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MAJOR AMENDMENT APPLICATION FOR A PENDING LOW POWER FM (LPFM) STATION (BNPL-20131112BNM) PROPOSING TO SERVE MIAMI, FL



Prepared For:

- Beware, Inc.
- 1332 NW 117th Street
Miami, FL 33167

Prepared By:

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Prepared On:

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Proposed Parameters:

Channel:	237 (95.3 MHz)
ERP:	100 W
HAAT:	25.6 m
Waiver:	Yes
Antenna:	Omni
Terrain:	3 Arc Second

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1.0 PURPOSE OF LPFM AMENDMENT APPLICATION

The purpose of this major amendment of Beware, Inc. (Beware) pending LPFM application (BNPL-20131112BNM) is to change channels from the initially requested Channel 224 (92.7 MHz) to the newly proposed Channel 237 (95.3 MHz) and to change transmitter sites in order to separate from MX Group #105 and become a singleton. The enclosed engineering demonstrates that the newly proposed channel and transmitter site meets all applicable requirements pursuant to FCC Rules and the application should therefore be granted so that Beware can begin serving the community of Miami, FL.

2.0 STATION TRANSMITTER & STUDIO LOCATION

The proposed transmitter site shall be at Crown Castle's 151 ft self-supporting tower (Site ID: 812074) which is located at 20855 NE 16th Ave in North Miami Beach, FL. The proposed transmitter site is approximately 6.7 miles NNE of the proposed main studio site. The antenna shall be side-mounted on the self-supporting tower at the 80 ft level AGL. The studio's physical address and the transmitter site's geographical coordinates are:

2.1 Studio Site Physical Address

The studio shall be located at the following physical address:

1332 NW 117th Street
Miami, FL 33167

2.2 Transmitter Site Geographic Coordinates (NAD27)

The following North American Datum 27 (NAD 27) coordinates identify the location of the proposed LPFM antenna site:

N. Latitude 25° 58' 03.2"
W. Longitude 080° 10' 12.9"

See Appendix A (NAD83 to NAD27 Conversion)

2.3 Antenna Structure Registration (ASR)

The 70 ft light pole, which the proposed LPFM antenna shall be mounted to, does not require an Antenna Structure Registration (ASR) or an FAA

study since the structure passes the 100:1 slope test as demonstrated from the FCC's TOWAIR program depicted in **Appendix B** of this report.

3.0 ANTENNA AND SITE ELEVATIONS - ROUNDED ON FCC 318 FORM

3.1 Height of Site AMSL

9.0 ft / 2.7 m

3.2 Overall Height of Structure AGL

151.0 ft / 46.0 m

3.3 Antenna Height Radiation Center AGL

80.0 ft / 24.4 m

3.4 Antenna Height Radiation Center AMSL

89.0 ft / 27.1 m

3.5 Antenna Height Above Average Terrain (HAAT) – 3 Second Terrain

84.0 ft / 25.6 m (Refer to **Appendix C** for HAAT Calculations)

4.0 LPFM EFFECTIVE RADIATED POWER

Pursuant to 47 C.F.R. Section 73.811(a) – Maximum Facilities: LPFM stations will be authorized to operate with maximum facilities of 100 watts Effective Radiated Power (ERP) at an antenna Height Above Average Terrain (HAAT) of 30 meters. An LPFM station with an antenna HAAT that exceeds 30 meters will not be permitted to operate with an ERP greater than that which would result in an F(50,50) 60 dBuV/m contour of 5.6 km. In no event will an ERP less than one watt be authorized. No facility will be authorized in excess of one watt ERP at 450 meters HAAT.

Since the calculated antenna HAAT is 25.6 m (4.4 m below 30.0 m AAT) as demonstrated in **Appendix C** of this document, the applicant proposes to operate with the maximum authorized ERP of 100 W, as calculated in **Appendix D**, in order to meet the LPFM maximum power and antenna height requirements pursuant to 47 C.F.R. Section 73.811(a) of the FCC Rules. The proposed antenna HAAT of 25.6 m and ERP of 100 W produces an F(50,50) 60 dBuV/m service contour of 5.6 km. Therefore, the proposed power and height combination meets

the FCC's LPFM power and antenna height requirements pursuant to Section 73.811(a) of the FCC rules.

5.0 **FREQUENCY SEARCH PRESELECTION OVERVIEW**

5.1 **Channels Found With No Spacing Violations**

Pursuant to 47 C.F.R. Section 73.807(a)(1) (Minimum Distance Separation Between Stations) of the FCC Rules, the following table depicts channels available for the assignment of an LPFM station at the proposed location that are fully spaced pursuant to Section 73.807(a)(1):

Channel	Comments
NONE	There are no channels at the proposed location that meet the minimum spacing requirements pursuant to 47 C.F.R. Section 73.807(a)(1) of the FCC Rules.

5.2 **Channel Found Requiring a Second Adjacent Channel Waiver**

Pursuant to 47 C.F.R. Section 73.807(e)(1) (Waiver Of The Second-Adjacent Channel Separations) of the FCC Rules, the following table depicts the applicant's proposed channel which is available for the assignment of an LPFM station at the proposed location:

ERP	Channel	Comments
100 W	237	Channel 237 (95.3 MHz) meets the minimum spacing requirements pursuant to 47 C.F.R. Section 73.807(a)(1) of the FCC Rules for co-channel and first-adjacent channel stations. Channel 237 is short-spaced with two licensed second adjacent channel facilities but meets the second-adjacent channel waiver requirements pursuant to 47 C.F.R. Section 73.807(e)(1) of the FCC Rules.

6.0 ALLOCATION ANALYSIS & 2nd ADJACENT CHANNEL WAIVER REQUEST

As indicated in Section 5 of this report, the only channels available for an LPFM facility at the proposed site will require a waiver of second adjacent channel separations as permitted pursuant to Section 73.807(e)(1) of the FCC Rules.

6.1 LPFM Short Space Study - 3 Second Terrain Data Used

An LPFM station will not be authorized initially unless the minimum distance separations pursuant to Section 73.807 of the FCC Rules are met. **Appendix E** in this report depicts the results of a channel spacing study which demonstrates that the proposed LPFM facility is short-spaced with the following second adjacent channel licensed facilities:

- WRMA-FM FCC File No.: BLH-20100420AIC
- WMGE-FM FCC File No.: BLH-20050225AAG

Note: 3 second terrain data was used for calculations.

6.2 Second Adjacent Channel Short Spacing - Waiver Required

Pursuant to Section 73.807(e)(1) of the FCC Rules, the FCC requires an LPFM station to establish that its proposed operations will not result in interference to any authorized radio service. An LPFM station may do so by demonstrating that no actual interference will occur due to intervening terrain or lack of population. An LPFM station may use an undesired to desired signal strength ratio methodology to define areas of potential interference. Based on the undesired-to-desired signal ratio method, when contour overlap is caused to a second adjacent frequency, "interference is predicted to occur where the LPFM's undesired signal exceeds the protection station's desired signal by 40 dB or more."

WRMA-FM: FCC F(50,50) curves were used to determine the signal strength, in dBu, of WRMA-FM (Channel 239) at the proposed LPFM

facility's transmitter site. The WRMA-FM -FM signal strength at the proposed LPFM facility's transmitter site was calculated to be 76.292 dBu (**Appendix F**). Combining the 40 dB U/D ratio, the resulting interference contour for the proposed LPFM facility is the 116.292 dBu contour ($76.292 + 40 = 116.292$ dBu). Based on the parameters for the proposed LPFM facility, its 116.292 dBu interference contour extends a maximum distance of 107.3 meters from the antenna. Referring to the Google Earth Exhibits in Appendix F, it can be see that there are a few one-story buildings and no major four-lane highways within the F(50,10) 116.292 dBu interference zone; therefore, it must be demonstrated that the signal from the antenna will not reach below 1.83 m AGL (6.0 ft). Calculations demonstrate that the signal from a 3-bay Shively model 6812 half-wave spaced antenna would not penetrate below 1.83 m AGL (**See table and elevation pastern in Appendix F**) and therefore complies with Section 73.807(e)(1) of the FCC rules.

WMGE-FM: FCC F(50,50) curves were used to determine the signal strength, in dBu, of WMGE-FM (Channel 235) at the proposed LPFM facility's transmitter site. The WMGE-FM signal strength at the proposed LPFM facility's transmitter site was calculated to be 110.278 dBu (**Appendix F**). Combining the 40 dB U/D ratio, the resulting interference contour for the proposed LPFM facility is the 150.278 dBu contour ($110.278 + 40 = 150.278$ dBu). **Based on the parameters for the proposed LPFM facility, its 150.278 dBu interference contour extends a maximum distance of 2.1 meters from the antenna.** Since the proposed LPFM facility's antenna height radiation center is 24.4 meters AGL and the interference area extends a maximum distance of only 2.1 meters from the antenna, the interference area will not come close to reaching the ground. In fact, the interference area will not come any closer to the ground than 22.3 meters above the ground (73.2 feet).

Accordingly, it has been demonstrated that no population will be subject to interference from the proposed station according to the undesired-to-desired ratio method. **As such, a wavier is respectfully requested for the proposed LPFM second-adjacent channel short-spacing with WRMA-FM and WMGE-FM.** WRMA-FM and WMGE-FM do not operate with a Radio Reading Service.

7.0 INTERFERENCE TO TRANSLATOR OR BOOSTER INPUT SIGNALS

Pursuant to the requirements of 47 C.F.R. Section 73.827(a), **Appendix G** lists the following FM translator stations (no FM boosters operate within 10 km) which are located within 10 km of the proposed LPFM site and are subject to potential third adjacent-channel interference to the reception of the FM translator station's input channel from their parent station from the proposed LPFM facility:

FM Boosters

- **NONE**

FM Translators

- W262AN FCC File No: BPFT-20140702AAB
Primary Station: WMGE (FM)
Input Channel: 235 (94.9 MHz)
3rd Adjacent: **No**
- W228BV FCC File No: BLFT-20110729AKB
Primary Station: WMIA-FM
Input Channel: 230 (93.9 MHz)
3rd Adjacent: **No**
- W245BF FCC File No: BLFT-20071207ABJ
Primary Station: WRGP (FM)
Input Channel: 201 (88.1 MHz)
3rd Adjacent: **No**
- W262AN FCC File No: BLFT-20110329ADV
Primary Station: WMGE (FM)
Input Channel: 235 (94.9 MHz)
3rd Adjacent: **No**

- W262AN FCC File No: BPFT-20131119BFO
 Primary Station: WMGE (FM)
 Input Channel: 235 (94.9 MHz)
 3rd Adjacent: **No**

- W262AN FCC File No: BPFT-20141124ARK
 Primary Station: WMGE (FM)
 Input Channel: 235 (94.9 MHz)
 3rd Adjacent: **No**

- W231CU FCC File No: BPFT-20141218AFP
 Primary Station: WMIA-FM
 Input Channel: 230 (93.9 MHz)
 3rd Adjacent: **No**

There are no FM translator stations or FM Booster stations, within 10 km of the proposed LPFM transmitter site, with input channels that are third-adjacent (CH 234 or CH 240) to the proposed LPFM facility (CH 237); therefore, the proposed LPFM facility will not cause interference to the input signals of surrounding FM translator and/or FM booster stations.

8.0 TELEVISION CHANNEL 6 (TV6) STATIONS

Channel 6 interference is not a factor for LPFM stations operating on channels 221 – 300 and therefore is not applicable to the application for further analysis.

9.0 AM STATION PROXIMITY

This rule part protects the operations of AM broadcast stations from nearby tower construction that may distort the AM antenna patterns. All parties holding or applying for Commission authorizations that propose to construct or make a significant modification to an antenna tower or support structure in the immediate vicinity of an AM antenna, or propose to install an antenna on an AM tower, are responsible for completing the analysis and notice process described in the FCC Rules, and for taking any measures necessary to correct disturbances of the AM radiation pattern, if such disturbances occur as a result of the tower construction or modification or as a result of the installation of an antenna on an AM tower. In

the event these processes are not completed before an antenna structure is constructed, any holder of or applicant for a Commission authorization is responsible for completing these processes before locating or proposing to locate an antenna on the structure, as described in the FCC Rules.

There are no AM stations within 3.2 km of the proposed coordinates as demonstrated in the FCC's AM Query Study below:

Wed Dec 24 11:56:29 2014 Eastern time	
Search Parameters	
Search radius:	3.20 km
Center lat / lon:	N 25 58 3.17 W 80 10 12.93
Lower Frequency	530
Upper Frequency	1700
*** 0 AM Records within 3.20 km distance of 25° 58' 3.17 " N, 80° 10' 12.93" W ***	

10.0 INTERNATIONAL COORDINATION

The proposed facility is not within 320 km of the Canadian or Mexican borders and therefore, does not require international coordination.

11.0 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

11.1 General Environmental Requirements

The proposed support structure and antenna will not:

- Require high intensity white lighting.
- Is not located in an official designated wilderness area or wildlife preserve.
- Does not threaten the existence or habitat of endangered species.
- Does not affect districts, sites, buildings, structures or objects significant in American history, architecture, archaeology, engineering

or culture that are listed in the National Register of Historic Places or are eligible for listing.

- Does not affect Indian religious sites.
- Is not located in a floodplain
- Does not require construction that involves significant changes in surface features (e.g., wetland fill, deforestation or water diversion).

11.2 Radio Frequency Radiation (RFR) Compliance

The proposed Channel 237 LPFM facility will not have a significant environmental impact and complies with the maximum permissible radio frequency electromagnetic exposure limits for controlled and uncontrolled environments pursuant to §1.1307 of the FCC Rules and the FCC's Office of Engineering and Technology Bulletin 65, Edition 97-01 (OET-65).

The LPFM transmitter, transmission line and antenna system shall produce an ERP of 100 W (circular polarization). It was determined that the maximum lobe of radiation from the base of the tower will occur at approximately 203.3 feet from the base of the tower (216.4-foot radial distance from the antenna center). At approximately 203.3 feet from the base of the tower, the depression angle of the main lobe will be approximately 20° below the horizontal. At that point, the relative field will be 0.615 and the power density six feet above the ground will be 0.00058 mW/cm². This equates to only 0.06% of the Maximum Permissible Exposure (MPE) limits for Occupational/Controlled Exposure and only 0.29% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (ANSI). Since operation of the proposed LPFM facility will not exceed 5.0% of the MPE limit for Occupational Controlled Exposure or General Population Uncontrolled Exposure at any point on the ground, the proposed facility is not considered a "significant contributor" to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01. Therefore, contributions of

exposure from other sources were not accounted for in this analysis. It is safe to conclude that the emissions would be insignificant and the proposed LPFM facility is well within the maximum allowable requirements.

12.0 RADIO READING SERVICE

LPFM stations must satisfy the second-adjacent channel minimum distance separation requirements with respect to any third-adjacent channel FM station that, as of September 20, 2000, broadcasts a radio reading service via a subcarrier frequency pursuant to Section 73.807(a)(2) of the FCC Rules. Referring to **Appendix E** in this document, it can be seen that the proposed LPFM station satisfies the third-adjacent channel Radio Reading requirements pursuant to Section 73.807(a)(2) of the FCC Rules.

13.0 NOTIFICATIONS

The proposed facility is not within the affected areas of the following installations and stations pursuant to 73.1030 of the FCC Rules.

- 73.1030(a) National Radio Astronomy Observatory Quite Zone at Green Bank, WV.....**Okay**
- 73.1030(a) Arecibo Observatory, Puerto Rico, Radio Astronomy Coordination Zone.....**Okay**
- 73.1030(b) Table Mountain Quiet Zone, Boulder, CO.....**Okay**
- 73.1030 (c) Monitoring Station at ALLEGAN, MI.....**Okay**
- 73.1030 (c) Monitoring Station at ANCHORAGE, AK.....**Okay**
- 73.1030 (c) Monitoring Station at BELFAST, ME.....**Okay**
- 73.1030 (c) Monitoring Station at CANANDAIGUA, NY.....**Okay**
- 73.1030 (c) Monitoring Station at DOUGLAS, AZ.....**Okay**
- 73.1030 (c) Monitoring Station at FERNDALE, WA.....**Okay**
- 73.1030 (c) Monitoring Station at VERO BEACH, FL.....**Okay**
- 73.1030 (c) Monitoring Station at GRAND ISLAND, NE.....**Okay**
- 73.1030 (c) Monitoring Station at KINGSVILLE, TX.....**Okay**
- 73.1030 (c) Monitoring Station at LAUREL, MD.....**Okay**

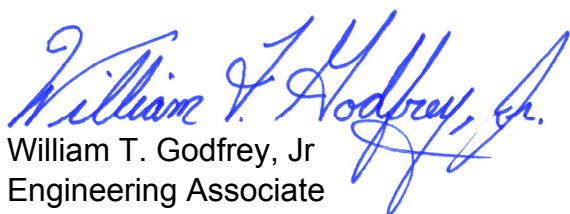
- 73.1030 (c) Monitoring Station at LIVERMORE, CA.....**Okay**
- 73.1030 (c) Monitoring Station at POWDER SPRINGS, GA..... **Okay**
- 73.1030 (c) Monitoring Station at SANTA ISABEL, PR.....**Okay**
- 73.1030 (c) Monitoring Station at HONOLULU, OAHU, HI..... **Okay**

14.0 CONCLUSION

The engineering conducted and discussed in this report demonstrates that Channel 237 (95.3 MHz) is available for the proposed LPFM facility. The proposed LPFM facility is well within compliance on all regulatory matters and a construction permit should therefore be issued to Beware.

15.0 CERTIFICATION

This technical statement was prepared by William T. Godfrey, Jr., Engineering Associate with the firm Kessler and Gehman Associates, Inc. having offices in Gainesville, Florida, and has been working with the firm in the field of radio and television broadcast consulting since 1998. Mr. Godfrey was a graduate from the University of North Florida and a Distinguished Military Graduate from the University of Florida. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.



William T. Godfrey, Jr
Engineering Associate
Kessler and Gehman Associates, Inc.



APPENDIX A – NAD83 TO NAD27 CONVERSION

Antenna Location Coordinates. The proposed antenna site must be specified using North American Datum 27 (NAD27) coordinates. The National Geodetic Survey is in the process of replacing NAD27 with the more accurate 1983 North American Datum (NAD83) and updating current topographic maps. In addition, coordinates determined by use of the satellite-based Global Positioning System already reflect the NAD83 datum. To prevent intermixing of data from these two sources, the Commission has announced that, until further notice, all LPFM applicants are to furnish coordinates based on NAD27 datum on all submissions and the Commission will continue to specify NAD27 coordinates in its data bases and authorizations.

Output from NADCON for station NAD83 to NAD27 Conversion

North American Datum Conversion

NAD 83 to NAD 27

NADCON Program Version 2.11

=====

Transformation #: 1 Region: Conus

	Latitude	Longitude
NAD 27 datum values:	25 58 3.16875	80 10 12.93296
NAD 83 datum values:	25 58 4.50000	80 10 12.10000
NAD 27 - NAD 83 shift values:	-1.33125	0.83296 (secs.)
	-40.968	23.171 (meters)
Magnitude of total shift:		47.067 (meters)



[NGS HOME PAGE](#)

APPENDIX B – FCC TOWAIR Study

Antenna Structure Registration (ASR) & FAA filing determination was calculated from the FCC's structure registration tool:

<http://wireless2.fcc.gov/UlsApp/AsrSearch/towairSearch.jsp>

Results: Structure does not require an ASR or an FAA study

TOWAIR Determination Results HELP

[New Search](#) [Printable Page](#)

A routine check of the coordinates, heights, and structure type you provided indicates that this structure does not require registration.

***** NOTICE *****

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results							
PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7709.61 MTRS (7.7096 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	25-59-51.00N	080-14-23.00W	NORTH PERRY	BROWARD HOLLYWOOD, FL	2.0	1021.1
PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7518.80 MTRS (7.51879 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	26-00-7.00N	080-14-6.00W	NORTH PERRY	BROWARD HOLLYWOOD, FL	2.0	1021.1
PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7262.77 MTRS (7.26280 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	25-59-53.00N	080-14-4.00W	NORTH PERRY	BROWARD HOLLYWOOD, FL	2.0	1021.1
Your Specifications							
NAD83 Coordinates							
Latitude						25-58-04.5 north	
Longitude						080-10-12.1 west	
Measurements (Meters)							
Overall Structure Height (AGL)						46	
Support Structure Height (AGL)						45.7	
Site Elevation (AMSL)						2.7	
Structure Type							
LTOWER - Lattice Tower							

APPENDIX C – Height Above Average Terrain (HAAT) Calculation

The Height Above Average Terrain (HAAT) was **calculated using a 3-arc second terrain database**; therefore, the applicant requests that the FCC also calculate the HAAT using 3 second terrain so that the applicant can operate with and ERP of 90 W. (See Appendix D for ERP calculation).

Results are as follows:

Latitude:	25-58-03.17 N	Broadcast Type:	<input type="radio"/> TV <input checked="" type="radio"/> FM
Longitude:	080-10-12.93 W		
Number Of Radials:	8	<input type="button" value="Update Average Terrain"/>	
Average Terrain: 1.563 m			
<div>HAAT: 25.56 m AMSL Height: 27.12 m</div>			

Transmitter Parameters		Frequency:	95.30	MHz
Identification:	LPFM	Channel:	237	
Latitude:	25-58-03.17 N	FM Broadcast Mode:	Analog	
Longitude:	080-10-12.93 W	HAAT:	25.56	m <input type="button" value="Calc HAAT"/>
ERP:	0.1	kW	<input type="button" value="Get Elevation"/>	<input checked="" type="checkbox"/> Auto
		Base Elevation:	2.74	m
		Antenna Height AG:	24.38	m <input type="button" value="Calc COR"/>
<input checked="" type="checkbox"/> To Ref <input type="checkbox"/> From Ref		<input type="button" value="Specify Xmitter Height AMSL"/>		
<input type="button" value="Load From FCC Database"/>		Class	Max	L1
Broadcast Type		<input type="button" value="Print Transmitter Info"/>		
<input type="radio"/> TV <input type="radio"/> DTV <input checked="" type="radio"/> FM <input type="radio"/> Other		Propagation Model	Property Files	
		<input type="button" value="Don't Calculate Signal"/>	<input type="button" value="Import"/>	
			<input type="button" value="Export"/>	

APPENDIX D – FM Propagation Curves Calculation

The Effective Radiated Power (ERP) was calculated from the FCC's FM Propagation Curves Calculator tool:

<http://transition.fcc.gov/mb/audio/bickel/curves.html>

Results are as follows:

FM and TV Propagation Curves

This function uses the FM or TV television propagation curves to compute the distance to a service or interfering contour, or the corresponding field strength at a given contour distance. [More after the form.](#)

Screen 3 - Results

Results of Calculation

HAAT less than 30 meters
reset to 30 meters for calculations

Effective Radiated Power (ERP) = 0.100 kilowatts (kW)

Unrounded ERP = 0.100 kilowatts (kW)

Back to Numeric Entries

Back to Initial Selections

Input Data from Screens 1 and 2

HAAT = 25.5 meters
Field Strength = 60.0 dBu = 1.0 mV/m
Distance to Contour = 5.6 kilometers

Distances are in meters and kilometers
Power is in kW (kilowatts)
Field Strength is in dBu
FM and NTSC TV Channels 2 through 6
F(50,50) for service contours selected
Find ERP, given a Field Strength and a Distance
[FM and F(50,50) Service contours only]

APPENDIX E – Channel Spacing Study

Short Spacing Study for Channel 237 (3 Second Terrain Data)

Kessler and Gehman Associates, Inc. Telecommunications Consulting Engineers LPFM Channel Spacing Study Beware Inc.							
REFERENCE		CLASS = L1		DISPLAY DATES			
25 58 03.2 N.		Current Spacings to 2nd Adj.		DATA 12-24-14			
80 10 12.9 W.		Channel 237 - 95.3 MHz		SEARCH 12-24-14			
Call	Channel	Location	Azi	Dist	FCC	Margin	
WMGE	LIC-D 235C0	Miami Beach	FL 269.5	3.92	83.5	-79.6	
WRMA	LIC-Z 239C2	North Miami Beach	FL 184.8	21.59	52.5	-30.9	
W237CP	LIC 237D	Miami	FL 221.1	31.04	25.5	5.5	
W237BD	LIC 237D	Pompano Beach	FL 3.0	37.06	31.5	5.6	
WLDI	LIC 238C1	Juno Beach	FL 350.4	129.73	99.5	30.2	
WJEW-LP	CP 237L1	Miami	FL 209.7	63.66	23.5	40.2	
WOLZ	LIC-N 237C1	Fort Myers	FL 290.0	178.45	110.5	68.0	
W236AO	LIC 236D	Port St. Lucie	FL 353.4	163.72	14.5	149.2	

Radio Reading Service study for Channel 237 (3 Second Terrain Data)

LPFM stations must satisfy the second-adjacent channel minimum distance separation requirements with respect to any third-adjacent channel FM station that, as of September 20, 2000, broadcasts a Radio Reading Service (RRS) via a subcarrier frequency. The proposed LPFM station is not shortspaced to any station; including stations providing a RRS Radio Reading Service.

Kessler and Gehman Associates, Inc. Telecommunications Consulting Engineers Radio Reading Service Channel Spacing Study Beware Inc.							
REFERENCE		CLASS = L1		DISPLAY DATES			
25 58 03.2 N.		Current Spacings to 3rd Adj.		DATA 12-24-14			
80 10 12.9 W.		Channel 237 - 95.3 MHz		SEARCH 12-24-14			
Call	Channel	Location	Azi	Dist	FCC	Margin	
WMGE	LIC-D 235C0	Miami Beach	FL 269.5	3.92	83.5	-79.6	
WRMA	LIC-Z 239C2	North Miami Beach	FL 184.8	21.59	52.5	-30.9	
W237CP	LIC 237D	Miami	FL 221.1	31.04	25.5	5.5	
W237BD	LIC 237D	Pompano Beach	FL 3.0	37.06	31.5	5.6	
WLDI	LIC 238C1	Juno Beach	FL 350.4	129.73	99.5	30.2	
WJEW-LP	CP 237L1	Miami	FL 209.7	63.66	23.5	40.2	
WOLZ	LIC-N 237C1	Fort Myers	FL 290.0	178.45	110.5	68.0	
W240CI	LIC 240D	North Palm Beach	FL 5.9	88.45	20.5	68.0	
WPHR-FM	LIC 234C2	Gifford	FL 353.7	176.98	52.5	124.5	
W236AO	LIC 236D	Port St. Lucie	FL 353.4	163.72	14.5	149.2	

APPENDIX F - SHORT SPACING WAIVER CALCULATIONS

Short Spacing Undesired-to-Desired Ratio Calculation to second-adjacent channel facility:

1) WRMA-FM FCC File No.: BLH-20100420AIC

Undesired-to-Desired Ratio Method:

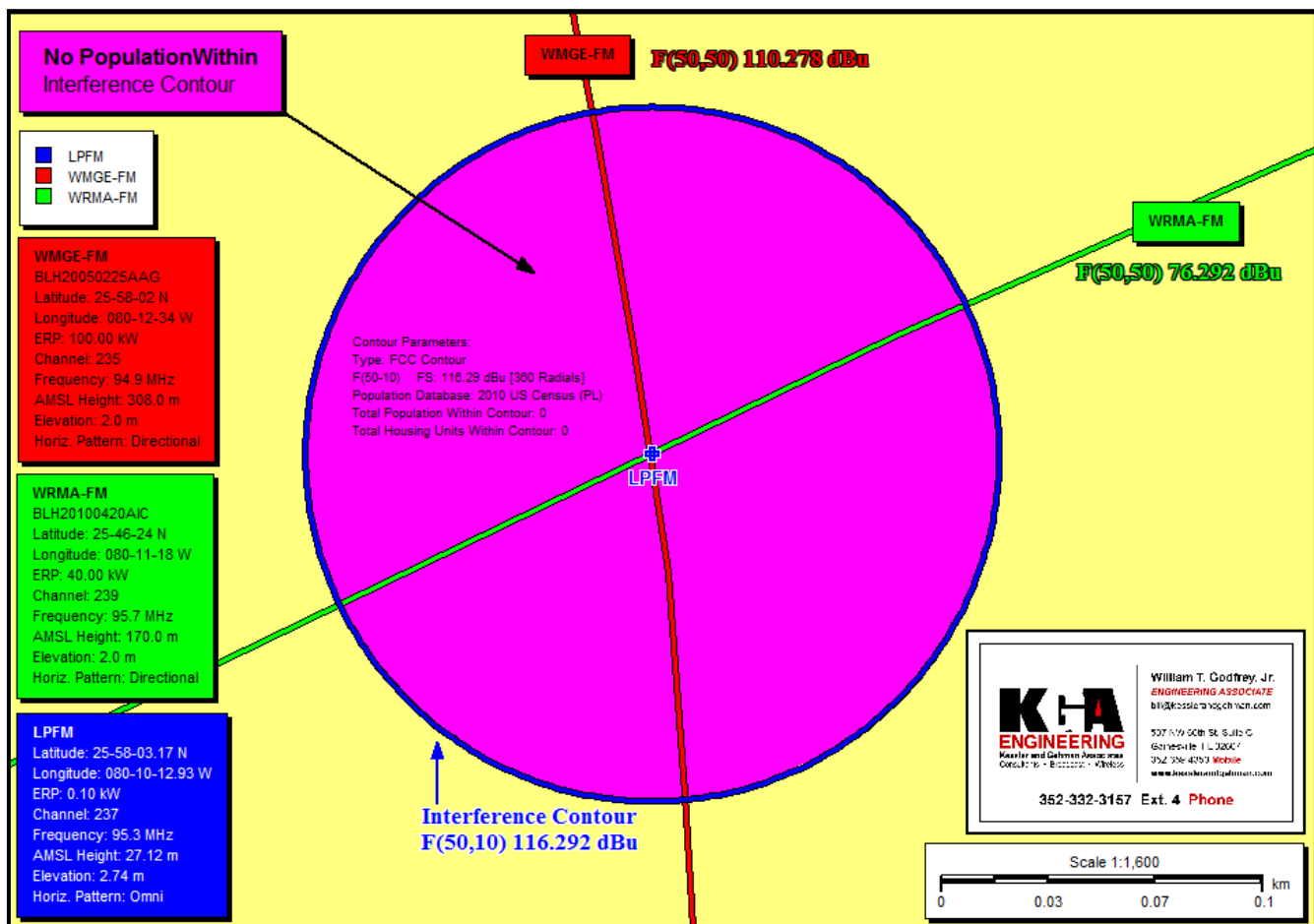
BLH-20100420AIC F(50,50) Service Contour at proposed LPFM site: **76.292 dBu**

Second-adjacent protection: **+ 40 dB**

Interference-zone boundary: **116.292 dBu**

Distance to F(50,10) 116.292 dBu: **107.3 m** (HAAT = 25.6 m, ERP = 0.1 kW)

The Interference Zone values above were calculated from map below:

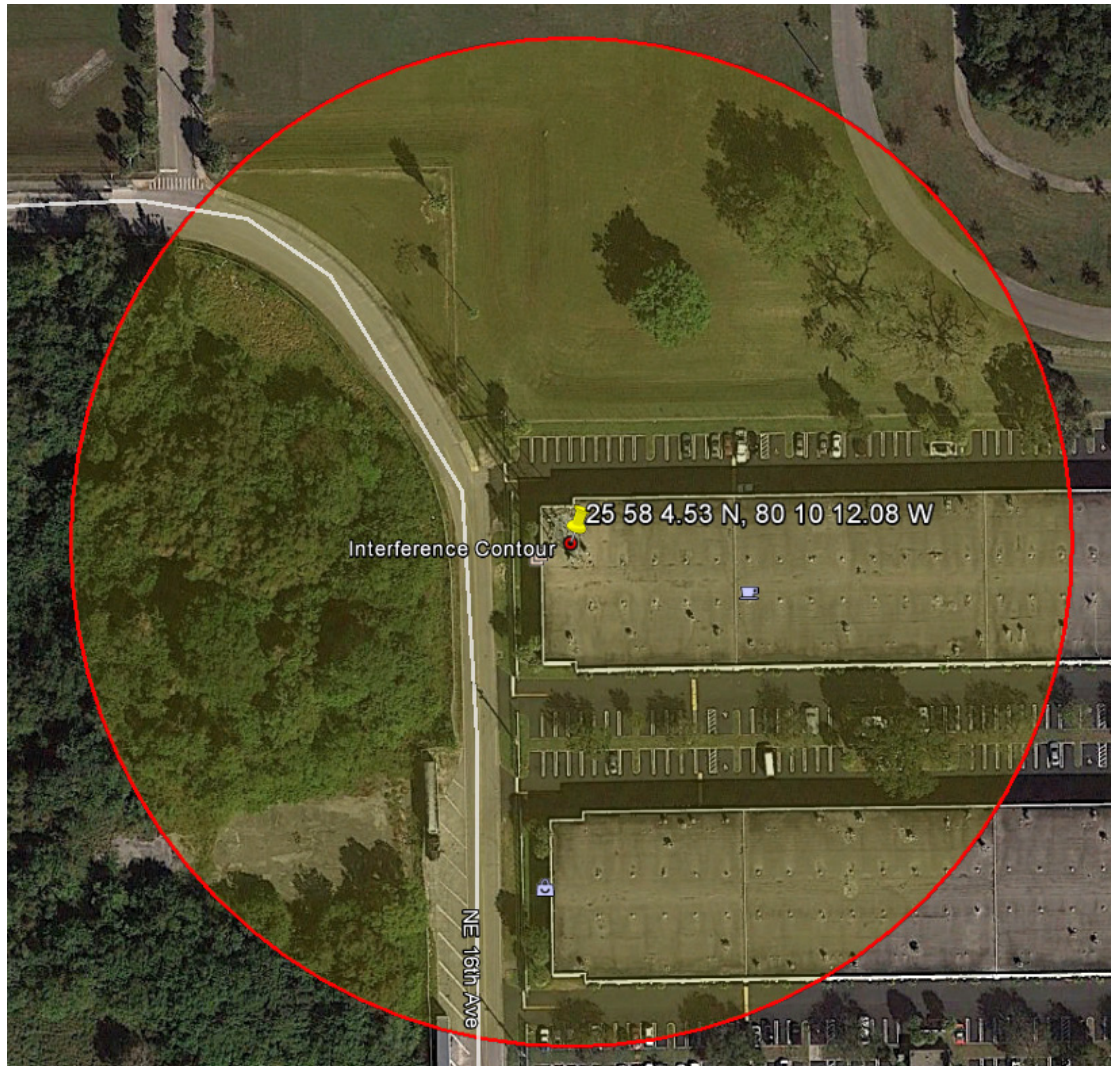


Type: FCC Contour
F(50-10) FS: 116.29 dBu [360 Radials]
Population Database: 2010 US Census (PL)
Primary Terrain: 3 Second US Terrain

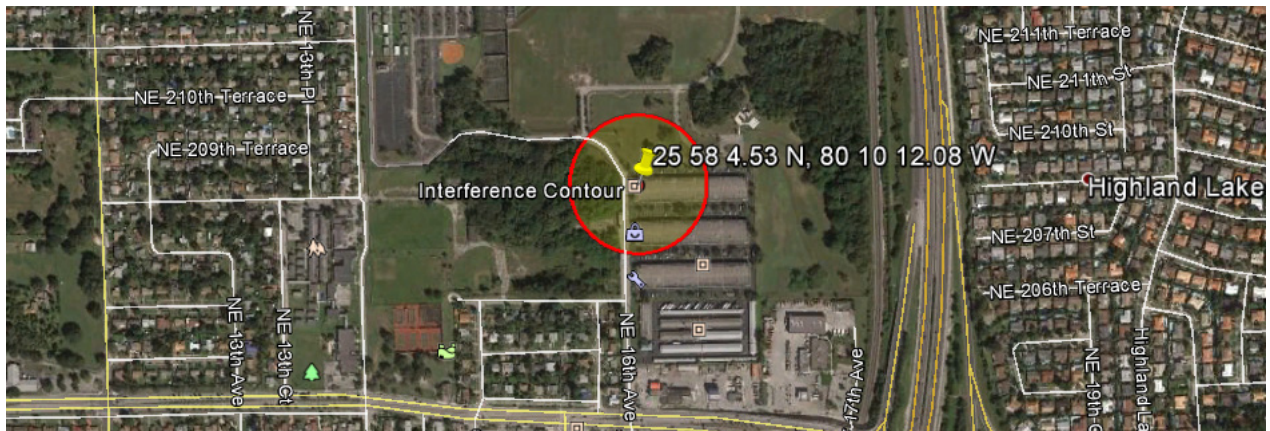
Transmitter Information:
Call Letters: LPFM
Latitude: 25-58-03.17 N
Longitude: 080-10-12.93 W
ERP: 0.10 kW
Channel: 237
Frequency: 95.3 MHz
AMSL Height: 27.12 m
Elevation: 2.74 m
HAAT: 25.56 m
Horiz. Antenna Pattern: Omni

Total Population Within Contour: 0
Total Housing Units Within Contour: 0
Total Area Within Contour: 0.04 sq. km

No Population (0.0)
Within F(50,10)
116.292 dBu
Interference Contour:







The small buildings within the 107.3 m prohibited zone are single story with no roof access which means that the interference must be at or above 1.83 m AGL (6.0 ft). Calculations below demonstrate that the signal from a 3-bay Shively model 6812 half-wave spaced antenna would not penetrate below 1.83 m AGL and therefore complies with Section 73.807(e)(1) of the FCC rules.

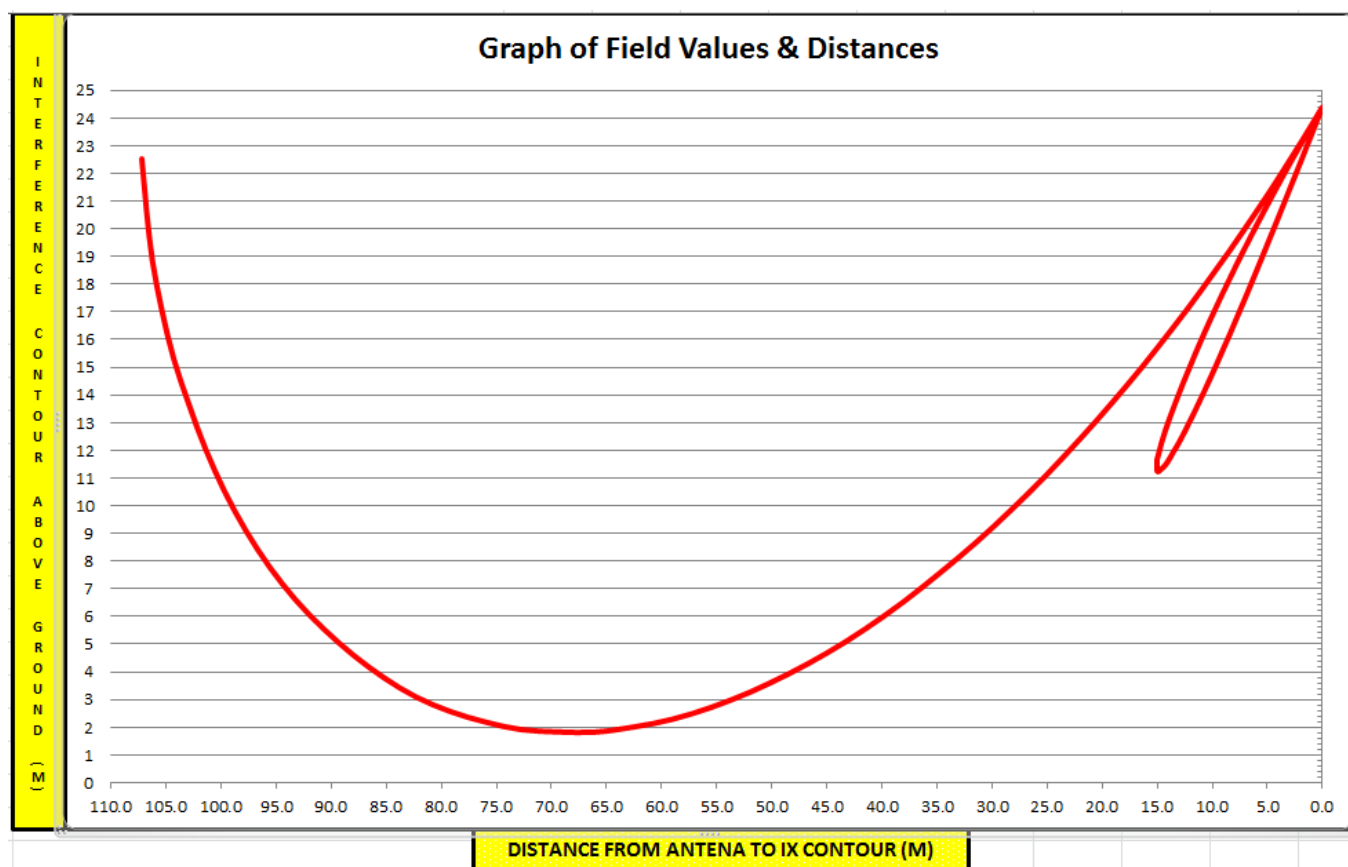
Deg Below Hor	Relative Field	ERP (kW)	Distance to IX Contour From Antenna (m)	Horizontal Distance of IX Contour From Tower (m)	Vertical Clearance of IX Contour AGL (m)
1	0.999	0.09980	107.2	107.2	22.53
2	0.995	0.09900	106.8	106.7	20.67
3	0.990	0.09801	106.2	106.1	18.84
4	0.982	0.09643	105.4	105.1	17.05
5	0.972	0.09448	104.3	103.9	15.31
6	0.959	0.09197	102.9	102.3	13.64
7	0.945	0.08930	101.4	100.7	12.04
8	0.929	0.08630	99.7	98.7	10.53
9	0.911	0.08299	97.8	96.6	9.11
10	0.891	0.07939	95.6	94.2	7.80
11	0.869	0.07552	93.3	91.5	6.61
12	0.845	0.07140	90.7	88.7	5.55
13	0.820	0.06724	88.0	85.7	4.61
14	0.794	0.06304	85.2	82.7	3.79
15	0.767	0.05883	82.3	79.5	3.10
16	0.738	0.05446	79.2	76.1	2.57
17	0.708	0.05013	76.0	72.7	2.19
18	0.678	0.04597	72.8	69.2	1.92
19	0.646	0.04173	69.3	65.5	1.83
20	0.615	0.03782	66.0	62.0	1.83
21	0.582	0.03387	62.5	58.3	2.02
22	0.550	0.03025	59.0	54.7	2.29

23	0.517	0.02673	55.5	51.1	2.72
24	0.484	0.02343	51.9	47.4	3.27
25	0.451	0.02034	48.4	43.9	3.95
26	0.419	0.01756	45.0	40.4	4.69
27	0.387	0.01498	41.5	37.0	5.55
28	0.355	0.01260	38.1	33.6	6.52
29	0.323	0.01043	34.7	30.3	7.60
30	0.293	0.00858	31.4	27.2	8.68
31	0.263	0.00692	28.2	24.2	9.86
32	0.234	0.00548	25.1	21.3	11.09
33	0.205	0.00420	22.0	18.4	12.42
34	0.178	0.00317	19.1	15.8	13.72
35	0.152	0.00231	16.3	13.4	15.04
36	0.126	0.00159	13.5	10.9	16.45
37	0.102	0.00104	10.9	8.7	17.81
38	0.079	0.00062	8.5	6.7	19.18
39	0.057	0.00032	6.1	4.8	20.55
40	0.037	0.00014	4.0	3.0	21.85
41	0.017	0.00003	1.8	1.4	23.20
42	0.001	0.00000	0.1	0.1	24.33
43	0.018	0.00003	1.9	1.4	23.08
44	0.034	0.00012	3.6	2.6	21.87
45	0.048	0.00023	5.2	3.6	20.76
46	0.062	0.00038	6.7	4.6	19.61
47	0.074	0.00055	7.9	5.4	18.59
48	0.085	0.00072	9.1	6.1	17.62
49	0.095	0.00090	10.2	6.7	16.71
50	0.104	0.00108	11.2	7.2	15.85
51	0.111	0.00123	11.9	7.5	15.14
52	0.118	0.00139	12.7	7.8	14.42
53	0.124	0.00154	13.3	8.0	13.77
54	0.129	0.00166	13.8	8.1	13.20
55	0.133	0.00177	14.3	8.2	12.71
56	0.136	0.00185	14.6	8.2	12.30

57	0.138	0.00190	14.8	8.1	11.98
58	0.140	0.00196	15.0	8.0	11.66
59	0.140	0.00196	15.0	7.7	11.52
60	0.140	0.00196	15.0	7.5	11.39
61	0.140	0.00196	15.0	7.3	11.26
62	0.139	0.00193	14.9	7.0	11.23
63	0.137	0.00188	14.7	6.7	11.30
64	0.135	0.00182	14.5	6.4	11.38
65	0.133	0.00177	14.3	6.0	11.46
66	0.130	0.00169	14.0	5.7	11.66
67	0.126	0.00159	13.5	5.3	11.95
68	0.123	0.00151	13.2	4.9	12.16
69	0.119	0.00142	12.8	4.6	12.48
70	0.114	0.00130	12.2	4.2	12.90
71	0.110	0.00121	11.8	3.8	13.24
72	0.105	0.00110	11.3	3.5	13.68
73	0.100	0.00100	10.7	3.1	14.14
74	0.095	0.00090	10.2	2.8	14.60
75	0.090	0.00081	9.7	2.5	15.07
76	0.084	0.00071	9.0	2.2	15.65
77	0.079	0.00062	8.5	1.9	16.14
78	0.073	0.00053	7.8	1.6	16.74
79	0.068	0.00046	7.3	1.4	17.24
80	0.062	0.00038	6.7	1.2	17.85
81	0.056	0.00031	6.0	0.9	18.46
82	0.050	0.00025	5.4	0.7	19.09
83	0.044	0.00019	4.7	0.6	19.71
84	0.038	0.00014	4.1	0.4	20.34
85	0.032	0.00010	3.4	0.3	20.98
86	0.026	0.00007	2.8	0.2	21.62
87	0.020	0.00004	2.1	0.1	22.26
88	0.013	0.00002	1.4	0.0	23.01
89	0.007	0.00000	0.8	0.0	23.65
90	0.000	0.00000	0.0	0.0	24.40

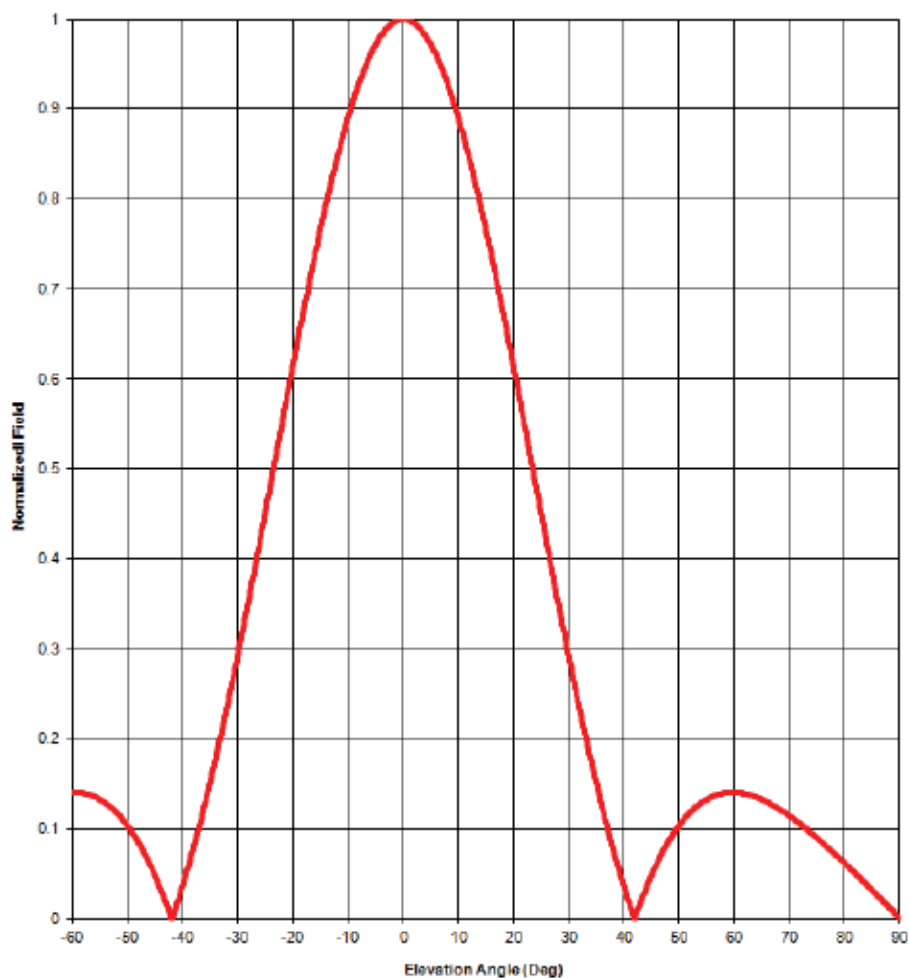
ERP (W)	ERP (kW)	Field Strength	
100.0	0.100	116.292	dBu
		652.5	uV/m

Antenna Height R/C AGL (m)	24.4
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Shively Labs®

Elevation pattern



Antenna models: 6014, 6015, 6020, 6510, 6513, 6600, & 68xx except 6832. 3-bay half-wave-spaced

Test frequency: 98.1 MHz

Gain (maximum):

	Power	dB
6014, 6015, 68xx:	1.02	0.08 dB
6510, 6513, 6600:	2.04	3.08 dB

Document No. 68xx 3-bay hw (130701)

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sales@shively.com
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Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field
1	0.999	19	0.646	37	0.102	55	0.133	73	0.100
2	0.995	20	0.615	38	0.079	56	0.136	74	0.095
3	0.990	21	0.582	39	0.057	57	0.138	75	0.090
4	0.982	22	0.550	40	0.037	58	0.140	76	0.084
5	0.972	23	0.517	41	0.017	59	0.140	77	0.079
6	0.959	24	0.484	42	0.001	60	0.140	78	0.073
7	0.945	25	0.451	43	0.018	61	0.140	79	0.068
8	0.929	26	0.419	44	0.034	62	0.139	80	0.062
9	0.911	27	0.387	45	0.048	63	0.137	81	0.056
10	0.891	28	0.355	46	0.062	64	0.135	82	0.050
11	0.869	29	0.323	47	0.074	65	0.133	83	0.044
12	0.845	30	0.293	48	0.085	66	0.130	84	0.038
13	0.820	31	0.263	49	0.095	67	0.126	85	0.032
14	0.794	32	0.234	50	0.104	68	0.123	86	0.026
15	0.767	33	0.205	51	0.111	69	0.119	87	0.020
16	0.738	34	0.178	52	0.118	70	0.114	88	0.013
17	0.708	35	0.152	53	0.124	71	0.110	89	0.007
18	0.678	36	0.126	54	0.129	72	0.105	90	0.000

Elevation Pattern Tabulation

Antenna models: 6014, 6015, 6020, 6510, 6513, 6600, & 68xx except 6832, 3-bay half-wave-spaced.

Relative Field at 0° Depression = 1.000

APPENDIX G – TRANSLATOR AND BOOSTER PROXIMITY

The proposed transmitter site proximity to FM boosters and translators was determined using the FCC's FMQuery tool:

<http://www.fcc.gov/encyclopedia/fm-query-broadcast-station-search>

Results are as follows:

Boosters within 10km of the proposed LPFM transmitter site: 0 (NONE)

Search Parameters:	
Service:	FB
Search radius:	10.00 km
Center lat / lon:	N 25 58 3.17 W 80 10 12.93
Lower Channel	200
Upper Channel	300

*** 0 FM Records within 10.00 km distance of 25° 58' 3.17 " N, 80° 10' 12.93" W ***

Translators within 10km of the proposed LPFM transmitter site: 2

Search Parameters:	
Service:	FX
Search radius:	10.00 km
Center lat / lon:	N 25 58 3.17 W 80 10 12.93
Lower Channel	200
Upper Channel	300

W262AN	219	D	FX	91.7	MHz	APP	TAMARAC	FL	US
W228BV	228	D	FX	93.5	MHz	LIC	FORT LAUDERDALE	FL	US
W245BF	245	D	FX	96.9	MHz	LIC	NORTH MIAMI	FL	US
W262AN	262	D	FX	100.3	MHz	LIC	TAMARAC	FL	US
W262AN	266	D	FX	101.1	MHz	APP	TAMARAC	FL	US
W231CU	284	D	FX	104.7	MHz	APP	MIAMI	FL	US
W262AN	288	D	FX	105.5	MHz	APP	TAMARAC	FL	US

*** 7 FM Records within 10.00 km distance of 25° 58' 3.17 " N, 80° 10' 12.93" W ***