

COMPLIANCE WITH SPECIAL OPERATING CONDITIONS
AND CALCULATION OF TRANSMITTER POWER OUTPUT

The applicant recognizes the responsibility to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

Special Operating Condition #2: A complete antenna proof-of-performance prepared by Dielectric is included as part of the attachment.

Special Operating Condition #3: A certification is attached from licensed/professional surveyor and mapper Derek S. Miller, P.S.M. 6341, of Miller Surveying, Inc., establishing that the WVIJ directional antenna has been oriented to the proper azimuth.

Special Operating Condition #4: An affidavit from Harold Kneller, SBE certified Professional Broadcast Engineer (#4153), concerning oversight of the WVIJ transmitting antenna installation is included as part of the attachment.

Special Operating Condition #5: An exhibit prepared by William Jeffrey Reynolds, Technical Consultant with du Treil, Lundin & Rackley, Inc., Consulting Engineers, demonstrating that the measured directional antenna pattern complies with the community coverage provisions of section 73.315 is included as part of the attachment. As indicated, the 70 dBu contour based on the Dielectric measured composite directional antenna pattern encompasses 100% of the 2010 Census defined land area within Port Charlotte.

Special Operating Condition #6: The measured horizontally and vertically polarized radiation components do not exceed, at any azimuth, the composite radiation pattern authorized by the construction permit. Furthermore, the principal minima and the associated field strength limit of 0.285 kilowatts across the arc of azimuths from 140 clockwise to 160 degrees true is not exceeded by the measured horizontally or vertically polarized radiation components.

Compliance with Section 73.316(c)(2)(ix)(A): It was determined that the calculated root mean square (RMS) of the measured composite antenna pattern (in relative field) is 0.6000, which is 85.5% percent of the RMS of the authorized composite directional antenna pattern of 0.7015. This complies with the 85% threshold value.

Calculation of Transmitter Power Output (TPO): The 1.41 kW (1.49 dBk) figure is based on consideration of total transmission system attenuation of 0.73 dB (84.57%). Given an antenna power gain of 7.56 (8.78 dB), a TPO of 1.41 kW produces an ERP of 9 kW (9.54 dBk).



Date	7/8/2021
Call Letters	WVIJ
Location	Port Charlotte, FL
Customer	Call Communications
Antenna Type	DCRT4
Frequency	91.7
Drawing #	P22

PATTERN CERTIFICATION

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Tabulation of Composite Pattern

Customer Gain Summary

Elevation Pattern



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PATTERN CERTIFICATION

Method of Measurement

The azimuth pattern for WVIJ, Dielectric Document Sketch #P22, was measured in the following manner.

A single 4.4 to 1 scale model "DCRT4" bay radiator was mounted on a similarly scaled model of the tower according to information provided to Dielectric by the customer; refer to Dielectric Document Sketch #P22. The antenna under test, all parasitics, all known tower appurtenances, and the tower section were rotated through 360 degrees while receiving a signal at the appropriate frequency from a linear cavity-backed source antenna. Both the horizontal and vertical polarization azimuth patterns were measured in an anechoic test range.

The transmit and scale model antennas are mounted at identical elevations and at opposite ends of the chamber. A Hewlett Packard model 8753ET network analyzer was used to supply the RF signal to the source antenna at 4.4 times the fundamental FM frequency and to receive the signal intercepted by the antenna under test. The received signal was converted to a relative level, referenced to the source. This level was stored on a computer acting as the master controller. The computer controls the measurement system via IEEE-488 control bus through a GPIB card.

Statement of Qualifications

Nicole Starrett is an Electrical Engineer here at Dielectric. She received a BS in Electrical Engineering from the University of Maine in 2014. She has 6 year(s) experience in RF antenna engineering and has been employed by Dielectric since 2014.

Signed by: _____

Date: 7/8/2021

A handwritten signature in black ink, appearing to read "Nicole Starrett", is written over a horizontal line. Below the line, the date "7/8/2021" is printed in blue.



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FM AZIMUTH PATTERN APPROVAL

The azimuth pattern of the horizontal polarization and vertical polarization as supplied by Dielectric in the document labeled "Pattern P22", is acknowledged as acceptable. We understand that Dielectric does not guarantee or predict signal strength in any particular location.

(Customer's name)

By:

(Name typed or printed)

Title:

(Signature)



Date
Call Letters
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7/8/2021
WVIJ
Port Charlotte, FL
Call Communications
DCRT4
91.7
P22

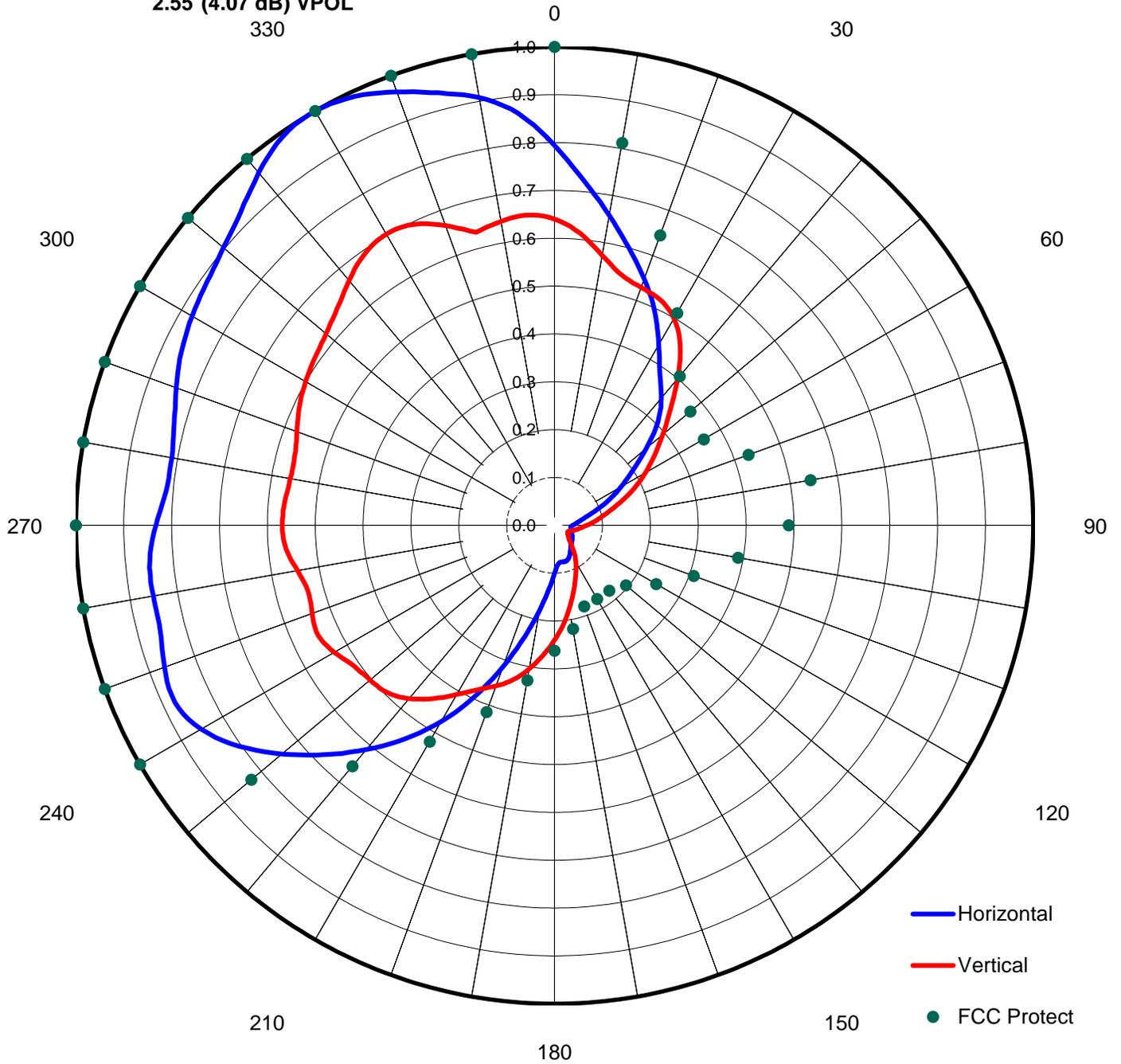
AZIMUTH PATTERN

85.53% Ccov 57.4% Hrms - 42.6% Vrms

Gain **2.85 (4.55 dB) HPOL**
2.55 (4.07 dB) VPOL

Calculated / Measured

Measured





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TABULATION OF HORIZONTAL AZIMUTH PATTERN

Angle	Field	dBk	ERP kW
	0.794	7.539	5.674
10	0.658	5.907	3.897
20	0.548	4.318	2.703
30	0.435	2.312	1.703
40	0.347	0.349	1.084
50	0.250	-2.499	0.563
60	0.160	-6.375	0.230
70	0.092	-11.182	0.076
80	0.054	-15.810	0.026
90	0.038	-18.862	0.013
100	0.035	-19.576	0.011
110	0.038	-18.862	0.013
120	0.042	-17.993	0.016
130	0.047	-17.016	0.020
140	0.054	-15.810	0.026
150	0.065	-14.199	0.038
160	0.077	-12.728	0.053
170	0.078	-12.616	0.055
180	0.100	-10.458	0.090
190	0.181	-5.304	0.295
200	0.314	-0.519	0.887
210	0.473	3.040	2.014
220	0.612	5.277	3.371
230	0.744	6.974	4.982
240	0.852	8.151	6.533
250	0.867	8.303	6.765
260	0.851	8.141	6.518
270	0.833	7.955	6.245
280	0.812	7.734	5.934
290	0.841	8.038	6.366
300	0.874	8.373	6.875
310	0.903	8.656	7.339
320	0.962	9.206	8.329
330	1.000	9.542	9.000
340	0.964	9.224	8.364
350	0.908	8.704	7.420



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7/8/2021
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TABULATION OF VERTICAL AZIMUTH PATTERN

Angle	Field	dBk	ERP kW
	0.640	5.666	3.686
10	0.573	4.706	2.955
20	0.529	4.012	2.519
30	0.499	3.504	2.241
40	0.400	1.584	1.440
50	0.295	-1.061	0.783
60	0.219	-3.649	0.432
70	0.150	-6.936	0.203
80	0.099	-10.545	0.088
90	0.067	-13.936	0.040
100	0.048	-16.833	0.021
110	0.035	-19.576	0.011
120	0.001	-50.458	0.000
130	0.038	-18.862	0.013
140	0.056	-15.494	0.028
150	0.089	-11.470	0.071
160	0.125	-8.519	0.141
170	0.177	-5.498	0.282
180	0.240	-2.853	0.518
190	0.305	-0.772	0.837
200	0.357	0.596	1.147
210	0.408	1.756	1.498
220	0.473	3.040	2.014
230	0.503	3.574	2.277
240	0.531	4.044	2.538
250	0.539	4.174	2.615
260	0.545	4.270	2.673
270	0.569	4.645	2.914
280	0.561	4.522	2.832
290	0.573	4.706	2.955
300	0.601	5.120	3.251
310	0.623	5.432	3.493
320	0.668	6.038	4.016
330	0.703	6.482	4.448
340	0.667	6.025	4.004
350	0.645	5.734	3.744

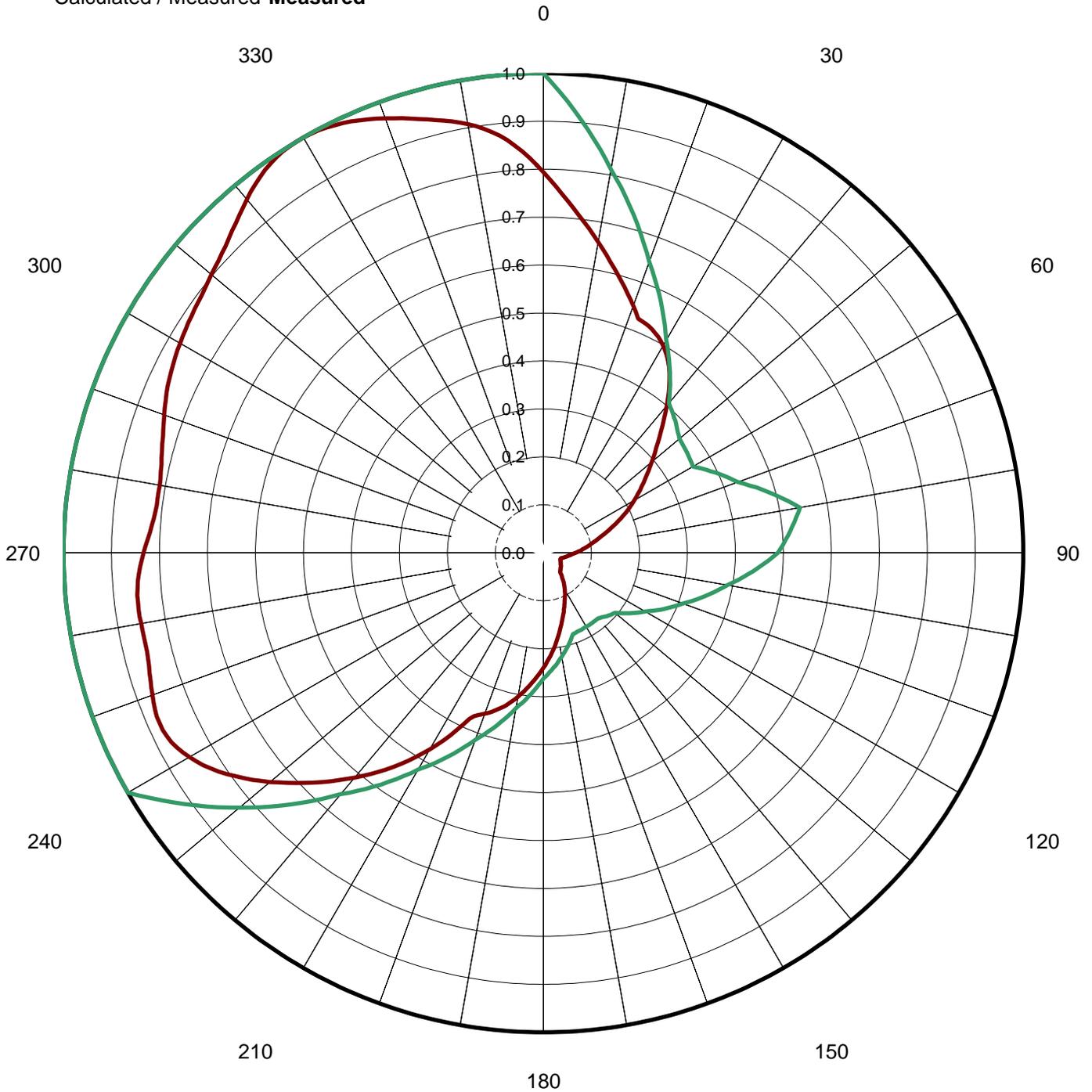


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COMPOSITE AZIMUTH PATTERN

Calculated / Measured **Measured**





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Angle	Field	dBk	Power kW	Input Power
	0.794	7.539	5.674	9.000
10	0.658	5.907	3.897	9.000
20	0.548	4.318	2.703	9.000
30	0.499	3.504	2.241	9.000
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160	0.125	-8.519	0.141	9.000
170	0.177	-5.498	0.282	9.000
180	0.240	-2.853	0.518	9.000
190	0.305	-0.772	0.837	9.000
200	0.357	0.596	1.147	9.000
210	0.473	3.040	2.014	9.000
220	0.612	5.277	3.371	9.000
230	0.744	6.974	4.982	9.000
240	0.852	8.151	6.533	9.000
250	0.867	8.303	6.765	9.000
260	0.851	8.141	6.518	9.000
270	0.833	7.955	6.245	9.000
280	0.812	7.734	5.934	9.000
290	0.841	8.038	6.366	9.000
300	0.874	8.373	6.875	9.000
310	0.903	8.656	7.339	9.000
320	0.962	9.206	8.329	9.000
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350	0.908	8.704	7.420	9.000



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CUSTOMER GAIN SUMMARY

Azimuth Pattern Gain of Horizontal Polarization	2.85 (4.55 dB)
Elevation Pattern Gain Per Polarization	2.65 (4.23 dB)
Peak Gain of Horizontal Polarization	7.56 (8.79 dB)

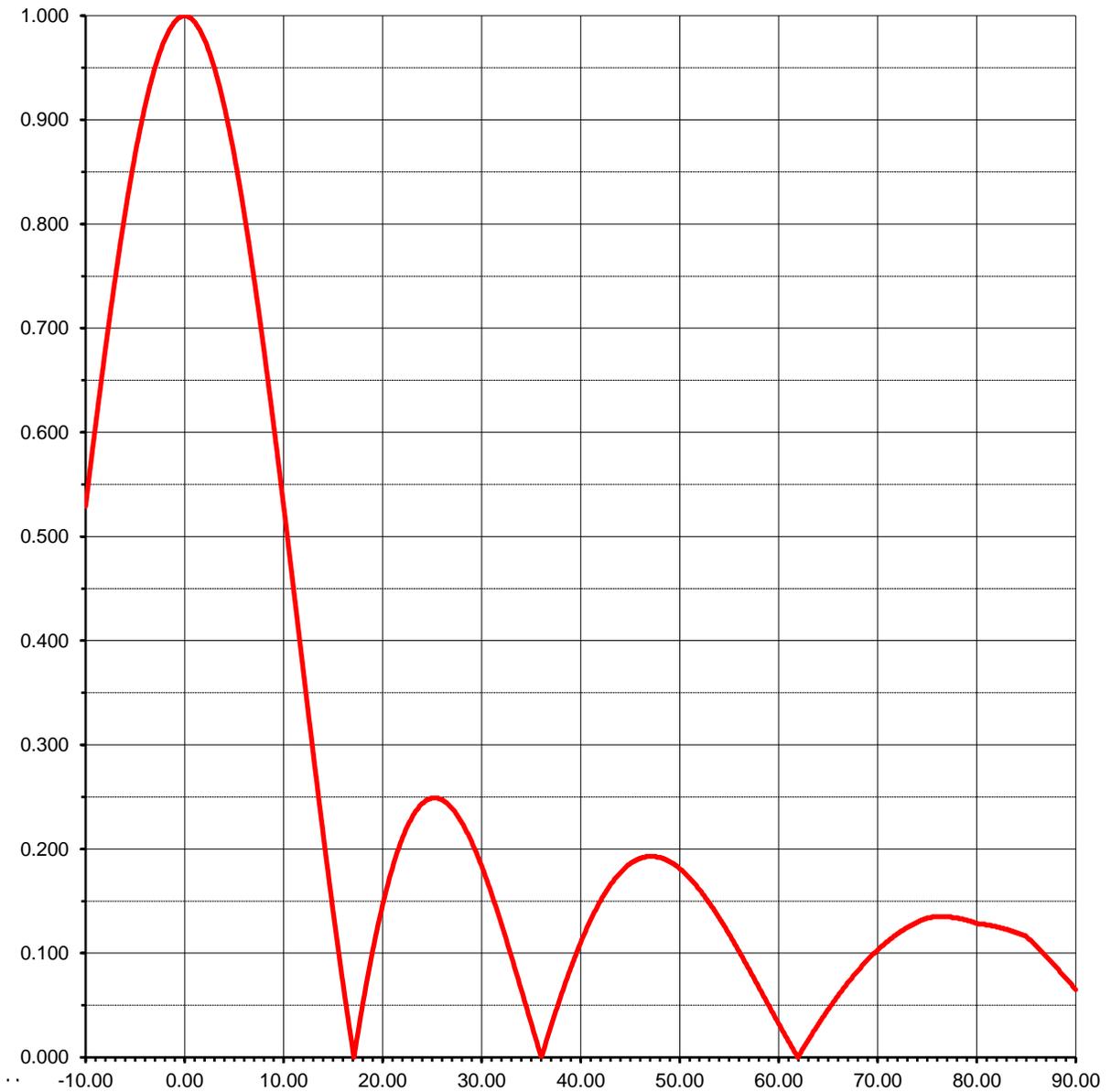


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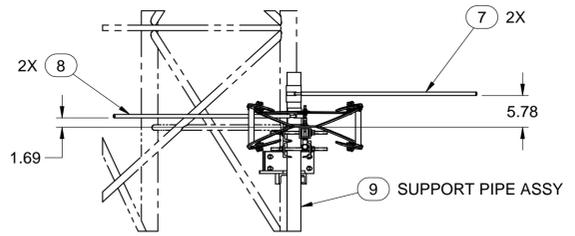
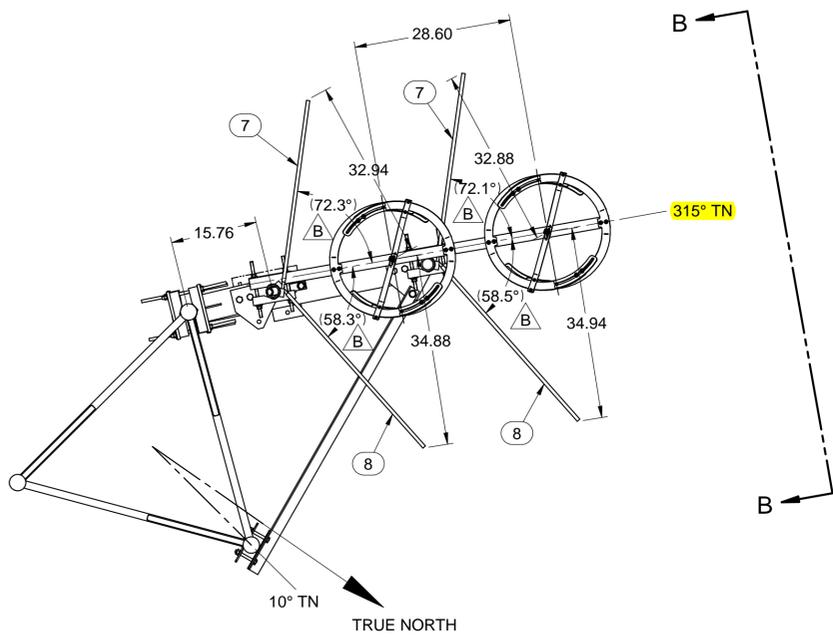
ELEVATION PATTERN

RMS Gain at Main Lobe **2.65 (4.23 dB)**
Per Polarization
Calculated / Measured **Calculated**

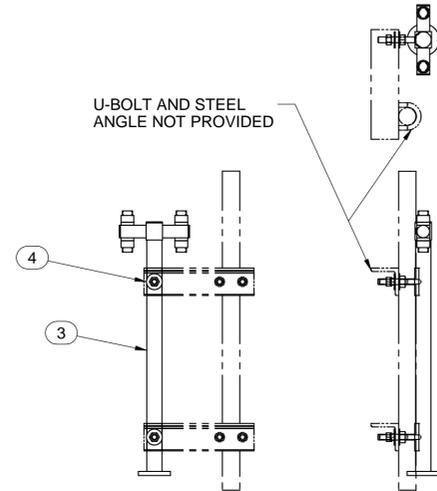
Beam Tilt **0 deg**
Frequency **91.7 MHz**



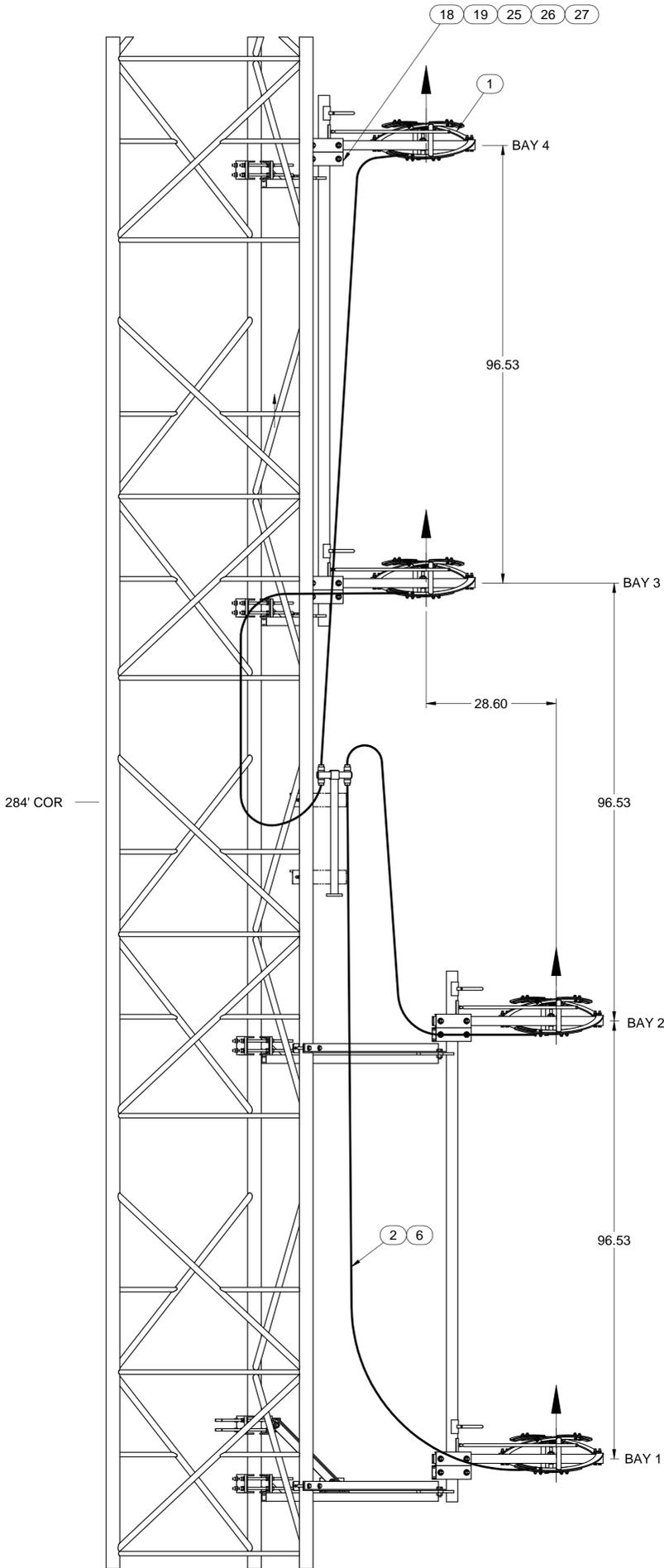
REV.	SHEET	ZONE	REVISION NOTE	ECO	DATE APPR
B			CAD MAINTAINED. CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY. ADDED ITEMS 25, 26 & 27. QTY 20 WAS 4 (ITEMS 18 & 19). ADDED ANGLES FOR ITEMS 7 & 8. ADD BAY DESIGNATIONS TO ITEMS 2-1, 2-2, 2-3 & 2-4.	1390	04/30/21



VIEW B-B
TYP BAYS 1-4
(PARASITICS MOUNTED TOWARDS FRONT OF SUPPORT PIPE ASSY)



RECOMMENDED MOUNTING FOR POWER DIVIDER



DCRT4 FM ANTENNA KIT 400016554			
ITEM NO	PART NO	DESCRIPTION	QTY
1	11000013892	ANTENNA ASSEMBLY DCRT	4
3	300003380	PDR 1-5/8 IN X (4) 7/16 OUT FM 87.5-108 MHz	1
4	R103295	SADDLE KIT, 1 5/8 T/L 5/8 X 7 LG	2
5	11000020198	HIGH TEMP SELF SEALING TAPE 1" WIDE 12 YARD ROLLS	2
6	11000014518	CABLE TIE BLACK 120LBS PA66UV	48
7	400016647	HORIZONTAL PARASITIC 34.1 LONG, DCRT4 KIT WVJ 91.7	4
8	400016648	HORIZONTAL PARASITIC 38.2 LONG, DCRT4 KIT WVJ 91.7	4
9	400016650	SUPPORT PIPE ASSY, ANT DCRT4 WVJ 91.7 SO 1933458	2
10	400016644	KIT, MOUNT SPECIAL TLP STYLE, 40.5 LONG, LEG Ø2.0 TO Ø6.5	2
11	400016646	KIT, MOUNT SPECIAL TLP STYLE, 12.2 LONG, LEG Ø2.0 TO Ø6.5	2
12	300006602	KNEE BRACE KIT TFU-WB ANTENNA	1
13	400016651	STRUT KIT ANTI-ROTATION WVJ 91.7 FIBERGLASS	2
14	R002A80601	ANTI - ROTATION REINFORCEMENT PLATE	2
15	R84381	CLAMPING BAR	2
16	R0025013325	HHCS SS 1/2-13X3.25	4
17	R0425000000	WASHER FLAT 1/2 SAE STD	8
18	R0145013000	NUT HEX 1/2-13 MOLY LUBED	20
19	R0165000000	LOCK WASHER SPLIT 1/2 SS	20
20	R0426300000	WASHER FLAT 5/8 SAE STD	4
21	R0166300000	LOCK WASHER SPLIT 5/8	2
22	R0146311000	NUT HEX 5/8-11 MOLY LUBED	2
23	R0026311200	HHCS SS 5/8-11X2.00	2
24	R0002187011	HOSE CLAMP 2.06-3.00 DIA	32
25	400015645	CUSTOM CLAMP WELDMENT DCRT FM ANTENNA	4
26	R80689	ROD THREADED 1/2-13 SS X 10.25"	8
27	R0155000000	WASHER FLAT 1/2 AN960-C816.063THK	16

FLEXLINE KIT 1/2" FOAM 7/16 MALE CONNECTORS LEONI FLEXLINE 400016667			
ITEM NO	PART NO	DESCRIPTION	QTY
2-1	400016667	FLEXLINE 1/2" FOAM 0° PHASE 6.35 METERS (250.00") LONG (BAY 1)	1
2-2	400016667	FLEXLINE 1/2" FOAM 0° PHASE 6.35 METERS (250.00") LONG (BAY 2)	1
2-3	400016667	FLEXLINE 1/2" FOAM 80° PHASE 5.71 METERS (224.83") LONG (BAY 3)	1
2-4	400016667	FLEXLINE 1/2" FOAM 80° PHASE 5.71 METERS (224.83") LONG (BAY 4)	1

INSTALLATION NOTES:

- ANTENNA SHALL BE INSTALLED PER THIS INSTALLATION DRAWING. ANY DEVIATIONS WILL VOID WARRANTY UNLESS APPROVED BY DIELECTRIC. REFER TO IB MANUAL FOR ANTENNA ASSEMBLY INSTRUCTIONS.
- TO ACHIEVE ANY GIVEN PATTERN STUDY PERFORMED BY DIELECTRIC, THE PROVIDED ANTENNA MUST BE INSTALLED AND ORIENTED AS DEPICTED IN THIS DRAWING. IF ANY SUCH PATTERN WAS NOT PROVIDED, THE ANTENNA ORIENTATION AND POSITION IS AT THE DISCRETION OF THE BUYER TO WHICH THE ANTENNA WAS SOLD. SHOULD ANY QUESTIONS ARISE DURING THE INSTALLATION PROCESS, CONTACT DIELECTRIC AT, 1-800-341-9678, TO ASSIST IN THIS PROCESS; BE PREPARED TO PROVIDE THE PART NUMBER OR DRAWING NUMBER SHOWN BELOW.
- COMPONENTS ARE MATCH MARKED FOR EASE IN ASSEMBLY.
- ITEM NUMBERS DEPICTED ON THIS DRAWING CORRESPOND TO ITEM NUMBERS LISTED ON ENCLOSED BILL OF MATERIAL.
- APPLY THIN LAYER OF DC4 DOW CORNING COMPOUND TO ALL "O"-RING SEALS PRIOR TO ASSEMBLY.
- UNLESS OTHERWISE SPECIFIED, THE TOP BAY MUST NOT BE LOCATED ANY CLOSER THAN 5 ft. BELOW THE TOWER TOP.
- BAY TAP POINT DIRECTION INDICATED BY ARROWS LOCATED IN THE BAY IN ELEVATION VIEW.
- REFER TO DRAWING A88212 FOR ALL HARDWARE TORQUE SPECIFICATIONS.
* FOR FIBERGLASS APPLICATIONS, TORQUE MOUNTING HARDWARE TO 180 in-lbs (15 ft-lbs)
- IT IS IMPORTANT TO MAINTAIN DOCUMENT FOR HISTORICAL PURPOSES. THE MOST CRITICAL PORTION OF INFORMATION TO BE MAINTAINED IS THE PART NUMBER AS SPECIFIED.
- REFER TO DCRT IB MANUAL.
- AFTER ANTENNA HAS BEEN INSTALLED AND TUNED ON THE TOWER, IT IS REQUESTED THAT A COPY OF THE TEST DATA BE FORWARDED TO:

DIELECTRIC
C/O FM ENGINEERING MANAGER
22 TOWER RD. RAYMOND, ME. 04071
PHONE 1 - 800 - 341 - 9678

5 USE SELF SEALING TAPE ON ALL CONNECTIONS ITEM 5

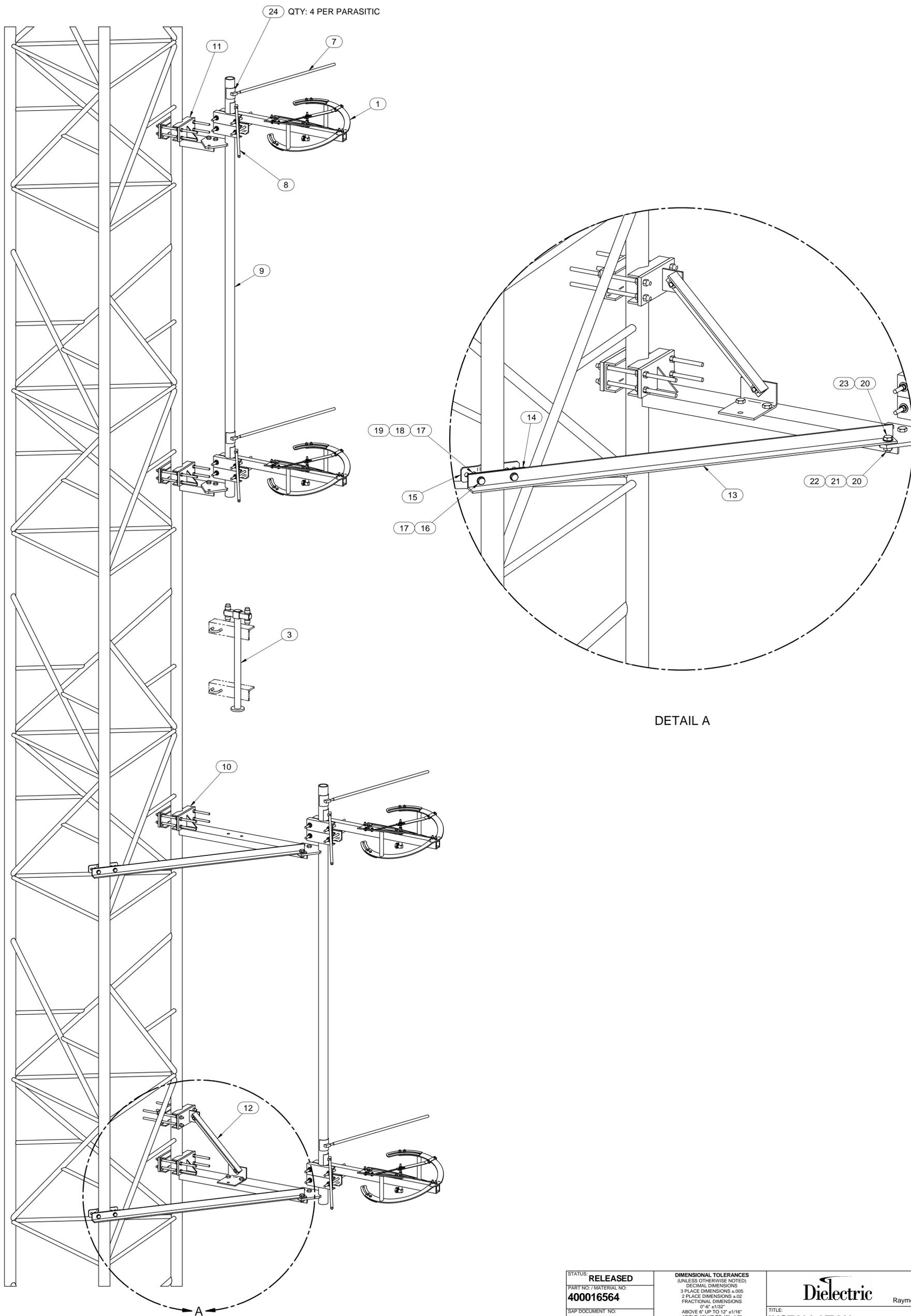
	CALCULATED WEIGHT (LBS)	HEIGHT (FT)
WVJ DCRT4 91.7 FM ANTENNA 1933458 (EXCLUDES MOUNTS)	165	24.13
TOTAL	165	

MEASURED WEIGHT STAMPED ON ANTENNA

STATUS: RELEASED	DIMENSIONAL TOLERANCES (UNLESS OTHERWISE NOTED) DECIMAL DIMENSIONS 3 PLACE DIMENSIONS ±.005 2 PLACE DIMENSIONS ±.02 FRACTIONAL DIMENSIONS 0"Ø ±1/32" ABOVE 6" UP TO 12" ±1/16" ABOVE 12" UP TO 48" ±1/8" ABOVE 48" ±1/4" ANGULAR DIMENSIONS ±1/2" REFERENCE DIMENSIONS ARE NOT FOR MANUFACTURING OR INSPECTION	 Raymond, ME TITLE: INSTALLATION DCRT4 1/2 WAVE 91.7 FM WVJ SALES ORDER 1933458													
PART NO: / MATERIAL NO: 400016564	<table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td>DESIGNED BY</td><td>prov 4/30/2021</td></tr> <tr><td>DETAIL BY</td><td>prov 4/30/2021</td></tr> <tr><td>CHKD. BY</td><td></td></tr> <tr><td>ENG. 1 APPR.</td><td>bits 04/29/21</td></tr> <tr><td>ENG. 2 APPR.</td><td>hstartett 03/28/21</td></tr> <tr><td>MANUFACT.</td><td>mayhan 04/30/21</td></tr> </tbody> </table>		NAME	DATE	DESIGNED BY	prov 4/30/2021	DETAIL BY	prov 4/30/2021	CHKD. BY		ENG. 1 APPR.	bits 04/29/21	ENG. 2 APPR.	hstartett 03/28/21	MANUFACT.
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SAP DOCUMENT NO:	<table border="1"> <thead> <tr> <th>GAGE CODE</th> <th>DRAWING NO.</th> </tr> </thead> <tbody> <tr> <td>D 08441</td> <td>020A21600</td> </tr> </tbody> </table>	GAGE CODE	DRAWING NO.	D 08441	020A21600										
GAGE CODE	DRAWING NO.														
D 08441	020A21600														
MATERIAL:	REFER TO D8110 FOR PLATING REFER TO D17800 FOR PAINT	1:55:14 PM SHEET: 1 OF 2													

COMPANY CONFIDENTIAL. INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS THE PROPERTY OF DIELECTRIC. IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF DIELECTRIC.
UNLESS OTHERWISE SPECIFIED
MANUFACTURING TOLERANCE AND PROCEDURES MUST BE IN ACCORDANCE WITH D78691. ALL ALUMINUM, COPPER, AND BRASS WELDING MUST COMPLY WITH A-62700, SECT. XIV "PRODUCTION WELDING PROCEDURES". STRUCTURAL STEEL WELDING MUST COMPLY WITH "AWS 1.1 CURRENT REVISION".

REV.	SHEET	ZONE	CAD MAINTAINED. CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY.	ECO	DATE APPR
B			REVISION NOTE ADDED ITEMS 25, 26 & 27. QTY 20 WAS 4 (ITEMS 18 & 19). ADDED ANGLES FOR ITEMS 7 & 8. ADD BAY DESIGNATIONS TO ITEMS 2-1, 2-2, 2-3 & 2-4.	1390	04/30/21



DETAIL A

COMPANY CONFIDENTIAL. INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS THE PROPERTY OF DIELECTRIC. IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF DIELECTRIC.

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SAP DOCUMENT NO:	DESIGNED BY: prov 4/30/2021	GAGE CODE: D 08441 DRAWING NO.: 020A21600
MATERIAL:	DETAIL BY: prov 4/30/2021	
FINISH: N/A	CHKD. BY: butts 04/29/21	1:55:14 PM SHEET: 2 OF 2
REFER TO D8110 FOR PLATING REFER TO D17800 FOR PAINT	ENG. 2 APPR: hstartett 03/28/21 MANUFACT. : mayhan 04/30/21	

MILLER SURVEYING, INC.

**Surveying and Mapping Services
Wetland Delineation**

21053 Peachland Boulevard
Port Charlotte, Florida 33954
941-743-8423 – office
941-743-8404 – fax
email: millersurveying@comcast.net



July 12, 2021

Hal Kneller, CPBE
Director of engineering
LECOM Radio
3679 Webber St.
Sarasota, FL. 34232

RE: FM Antenna Orientation (Station WVJ 91.7)

Dear Rob;

As a result of field work on July 8, 2021 and calculations we have determined that the orientation of the above referenced FM Broadcast Station Antenna is bearing 315 degrees (+/- 1 degree) to True North (Grid North).

If you require any additional information regarding this matter please do not hesitate to contact our office.

Sincerely:



Miller Surveying, Inc.
Derek S. Miller, PSM
21053 Peachland Blvd.
Port Charlotte, FL. 33954
LS 6341
LB 7413

Supervision and Qualifications of Harold (Hal) Kneller

July 10, 2021

I, Harold (Hal) Kneller have supervised the WVIJ antenna project since its inception, along with the Consulting Engineer (Robert Robbins) who performed the FCC filings for the Construction Permit.

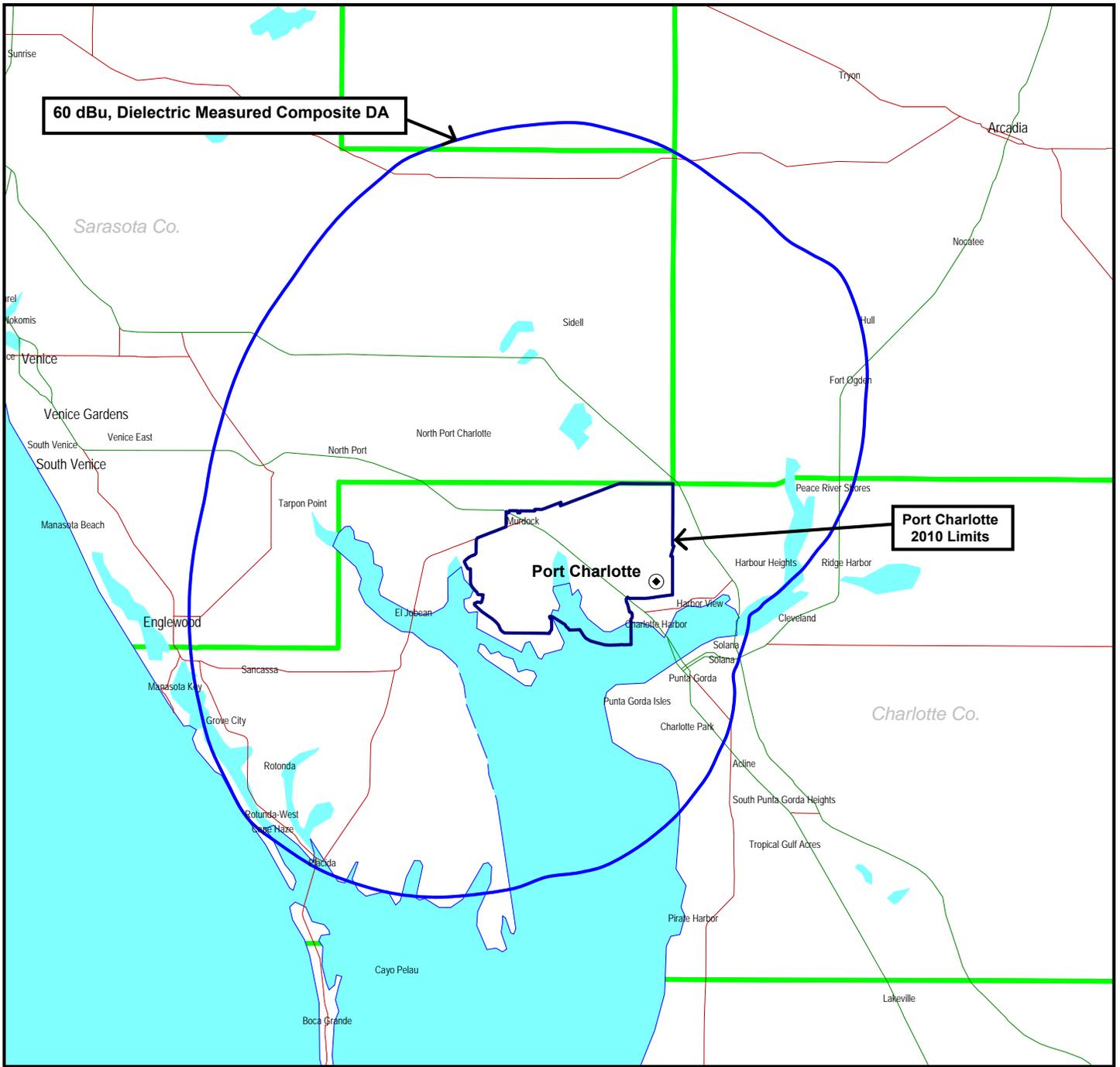
Working with Dielectric Communications, we created an antenna which pattern is compliant with the Commission's requirements as demonstrated in the antenna package elsewhere in this filing. Further, I was on site during the entire antenna installation to verify proper orientation and manufacturer instructions were followed.

My qualifications are a matter of record with the Federal Communications Commission. I have held an FCC First Class Radio/Telephone license since 1966 and currently hold a Lifetime FCC General Radio/Telephone License (PG-2-20804) and General Class Amateur Radio License (KD4RLX). I am also a Certified Professional Broadcast Engineer by the Society of Broadcast Engineers (#4153) and hold additional certifications in Digital Broadcast, AM Directional Antennas and Broadcast Network Engineering. I have practiced broadcast engineering since graduation from Emerson College, Boston, Mass. with a Degree in Mass Communications in 1972.

Prior to relocating to Florida in 1986, I was a broadcast engineer at radio stations in New York, NY, Long Island, NY and in New England. I have built numerous radio stations, both AM and FM and owned eight radio stations in Florida and Arkansas.

A handwritten signature in cursive script that reads "Hal Kneller".

Figure 1



10 0 10 20



Kilometers

COMPLIANCE WITH SECTION 73.515

STATION WVIJ
PORT CHARLOTTE, FLORIDA
CH 219C3 (91.7 MHz) 9 KW (DA) 89.6 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida