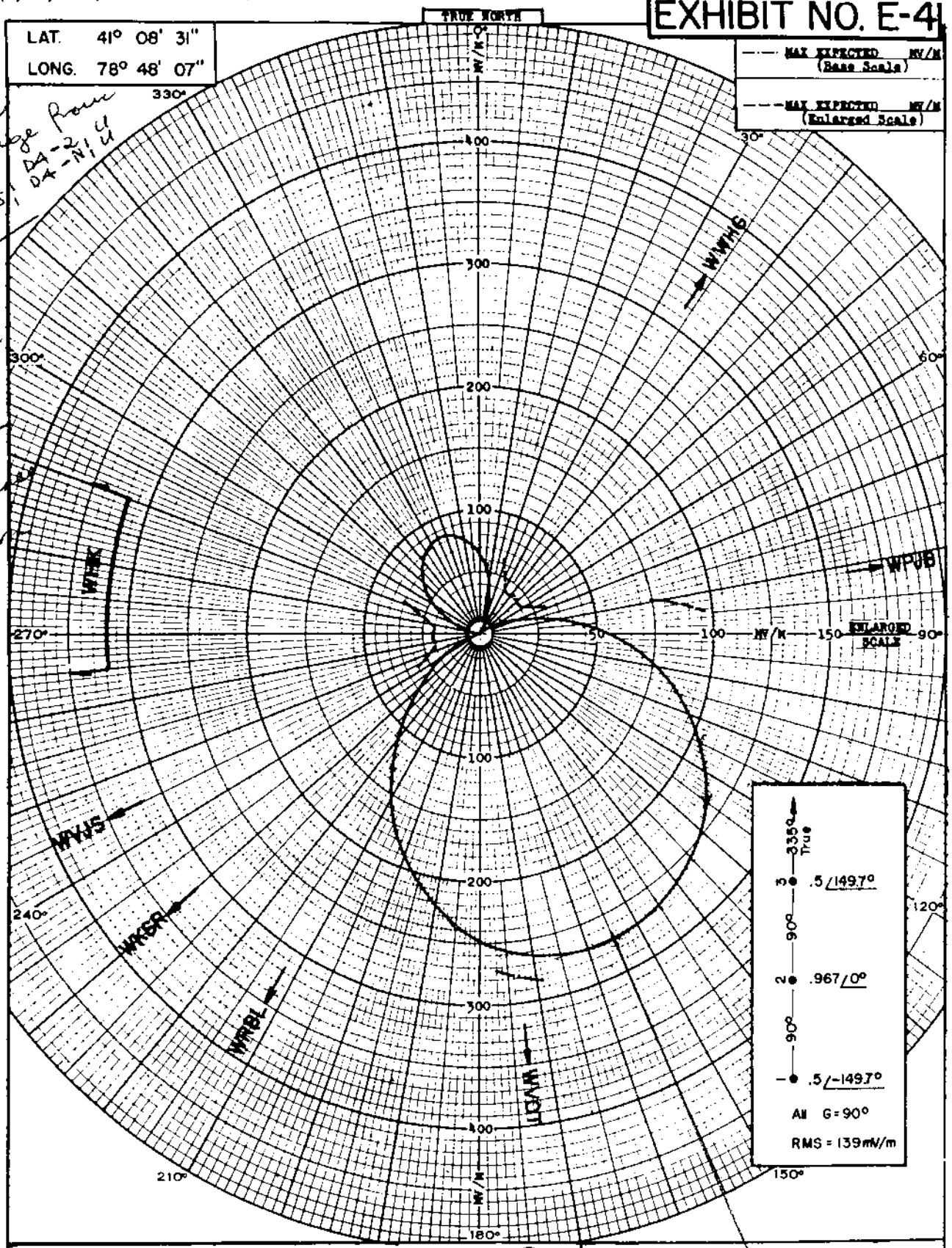
1420kc

EXHIBIT NO. E-4

BP-17471
appl. accepted
1-3-67 to change from
500W, 5KW-LS DA-2, U
to 500W, 5KW-LS, DA-N, U

8-14-67
GRANTED CP
change from
DA-2 to
DA-N

11-7-68
Granted license
covering
change from
DA-2 to
DA-N



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

PATTERN: PROPOSED NIGHTTIME
FOR: WCED, DuBois, Pa.
POWER: 500 W FREQ: 1420 KC
DATE: 6/8/54

FCC FILE NO. BP-9349 DATE ACCEPTED 6-30-54

1420kc

WCED

PROPOSED
NIGHT NULLS (7/21/54G)

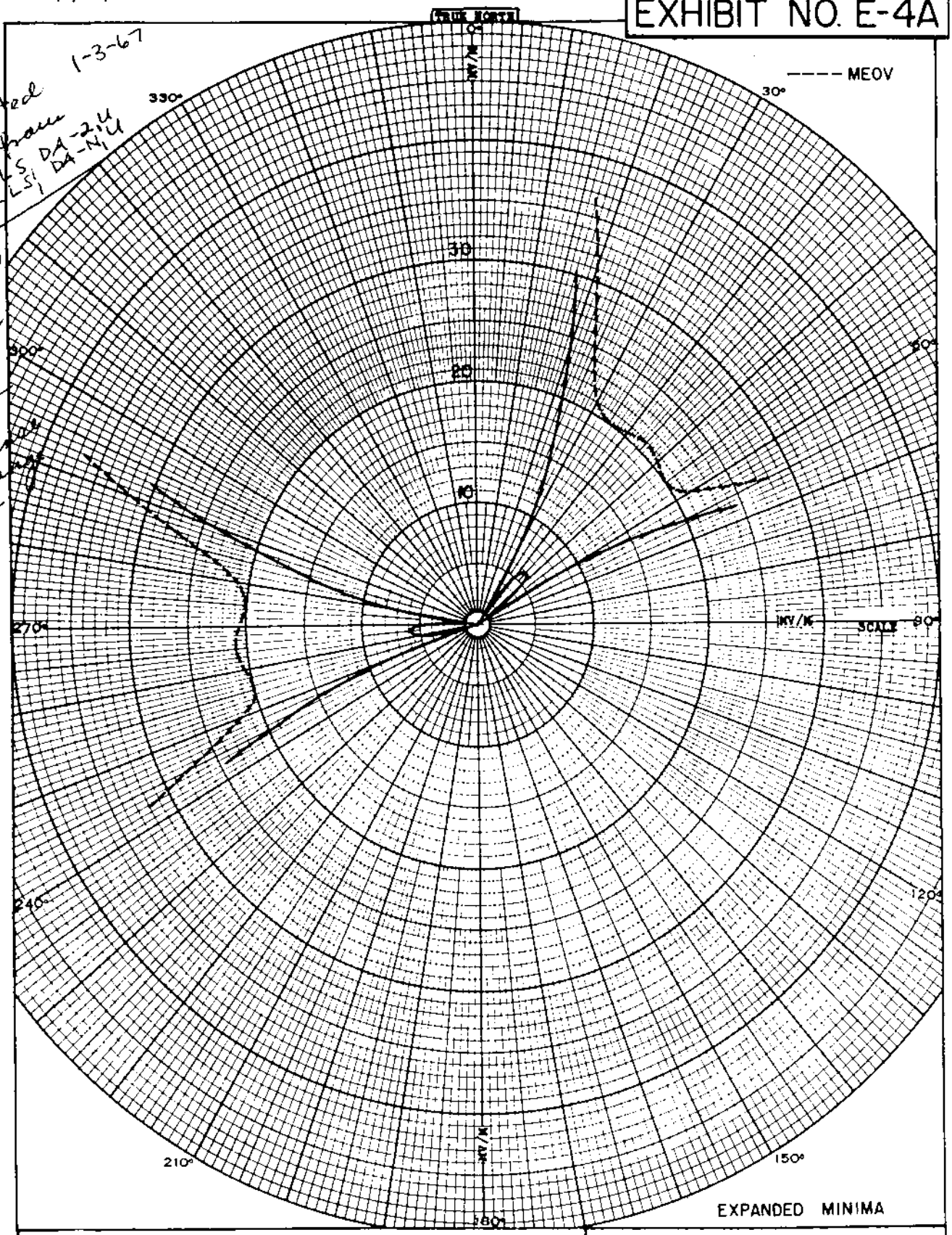
WCED
DU BOIS, PA.

500W,5KW-LS DA-2,U

1420kc

EXHIBIT NO. E-4A

BP- 17471
Appl. accepted 1-3-67
to change from
500W, 5KW-LS DA-2,U
to 500W, 5KW-LS, DA-N,U
8-14-67
GRANTED CP
change from
DA-2 to
DA-N
11-7-68
Granted minor
covering change
from DA-2
to DA-N



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

PATTERN: PROPOSED NIGHTTIME
FOR: WCED, Du Bois, Pa.
POWER: 500 W FREQ: 1420 KC
DATE: 6/8/54

FCC FILE NO. BP-9349 DATE ACCEPTED 6-30--54

1420kc

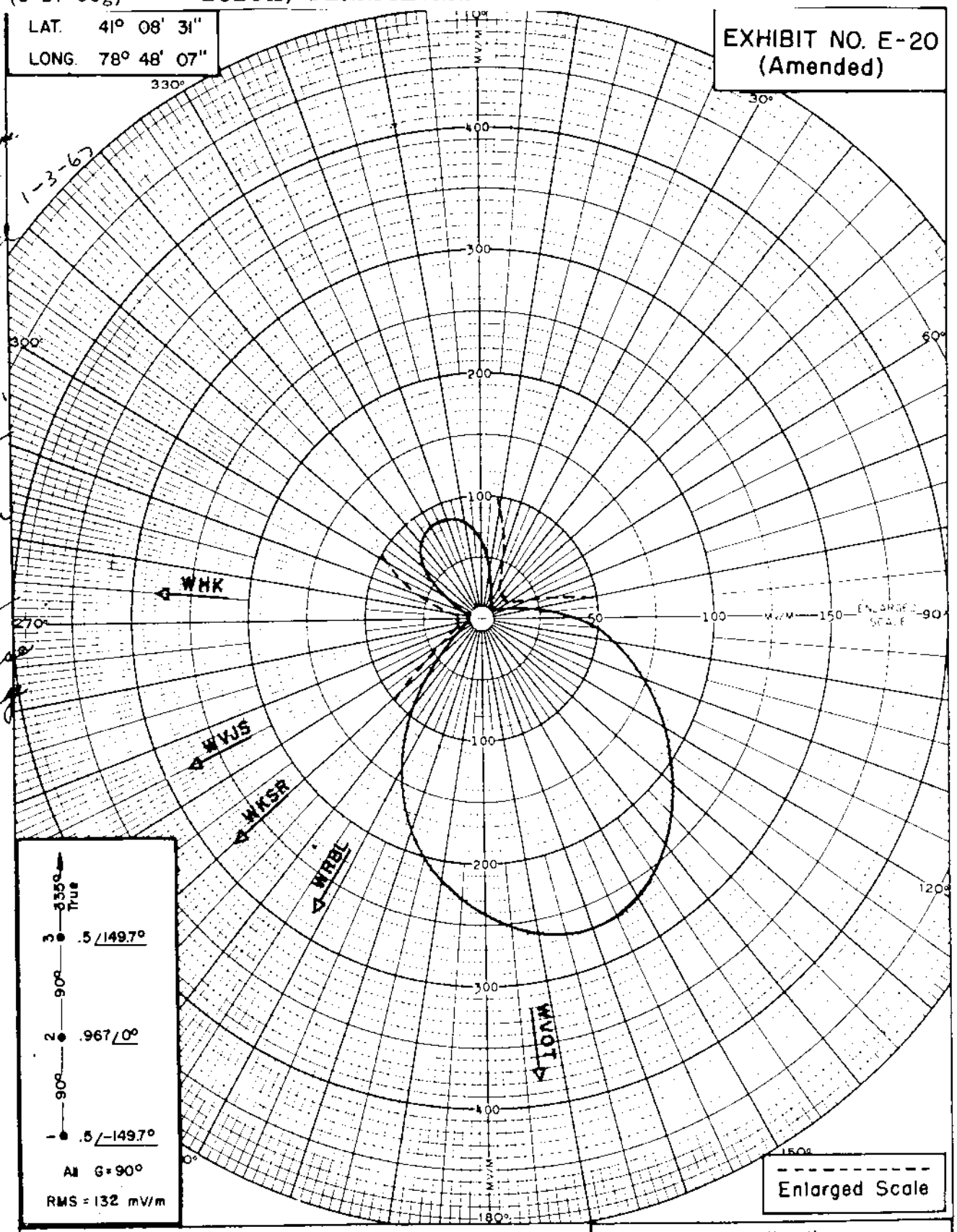
WCED

MEASURED
NIGHT (6-27-56g)

STATION WCED
DUBOIS, PENNSYLVANIA

500 W, 5 KW
DA-2, U

1420 KC



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

PATTERN Measured Nighttime
FOR WCED, Du Bois, Pa.
POWER 500 Watts FREQ. 1420 Kc
DATE May 1956 BY CCW

FCC File No. BL-6192 Accepted 6-21-56 WCED, Dubois, Pennsylvania 1420 KC

ranted license 28/57 for change in freq, tran. location & to DA-2
BP-17471 ppl. accepted change power 500W, 5KW-LS; DA-2, U
500W, 5KW-LS, DA-N, U
8-14-67 GRANTED CP change power DA-2 to DA-N
11-7-68 granted license covering change from DA-2 to DA-N.

WCED

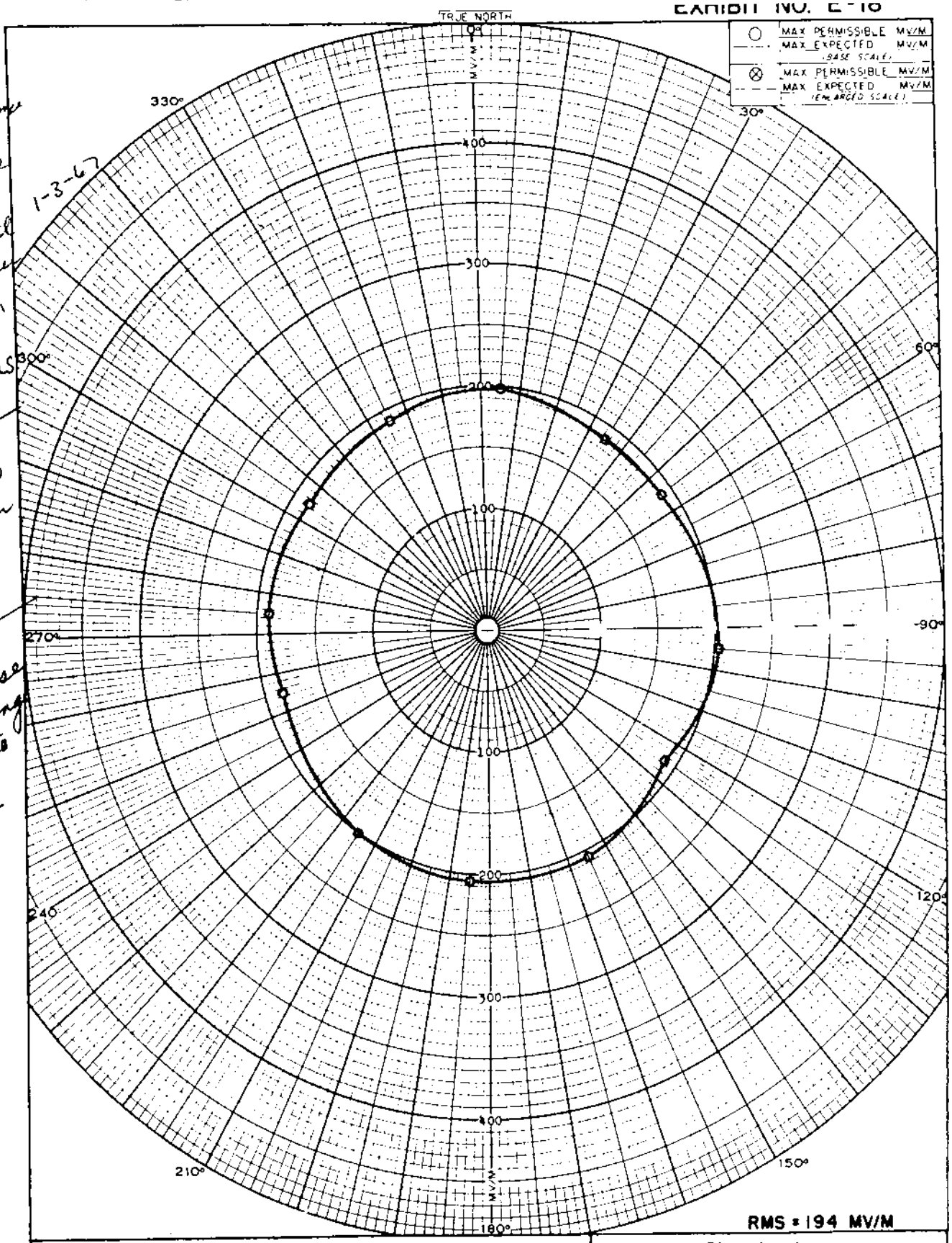
MEASURED NON-DIRECTIONAL (6-27-56g)

STATION WCED
DUBOIS, PENN.

500 W, 5 KW
DA-2, U

1420 KC

EXHIBIT NO. E-18



RMS = 194 MV/M

COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D. C.

PATTERN: Non-Directional
FOR: WCED
POWER: 1 KW FREQ: 1420 Kc
DATE: MAY 4, 1956 BY: CCW

FCC File No. BL-6192 Accepted 6-21-56 WCED, Dubois, Pennsylvania 1420 KC

10

granted license (28/57) for change in freq., trans. location + to DA-2

BP-17471 appl. accepted to change from 500 W, 5KW-LS, DA-2, U to 500 W, 5KW-LS, DA-N, U

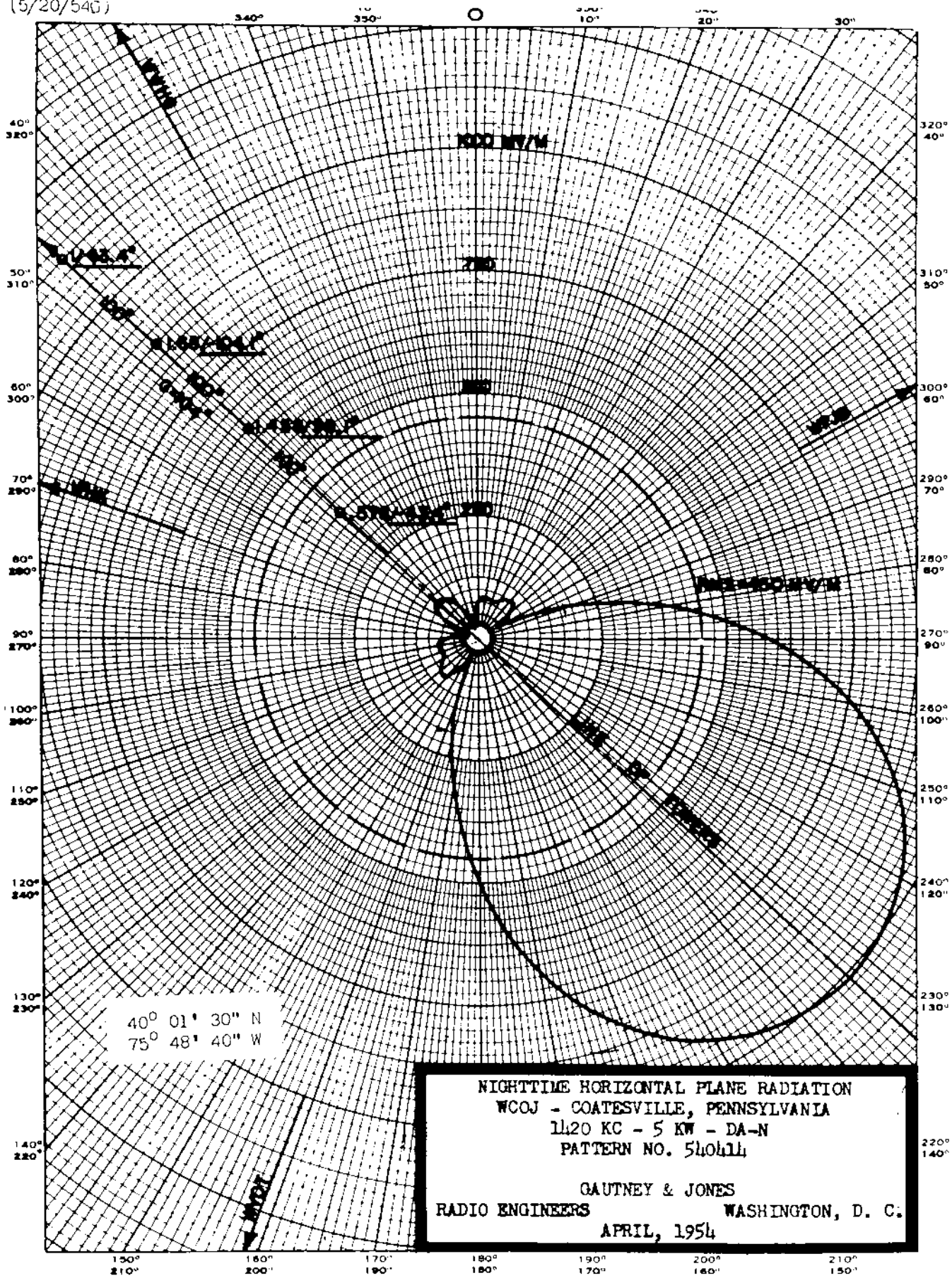
1-3-67

8-14-67 CP GRANTED change from DA-2 to DA-N

11-7-68 granted license covering change from DA-2 to DA-N

WCOJ

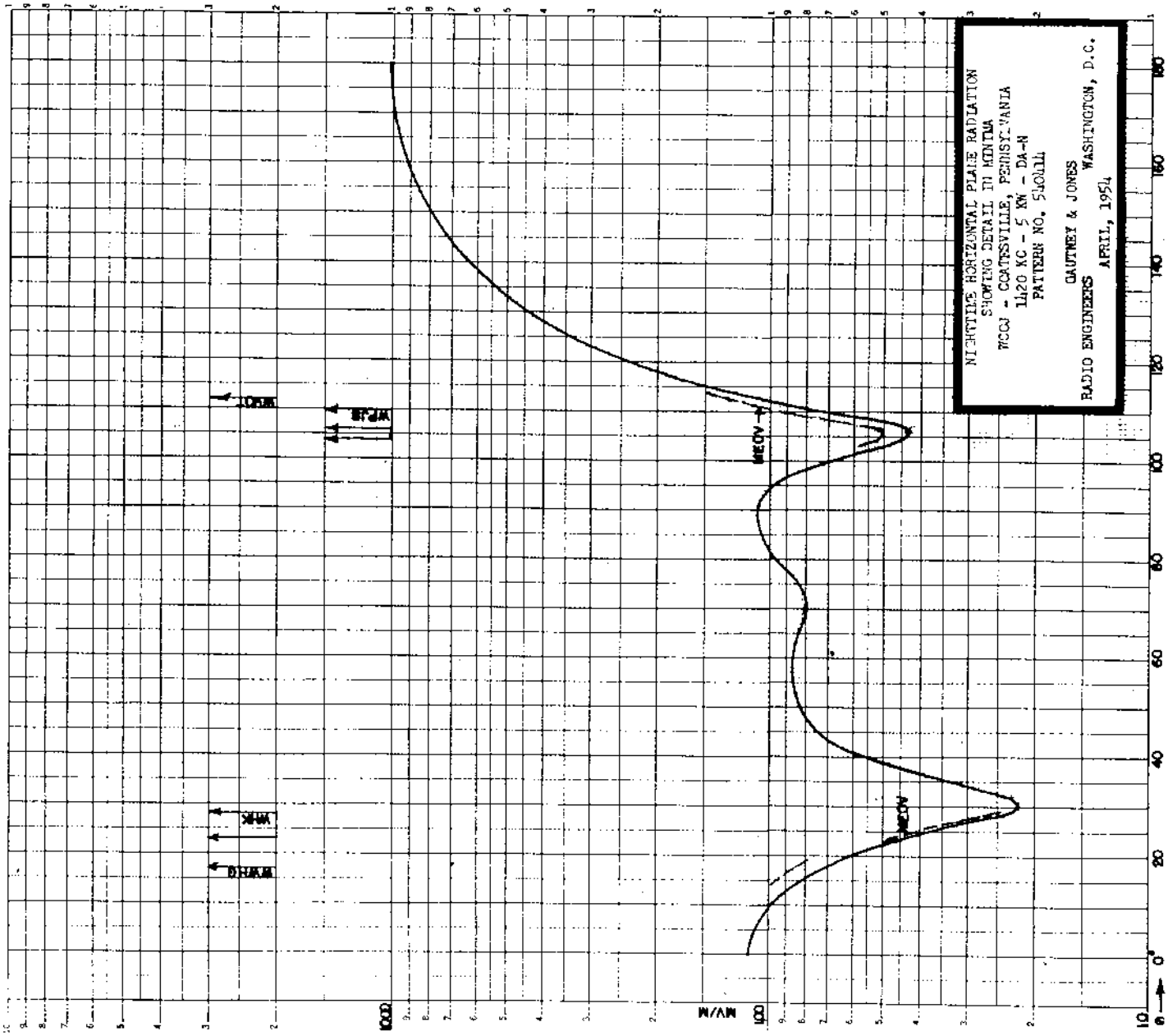
PROPOSED WCOJ, Coatesville, Pa. 5KW, U, DA-N 1420 kc
NIGHT (5/20/540)



FCC File No. BP-9274 Accepted 5/1/54 WCOJ, Coatesville, Pa. 1420 kc

WCOJ

PROPOSED WCOJ, Coatesville, Pa. 5KW, U, DA-N 1420 kc
NIGHT NULLS (5/20/54G)



FCC. File No. BP-9274 Accepted 5/10/54 WCOJ, Coatesville, Pa. 1420 kc

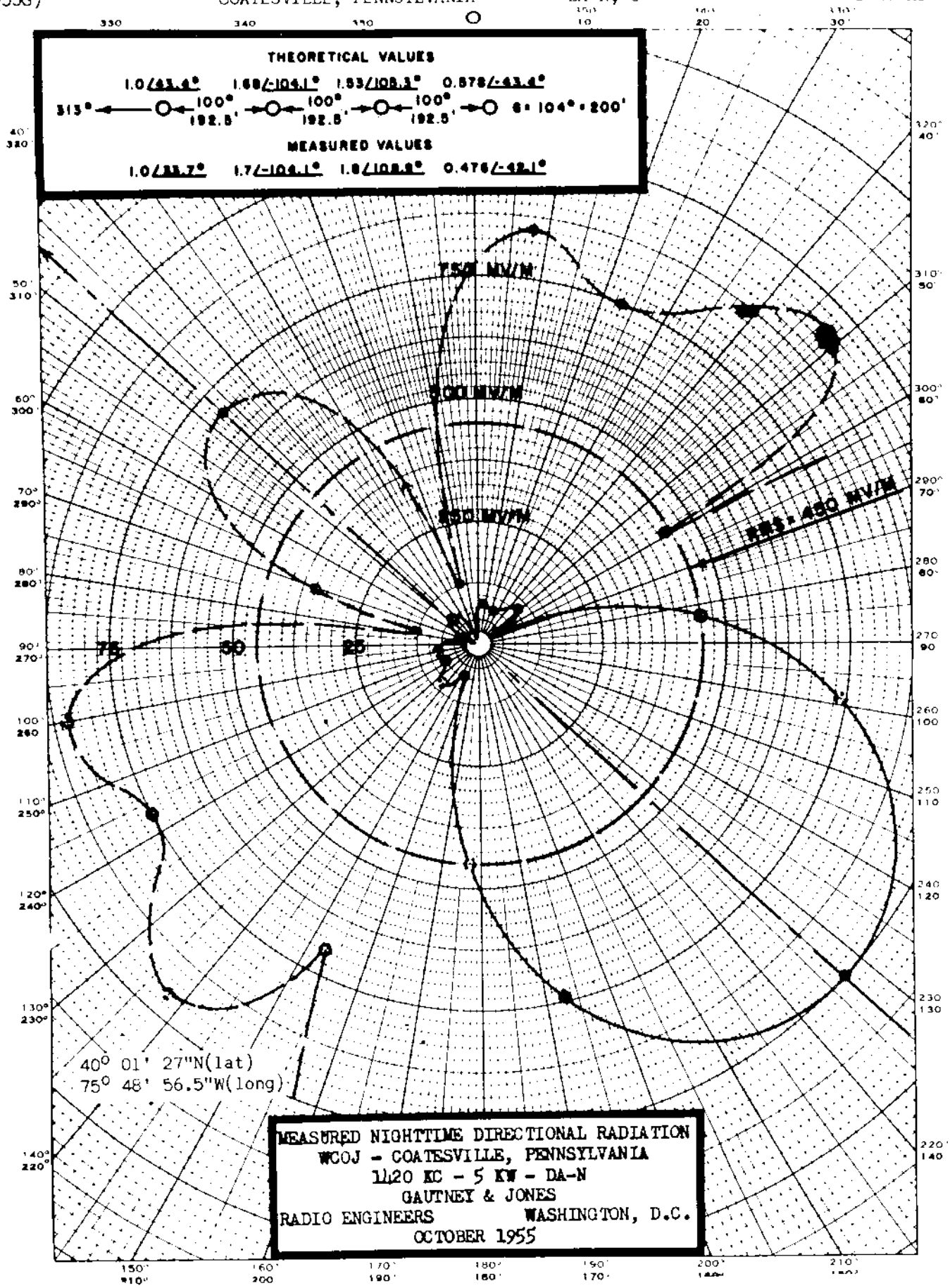
WCOJ

MEASURED NIGHT
(11-28-55G)

STATION WCOJ
COATESVILLE, PENNSYLVANIA

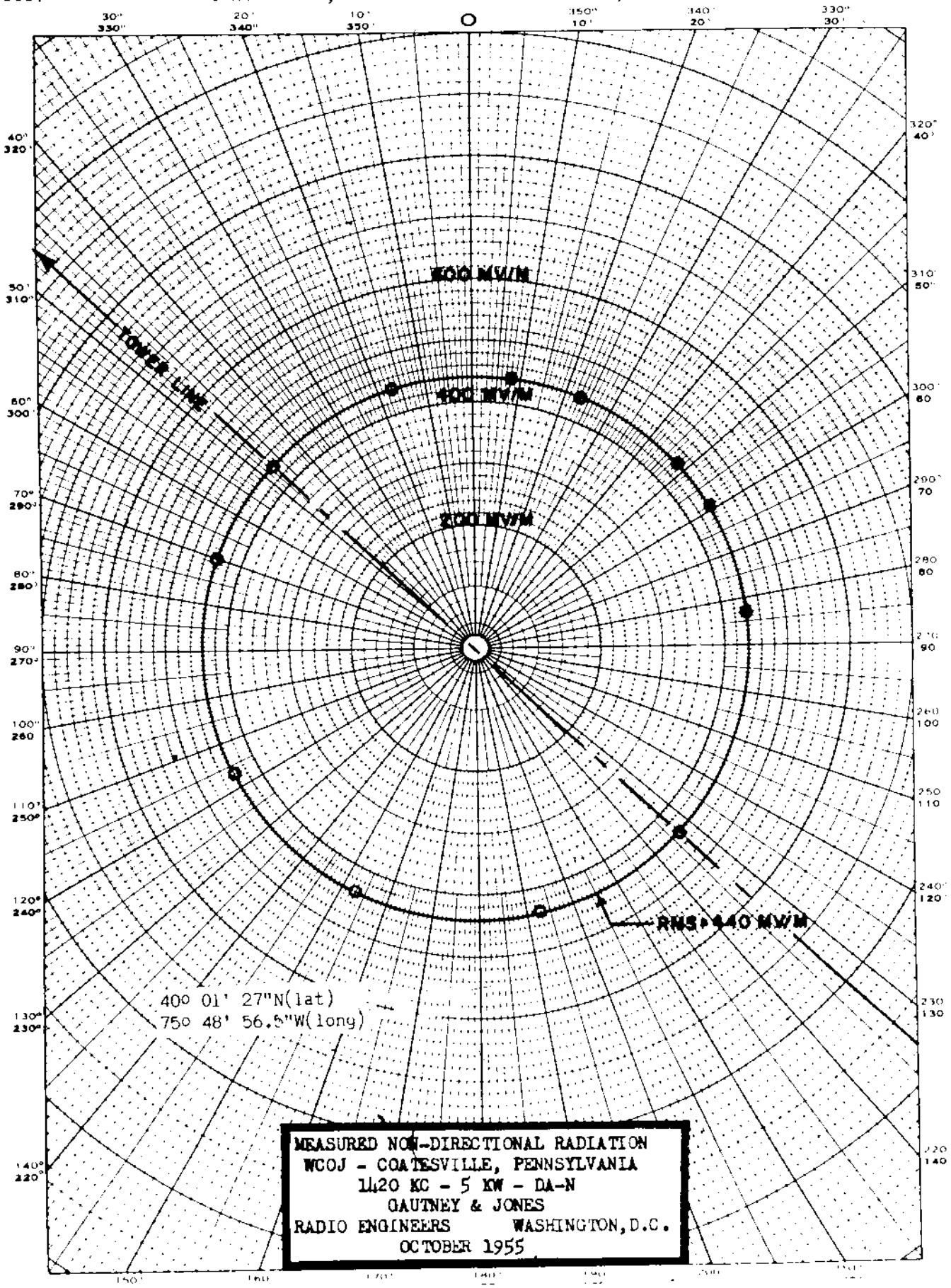
5 KW
DA-N, U

1420 KC



FILE NO. BL-5906 ACCEPTED 11-1-55 FCC WCOJ, Coatesville, Pa. 1420 KC

MEASURED NON-DIRECTIONAL STATION WCOJ 5 KW
(11-28-55G) COATESVILLE, PENNSYLVANIA DA-N, U 1420 KC



FILE NO. BL-5906 ACCEPTED 11-1-55 FCC WCOJ, Coatesville, Pa. 1420 KC

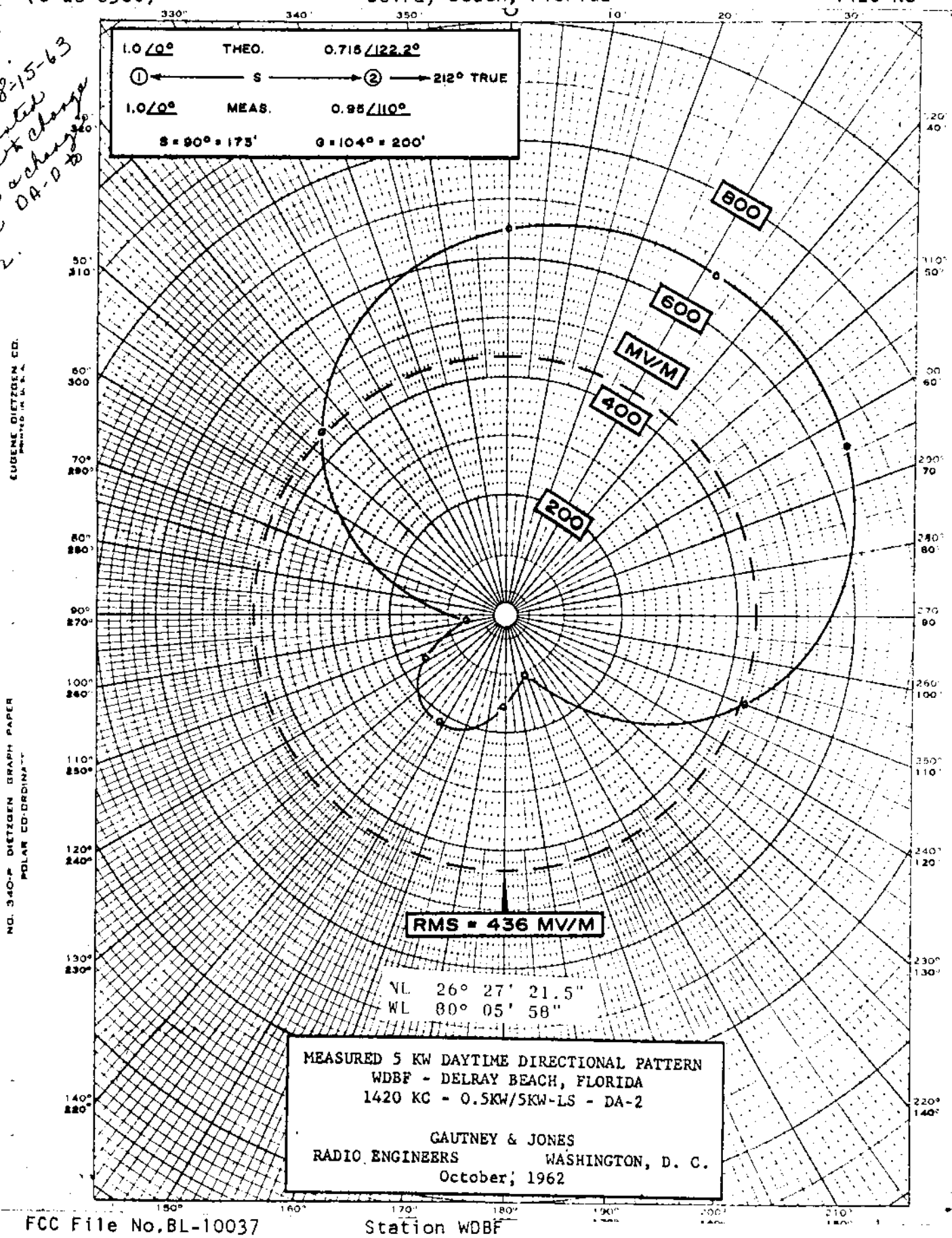
WDBF

Measured Day
(6-28-63ct)

Station WDBF
Delray Beach, Florida

500w,5kw-LS,DA-2,U
1420 kc

8-15-63
Operator requested change hours & change from DA-D to DA-2.



FCC File No.BL-10037
Accepted 6-17-63

Station WDBF
Delray Beach, Florida

1420 kc

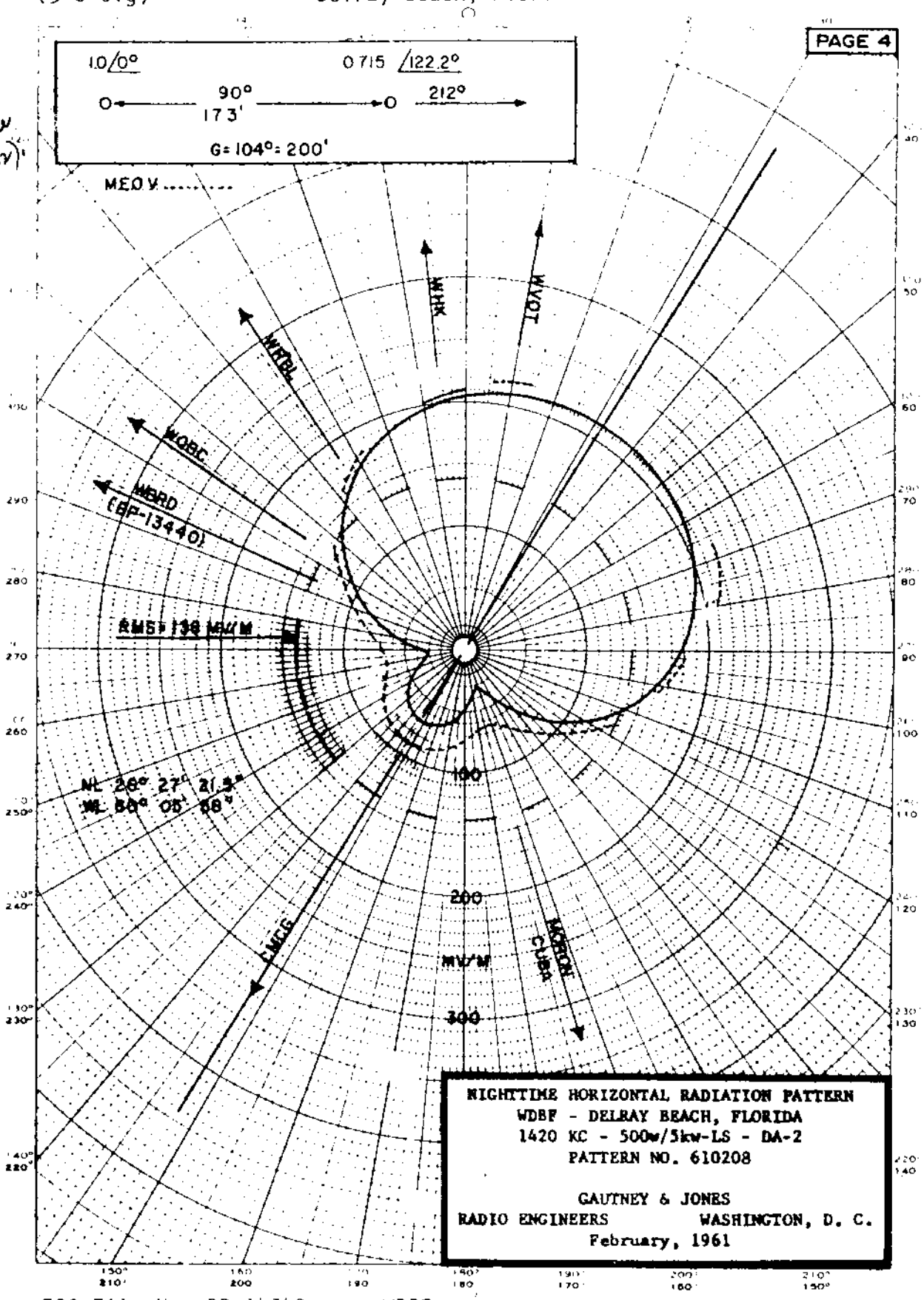
WDBF

PROPOSED NIGHT (5-8-61g)

Station WDBF Delray Beach, Florida

500w,5kw-LS, DA-2,U 1420 KC

6-27-62 granted OP to change from DA to unlimited time (from DA-D to DA-2).



NIGHTTIME HORIZONTAL RADIATION PATTERN
WDBF - DELRAY BEACH, FLORIDA
1420 KC - 500w/5kw-LS - DA-2
PATTERN NO. 610208

GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D. C.
February, 1961

FCC File No. BP-14749
Accepted 4-25-61

WDBF
Delray Beach, Florida 1420 KC

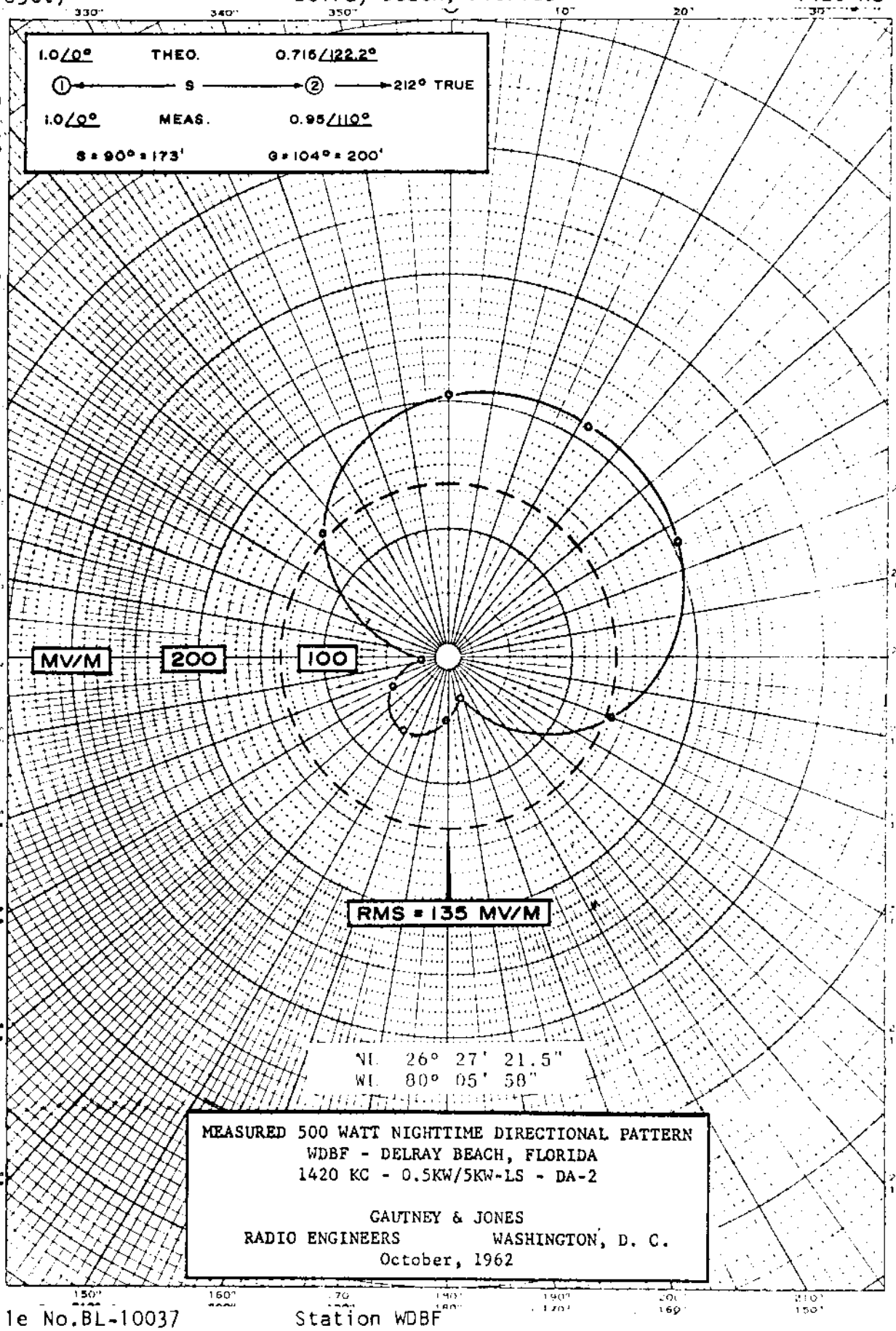
WDBF

Measured Night
(6-28-63ct)

Station WDBF
Delray Beach, Florida

500w, 5kw-LS, DA-2, U
1420 kc

8-15-63 Granted license for hours + change from DA-D to DA-2.



FCC File No. BL-10037
Accepted 6-17-63

Station WDBF
Delray Beach, Florida

1420 kc

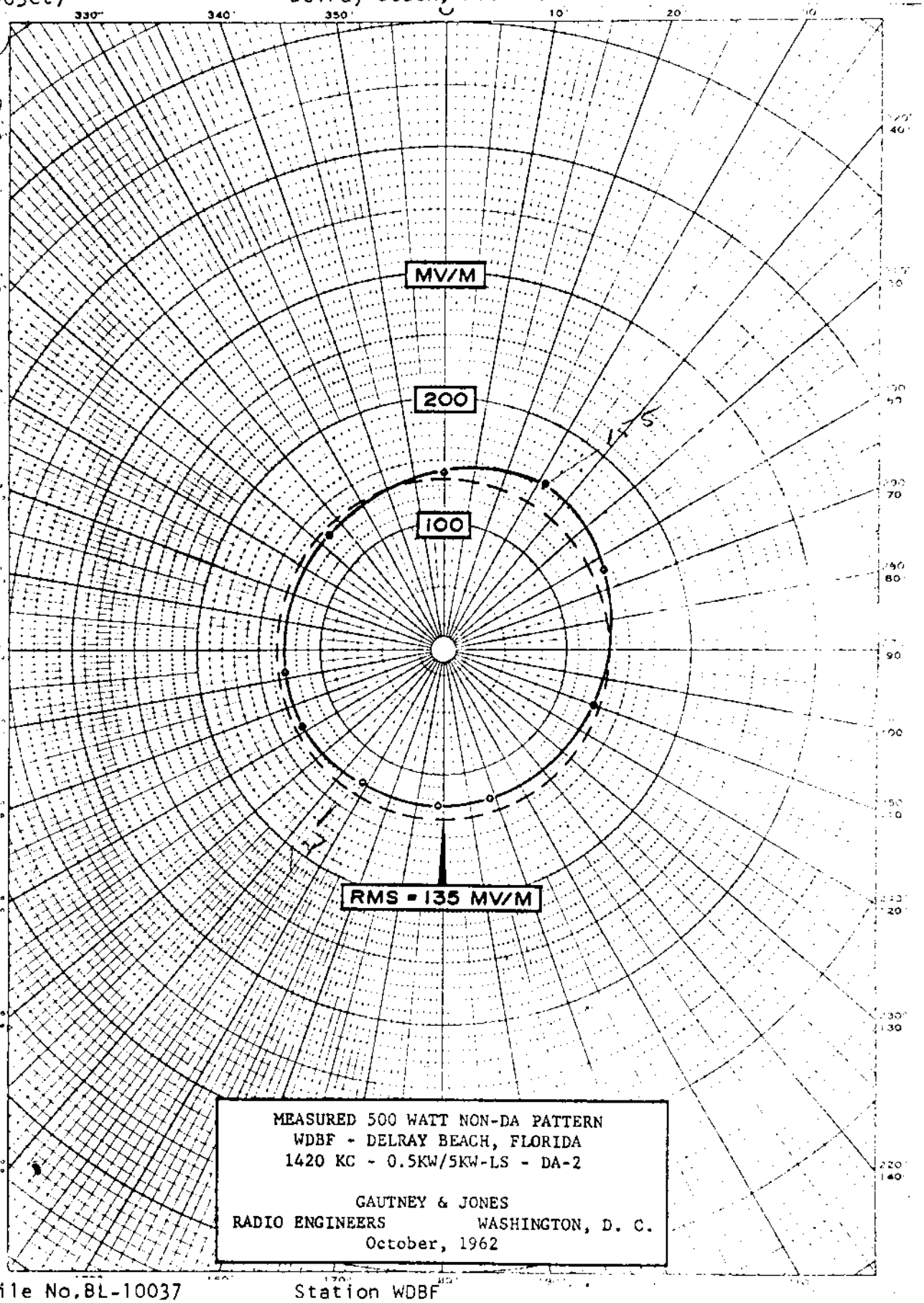
WDBF

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

Station WDBF
Delray Beach, Florida

500w,5kw-LS,DA-2,U
1420 kc

8-15-63 Director letter for change in name & change from DA-0 to DA-2



MEASURED 500 WATT NON-DA PATTERN
WDBF - DELRAY BEACH, FLORIDA
1420 KC - 0.5KW/5KW-LS - DA-2

GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D. C.
October, 1962

FCC File No.BL-10037
Accepted 6-17-63

Station WDBF
Delray Beach, Florida

1420 kc

WHK

Proposed Night
(9-25-63ct)

Station WHK
Cleveland, Ohio

5kw,DA-N,U
1420 kc

9-25-63
[illegible] CP
[illegible] changes
[illegible] night DA.

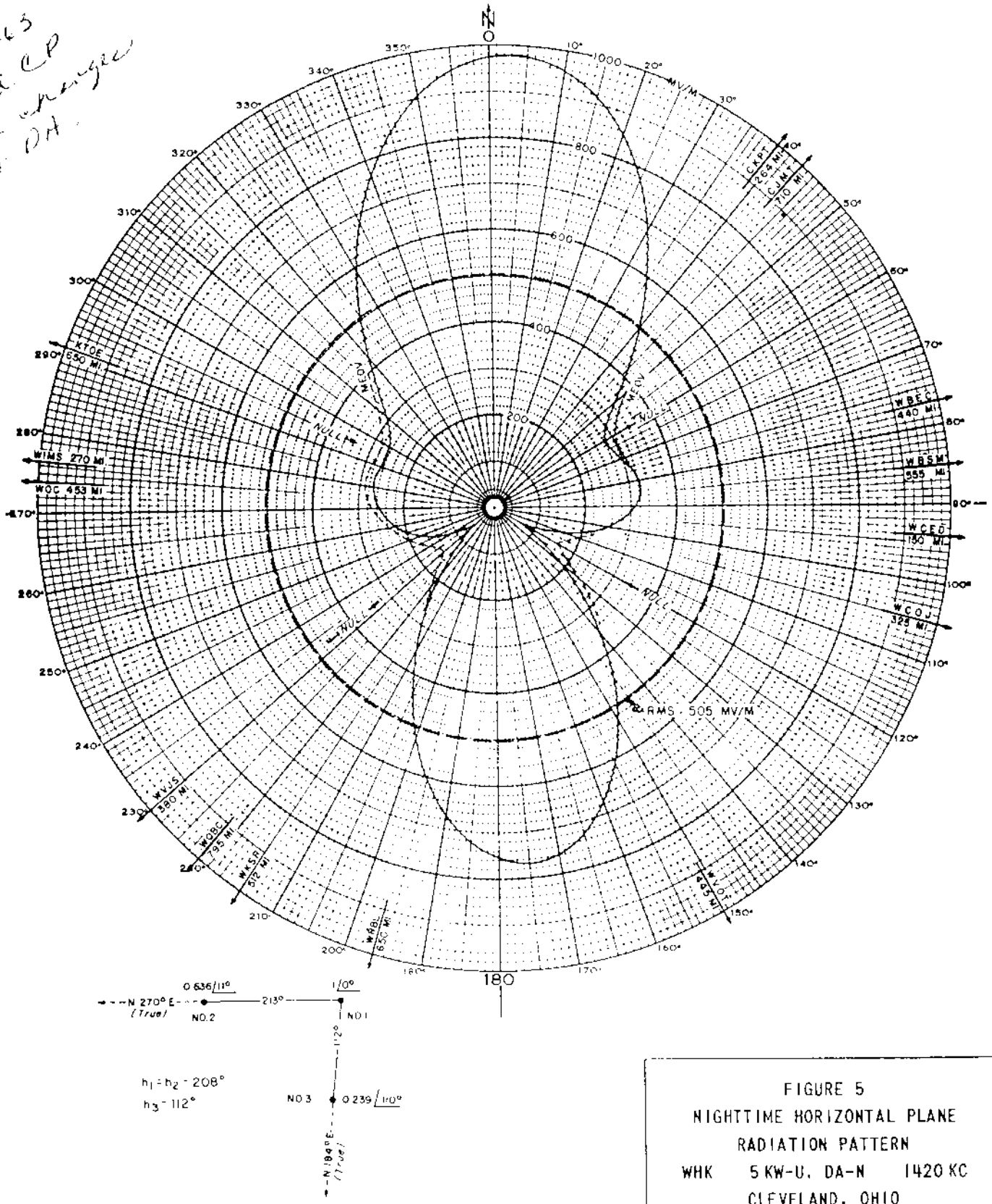


FIGURE 5
NIGHTTIME HORIZONTAL PLANE
RADIATION PATTERN
WHK 5 KW-U, DA-N 1420 KC
CLEVELAND, OHIO

Prepared by
Cohner and Culver Washington 4, D.C.
August 1963

FCC File No.BP-15983
Accepted 8-28-63

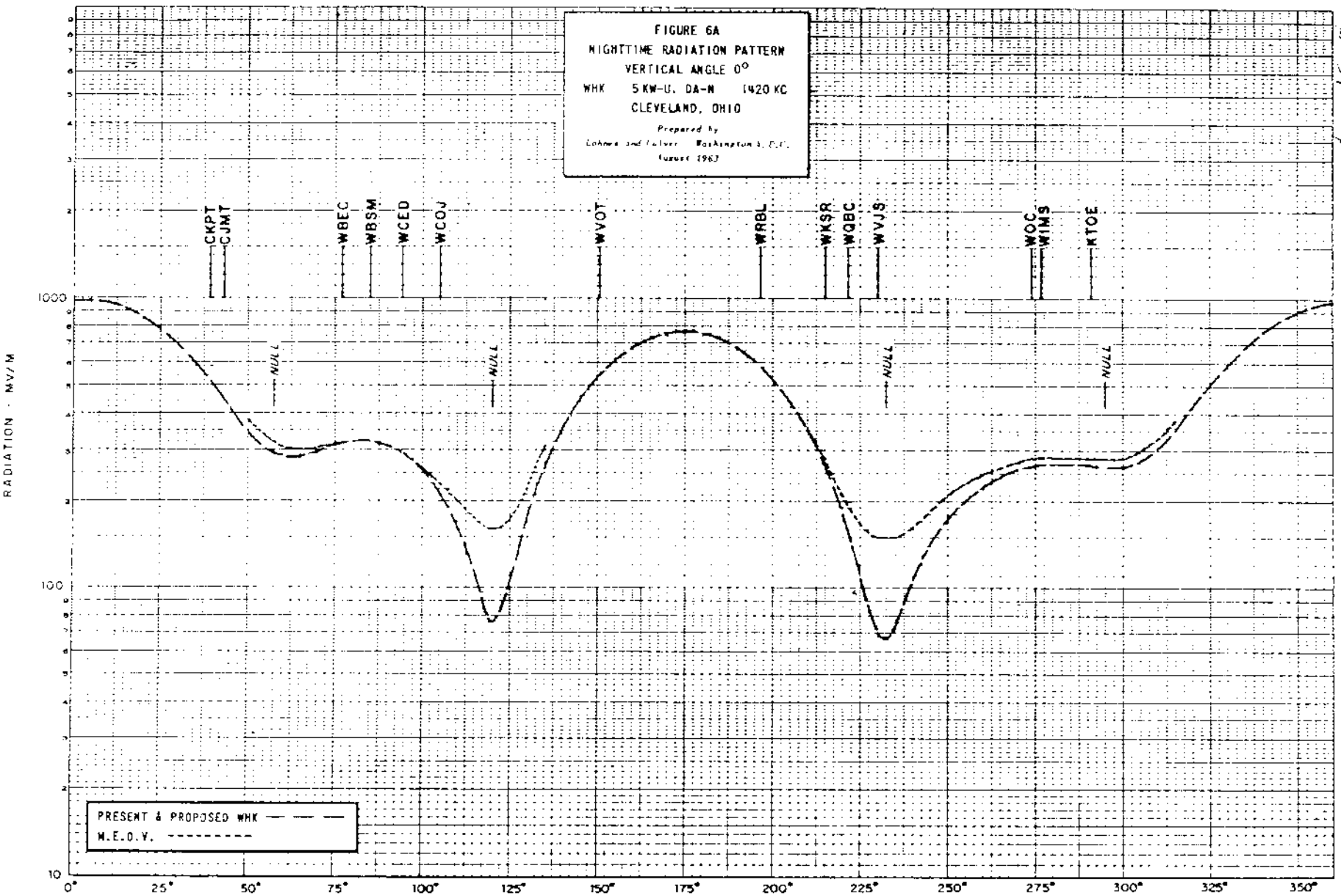
Station WHK
Cleveland, Ohio

1420 kc

Proposed Night Nulls
(9-25-63ct)

Station WHK
Cleveland, Ohio

5kw,DA-N,U
1420 kc



Proposed night pattern for DA-N 9-25-63

FCC File No.BP-15983
Accepted 8-28-63

Station WHK
Cleveland, Ohio

1420 kc

Φ = 0 at N0°E

WHK

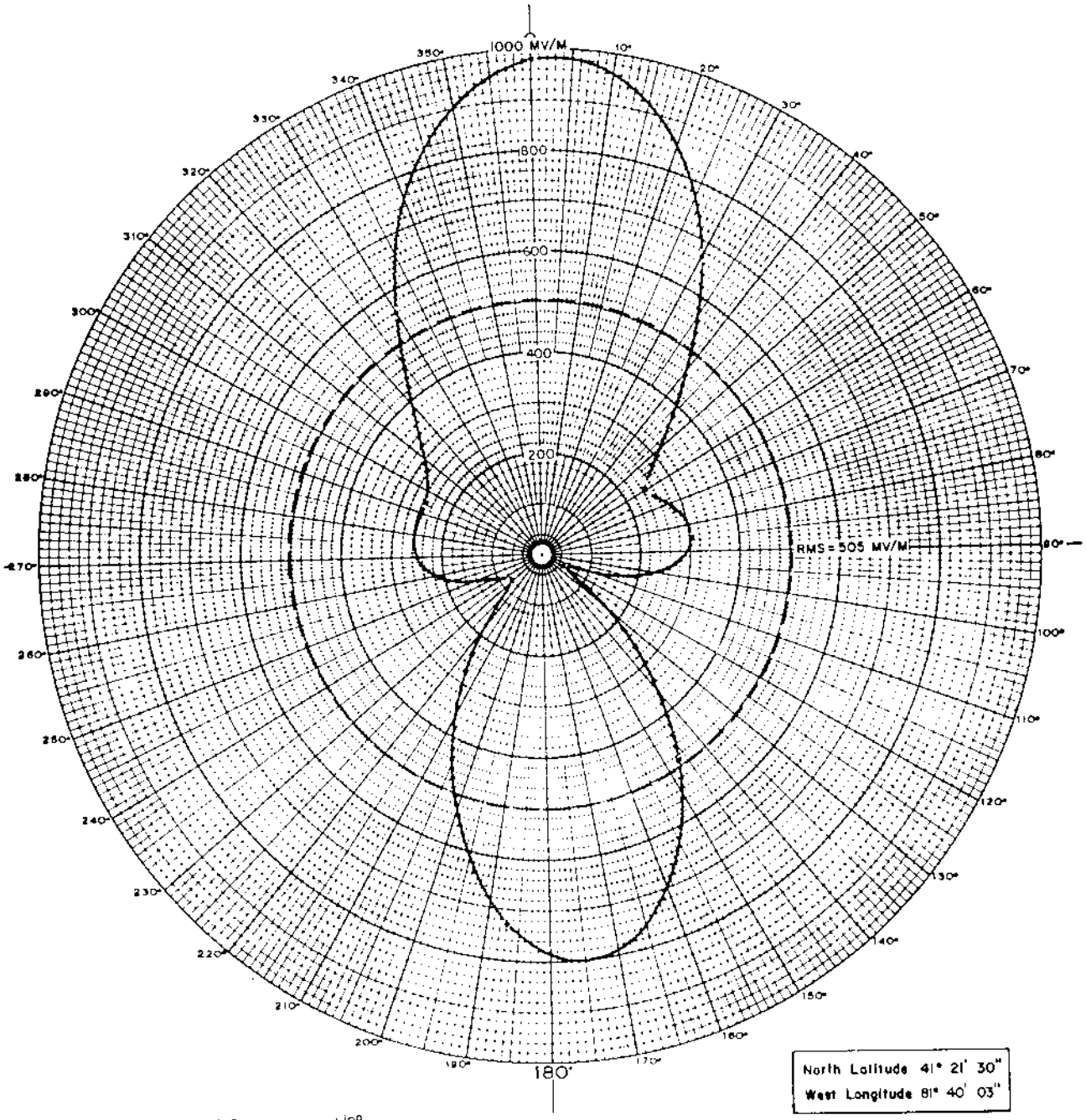
WHK

Measured Night
(12-22-64ct)

Station WHK
Cleveland, Ohio

5kw,DA-N,U
1420 kc

BL-10673
GRANTED
12-29-64
CHG, DA



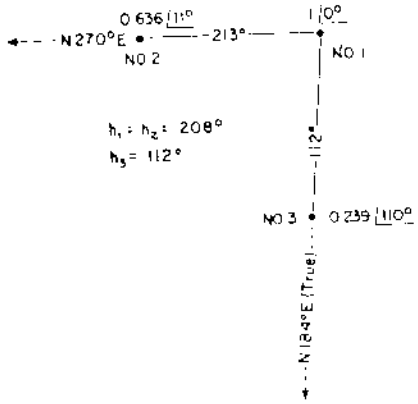


FIGURE 9
MEASURED RADIATION PATTERN
DIRECTIONAL OPERATION
WHK 5 KW-U, DA-N 1420 KC
METROMEDIA, INC.
CLEVELAND, OHIO
Prepared by
Lohnes and Culver Washington, D. C.
June 1964

FCC File No. BL-10673
Accepted 11-25-64

Station WHK
Cleveland, Ohio

1420 kc

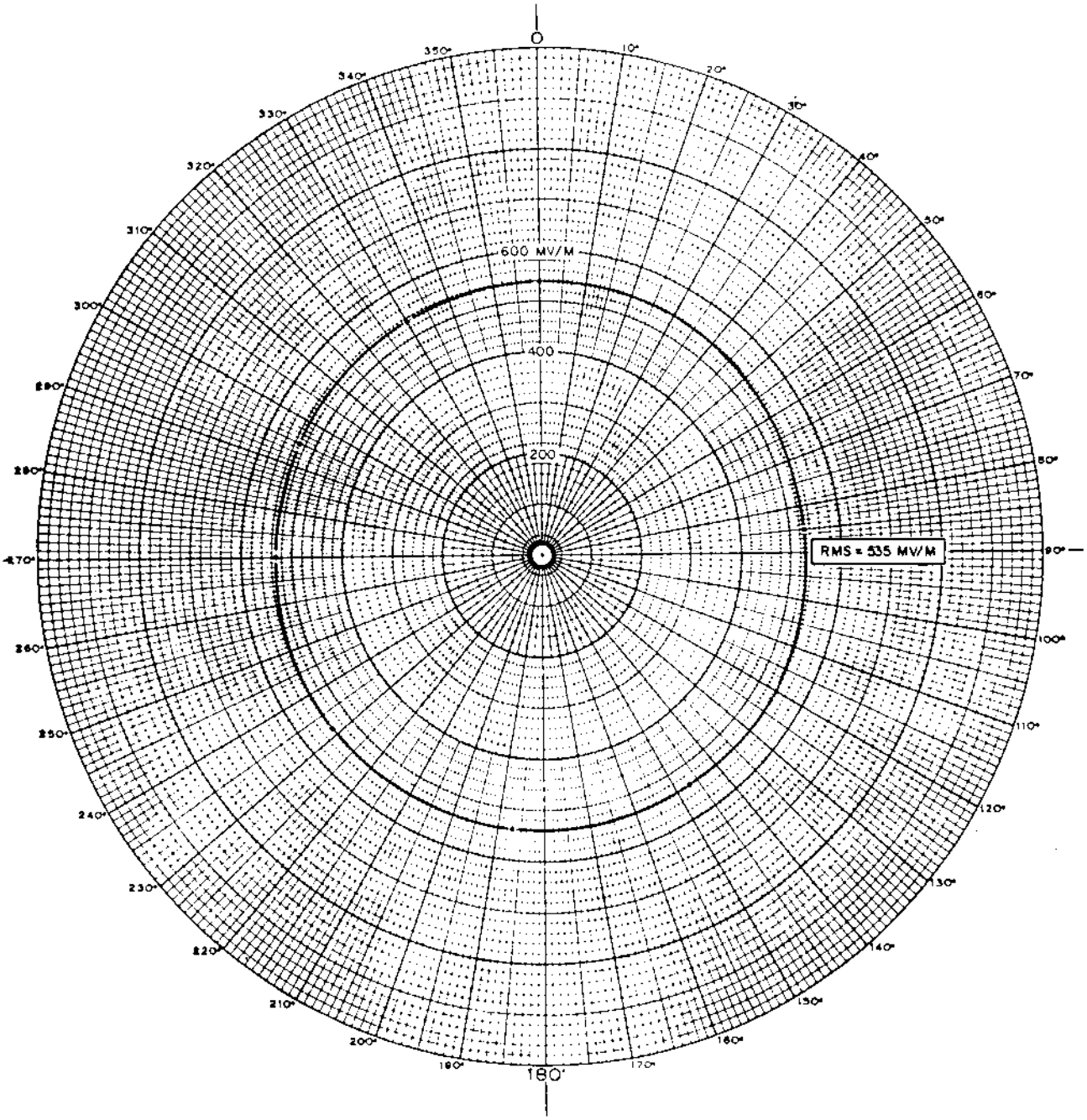
WHK

Measured Non-DA
(12-22-64ct)

Station WHK
Cleveland, Ohio

5kw,DA-N,U
1420 kc

BL-10673
GRANTED
12-29-64
CHG. DA



North Latitude 41° 21' 30"
West Longitude 81° 40' 03"

FIGURE 8
MEASURED RADIATION PATTERN
NON-DIRECTIONAL TOWER #1
WHK 5 KW-U, DA-N 1420 KC
METROMEDIA, INC.
CLEVELAND, OHIO
Prepared by
Lohnes and Culver Washington, D. C.
June 1964

FCC File No. BL-10673
Accepted 11-25-64

Station WHK
Cleveland, Ohio

1420 kc

WIMS

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WIMS

Main Studio: Michigan City, Indiana

Frequency: 1420 kHz

Power: 5 kw Night 5 kw Day

Notification List No. 1778

Date: August 30, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 41° 40' 26"
West Longitude: 86° 55' 58"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 6
Type of elements: Series excited, uniform cross-section vertical steel towers. Towers #1, 2, 3 and 4 are guyed. Towers #5 and 6 are self supporting.

TOWER:	#5(SSW)	#1(SW)	#2(C)	#3(NE)	#6(NNE)	#4(SE)
HEIGHT ABOVE INSULATORS:	195'(101.3°)	195'	195'	195'	195'	140'(72.8°)
NIGHT PHASING:	0°	-161.4°	+43.6°	-105.5°	+112.5°	---
NIGHT FIELD RATIO:	1.000	2.772	3.266	1.9294	0.582	---
DAY PHASING:	---	---	0°	---	---	-70°
DAY FIELD RATIO:	---	---	1.0	---	---	0.5

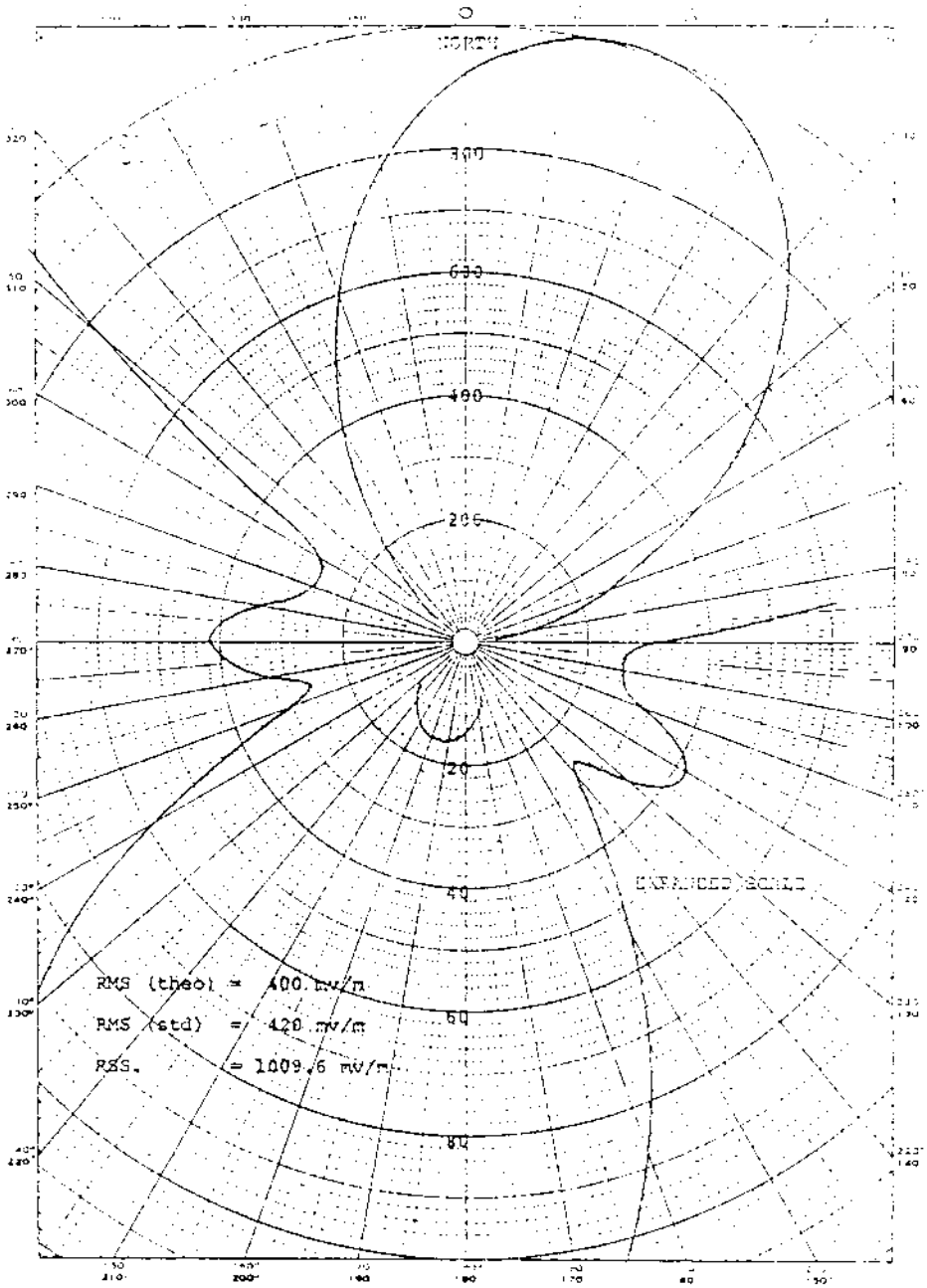
SPACING AND ORIENTATION: Towers #1, #2, #3, #5, #6 spaced 172' (90°) on a line bearing 16 true. Tower #4 is spaced 212' (110°) on a line bearing 155° true.

GROUND SYSTEM: 120 - 275' equally spaced copper radials plus 120 - 75' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

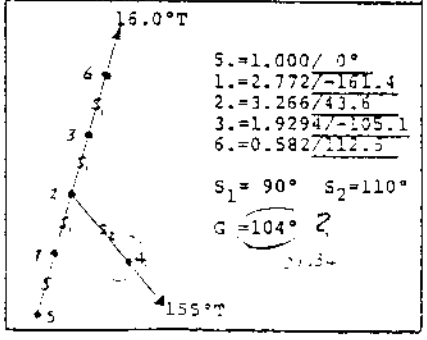
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	415 mv/m		
Night	400 mv/m	1009.6 mv/m	420 mv/m

Note: Please retain the Daytime directional antenna radiation pattern notified for Station WIMS in United States Change List Number 812 dated May 27, 1959 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.



PATTERN PARAMETERS



DIRECTIONAL RADIATION PATTERN

NORTHERN INDIANA BROADCASTERS, INC

[ ] MEASURED [X] PROPOSED

FREQ: 1420 (kHz) POWER 5.0 (kW) [ ] DA-D

N LAT 41 ° 40 ' 26 " [X] DA-N

W LONG 86 ° 55 ' 58 " [ ] N-D

LOCATION: Michigan City, Indiana

DATE: May 1976

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

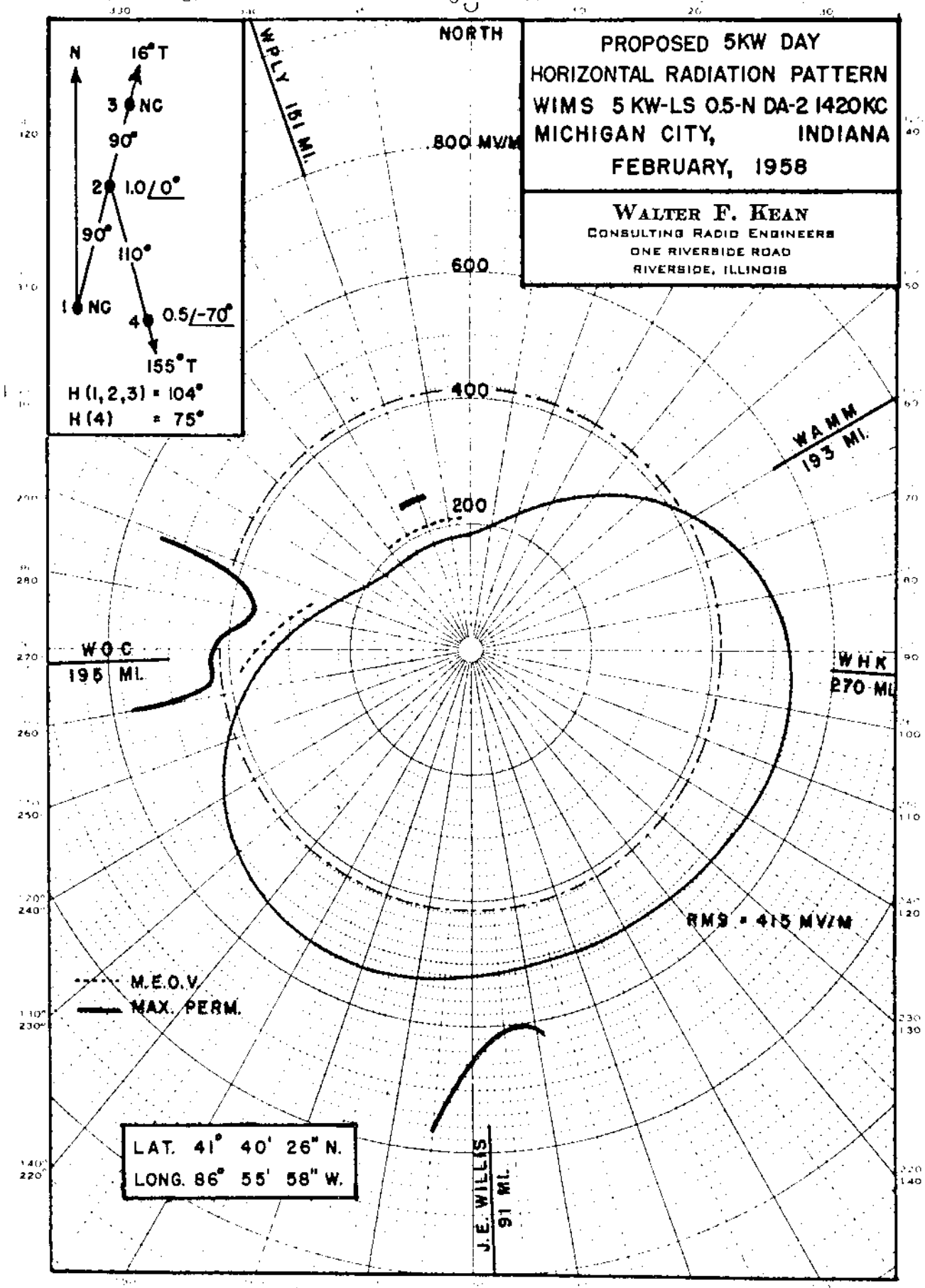
FIGURE

superseded 4/4/58

WIMS

PROPOSED DAY
(4-9-58g)

Station WIMS 500w,5kw-LS, DA-2,U
Michigan City, Indiana 1420 KC



Granted CP 9-16-59
increase day power - 5KW

FCC File No. BP-11,285
Accepted 4-1-58

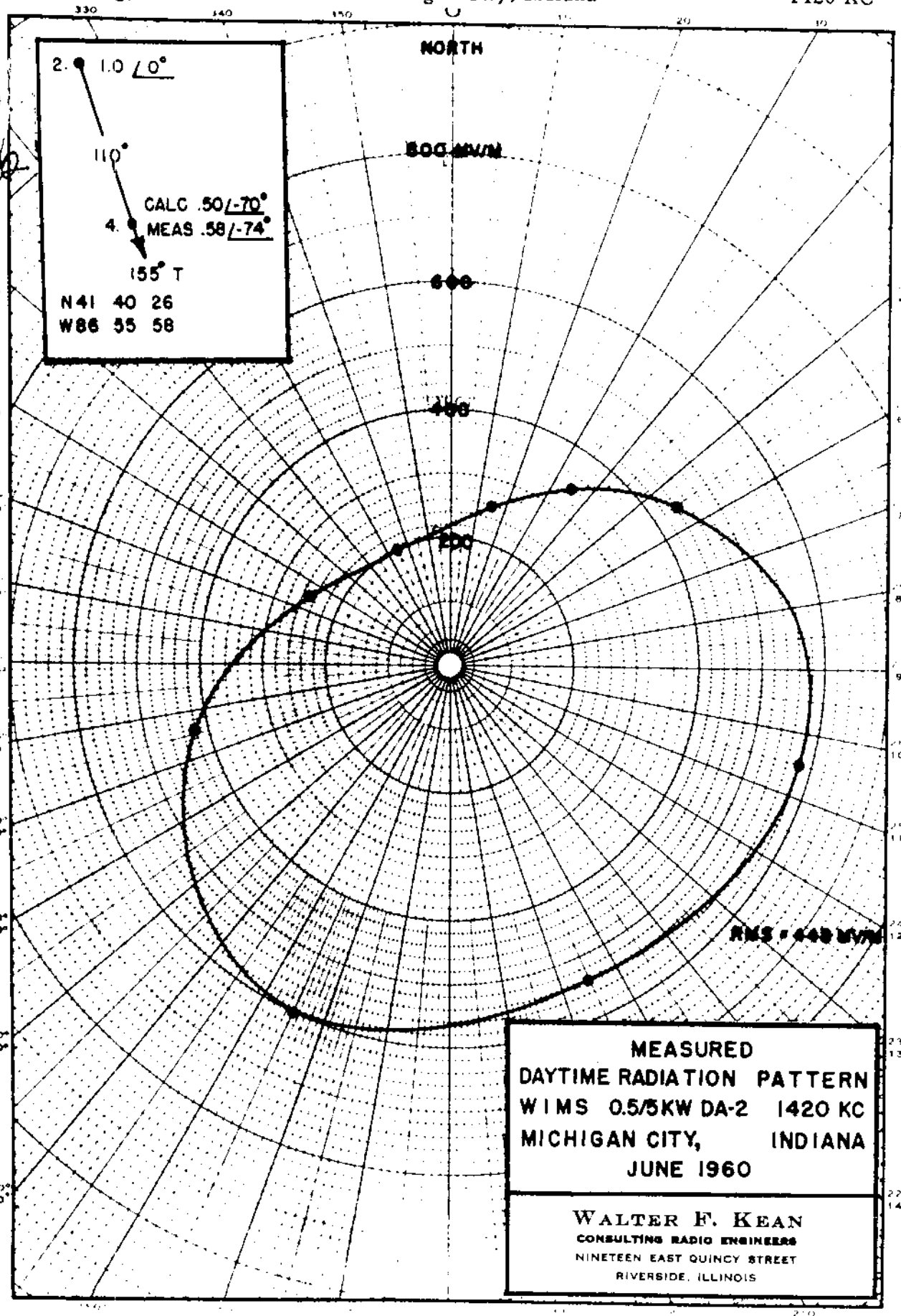
WIMS
Michigan City, Indiana 1420 KC

WIMS

MEASURED DAY
(9-13-60g)

Station WIMS
Michigan City, Indiana

500w, 5kw-LS, DA-2,U
1420 KC



FCC File No. BL-8028
Accepted 8-30-60

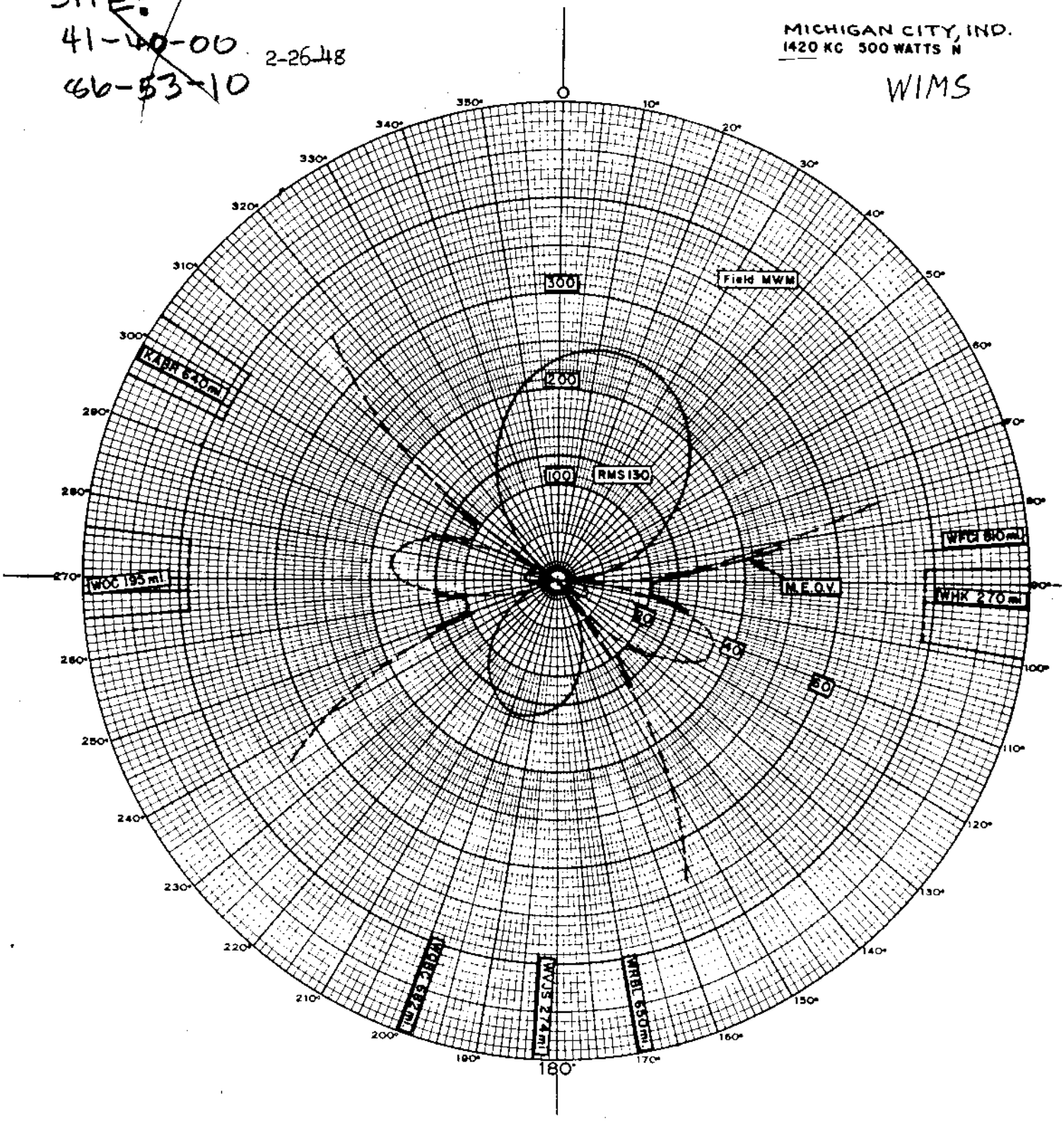
WIMS
Michigan City, Indiana

1420 KC

SITE:
41-40-00
66-53-10
2-26-48

MICHIGAN CITY, IND.
1420 KC 500 WATTS N

WIMS



NORTHERN INDIANA BROADCASTERS, INC. MICHIGAN CITY, INDIANA		Figure 1 Series 480127A
		1420 KC 500 WATTS NIGHT
SPACING 90° H=101° 1∠24.8° 1.7∠-167.6° 16.9 1∠0°	PROPOSED DIRECTIONAL ANTENNA PATTERN	FRANK H. McINTOSH *Consulting Radio Engineer* Washington, D.C.

2-26-48

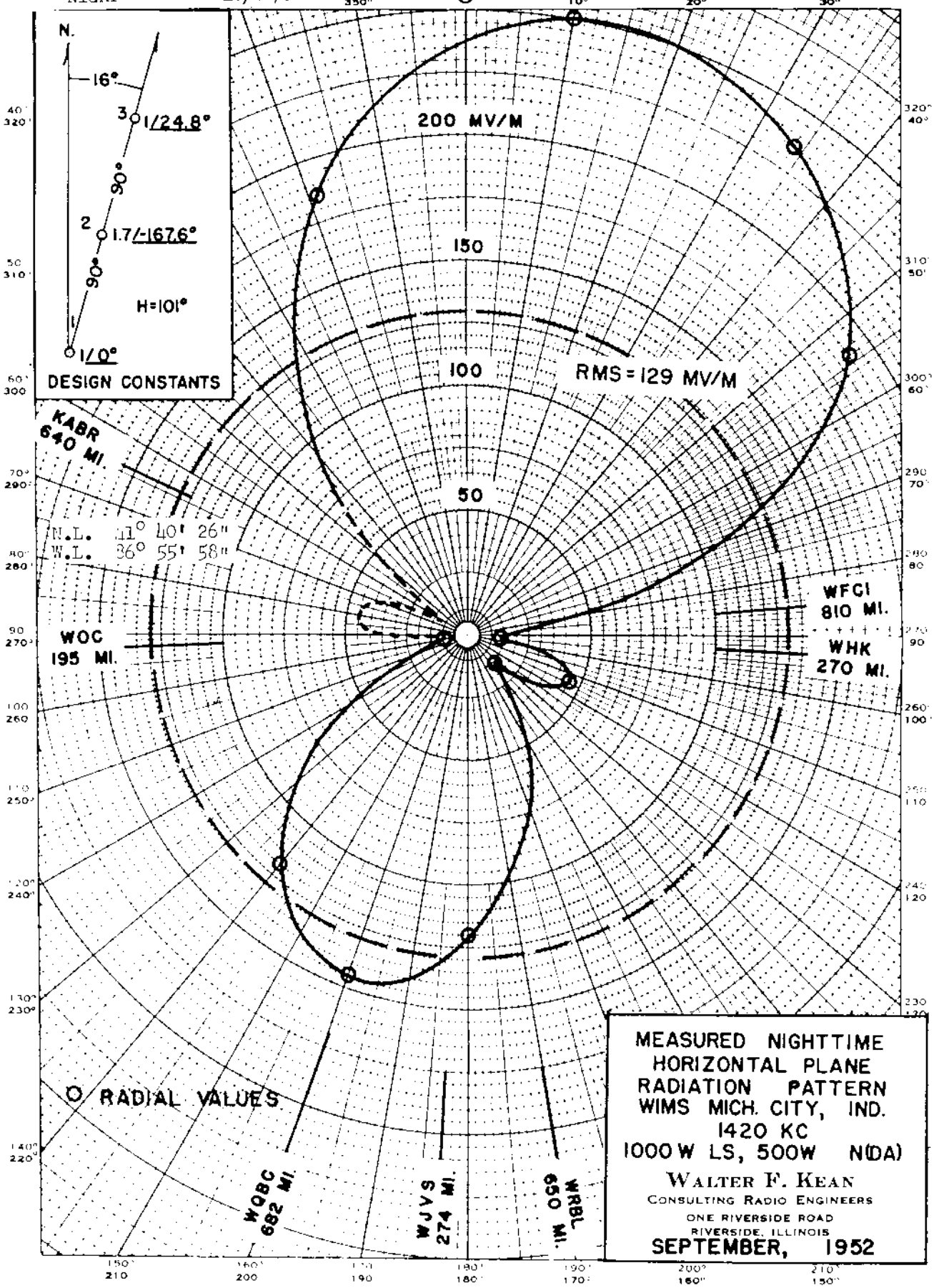
WIMS

MEASURED NIGHT

WIMS, MICHIGAN CITY, IND. 10/20/52G

500W, 1 KW-LS, U, DA-N

1420 KC



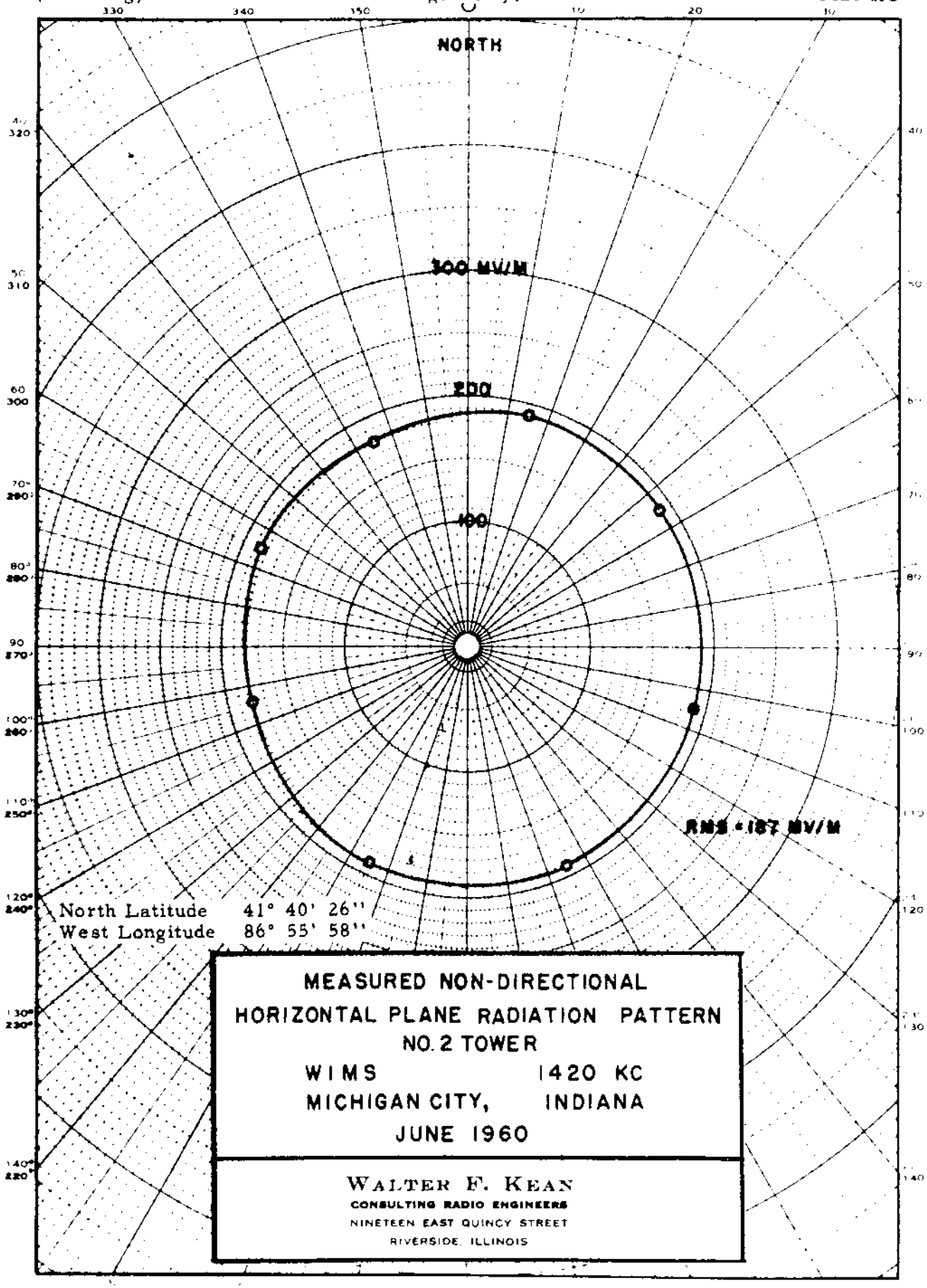
APPL RECD FCC 9/10/52 ACC 10/9/52 BL-4786 WIMS, MICHIGAN CITY, IND. 1420 KC

WIMS

MEASURED NON-DA
(9-13-60g)

Station WIMS
Michigan City, Indiana

500w, 5kw-LS, DA-2,U
1420 KC



FCC File No. BL-8028
Accepted 8-30-60

WIMS
Michigan City, Indiana

1420 KC

WINI

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WINI

Main Studio: Murphysboro, Illinois

Frequency: 1420 kHz

Power: 0.5 kW

Notification List No. 1739

Date: July 1, 1977

Class: III

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

	Daytime				Nighttime			
North Latitude:	37°	47'	20"	North Latitude:	37°	45'	30"
West Longitude:	89°	20'	12"	West Longitude:	89°	14'	02"

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:	NW(#1)	NE(#2)	SE(#3)	SW(#4)
HEIGHT ABOVE INSULATORS:	129'	129'	129'	129' (67°)
PHASING:	0°	+116.5°	+119.5°	-28.5
FIELD RATIO:	1	0.36	0.65	0.92

SPACING AND ORIENTATION: From tower #1, tower #2 is located 134.77' (70°) in length on a line bearing 70.7° true, tower #3 is located 270.57' (140.5°) in length on a line bearing 168.5° true, and tower #4 is located 317.68' (165°) on a line bearing 192.9° true.

GROUND SYSTEM: 120-173' 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)
Number of elements: 1
Height above insulator: 170'
Ground System: 120-170' equally spaced copper radials about the tower.

(Cont'd)

WIN1

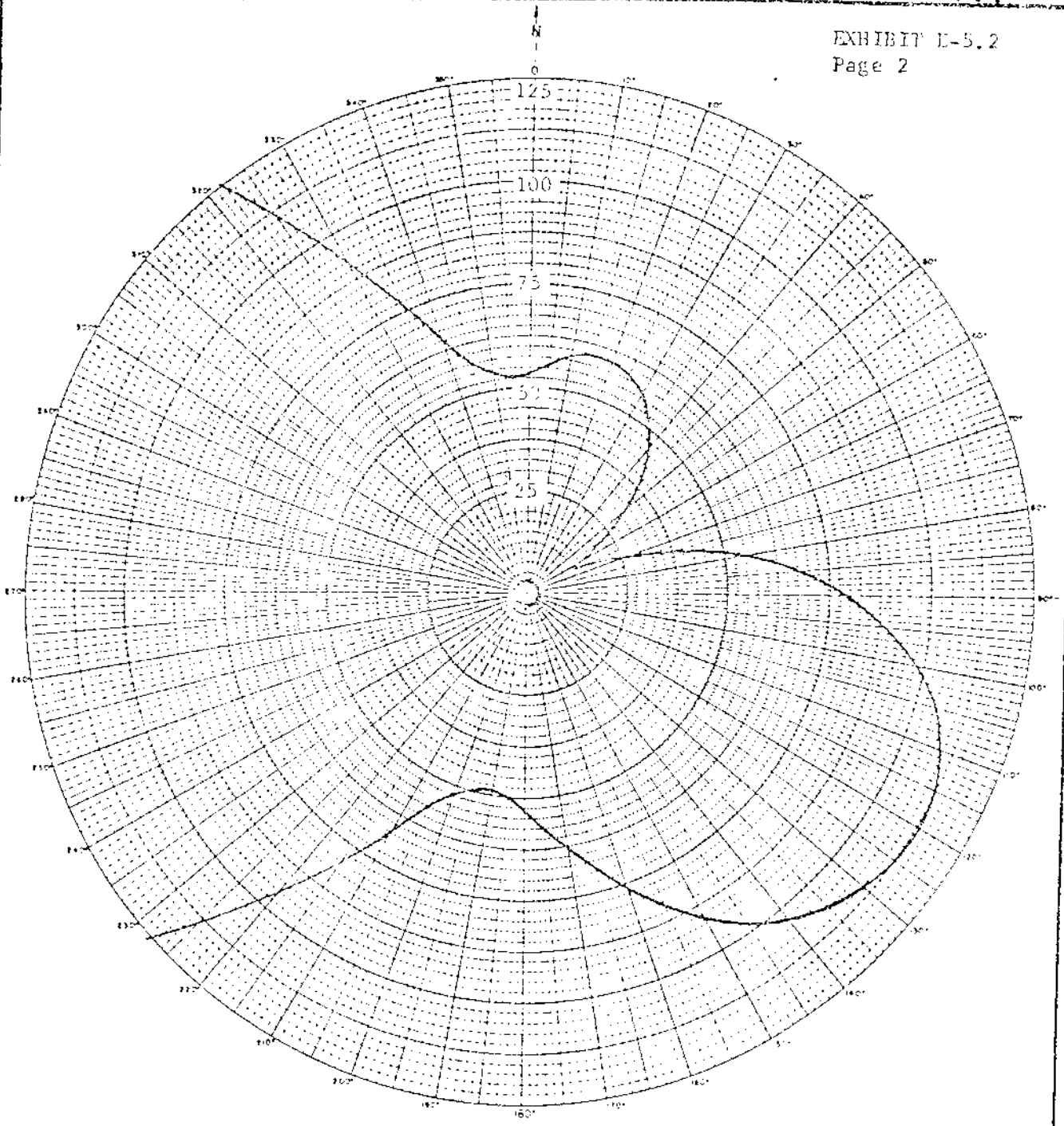
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	134.3 mv/m	- mv/m	- mv/m
Night	124.315 mv/m	169.79 mv/m	130.683 mv/m

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

WINI

EXHIBIT E-5.2
Page 2



STANDARD

HORIZONTAL RADIATION PATTERN

RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975

EXPANDED SCALE

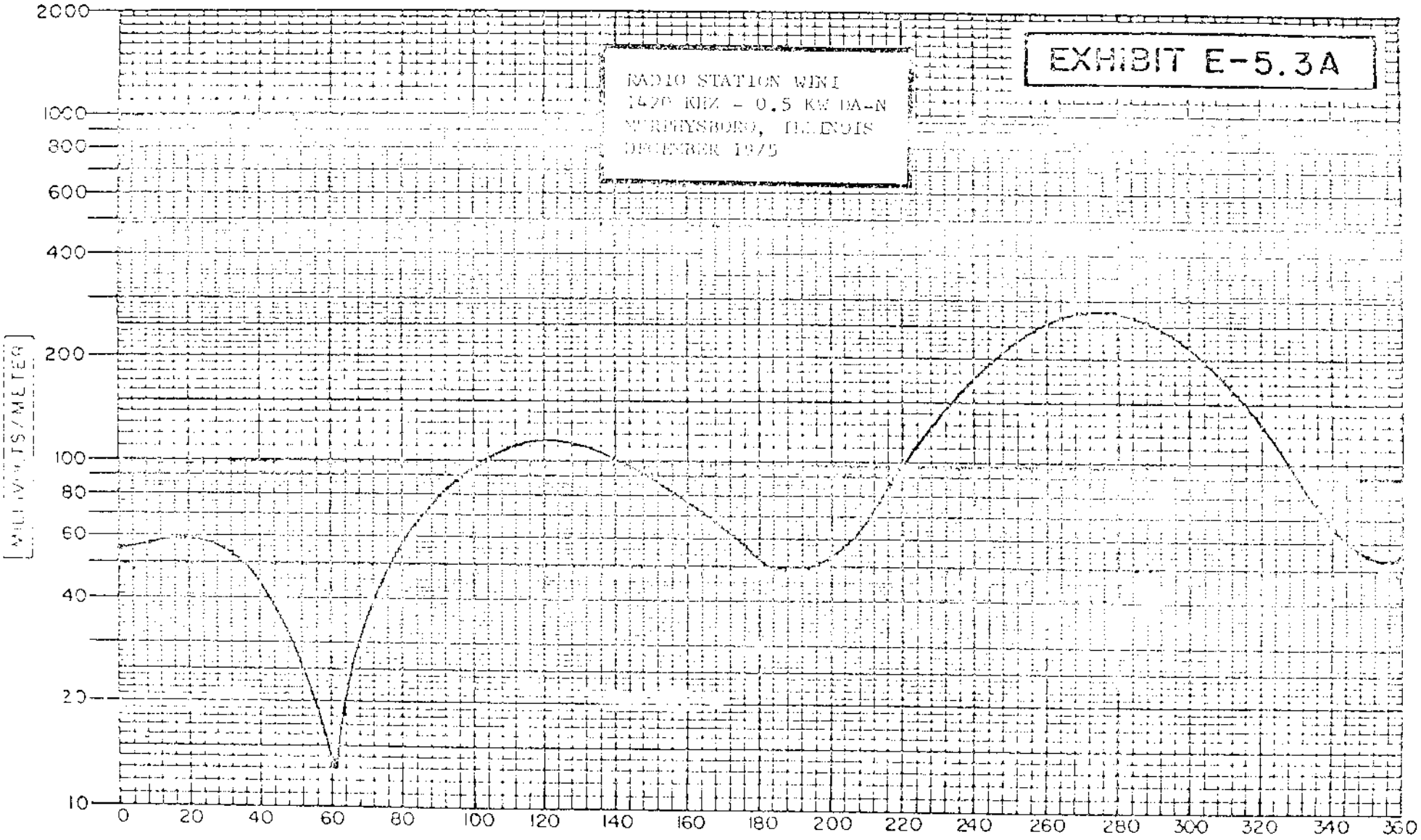
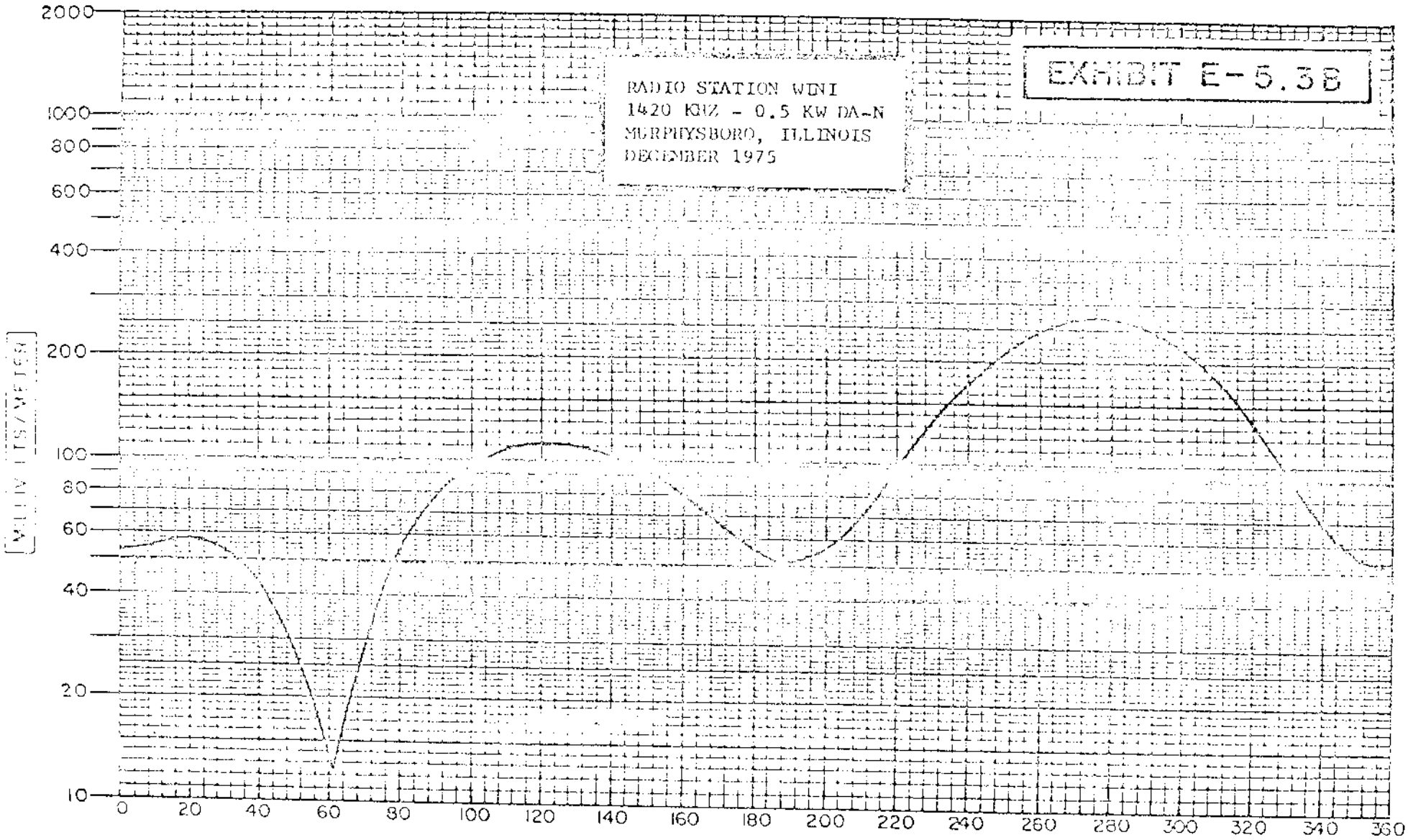


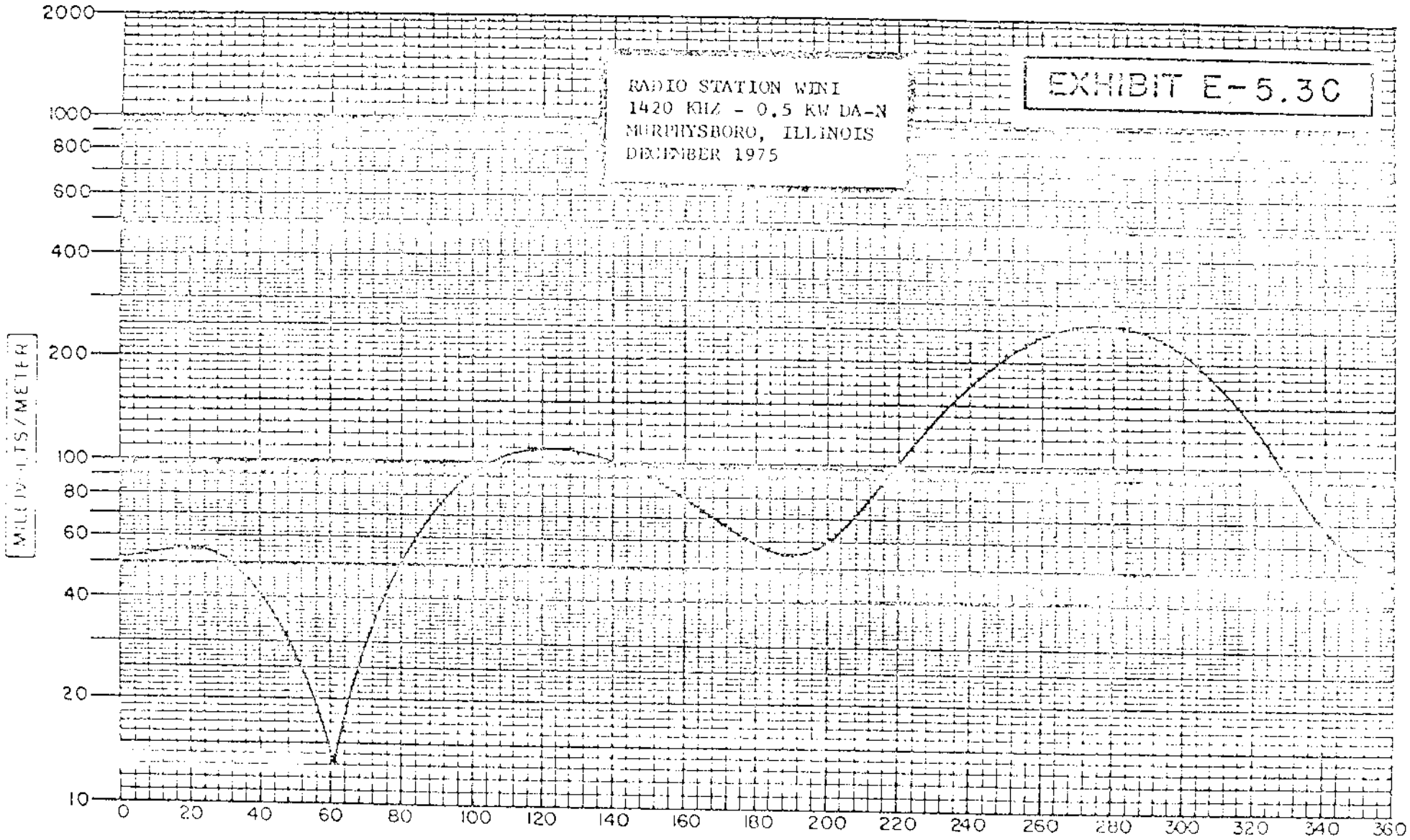
EXHIBIT E-5.3A
RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 5°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

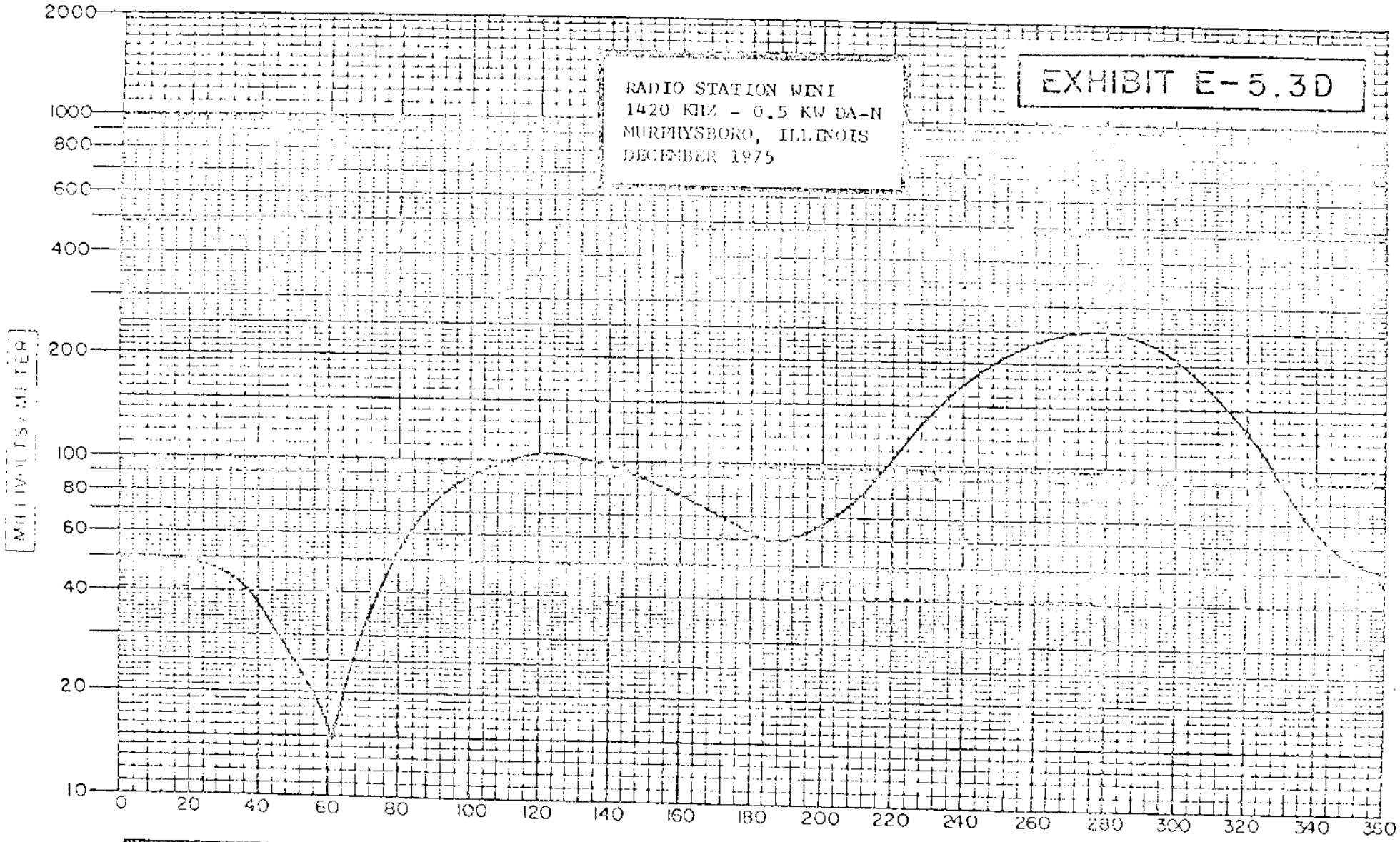
WINI

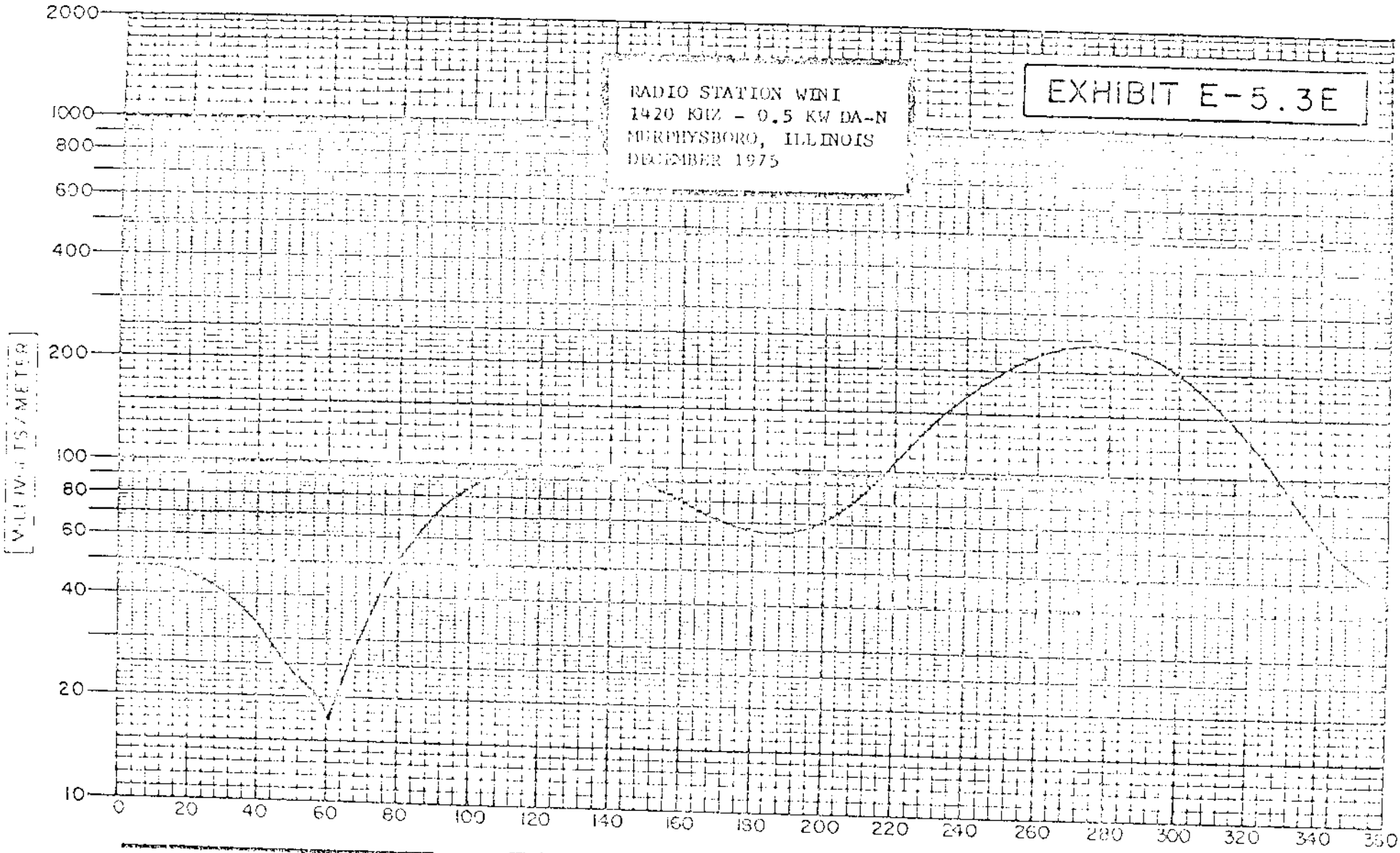


VERTICAL ANGLE = 10°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

WINI


RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
EXHIBIT E-5.3C
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 15°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
WINI


RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
EXHIBIT E-5.3D
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 20°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
WINI


RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
EXHIBIT E-5.3E
VOLTS / METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 25°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
WINI

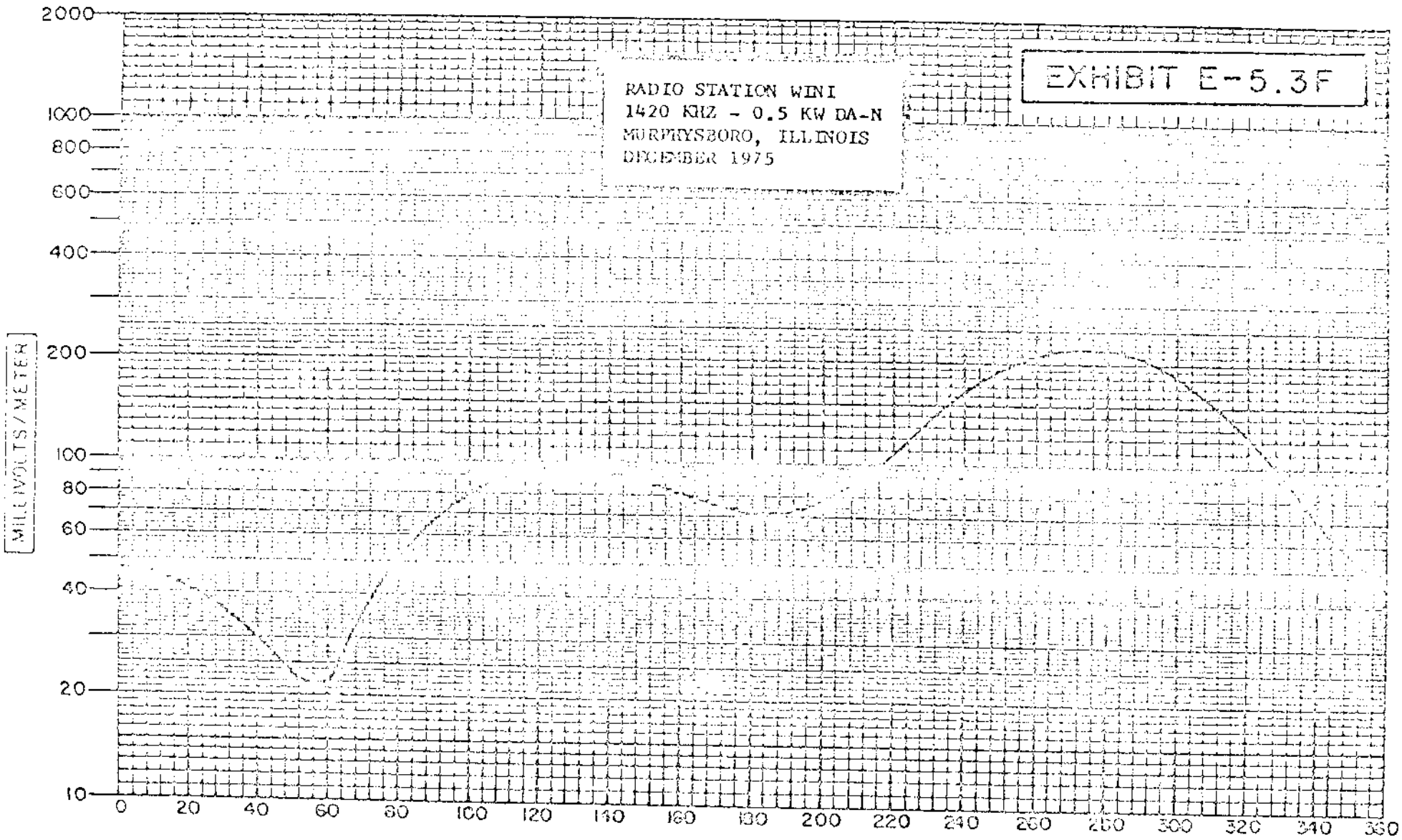


EXHIBIT E-5.3F
RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 30°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
WINI

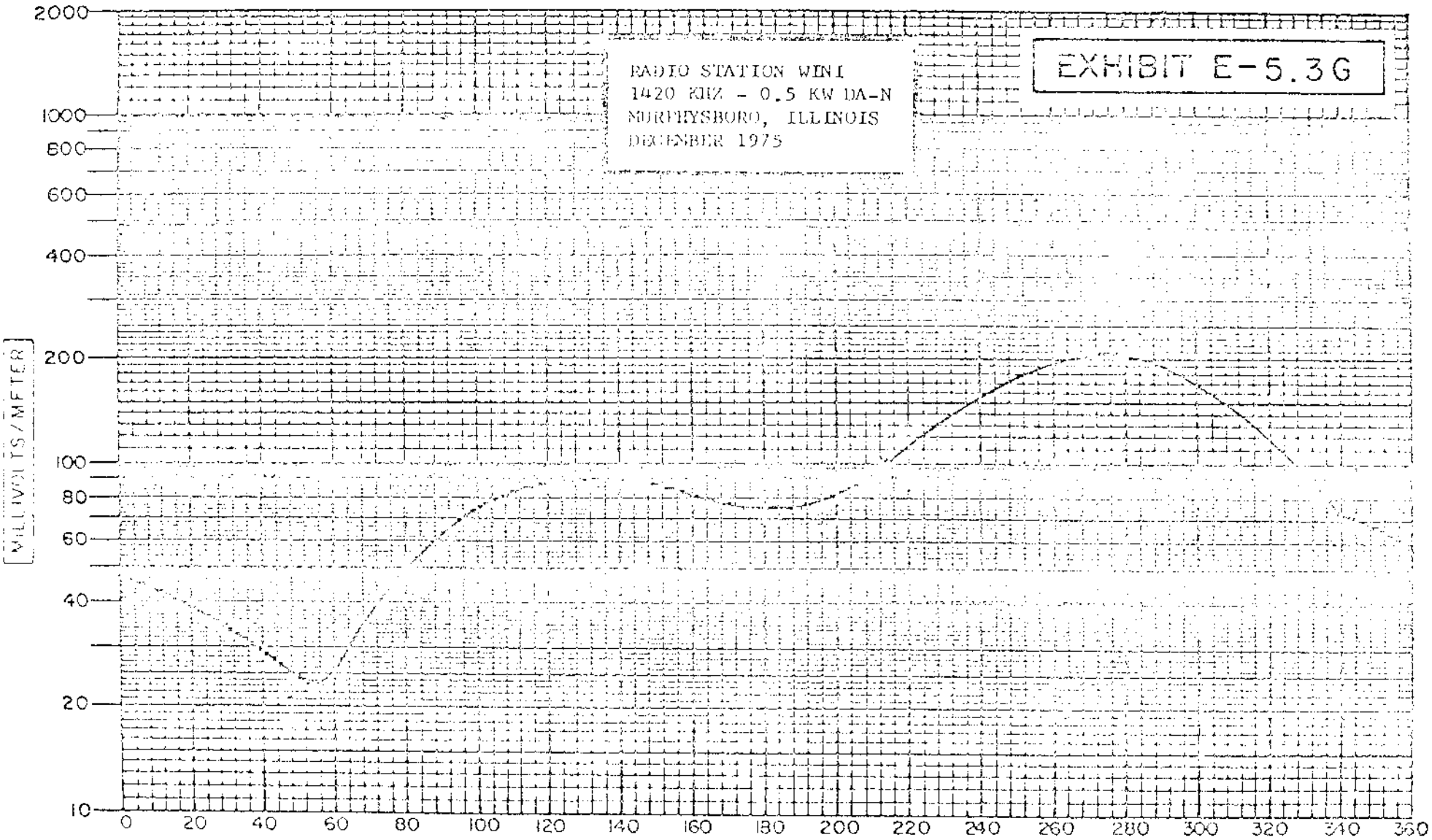
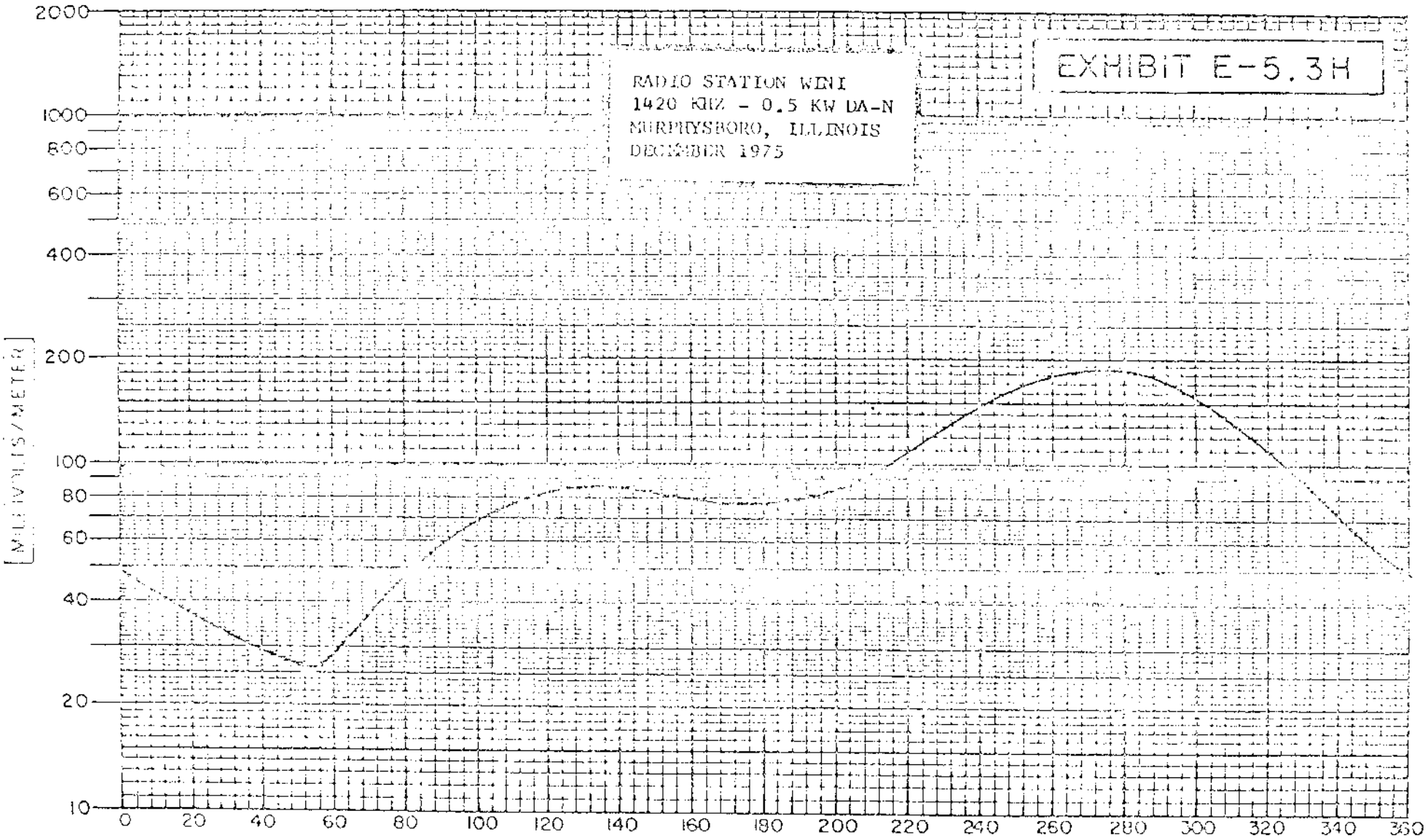


EXHIBIT E-5.3G
RADIO STATION WINI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE +30°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

WINI



VERTICAL ANGLE - 40°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

WINI

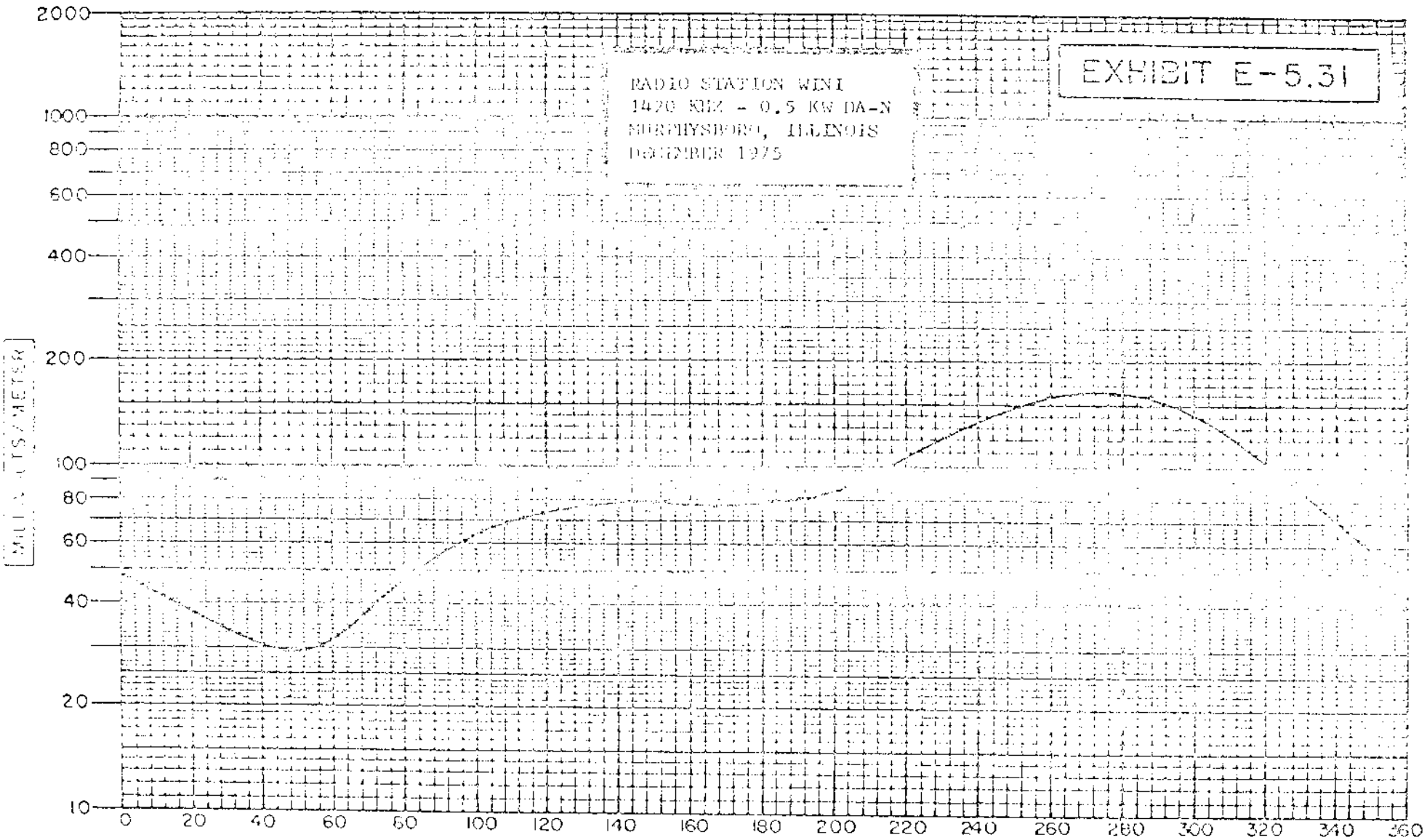


EXHIBIT E-5.31
RADIO STATION WINI
1470 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 45°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
WINI

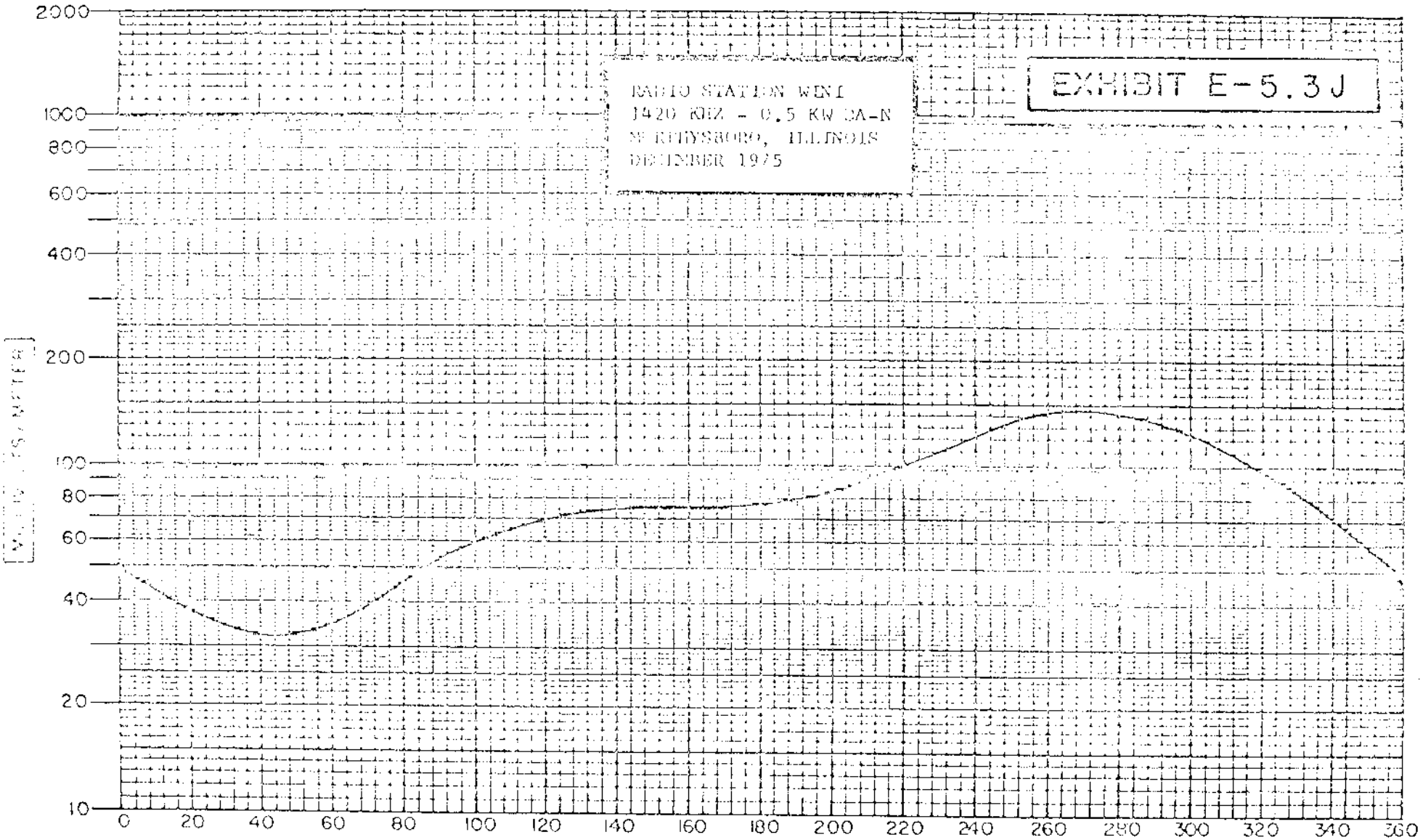
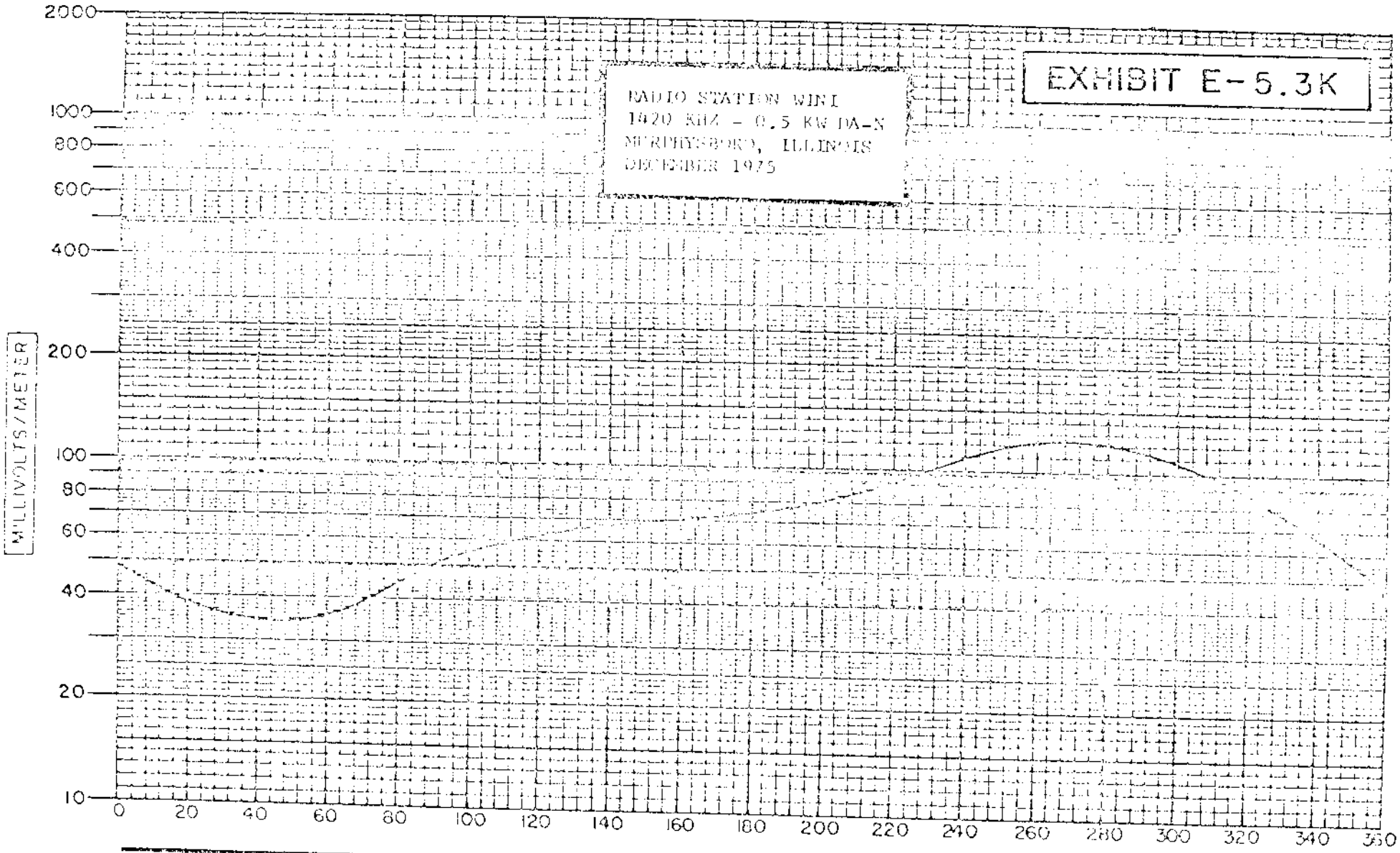


EXHIBIT E-5.3J
RADIO STATION WENI
1420 KHZ - 0.5 KW DA-N
NEWTONSBORO, ILLINOIS
DECEMBER 1975
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 50°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE



VERTICAL ANGLE - 55°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

WINI

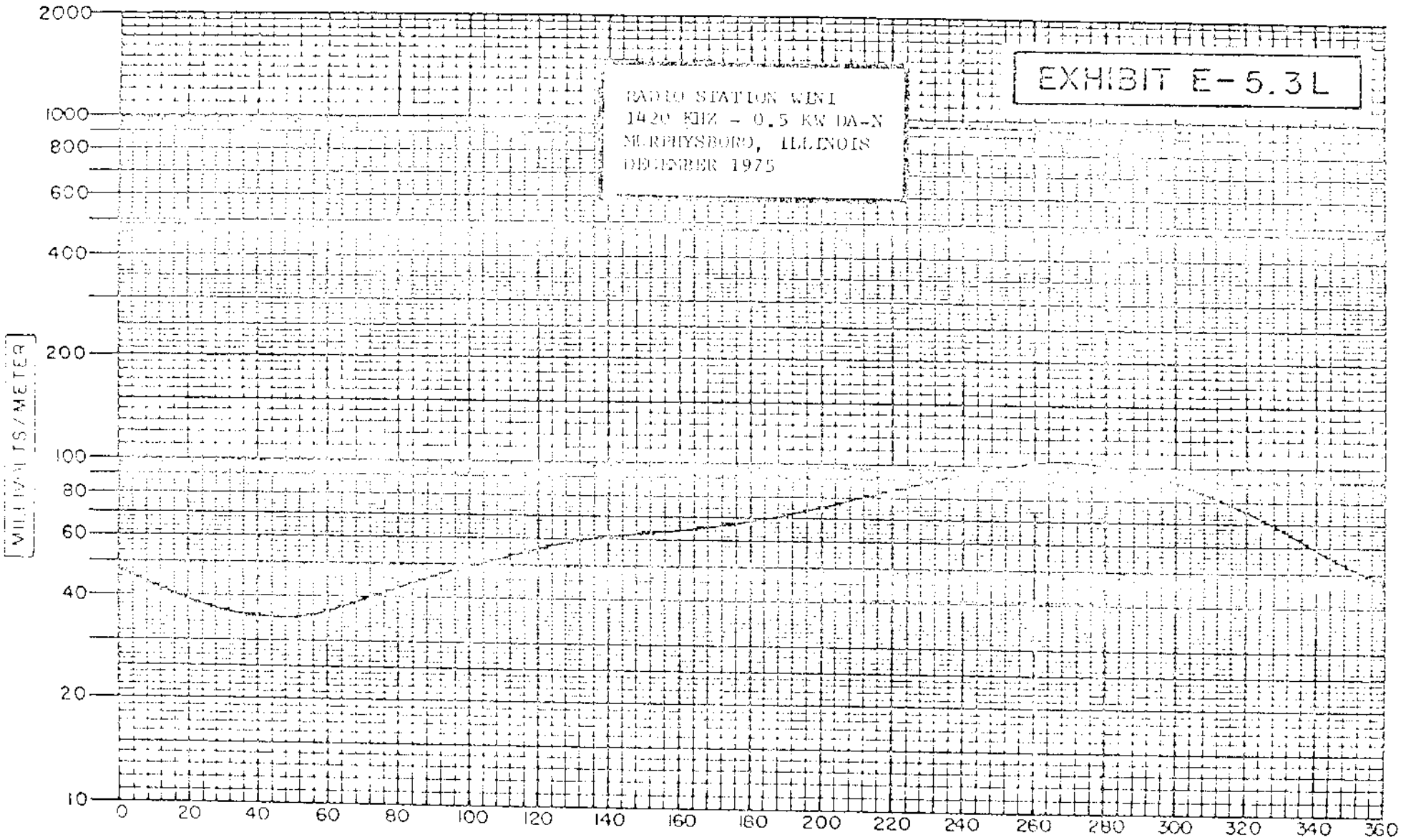


EXHIBIT E-5.3L
RADIO STATION WENI
1420 KHZ - 0.5 KW DA-N
MURPHYSBORO, ILLINOIS
DECEMBER 1975
MILLIVOLTS/METER
2000
1000
800
600
400
200
100
80
60
40
20
10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
AZIMUTH, DEGREES FROM TRUE NORTH
VERTICAL ANGLE - 60°
CONICAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

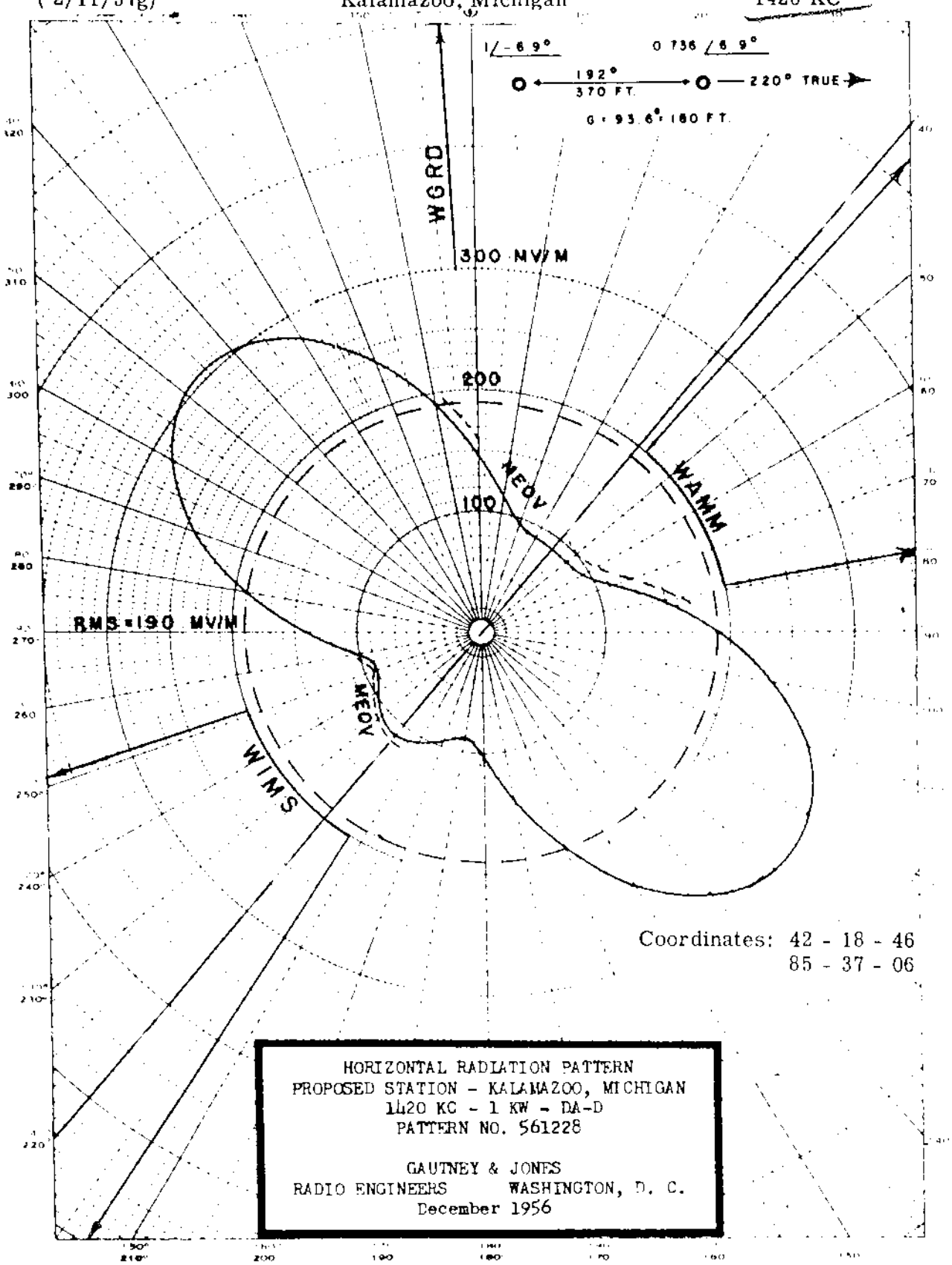
WENI

WKPR

PROPOSED DAY
(2/11/57g)

Kalamazoo B/C Co.
Kalamazoo, Michigan

1KW,DA-D,D
1420 KC



6 8 60 granted

FCC File No BP-11,022
Accepted 1/28/57

Kalamazoo B/C Co.
Kalamazoo, Michigan

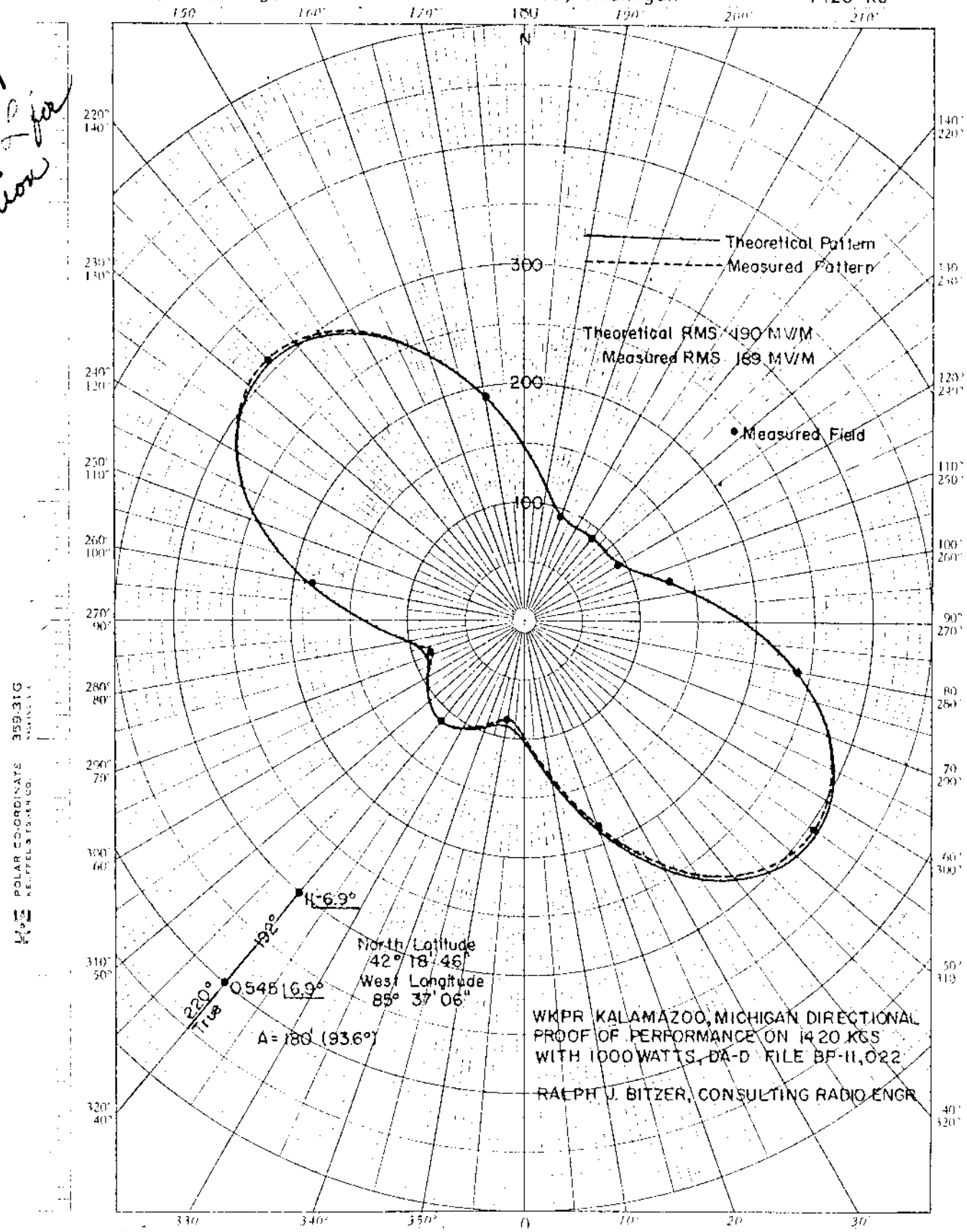
1420 KC

WKPR

MEASURED DAY
(12-15-60g)

Station WKPR
Kalamazoo, Michigan

1kw, DA-D,D
1420 KC



FCC File No. BL-8165
Accepted 12-7-60

WKPR
Kalamazoo, Michigan

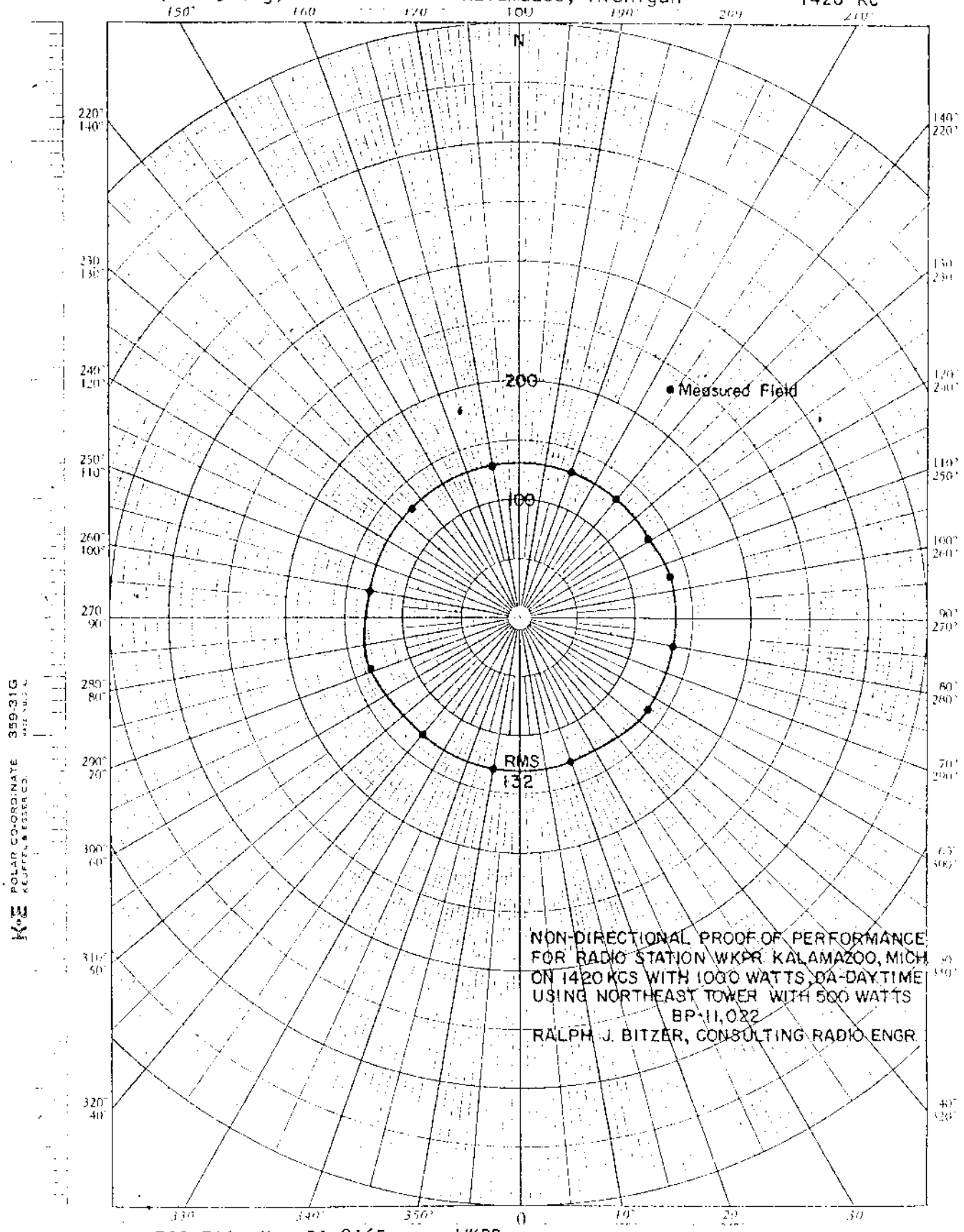
1420 KC

WKPR

MEASURED NON-DA
(12-15-60g)

Station WKPR
Kalamazoo, Michigan

1kw, DA-D,D
1420 KC



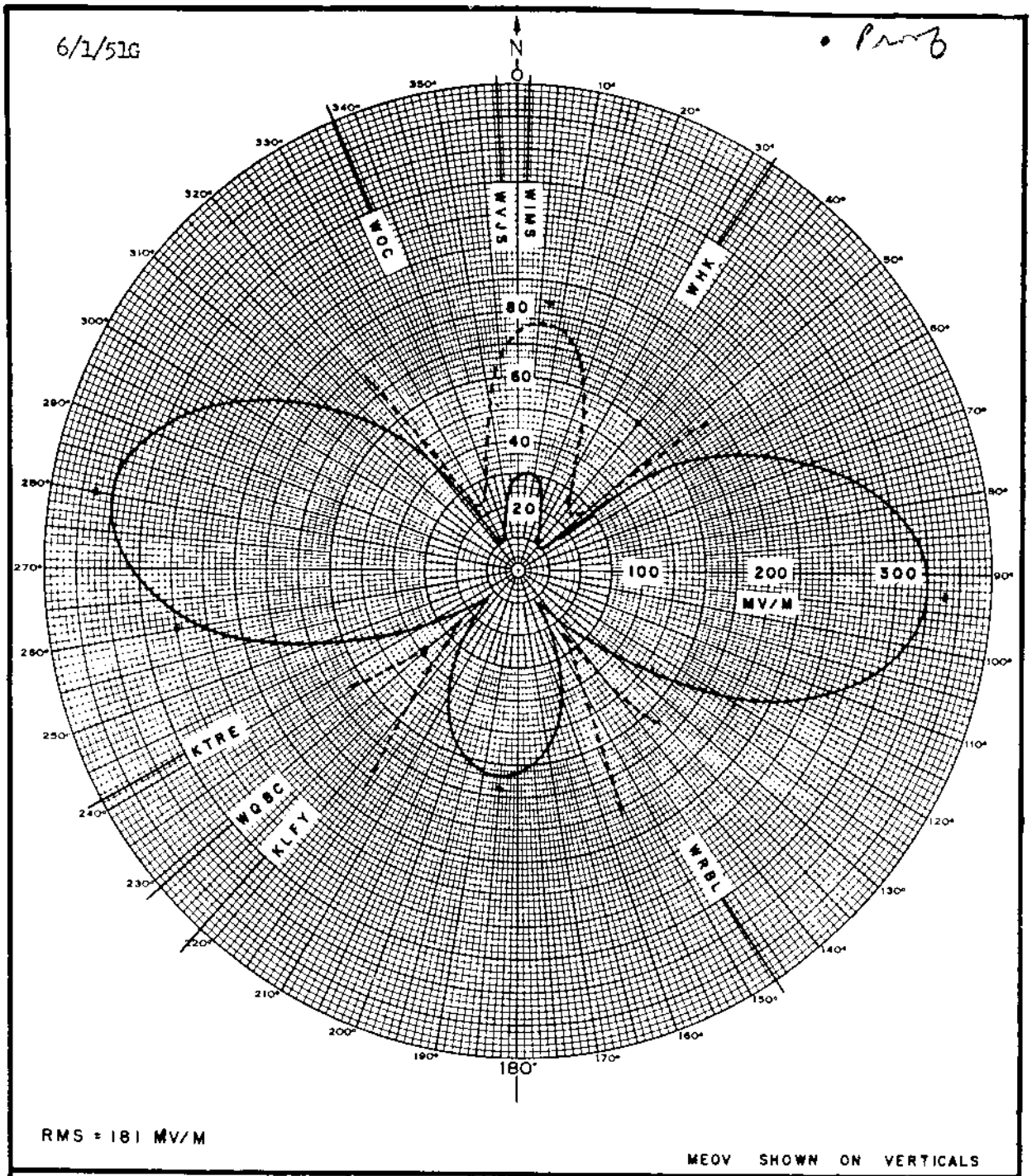
FCC File No. B1-8165
Accepted 12-7-60

WKPR
Kalamazoo, Michigan

1420 KC

WKSR

PROPOSED NIGHT — WKSR, PULASKI, TENN. — 1kw, DA-N — 1420 kc



PATTERN NO. 050851
LATITUDE: 35°-11'-04"
LONGITUDE: 87°-03'-20"

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

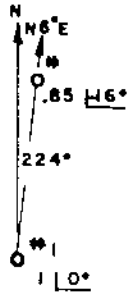


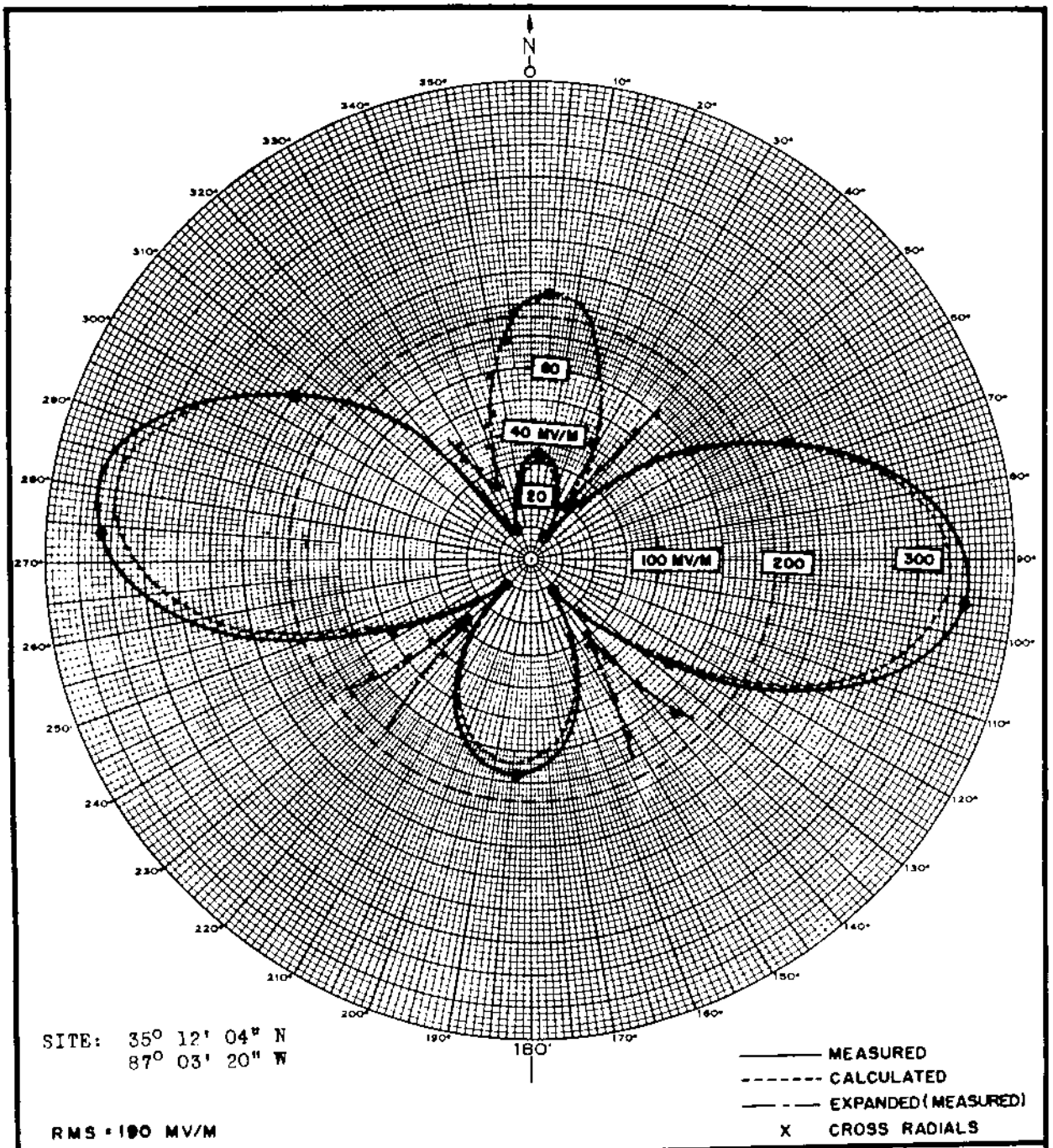
EXHIBIT NO. 2
NIGHT HORIZONTAL
RADIO STATION WKSR
PULASKI BROADCASTING CO.
PULASKI, TENNESSEE

PRES. 730 KC 250W-D
PROP. 1420KC 1KW-DA-N-U

AMENDMENT RECD 5/16/51 ACC 5/25/51 BP-7922

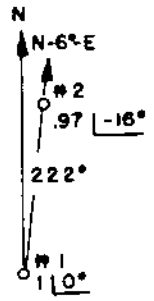
WKSR, Pulaski, Tenn. 1420 kc

MEASURED NIGHT (2/4/53G) WKSR, PULASKI, TENN. 1kw, U, DA-N 1420 kc



PATTERN NO. 111352
LATITUDE: 35°-12'-04"
LONGITUDE: 87°-03'-20"

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



G = 100°

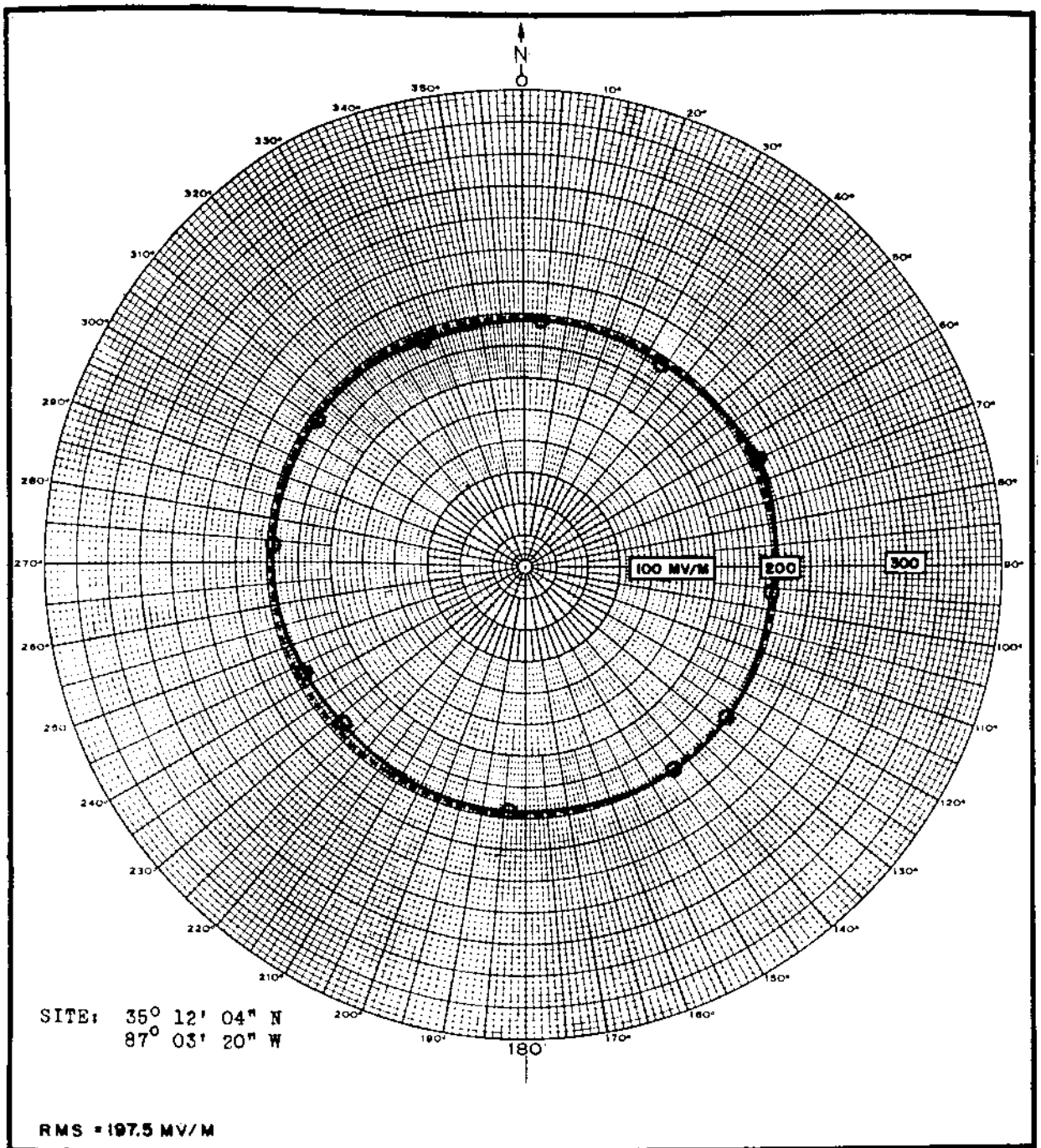
FIGURE 21

NIGHTTIME
MEASURED HORIZONTAL PATTERN

RADIO STATION WKSR
PULASKI, TENNESSEE

1420 KC 1KW-DA-N-U

MEASURED WKSR, PULASKI, TENN. 1kw, U, DA-N 1420 kc
~~DAE~~ NON DAe/4/53G)



PATTERN NO. 111352
LATITUDE: 35°-12'-04"
LONGITUDE: 87°-03'-20"

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

FIGURE 20

DAYTIME
MEASURED HORIZONTAL PATTERN

RADIO STATION WKSR
PULASKI, TENNESSEE

1420 KC 1 KW-DA-N-U

WLNA
1420 kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WLNA

Main Studio: Peekskill, New York

Frequency: 1420 kHz

Power: 1kw Night 5 kw Day

Notirication List No. 1783

Date: November 2, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 41° 18' 31"
West Longitude: 73° 55' 00"

ANTENNA CHARACTERISTICS

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

TOWER:	C(#1)	NE(#2)	SW(#3)	NW(#4)	SE(#5)
HEIGHT ABOVE INSULATORS	211.6'(110°)	211.6'	211.6'	150'	150' (78°)
NIGHT PHASING:	0°	+164°	-164°		
NIGHT FIELD RATIO:	1	0.654	0.473		
DAY PHASING:	0°			-117.8°	+169.8°
DAY FIELD RATIO:	1			0.565	0.565

SPACING AND ORIENTATION: With the center (#1) tower as reference the NE(#2) tower is spaced 173.2' (90°) on a line bearing 335° true, the Southwest (#3) tower is spaced 173.2' (90°) on a line bearing 155° true, the northwest (#4) tower is spaced 173.2' (90°) on a line bearing 300° true and the Southeast (#5) tower is spaced 173.2' (90°) on a line bearing 120° true.

GROUND SYSTEM: 120-173' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	462.59 mv/m	659.53 mv/m	486.02 mv/m
Night	220.22 mv/m	413.19 mv/m	231.49 mv/m

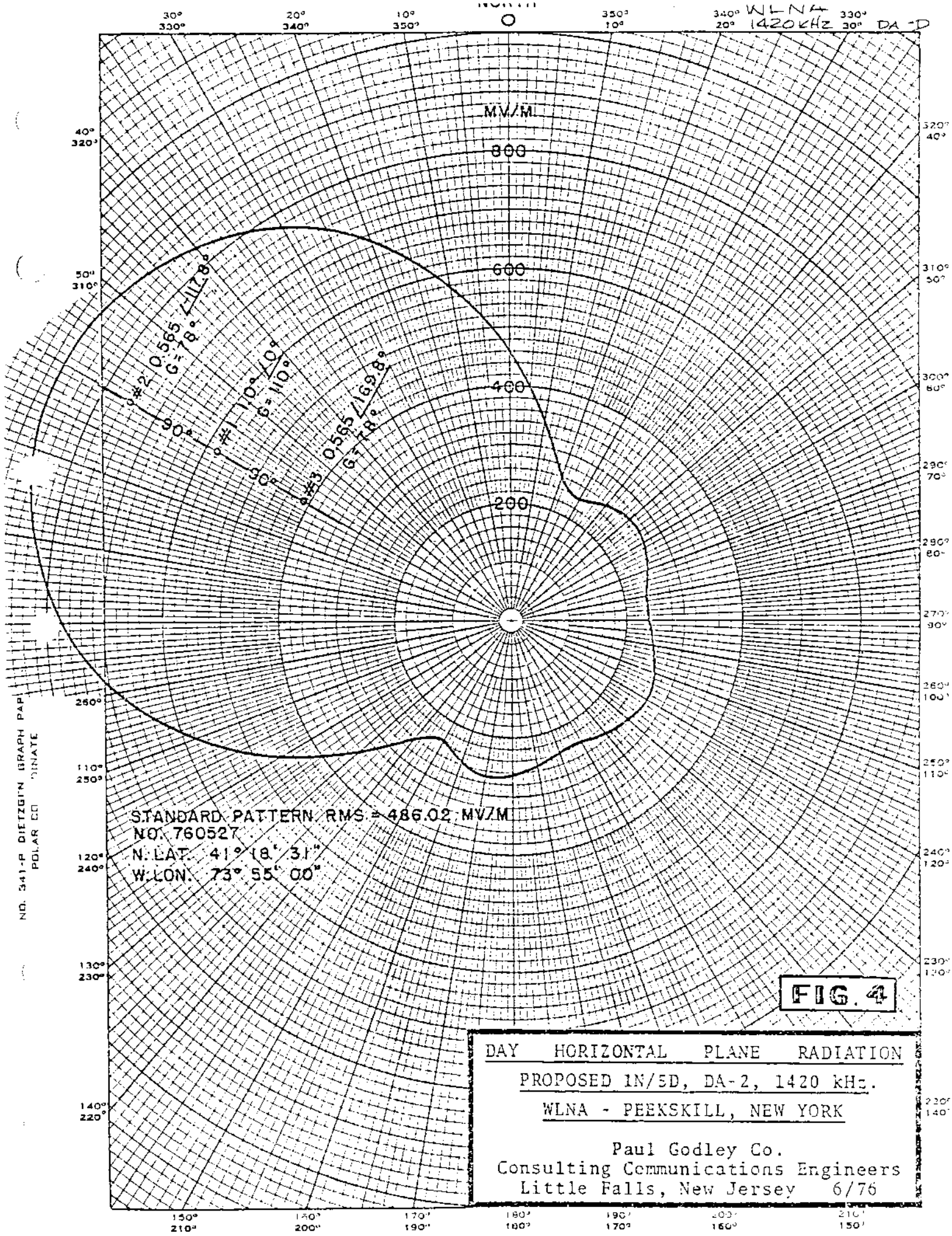


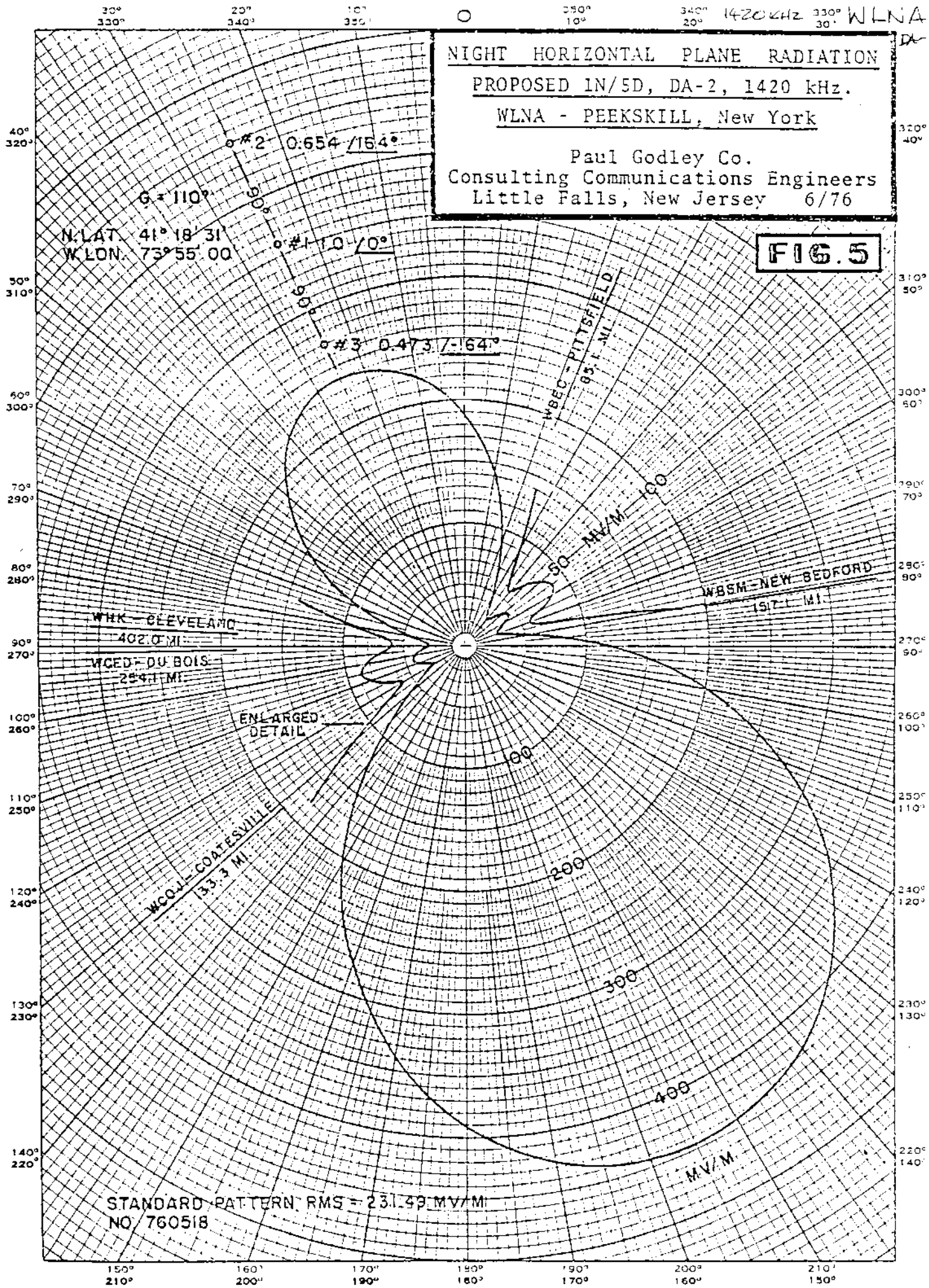
FIG. 4

DAY HORIZONTAL PLANE RADIATION

PROPOSED 1N/5D, DA-2, 1420 kHz.

WLNA - PEEKSKILL, NEW YORK

Paul Godley Co.
Consulting Communications Engineers
Little Falls, New Jersey 6/76



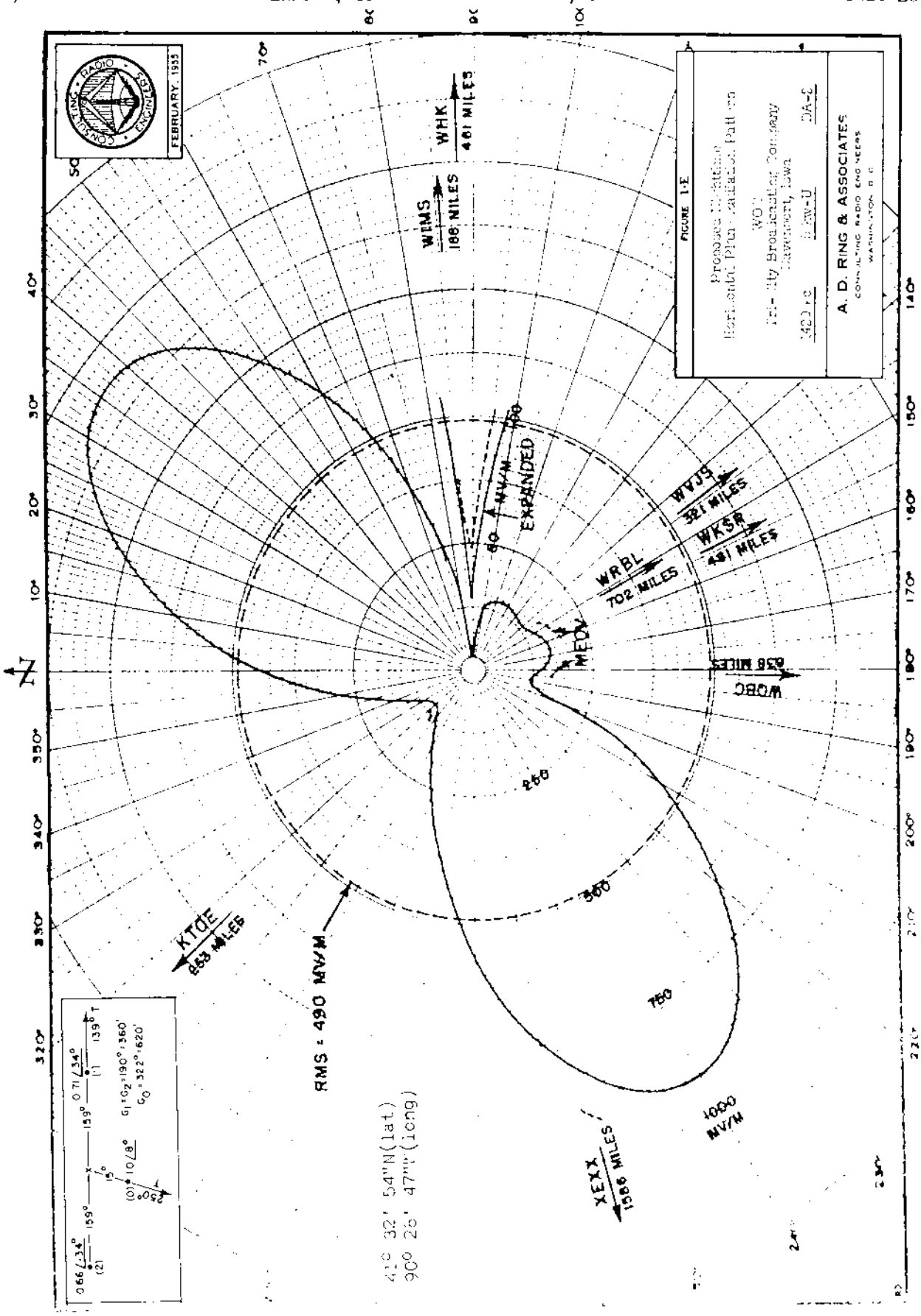


FIGURE 1-E
A. D. RING & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.
FEBRUARY, 1955
WHK 481 MILES
WIMS 186 MILES
WWJ 321 MILES
WKSR 481 MILES
WRBL 702 MILES
WOBC 638 MILES
KTOE 853 MILES
XEXX 1586 MILES
EXPANDED
RMS = 490 MV/M
250
500
750
1000 MV/M
41° 32' 54"N (lat.)
90° 25' 47"W (long.)

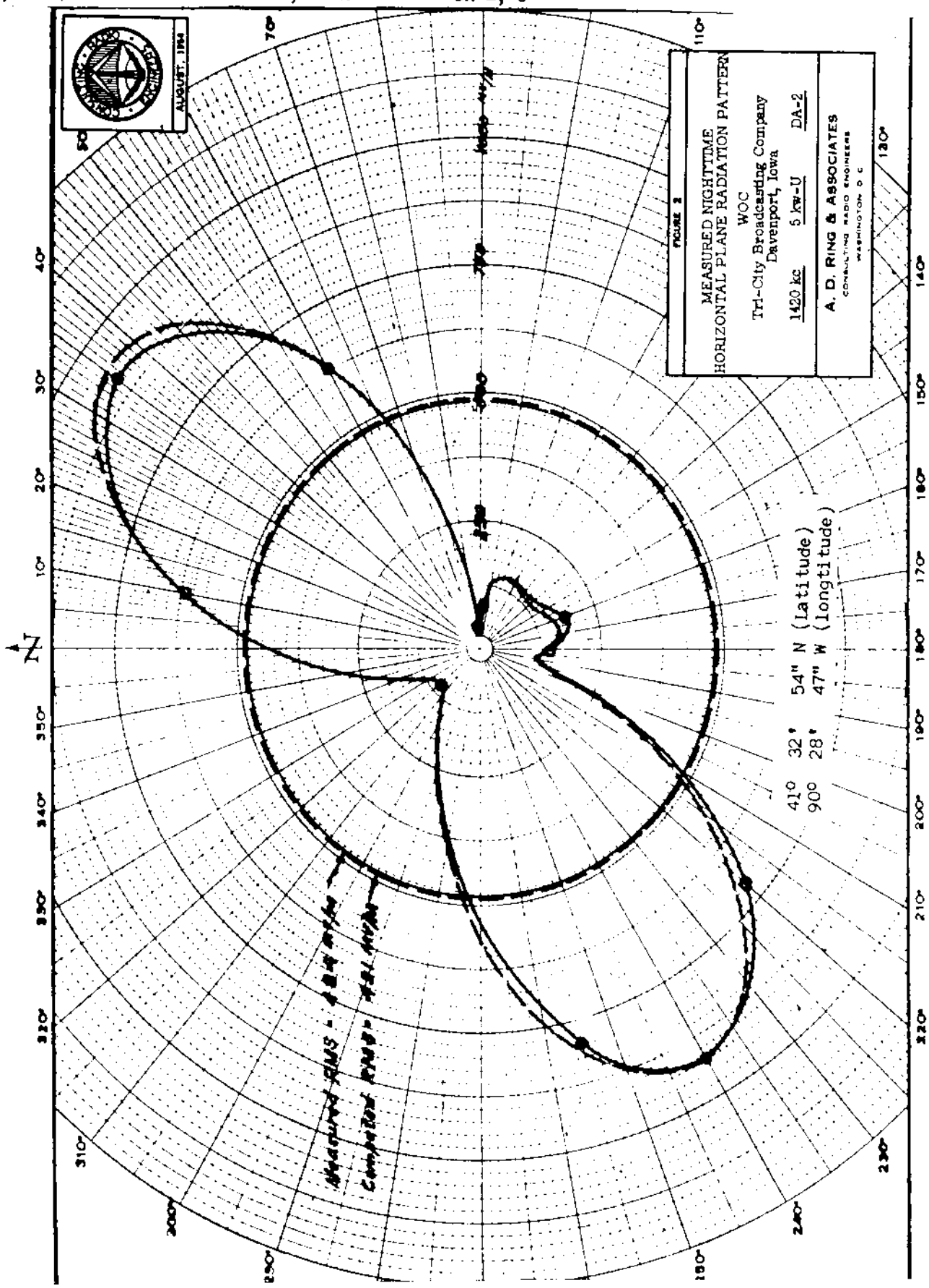
WOC

MEASURED NIGHT
(10/18/54 G)

STATION WOC,
DAVENPORT, IOWA

5 KW
DA-2, U

1420 KC



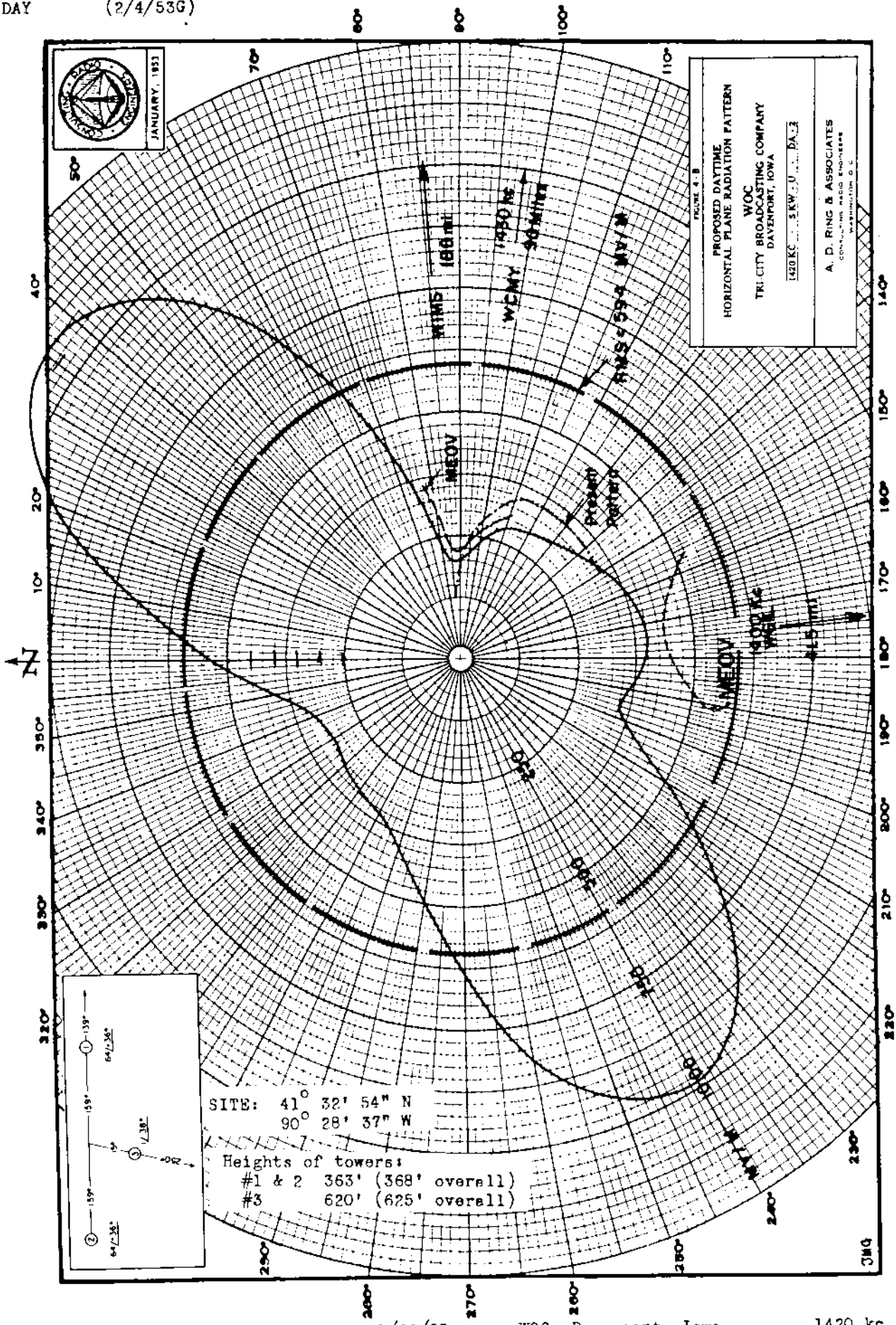
File No. BL--5472
(10/18/54 G)

Accepted 10/8/54

WOC, Davenport, Iowa

1420 KC

PROPOSED DAY (2/4/53G) WOC, DAVENPORT, IOWA 5kw, U, DA-2 1420 kc

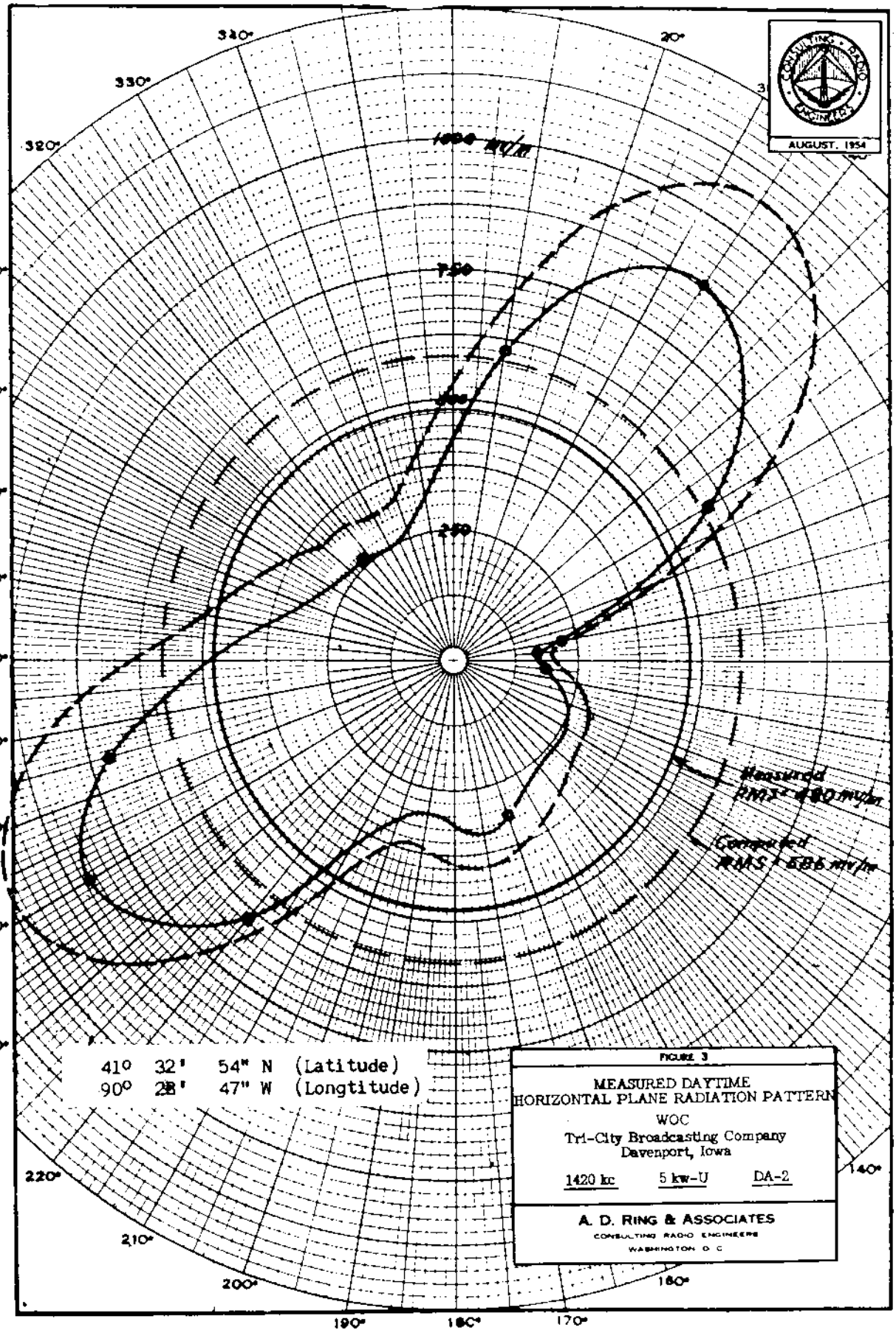


A. D. RING & CO - 1/52 - 1000

FCC File No. BP-8636 Amended Recd. 1/22/53 WOC, Davenport, Iowa 1420 kc

WOC

MEASURED DAY (10/18/54 G) | STATION WOC DAVENPORT, IOWA | 5 KW DA-2, U | 1420 KC



A. D. RING & CO - 1/52 - 1000

File No. BL-5472 Accepted October 8, 1954 WOC, Davenport, Iowa 1420 KC

ND

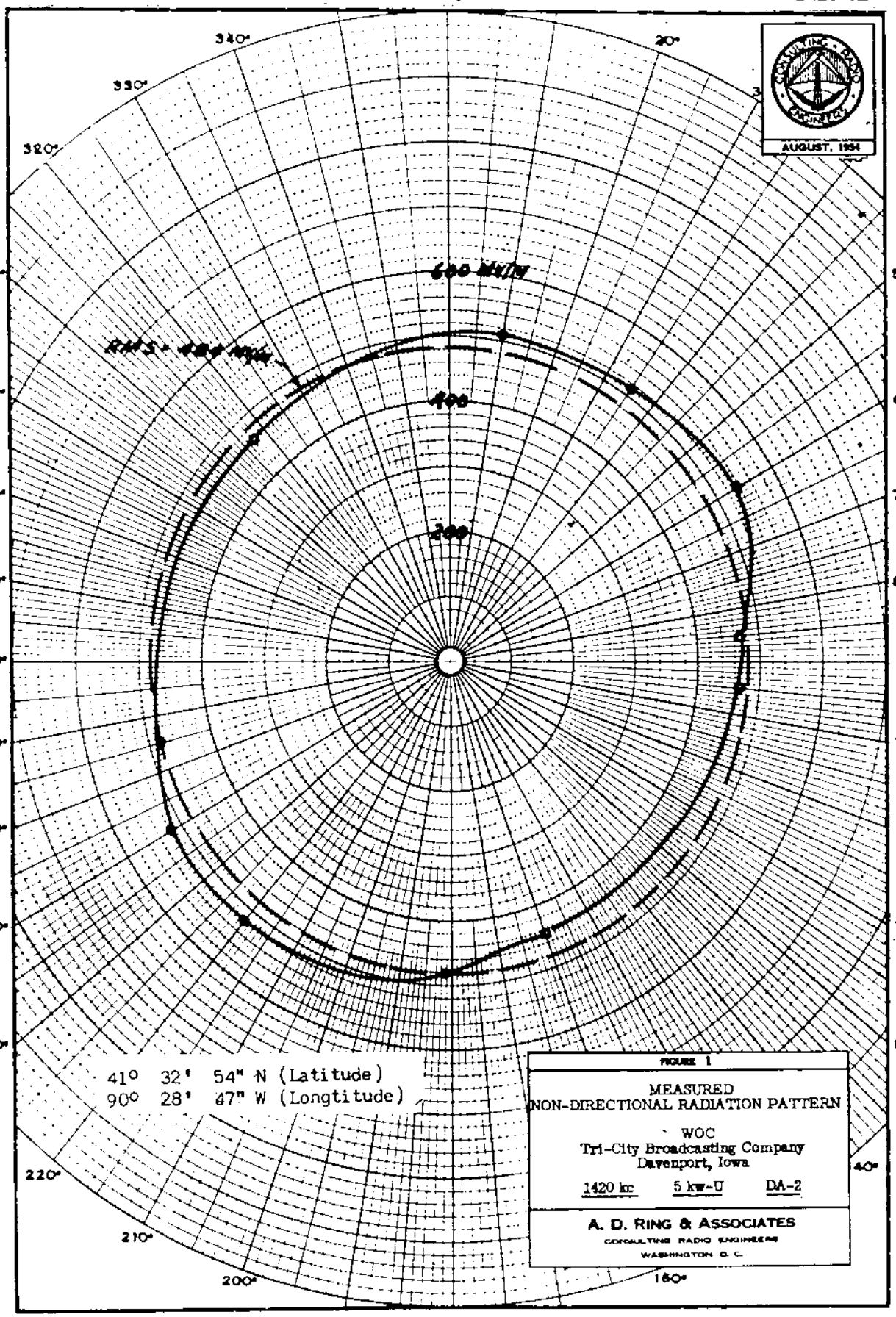
WOC

MEASURED ~~NIGHT AND DAY~~ (10/18/ 54 G)

STATION WOC, DAVENPORT, IOWA

5 KW DA-2, U

1420 KC



A. D. RING & CO. - 1/52 - 1000

File No. BL-5472 Accepted 10/8/54 WOC, Davenport, Iowa 1420 KC

SUPERSEDES

WRBL - 1420

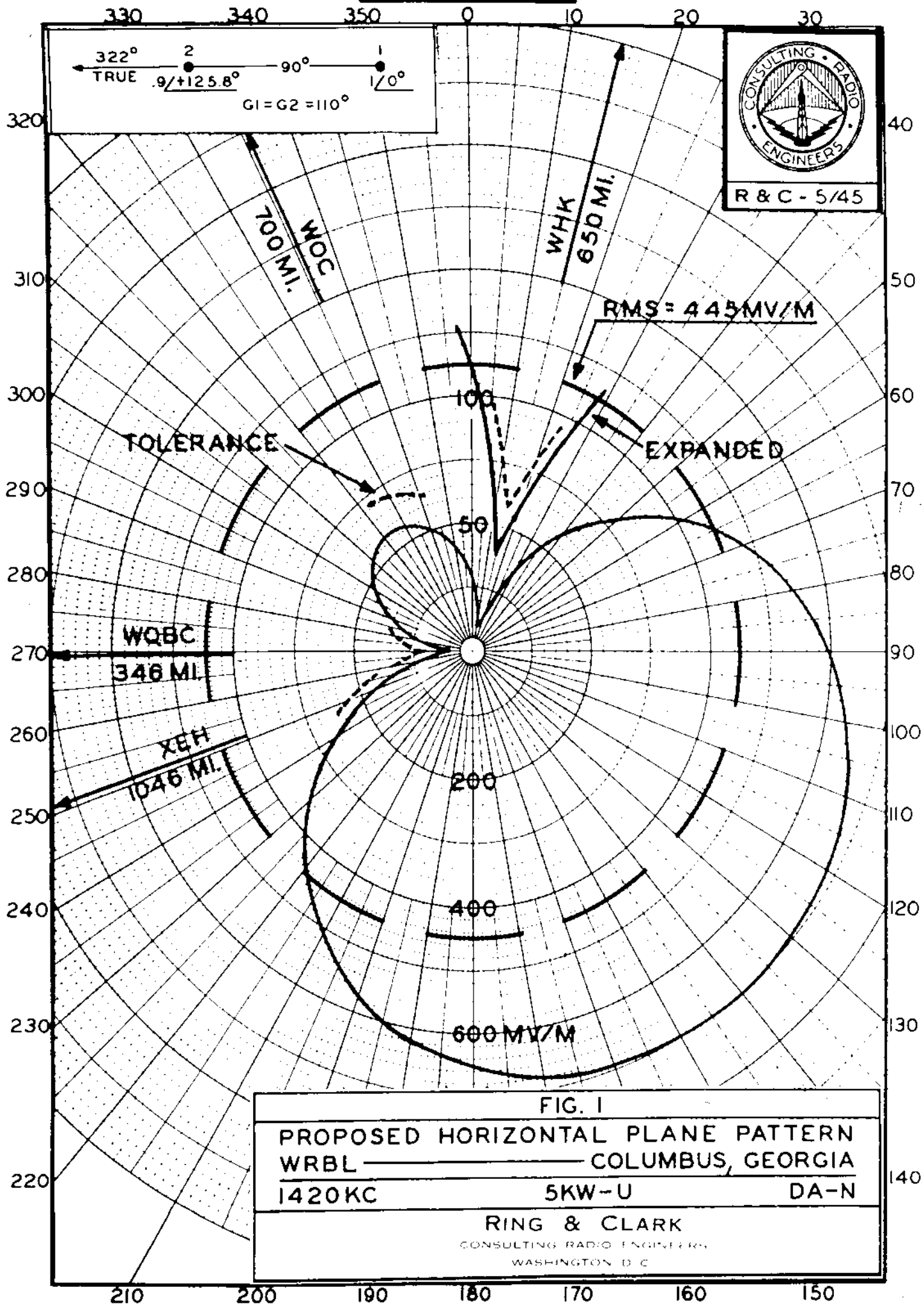


FIG. 1

PROPOSED HORIZONTAL PLANE PATTERN

WRBL — COLUMBUS, GEORGIA

1420 KC 5KW-U DA-N

RING & CLARK

CONSULTING RADIO ENGINEERS

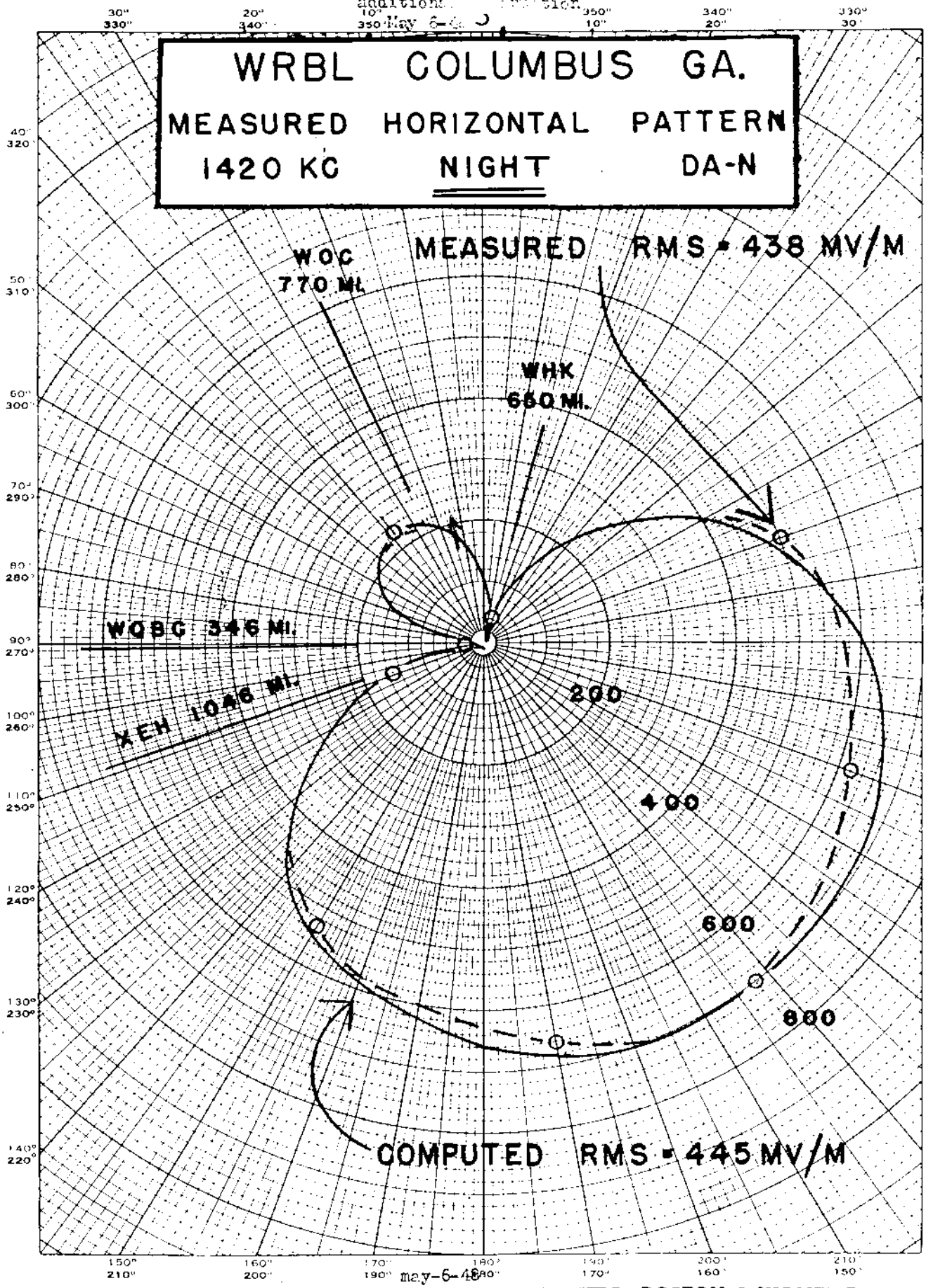
WASHINGTON D.C.

32-29-52
85-02-48

WRBL
1420

JAN 3 1948 G

additions ... tion
May 6-4



may-6-48

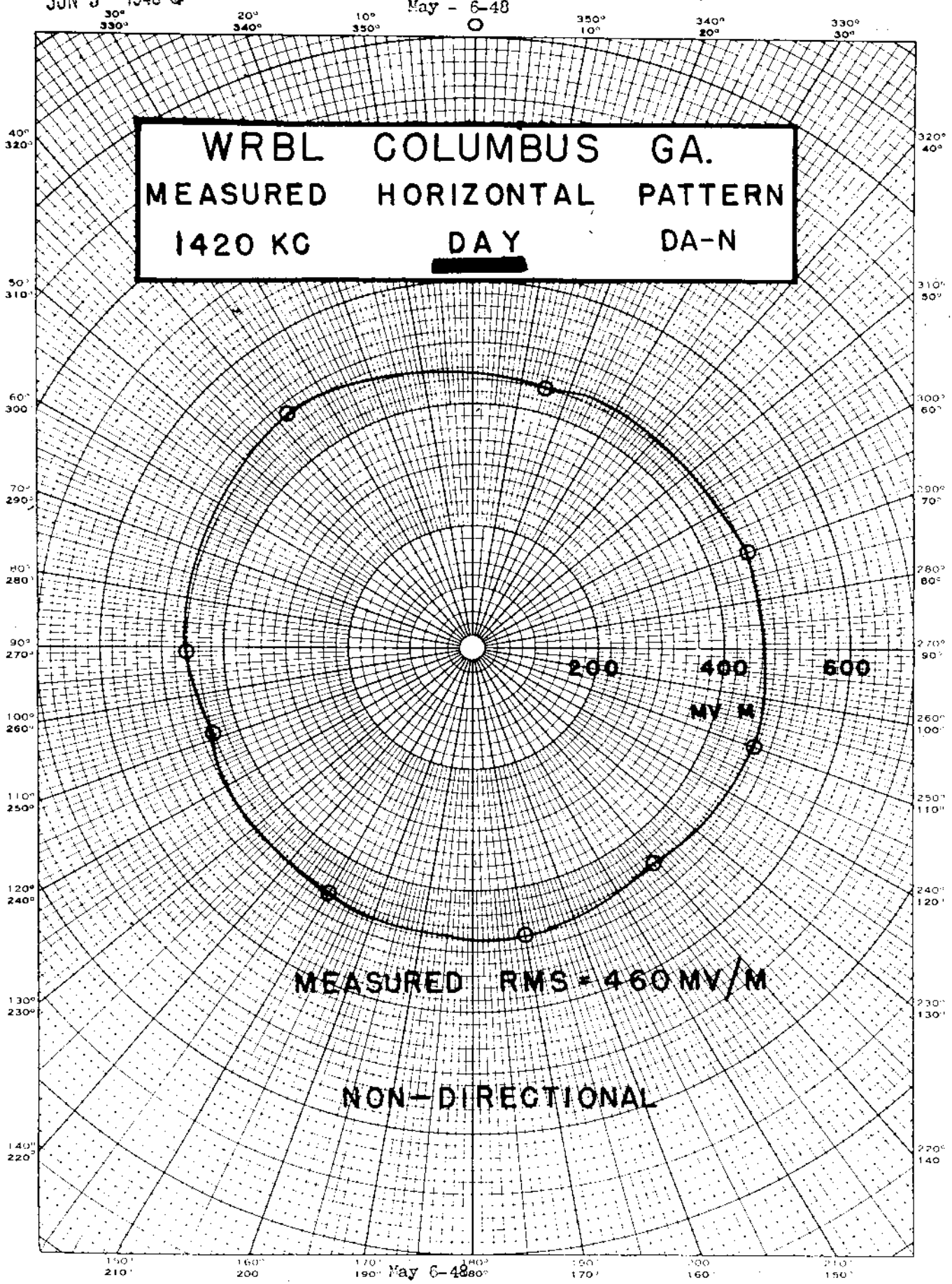
STILES & WARING—CONSULTING RADIO ENGINEERS—BOSTON & WASHINGTON

WRBL
1420

32-29-52
51-02-48

JUN 3 1948 G

additional information
May - 6-48



STILES & WARING—CONSULTING RADIO ENGINEERS—BOSTON & WASHINGTON

WVJS

PROPOSED DAY
(7-29-60g)

Station WVJS
Owensboro, Kentucky

1kw, 5kw-LS, DA-2,U
1420 kc

2-6-62
granted L for new station

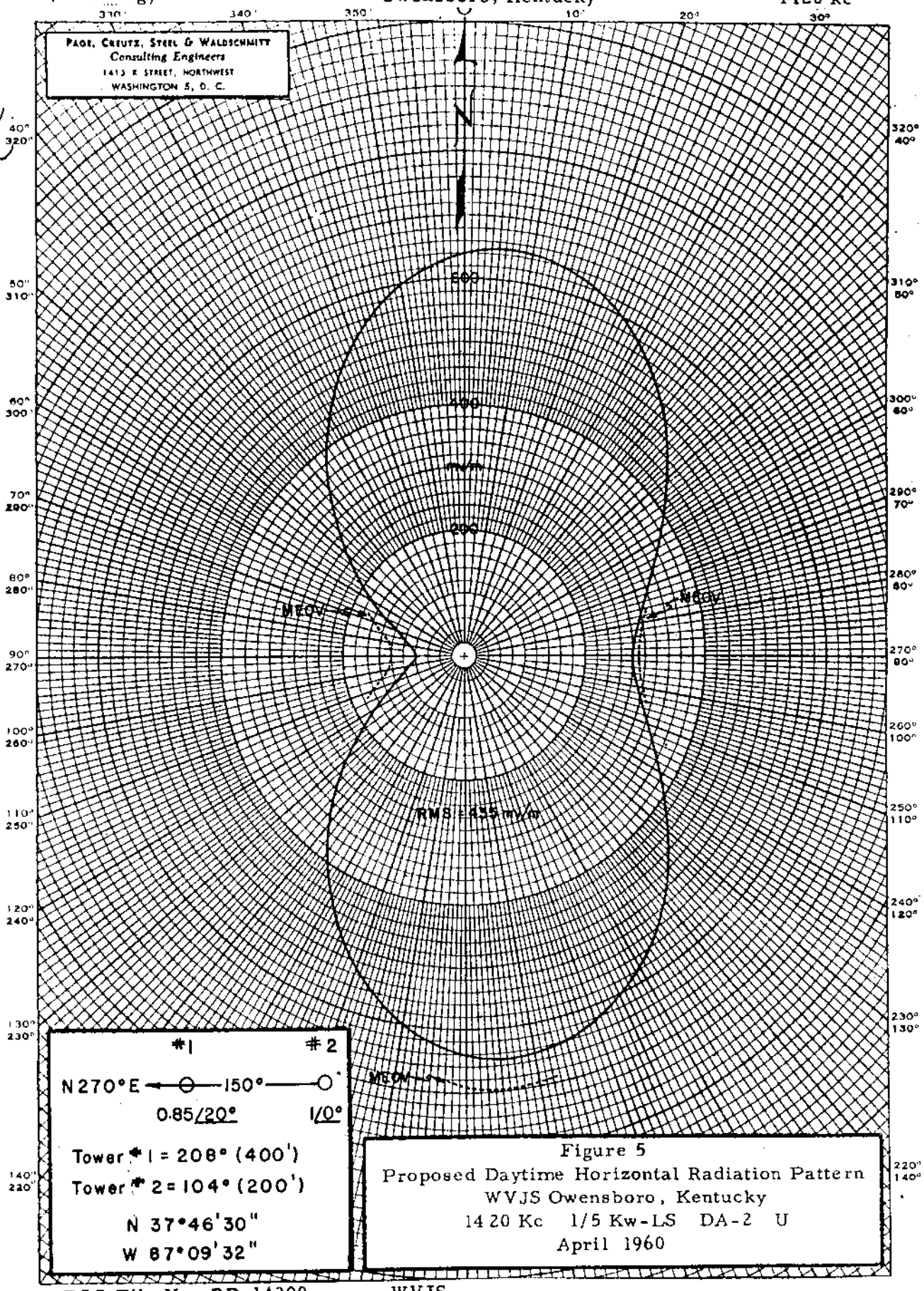


Figure 5
Proposed Daytime Horizontal Radiation Pattern
WVJS Owensboro, Kentucky
1420 Kc 1/5 Kw-LS DA-2 U
April 1960

FCC File No. BP-14208
Accepted 7-14-60

WVJS
Owensboro, Kentucky

1420 kc

WVJS

Measured Day
(10-26-62ct)

Station WVJS
Owensboro, Kentucky

1kw, 5kw-LS, U
1420 kc

1/2/63 granted for increase in day power

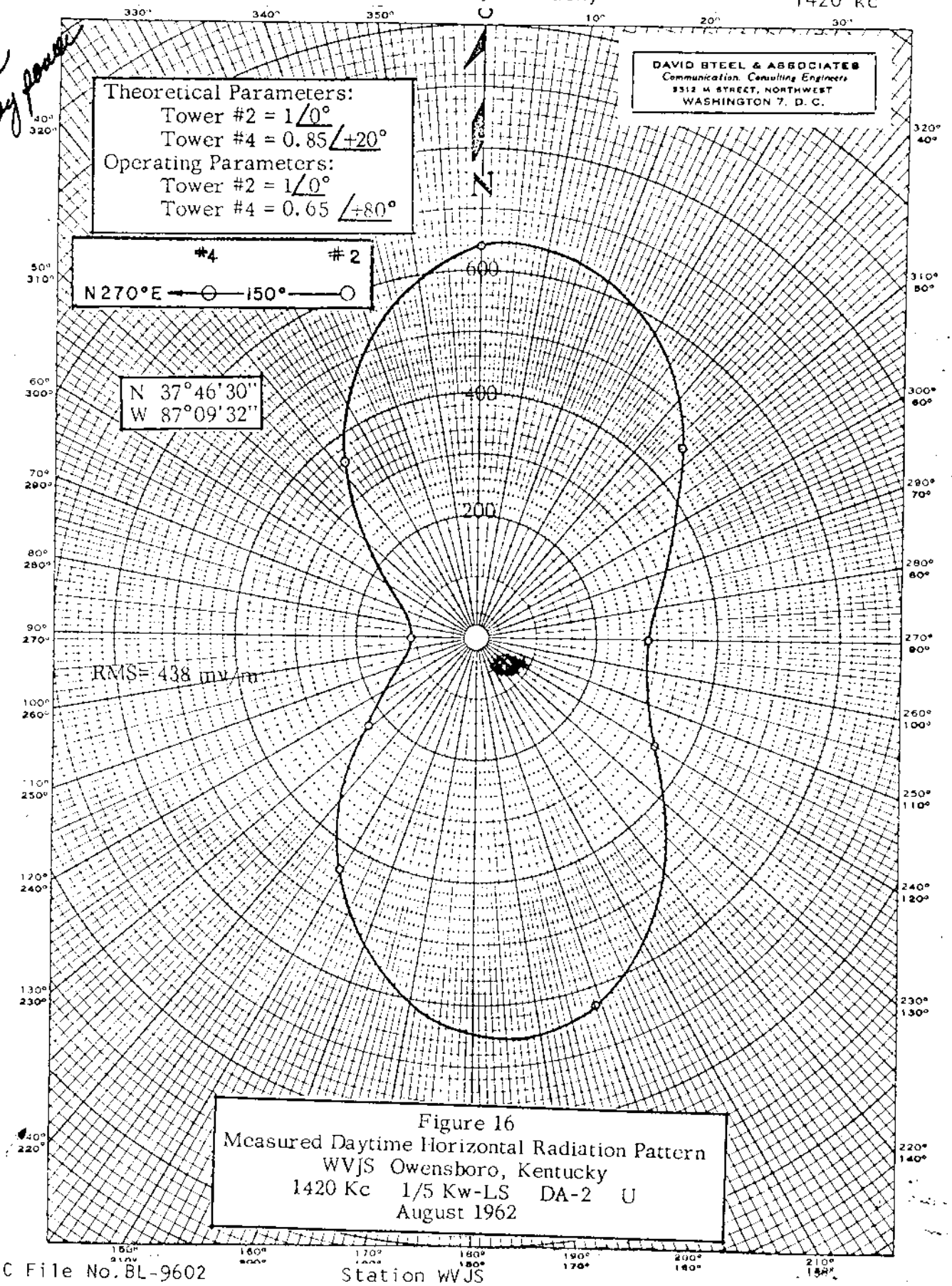
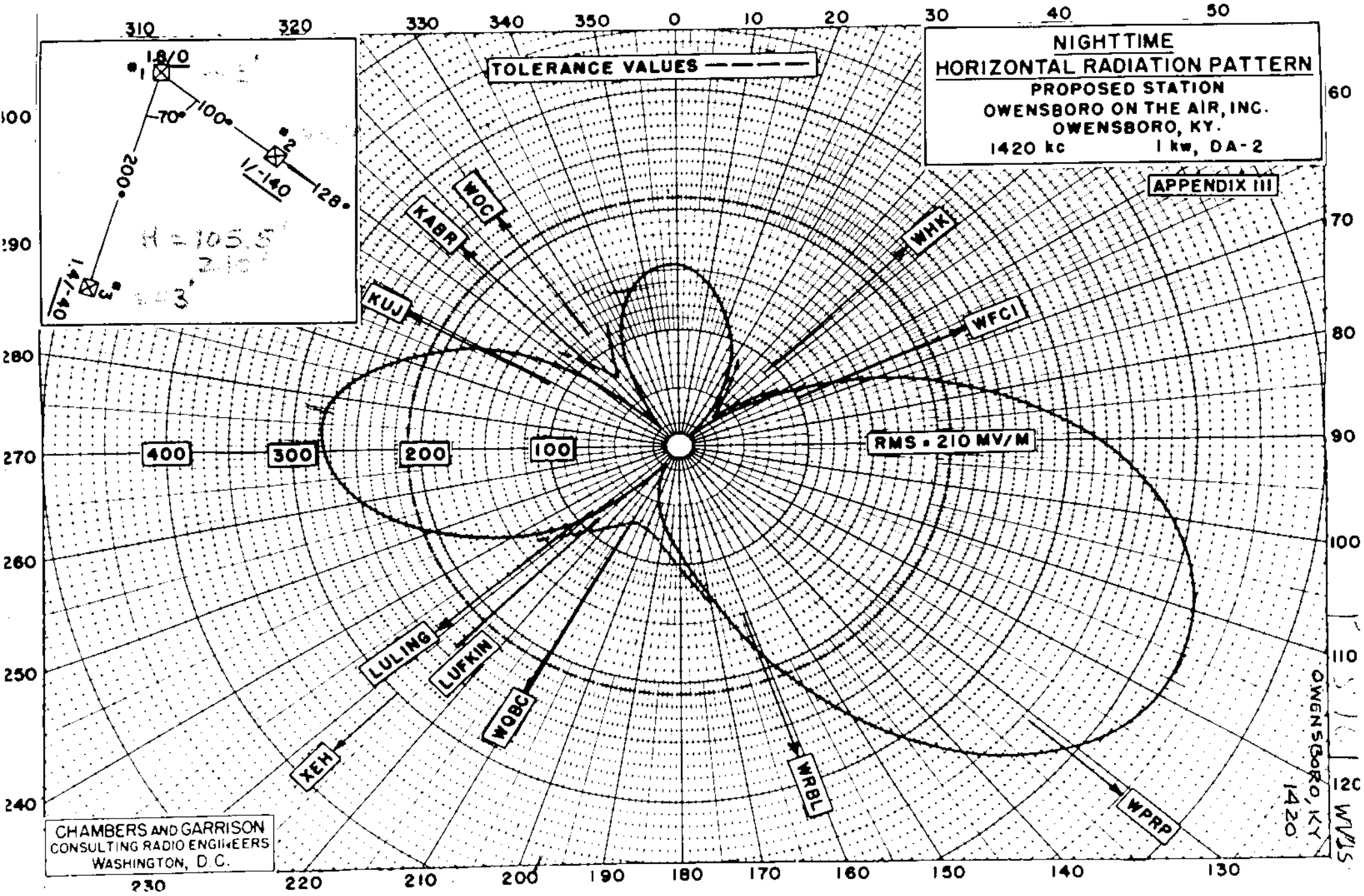


Figure 16
Measured Daytime Horizontal Radiation Pattern
WVJS Owensboro, Kentucky
1420 Kc 1/5 Kw-LS DA-2 U
August 1962

FCC File No. BL-9602
Accepted 10-18-62

Station WVJS
Owensboro, Kentucky

1420 kc


NIGHTTIME
HORIZONTAL RADIATION PATTERN
PROPOSED STATION
OWENSBORO ON THE AIR, INC.
OWENSBORO, KY.
1420 kc
1 kw, DA-2
APPENDIX III
TOLERANCE VALUES
RMS = 210 MV/M
400
300
200
100
WOC
KABR
KUJ
WHK
WFCI
LULING
LUFKIN
WOBC
XEH
WRBL
WPRP
18/0
70
100
200
128
17-140
14/-40
CHAMBERS AND GARRISON
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.
OWENSBORO, KY
1420
WVJS

WVJS

Measured Night
(10-26-62ct)

Station WVJS
Owensboro, Kentucky

1kw, 5kw-LS, U
1420 kc

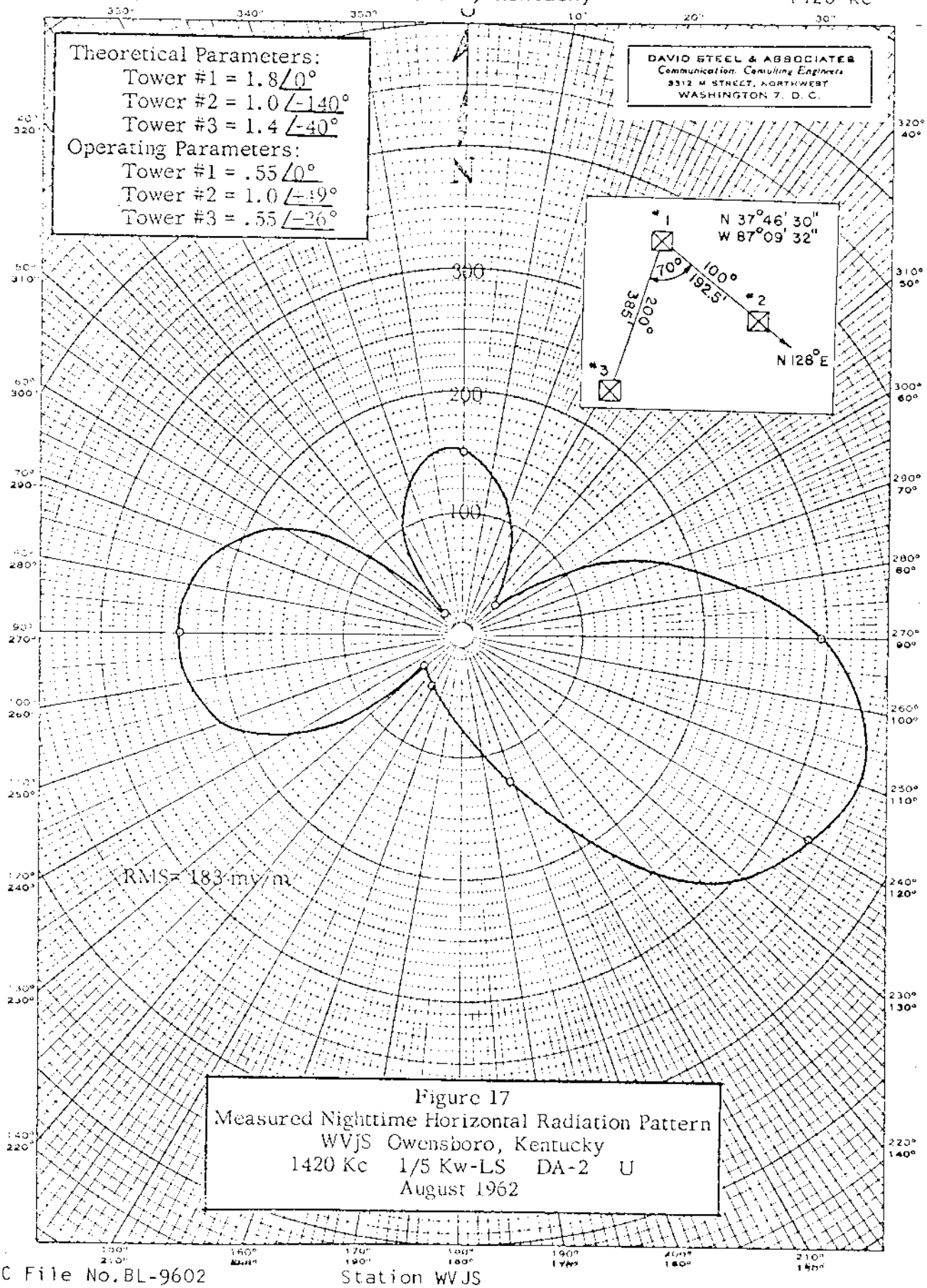


Figure 17
Measured Nighttime Horizontal Radiation Pattern
WVJS Owensboro, Kentucky
1420 Kc 1/5 Kw-LS DA-2 U
August 1962

FCC File No. BL-9602
Accepted 10-18-62

Station WVJS
Owensboro, Kentucky

1420 kc

WVJS

Measured Non-DA
(10-26-62ct)

Station WVJS
Owensboro, Kentucky

1kw,5kw-LS,U
1420 kc

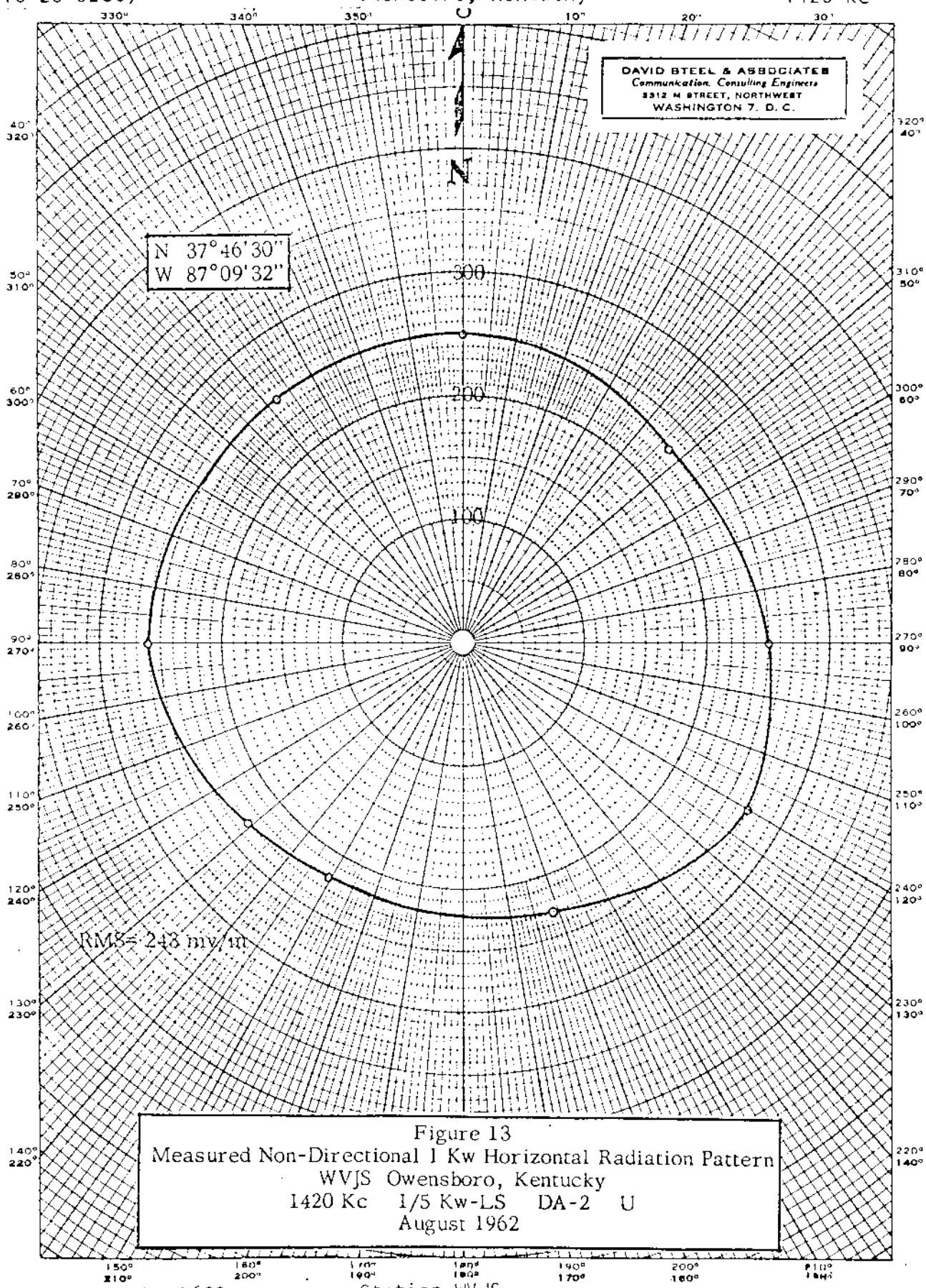


Figure 13
Measured Non-Directional 1 Kw Horizontal Radiation Pattern
WVJS Owensboro, Kentucky
1420 Kc 1/5 Kw-LS DA-2 U
August 1962

FCC File No.BL-9602
Accepted 10-18-62

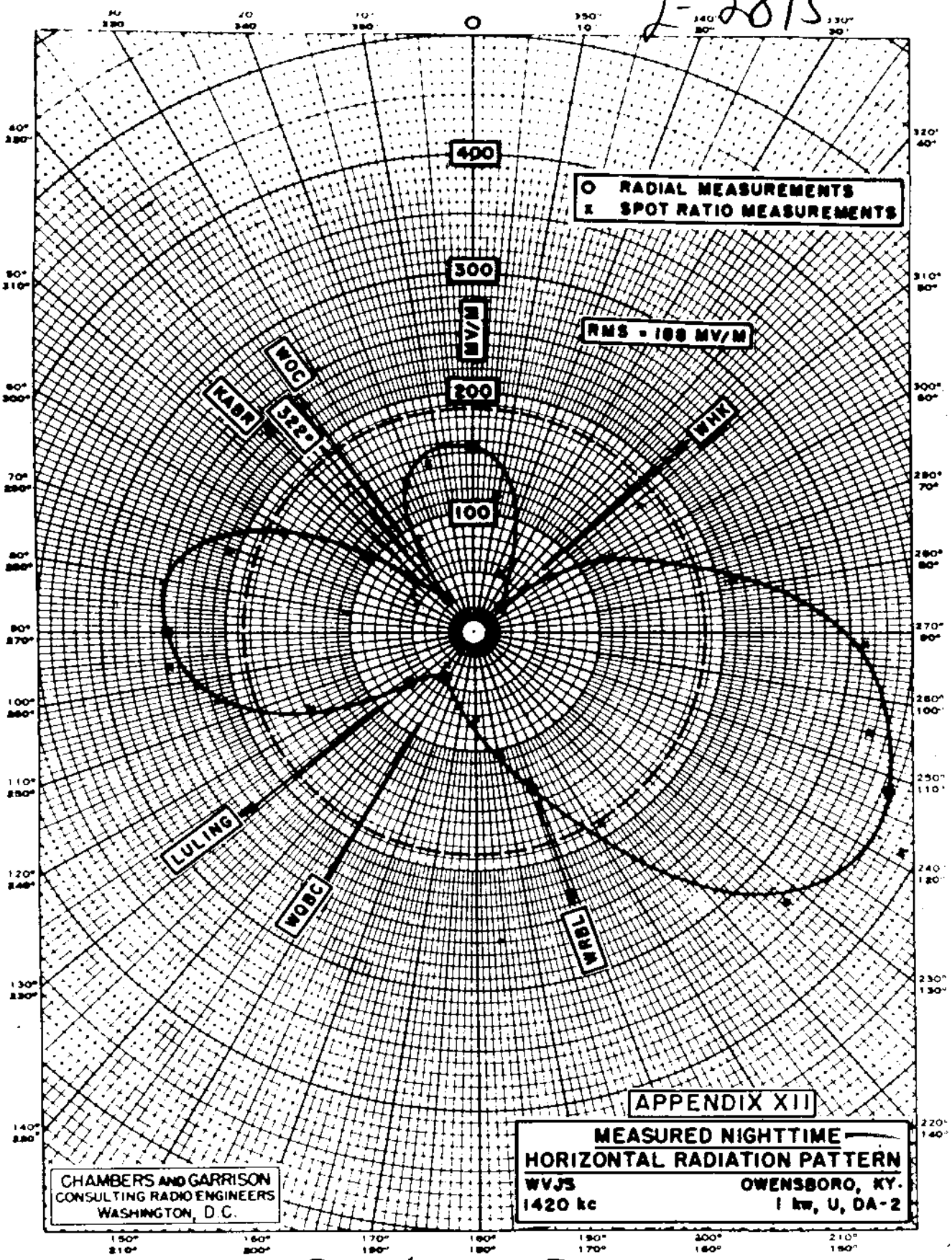
Station WVJS
Owensboro, Kentucky

1420 kc

WVJS
1420

9/2/48 60

L-2815



Rec'd 11-24-47

WVOT

PROPOSED NIGHT

WVOT, WILSON, N.C.

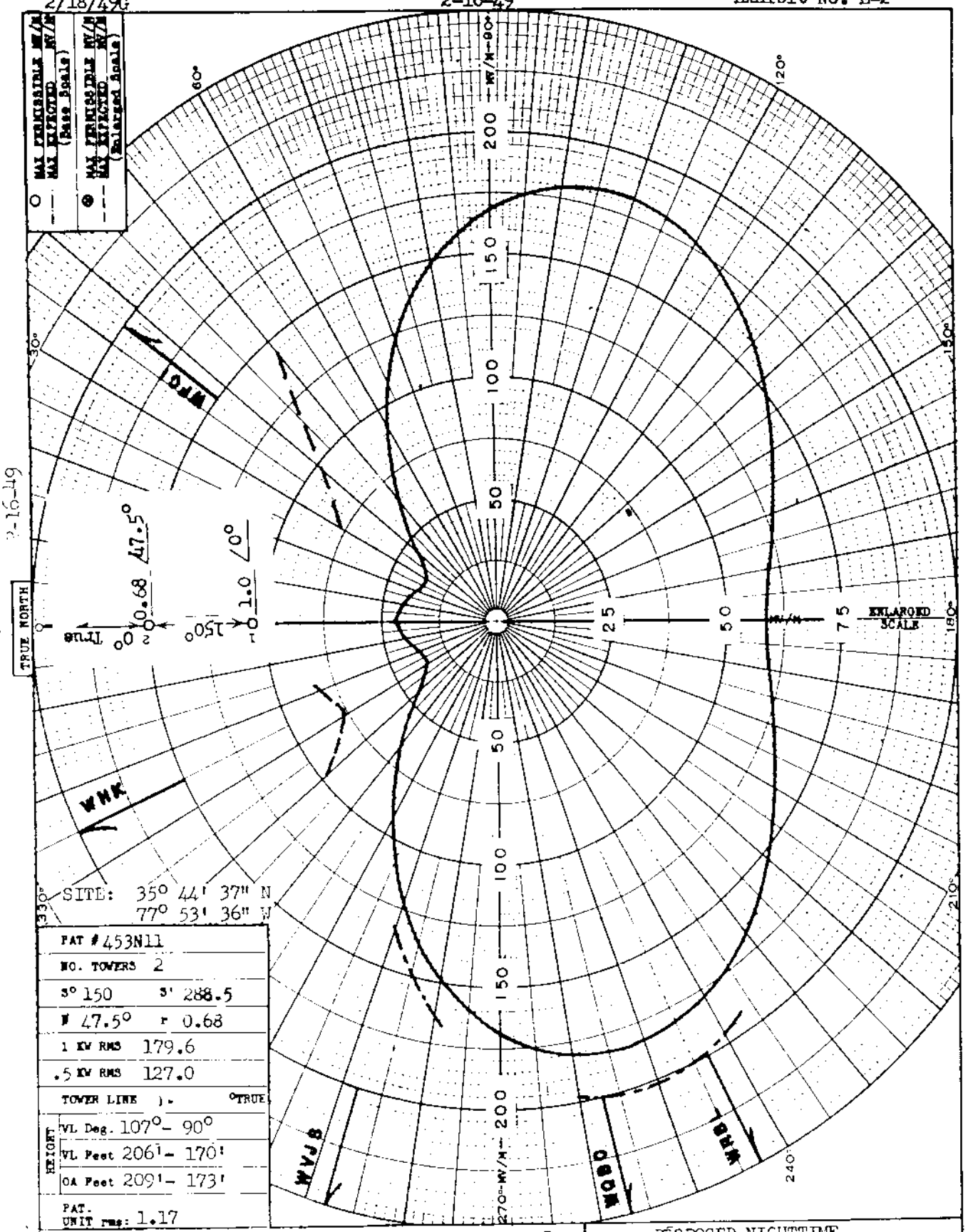
2/18/49G

2-16-49

500w,1kw-LS,DAN

1420kc

Exhibit No. E-2



PAT # 453N11	
NO. TOWERS 2	
S° 150	S' 288.5
W 47.5°	r 0.68
1 KW RMS 179.6	
.5 KW RMS 127.0	
TOWER LINE) -	°TRUE
HEIGHT VL Deg. 107° - 90°	
HEIGHT VL Feet 206' - 170'	
HEIGHT OA Feet 209' - 173'	
PAT. UNIT rms: 1.17	

COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

PATTERN: PROPOSED NIGHTTIME

FOR: WVOT, Wilson, North Carolina

POWER: 500W, 1KW-D FREQ: 1420KC

DATE: February 9, 1949 BY: ITN

WVOT

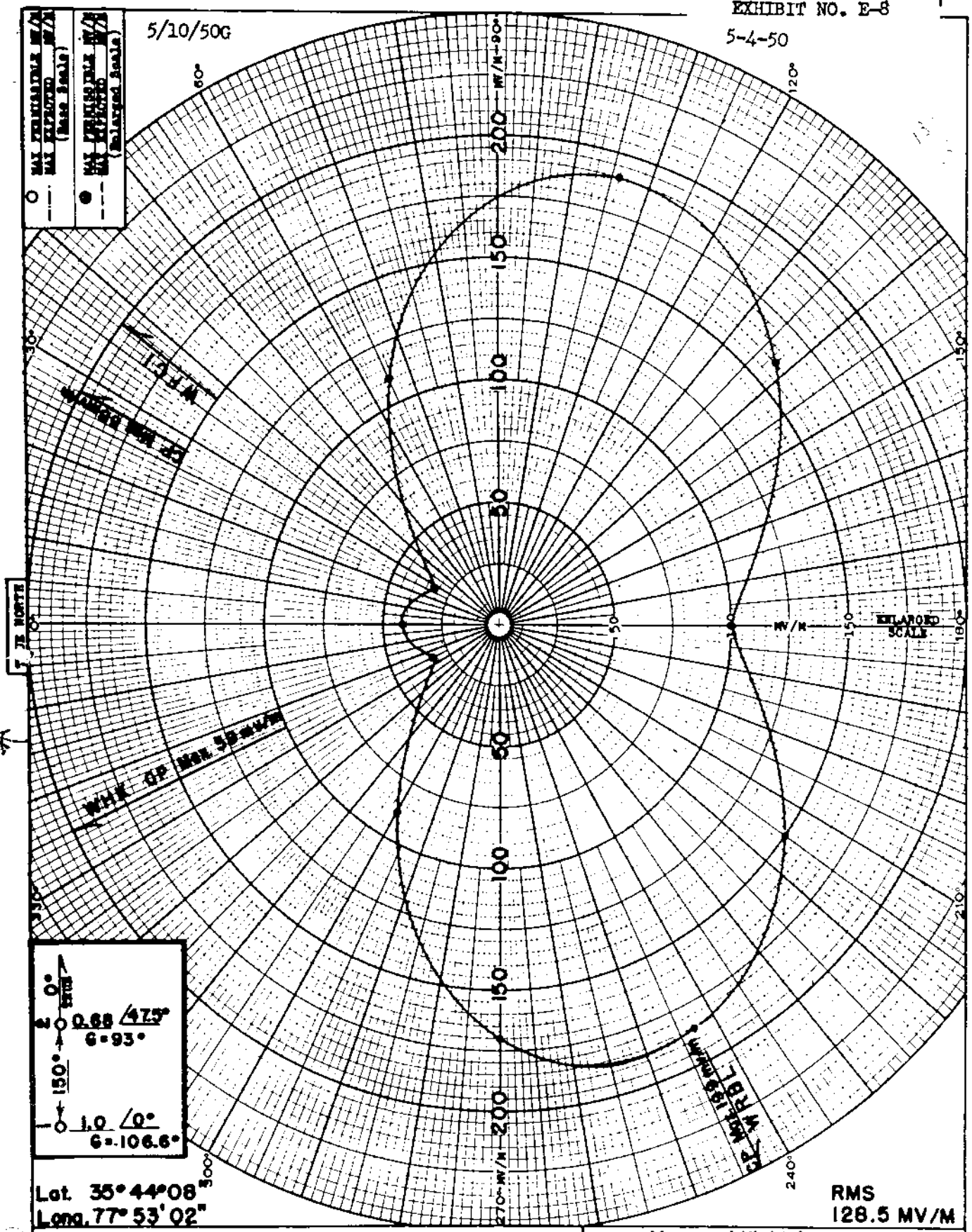
MEASURED NIGHT

WVOT, WILSON, N. C.

500w, 1kw-LS, DAN 1420 kc

EXHIBIT NO. E-8

5-4-50



COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

PATTERN: Measured Nighttime

FOR: WVOT, Wilson, N.C.

POWER: 1kw-D, 0.5kw-N FREQ: 1420 KC

DATE: MAY 1, 1950 BY: ITN

XEEW

PROPOSED Station X E E W 1 KW, DA-1 Class III
DAY & NIGHT Matamoros, Tamaulipas
(9-21-56g)

1420 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET 35615

Station: X E E W

Main Studio: Matamoros, Tamaulipas

Frequency: 1420 KC

Power: 1 KW

Mexican Change List No. 193

Date: June 29, 1956 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: North Latitude: 25" 51' 38*
West Longitude: 97" 28' 29*

ANTENNA CHARACTERISTICS

Authorized for Day and Night Operation. (DA-1)
Number of elements: 2
Type of elements: Series-excited, uniform cross-section,

TOWER:	North	South
HEIGHT ABOVE INSULATORS:	90*	90* (53 meters)
PHASING:	160*	0*
FIELD RATIO:	1.0	1.0

SPACING AND ORIENTATION: Adjacent elements are spaced 60* (35x21) meters) on a line bearing 325* true.

GROUND SYSTEM: 120-90* equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of systems are bonded together.

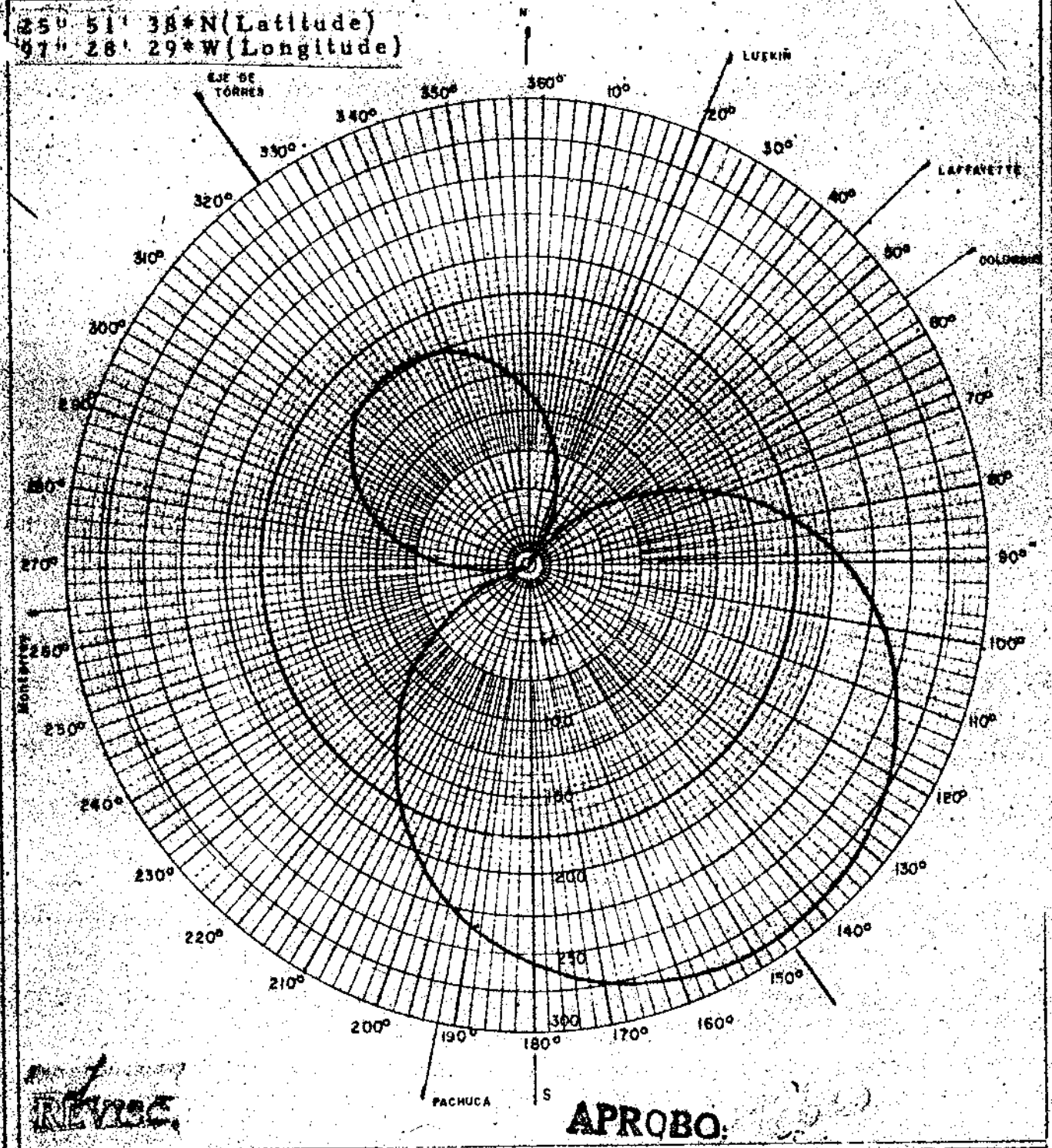
Predicted effective Field: 175 mv/m at rated power.

XEEW

1420 KC

PROPOSED Station X E E W 1 KW, Da-1
DAY & NIGHT Matamoros, Tamaulipas Class III
(9-21-56 g)

25° 51' 38*N(Latitude)
97° 28' 29*W(Longitude)

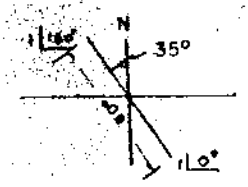


REVISO

APROBO:

PATRON DE RADIACION HORIZONTAL CALCULADO EN mv./M a 1609 MTS.

Esquema de las torres y su orientacion respecto al Norte astronomico.



JORGE CARDENAS GONZALEZ.

Razon social o nombre del concesionario e indicativo de llamada.

X E E W.

1420 KHz.

1000 Watts.

TECNICOS ASOCIADOS.

FCC FILE Station X E E W 1420 KC
List No. 193 Matamoros, Tamaulipas
6-29-56

NEW

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION CALL : New LOCATION : Digby N S

FREQUENCY : 1420 KHz POWER : 1 kW CLASS : III

Notification List No : Date :

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM : 44° 38' 44"N Lat.
65° 46' 42"W.Long.

ANTENNA CHARACTERISTICS :

Mode of Operation : DA-1, full time

No. of Elements : 2 (two)

Type of Elements : Uniform cross-section guyed base insulated series fed no top loading

Tower No.	:	#1 NE	#2 SW
Height above Insulator	:	136 ft (70°)	136 ft
Spacing	:	102 ft. (.53	
Phasing	:	0°	194
Field Ratio	:	1	.13

Orientation : on a line bearing 50° E of T.N.

Ground System : 120 equispacedly spaced radials per tower No. 10 AWG soft-drawn copper wire and buried approx. 6 inches in ground and extending to the limits of the property in order to cover an area equivalent to 0.4 wavelength ground system

PREDICTED EFFECTIVE FIELD :

186 mV/m at one mile for 1 kW radiated

PETER CAHN & ASSOCIATES
CONSULTING ENGINEERS

NEW

Proposed Day & Night
(9-26-68ct)

New Station
Digby, Nova Scotia

1kw,DA-1,U,Class III
1420 kc