Preliminary Specification

ROTOTILLER® LPX Series

Circularly Polarized FM Antenna

Project: University of Florida

Customer: WJUF-FM

Location: Inverness, FL

Model: LPX-4C

Specification No.: WJUF-FM02012023r1

Created By: John Lynch

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Electrical Characteristics

Channel:	211
Frequency:	90.1 MHz
Azimuth Pattern:	Non-directional
Azimuth Directivity:	1.00
Elevation Directivity:	2.133
Antenna Power Gain:	2.133 numeric (3.dB)
Electrical Beam Tilt:	0.00 degrees
First Null Fill:	1%
Second Null Fill:	0%
Input Power Required:	10.096 kW (10.042 dBk)
RF Input:	3-1/8-inch, 50Ω, 50 Ω
Input Power Rating:	12.0kW

Antenna VSWR (maximum): 1.07 : 1 or less, with single channel

1.15 : 1 or less, with field matching

1.25 : 1 or less, pole or LAMBDA Mounting Sectiion

1.50 : 1 or less, side mounted without field matching

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Antenna Mechanical Characteristics

Mounting Configuration:	Side Mounted
Height of Antenna:	32.63 feet (9.95 meters)
Height of Center of Radiation:	16.32 feet (4.97 meters)
Overall Height:	35.18 feet (10.72 meters)
Recommended Aperture Height:	45.18 feet (13.77 meters)
Deicing:	No deicer
Radomes:	No radomes
Antenna Weight:	318.00 lbs
Antenna Weight (With Radomes):	563.00 lbs
Effective Projected Area (EPA):	13.57 ft

1. Please note, the listed weights and effective wind areas are based on the PRELIMINARY design of the antenna. Final As-Built values for the antenna are typically within +/-10% of the Preliminary design values, and will be provided in the technical manual that accompanies the antenna. Specified loads for the antenna include the antenna and lightning spurs only. Specified loads for the mounting assembly include typical base mounts, standoff mounts, and tie-back assemblies for multi-level arrays. Custom mounting brackets/adapters and/or antenna input section are NOT included as part of this preliminary specification.
2. Loads calculated in accordance with the ANSI/TIA-222-G standard

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FM Antenna

MODEL LPX4-C

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Preliminary Power Analysis

Antenna Model: LPX-4C

	Analog		*Digital (-14 dBc)*	
Call Letters:				
Frequency:	90.1 MHz	Channel 211		
ERP:	22.300 kW	13.483 dBk	0.892 kW	-0.496 dBk
Polarization:	Circular		Circular	
Antenna RMS Gain:	2.133 Numeric	3.290 dB	2.133 Numeric	3.290 dB
Antenna Input Power:	10.455 kW	10.193 dBk	0.418 kW	-3.786 dBk
Peak Voltage:	1,022 volts		409 volts	
Transmission Line Type - Vertical Run:	HJ7-50A 1-5/8-inch Air HELIAX®		HJ7-50A 1-5/8-inch Air HELIAX®	
Vertical Run Length:	400 feet	121.9 meters	400 feet	121.9 meters
Vertical Run Attenuation:	0.192 dB/100-feet	0.631 dB/100-meters	0.192 dB/100-feet	0.631 dB/100-meters
Transmission Line Type - Horizontal Run:	HJ7-50A 1-5/8-inch Air HELIAX®		HJ7-50A 1-5/8-inch Air HELIAX®	
Horizontal Run Length:	50 feet	15.2 meters	50 feet	15.2 meters
Horizontal Run Attenuation:	0.192 dB/100-feet	0.631 dB/100-meters	0.192 dB/100-feet	0.631 dB/100-meters
Line Loss:	-2.305 kW	0.865 dB	-0.092 kW	0.865 dB
Line Efficiency:	81.936%		81.936%	
Power Output from Combiner:	12.760 kW	11.058 dBk	0.510 kW	-2.921 dBk
Peak Voltage:	1,130 volts		452 volts	
Combiner Losses:	-1.071 kW	0.350 dB	-0.043 kW	0.350 dB
Transmitter Power Output:	13.830 kW	11.408 dBk	0.553 kW	-2.571 dBk
Peak Voltage:	1,176 volts		470 volts	
Combined power into transmission line by type:	12.760 kW	1,130 volts	0.510 kW	452 volts
Combined power into antenna by type:	10.455 kW	1,022 volts	0.418 kW	409 volts
Total combined power into transmission line:	13.270 kW	1,581 volts		
Total combined power into antenna:	10.873 kW	1,431 volts		

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