



(DRAFT COPY - Not for submission)  
License To Cover for FM Application

File Number: | Submit Date: **03/01/2022** | Lead Call Sign: **WXTY** | Facility ID: **9311** |

FRN: **0026855924**

Service: **Full Power FM** | Purpose: **License To Cover** | Status: **Saved** | Status Date: **02/25/2022** | Filing Status: **Active**

**General Information**

Section	Question	Response
<b>Attachments</b>	Are attachments (other than associated schedules) being filed with this application?	No

**Fees, Waivers, and Exemptions**

Section	Question	Response
<b>Fees</b>	Is the applicant exempt from FCC application Fees?	No
	Indicate reason for fee exemption:	
	Is the applicant exempt from FCC regulatory Fees?	No
<b>Waivers</b>	Does this filing request a waiver of the Commission's rule (s)?	No
	Total number of rule sections involved in this waiver request:	

Application Type	Call Sign	Facility ID	Fee Code	Fee Amount
License To Cover			MLR	\$630.00
			Total	

**Applicant Information**

**Applicant Name, Type, and Contact Information**

Applicant	Address	Phone	Email	Applicant Type
<b>ADAMS RADIO OF TALLAHASSEE, LLC</b> Doing Business As: ADAMS RADIO OF TALLAHASSEE, LLC	PO Box 430 LAKEVILLE, MN 55044 United States	+1 (952) 232-0588	RONSTONE@ADAMSRADIOGROUP.COM	LLC

**Contact Representatives (2)**

Contact Name	Address	Phone	Email	Contact Type
<b>Justin Asher</b> <i>Technical Consultant</i> Asher Broadcast Consulting, LLC	579 Babcock Road Bronson, MI 49028-9347 United States	+1 (202) 875-2986	justinasher@consultant.com	Technical Representative
<b>Gregg P. Skall, Esq.</b> <i>Legal Counsel</i> Telecommunications Law Professionals, PLLC	1025 Connecticut Avenue, NW Suite 1011 Washington, DC 20036 United States	+1 (202) 789-3121	gskall@tlp.law	Legal Representative

**Legal  
Certifications**

Section	Question	Response
<p><b>Obligations</b></p>	<p>Licensee/Permittee certifies that all terms, conditions, and obligations set forth in the underlying construction permit have been fully met.</p>	
	<p>Licensee/Permittee certifies that, apart from changes already reported, no cause or circumstance has arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect.</p>	
<p><b>Character Issues</b></p>	<p>Applicant certifies that neither the applicant nor any party to the application has or had any interest in, or connection with:</p> <ul style="list-style-type: none"> <li>(a) any broadcast application in any proceeding where character issues were left unresolved or were resolved adversely against the applicant or party to the application; or</li> <li>(b) any pending broadcast application in which character issues have been raised.</li> </ul>	
<p><b>Adverse Findings</b></p>	<p>Applicant certifies that, with respect to the applicant and any party to the application, no adverse finding has been made, nor has an adverse final action been taken by any court or administrative body in a civil or criminal proceeding brought under the provisions of any laws related to any of the following: any felony; mass media-related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination.</p>	
<p><b>Program Service Certification</b></p>	<p>Applicant certifies that it is cognizant of and will comply with its obligations as a Commission licensee to present a program service responsive to the issues of public concern facing the station's community of license and service area.</p>	
<p><b>Local Public Notice</b></p>	<p>Applicant certifies that it has or will comply with the public notice requirements of 47 C.F.R. Section 73.3580.</p>	
<p><b>Equal Employment Opportunity (EEO)</b></p>	<p>If the applicant proposes to employ five or more full-time employees, applicant certifies that it is filing simultaneously with this application a Model EEO Program Report.</p>	
<p><b>Operational Compliance</b></p>	<p>Applicant certifies that it is not the licensee or permittee of the commercial primary station being rebroadcast and that neither it nor any parties to the application have any interest in or connection with the commercial primary station being rebroadcast? See 47 C.F.R. Section 74.1232(d).</p>	
	<p>Applicant certifies that the FM translator's (a) 1mV/m coverage contour does not extend beyond the protected contour of the commercial FM primary station to be rebroadcast, or (b) entire 1mV/m coverage contour is contained within the greater of either: (i) the 2 mV/m daytime contour of the commercial AM primary station to be rebroadcast, or (ii) a 25-mile radius centered at the commercial AM primary station's transmitter site.</p>	
<p><b>Support Compliance</b></p>	<p>The applicant, if for a commercial FM translator station with a coverage contour extending beyond the protected contour of the commercial primary station being rebroadcast, certifies that it has not received any support, before or after constructing, directly or indirectly, from the licensee /permittee of the primary station or any person with an interest in or connection with the licensee or permittee of the primary station, except for technical assistance as provided for under 47 C.F.R. Section 74.1232(e).</p>	

<b>Rebroadcast Certification</b>	For applicants proposing translator rebroadcasts that are not the licensee of the primary station, the applicant certifies that written authority has been obtained from the licensee of the station whose programs are to be retransmitted.	
<b>Station Ready for Operation</b>	Applicant certifies that station is now in satisfactory operating condition and ready for regular operation.	
<b>Programming</b>	The applicant certifies that it is the licensee of the primary station or the applicant certifies that written authority has been obtained from the licensee of the primary station whose programming is to be retransmitted.	
<b>Eligibility Certifications</b>	The applicant certifies that it is a:	
	If the applicant is submitting multiple applications, is this application the "priority" application? See Creation of a Low Power Radio Service, Memorandum Opinion and Order on Reconsideration, 15 FCC Rcd 19208, 19239-40, 79-80, paras. 79-80 (2000).	
	The applicant certifies that the Commission has previously granted a broadcast application identified here by file number that found this applicant qualified as a noncommercial educational entity with a qualifying educational program, and that the applicant will use the proposed station to advance a program similar to that the Commission has found qualifying in applicant's previous application.	
	The applicant certifies that its governing documents (e.g., articles of incorporation, by-laws, charter, enabling statute, and/or other pertinent organizational document) permit the applicant to advance an educational program and that there is no provision in any of those documents that would restrict the applicant from advancing an educational program or complying with any Commission rule, policy, or provision of the Communications Act of 1934, as amended.	
<b>Community-Based Criteria</b>	Applicants must certify that they are local to be eligible for LPFM authorizations. An applicant must select "yes" to at least one of the certifications below to be eligible for an LPFM license. The applicant certifies that:	
	it is a nonprofit educational institution or organization that is physically headquartered or has a campus within 16.1 kilometers (10 miles), if applicant is in the top 50 urban markets, or 32.1 kilometers (20 miles) if applicant is outside the top 50 urban markets, of the proposed transmitting antenna site set forth in this application	
	it is a nonprofit educational institution or organization that has 75 percent of its board members residing within 16.1 kilometers (10 miles), if applicant is in the top 50 urban markets, or 32.1 kilometers (20 miles) if applicant is outside the top 50 urban markets, of the proposed transmitting antenna site set forth in this application	
	it is a Tribe and its Tribal Lands, as that term is defined in Section 73.7000 of the Commission's rules, are within the service area of the proposed LPFM station; or it is a Tribal organization owned or controlled by a Tribe (or Tribes) and such Tribe's (or Tribes') Tribal Lands, as that term is defined in Section 73.7000 of the Commission's rules, are within the service area of the proposed LPFM station. See 47 C.F.R. Sections 73.853(c) and 73.7000.	
	it proposes a public safety radio service and has jurisdiction within the service area of the proposed LPFM station.	

<b>Ownership</b>	The applicant certifies that: no party to this application has an attributable interest in any low power FM broadcast station	
	1. no party to this application has an attributable interest in any non-LPFM broadcast station, including any full power AM or FM station, FM translator station, full or low power television station, or any other media subject to the Commission's broadcast ownership restrictions	
	2. no party to this application has pending an application for a low power FM, full power AM or FM station, FM translator station, or full or low power television station;	
	the applicant is in compliance with the Commission's policies relating to media interests of immediate family members; and	
	the applicant is in compliance with the Commission's policies relating to investor insulation and the non-participation of non-party investors and creditors.	
<b>Unlicensed Operation</b>	The applicant certifies, under penalty of perjury, that neither the applicant nor any party to the application has engaged in any manner, individually or with other persons, groups, organizations, or other entities, in the unlicensed operation of any station in violation of Section 301 of the Communications Act of 1934, as amended, 47 U.S.C. Section 301.	
<b>Financial</b>	The applicant certifies that sufficient net liquid assets are on hand or that sufficient funds are available from committed sources to construct and operate the requested facilities for three months without revenue.	
<b>Holding Period Certifications</b>	Applicant certifies that this application does not propose a modification to an authorization that was awarded on the basis of a preference for fair distribution of service pursuant to 47 U.S.C. Section 307(b).	
	Applicant certifies that this application does not propose a modification to an authorized station that received a credit for superior technical parameters under the point system selection method in 47 C.F.R. Section 73.7003.	
<b>Fair Distribution of Service Pursuant to 47 U.S.C. Section 307(b)</b>	Applicant certifies that the proposed station will provide a first rural (reception) service.	
	Applicant certifies that: (a) it is a Tribal Applicant, as defined in 47 C.F.R. Section 73.7000; (b) the facilities proposed in this Application will provide Tribal Coverage, as defined in 47 C.F.R. Section 73.7000, of Tribal Lands occupied by the applicant Tribe(s); (c) the proposed community of license is located on Tribal Lands, as defined in 47 C.F.R. Section 73.7000; and (d) the proposed facility would be the first local Tribal-owned noncommercial educational transmission service at the proposed community of license	
	Applicant certifies that the proposed station will provide a first noncommercial educational aural service to (a) at least 10 percent of the people residing within the station's 60 dBu (1mV/m) service contour and (b) to a minimum of 2,000 people.	
	Applicant certifies that the proposed station will provide a second noncommercial educational aural service, or an aggregated first and second noncommercial educational aural service, to (a) at least 10 percent of the people residing within the station's 60 dBu (1 mV/m) service contour and (b) to a minimum of 2,000 people.	



<b>Auction Authorization</b>	If the application is being submitted to obtain a construction permit for which the applicant was the winning bidder in an auction, then the applicant certifies, pursuant to 47 C.F.R. Section 73.5005(a), that it has attached an exhibit containing the information required by 47 C.F.R. Sections 1.2107(d), 1.2110(i), 1.2112(a) and 1.2112(b), if applicable.	
<b>Tribal Priority – Threshold Qualifications</b>	Is the Applicant applying for an FM allotment set forth in a Public Notice announcing a Tribal Threshold Qualifications window?	
<b>Petition for Rulemaking /Counterproposal to Add New FM Channel to FM Table of Allotments</b>	This application is being submitted concurrently with a Petition for Rulemaking or Counterproposal to Amend the FM Table of Allotments (47 C.F.R. Section 73.202) to add a new FM channel allotment. The petitioner/counter-proponent certifies that, if the FM channel allotment requested is allotted, petitioner/counter- proponent will apply to participate in the auction of the channel allotment requested and specified in this application.	

### Channel and Facility Information

Section	Question	Response
<b>Program Test Authority</b>	The application is operating pursuant to automatic program test authority	No
	The applicant is requesting program test authority	Yes
<b>Proposed Community of License</b>	State	
	City	
	Channel	260
	Frequency	99.9
<b>Facility Type</b>	Facility Type	Commercial
<b>Station Class</b>	Station Class	A

### Antenna Location Data

Section	Question	Response
<b>Antenna Structure Registration</b>	Do you have an FCC Antenna Structure Registration (ASR) Number?	
	ASR Number	1030679
<b>Coordinates (NAD83)</b>	Latitude	30° 29' 17.1" N+
	Longitude	084° 16' 47.1" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	192.1 meters
	Support Structure Height	182.8 meters
	Ground Elevation (AMSL)	65.5 meters
<b>Antenna Data</b>	Height of Radiation Center Above Ground Level	Horizontal:152 meters Vertical:152 meters
	Height of Radiation Center Above Average Terrain	Horizontal:180 meters Vertical:180 meters
	Height of Radiation Center Above Mean Sea Level	Horizontal:218 meters Vertical:218 meters

	Effective Radiated Power	Horizontal:1.9 Vertical: 1.9
	Transmitter Power Output	1.20 kW
<b>Proposed Allotment or Assignment - Coordinates (NAD83)</b>	Latitude	
	Longitude	

**Antenna  
Technical Data**

Section	Question	Response
<b>Antenna Type</b>	Antenna Type	Directional
<b>Primary Station</b>	Call Sign	
	Facility ID	
	Frequency	
	Channel	
	Service Code	
	City	
	State	
<b>Delivery Method</b>	Delivery Method	
	If Other, Please specify:	
<b>Transmitting Antenna</b>	Manufacturer:	ERI
	Model	1192-2CP-DA
	Antenna Number of Sections:	2
	Antenna Spacing Between Sections:	1.0

**Directional Antenna Relative Field Value**

Degree	Value	Degree	Value	Degree	Value	Degree	Value
0	0.5	90	0.408	180	1.0	270	1.0
10	0.5	100	0.514	190	1.0	280	0.914
20	0.458	110	0.647	200	1.0	290	0.726
30	0.39	120	0.815	210	1.0	300	0.647
40	0.324	130	1.0	220	1.0	310	0.577
50	0.27	140	1.0	230	1.0	320	0.5
60	0.263	150	1.0	240	1.0	330	0.5
70	0.27	160	1.0	250	1.0	340	0.5
80	0.324	170	1.0	260	1.0	350	0.5

**Additional Azimuths**

Degree	Value
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**Technical  
Certifications**

Section	Question	Response
<b>Environmental Effect</b>	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See 47 C.F.R. Section 1.1306)	No

<b>Broadcast Facility</b>	Does the proposed facility comply with the applicable engineering standards and assignment requirements of 47 C.F.R. Sections 73.203, 73.207, 73.213, 73.315, 73.509, 73.515, 73.525, and 73.1125?	Yes
<b>Contour Protection</b>	Does the proposed facility request processing pursuant to the contour protection provisions of 47 C.F.R Section 73.215?	Yes
<b>Community of License Change - Section 307(b)</b>	Is the application being submitted to change the facility's community of license? If 'Yes', an exhibit is required containing information demonstrating that the proposed community of license change constitutes a preferential arrangement of assignments under Section 307(b) of the Communications Act of 1934, as amended (47 U.S.C. Section 307(b))	No
<b>Proposal Compliance</b>	Does the applicant certify that the proposal is for a fill-in translator or booster?	
	Does the applicant certify that the proposal complies with Sections 74.1204, 74.1205, 74.1232, 74.1234 and 74.1235?	
<b>Interference</b>	Does the applicant certify that the proposed facility complies with the engineering requirements of 47 CFR Section 73.807 (a) through (g), 73.825 and 73.827(a)?	
<b>Transmitter Power Output</b>	Does the operating transmitter power output produce the authorized effective radiated power?	Yes
<b>Constructed Facility</b>	The facility was constructed as authorized in the underlying construction permit or complies with 47 C.F.R. Section 73.1690?	Yes
<b>Special Operating Conditions</b>	Was the facility constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit?	Yes
<b>Environmental</b>	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See 47 C.F.R. Section 1.1306)	No
<b>Reasonable Site Assurance</b>	Applicant certifies that it has reasonable assurance in good faith that the site or proposed structure at the location of its transmitting antenna will be available to the applicant for the applicant's intended purpose.	
	If reasonable assurance is not based on applicant's ownership of the proposed site or structure, applicant certifies that it has obtained such reasonable assurance by contacting the owner or person possessing control of the site or structure.	
	Name of the person contacted	
	Phone number of the person contacted	
	Person contacted is	

**Modification of License Certifications**

Section	Question	Response
<b>Change in effective radiated power, transmitter output power, replacing a directional or non-directional antenna, deleting contour protection status, or correcting coordinates</b>	Is this application being filed to authorize a change in Effective Radiated Power and/or a change in transmitter output power, and/or replacing a directional or non-directional antenna and/or deleting contour protection status and/or correcting coordinates, as authorized by 47 CFR Sections 73.1690(c)(1) through (c)(11)?	No

<b>Using a formerly licensed main facility as an auxiliary facility.</b>	Is this application being filed pursuant to 47 CFR Section 73.1675(c)(1) to request authorization to use a formerly licensed main facility as an auxiliary facility and/or change the ERP of the proposed auxiliary facility?	
<b>Change the license status</b>	Is this application being filed to authorize a change in license status from commercial to non-commercial or from noncommercial to commercial, pursuant to 47 CFR Section 73.1690(c)(9)?	No
<b>Change in hours of operation</b>	Is this application being filed to authorize a change in hours of operation?	
<b>Replacement of Antenna</b>	Is this application being filed to authorize the replacement of the licensed nondirectional antenna with another nondirectional antenna within 2 meters above or 4 meters below the licensed antenna center of radiation? See 47 CFR Section 73.875(c)(1)?	
<b>Replacement of transmission line</b>	Is this application being filed to authorize a replacement of the transmission line that resulted in a change in licensed transmitter power output, but not the effective radiated power? See 47 CFR Section 73.875(c)(2)?	

## Certification

Section	Question	Response
<b>General Certification Statements</b>	The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by authorization or otherwise, and requests an Authorization in accordance with this application (See Section 304 of the Communications Act of 1934, as amended.).	
	The Applicant certifies that neither the Applicant nor any other party to the application is subject to a denial of Federal benefits pursuant to §5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862, because of a conviction for possession or distribution of a controlled substance. This certification does not apply to applications filed in services exempted under §1.2002(c) of the rules, 47 CFR . See §1.2002(b) of the rules, 47 CFR § 1.2002(b), for the definition of "party to the application" as used in this certification § 1.2002(c). The Applicant certifies that all statements made in this application and in the exhibits, attachments, or documents incorporated by reference are material, are part of this application, and are true, complete, correct, and made in good faith.	
<b>Authorized Party to Sign</b>	<b>FAILURE TO SIGN THIS APPLICATION MAY RESULT IN DISMISSAL OF THE APPLICATION AND FORFEITURE OF ANY FEES PAID</b> Upon grant of this application, the Authorization Holder may be subject to certain construction or coverage requirements. Failure to meet the construction or coverage requirements will result in automatic cancellation of the Authorization. Consult appropriate FCC regulations to determine the construction or coverage requirements that apply to the type of Authorization requested in this application. <b>WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, §1001) AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, §312(a)(1)), AND /OR FORFEITURE (U.S. Code, Title 47, §503).</b>	
	I declare, under penalty of perjury, that I am an authorized representative of the above-named applicant for the Authorization(s) specified above.	

## Attachments

File Name	Uploaded By	Attachment Type	Description	Upload Status
<u>Engineering 1 - Summary of Schedule 302-FM Filing for WXTY(FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion
<u>Engineering 2 - ERI Model 1192-2CP-DA Directional Antenna Proof of Performance for WXTY(FM) &amp; WQTL(FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion
<u>Engineering 3 - Surveyor Certification for WXTY(FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion
<u>Engineering 4 - Engineer Affidavit for WXTY(FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion
<u>Engineering 5 - Measured DA Pattern Community Coverage Showing for WXTY(FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion
<u>Engineering 6 - Spurious Emissions Study for WXTY (FM) &amp; WQTL(FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion
<u>Engineering 7 - FM Combiner and Antenna System Report (TPO Calculation) for WXTY(FM) &amp; WQTL (FM).pdf</u>	Applicant	Technical Certifications		Done with Virus Scan and/or Conversion

**Call letters:** WXTY (FM) .C  
**City of License:** Lafayette, FL  
**Channel:** CH260A (99.9 MHz)  
**File No:** LMS-0000153427  
**Facility ID:** 9311  
**Applicant:** Adams Radio of Tallahassee, LLC

## **Explanation of FM License to Cover Filing and Compliance with Special Operating Conditions or Restrictions**

1. The applicant certifies coordination with other users of the site 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.
2. The applicant acknowledges this is a Section 215 (short-spaced) contour protection grant as requested by the applicant.
3. The applicant certifies it has submitted the results of a complete proof-of-performance establishing the horizontal plane radiation patterns for both the horizontally and vertically polarized radiation components. This proof-of-performance has been accomplished using either the complete full size antenna, or individual bays therefrom, mounted on a supporting structure of identical dimensions and configuration as the proposed structure, including all braces, ladders, conduits, coaxial lines, and other appurtenances; or using a carefully manufactured scale model of the entire antenna, or individual bays therefrom, mounted on an equally scaled model of the proposed supporting structure, including all appurtenances. The applicant has submitted engineering exhibits herein including a description of the antenna testing facilities and equipment employed, including appropriate photographs or sketches and a description of the testing procedures, including scale factor, measurements frequency, and equipment calibration. *(See Attached Antenna Proof of Performance)*
4. The applicant certifies it has submitted a certification executed by a licensed surveyor showing that the FM directional antenna system has been oriented at the azimuth(s) specified in the directional antenna proof of performance. This certification includes a description of the method used by the surveyor to determine the azimuth(s) of the installed directional antenna system and the accuracy of that determination. *(See Attached Surveyor's Certification)*
5. The applicant certifies it has submitted an affidavit that the installation of the directional antenna system was overseen by a qualified engineer. This declaration includes a certification by the engineer that the antenna was installed pursuant to the manufacturer's instructions and lists the qualifications of the certifying engineer. *(See Attached Engineer's Affidavit)*

6. The applicant certifies it has submitted an exhibit demonstrating that the measured directional antenna pattern complies with the appropriate community coverage provisions of 47 C.F.R. Sections 73.315 or 73.515 (See 47 C.F.R. Section 73.316(c)(2)(ix)(B)).

*(See Attached Community Coverage Showing)*

7. The applicant certifies the relative field strength of neither the measured horizontally nor vertically polarized radiation component exceeds at any azimuth the value indicated on the composite radiation pattern authorized by this construction permit. In this instance, a relative field strength of 1.0 on the composite radiation pattern herein authorized corresponds to the following effective radiated power: 1.9 kilowatts. The principal minima and their associated field strength limits as follows: 60 degrees True: 0.13 kilowatts.

*(See Attached Antenna Proof of Performance)*

8. The applicant certifies that before Program Tests commence, sufficient measurements have been made establishing that the operation authorized in this Construction Permit is in compliance with the spurious emissions requirements of 47 C.F.R. Section(s) 73.317(b) through 73.317(d). All measurements have been made with all stations simultaneously utilizing the shared antenna. These measurements have been submitted to the Commission along with the FCC Schedule 302-FM application for license. *(see attached Spurious Emissions Study)*

9. The applicant certifies that upon commencement of program tests in accordance with Section 73.1620, the licensee has ceased use of the auxiliary facility authorized by BXLH-20120126ACK due to a violation of Section 73.1675(a)(1). At this time, the licensee is not seeking modification of the auxiliary facility in accordance with Section 73.1675(c)(1) to bring it into compliance with Section 73.1675(a)(1); therefore, no documentation of compliance with this condition need be submitted with this Application for License. The applicant notes that at a future point, it may still seek modification of the auxiliary facility. Should that occur, the applicant will file the necessary Section 73.1675(a)(1) documentation at that future time.

## ***Measured Antenna Report for Directional Antenna System WQTL and WXTY, Tallahassee, Florida***

09/25/21

### **INTRODUCTION**

Electronics Research, Inc. is submitting this report for a diplexed custom fabricated FM antenna system. The array is designed to meet the FCC requirements and provide years of trouble free performance for WQTL and WXTY.

### **ANTENNA DESCRIPTION**

The ERI model 1192-2CP-DA antenna consists of two 114.175” spaced bays. Each bay uses two driven circular polarized radiating elements attached to two passive panels and the custom hardware needed for pattern shaping. All tests were performed on frequencies of 106.1 and 99.9 megahertz, which are the center of the FM broadcast channel assigned to WQTL and WXTY

Pattern measurements were made on a sixty-acre antenna pattern range that is owned and operated by Electronics Research, Inc. The tests were performed under the direction of Thomas B. Silliman, president of Electronics Research, Inc. Mr. Silliman has the Bachelor of Electrical Engineering and the Master of Electrical Engineering degrees from Cornell University and is a registered professional engineer in the states of Indiana, Maryland and Minnesota.



***Measured Antenna Report for  
Directional Antenna System for  
WQTL and WXTY, Tallahassee, Florida***  
(Continued)

DESCRIPTION OF THE TEST PROCEDURE

The test antenna consisted of one bay level of complete circular polarized system. The elements and brackets that were used in this test are electrically equivalent to those that will be supplied with the antenna.

The power distribution and phase relationship to the antenna elements was adjusted in order to achieve the directional radiation patterns for both horizontal and vertical polarization components.

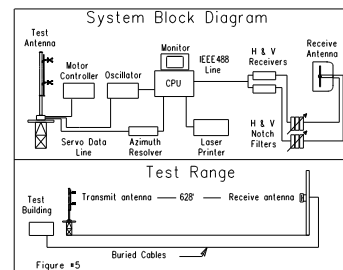
The proof-of-performance was accomplished using a full scale model of the Rohn 90 tower on which the antenna will be installed. The structure was erected vertically on a turntable mounted on a non-metallic building with the antenna centered vertically on the structure, making the center of radiation of the test approximately 30 feet above ground. The turntable is equipped with a motor drive and azimuth indicating mechanism, resolution of this azimuth measuring device is one-tenth of a degree.

The antenna under test was operated in the transmitting mode and fed from a Wavetek Model 3000 signal generator. The frequency of the signal source was set at 99.5 and MHz respectively and was constantly monitored Anritsu Model ML521B measuring receiver.

A broad-band horizontal and vertical dipole located approximately 628 feet from the test system was mounted at the same height above as the center of the antenna under test. The signals received by the dipole system were fed to the test building by way of two buried Heliax cables to an Anritsu Model ML521B measuring receiver.

This data was interfaced to a Hewlett-Packard Laser Jet 4P printer by means of a Pentium computer system. Relative field strength for each station was plotted as a function of azimuth.

The measurements were performed by rotating the test antenna in a counter-clockwise direction and plotting the received signal on polar co-ordinated graph paper in a clockwise direction. Both horizontal and vertical components for each station were recorded separately.



101.1  
by an  
system,  
antenna,  
dipole  
terrain

Figure #5

***Measured Antenna Report for  
Directional Antenna System for  
WQTL and WXTY, Tallahassee, Florida***  
(Continued)

CONCLUSIONS

Each bay uses two driven circular polarized radiating elements attached to two passive panels and the custom hardware needed for pattern shaping. The power distribution and phase relationship was fixed when the antenna was manufactured. Proper maintenance of the elements should be all that is required to maintain the pattern in adjustment.

The 1192-2CP-DA array is to be mounted on the 60.5" face, Rohn 90 tower at a bearing of North 204 degrees East. Blue prints provided with the antenna will show the proper antenna orientation alignment. The antenna alignment procedure should be directed by a licensed surveyor as prescribed by the FCC.

Figure #1 for each station represents the maximum value of either the horizontal or vertical component at any azimuth. The measured horizontal plane relative field patterns, for both the horizontal and vertical polarization components, are shown on Figure #2 attached for each station. The actual measured patterns do not exceed the authorized FCC composite patterns filed for each of the stations at any azimuth. A calculated vertical plane relative field pattern for WQTL is shown on Figure #3 attached. A calculated vertical plane relative field pattern for WXTY is shown on Figure #3A attached. The power in the maximum will reach 6 kilowatts (7.78 dBk) for each station.

***Measured Antenna Report for  
Directional Antenna System for  
WQTL and WXTY, Tallahassee, Florida***  
(Continued)

The RMS of the vertically polarized horizontal plane component does not exceed the RMS of the horizontally polarized horizontal plane component for either of the patterns developed for WQTL or WXTY.

The composite horizontal and vertical maximum relative field pattern obtained from the measured data as shown on Figure #1 for both WQTL & WXTY has an RMS that is greater than 85% of the filed composite patterns.

The clear vertical length of the structure required to support the antenna is 20 feet.

The directional antenna should not be mounted on the top of an antenna tower that includes a top-mounted platform larger than the cross-sectional area of the tower in the horizontal plane. No obstructions other than those that are specified by the blue prints supplied with the antenna are to be mounted within 75 ft. horizontally of the system. The vertical distance to the nearest obstruction should be a minimum of 10 ft. from the directional antenna.

Dan Dowdle  
ERI Range Director

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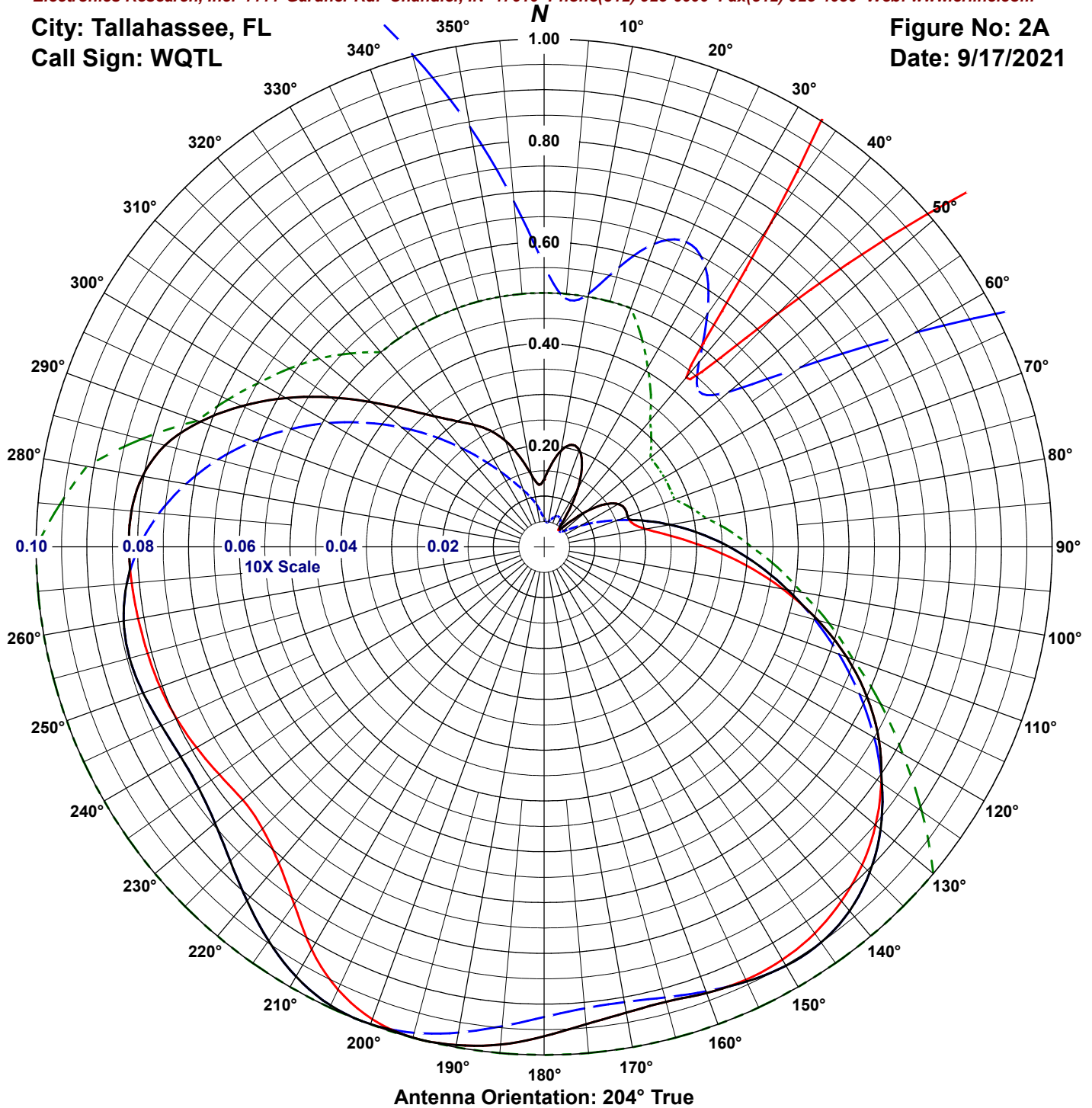
ELECTRONICS RESEARCH, INC.

# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

City: Tallahassee, FL  
Call Sign: WQTL

Figure No: 2A  
Date: 9/17/2021



Frequency: 106.1 MHz  
Antenna Type: 1192-2CP-DA

Antenna Mounting: Custom  
Tower Type: Rohn 90

## HORIZONTAL

RMS: .651  
Maximum: 1 @ 194°  
Minimum: .044 @ 40°

## VERTICAL

RMS: .646  
Maximum: 1 @ 201°  
Minimum: .043 @ 45°

## COMPOSITE

RMS: .667  
Maximum: 1 @ 194°  
Minimum: .046 @ 41°

## FCC ENVELOPE

RMS: .763  
Maximum: 1 @ 130°  
Minimum: .273 @ 50°

# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure# 2A

Date: 9/17/2021

Station: WQTL

Antenna: 1192-2CP-DA

Location: Tallahassee, FL

Antenna Orientation: 204° True

Frequency: 106.1 MHz

Number of Bays: 2

Azimuth	Horizontal			Vertical			Azimuth	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.133	0.106	-9.749	0.055	0.018	-17.359	180°	0.963	5.569	7.458	0.925	5.139	7.109
5°	0.163	0.160	-7.967	0.049	0.014	-18.400	185°	0.983	5.800	7.634	0.947	5.381	7.309
10°	0.192	0.222	-6.535	0.051	0.015	-18.131	190°	0.996	5.949	7.745	0.971	5.653	7.523
15°	0.208	0.259	-5.863	0.057	0.020	-17.098	195°	1.000	5.998	7.780	0.990	5.881	7.695
20°	0.203	0.246	-6.087	0.063	0.024	-16.163	200°	0.989	5.870	7.686	1.000	5.996	7.778
25°	0.176	0.187	-7.285	0.066	0.026	-15.795	205°	0.961	5.539	7.434	0.995	5.945	7.742
30°	0.132	0.105	-9.781	0.064	0.024	-16.161	210°	0.915	5.022	7.009	0.977	5.721	7.575
35°	0.078	0.036	-14.394	0.056	0.019	-17.249	215°	0.858	4.417	6.451	0.946	5.369	7.299
40°	0.044	0.011	-19.448	0.047	0.014	-18.692	220°	0.812	3.961	5.978	0.910	4.964	6.959
45°	0.065	0.025	-16.017	0.043	0.011	-19.503	225°	0.784	3.690	5.670	0.874	4.582	6.611
50°	0.109	0.071	-11.494	0.048	0.014	-18.674	230°	0.774	3.599	5.562	0.846	4.290	6.325
55°	0.146	0.128	-8.927	0.062	0.023	-16.426	235°	0.781	3.659	5.633	0.829	4.128	6.157
60°	0.168	0.170	-7.695	0.084	0.043	-13.686	240°	0.790	3.745	5.734	0.826	4.092	6.120
65°	0.176	0.186	-7.312	0.115	0.080	-10.985	245°	0.799	3.826	5.828	0.831	4.148	6.178
70°	0.175	0.184	-7.343	0.154	0.142	-8.471	250°	0.805	3.885	5.893	0.840	4.234	6.268
75°	0.180	0.194	-7.120	0.200	0.240	-6.198	255°	0.808	3.919	5.931	0.845	4.281	6.316
80°	0.203	0.246	-6.083	0.252	0.380	-4.202	260°	0.811	3.950	5.965	0.840	4.236	6.269
85°	0.250	0.375	-4.262	0.307	0.565	-2.478	265°	0.815	3.983	6.002	0.824	4.078	6.104
90°	0.317	0.605	-2.184	0.365	0.798	-0.982	270°	0.817	4.007	6.029	0.797	3.816	5.816
95°	0.396	0.940	-0.269	0.425	1.082	0.342	275°	0.815	3.987	6.006	0.761	3.472	5.405
100°	0.477	1.367	1.356	0.487	1.423	1.531	280°	0.802	3.862	5.869	0.716	3.072	4.874
105°	0.558	1.866	2.710	0.551	1.823	2.609	285°	0.773	3.581	5.541	0.664	2.648	4.229
110°	0.634	2.410	3.819	0.617	2.287	3.592	290°	0.720	3.114	4.934	0.609	2.224	3.472
115°	0.702	2.956	4.707	0.684	2.811	4.488	295°	0.656	2.582	4.120	0.550	1.813	2.584
120°	0.761	3.475	5.410	0.750	3.377	5.285	300°	0.586	2.063	3.145	0.488	1.428	1.548
125°	0.810	3.938	5.953	0.811	3.950	5.966	305°	0.513	1.581	1.990	0.426	1.087	0.363
130°	0.852	4.351	6.386	0.864	4.484	6.517	310°	0.443	1.177	0.706	0.365	0.801	-0.966
135°	0.885	4.703	6.723	0.906	4.928	6.927	315°	0.382	0.876	-0.575	0.308	0.569	-2.451
140°	0.910	4.973	6.966	0.935	5.248	7.200	320°	0.335	0.675	-1.705	0.255	0.390	-4.095
145°	0.928	5.172	7.137	0.950	5.420	7.340	325°	0.303	0.550	-2.595	0.208	0.261	-5.839
150°	0.938	5.280	7.226	0.952	5.438	7.355	330°	0.278	0.463	-3.345	0.170	0.174	-7.584
155°	0.940	5.302	7.245	0.944	5.344	7.279	335°	0.253	0.384	-4.154	0.141	0.119	-9.233
160°	0.935	5.241	7.194	0.931	5.200	7.160	340°	0.222	0.295	-5.296	0.119	0.084	-10.741
165°	0.927	5.156	7.123	0.918	5.057	7.039	345°	0.183	0.201	-6.975	0.100	0.061	-12.181
170°	0.931	5.198	7.158	0.910	4.967	6.961	350°	0.144	0.125	-9.039	0.084	0.042	-13.738
175°	0.943	5.339	7.275	0.912	4.989	6.980	355°	0.123	0.091	-10.398	0.068	0.028	-15.534

**Horizontal Polarization:**

**Maximum: 2.233 (3.489 dB)**

**Horizontal Plane: 2.233 (3.489 dB)**

**Maximum ERP: 6.000 kW**

**Vertical Polarization:**

**Maximum: 2.233 (3.489 dB)**

**Horizontal Plane: 2.233 (3.489 dB)**

**Maximum ERP: 6.000 kW**

**Total Input Power: 2.687 kW**

**Reference: WQTL2A.FIG**

# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure# 1

Date: 9/17/2021

Station: WQTL

Antenna: 1192-2CP-DA

Location: Tallahassee, FL

Antenna Orientation: 204° True

Frequency: 106.1 MHz

Number of Bays: 2

Azimuth	Envelope			Polarization Maximum	Azimuth	Envelope			Polarization Maximum
	Field	kW	dBk			Field	kW	dBk	
0°	0.133	0.106	-9.749	Horizontal	180°	0.963	5.569	7.458	Horizontal
5°	0.163	0.160	-7.967	Horizontal	185°	0.983	5.800	7.634	Horizontal
10°	0.192	0.222	-6.535	Horizontal	190°	0.996	5.949	7.745	Horizontal
15°	0.208	0.259	-5.863	Horizontal	195°	1.000	5.998	7.780	Horizontal
20°	0.203	0.246	-6.087	Horizontal	200°	1.000	5.996	7.778	Vertical
25°	0.176	0.187	-7.285	Horizontal	205°	0.995	5.945	7.742	Vertical
30°	0.132	0.105	-9.781	Horizontal	210°	0.977	5.721	7.575	Vertical
35°	0.078	0.036	-14.394	Horizontal	215°	0.946	5.369	7.299	Vertical
40°	0.047	0.014	-18.692	Vertical	220°	0.910	4.964	6.959	Vertical
45°	0.065	0.025	-16.017	Horizontal	225°	0.874	4.582	6.611	Vertical
50°	0.109	0.071	-11.494	Horizontal	230°	0.846	4.290	6.325	Vertical
55°	0.146	0.128	-8.927	Horizontal	235°	0.829	4.128	6.157	Vertical
60°	0.168	0.170	-7.695	Horizontal	240°	0.826	4.092	6.120	Vertical
65°	0.176	0.186	-7.312	Horizontal	245°	0.831	4.148	6.178	Vertical
70°	0.175	0.184	-7.343	Horizontal	250°	0.840	4.234	6.268	Vertical
75°	0.200	0.240	-6.198	Vertical	255°	0.845	4.281	6.316	Vertical
80°	0.252	0.380	-4.202	Vertical	260°	0.840	4.236	6.269	Vertical
85°	0.307	0.565	-2.478	Vertical	265°	0.824	4.078	6.104	Vertical
90°	0.365	0.798	-0.982	Vertical	270°	0.817	4.007	6.029	Horizontal
95°	0.425	1.082	0.342	Vertical	275°	0.815	3.987	6.006	Horizontal
100°	0.487	1.423	1.531	Vertical	280°	0.802	3.862	5.869	Horizontal
105°	0.558	1.866	2.710	Horizontal	285°	0.773	3.581	5.541	Horizontal
110°	0.634	2.410	3.819	Horizontal	290°	0.720	3.114	4.934	Horizontal
115°	0.702	2.956	4.707	Horizontal	295°	0.656	2.582	4.120	Horizontal
120°	0.761	3.475	5.410	Horizontal	300°	0.586	2.063	3.145	Horizontal
125°	0.811	3.950	5.966	Vertical	305°	0.513	1.581	1.990	Horizontal
130°	0.864	4.484	6.517	Vertical	310°	0.443	1.177	0.706	Horizontal
135°	0.906	4.928	6.927	Vertical	315°	0.382	0.876	-0.575	Horizontal
140°	0.935	5.248	7.200	Vertical	320°	0.335	0.675	-1.705	Horizontal
145°	0.950	5.420	7.340	Vertical	325°	0.303	0.550	-2.595	Horizontal
150°	0.952	5.438	7.355	Vertical	330°	0.278	0.463	-3.345	Horizontal
155°	0.944	5.344	7.279	Vertical	335°	0.253	0.384	-4.154	Horizontal
160°	0.935	5.241	7.194	Horizontal	340°	0.222	0.295	-5.296	Horizontal
165°	0.927	5.156	7.123	Horizontal	345°	0.183	0.201	-6.975	Horizontal
170°	0.931	5.198	7.158	Horizontal	350°	0.144	0.125	-9.039	Horizontal
175°	0.943	5.339	7.275	Horizontal	355°	0.123	0.091	-10.398	Horizontal

**Horizontal Polarization:**

**Maximum: 2.233 (3.489 dB)**

**Horizontal Plane: 2.233 (3.489 dB)**

**Maximum ERP: 6.000 kW**

**Vertical Polarization:**

**Maximum: 2.233 (3.489 dB)**

**Horizontal Plane: 2.233 (3.489 dB)**

**Maximum ERP: 6.000 kW**

**Total Input Power: 2.687 kW**

**Reference: WQTL2A.FIG**

# ERI<sup>®</sup> Vertical Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure No: 3

Call Sign: WQTL

Location: Tallahassee, FL

Frequency: 106.1 MHz

Antenna: 2 bay 1192-2CP-DA

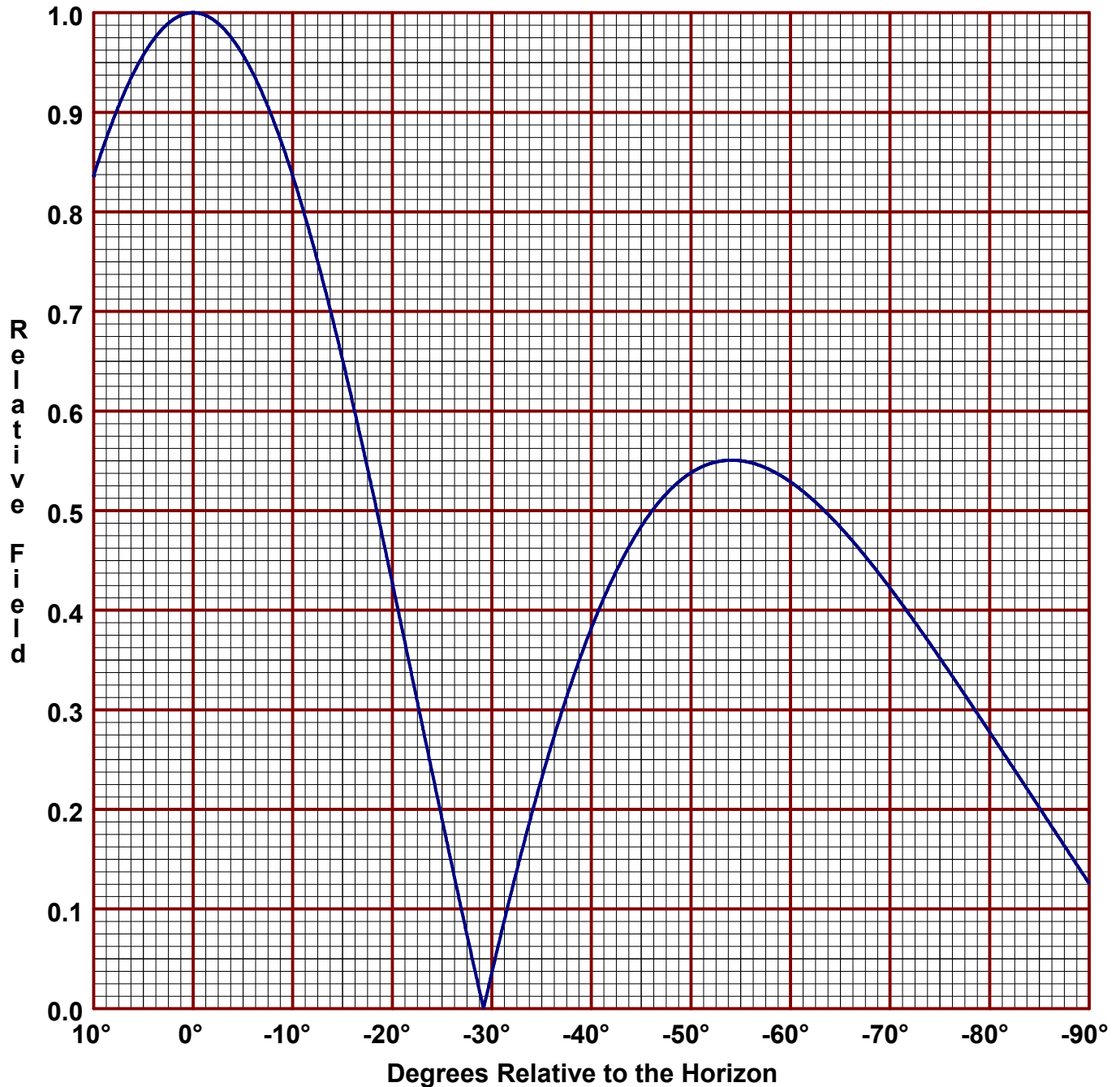
Date: 9/17/2021

H/V Power Ratio: 1

1.03 Wave-length Spacing

0° Beam Tilt

0% First Null Fill



**Horizontal Polarization:**

**Maximum: 2.233 (3.489 dB)**

**Horizontal Plane: 2.233 (3.489 dB)**

**Maximum ERP: 6.000 kW**

**Vertical Polarization:**

**Maximum: 2.233 (3.489 dB)**

**Horizontal Plane: 2.233 (3.489 dB)**

**Maximum ERP: 6.000 kW**

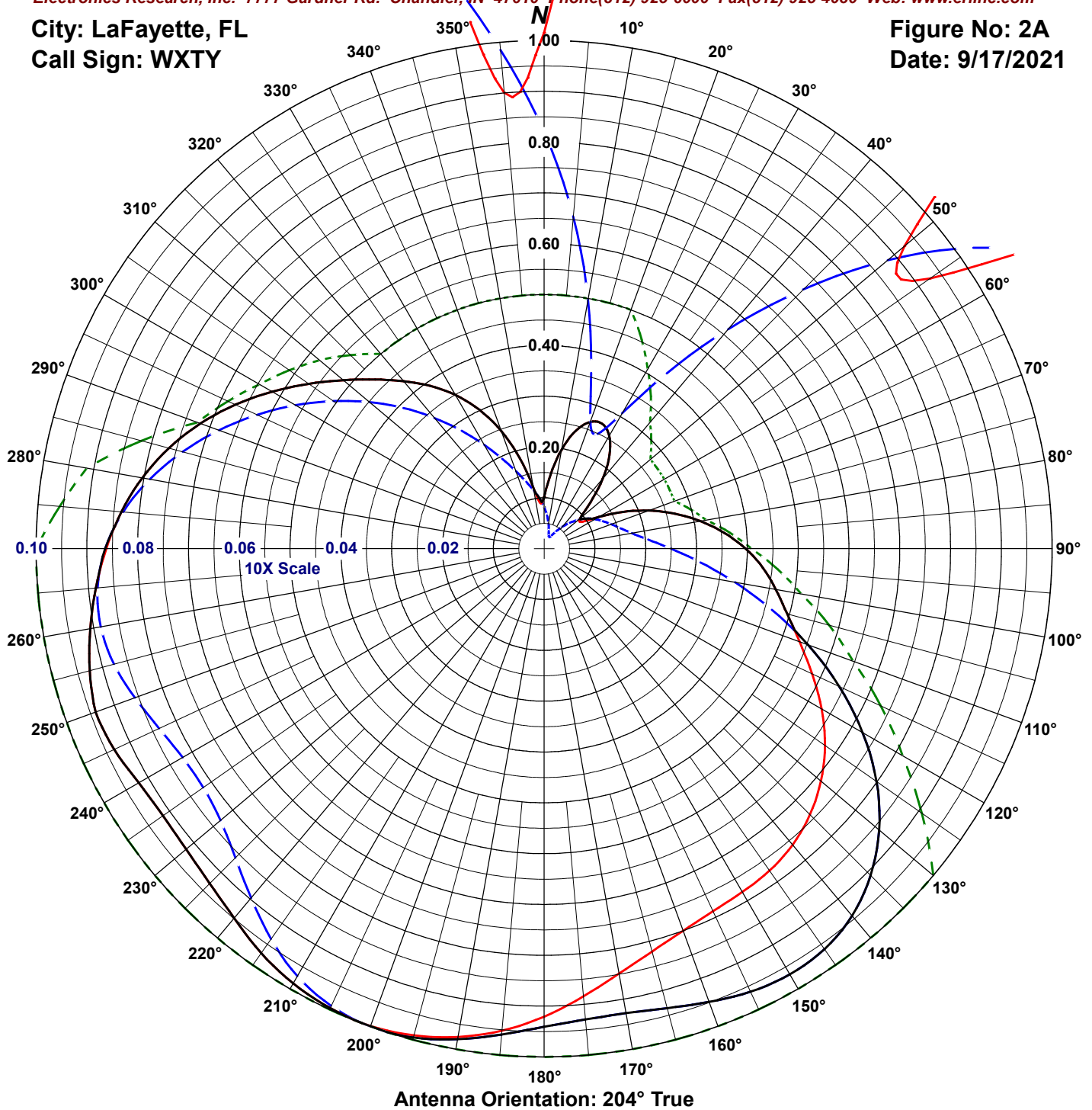


# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

City: LaFayette, FL  
Call Sign: WXTY

Figure No: 2A  
Date: 9/17/2021



Frequency: 99.9 MHz  
Antenna Type: 1192-2CP-DA

Antenna Mounting: Custom  
Tower Type: Rohn 90

## HORIZONTAL

RMS: .656  
Maximum: 1 @ 201°  
Minimum: .088 @ 52°

## VERTICAL

RMS: .656  
Maximum: 1 @ 198°  
Minimum: .025 @ 24°

## COMPOSITE

RMS: .687  
Maximum: 1 @ 198°  
Minimum: .091 @ 51°

## FCC ENVELOPE

RMS: .763  
Maximum: 1 @ 130°  
Minimum: .273 @ 50°



# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure# 2A

Date: 9/17/2021

Station: WXTY

Antenna: 1192-2CP-DA

Location: LaFayette, FL

Antenna Orientation: 204° True

Frequency: 99.9 MHz

Number of Bays: 2

Azimuth	Horizontal			Vertical			Azimuth	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.102	0.062	-12.084	0.082	0.040	-13.947	180°	0.921	5.087	7.065	0.941	5.310	7.251
5°	0.147	0.129	-8.896	0.066	0.026	-15.874	185°	0.952	5.436	7.353	0.960	5.524	7.423
10°	0.198	0.235	-6.290	0.050	0.015	-18.284	190°	0.976	5.710	7.566	0.980	5.764	7.607
15°	0.240	0.345	-4.620	0.036	0.008	-21.144	195°	0.991	5.896	7.706	0.996	5.949	7.745
20°	0.265	0.423	-3.740	0.027	0.004	-23.722	200°	0.999	5.991	7.775	1.000	6.000	7.782
25°	0.271	0.441	-3.559	0.025	0.004	-24.280	205°	0.997	5.967	7.758	0.992	5.907	7.714
30°	0.256	0.394	-4.043	0.031	0.006	-22.455	210°	0.988	5.853	7.673	0.971	5.658	7.527
35°	0.225	0.303	-5.189	0.042	0.011	-19.729	215°	0.971	5.659	7.527	0.937	5.270	7.218
40°	0.180	0.194	-7.131	0.056	0.019	-17.198	220°	0.949	5.402	7.326	0.897	4.830	6.839
45°	0.129	0.099	-10.036	0.072	0.031	-15.061	225°	0.931	5.201	7.161	0.859	4.432	6.466
50°	0.093	0.051	-12.887	0.088	0.047	-13.299	230°	0.920	5.079	7.058	0.832	4.149	6.180
55°	0.093	0.052	-12.878	0.103	0.064	-11.948	235°	0.916	5.033	7.019	0.819	4.026	6.048
60°	0.125	0.093	-10.296	0.116	0.081	-10.942	240°	0.921	5.095	7.071	0.822	4.052	6.076
65°	0.171	0.175	-7.568	0.128	0.098	-10.090	245°	0.934	5.234	7.188	0.836	4.195	6.227
70°	0.219	0.288	-5.402	0.141	0.118	-9.264	250°	0.940	5.296	7.240	0.857	4.409	6.444
75°	0.266	0.426	-3.709	0.155	0.145	-8.389	255°	0.926	5.145	7.114	0.877	4.611	6.638
80°	0.312	0.585	-2.329	0.175	0.185	-7.338	260°	0.907	4.938	6.935	0.886	4.712	6.732
85°	0.356	0.761	-1.187	0.206	0.254	-5.957	265°	0.886	4.706	6.727	0.882	4.669	6.692
90°	0.397	0.943	-0.253	0.250	0.374	-4.271	270°	0.862	4.456	6.489	0.864	4.478	6.511
95°	0.432	1.121	0.497	0.309	0.572	-2.427	275°	0.835	4.184	6.216	0.832	4.151	6.181
100°	0.463	1.287	1.097	0.381	0.873	-0.589	280°	0.803	3.869	5.876	0.788	3.724	5.711
105°	0.495	1.472	1.678	0.464	1.293	1.116	285°	0.764	3.505	5.447	0.737	3.255	5.126
110°	0.535	1.718	2.349	0.553	1.832	2.628	290°	0.720	3.109	4.926	0.681	2.782	4.444
115°	0.582	2.033	3.080	0.641	2.462	3.913	295°	0.670	2.696	4.307	0.623	2.331	3.676
120°	0.631	2.388	3.780	0.724	3.145	4.977	300°	0.618	2.290	3.598	0.565	1.914	2.819
125°	0.675	2.732	4.365	0.799	3.830	5.832	305°	0.565	1.918	2.829	0.506	1.537	1.867
130°	0.711	3.036	4.823	0.861	4.447	6.480	310°	0.516	1.596	2.029	0.448	1.206	0.812
135°	0.740	3.286	5.166	0.909	4.956	6.952	315°	0.471	1.329	1.236	0.392	0.920	-0.363
140°	0.761	3.472	5.406	0.943	5.336	7.272	320°	0.430	1.110	0.452	0.336	0.676	-1.697
145°	0.773	3.589	5.550	0.962	5.553	7.446	325°	0.391	0.917	-0.377	0.283	0.481	-3.181
150°	0.780	3.650	5.623	0.967	5.613	7.492	330°	0.349	0.731	-1.359	0.236	0.334	-4.768
155°	0.787	3.716	5.701	0.962	5.549	7.442	335°	0.301	0.545	-2.634	0.195	0.228	-6.416
160°	0.800	3.840	5.843	0.949	5.403	7.327	340°	0.246	0.363	-4.395	0.162	0.158	-8.025
165°	0.821	4.040	6.064	0.936	5.255	7.206	345°	0.184	0.202	-6.945	0.136	0.111	-9.527
170°	0.849	4.325	6.360	0.928	5.167	7.132	350°	0.123	0.090	-10.436	0.116	0.081	-10.928
175°	0.884	4.693	6.715	0.930	5.188	7.150	355°	0.090	0.049	-13.127	0.099	0.058	-12.348

**Horizontal Polarization:**

**Maximum: 2.212 (3.448 dB)**

**Horizontal Plane: 2.212 (3.448 dB)**

**Maximum ERP: 6.000 kW**

**Vertical Polarization:**

**Maximum: 2.212 (3.448 dB)**

**Horizontal Plane: 2.212 (3.448 dB)**

**Maximum ERP: 6.000 kW**

**Total Input Power: 2.712 kW**

**Reference: WXTY2A.FIG**

# ERI<sup>®</sup> Horizontal Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure# 1

Date: 9/17/2021

Station: WXTY

Antenna: 1192-2CP-DA

Location: LaFayette, FL

Antenna Orientation: 204° True

Frequency: 99.9 MHz

Number of Bays: 2

Azimuth	Envelope			Polarization Maximum	Azimuth	Envelope			Polarization Maximum
	Field	kW	dBk			Field	kW	dBk	
0°	0.102	0.062	-12.084	Horizontal	180°	0.941	5.310	7.251	Vertical
5°	0.147	0.129	-8.896	Horizontal	185°	0.960	5.524	7.423	Vertical
10°	0.198	0.235	-6.290	Horizontal	190°	0.980	5.764	7.607	Vertical
15°	0.240	0.345	-4.620	Horizontal	195°	0.996	5.949	7.745	Vertical
20°	0.265	0.423	-3.740	Horizontal	200°	1.000	6.000	7.782	Vertical
25°	0.271	0.441	-3.559	Horizontal	205°	0.997	5.967	7.758	Horizontal
30°	0.256	0.394	-4.043	Horizontal	210°	0.988	5.853	7.673	Horizontal
35°	0.225	0.303	-5.189	Horizontal	215°	0.971	5.659	7.527	Horizontal
40°	0.180	0.194	-7.131	Horizontal	220°	0.949	5.402	7.326	Horizontal
45°	0.129	0.099	-10.036	Horizontal	225°	0.931	5.201	7.161	Horizontal
50°	0.093	0.051	-12.887	Horizontal	230°	0.920	5.079	7.058	Horizontal
55°	0.103	0.064	-11.948	Vertical	235°	0.916	5.033	7.019	Horizontal
60°	0.125	0.093	-10.296	Horizontal	240°	0.921	5.095	7.071	Horizontal
65°	0.171	0.175	-7.568	Horizontal	245°	0.934	5.234	7.188	Horizontal
70°	0.219	0.288	-5.402	Horizontal	250°	0.940	5.296	7.240	Horizontal
75°	0.266	0.426	-3.709	Horizontal	255°	0.926	5.145	7.114	Horizontal
80°	0.312	0.585	-2.329	Horizontal	260°	0.907	4.938	6.935	Horizontal
85°	0.356	0.761	-1.187	Horizontal	265°	0.886	4.706	6.727	Horizontal
90°	0.397	0.943	-0.253	Horizontal	270°	0.864	4.478	6.511	Vertical
95°	0.432	1.121	0.497	Horizontal	275°	0.835	4.184	6.216	Horizontal
100°	0.463	1.287	1.097	Horizontal	280°	0.803	3.869	5.876	Horizontal
105°	0.495	1.472	1.678	Horizontal	285°	0.764	3.505	5.447	Horizontal
110°	0.553	1.832	2.628	Vertical	290°	0.720	3.109	4.926	Horizontal
115°	0.641	2.462	3.913	Vertical	295°	0.670	2.696	4.307	Horizontal
120°	0.724	3.145	4.977	Vertical	300°	0.618	2.290	3.598	Horizontal
125°	0.799	3.830	5.832	Vertical	305°	0.565	1.918	2.829	Horizontal
130°	0.861	4.447	6.480	Vertical	310°	0.516	1.596	2.029	Horizontal
135°	0.909	4.956	6.952	Vertical	315°	0.471	1.329	1.236	Horizontal
140°	0.943	5.336	7.272	Vertical	320°	0.430	1.110	0.452	Horizontal
145°	0.962	5.553	7.446	Vertical	325°	0.391	0.917	-0.377	Horizontal
150°	0.967	5.613	7.492	Vertical	330°	0.349	0.731	-1.359	Horizontal
155°	0.962	5.549	7.442	Vertical	335°	0.301	0.545	-2.634	Horizontal
160°	0.949	5.403	7.327	Vertical	340°	0.246	0.363	-4.395	Horizontal
165°	0.936	5.255	7.206	Vertical	345°	0.184	0.202	-6.945	Horizontal
170°	0.928	5.167	7.132	Vertical	350°	0.123	0.090	-10.436	Horizontal
175°	0.930	5.188	7.150	Vertical	355°	0.099	0.058	-12.348	Vertical

**Horizontal Polarization:**

**Maximum: 2.212 (3.448 dB)**

**Horizontal Plane: 2.212 (3.448 dB)**

**Maximum ERP: 6.000 kW**

**Vertical Polarization:**

**Maximum: 2.212 (3.448 dB)**

**Horizontal Plane: 2.212 (3.448 dB)**

**Maximum ERP: 6.000 kW**

**Total Input Power: 2.712 kW**

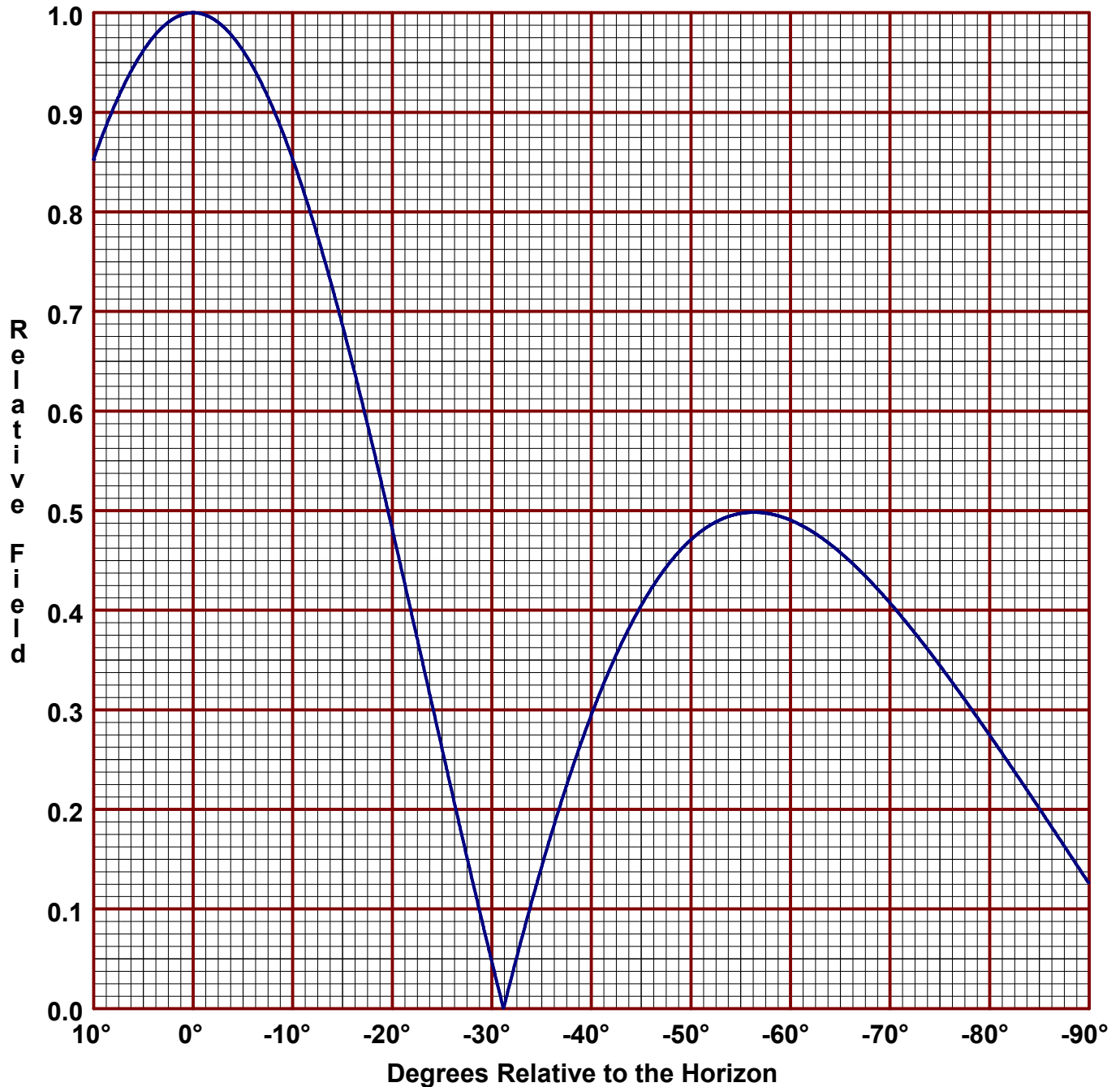
**Reference: WXTY2A.FIG**

# ERI<sup>®</sup> Vertical Plane Relative Field Pattern

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure No: 3  
Call Sign: WXTY  
Location: LaFayette, FL  
Frequency: 99.9 MHz  
Antenna: 2 bay 1192-2CP-DA

Date: 9/17/2021  
H/V Power Ratio: 1  
.97 Wave-length Spacing  
0° Beam Tilt  
0% First Null Fill



**Horizontal Polarization:**  
Maximum: 2.212 (3.448 dB)  
Horizontal Plane: 2.212 (3.448 dB)  
Maximum ERP: 6.000 kW

**Vertical Polarization:**  
Maximum: 2.212 (3.448 dB)  
Horizontal Plane: 2.212 (3.448 dB)  
Maximum ERP: 6.000 kW

***Measured Antenna Report for  
Directional Antenna System for  
WQTL and WXTY, Tallahassee, Florida***  
(Continued)

ANTENNA SPECIFICATIONS

Antenna Type: 1192-2CP-DA  
Frequency: 99.9/106.1 MHz  
Number of Bays: 2

MECHANICAL SPECIFICATIONS

Mounting: Custom  
System length: 17 ft 6 in  
Aperture length required: 20 ft  
Orientation: 204° true  
Input flange to the antenna 3 1/8 inch female

ELECTRICAL SPECIFICATIONS

WQTL

(For directional use)

Maximum Horizontal ERP: 6 kW (7.78 dBk)  
Horizontal Maximum Power Gain: 2.233 (3.489 dB)  
Maximum Vertical ERP: 6 kW (7.78 dBk)  
Vertical Maximum Power Gain: 2.233 (3.489 dB)  
Total Input Power: 2.687 kW (4.293 dBk)

ELECTRICAL SPECIFICATIONS

WXTY

(For directional use)

Maximum Horizontal ERP: 6 kW (7.78 dBk)  
Horizontal Maximum Power Gain: 2.212 (3.448 dB)  
Maximum Vertical ERP: 6 kW (7.78 dBk)  
Vertical Maximum Power Gain: 2.212 (3.448 dB)  
Total Input Power: 2.712 kW (4.33 dBk)

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	ITEM #33 WAS WF08GA, ITEM #34 WAS WL08GA, ITEM #35 WAS NU0813GA.	11/15/2021	K. SCHARP
B	UPDATED TITLE BLOCK	1/14/2022	K. SCHARP
C	REMOVED APPROVED ORIENTATIONS OF 114°, 159°, 249° & 294°	2/24/2022	K. SCHARP

NOTES:

- 1. ALL RED BANDS DESIGNATE SIDE TO BE MOUNTED DOWNWARD.
- 2. TRIM ALL HOSE CLAMP BANDS TO ~1/2" MAX. AFTER FULLY TIGHTENING. (SEE HOSE CLAMP DETAIL, SHEET 4)
- 3. ALL FEED HARNESS CONNECTIONS ARE LABELED TO ENSURE PROPER INSTALLATION.
- 4. ALL FEED HARNESS CONNECTIONS REQUIRE AN O-RING AND GREASE.
- 5. OVERALL SYSTEM LENGTH APPROXIMATELY 17.5'.
- 6. EVENLY SPACE HOSE CLAMPS BETWEEN PANELS AND/OR FRAMES (VERTICALLY AND HORIZONTALLY).
- 7. ALL POWER DIVIDER ELBOWS MAY BE SWIVELED TO BETTER COORDINATE AND MOUNT CABLES.
- 8. ASSEMBLE ANTENNA SYSTEM BY MATING CORRESPONDING NUMBERS.

GALVANIZED HARDWARE NOTES:

- 1. IT IS ERI'S INTENTION THAT A NUT LOCKING DEVICE BE PROVIDED ON ALL BOLTED CONNECTIONS, UNLESS OTHERWISE SPECIFIED.
- 2. FLAT WASHERS ARE NOT REQUIRED ON CONNECTIONS WITH STANDARD HOLES, BUT MAY BE PROVIDED AND INSTALLED TO ACCOUNT FOR BOLT ASSEMBLY TOLERANCES TO PREVENT NUT JAMMING IN CASE THE BOLT SHANK PROTRUDES OUTSIDE OF THE CONNECTED PLIES. ASTM F436 FLAT WASHERS ARE REQUIRED FOR ALL CONNECTIONS WITH OVERSIZED OR SHORT-SLOTTED HOLES. STRUCTURAL STEEL GRADE PLATE WASHERS OR A CONTINUOUS BAR NOT LESS THAN 5/16" THICK SHALL BE USED FOR ALL CONNECTIONS WITH LONG-SLOTTED HOLES.
- 3. UNLESS OTHERWISE NOTED, ALL BOLTED CONNECTIONS SHALL INITIALLY BE BROUGHT TO A SNUG-TIGHT CONDITION WHERE JOINT TIGHTNESS IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE PLIES INTO FIRM CONTACT. A SYSTEMATIC APPROACH SHALL BE USED TO BRING THE JOINT INTO A SNUG-TIGHT CONDITION STARTING WITH THE MOST RIGID PART OF THE JOINT AND PROCEEDING TOWARD THE FREE EDGES.
- 4. FOR FINAL TIGHTENING, ERI RECOMMENDS AN ADDITIONAL 1/3 TURN BE APPLIED TO ALL BOLTS UP TO Ø3/4" OR TORQUED AN ADDITIONAL 150 FT-LBS FOR BOLTS OVER Ø3/4", UNLESS OTHERWISE NOTED. FINAL TIGHTENING OF ALL BOLTS SHOULD BE COMPLETED AFTER FINAL CONSTRUCTION OF THE STRUCTURE/ASSEMBLY. PLEASE NOTE, SPECIAL ATTENTION SHALL BE GIVEN TO TIGHTENING OF 1/2"-DIAMETER A325 BOLTS, U-BOLTS, AND THREADED RODS AS TO PREVENT STRIPPING THE THREADS FROM OVER-TIGHTENING.

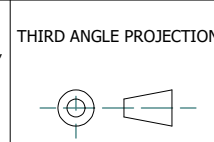
42	4	OR2328S	O-RING 1.850" ID X .210" THICK
41	9	ACX150-20	1-5/8" STD INNER CONN 50 OHM
40	3	31670-3	ROUND MEMBER ADAPTOR 3" - 4" OD
39	3	31670-2	ROUND MEMBER ADAPTOR 2" - 3" OD
38	3	42396A-5	HANGER KIT 7/8" HELIAX EW85 EW90 STNDRD
37	3	31768A	ANGLE ADAPTER 1/2" TO 4"
36	3	HWK0001	HELIAX HARDWARE KIT - 3/8-16 X 1" (KIT OF 10)
35	24	NU0813	1/2 - 13 SS HEX NUT, WAX COATED
34	24	WL08SS	1/2 in, SS LOCK WASHER
33	24	WF08SS	1/2 in, SS FLAT WASHER
32	8	SC0813H0375	1/2-13 UNC x 3.75 in, SST HEX BOLT
31	16	SC0813H0225	1/2-13 UNC x 2.25 in, SST HEX BOLT
30	8	NU0616	3/8 - 16 SS HEX NUT, WAX COATED
29	8	WL06SS	3/8 in, SS LOCK WASHER
28	8	WF06SS	3/8 in, SS FLAT WASHER
27	8	SC0616H0125	3/8-16 UNC x 1.25 in, SST HEX BOLT
26	16	WL05SS	5/16 in, SS LOCK WASHER
25	16	SC0518H0100	5/16-18 UNC x 1 in, SST HEX BOLT
24	16	HC0048	#48 HOSE CLAMP, SS (FITS 2-1/2" TO 3-1/2")
23	96	HC0044	#44 HOSE CLAMP, SS (FITS 2-1/4" TO 3-1/4")
22	42	HC0036	#36 HOSE CLAMP, SS (FITS 1-3/4" TO 2-3/4")
21	30	HC0028	#28 HOSE CLAMP, SS (FITS 1-1/4" TO 2-1/4")
20	16	UB1011-0487GA2	5/8-11 x 4-7/8" C-C GALV. U-BOLT W/NUT LW&FW
19	38	UB1011-0387GA2	5/8-11 X 3-7/8" C-C GALV. U-BOLT W/NUT LW&FW
18	18	RLA100-21	1-5/8" HARDWARE KIT
17	4	39083-RP2	MAIN REFLECTING PANEL
16	6	39083-RP1	MAIN REFLECTING PANEL
15	4	39083-FW1	FRAME WELDMENT
14	3	39083-BT7	POWER DIVIDER BRACKET
13	8	39083-BT6	1190 HYBRID SUPPORT ANGLE
12	8	39083-BT5	CUSTOM 1190 HYBRID SUPPORT BRACKET
11	8	39083-BT4	SECONDARY ANTI-ROTATION BRACKET
10	4	39083-BT3	MAIN ANTI-ROTATION BRACKET
9	4	39083-BT2	H-FRAME BRACKET
8	4	39083-BT1	BRACKET WELDMENT
7	4	HY0238	90° HYBRID ASSEMBLY WITH CAP & PLUG
6	1	PD1241	2 STAGE POWER DIVIDER ASSEMBLY
5	4	ACX150-10SE-5	1-5/8" ELBOW 90° SQUARE TO ROUND FLANGE
4	1	CL1031	1-5/8" 6ft MATCHING SECTION RFF/RFF
3	8	H5MPB-110E	1-5/8" EIA 50 OHM CONNECTOR TO 7/8" CABLE
2	64 ft	H5-50	7/8" 50 OHM HELIAX CABLE, (4) 16 ft LONG SECTIONS
1	4	AE1190	1190 ELEMENT
ITEM	QTY	PART NUMBER	DESCRIPTION

STAINLESS STEEL HARDWARE NOTES:

- 1. TORQUE 5/16" = 18 LBS-FT
- 2. TORQUE 3/8" = 28 LBS-FT
- 3. TORQUE 1/2" = 50-55 LBS-FT



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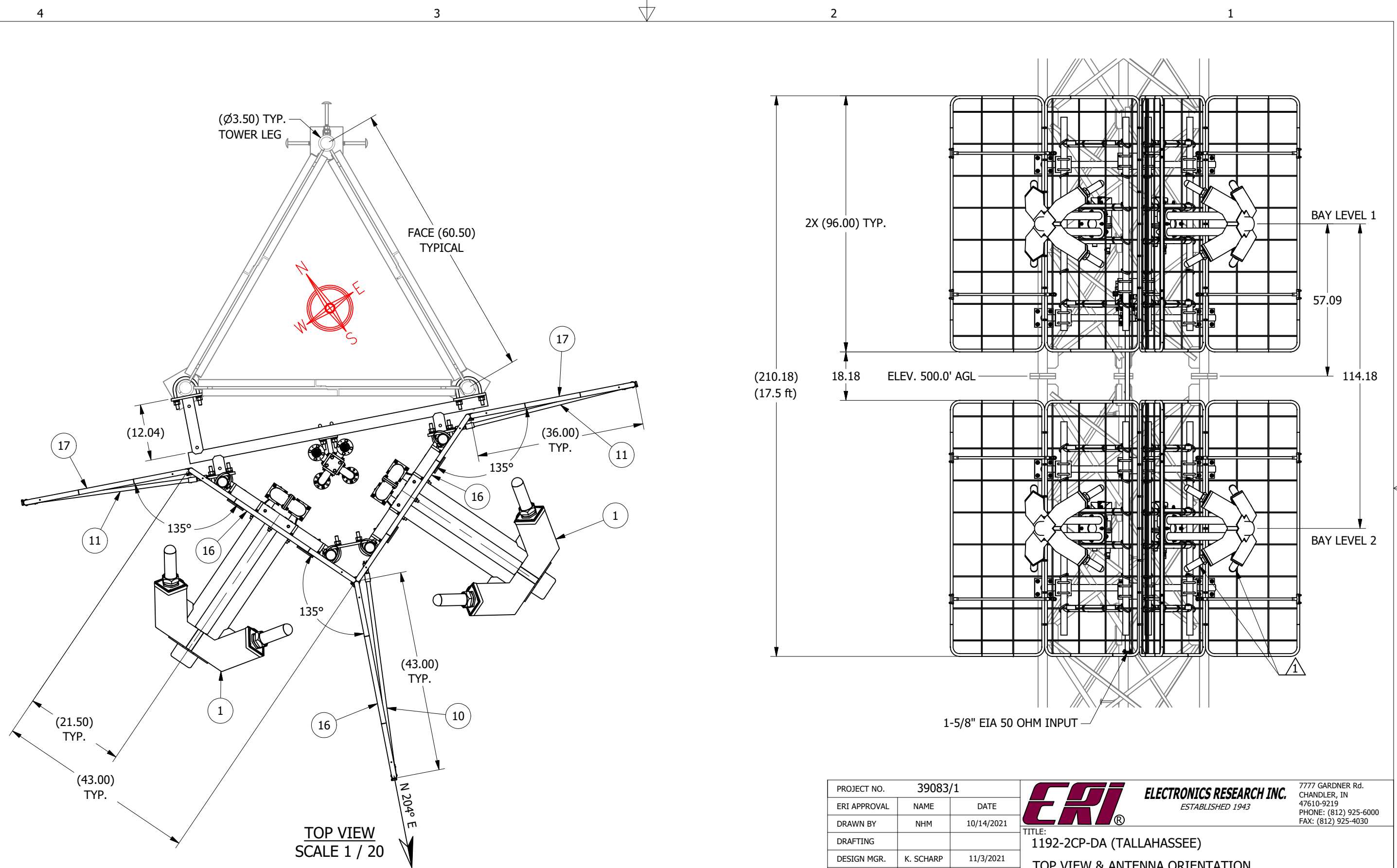
MATERIAL FINISH

**TOLERANCES**  
 OVERALL-NOT CUMULATIVE  
 UNLESS OTHERWISE SPECIFIED,  
 ALL DIMENSIONS ARE IN INCHES  
 AND APPLICABLE AT 20°C (68°F)  
 INTERPRET DIMENSIONS AND TOLERANCES  
 PER ASME Y14.5M-1994

1 PLACE DECIMAL ± .1  
 2 PLACE DECIMAL ± .03  
 3 PLACE DECIMAL ± .010  
 ANGULAR ± .5°  
 FRACTIONAL ± 1/16"

PROJECT NO.	39083/1	
ERI APPROVAL	NAME	DATE
DRAWN BY	NHM	10/14/2021
DRAFTING		
DESIGN MGR.	K. SCHARP	11/3/2021
ENG.		
MANUF.		
EXT. APPROVAL	DD	11/4/2021
SUPERSEDES PART NO.		
FILE NAME:	IA39083-1.idw	

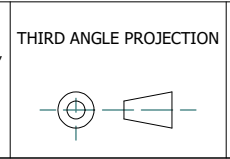
	7777 GARDNER Rd. CHANDLER, IN 47610-9219 PHONE: (812) 925-6000 FAX: (812) 925-4030	
	ESTABLISHED 1943	
TITLE:		
1192-2CP-DA (TALLAHASSEE)		
BILL OF MATERIALS & NOTES		
WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz		
SIZE	CAGE CODE	DWG NO.
B	OZNS1	IA39083-1
SCALE:	AS NOTED	WEIGHT:
		2043 lbmass
SHEET:		1 OF 6



TOP VIEW  
SCALE 1 / 20



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MATERIAL

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3 PLACE DECIMAL ± .010  
ANGULAR ± .5°  
FRACTIONAL ± 1/16"

INTERPRET DIMENSIONS AND TOLERANCES  
PER ASME Y14.5M-1994

PROJECT NO.	39083/1	
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DRAFTING		
DESIGN MGR.	K. SCHARP	11/3/2021
ENG.		
MANUF.		
EXT. APPROVAL	DD	11/4/2021
SUPERSEDES PART NO.		
FILE NAME:	IA39083-1.idw	

<b>ERI</b>		<b>ELECTRONICS RESEARCH INC.</b> ESTABLISHED 1943		7777 GARDNER Rd. CHANDLER, IN 47610-9219 PHONE: (812) 925-6000 FAX: (812) 925-4030
TITLE: 1192-2CP-DA (TALLAHASSEE) TOP VIEW & ANTENNA ORIENTATION WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz				
SIZE	CAGE CODE	DWG NO.	REV.	
B	OZNS1	IA39083-1	C	
SCALE:	AS NOTED	WEIGHT:	2043 lbmass	SHEET: 2 OF 6

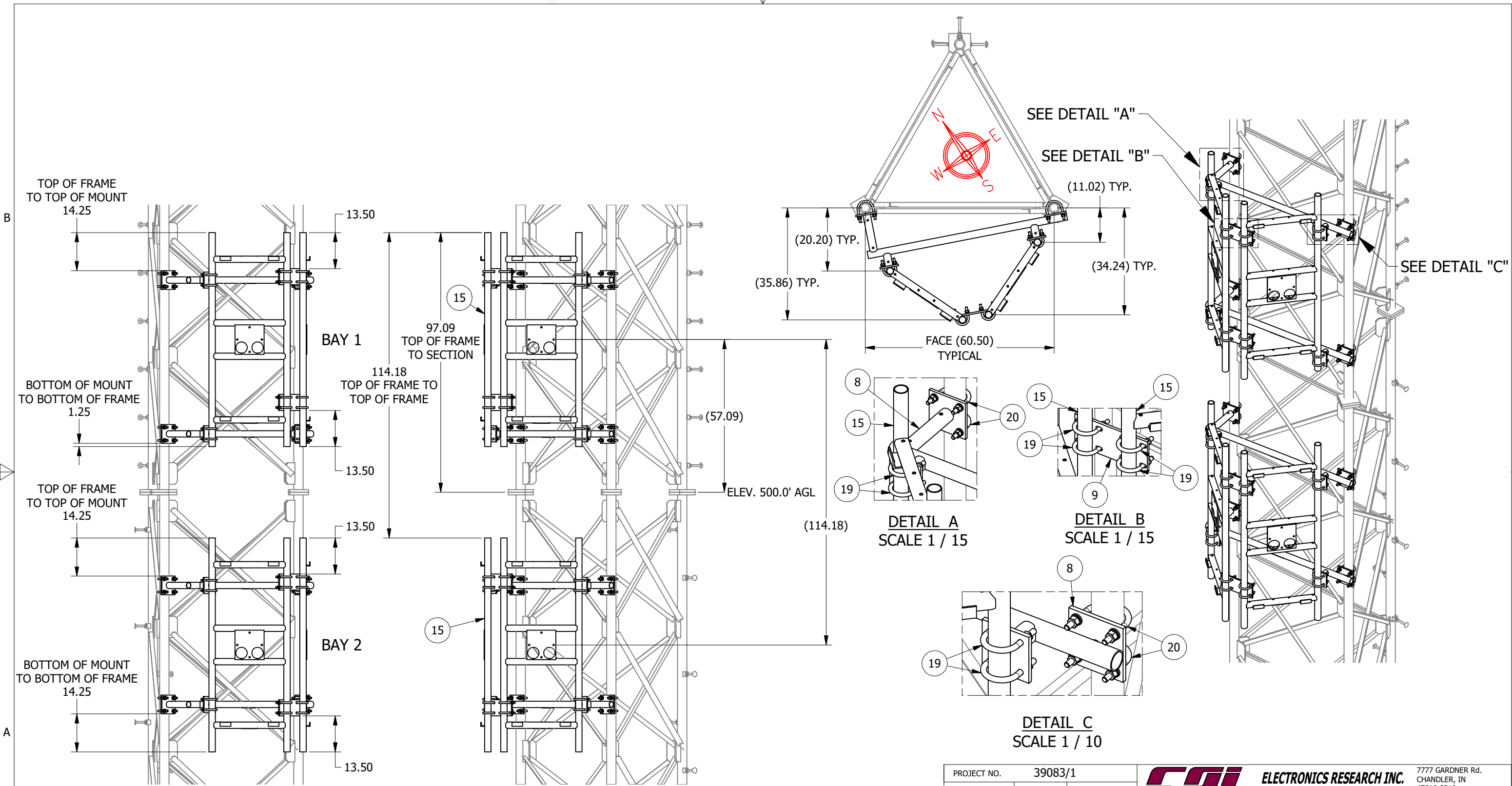


4

3

2

1



**VIEW A**  
2X TYPICAL FACE  
SCALE 1 / 35

**VIEW B**  
2X TYPICAL  
SCALE 1 / 35

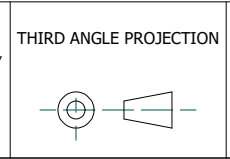
**DETAIL A**  
SCALE 1 / 15

**DETAIL B**  
SCALE 1 / 15

**DETAIL C**  
SCALE 1 / 10



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MATERIAL  
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FRACTIONAL ± 1/16"

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DRAFTING		
DESIGN MGR.	K. SCHARP	11/3/2021
ENG.		
MANUF.		
EXT. APPROVAL	DD	11/4/2021
SUPERSEDES PART NO.		
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<b>ERI</b> ELECTRONICS RESEARCH INC. ESTABLISHED 1943		7777 GARDNER Rd. CHANDLER, IN 47610-9219 PHONE: (812) 925-6000 FAX: (812) 925-4030	
TITLE: 1192-2CP-DA (TALLAHASSEE)			
SUPPORTING STRUCTURE			
WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz			
SIZE	CAGE CODE	DWG NO.	REV.
B	OZNS1	IA39083-1	C
SCALE:	AS NOTED	WEIGHT:	SHEET:
		2043 lbmass	3 OF 6

3

2

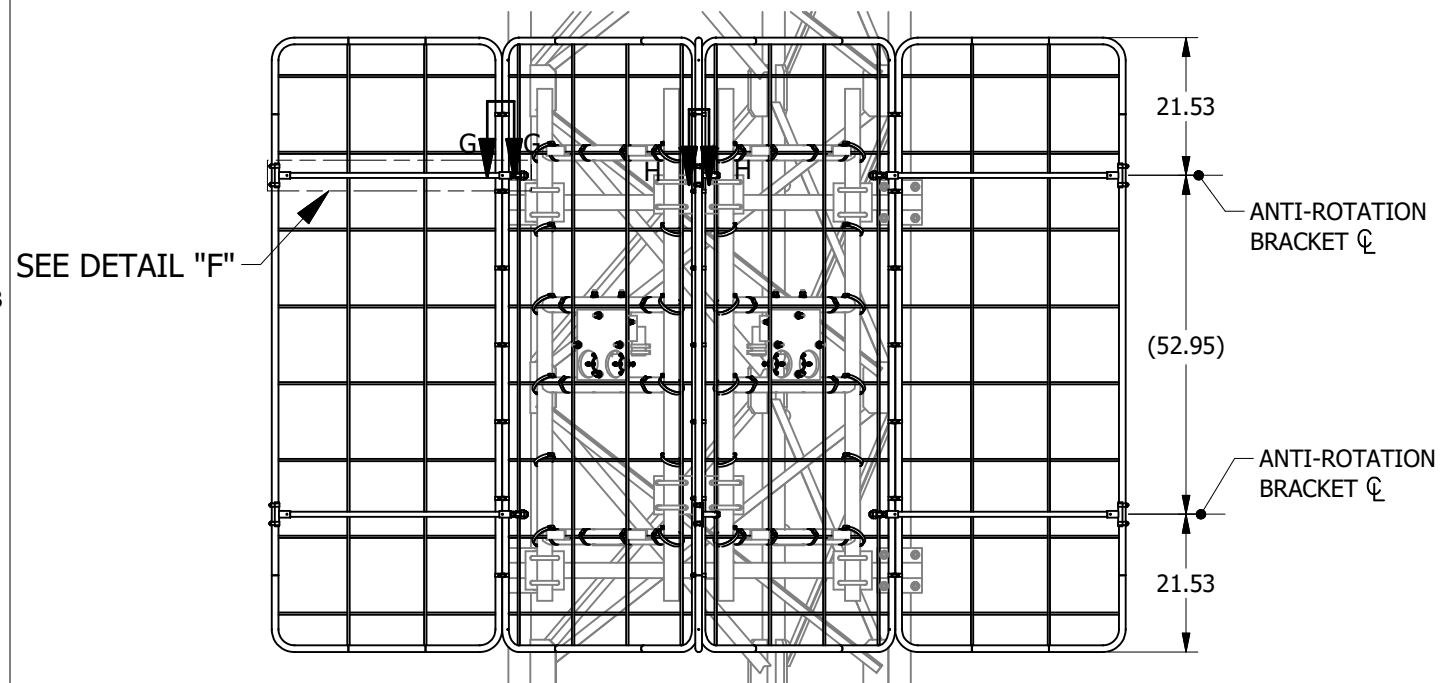
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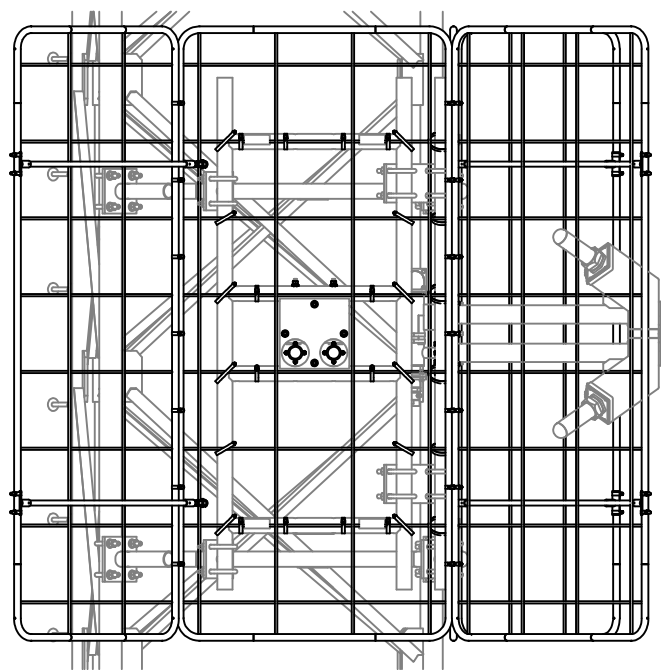
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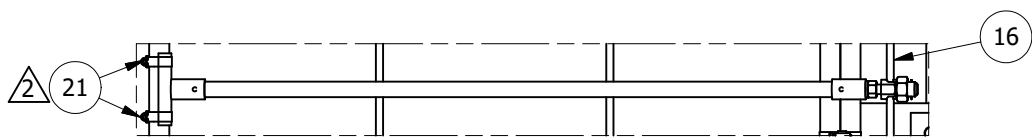
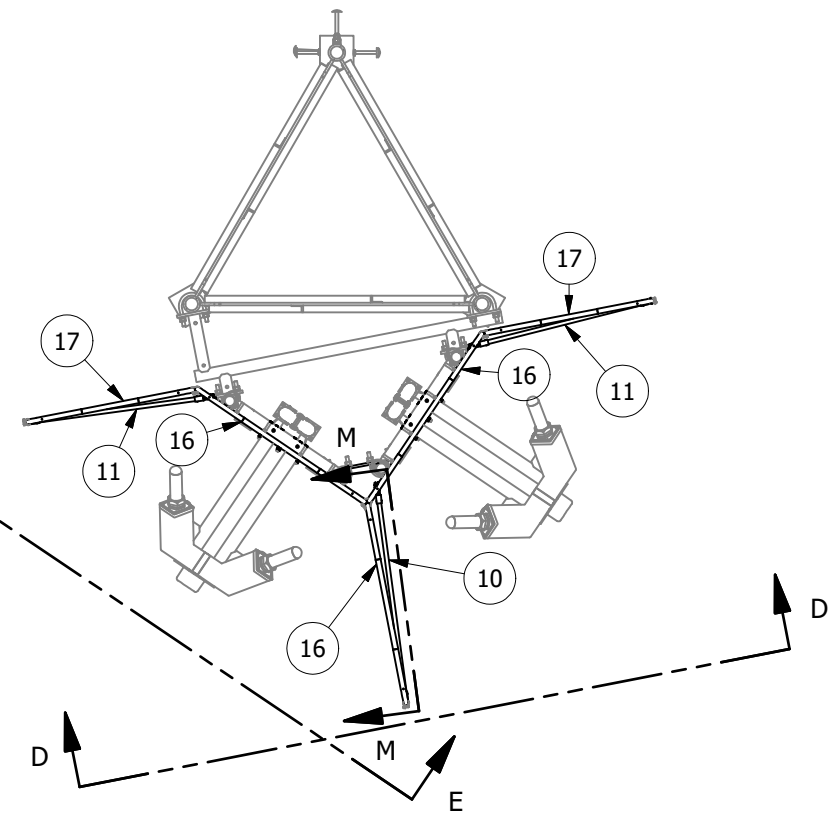
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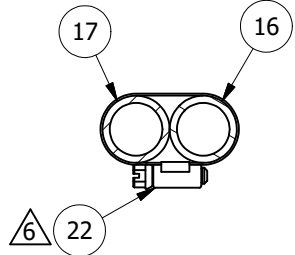
SECTION D-D  
SCALE 1 / 30



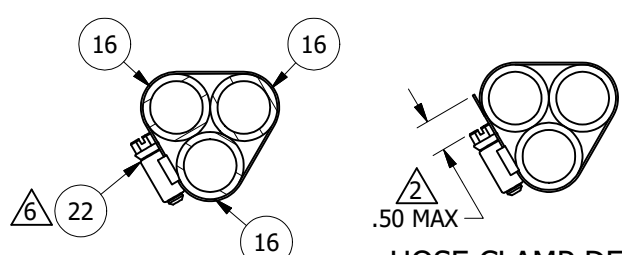
SECTION E-E  
SCALE 1 / 30



DETAIL F  
8X TYPICAL  
SCALE 1 / 10



SECTION G-G  
24X TYPICAL  
SCALE 1 / 3

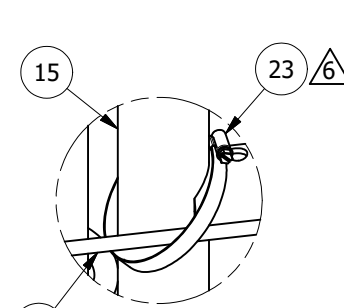
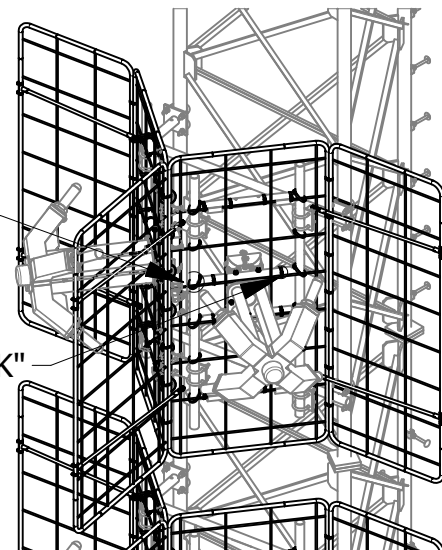


SECTION H-H  
14X TYPICAL  
SCALE 1 / 3

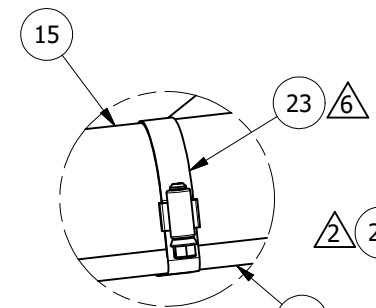
HOSE CLAMP  
DETAIL  
TYPICAL ALL HOSE CLAMPS  
SCALE 1 / 3

SEE DETAIL "J"

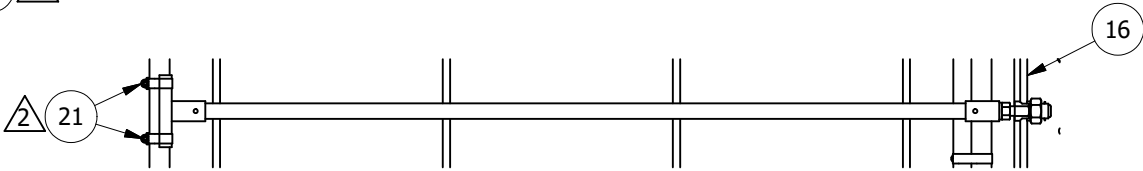
SEE DETAIL "K"



DETAIL J  
48X TYPICAL  
SCALE 1 / 5



DETAIL K  
48X TYPICAL  
SCALE 1 / 3

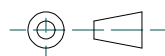


SECTION M-M  
4X TYPICAL  
SCALE 1 / 10



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THIRD ANGLE PROJECTION



MATERIAL

FINISH

TOLERANCES

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ANGULAR ± .5°  
FRACTIONAL ± 1/16"

PROJECT NO.	39083/1	
ERI APPROVAL	NAME	DATE
DRAWN BY	NHM	10/14/2021
DRAFTING		
DESIGN MGR.	K. SCHARP	11/3/2021
ENG.		
MANUF.		
EXT. APPROVAL	DD	11/4/2021
SUPERSEDES PART NO.		
FILE NAME:	IA39083-1.idw	

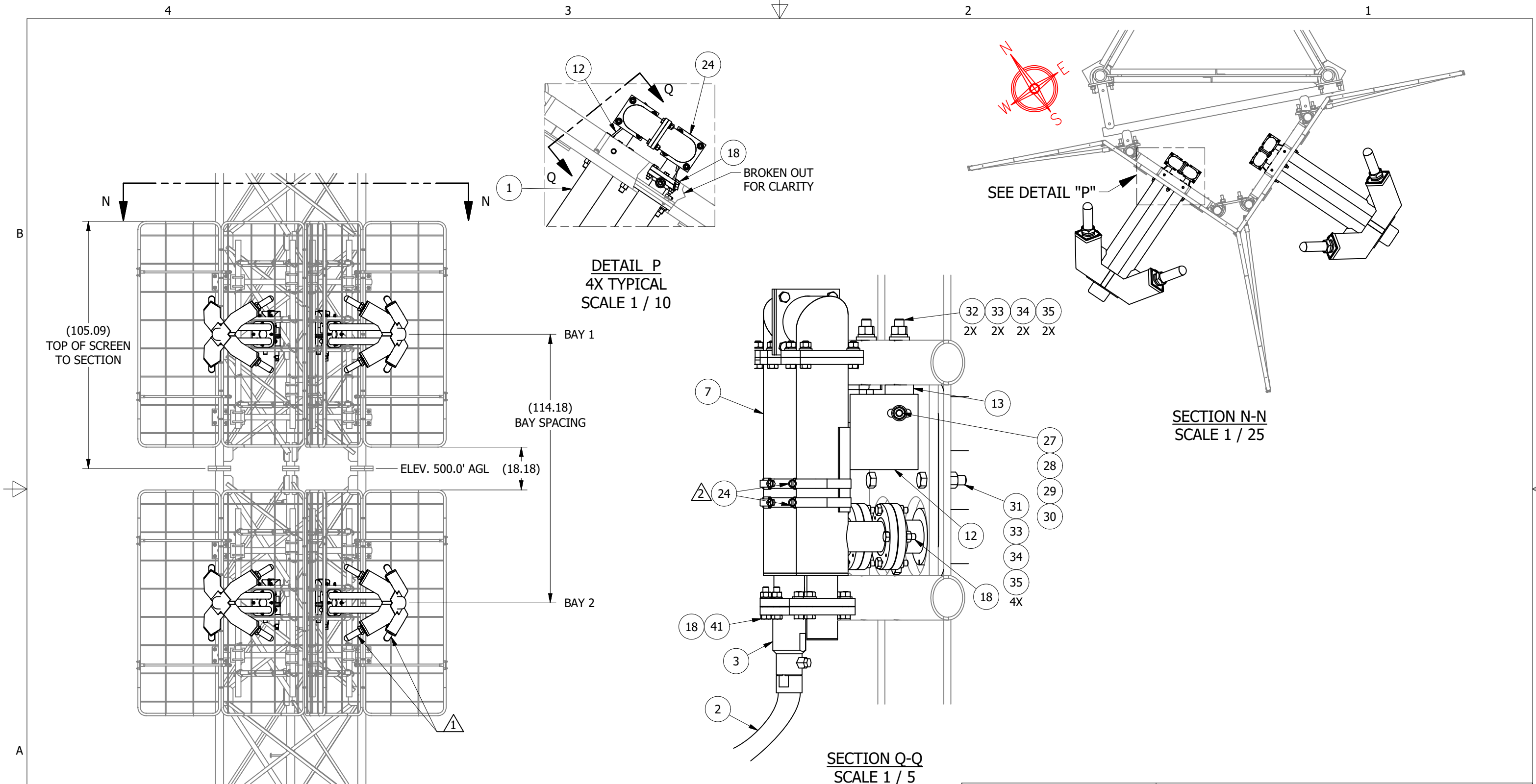
<b>ERI</b>		<b>ELECTRONICS RESEARCH INC.</b>		7777 GARDNER Rd. CHANDLER, IN 47610-9219 PHONE: (812) 925-6000 FAX: (812) 925-4030
ESTABLISHED 1943				
TITLE: 1192-2CP-DA (TALLAHASSEE) REFLECTING PANEL WELDMENTS WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz				
SIZE	CAGE CODE	DWG NO.	REV.	
B	OZNS1	IA39083-1	C	
SCALE:	AS NOTED	WEIGHT:	2043 lbmass	SHEET: 4 OF 6

3

2

1



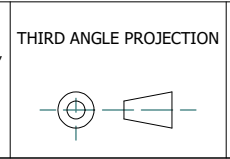


PROJECT NO.	39083/1	
ERI APPROVAL	NAME	DATE
DRAWN BY	NHM	10/14/2021
DRAFTING		
DESIGN MGR.	K. SCHARP	11/3/2021
ENG.		
MANUF.		
EXT. APPROVAL	DD	11/4/2021
SUPERSEDES PART NO.		
FILE NAME:	IA39083-1.idw	

<b>ERI</b> ELECTRONICS RESEARCH INC. ESTABLISHED 1943		7777 GARDNER Rd. CHANDLER, IN 47610-9219 PHONE: (812) 925-6000 FAX: (812) 925-4030	
TITLE: 1192-2CP-DA (TALLAHASSEE)			
ELEMENT & HYBRIDS			
WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz			
SIZE	CAGE CODE	DWG NO.	REV.
B	OZNS1	IA39083-1	C
SCALE:	AS NOTED	WEIGHT:	SHEET:
		2043 lbmass	5 OF 6



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MATERIAL

FINISH

**TOLERANCES**  
OVERALL-NOT CUMULATIVE  
UNLESS OTHERWISE SPECIFIED,  
ALL DIMENSIONS ARE IN INCHES  
AND APPLICABLE AT 20°C (68°F)  
INTERPRET DIMENSIONS AND TOLERANCES  
PER ASME Y14.5M-1994

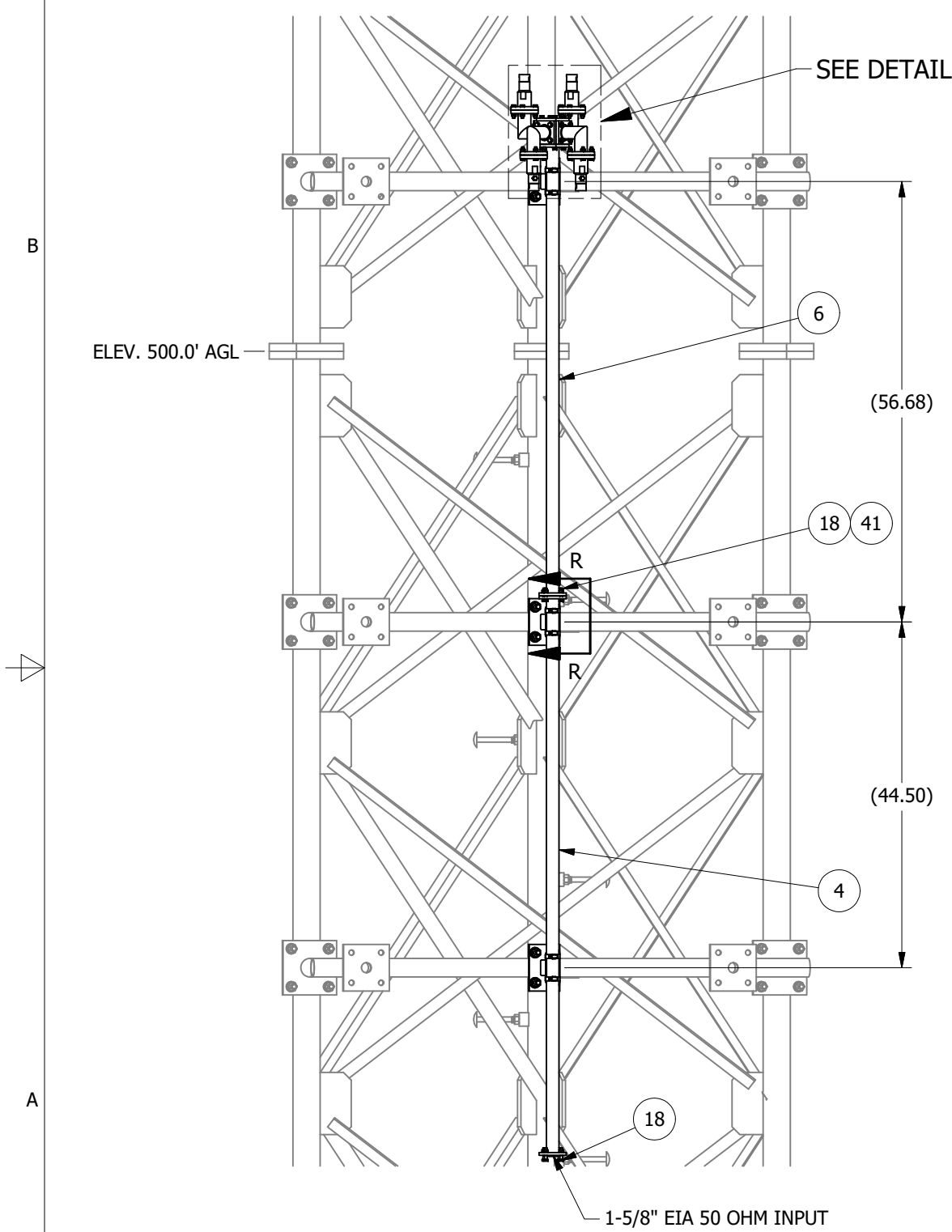
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2 PLACE DECIMAL ± .03  
3 PLACE DECIMAL ± .010  
ANGULAR ± .5°  
FRACTIONAL ± 1/16"

4

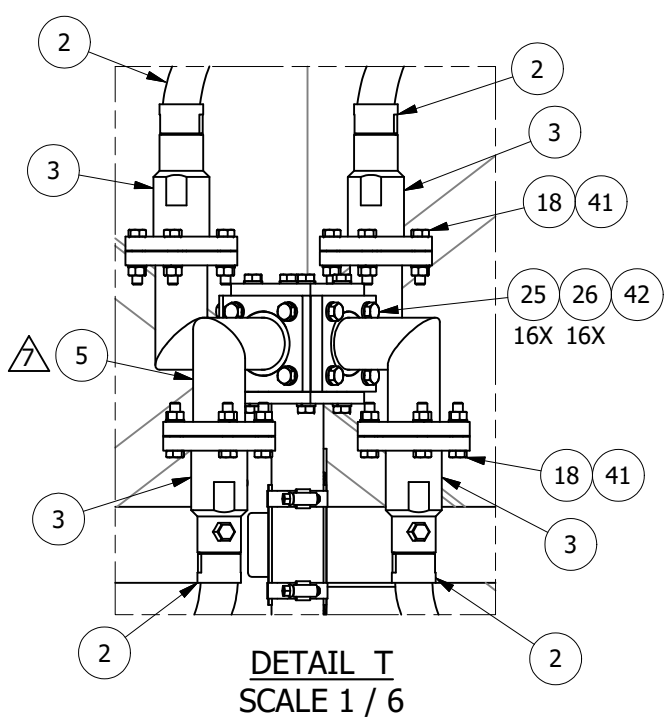
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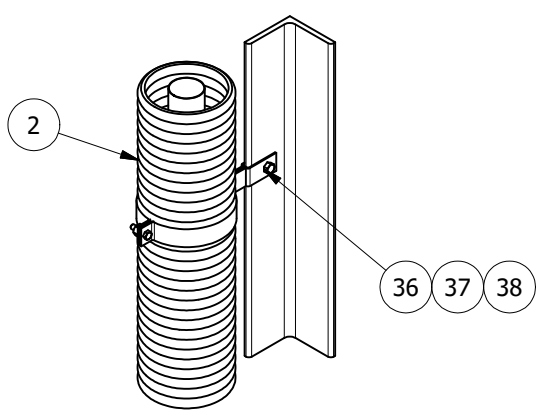
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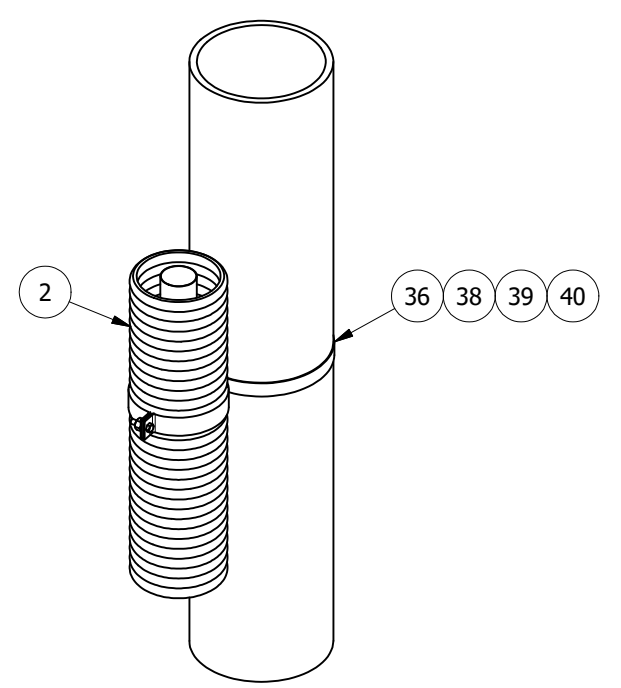
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SCALE 1 / 20



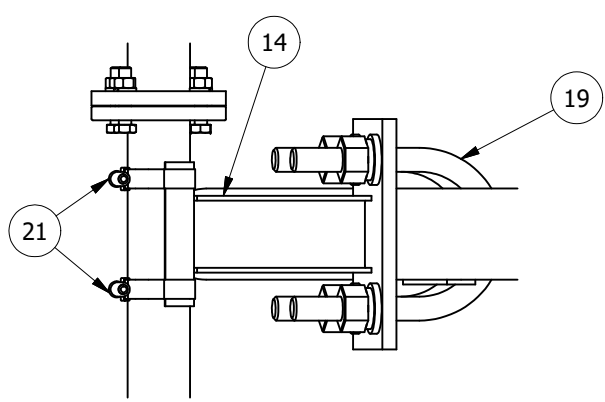
**DETAIL T**  
SCALE 1 / 6



**CABLE SUPPORT VIEW**  
TYP., EVERY 3.0' MAX.



**CABLE SUPPORT VIEW**  
TYP., EVERY 3.0' MAX.

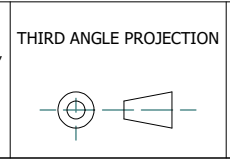


**SECTION R-R**  
SCALE 1 / 5

1-5/8" EIA 50 OHM INPUT



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MATERIAL

FINISH

**TOLERANCES**  
OVERALL-NOT CUMULATIVE  
UNLESS OTHERWISE SPECIFIED,  
ALL DIMENSIONS ARE IN INCHES  
AND APPLICABLE AT 20°C (68°F)  
INTERPRET DIMENSIONS AND TOLERANCES  
PER ASME Y14.5M-1994

1 PLACE DECIMAL ± .1  
2 PLACE DECIMAL ± .03  
3 PLACE DECIMAL ± .010  
ANGULAR ± .5°  
FRACTIONAL ± 1/16"

PROJECT NO.	39083/1	
ERI APPROVAL	NAME	DATE
DRAWN BY	NHM	10/14/2021
DRAFTING		
DESIGN MGR.	K. SCHARP	11/3/2021
ENG.		
MANUF.		
EXT. APPROVAL	DD	11/4/2021
SUPERSEDES PART NO.		
FILE NAME:	IA39083-1.idw	

		<b>ELECTRONICS RESEARCH INC.</b> ESTABLISHED 1943		7777 GARDNER Rd. CHANDLER, IN 47610-9219 PHONE: (812) 925-6000 FAX: (812) 925-4030
TITLE: 1192-2CP-DA (TALLAHASSEE)				
POWER DIVIDERS & PD BRACKETS				
WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz				
SIZE	CAGE CODE	DWG NO.	REV.	
B	OZNS1	IA39083-1	C	
SCALE:	AS NOTED	WEIGHT:	2043 lbmass	SHEET: 6 OF 6

3

2

1



**Date:** February 25, 2022

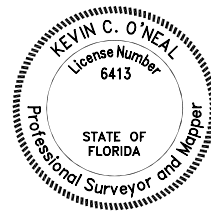
**To:** Chris Hall  
Reel Audio Broadcast Engineering

**Re:** ER Directional Panel Antenna for WQTL and WXTY

**Site Location:** North Florida Christian School Radio Tower Site, #3000 N. Meridian Rd.  
Tallahassee, Florida

On February 23, 2022 a directional panel antenna (center reflector) was observed to have a true north azimuth of 204 degrees with an accuracy of plus or minus one (1) degree. The reflector was located by means of triangulation taken from a base line that was established through GPS/RTK observations referenced to published NGS control data.

**Kevin C O'Neal** Digitally signed by Kevin C O'Neal  
Date: 2022.02.25 09:23:14 -05'00'



Kevin O'Neal  
Florida Professional Surveyor & Mapper #6413  
Florida Licensed Business #7834

Topographic Surveys, Boundary Surveys, Construction Layout, GPS Services  
Eric Wills – President      Kevin O'Neal – Vice President

3201 Shamrock St. S. Suite 102, Tallahassee, Fl. 32309  
Office: (850) 668-7641 Fax: (850) 668-7648



**Certification**  
**2-25-2022**  
**WQTL/WXTY**

This letter certifies that the installation of the WQTL/WXTY directional panel antenna, model ERI 1192-2CP-DA was completed with best engineering practices. The installation was overseen by myself (Chris Hall), and the antenna was installed by Worldwide Communications. The antenna was assembled and installed per the manufacturer drawings and the azimuth was confirmed by Meridian Surveying of Tallahassee.

I, Chris Hall, have 25 years of FM technical service experience. I have owned and operated Reel Audio Broadcast Engineering, providing technical services to the broadcast industry since 2001 and was employed as an RF technician by a TV station prior to that.

A handwritten signature in black ink, appearing to read "Chris Hall", is positioned below the text.

**Reel Audio**  
**1425 E Jackson St Suite O**  
**Thomasville, GA 32792**  
**7028250287**  
[\*\*reelaudio@gmail.com\*\*](mailto:reelaudio@gmail.com)

**Lafayette, FL - WXTY (FM)**  
**City Coverage Study:**  
**Measured Directional Pattern**

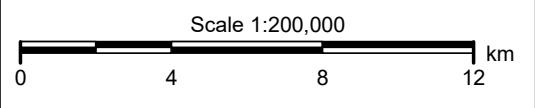
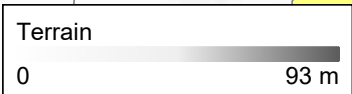
**WXTY.C**  
 Lafayette, FL  
 0000153427  
 Facility ID: 9311  
 Latitude: 30-29-17.10 N  
 Longitude: 084-16-47.10 W  
 ERP: 1.90 kW  
 Channel: 260A (99.9 MHz)  
 AMSL Height: 217.9 m  
 Horiz. Pattern: Directional

**70 dBµ F(50:50) Contour**  
 Total Population: 241,796  
 Total Area: 603.4 sq. km

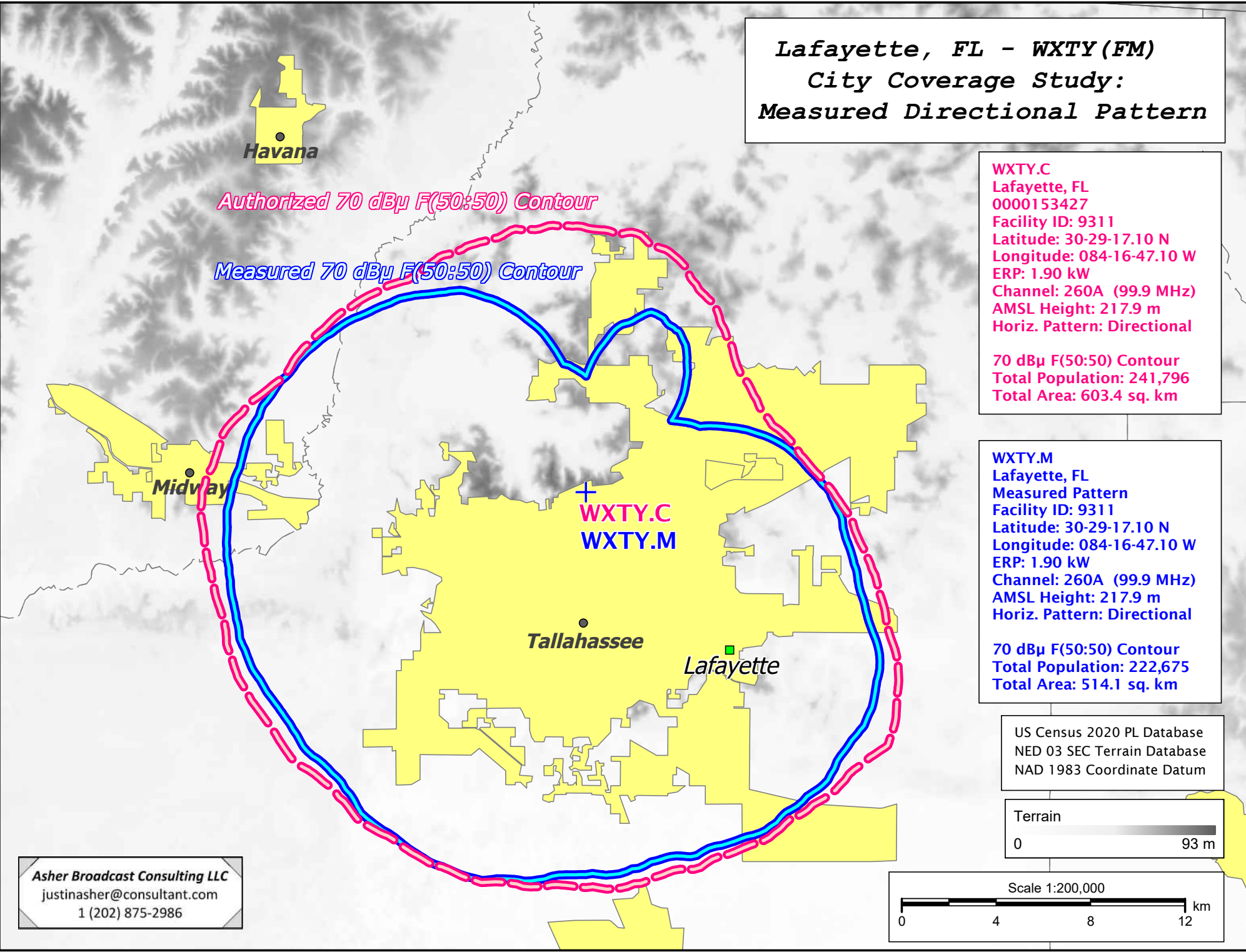
**WXTY.M**  
 Lafayette, FL  
 Measured Pattern  
 Facility ID: 9311  
 Latitude: 30-29-17.10 N  
 Longitude: 084-16-47.10 W  
 ERP: 1.90 kW  
 Channel: 260A (99.9 MHz)  
 AMSL Height: 217.9 m  
 Horiz. Pattern: Directional

**70 dBµ F(50:50) Contour**  
 Total Population: 222,675  
 Total Area: 514.1 sq. km

US Census 2020 PL Database  
 NED 03 SEC Terrain Database  
 NAD 1983 Coordinate Datum



**Asher Broadcast Consulting LLC**  
 justinasher@consultant.com  
 1 (202) 875-2986



# **Report Of Intermodulation Product Findings**

***Tallahassee, FL.***

**WXTY – 99.9 MHz.  
WQTL – 106.1 MHz.**

**Project# 39083**

*February 25, 2022*

**Electronics Research Inc.  
7777 Gardner Road  
Chandler, Indiana 47610  
Phone (812) 925-6000 Fax (812) 925- 4030**



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## Report of Findings for Intermodulation Product Measurements

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Page 5 .....	Table of Third order Products Expected
Page 6 .....	Intermodulation Product Measurements for all Stations
Page 7 .....	Conclusion
Page 8 .....	Affidavit

## Exhibits Accompanying This Report

<b>EXHIBIT A</b> .....	Antenna and Combiner Specification Sheet and Drawing
A-1.....	Drawing Depicting Antenna
A-2.....	ERI Antenna Specification Sheet
A-3.....	Drawing Depicting Combiner System
A-4.....	ERI Combiner Specification Sheet
A-5.....	Theoretical Vertical Plane Relative Field Antenna Plots
<b>EXHIBIT B-1</b> .....	Intermodulation Product Measurement Equipment Layout
B-2.....	Broadcasting Scheme of the Multiplexed System

## **REPORT OF FINDINGS TALLAHASSEE, FLORIDA BROADCAST FACILITY**

**Introduction:** This report of findings is based on data collected at the FM broadcast facility located in Tallahassee, FL. The report includes measurements offered as proof that the combined operations of WXTY (99.9 MHz.) and WQTL (106.1 MHz.), transmitters are in compliance with the FCC Rules and Regulations as required by the Code of Federal Regulations (CFR) Title 47 section 73.317 paragraph (b) through (d). WWOE (103.1 MHz), WHTF (104.9 MHz.) operates into a separate antenna that is co-located on the tower. Their effects on the stations operating from the system are considered in this report. In brief, the collection of measurements presented in this report shows that all possible third order inter-modulation (IM) products generated by this multiplexed and single station systems are less than the maximum allowable level as required by section 73.317 (b) through (d). Jeff Taylor of Electronics Research, Inc. located in Chandler, Indiana performed the measurements summarized herein on February 25, 2022.

**The following exhibits are provided:**

Exhibit A:

- A-1 Drawing Depicting Antenna.
- A-2 1192-2CP-DA Antenna Specification Sheet.
- A-3 Drawing Depicting Diplexed Scheme.
- A-4 Diplexer Specification Sheet.
- A-5 Theoretical Vertical Plane Relative Field Antenna Plots

Exhibit B:

- B-1 Equipment Employed In Intermodulation Product Measurement.
  - B-2 Broadcasting Scheme of the Multiplexed Systems.
- Table 1. Carrier Reference Levels.  
Table 2. Calculated Third Order Products.  
Table 3. Intermodulation Analysis Measurements.

**Exhibits Accompanying Report:** Exhibit A provides comprehensive information on both antenna and filters used by these radio stations. Exhibit B illustrates the broadcasting scheme of each station, the layout of the equipment used to isolate and measure potential intermodulation products and forward carrier reference levels. Found within Table 1 are the narrow band carrier frequency measurements that provide relative output signal levels for the IM analysis. Table 2 lists the calculated third order products that can be generated from FM transmitters broadcasting from the multiplexed system. The IM Analysis Measurements, in Table 3, provides detailed information obtained from the product frequency investigation.

**The Nature of Intermodulation Products (IM):** Intermodulation products result from inadequate transmitter-to-transmitter isolation. Intermodulation products are commonly generated from radio stations operating into multiplexed facilities and congested antenna broadcast sites. The mechanics associated with the phenomenon have been well documented. When two or more transmitters are coupled to each other, new spectral components are produced by the mixing of the station frequencies in the active circuits of each transmitter. The common term used to describe this phenomenon is third order product denoted by the mathematical expression  $[2(F_1)-(F_2)]$ , where  $F_1$  signifies the frequency of the transmitter that is generating the intermodulation product, and  $F_2$  signifies the frequency causing the interference.



**The Multiplexed System:** These measurements were taken with both FM stations operating from the antenna system. The WXTY and WQTL, diplexed system is fundamentally comprised of antenna, feed line and diplexer unit. The 1192-2CP-DA antenna, 935-3 & 955-4 combiner units, are products of Electronics Research, Inc. The 1 5/8" feedline HJ7-50A is a product of Comscope. Refer to Exhibit B-1, for an illustration of the Broadcasting Scheme of these stations.

To accomplish the aggregation of two transmitter signals into a common feed and provide transmitter-to-transmitter isolation, a diplexed scheme consisting of a 935-3/955-4 "TEE" Combiner" was installed. Specifically, the combiner uses one 935-3 module for frequency (99.9 MHz.), and one 955-4 module for frequency (106.1 MHz.). An interconnecting "T" is required to complete the combiner. The "T" combiner, fully assembled, exhibited transmitter port-to-port isolation in excess of -80 dB. Other performance measurements, such as match, loss, group-delay, etc, revealed that the "T" combiner unit was in proper working condition. Refer to Exhibit A-4 for the Combiner Specification Sheet.

**The IM Investigation:** Directional Couplers were placed at key locations throughout the combiner to monitor and maintain the multiplexer's performance. All couplers furnished with the system are factory calibrated and capable of delivering accurate and repeatable RF measurements. To facilitate the taking of the measurements, the coupler located at the antenna output of the multiplexed system was used. Care was taken in the selection of the measurement location to ensure that the measurements would be made far removed from transmitters and any filtering used to reduce broadcast emissions. The coupler selected would normally be used for antenna reflection measurements and thus would provide greater than -30 dB directivity and a forward signal sample of -41 dB.

The forward port of the coupler was used for sampling the outgoing carrier levels and IM products. The IM sampled signal was fed by shielded cable into a Band Pass Filter where all extraneous energy was steeply attenuated. Various attenuation pads were used, when needed, on the band pass filter and/or the Spectrum Analyzer to ensure an adequate signal level for measurements without overloading the measurement equipment. A Rohde & Schwarz Spectrum Analyzer serial# 100396 was employed to record the level of all signals investigated. A Rohde & Schwarz Network Analyzer serial# 100396 was used for selective tuning of the Band Pass Filter. The Rohde & Schwarz Spectrum Analyzer was also used to measure the close in spectral attenuation of each carrier and wide band search for any anomalies that may need further investigation. See attached Exhibit B-1 for an illustration of the measurement equipment.

Prior to recording measurements, all pertinent broadcasting equipment including Transmitters, Multiplexer, Feed Line and Antenna were adjusted to optimal performance. Also, it was confirmed before taking any measurements that all transmitters were operating at full licensed power. From the equipment setup described above, the relative output signal level of each stations forward carrier was made. The resulting signal levels of these measurements are listed in Table 1, column labeled "Adjusted Level". This level will be used as the reference level for possible IM products of each carrier and was necessary to confirm that no significant levels of spurious energy, referenced to each carrier, were present from any transmitter operating from the multiplexed system.

**Table 1 - Carrier Reference Levels.**

<b>Carrier Frequency (MHz)</b>	<b>Pad One (dB)</b>	<b>Full Scale Range (dB)</b>	<b>Scale Reading (dBm)</b>	<b>Carrier Level (dBm)</b>	<b>Notes</b>
<b>WXTY 99.9</b>	<b>10</b>	<b>---</b>	<b>7.03</b>	<b>17.03</b>	
<b>WQTL 106.1</b>	<b>10</b>	<b>---</b>	<b>7.42</b>	<b>17.42</b>	

Predictable third-order products due to system harmonics mixed with all on-site interfering frequencies that could be generated from the multiplexed system are calculated and listed in Table 2.

**Table 2 - Third order Products.**

	<b>Carrier Frequencies</b>	
<b>Interfering Frequencies</b>	<b>99.9</b>	<b>106.1</b>
99.9 MHz.	----	112.3
103.1 MHz.	96.7	109.1
104.9 MHz.	94.9	107.3
106.1 MHz.	93.7	----

Using the equipment previously described the IM product measurements were recorded and are listed in Table 3. The signal levels referenced to the carriers are calculated and listed in the column labeled "Level Referenced to Carrier". Refer to Exhibit B-2 for a layout of the measurement equipment.

**Table 3 – Intermodulation Measurements**

IM Measurements Taken in Tallahassee, Florida										
Product Frequency (MHz)	Transmitter Frequency (MHz)	Interfering Frequency (MHz)	Pad (dB)	Bandpass Filter Loss (dB)	Total Loss	Measured Level (dB)	Adjusted Level (dB)	Carrier Reference Level (dB)	Level Referenced to Carrier (dB)	Notes*
<b>Transmitter Mixes</b>										
	<b>99.9</b>	<b>Ref.</b>	10		10	7.03	17.03	<b>17.03</b>		
	<b>106.1</b>	<b>Ref.</b>	10		10	7.42	17.42	<b>17.42</b>		
93.7	99.9	106.1	10	12.4	22.4	-83.97	-61.57	17.03	<b>-78.6</b>	1
94.9	99.9	104.9	10	12.5	22.5	-87.04	-64.54	17.03	<b>-81.57</b>	
96.7	99.9	103.1	10	12.4	22.4	-83.3	-60.9	17.03	<b>-77.93</b>	1
107.3	106.1	104.9	10	12.3	22.3	-85.33	-63.03	17.42	<b>-80.45</b>	
109.1	106.1	103.1	10	12.2	22.2	-85.71	-63.51	17.42	<b>-80.93</b>	
112.3	106.1	99.9	10	11.9	21.9	-87.02	-65.12	17.42	<b>-82.54</b>	
(1) Low Power rule Section 73.317 paragraph D.										

The Spectrum Analyzer was used to check the close in spectral attenuation of the carrier to confirm the operation of the transmitter, are in compliance with Sections (b) and (c) of the FCC Rules and Regulations.

As a final proof of the systems IM Product performance, a wide band search was undertaken using the Spectrum Analyzer. The purpose for this measurement was to look for suspicious anomalies that may warrant further investigation. My search ranged the complete frequency span of the receiver and resulted in no additional investigations.

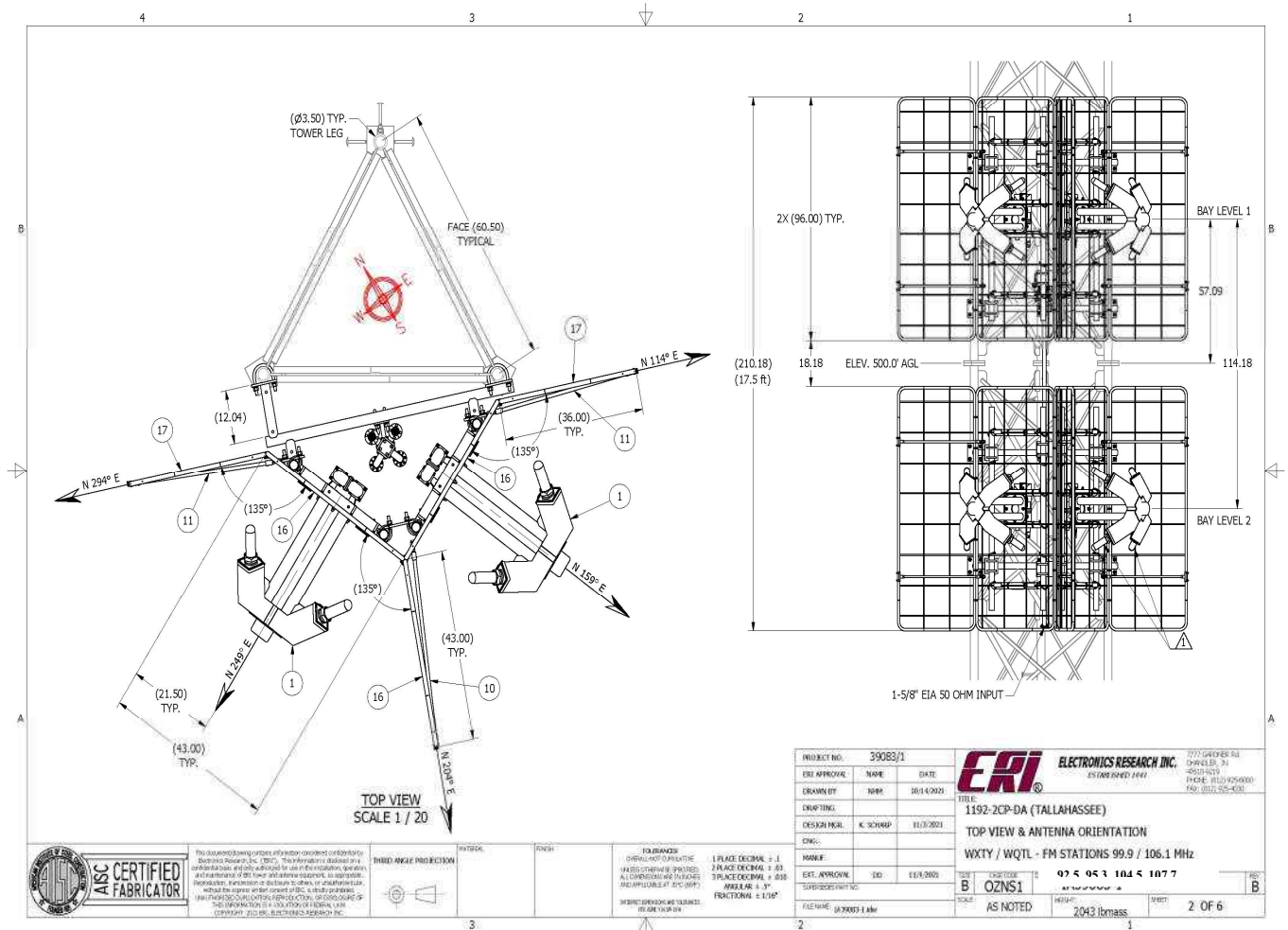
**Conclusion:** Based upon my observations and measurements taken on February 25, 2022 as summarized in this document, I, Jeff Taylor, find the subject system, specifically the transmitters and filter systems for the operation of WXTY and WQTL into the antenna to be in proper working order. Furthermore, based on the measured data, it is my opinion that there are no inter-modulation products in excess of -80 dB below carrier levels generated from or within the station operating on the installed system. Based on this recorded data, I conclude that WXTY and WQTL, are in compliance with the requirements of Section 73.317 paragraph (b) through (d) of the FCC Rules and Regulations.

Respectfully submitted,  
Electronics Research, Inc.

Jeff Taylor, Field Technician



# EXHIBIT, A-1



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NO.	DESCRIPTION	DATE
1	ISSUED FOR FABRICATE	11/17/2003
2	FOR APPROVAL	11/17/2003
3	FOR APPROVAL	11/17/2003

NO.	DESCRIPTION	DATE
1	1 PLACE DECIMAL ± .1	
2	2 PLACE DECIMAL ± .03	
3	3 PLACE DECIMAL ± .015	
4	4 PLACE DECIMAL ± .0075	
5	FRACTIONAL ± 1/16"	

PROJECT NO.	30083/1
ERI APPROVAL	NAME: DATE:
DRAWING BY	NAME: 08/14/2003
DESIGN BY	K. SCHMIDT 11/17/2003
DATE:	
SCALE:	
FILE NAME:	JA70033-1.dwg

**ERI** ELECTRONICS RESEARCH INC.  
 6510 W. STATE ROAD 104  
 TAMPA, FL 33611  
 PHONE: (813) 905-4000  
 FAX: (813) 905-4001

TITLE:  
**1192-2CP-DA (TALLAHASSEE)**  
**TOP VIEW & ANTENNA ORIENTATION**  
 WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz

02 5 95 3 104 5 107 7

**B** OZNS1

SCALE: AS NOTED WEIGHT: 2043 lbsmass SHEET: 2 OF 6

**A-2 ERI Antenna Specification Sheet**

**TRANSMISSION SITE  
TALLAHASSEE, FLORIDA**

**General Specifications**

Antenna Type .....High Power FM-Broadcast, Suitable For Diplexing  
 Model Number ..... 1192-2CP-DA  
 Number of Bay Levels ..... Two  
 Polarization..... Circular Polarized

**Electrical Specifications**

Antenna Input Power Capability ..... 2.5 kW Max <sup>(1)</sup>  
 Operating Frequency Band ..... 99.9 ~ 106.1 Megahertz.  
 VSWR. .... <1.06:1 @ Operating Frequencies<sup>(2)</sup>  
 Azimuthal Pattern Circularity ..... Better Than +/- 2dB From RMS (Free Space)  
 Power Split ..... 50/50 (Horizontal & Vertical)  
 Frequency Specific Information:

<u>Frequency</u>	<u>Station ERP</u>	<u>Beam Tilt</u>	<u>First Null Fill</u>	<u>Second Null Fill</u>	<u>Power Gain</u>	<u>Line Loss</u> <sup>(3)</sup>	<u>Filter Loss</u> <sup>(4)</sup>	<u>Computed TPO</u>
99.9	1.90 KW	0.0°	0.0 %	0.0 %	2.212	-1.069 dB	-0.452 dB	1.219 kW
106.1	1.90 KW	0.0°	0.0 %	0.0 %	2.233	-1.101 dB	-0.348 dB	1.187 kW

**Mechanical Specifications**

Antenna Feed System.....Single Input  
 Input Connector .....1 5/8”50-Ohm EIA Flanged  
 Element Deicing..... Radome  
 Interbay Spacing..... 114.175” Center to Center  
 Array Length ..... 17.5 Feet  
 Construction Material (Antenna)..... Galvanized Plated Steel and Stainless Steel

1) Power Capability Has Been Rated Assuming an Operating Transmission VSWR of 1.5:1  
 2) VSWR Specification Achieved After on Site Tuning For User Specific Frequencies.  
 3) Line Loss Assumes A Feed Run of 527 Feet of Comscope HJ7-50A..  
 4) Losses Taken from Actual Combiner.





**A-4 ERI "T" Combiner Specification Sheet**

**TRANSMISSION SITE  
TALLAHASSEE, FLORIDA**

**General Specifications:**

**Multiplexer Type ..... 935-3/955-4 "T" Combiner  
Number of Combining Units ..... Two  
Injected Port to Injected Port Isolation ..... < - 80 dB  
Output Connector ..... 1 5/8 "50 Ohm EIA (Flanged)  
Output Power (Designed) ..... 2.4 kW<sup>(1)</sup>**

**Heat Removal ..... Natural Convection  
Physical Arrangement ..... Floor Standing**

**Injected Port Specifications:**

**Frequency Assignment ..... 99.9 ~ 106.1 MHz.  
Power Rating, Each Injected Port (Designed)..... 1.22 kW 99.9 MHz, 1.19 kW 106.1 MHz.  
Input Connector ..... 1-5/8" 50 Ohm EIA (Flanged).  
VSWR.....< 1.07:1 @ +/-200 KHz.<sup>(2)</sup>  
Group Delay .....Less than 50 ns Overall Variation, Carrier @ +/- 150 KHz.  
Insertion Loss (Measured):**

**99.9 MHz. .... - 0.452 dB  
106.1 MHz. .... - 0.348 dB**

1) Power Rating Listed is as Designed Only. Actual Power Capabilities May Vary.

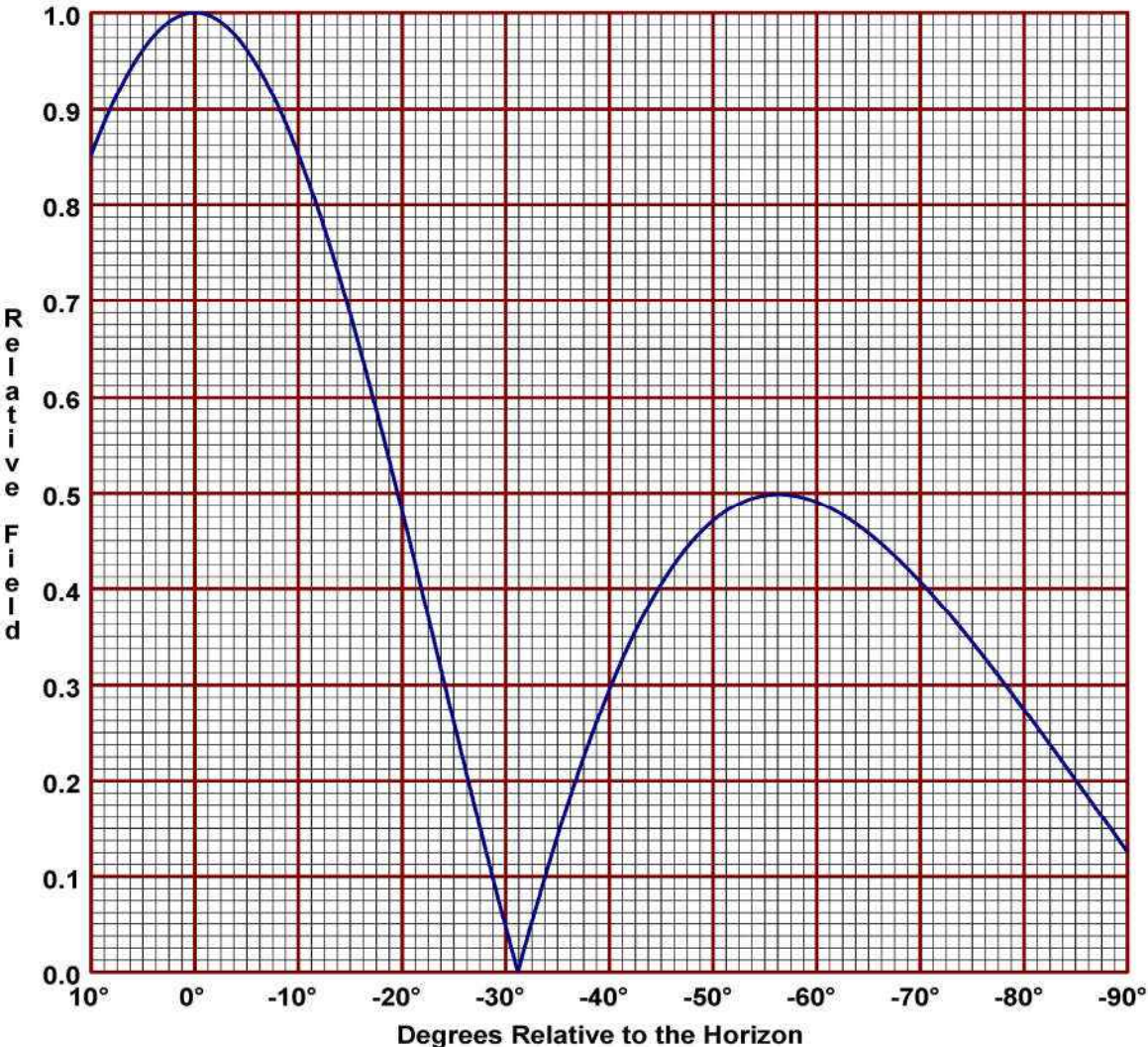
2) When Terminated in 50 Ohm Resistive Load.

# **ERI<sup>®</sup> Vertical Plane Relative Field Pattern**

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure No: 3  
Call Sign: WXTY  
Location: LaFayette, FL  
Frequency: 99.9 MHz  
Antenna: 2 bay 1192-2CP-DA

Date: 9/17/2021  
H/V Power Ratio: 1  
.97 Wave-length Spacing  
0° Beam Tilt  
0% First Null Fill



**Horizontal Polarization:**  
Maximum: 2.212 (3.448 dB)  
Horizontal Plane: 2.212 (3.448 dB)  
Maximum ERP: 6.000 kW

**Vertical Polarization:**  
Maximum: 2.212 (3.448 dB)  
Horizontal Plane: 2.212 (3.448 dB)  
Maximum ERP: 6.000 kW

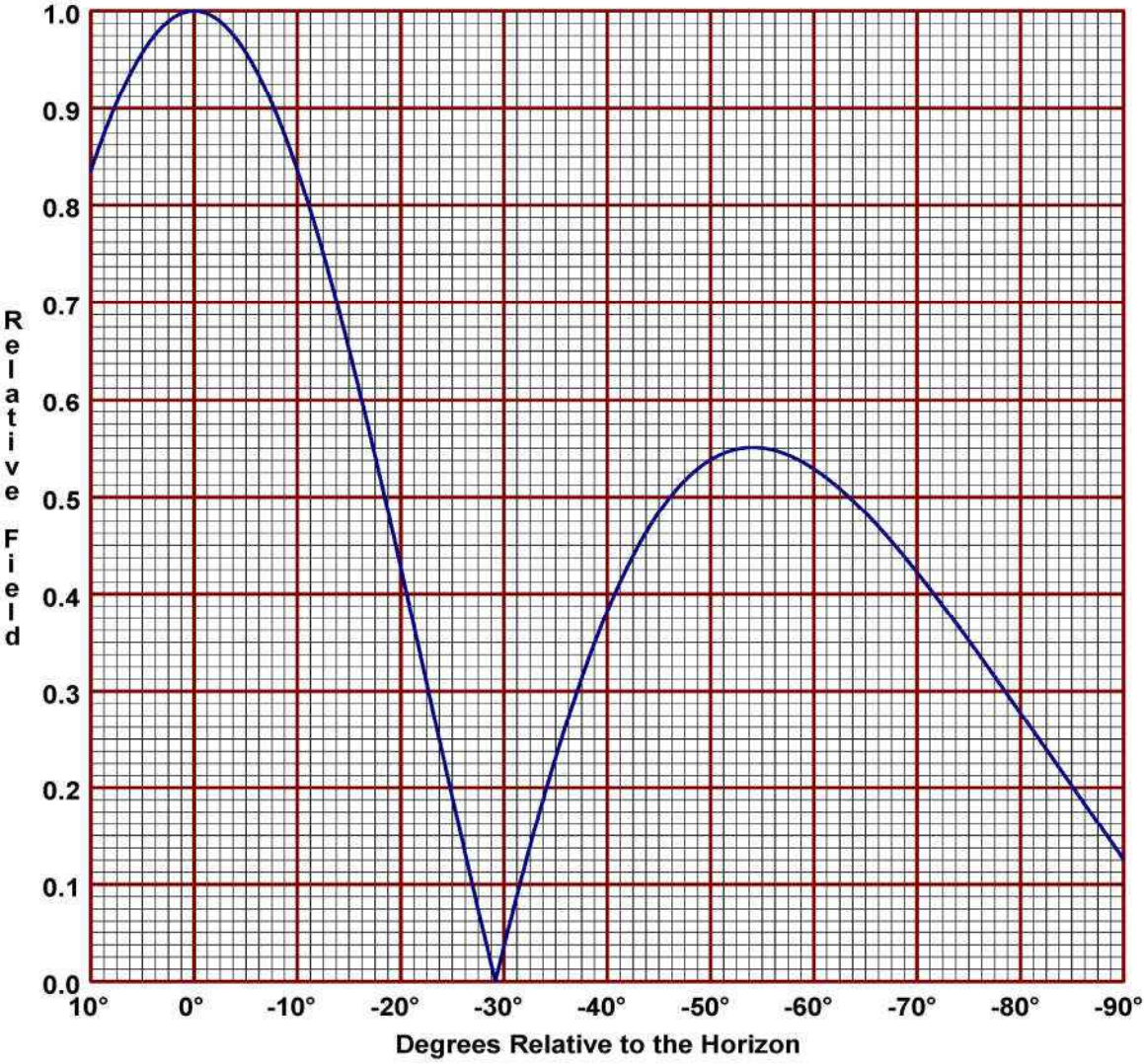


# **ERI<sup>®</sup> Vertical Plane Relative Field Pattern**

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Figure No: 3  
Call Sign: WQTL  
Location: Tallahassee, FL  
Frequency: 106.1 MHz  
Antenna: 2 bay 1192-2CP-DA

Date: 9/17/2021  
H/V Power Ratio: 1  
1.03 Wave-length Spacing  
0° Beam Tilt  
0% First Null Fill

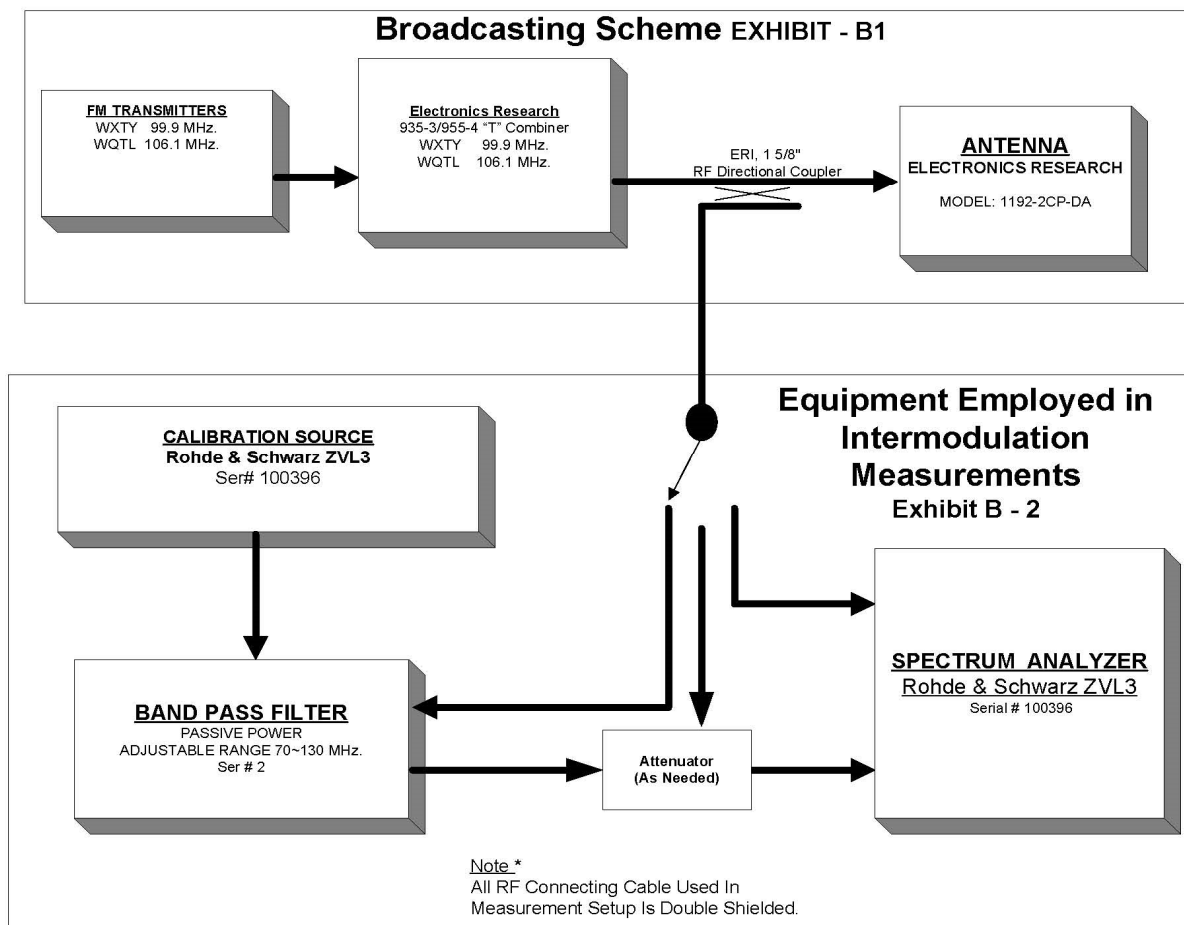


**Horizontal Polarization:**  
Maximum: 2.233 (3.489 dB)  
Horizontal Plane: 2.233 (3.489 dB)  
Maximum ERP: 6.000 kW

**Vertical Polarization:**  
Maximum: 2.233 (3.489 dB)  
Horizontal Plane: 2.233 (3.489 dB)  
Maximum ERP: 6.000 kW

Broadcasting Scheme and Equipment Employed in Intermodulation Measurements

EXHIBIT B



# Field Service Report

## FM Combiner and Antenna System

Tallahassee, FL.  
Broadcast Facility

ERI Antenna: 1192-2CP-DA  
ERI 935-3/955-4 "T" Combiner  
92.1 MHz. ~ 104.1 MHz.  
Feedline: Comscope HJ7-50A  
527 Feet

WXTY 99.9 MHz. ~ WQTL 106.1 MHz.

ERI Project # 39083

February 25, 2020

### Submitted By:

Jeff Taylor  
7777 Gardner Rd.  
Chandler, In. 47610  
TX: 812-925-6000 Ext. 276  
Cell: 812-459-6544  
EM: JTaylor@eriinc.com



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## INTRODUCTION

Listed below is a summary of the data and attached are the plots collected from the WXTY ~ WQTL transmission site in Tallahassee, FL. by Jeff Taylor February 25, 2022.

- The antenna is a 1192-2CP-DA.
- The combiner is a 935-3/955-4 "T" Combiner.
- Equipment used for testing combiner was a Copper Mountain S5048 VNA.
- Equipment used for filter to antenna testing was a Rohde & Schwarz ZVL3 VNA with amp.
- Equipment used for feedline and antenna testing was a Rohde & Schwarz ZVL3 VNA with amp.
- All output measurements of the combiner system were taken at the 1 5/8" output directional coupler unless noted otherwise.
- All input measurements of the ERI products were taken at the 1 5/8" input directional couplers.
- All feedline and antenna measurements were taken on the 1 5/8" flex connector in the transmitter room.

**Site Address:** 3000 N. Meridian Road  
Tallahassee, FL. 32312

**Attendees:** Jeff Taylor Electronics Research, Inc.  
Rick Hall Project Engineer  
Tower Service World Wide

The reason for this Field Service Trip was install the ERI filter system, tune the antenna and conduct intermodulation measurements.

## SUMMARY and RECOMMENDATIONS

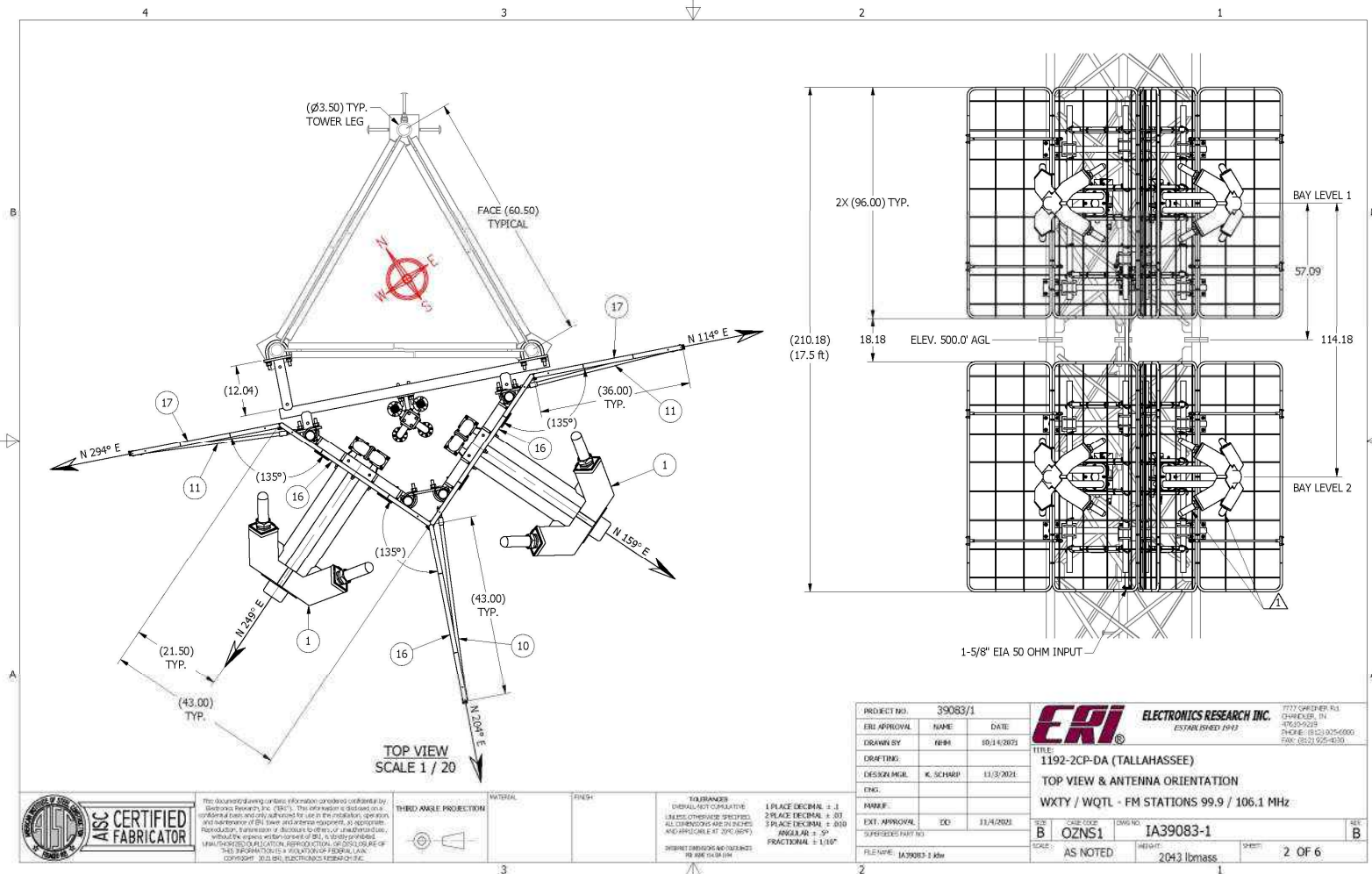
All measurements were taken by Jeff Taylor of Electronics Research Inc. February 2022.

Sincerely Jeff Taylor

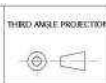




## Drawing 2: Antenna Drawing.



The documents and drawings information contained herein are the property of ERI. The information is based on a professional design and shall be used only for the intended purpose. ERI does not warrant the accuracy or completeness of the information provided herein. ERI shall not be held responsible for any errors or omissions in this information. ERI shall not be held responsible for any damages or liabilities arising from the use of this information. ERI shall not be held responsible for any information that is not contained herein.



**MATERIAL**

**FINISH**

**TOLERANCES**  
DIMENSIONS NOT SPECIFIED  
UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE IN INCHES  
AND REFERENCE AT 20°C (68°F)

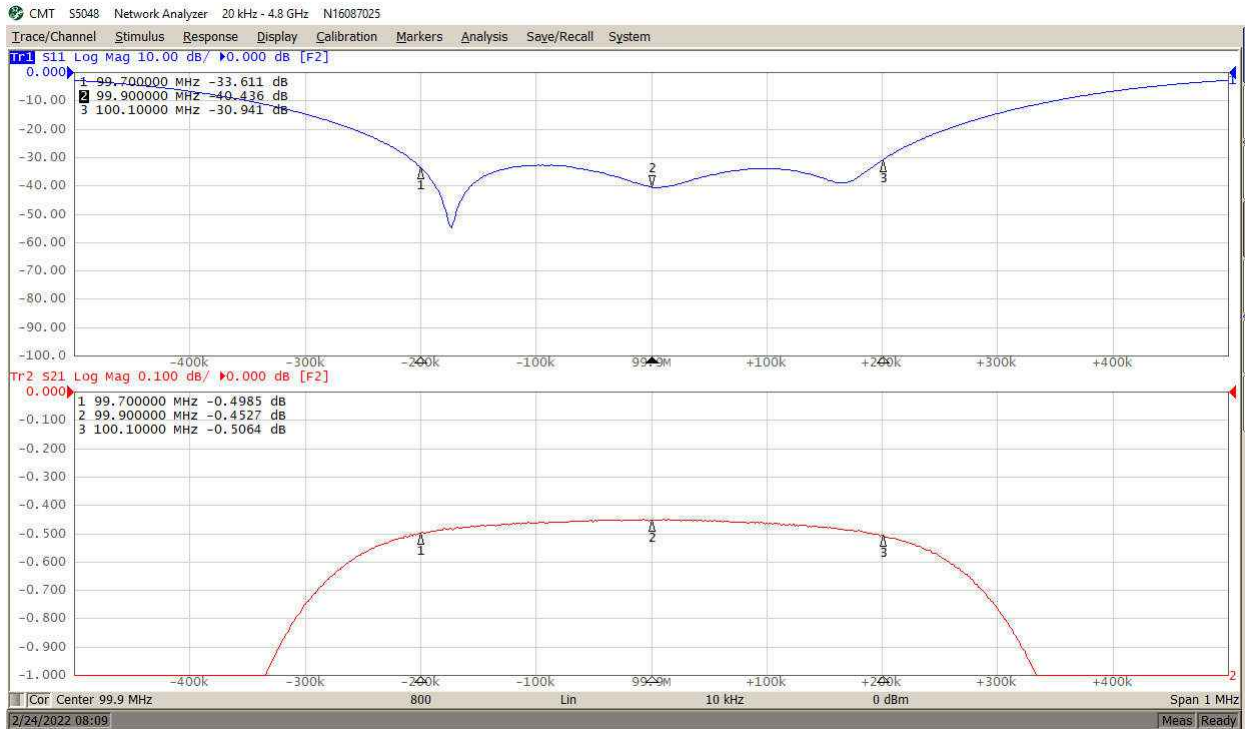
1 PLACE DECIMAL ± .1  
2 PLACE DECIMAL ± .01  
3 PLACE DECIMAL ± .010  
ANGULAR ± .5°  
FRACTIONAL ± 1/16"

PROJECT NO.	39083/1	
ERI APPROVAL	NAME	DATE
DRAWN BY	WFM	10/14/2023
DESIGNER	K. SCHARP	
DATE	11/3/2023	
EXT. APPROVAL	DATE	11/14/2023
FILE NAME	IA39083-1.dwg	

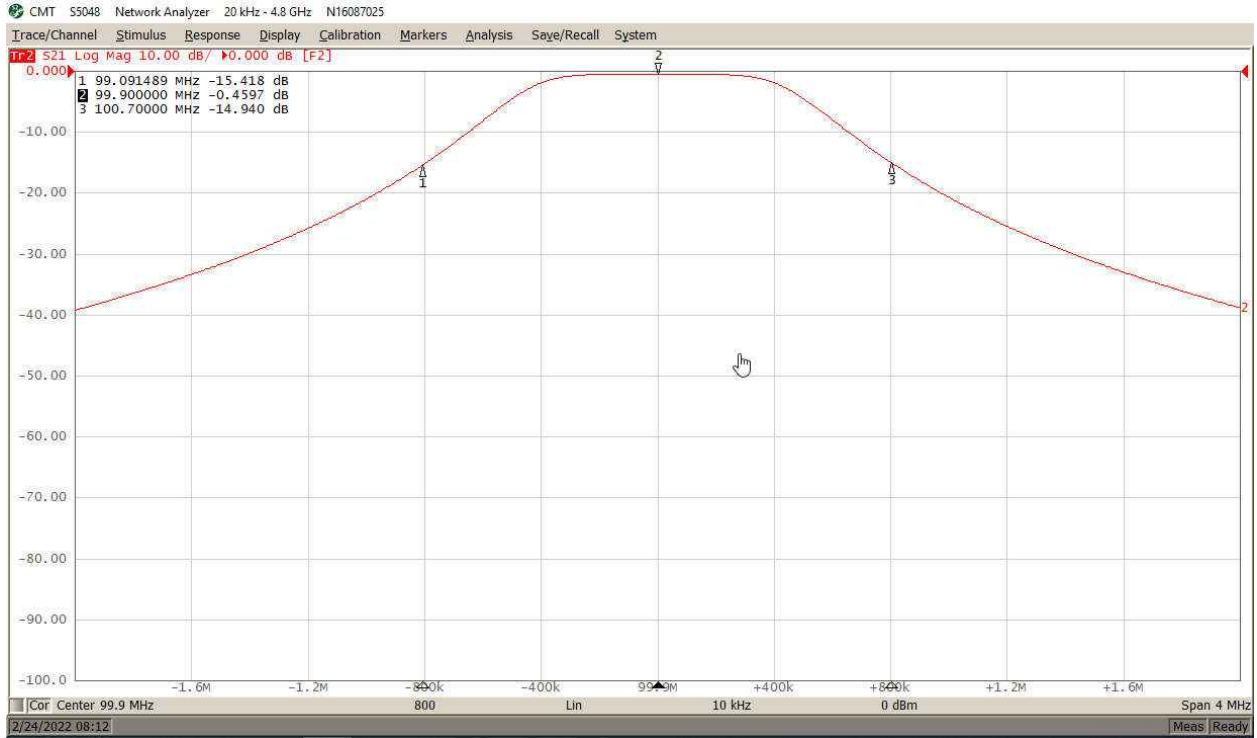
**1192-2CP-DA (TALLAHASSEE)**  
**TOP VIEW & ANTENNA ORIENTATION**  
**WXTY / WQTL - FM STATIONS 99.9 / 106.1 MHz**

SIZE	DATE	DESCRIPTION	BY
B	OZNS1	IA39083-1	B
SCALE	AS NOTED	WEIGHT	SHEET
		2043 lbmass	2 OF 6

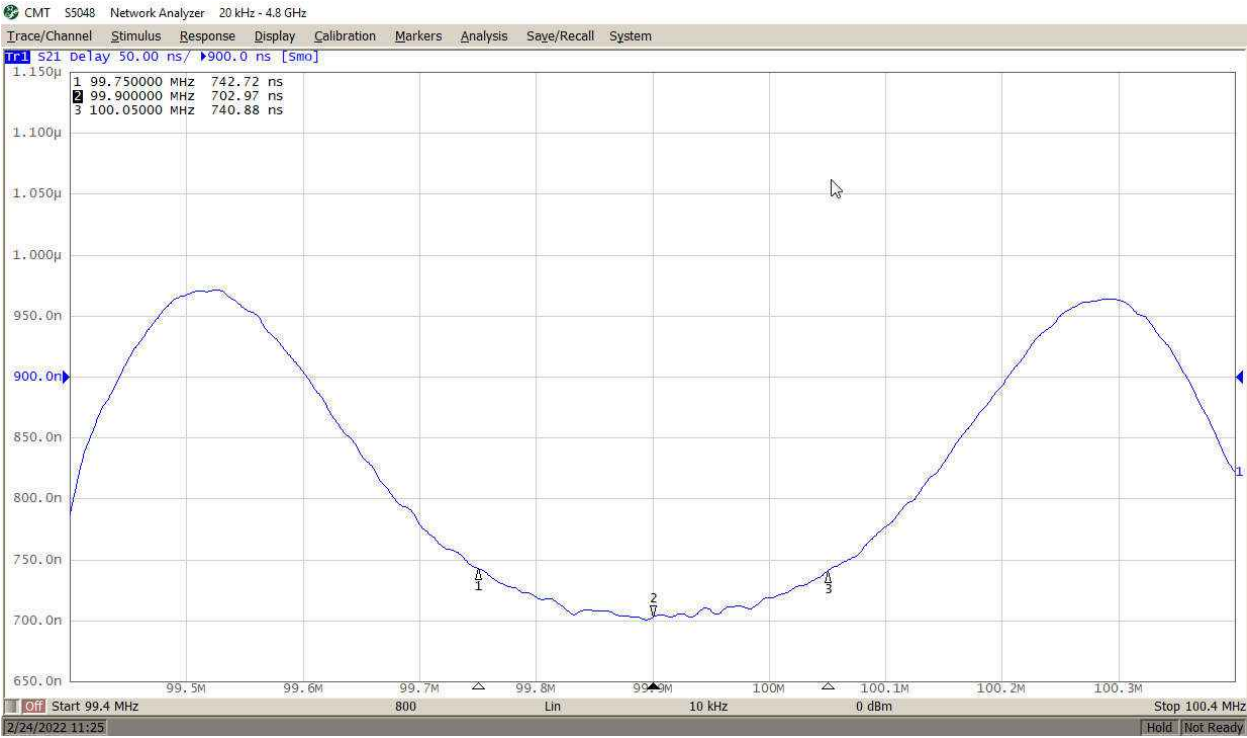
## Measurement 1: Match and Insertion Loss of 99.9 MHz.



## Measurement 2: Isolation +/- 800 KHz. of 99.9 MHz.



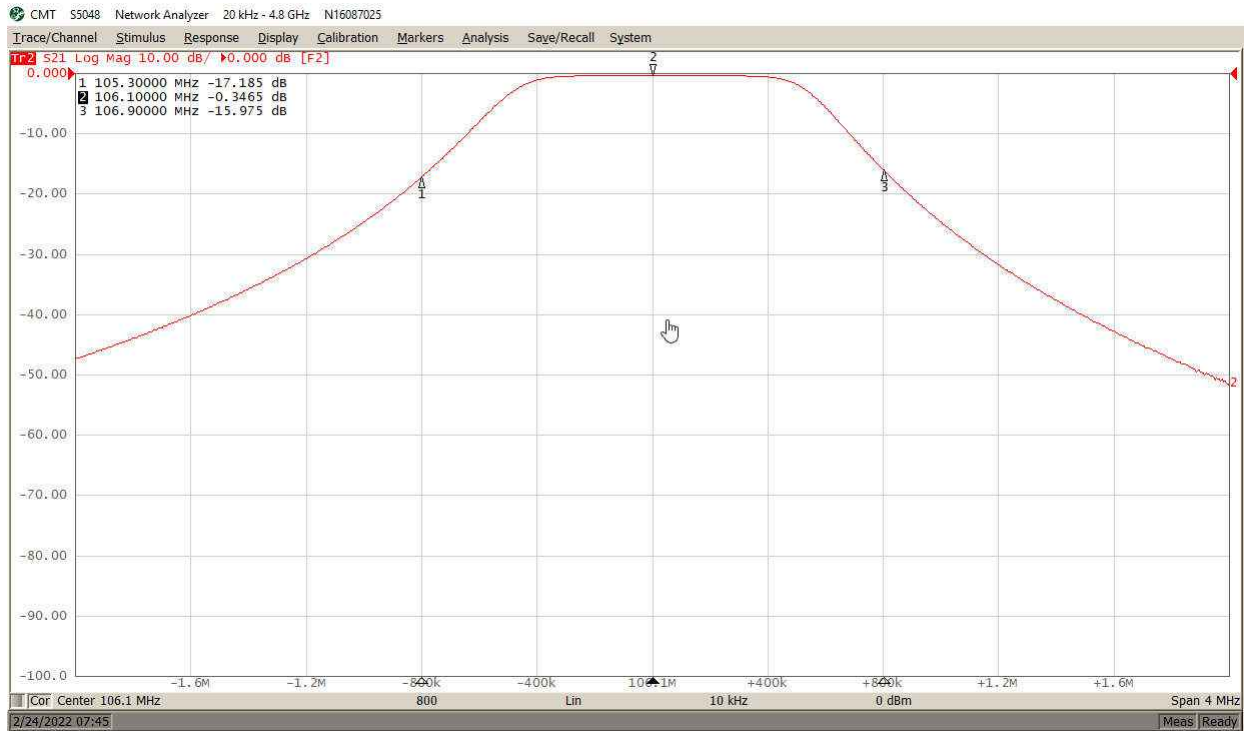
### Measurement 3: Group Delay of 99.9 MHz.



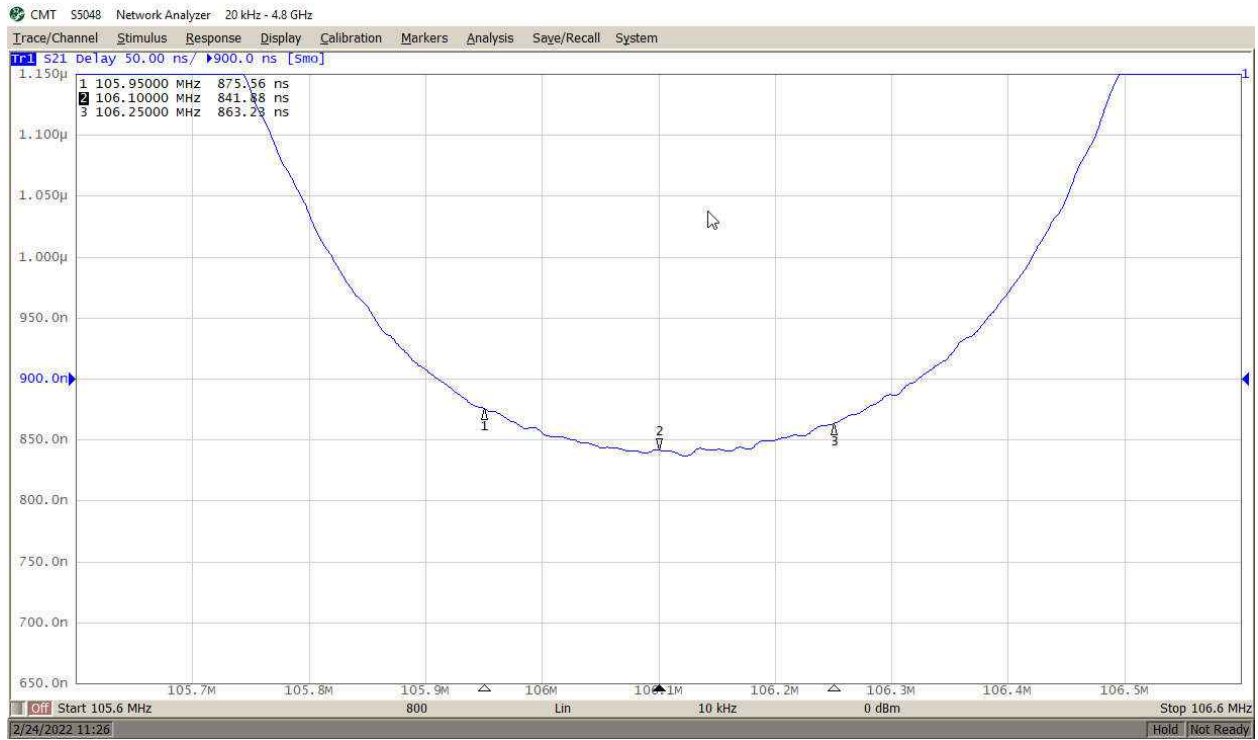
## Measurement 4: Match and Insertion Loss of 106.1 MHz.



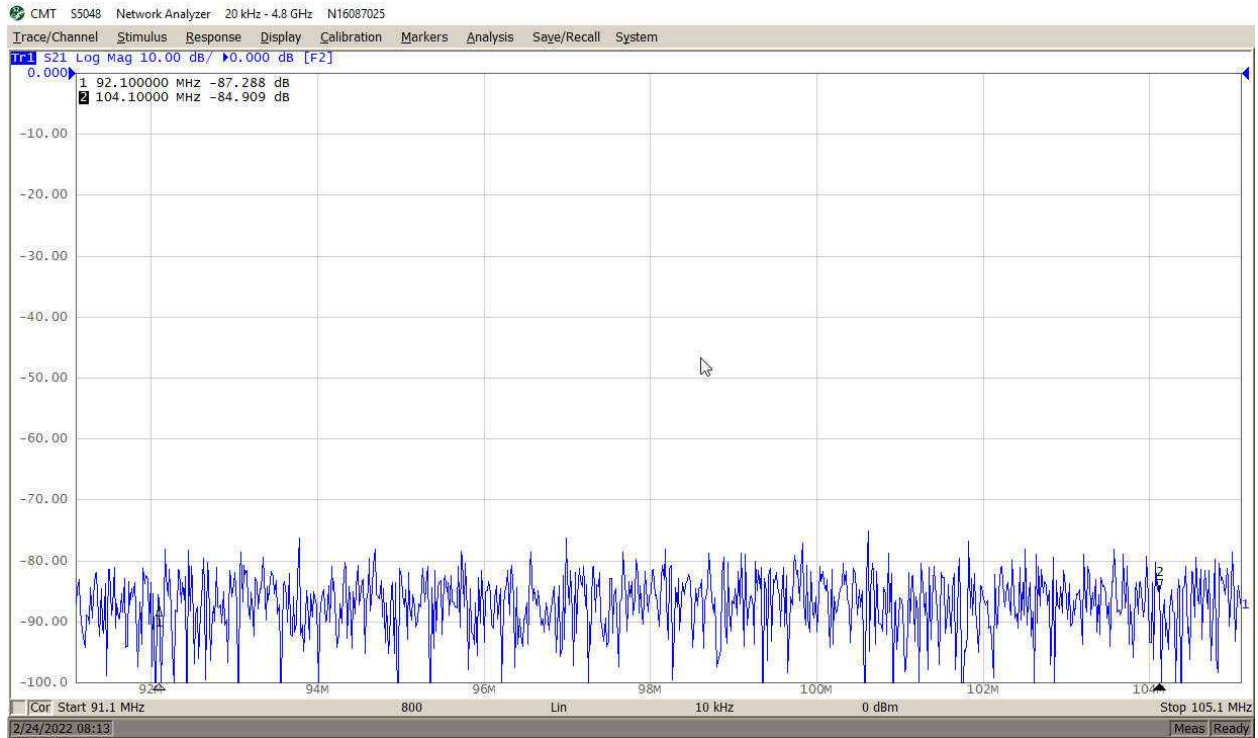
## Measurement 5: Isolation +/- 800 KHz. of 106.1 MHz.



## Measurement 6: Group Delay of 106.1 MHz.



## Measurement 7: Port to Port Isolation 99.9 to 106.1 MHz.

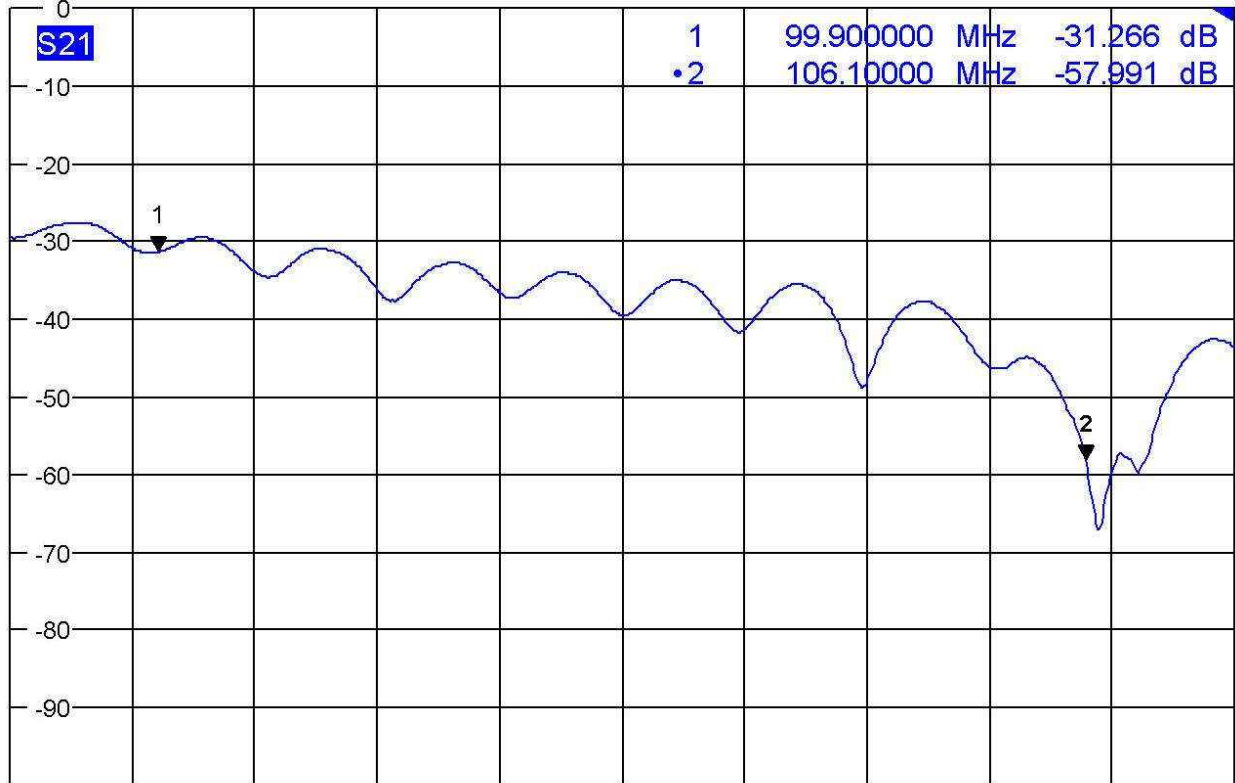




**Measurement 8: Final Antenna 99.9 and 106.1 MHz.**



Trc1 **S21** dB Mag 10 dB / Ref 0 dB Cal 1



Ch1 Start 98.9 MHz Pwr -10 dBm Stop 107.1 MHz

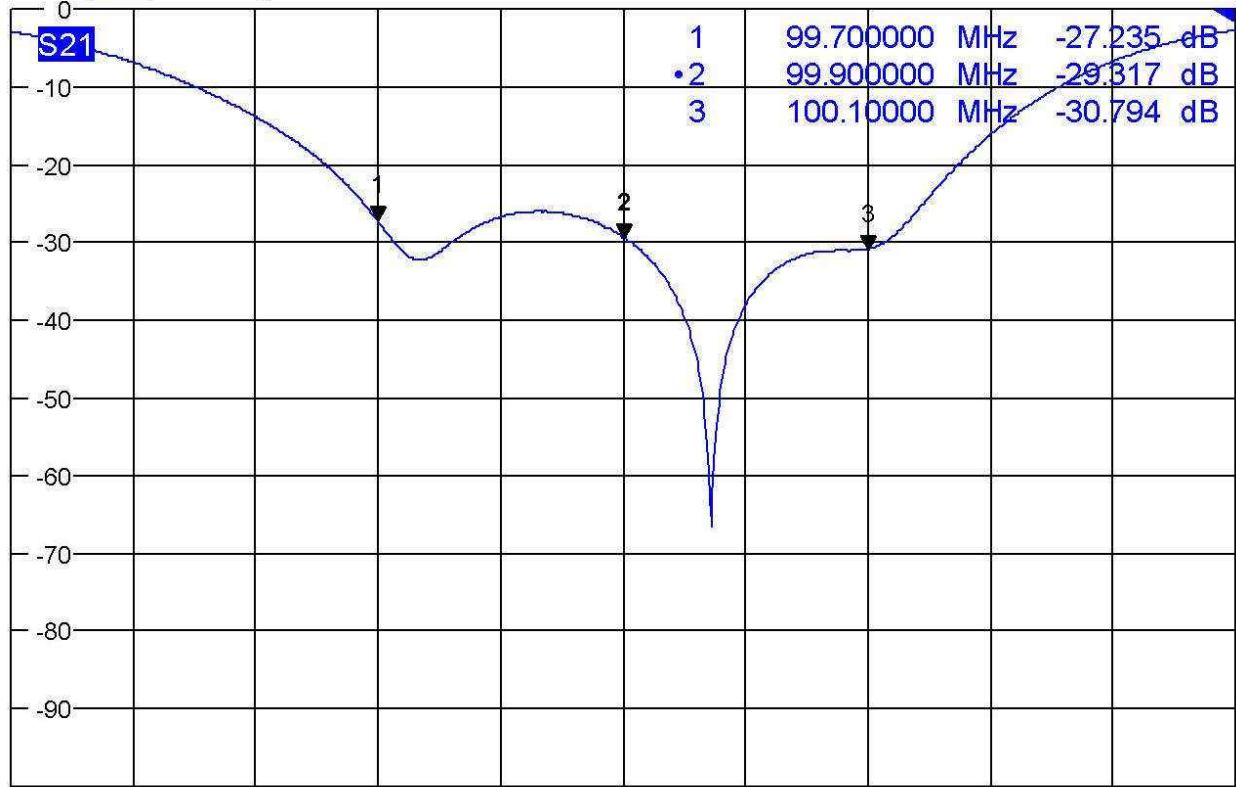
Date: 25.FEB.2022 12:09:00

### Measurement 9: Filter to Antenna Match 99.9 MHz.



Trc1 S21 dB Mag 10 dB / Ref 0 dB Cal

1



Ch1 Center 99.9 MHz

Pwr -10 dBm

Span 1 MHz

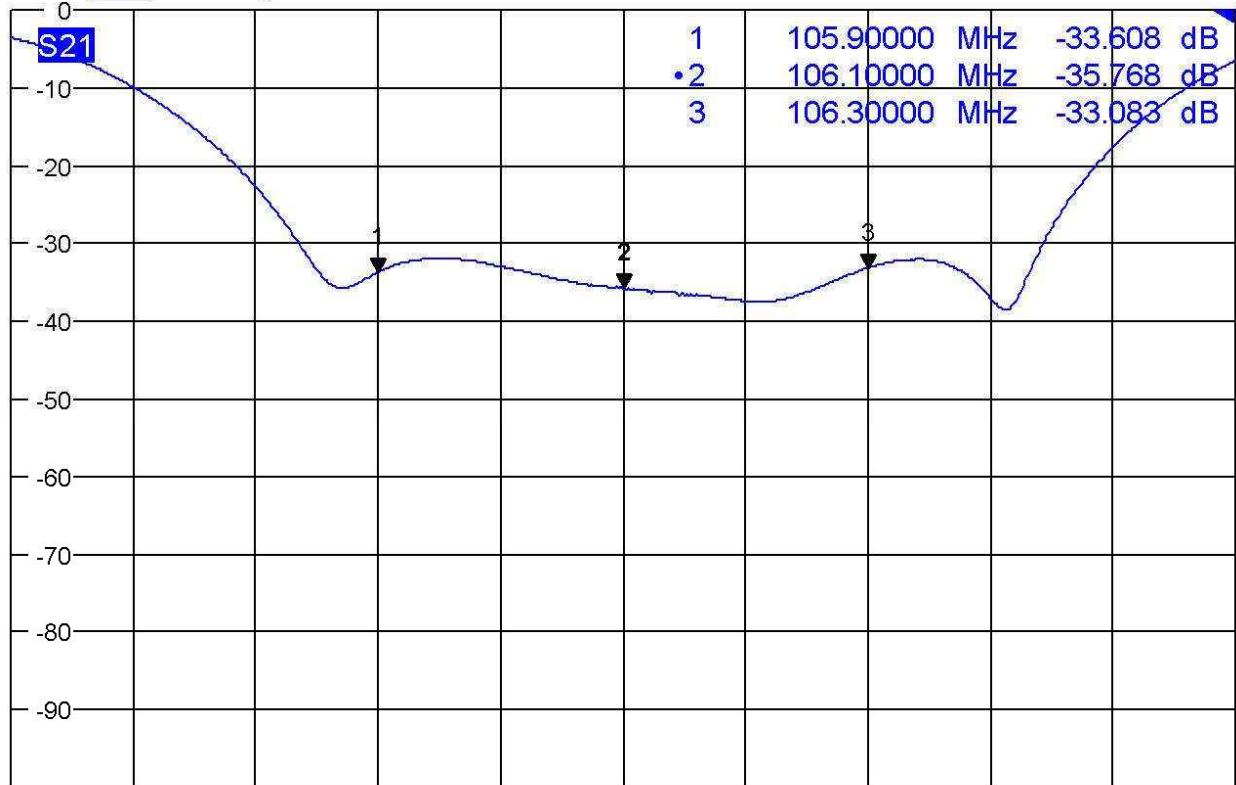
Date: 25.FEB.2022 12:50:03

### Measurement 10: Filter to Antenna Match 106.1 MHz.



Trc1 S21 dB Mag 10 dB / Ref 0 dB Cal

1



Ch1 Center 106.1 MHz

Pwr -10 dBm

Span 1 MHz

Date: 25.FEB.2022 12:52:20

**Measurement 11: 50 to 400 MHz. sweep of Feedline with Antenna as Load.**

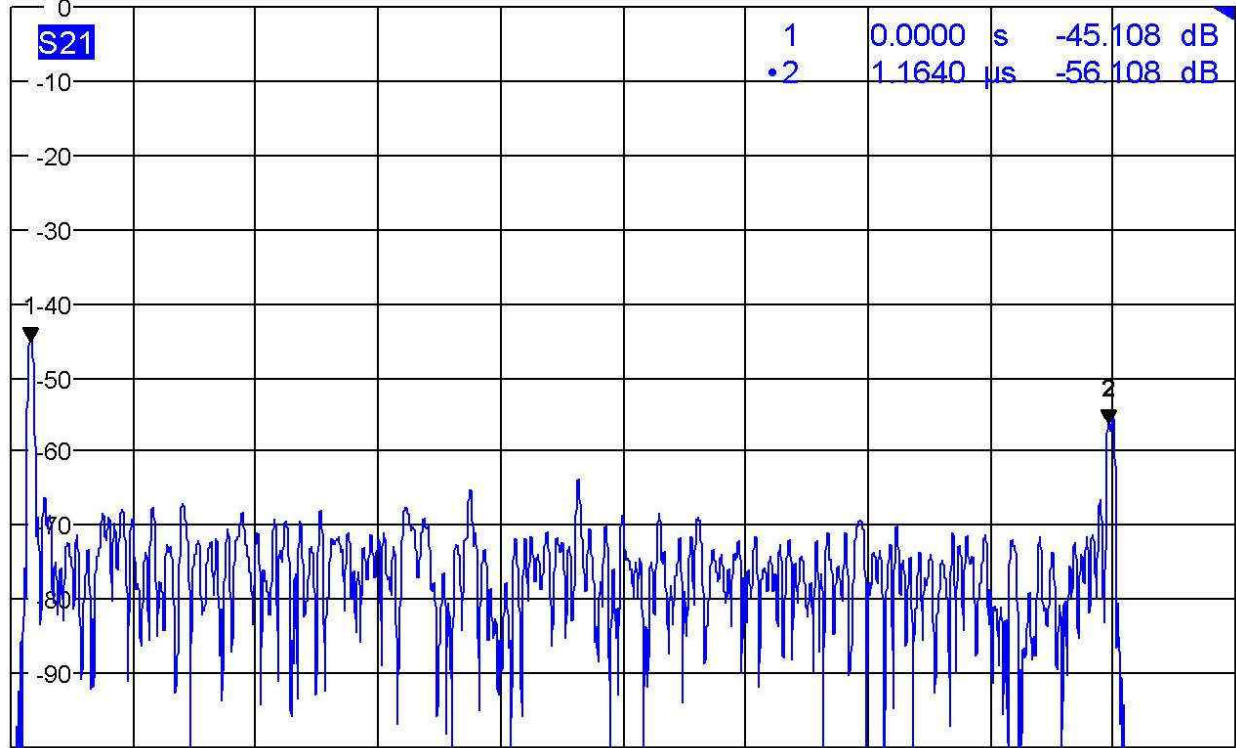
**TDR Return Loss Measurement.**

**Mkr#1 is the Test Measurement Location @ Zero Feet.**

**Mkr#2 is the 50-ohm Load @ Approx. 527 Feet.**



Trc1 S21 dB Mag 10 dB / Ref 0 dB Cal 1



Ch1 Start 50 MHz Pwr -10 dBm Stop 400 MHz  
Trc1 Start -20 ns Time Domain Stop 1.3 μs

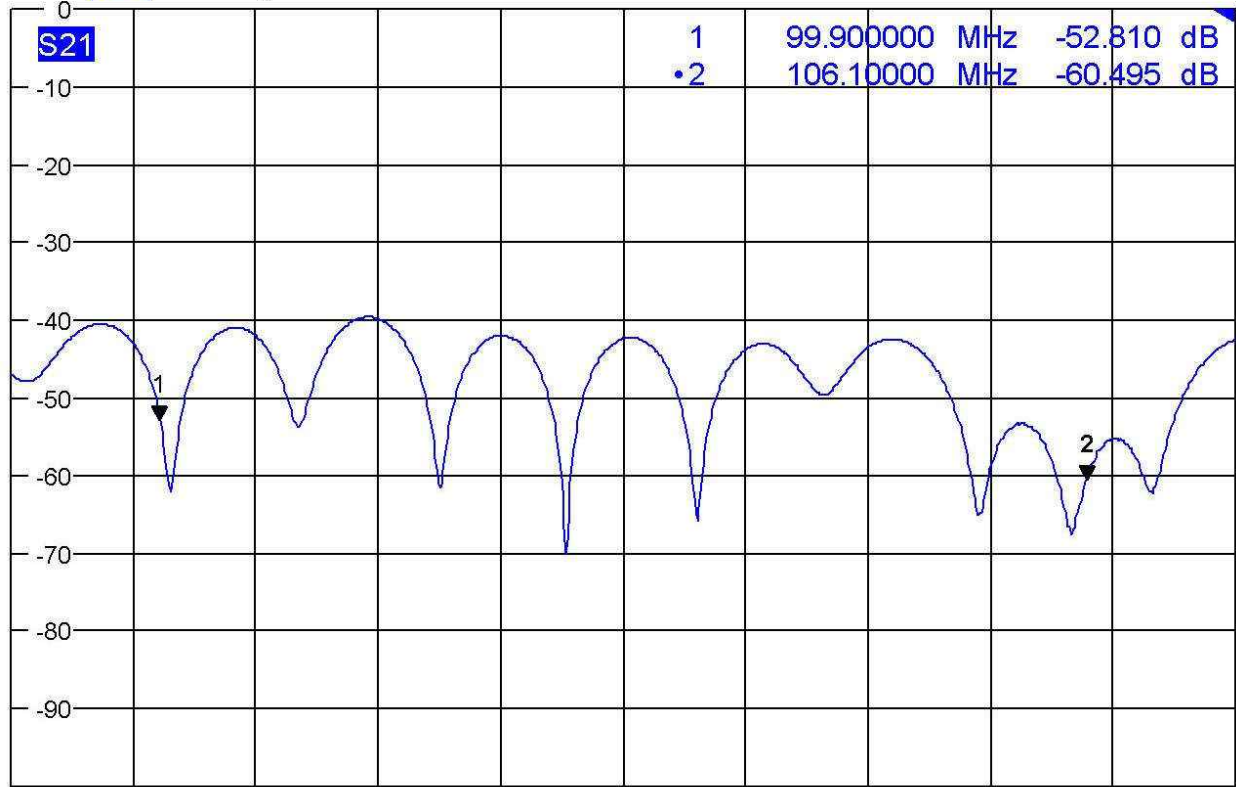
Date: 25.FEB.2022 11:49:04

### Measurement 12: Narrow Sweep of Feedline with 50-ohm Load.



Trc1 S21 dB Mag 10 dB / Ref 0 dB Cal

1



Ch1 Start 98.9 MHz

Pwr -10 dBm

Stop 107.1 MHz

Date: 25.FEB.2022 11:46:40

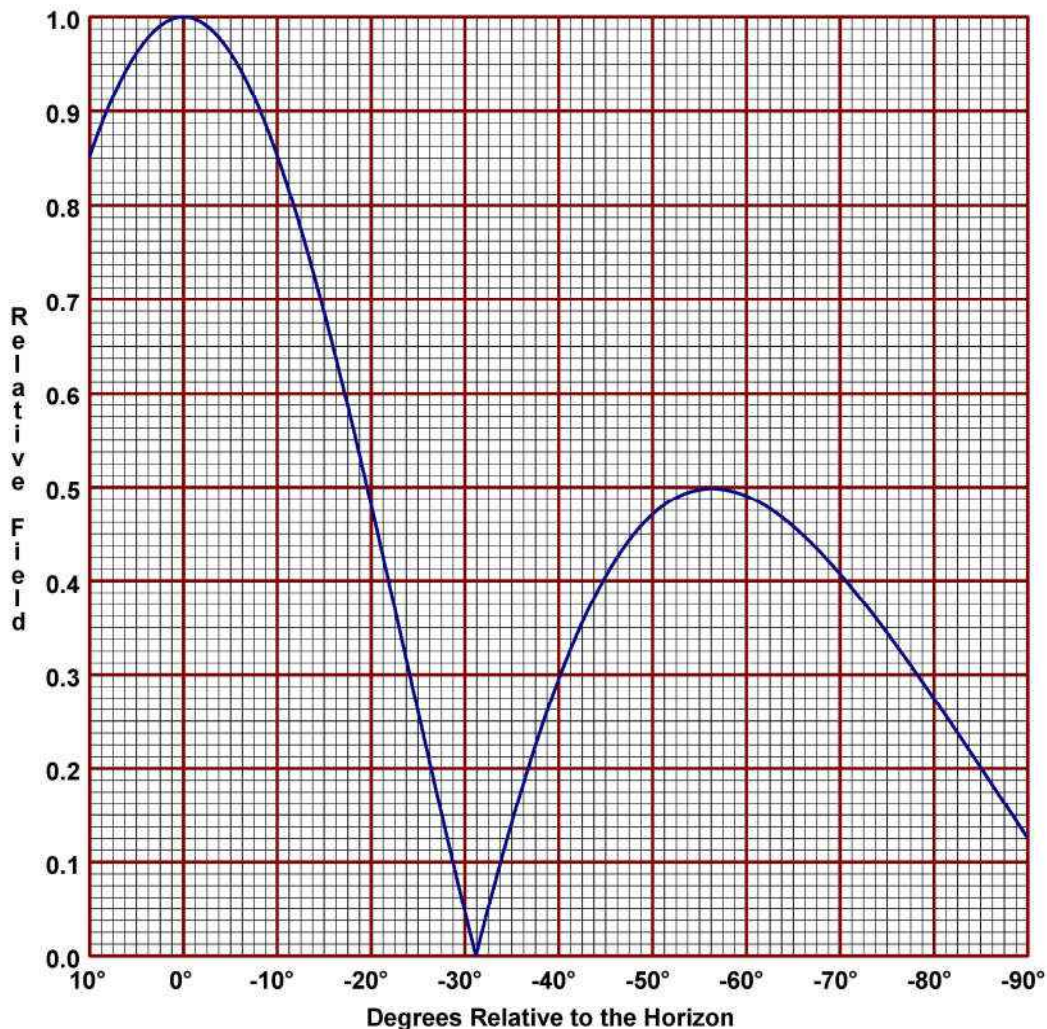
**Figure 1: Vertical Plane Relative Field Plot of 99.9 MHz.**

## **ERI<sup>®</sup> Vertical Plane Relative Field Pattern**

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Figure No: 3  
Call Sign: WXTY  
Location: LaFayette, FL  
Frequency: 99.9 MHz  
Antenna: 2 bay 1192-2CP-DA

Date: 9/17/2021  
H/V Power Ratio: 1  
.97 Wave-length Spacing  
0° Beam Tilt  
0% First Null Fill



**Horizontal Polarization:**  
Maximum: 2.212 (3.448 dB)  
Horizontal Plane: 2.212 (3.448 dB)  
Maximum ERP: 6.000 kW

**Vertical Polarization:**  
Maximum: 2.212 (3.448 dB)  
Horizontal Plane: 2.212 (3.448 dB)  
Maximum ERP: 6.000 kW



**Figure 2: Vertical Plane Relative Field Plot of 106.1 MHz.**

## **ERI<sup>®</sup> Vertical Plane Relative Field Pattern**

Electronics Research, Inc. 7777 Gardner Rd. Chandler, IN 47610 Phone(812) 925-6000 Fax(812) 925-4030 Web: www.eriinc.com

Figure No: 3

Call Sign: WQTL

Location: Tallahassee, FL

Frequency: 106.1 MHz

Antenna: 2 bay 1192-2CP-DA

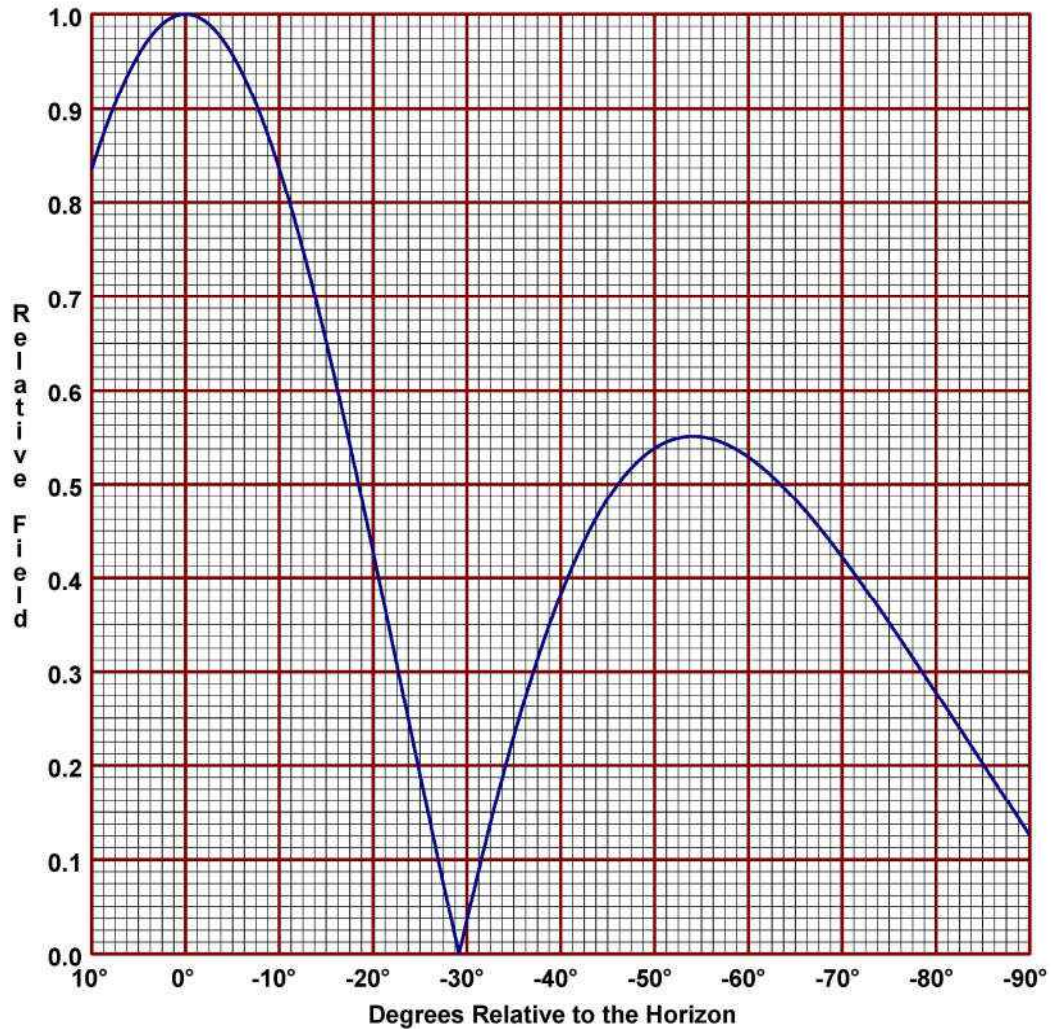
Date: 9/17/2021

H/V Power Ratio: 1

1.03 Wave-length Spacing

0° Beam Tilt

0% First Null Fill



**Horizontal Polarization:**  
Maximum: 2.233 (3.489 dB)  
Horizontal Plane: 2.233 (3.489 dB)  
Maximum ERP: 6.000 kW

**Vertical Polarization:**  
Maximum: 2.233 (3.489 dB)  
Horizontal Plane: 2.233 (3.489 dB)  
Maximum ERP: 6.000 kW

**Table 1: Power Analysis for 99.9 MHz.**

<b>Antenna Model:</b>	1192-2CP-DA	
		<i>Analog</i>
<b>Call Letters:</b>	WXTY (FM), Lafayette, Florida	
<b>Frequency:</b>	99.9 MHz	
<b>ERP:</b>	1.900 kW	2.788 dBk
<b>Polarization:</b>	Circular	
<b>Antenna Peak Gain:</b>	2.212 Numeric	3.448 dB
<b>Antenna Input Power:</b>	0.859 kW	-0.660 dBk
<b>Peak Voltage:</b>	293 volts	
<b>Transmission Line Type - Vertical Run:</b>	1-5/8-inch Air HELIAX®	
<b>Vertical Run Length:</b>	500 feet	152.4 meters
<b>Vertical Run Attenuation:</b>	0.203 dB/100- feet	0.666 dB/100-meters
<b>Transmission Line Type - Horizontal Run:</b>	1-5/8-inch Air HELIAX®	
<b>Horizontal Run Length:</b>	27 feet	8.2 meters
<b>Horizontal Run Attenuation:</b>	0.203 dB/100- feet	0.666 dB/100-meters
<b>Line Loss:</b>	-0.240 kW	1.069 dB
<b>Line Efficiency:</b>	78.176%	
<b>Power Output from Combiner:</b>	1.099 kW	0.409 dBk
<b>Peak Voltage:</b>	331 volts	
<b>Combiner Losses:</b>	-0.121 kW	0.452 dB
<b>Transmitter Power Output:</b>	1.219 kW	0.861 dBk



**Table 2: Power Analysis for 106.1 MHz.**

<b>Call Letters:</b>	WQTL (FM), Tallahassee, Florida	
<b>Frequency:</b>	106.1 MHz	
<b>ERP:</b>	1.900 kW	2.788 dBk
<b>Polarization:</b>	Circular	
<b>Antenna Peak Gain:</b>	2.233 Numeric	3.489 dB
<b>Antenna Input Power:</b>	0.850 kW	-0.706 dBk
<b>Peak Voltage:</b>	292 volts	
<b>Transmission Line Type - Vertical Run:</b>	1-5/8-inch Air HELIAX®	
<b>Vertical Run Length:</b>	500 feet	152.4 meters
<b>Vertical Run Attenuation:</b>	0.209 dB/100- feet	0.687 dB/100-meters
<b>Transmission Line Type - Horizontal Run:</b>	1-5/8-inch Air HELIAX®	
<b>Horizontal Run Length:</b>	27 feet	8.2 meters
<b>Horizontal Run Attenuation:</b>	0.209 dB/100- feet	0.687 dB/100-meters
<b>Line Loss:</b>	-0.246 kW	1.103 dB
<b>Line Efficiency:</b>	77.565%	
<b>Power Output from Combiner:</b>	1.096 kW	0.398 dBk
<b>Peak Voltage:</b>	331 volts	
<b>Combiner Losses:</b>	-0.091 kW	0.348 dB
<b>Transmitter Power Output:</b>	1.187 kW	0.746 dBk