

**EXHIBIT E  
ENGINEERING STATEMENT  
IN SUPPORT OF AN APPLICATION  
FOR CONSTRUCTION PERMIT TO  
REPLACE AN EXISTING ANTENNA SYSTEM  
WMXJ 100KW MAX-DA 307M AAT CH. 274  
POMPANO BEACH, FLORIDA**

**INTRODUCTION**

This statement was prepared on behalf of Jefferson Pilot Communications Company of Florida, licensee of FM broadcast station WMXJ Pompano Beach, FL. WMXJ is one of ten stations licensed to operate in the Miami area using a Master FM antenna system. The purpose of this statement is to provide technical information in support of an application on FCC Form 301 seeking authority to replace the existing antenna system and correct the antenna coordinates.

**GEOGRAPHIC COORDINATES**

The existing tower and antenna system are owned by American Tower, Inc., ("American"). The tower was properly registered by American with ASR number 1028046. The coordinates licensed to WMXJ are slightly different than those registered by American. This statement and FCC Form 301, to which it is attached, requests a minor correction in the licensed coordinates of WMXJ in order to conform to the coordinates registered by American. There are no changes in the structure or its location however, the minor correction will bring the WMXJ license in to full compliance with the tower registration.

**ANTENNA SYSTEM MODIFICATION**

In addition to the coordinate correction the application describes the replacement of the Master Antenna that will continue to accommodate the ten stations. The existing antenna

system has suffered significant deterioration due to environmental conditions along the coastal area. The new antenna has been designed with elements better suited to withstand the effects of the oceanic conditions. The new Master Antenna was designed to achieve the same directional characteristics as the currently licensed antenna, that is, to provide maximum coverage north and south along the coast, while restricting the energy east and west over the Ocean and the uninhabitable Florida Everglades. The maximum lobes of radiation north and south along the coast are identical to the currently licensed pattern, with 100 kW of ERP. An exact duplication of the radiation pattern east and west proved impractical since the radiating elements of the new antenna are of a different design, however, the variations are minor and occur in the uninhabited null areas to the east and west. There are no changes in the existing tower structure, the antenna radiation center HAAT and no change in the maximum lobe ERP of 100 kW.

The new directional antenna will be measured on a test range at the operating frequency of each of the ten stations. Those measured patterns will be submitted with each station's license application. For the purpose of this application and those of the other stations using the system, an envelope pattern encompassing the final measured pattern is described in Paragraph 10(e) of the FCC Form 301. Attached to this statement as Figure 1 is a tabulation of the azimuth envelope pattern in relative field strength and in dB relative to 1 kW for every 5° of azimuth. A plot of the pattern in relative field is attached as Figure 2. Compliance with the Commission's community coverage requirement has also been reaffirmed and a map demonstrating that the predicted 70 dBu contour completely encompasses the entire principal community of license is provided as Figure 3.

## **GRANDFATHERED CLASS C STATION**

WMXJ is grandfathered in the FM Table of Allotments as a Class C assignment. Its Class C designation became "grandfathered" as a result of the C0 classification created by the Commission in Report and Order FCC 00-368. The authorized licensed facilities and the

facilities proposed herein for WMXJ do not meet the minimum Class C HAAT specified in Section 73.211 of the rules, however the changes proposed in this application do not warrant a change in the “grandfathered” status of WMXJ. The proposal specifies a replacement antenna that involves essentially the same directional characteristics as the current system, which is shared with nine other FM stations. The multiple-user system was initially designed for the purpose of conserving energy by suppressing radiation to the East over the Atlantic Ocean and to the West over the uninhabited Florida Everglades. Although the station uses a directional antenna in order to conserve energy, there are no other circumstances or FCC limitations requiring directional operation by the station. Thus, under the present rules, the station could operate in a nondirectional mode with maximum facilities of 100kW at 600 meters HAAT. Since the purpose of the application is to correct the geographic coordinates to conform to the ASR coordinates registered by the owner of the supporting structure and to authorize the installation of a similar replacement directional antenna and since there has been no expressed need for spectrum recovery, a waiver of the minimum antenna height requirement in Section 73.211 is respectfully requested in order to continue the station’s “grandfathered” Class C status.

## **ENVIRONMENTAL PROCESSING AND RF EXPOSURE COMPLIANCE**

As previously stated the antenna proposed in this application is shared by the applicant, WMXJ and nine other FM broadcast stations. The proposals are categorically excluded from environmental processing by Section 1.1306 of the FCC Rules. They are excluded since the applications do not involve a site location as described in Section 1.1307(a) and as described below the safety limits for human exposure to radio-frequency (RF) energy in Section 1.1307(b) will not be exceeded. Since the collective proposals are considered not to have a significant effect on the quality of the human environment under Section 1.1307(a) and (b), environmental processing is not required.

The proposed antenna system will not subject workers or the general population to

levels of radio frequency energy in excess of the Radio frequency Radiation Exposure limits contained in Section 1.1310 of the FCC Rules. General access to the immediate site is controlled and the based facilities for the combined FM operations are equipped with suitable warning signs. There is one other FM broadcast facility operating from the tower. That station and its operating parameters have been included in the following calculation.

Based on information supplied by the manufacturer in the form of vertical plane relative field calculation plots, the maximum percentage of relative field in the vertical plane between minus 10 degrees and minus 90 degrees for the multi-user antenna system is less than 20 percent of maximum field at all frequencies. Since this is a combined antenna system, all ten stations have a common antenna height of 307 meters above ground. Nine stations will operate with an ERP of 100 kW H and V while the tenth station will operate with an ERP of 95 kW H and V. The EPA model for predicting ground-level power density contained in the Commission's bulletin was used to determine the "worst case" power density level for all locations 2 meters above ground for the combined operation.

The calculated power density for each of the nine 100 kW operations based on an assumed 20 percent of relative field is 2.87 microwatts/cm<sup>2</sup> per station. The contribution of 95 kW operation is 2.73 microwatts/cm<sup>2</sup>. Based on these calculation the total power density at two meters above ground for the proposed ten station system will be 28.56 microwatts/cm<sup>2</sup>. As previously stated, there is one other FM station, WEDR Channel 256 operating with ERP of 100 kW H and V with the antenna radiation center at 281 meters AGL. EPA model calculation for the contribution of WEDR at two meters above ground level, assuming 100 percent downward radiation was determined to be 85.84 microwatts/cm<sup>2</sup>. The total power density at 2 meters above ground for the ten stations using the master antenna and the single antenna of WEDR is 114.40 microwatts/cm<sup>2</sup> or 11.4 percent of the MPE limit for controlled exposure and 57.2 percent for uncontrolled exposure.

It has been demonstrated that occupational exposure in excess of the guidelines is not

possible at any ground-level locations. Nevertheless, the applicant has adopted a work policy that is designed to avoid harmful exposure when work is being done at higher elevations on the tower. Accordingly, workers will be protected from excessive exposure to radio frequency field in areas of close proximity to the radio frequency source by employing the methods recommended in OET Bulletin No. 65, Version 97-01. Preventative steps to avoid excessive exposure shall include scheduling work on the tower when the facility is shut down or operating at reduced power or by time averaging.

Prepared by

**LOHNES AND CULVER**

8309 Cherry Lane  
Laurel, MD. 20707

October, 2003

**LOHNES AND CULVER**  
**LAUREL, MARYLAND**

**FIGURE 1**

Page 1 of 2

Project No.:	1547	<b>Directional Envelope Pattern</b>	
Station:	<b>WPYM, WLVE, WZTA, WPOW, WFLC, WHYI-FM, WMXJ, WMIB &amp; WHQT</b>	Max. ERP (kW):	100 (20.0 dBk)
Channel:	226 - 286 (93.1 - 105.1 MHz)	RC Ht.(m):	307 HAAT
Antenna Location:	ASR. No. 1028046	Coordinates:	N 25° 58' 02.4" W 80° 12' 34.0"

Bearings ETN (Degrees)	Relative Field Strength	dB rel to 1 kW	
0	0.990	19.91 dBk	0°
5	0.995	19.96 dBk	
10	1.000	20.00 dBk	
15	0.995	19.96 dBk	
20	0.990	19.91 dBk	
25	0.960	19.65 dBk	
30	0.930	19.37 dBk	
35	0.885	18.94 dBk	
40	0.840	18.49 dBk	
45	0.800	18.06 dBk	
50	0.760	17.62 dBk	
55	0.740	17.38 dBk	
60	0.720	17.15 dBk	
65	0.715	17.09 dBk	
70	0.710	17.03 dBk	
75	0.715	17.09 dBk	
80	0.720	17.15 dBk	90°
85	0.733	17.30 dBk	
90	0.745	17.44 dBk	
95	0.753	17.54 dBk	
100	0.760	17.62 dBk	
105	0.760	17.62 dBk	
110	0.760	17.62 dBk	
115	0.745	17.44 dBk	
120	0.732	17.29 dBk	
125	0.723	17.18 dBk	
130	0.715	17.09 dBk	
135	0.720	17.15 dBk	
140	0.725	17.21 dBk	
145	0.753	17.54 dBk	
150	0.780	17.84 dBk	
155	0.820	18.28 dBk	
160	0.860	18.69 dBk	
165	0.900	19.08 dBk	
170	0.940	19.46 dBk	
175	0.965	19.69 dBk	
180	0.990	19.91 dBk	180°
185	0.995	19.96 dBk	
190	1.000	20.00 dBk	
195	0.995	19.96 dBk	
200	0.990	19.91 dBk	
205	0.965	19.69 dBk	
210	0.940	19.46 dBk	
215	0.900	19.08 dBk	
220	0.860	18.69 dBk	

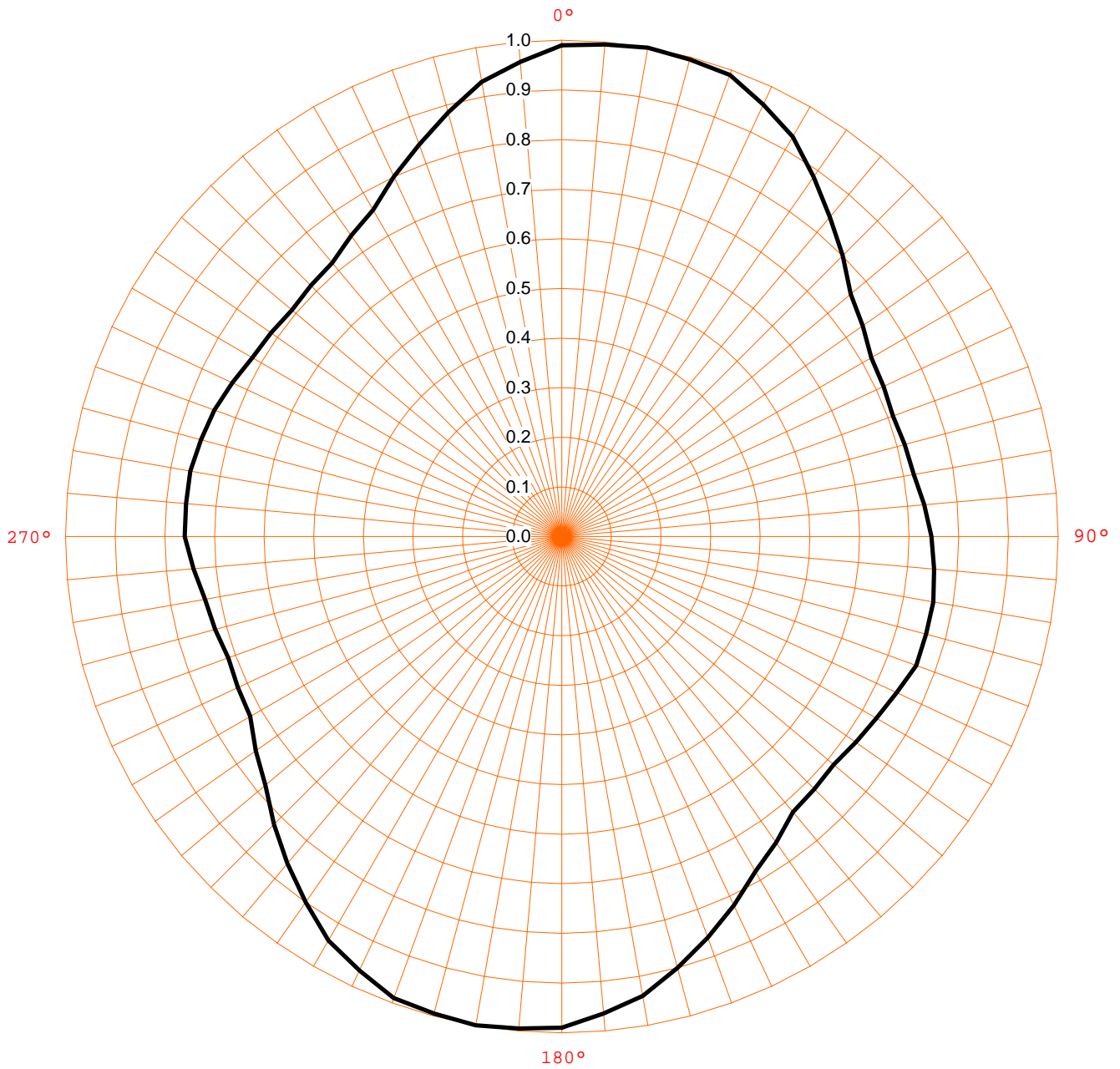
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**LAUREL, MARYLAND**

**FIGURE 1**

Page 2 of 2

225	0.820	18.28 dBk	
230	0.780	17.84 dBk	
235	0.753	17.54 dBk	
240	0.725	17.21 dBk	
245	0.720	17.15 dBk	
250	0.715	17.09 dBk	
255	0.723	17.18 dBk	
260	0.730	17.27 dBk	
265	0.745	17.44 dBk	
270	0.760	17.62 dBk	270°
275	0.760	17.62 dBk	
280	0.760	17.62 dBk	
285	0.753	17.54 dBk	
290	0.745	17.44 dBk	
295	0.733	17.30 dBk	
300	0.720	17.15 dBk	
305	0.715	17.09 dBk	
310	0.710	17.03 dBk	
315	0.715	17.09 dBk	
320	0.720	17.15 dBk	
325	0.740	17.38 dBk	
330	0.760	17.62 dBk	
335	0.800	18.06 dBk	
340	0.840	18.49 dBk	
345	0.885	18.94 dBk	
350	0.930	19.37 dBk	
355	0.960	7.78 dBk	

**FIGURE 2**  
**AZIMUTH ENVELOPE PATTERN**  
**NON-REQUIRED DIRECTIONAL ANTENNA**  
**(Relative Field Strength)**



Project No. 1547  
Station(s): WPYM, WLVE, WZTA, WPOW,  
WFLC, WHYI-FM, WMXJ, WMIB, WHQT &  
WAMR-FM\*  
Channel(s): 226 - 298 (93.1 - 107.5 MHz)  
Antenna Location: ASR No. 1028046  
Coordinates: N25° 58' 02.4" W80° 12' 34.0"  
Max. ERP: 100 kW / \* WAMR-FM 95 kW  
RC Ht: 307 m HAAT



