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# CONSTRUCTION PERMIT APPLICATION FOR A NEW LOW POWER FM (LPFM) BROADCAST STATION TO SERVE OAKLAND, CA



## Prepared For:

- Peralta Community College  
District
- 333 East Eighth Street  
Oakland, CA 94606-2844

## Prepared By:

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## Prepared On:

November 07, 2013

## Proposed Parameters:

Channel:	245 (96.9 MHz)
ERP:	100 W
HAAT:	-40.8 m
Waiver:	Yes
Antenna:	Omni
Terrain:	3 Arc Second

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**1.0 PURPOSE OF LPFM APPLICATION**

The Peralta Community College District (PCCD) is applying for a Low Power FM (LPFM) station as a noncommercial educational organization that will utilize its LPFM broadcast station for the advancement of PCCD's educational program. PCCD's programs will be educational in nature, as they will provide a means by which public community college students at Berkeley City College, College of Alameda, Laney College and Merritt College (PCCD's campuses) will advance their studies in Media Communications, Journalism, Multimedia and other courses taught for credit at PCCD's campuses. Moreover, PCCD will provide teaching and instruction to all students at PCCD's campuses by presenting educational radio programming and learning opportunities for a broader range of disciplines, including the arts, music, social sciences, history, television and radio broadcasting, multimedia design, political science and engineering.

PCCD's proposed station programming will be used to advance the educational purpose of the PCCD's campuses. The proposed LPFM station's programs will be produced by individuals who collectively represent the diversity of the students at PCCD's campuses and the community. The proposed LPFM station's content will be produced locally by current or former students of PCCD. Each person producing a radio program at the proposed LPFM station will receive extensive training in the technical and aesthetic aspects of producing a community radio program. In addition to technical training provided by the proposed LPFM station, other areas in which training will be offered include how to produce community news and interview programs, recording promotional clips, social media integration and promotion, and basic audio engineering and editing skills. Students will be able to receive credit for working with the station through the Cooperative Education Program (Course COPED 460A) at PCCD's campuses. The proposed LPFM station will provide a voice for community and student groups at PCCD's campuses such as the Black Student Union, Gay Straight Alliance, Peralta Sports and others. Additionally, the proposed LPFM station will record events organized by the music department at Laney College.

## **2.0 STATION TRANSMITTER LOCATION**

The proposed transmitter site shall be located at PCCD's baseball field which is only 0.24 miles SE (147.3°) from the studio. The antenna shall be mounted on a support pole which will be attached to one of the baseball field's light poles. The studio's address and resulting site geographical coordinates are:

### **2.1 Studio Site Physical Address**

The studio shall be located at the following physical address:

333 East 8<sup>th</sup> Street  
Oakland, CA 94606-2844

### **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      37° 47' 38.6"  
W. Longitude    122° 15' 33.7"

**See Appendix A (NAD27 to NAD83 Conversion)**

### **2.3 Antenna Structure Registration (ASR) & FAA**

The combined structure and mast height of the antenna system does not require an FAA determination or an Antenna Structure Registration (ASR) 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**

### **3.1 Height of Site AMSL**

0.0 ft / 0.0 m

### **3.2 Height of Structure AGL**

90.0 ft / 27.4 m

### **3.3 Overall Height of Structure AGL with Antenna Support Pole**

110.0 ft / 33.5 m

### **3.4 Antenna Height Radiation Center AGL**

110.0 ft / 33.5 m

### **3.5 Antenna Height Radiation Center AMSL**

110.0 ft / 33.5 m

### **3.6 Antenna Height Above Average Terrain (HAAT) – 3 Second Terrain**

-133.9 ft / -40.8 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 -40.8 m (70.8 m less than 30.0 m AAT) as demonstrated in **Appendix C** of this document, **the applicant proposes to operate with an 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 -40.8 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):

<b>Channel</b>	<b>Comments</b>
<b>NONE</b>	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	245	Channel 245 (96.9 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 245 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 & 2<sup>nd</sup> 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:

KOIT-FM FCC File No.: BMLH-20111004ACJ

KLLC-FM FCC File No.: BMLH-20080818ABJ

**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. **Accordingly, PCCD hereby requests processing based on the “undesired-to-desired signal ratio method.”** 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.”

FCC F(50,50) curves were used to determine the signal strength, in dBu, of KOIT-FM (Channel 243) at the proposed LPFM facility’s transmitter site. The KOIT-FM signal strength at the proposed LPFM facility’s transmitter site was calculated to be 88.746 dBu (**Appendix F**). Combining the 40 dB U/D ratio, the resulting interference contour for the proposed LPFM facility is the 128.746 dBu contour ( $88.746 + 40 = 128.746$  dBu). Based on the parameters for the proposed LPFM facility, its 128.746 dBu interference contour extends a maximum distance of only 25.6 meters. Since the proposed LPFM facility’s antenna height radiation center is 33.5 meters AGL and the interference area extends a maximum distance of only 25.6 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 7.9 meters above the ground (25.9 feet). Even if it did touch the ground, it would be on a baseball field where there are no people or occupied buildings; therefore, there would still be no interference.



FCC F(50,50) curves were used to determine the signal strength, in dBu, of KLLC-FM (Channel 247) at the proposed LPFM facility's transmitter site. The KLLC-FM signal strength at the proposed LPFM facility's transmitter site was calculated to be 87.437 dBu (**Appendix F**). Combining the 40 dB U/D ratio, the resulting interference contour for the proposed LPFM facility is the 127.437 dBu contour ( $87.437 + 40 = 127.437$  dBu). Based on the parameters for the proposed LPFM facility, its 127.437 dBu interference contour extends a maximum distance of only 29.7 meters. Since the proposed LPFM facility's antenna height radiation center is 33.5 meters AGL and the interference area extends a maximum distance of only 29.7 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 3.8 meters above the ground (12.5 feet). Even if it did touch the ground, it would be on a baseball field where there are no people or occupied buildings; therefore, there would still be no interference.

Within the interference zone, there are no occupied structures or major four-lane highways; therefore, 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 KOIT-FM and KLLC-FM.** Neither KOIT-FM nor KLLC-FM operates 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**

- NONE

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 242 or CH 248) to the proposed LPFM facility (CH 245); 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:

Search Parameters	
Search radius:	3.20 km
Center lat / lon:	N 37 47 38.60 W 122 15 33.70
Lower Frequency	530
Upper Frequency	1700
*** 0 AM Records within 3.20 km distance of 37° 47' 38.60" N, 122° 15' 33.70" 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 (building) 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 245 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). Assuming the maximum lobe of radiation were oriented directly toward the ground, the proposed LPFM facility's power density six feet above the ground would be 0.007 mW/cm<sup>2</sup>. A power density of 0.007 mW/cm<sup>2</sup> equates to 0.67% of the Maximum Permissible Exposure (MPE) limits for Occupational/Controlled Exposure and 3.37% 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.

It is safe to conclude that the emissions will be insignificant and that the proposed LPFM facility will be 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.

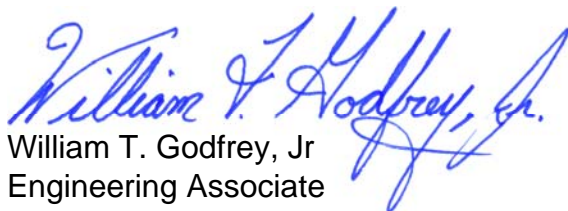
- 73.1030(a) National Radio Astronomy Observatory Quiet Zone at Green Bank, WV.....**Okay**
- 73.1030(a) Arecibo Observatory, Puerto Rico, Radio Astronomy Coordination Zone.....**Okay**
- 73.1030(b) Table Mountain Quiet Zone, Boulder, CO.....**Okay**
- 73.1030 (c) Monitoring Station at ALLEGAN, MI.....**Okay**
- 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 245 (96.9 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 PCCD.

**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 (NAD 27) coordinates. The latitude and longitude Coordinates for all points in the United States for this LPFM service are based upon the 1927 North American Datum (NAD 27). The National Geodetic Survey is in the process of replacing NAD 27 with the more accurate 1983 North American Datum (NAD 83) and updating current topographic maps. In addition, coordinates determined by use of the satellite-based Global Positioning System already reflect the NAD 83 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 NAD 27 datum on all submissions and the Commission will continue to specify NAD 27 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:	37 47 38.64913	122 15 33.73101
NAD 83 datum values:	37 47 38.39000	122 15 37.62000
NAD 27 - NAD 83 shift values:	0.25913	-3.88899 (secs.)
	7.989	-95.148 (meters)
Magnitude of total shift:	95.483 (meters)	


[NGS HOME PAGE](#)

**APPENDIX B – FCC TOWAIR Study**

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

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

**Results:** Structure does not require registration.


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**Antenna Structure Registration**

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR

[? HELP](#)

### TOWAIR Determination Results

[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 & 7804.70 MTRS (7.80470 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	37-43-50.00N	122-13-20.00W	METROPOLITAN OAKLAND INTL	ALAMEDA OAKLAND, CA	0.5	3206.5

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7871.76 MTRS (7.87180 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	37-43-43.00N	122-13-33.00W	METROPOLITAN OAKLAND INTL	ALAMEDA OAKLAND, CA	0.5	3206.5

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 6822.64 MTRS (6.82260 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	37-44-25.00N	122-13-22.00W	METROPOLITAN OAKLAND INTL	ALAMEDA OAKLAND, CA	0.5	3206.5

**Your Specifications**

**NAD83 Coordinates**

Latitude	37-47-38.4 north
Longitude	122-15-37.6 west

**Measurements (Meters)**

Overall Structure Height (AGL)	33.5
Support Structure Height (AGL)	27.4
Site Elevation (AMSL)	0.0

**Structure Type**

POLE - Any type of Pole	
-------------------------	--



**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 an ERP of 100 W. (See Appendix D for ERP calculation).

Results are as follows:

The screenshot shows a window titled "HAAT Calculation". It contains the following fields and controls:

- Latitude: 37-47-38.60 N
- Longitude: 122-15-33.70 W
- Broadcast Type: ☐ TV, ☒ FM
- Number Of Radials: 8 (dropdown menu)
- Update Average Terrain button
- Average Terrain: 74.312 m
- HAAT: -40.81 m
- AMSL Height: 33.5 m

The screenshot shows a window titled "Transmitter Properties" with four tabs: Transmitter, Antenna, Info, and Longley/Rice Parameters. The "Transmitter" tab is active, showing the following fields and controls:

- Transmitter Parameters section:
  - Identification: LPFM-CA
  - Latitude: 37-47-38.60 N
  - Longitude: 122-15-33.70 W
  - ERP: 0.1 kW
- Frequency: 96.10 MHz
- Channel: 241
- FM Broadcast Mode: Analog (dropdown menu)
- HAAT: -40.81 m
- Calc HAAT button
- Get Elevation button
- Auto checkbox (checked)
- Base Elevation: 0.00 m
- Antenna Height AG: 33.50 m
- Calc COR button
- Specify Xmitter Height AMSL button
- To Ref and From Ref checkboxes
- Load From FCC Database button
- Class section: Max, L1 (dropdown menu)
- Print Transmitter Info button
- Property Files section: Import, Export buttons
- Broadcast Type section: ☐ TV, ☐ DTV, ☒ FM, ☐ Other
- Propagation Model: Longley/Rice (dropdown menu)

**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:

The screenshot displays the FCC's FM Propagation Curves Calculator interface. At the top, the FCC logo and navigation links are visible. The page title is "Audio Division" and "FM and TV Propagations Curves". The "Calculations" section shows the phone number "(202)-418-2700" and the breadcrumb "FCC > MB > Audio Division > FM and TV Curves Calculations". The main heading is "Results -- FM and TV Propagation Curves Calculations". Below this, it states "Entered HAAT is less than 30 meters -- Set to 30 m". A green box highlights the "Results of Calculation" section, which shows "Effective Radiated Power (ERP) = 0.100 kW" in red text and "Unrounded ERP = 0.100 kilowatts" in black text. Below the green box are two buttons: "Back to Numeric Entries" and "Back to Initial Selections". A pink box contains the input data from Pages 1 and 2: "HAAT entered = -40.80 meters", "Distance entered = 5.640 kilometers", "Field Strength entered = 60.000 dBu", and "Find the ERP, given a Distance to the Contour and a Field Strength F(50,50) curves for service contours FM and NTSC analog TV Channels 2 through 6". A note at the bottom states: "NOTE: While this ERP will produce the desired contour at the given distance for the given HAAT, please be aware that the ERP / HAAT combination might not comply with the limits for the FM station class or be equivalent in terms of F(50, 50) service when compared to another ERP / HAAT. Equivalence may be evaluated by comparing the distances to the 60 dBu (1 mV/m) contour, using the F(50,50) curves."

FCC Federal Communications Commission

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Audio Division FM and TV Propagations Curves

Calculations

(202)-418-2700 FCC > MB > Audio Division > FM and TV Curves Calculations

**Results -- FM and TV Propagation Curves Calculations**

Entered HAAT is less than 30 meters -- Set to 30 m

**Results of Calculation**

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

Unrounded ERP = 0.100 kilowatts

Back to Numeric Entries Back to Initial Selections

**For input data from Pages 1 and 2:**

HAAT entered = -40.80 meters  
Distance entered = 5.640 kilometers  
Field Strength entered = 60.000 dBu  
Find the ERP, given a Distance to the Contour and a Field Strength  
F(50,50) curves for service contours  
FM and NTSC analog TV Channels 2 through 6

**NOTE:** While this ERP will produce the desired contour at the given distance for the given HAAT, please be aware that the ERP / HAAT combination might not comply with the limits for the FM station class or be equivalent in terms of F(50, 50) service when compared to another ERP / HAAT. Equivalence may be evaluated by comparing the distances to the 60 dBu (1 mV/m) contour, using the F(50,50) curves.

**APPENDIX E – Channel Spacing Study****Short Spacing Study for Channel 245 (3 Second Terrain Data)**

Kessler and Gehman Associates, Inc. Telecommunications Consulting Engineers LPFM Channel Study Peralta Community College District							
REFERENCE				CLASS = L1		DISPLAY DATES	
37 47 38.6 N.				Current Spacings to 2nd Adj.		DATA 11-07-13	
122 15 33.7 W.				Channel 245 - 96.9 MHz		SEARCH 11-07-13	
-----							
Call	Channel	Location		Azi	Dist	FCC	Margin
-----							
ALLO	USE 243B	San Francisco	CA	255.8	17.44	66.5	-49.1
Coordinates updated from LIC record				BLH6256			
KOIT	LIC 243B	San Francisco	CA	255.7	17.48	66.5	-49.0
KLLC	LIC 247B	San Francisco	CA	286.9	21.89	66.5	-44.6
ALLO	USE 247B	San Francisco	CA	286.3	21.95	66.5	-44.6
Coordinates updated from LIC record				BLH5151			
ALLO	USE 245B	Sacramento	CA	35.5	116.94	111.5	5.4
Coordinates updated from LIC record				BLH800630AC			
KSEG	LIC 245B	Sacramento	CA	35.5	116.94	111.5	5.4
KOIT-FM3	LIC-D 243D	Martinez, Etc.	CA	37.9	19.52	5.5	14.0
Vertical polarization only							
KLLC-FM1	LIC 247D	San Ramon, Etc.	CA	104.8	24.19	5.5	18.7
KLLC-FM2	LIC-D 247D	Pleasanton	CA	111.6	40.07	5.5	34.6
KWAV	LIC 245B	Monterey	CA	157.8	150.83	111.5	39.3
ALLO	USE 245B	Monterey	CA	157.8	150.83	111.5	39.3
Coordinates updated from LIC record				BLH841127KT			
ALLO	USE 246A	Patterson	CA	110.2	97.22	55.5	41.7
KTSE-FM	LIC 246A	Patterson	CA	109.9	97.24	55.5	41.7
ALLO	USE 244A	Healdsburg	CA	335.1	114.98	55.5	59.5
KNOB	LIC 244A	Healdsburg	CA	334.0	116.53	55.5	61.0
KMRQ	LIC 244A	Riverbank	CA	95.7	118.40	55.5	62.9
KULV	LIC 246A	Ukiah	CA	334.7	164.57	55.5	109.1
ALLO	USE 246A	Ukiah	CA	331.6	171.79	55.5	116.3
K217CO	CP 247D	Tularcitos & Carmel	CA	157.9	150.42	20.5	129.9
K242AH	CP 243D	Clearlake	CA	342.6	146.17	13.5	132.7
K246BX	CP -D 246D	Sonora	CA	81.3	168.54	20.5	148.0
-----							
All separation margins include rounding							

**Radio Reading Service study for Channel 245 (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.

# CONSTRUCTION PERMIT APPLICATION FOR A NEW LPFM BROADCAST STATION

Peralta Community College District

November 07, 2013

Kessler and Gehman Associates, Inc. Telecommunications Consulting Engineers LPFM Channel Study Radio Reading Service Spacing Study						
REFERENCE				CLASS = L1	DISPLAY DATES	
37 47 38.6 N.				Current Spacings to 3rd Adj.	DATA	11-07-13
122 15 33.7 W.				Channel 245 - 96.9 MHz	SEARCH	11-07-13
Call	Channel	Location	Azi	Dist	FCC	Margin
ALLO	USE	243B San Francisco	CA 255.8	17.44	66.5	-49.1
Coordinates updated from LIC record			BLH6256			
KOIT	LIC	243B San Francisco	CA 255.7	17.48	66.5	-49.0
KLLC	LIC	247B San Francisco	CA 286.9	21.89	66.5	-44.6
ALLO	USE	247B San Francisco	CA 286.3	21.95	66.5	-44.6
Coordinates updated from LIC record			BLH5151			
KSEG	LIC	245B Sacramento	CA 35.5	116.94	111.5	5.4
ALLO	USE	245B Sacramento	CA 35.5	116.94	111.5	5.4
Coordinates updated from LIC record			BLH800630AC			
KOIT-FM3	LIC-D	243D Martinez, Etc.	CA 37.9	19.52	5.5	14.0
Vertical polarization only						
KLLC-FM1	LIC	247D San Ramon, Etc.	CA 104.8	24.19	5.5	18.7
KLLC-FM2	LIC-D	247D Pleasanton	CA 111.6	40.07	5.5	34.6
ALLO	USE	245B Monterey	CA 157.8	150.83	111.5	39.3
Coordinates updated from LIC record			BLH841127KT			
KWAV	LIC	245B Monterey	CA 157.8	150.83	111.5	39.3
ALLO	USE	246A Patterson	CA 110.2	97.22	55.5	41.7
KTSE-FM	LIC	246A Patterson	CA 109.9	97.24	55.5	41.7
ALLO	USE	244A Healdsburg	CA 335.1	114.98	55.5	59.5
KNOB	LIC	244A Healdsburg	CA 334.0	116.53	55.5	61.0
KMRQ	LIC	244A Riverbank	CA 95.7	118.40	55.5	62.9
K248BR	LIC	248D Santa Cruz	CA 168.1	89.73	7.5	82.2
ALLO	USE	248B Merced	CA 105.8	165.56	66.5	99.1
Coordinates updated from LIC record			BLH7878			
KULV	LIC	246A Ukiah	CA 334.7	164.57	55.5	109.1
K242AT	LIC-D	242D Salinas, Etc.	CA 149.6	133.36	20.5	112.9
ALLO	USE	246A Ukiah	CA 331.6	171.79	55.5	116.3
KABX-FM	LIC-D	248B Merced	CA 101.1	190.75	66.5	124.3
K217CO	CP	247D Tularecitos & Carmel	CA 157.9	150.42	20.5	129.9
KUBB	LIC	242B Mariposa	CA 97.7	198.86	66.5	132.4
K242AH	CP	243D Clearlake	CA 342.6	146.17	13.5	132.7
ALLO	USE	242B Mariposa	CA 97.7	199.28	66.5	132.8
Coordinates updated from LIC record			BLH870202KH			
K242AD	LIC-D	242D Boonville	CA 327.1	153.48	20.5	133.0
Translator for KUKIFM, Ukiah, CA						
K242AH	LIC	242D Kelseyville	CA 341.9	141.16	7.5	133.7
Translator for KUKIFM, Ukiah, CA						
K246BX	CP -D	246D Sonora	CA 81.3	168.54	20.5	148.0
K242AD	APP-D	242D Ukiah	CA 330.4	169.56	20.5	149.1
K242AD	CP -D	242D Ukiah	CA 330.4	169.56	20.5	149.1
All separation margins include rounding						

## APPENDIX F - SHORT SPACING WAIVER CALCULATIONS

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

### 1) KOIT-FM FCC File No.: BMLH-20111004ACJ

Undesired-to-Desired Ratio Method:

BMLH-20111004ACJ F(50,50) Service Contour at proposed LPFM site: **88.746 dBu**

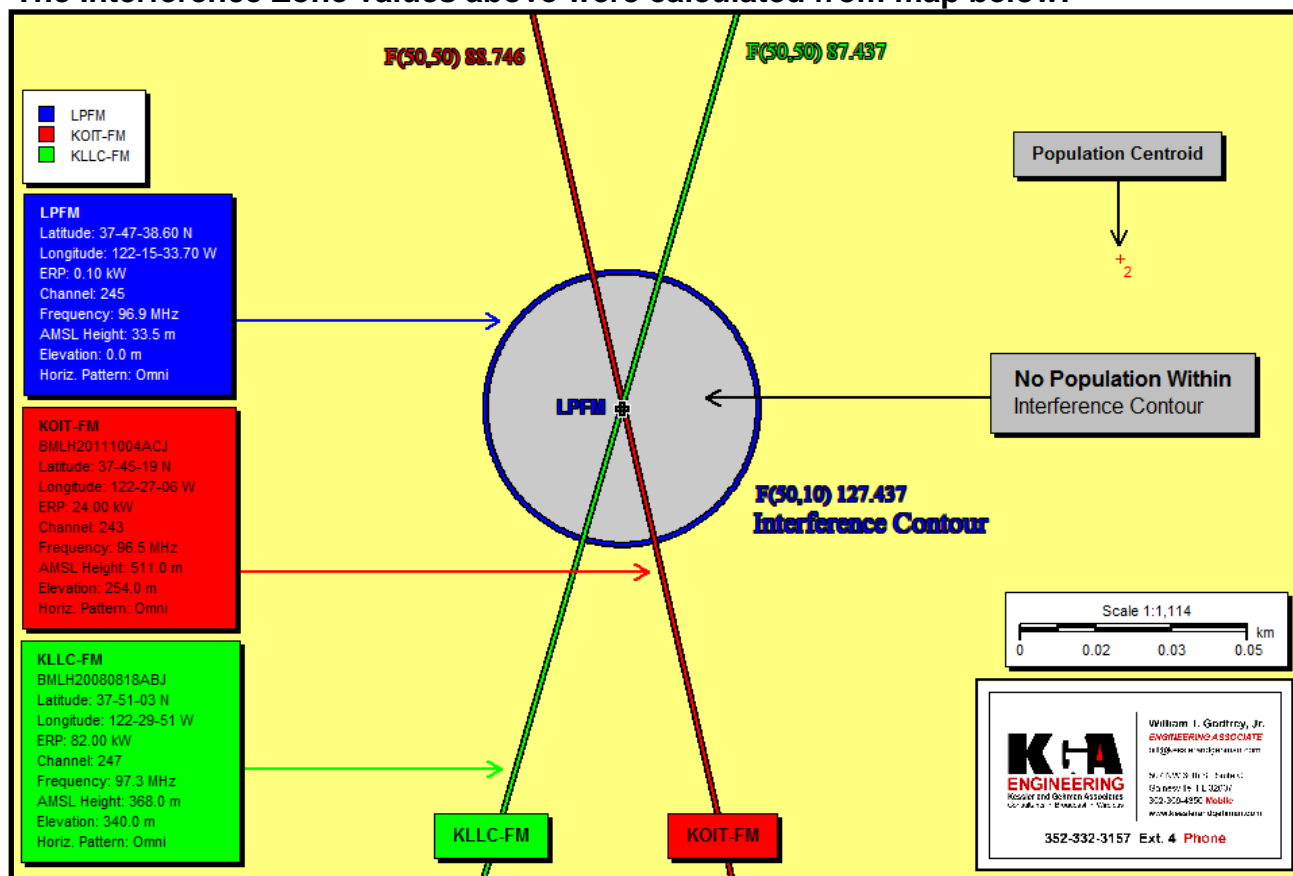
Second-adjacent protection: **+ 40 dB**

Interference-zone boundary: **128.746 dBu**

Distance to F(50,10) 128.51 dBu: **25.6 m (HAAT = -40.8 m, ERP = 0.1 kW)**

\*\*\* **Antenna Height AGL is 33.5 m and the Interference Contour is 25.6 m. Therefore, the interference will never touch the ground and will not affect any persons** \*\*\*

The Interference Zone values above were calculated from map below:



Contour Parameters:

Type: FCC Contour  
 F(50-10) FS: 127.44 dBu [360 Radials]  
 Population Database: 2010 US Census (PL)  
 Primary Terrain: 3 Second US Terrain

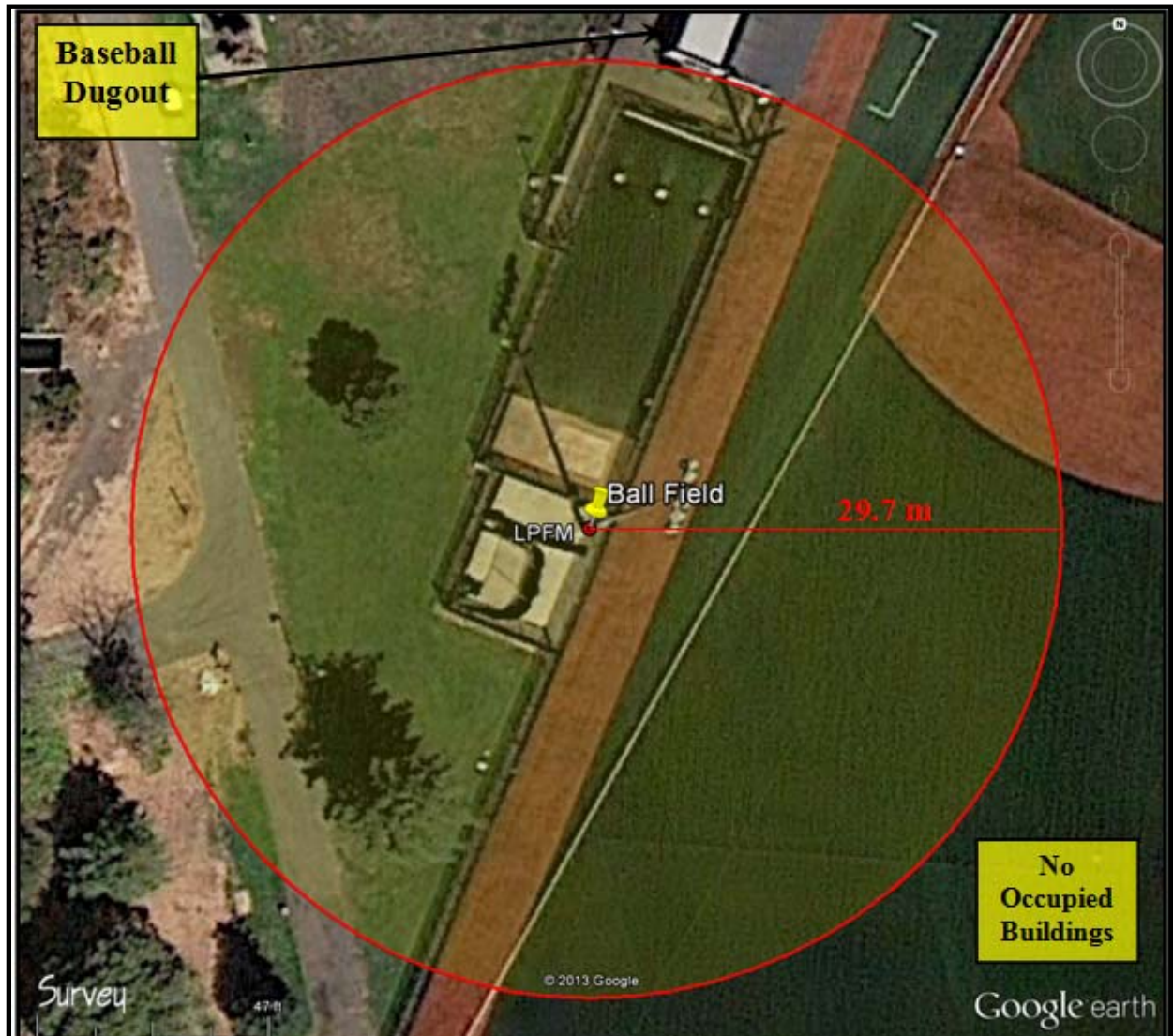
Transmitter Information:

Call Letters: LPFM  
 Latitude: 37-47-38.60 N  
 Longitude: 122-15-33.70 W  
 ERP: 0.10 kW  
 Channel: 245  
 Frequency: 96.9 MHz  
 AMSL Height: 33.5 m  
 Elevation: 0.0 m  
 HAAT: -40.81 m  
 Horiz. Antenna Pattern: Omni  
 Vert. Elevation Pattern: No

Total Population Within Contour: 0  
 Total Housing Units Within Contour: 0  
 Total Area Within Contour: 0.00 sq. km

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





**2) KLLC-FM    FCC File No.: BMLH-20080818ABJ**Undesired-to-Desired Ratio Method:BMLH-20080818ABJ F(50,50) Service Contour at proposed LPFM site: **87.437 dBu**Second-adjacent protection: **+ 40 dB**Interference-zone boundary: **127.437 dBu**Distance to F(50,10) 129.24 dBu: **29.7 m** (HAAT = -48.0 m, ERP = 0.1 kW)

Since it has been shown that there would be no interference caused to KLLC-FM with an interference contour of 29.7 m, it must also be true that there is no interference to KOIT-FM since the interference contour with respect to KOIT-FM is only 25.6 m (4.1 m smaller).

Accordingly, it has been demonstrated that the proposed LPFM facility's operations will not result in interference to any authorized radio service pursuant to Section 73.807(e)(1) of the FCC Rules.

**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: NONE**

Search Parameters	
Service:	FB
Search radius:	10.00 km
Center lat / lon:	N 37 47 38.60 W 122 15 33.70
Lower Channel	200
Upper Channel	300
*** 0 FM Records within 10.00 km distance of 37° 47' 38.60" N, 122° 15' 33.70" W ***	



**Translators within 10km of the proposed LPFM transmitter site: NONE**

**Search Parameters**

Service:	FX
Search radius:	10.00 km
Center lat / lon:	N 37 47 38.60 W 122 15 33.70
Lower Channel	200
Upper Channel	300

\*\*\* 0 FM Records within 10.00 km distance of 37° 47' 38.60" N, 122° 15' 33.70" W \*\*\*