

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-LIC:**

**RADIO STATION KORL-FM  
HOCHMAN HAWAII-THREE, INC.  
WAIANAЕ, HAWAII**

**Ch. 266C 100 KW-DA 592 M HAAT**

**JULY 6, 2007**

ENGINEERING STATEMENT IN SUPPORT OF  
A LICENSE APPLICATION FOR A  
**MODIFIED FM STATION**  
USING A DIRECTIONAL ANTENNA SYSTEM

File No. BPH-20060124AMJ - Facility ID: 36242

**QUESTION 7 - EXHIBIT 8 OF FCC FORM 302-FM**



**ENGINEERING EXHIBIT EE-LIC:**

**RADIO STATION KORL-FM  
WAIANAE, HAWAII**

**Ch. 266C 100 KW-DA 592 M HAAT**

**TABLE OF CONTENTS:**

1. F.C.C. Form 302-FM.
2. Declaration of Engineer
3. Narrative Statement
4. Table A, Summary of Technical Facilities Installed.
5. Figure 1, Measured Pattern with CP Limitations - Relative Field.
6. Appendix A, Antenna Pattern Certification by manufacturer.
7. Appendix B, Intermodulation & Spurious Emissions Certification.
8. Appendix C, RF Exposure Compliance Statement.
9. Appendix D, Protection of FCC Monitoring Station.

Existing Master Antenna being used, thus, no new statement from a surveyor or local engineer is being submitted. Both are “on file”.

## Declaration

I, John J. Mullaney, declare and state that I am a graduate electrical engineer with a B.E.E. and my qualifications are known to the Federal Communications Commission, and that I am an principal engineer in the firm of Mullaney Engineering, Inc., and that I have provided engineering services in the area of telecommunications since 1977. My qualifications as an expert in radio engineering are a matter of record with the Federal Communications Commission.

The firm of Mullaney Engineering, Inc., prepare the instant engineering exhibit in support of a license application for FM Station KORL-FM (FCC Facility ID Number: 36242).

All facts contained herein are true of my own knowledge except where stated to be on information or belief, and as to those facts, I believe them to be true. Information concerning the technical equipment installed and compliance with special conditions was obtained directly from the licensee. No on-site inspection of the facility by Mullaney Engineering was made. I declare under penalty of perjury that the foregoing is true and correct.



---

John J. Mullaney, Consulting Engineer

Executed on the 6th day of July 2007.

**ENGINEERING EXHIBIT EE-LIC:**

**RADIO STATION KORL-FM  
HOCHMAN HAWAII-THREE, INC.  
WAIANAЕ, HAWAII**

**Ch. 266C 100 KW-DA 592 M HAAT**

**NARRATIVE STATEMENT:**

This engineering statement has been prepared on behalf of Hochman Hawaii-Three, Inc., licensee of Radio Station KORL-FM (was KLHI-FM) at Waianae (Facility ID 36242). The purpose of this statement is to inform the Commission that construction has been completed and that the new facility complies completely with its outstanding construction permit (BPH-20060124AMJ). KORL-FM is operating at **50% power** per FCC letter (dated June 28, 2007, Rodolfo Bonacci) and is now requesting formal full power program test authority.

In accordance with the Special Operating Conditions on the construction permit, KORL-FM coordinated the times and locations of construction such that no worker was exposed to excessive R.F. levels and it will continue to do so in the future. The facility is in full compliance with both the “controlled” & “un-controlled” FCC Radiation Guidelines.

**Table A** is a summary of the technical facilities installed.

**Figure 1** is a plot of the directional horizontal plane pattern for the FM antenna which has been installed by KORL-FM. This figure shows the limitations imposed by the C.P. and as can be seen none of the C.P. limits have been exceeded. The RMS of the measured composite pattern encompasses 92.8% of the pattern authorized in the C.P. and this easily exceeds the 85% minimum specified by the rules [ Section 73.1690(C)(2)(ii) ].

It should be understood that this 14 bay panel antenna was initially erected several years ago. Consequently, since no new outside construction was required to implement the KORL-FM CP no new certification from a surveyor or from a local engineer is necessary. Those certifications are already on file by: KQMQ 226C & KAIM 238C. It should be understood that this directional antenna is not being used to protect another station per Section 73.215 of the rules. The directional antenna is being used to conserve energy.

### **Special Conditions**

#1 - KORL certifies that no one was exposed during construction or as a result of the operation of this station.

#2 - **Appendix A** is a statement by the antenna manufacturer (Shively) in which it provides the “as built” measured horizontal and vertical patterns. That certification provides the horizontal/vertical

power gains and RMS values. The measured composite RMS is stated to be 49.2% and the FCC\_CP RMS is 53.0%. The required orientation of the directional antenna is stated to be N-85-E. That statement also describes the methods used to measure the pattern. The antenna consists of one side of a 14 bay panel antenna system.

#3 - Surveyor certificate is **already on file**.

#4 - Certification by local engineer is **already on file**.

#5 - The directional pattern does not exceed the CP pattern at any angle. The maximum ERP is 100 kW and along 220 to 300 degrees true the ERP never exceeds 3.4 kW and this is below the CP limit of 4 kW.

#6 - Intermodulation & Spurious measurements were taken by the antenna manufacturer (Shively) and are attached as **Appendix B**. Spurious measurements were taken with all stations operating at rated power and that those measurements indicate full compliance with the emission criteria specified in Section 73.317(b) through 73.317(d).

#7 - Automatic test at 50% power was granted by FCC letter (6/28/07).

#8 & #9 - RF Exposure measurements were taken and are attached as **Appendix C**. The measured controlled fields were all below the FCC guidelines. Areas in uncontrolled areas which were found to exceed the limit were brought into compliance by extending the fence. These measurements have been placed in the RF Safety Plan for the site.

#10 - RF signal levels were measured at the FCC's Monitoring Station at Waipahu, HI and a certification is submitted as **Appendix D**. The measured levels were well below the 27 mV/m CP limit.

### SUMMARY

Radio Station KORL-FM herein files its license application indicating that construction has been completed and that the facility complies with its outstanding construction permit. KORL-FM is operating at **50% power** per FCC letter (dated June 28, 2007, Rodolfo Bonacci) and is now requesting formal full power program test authority.



---

John J. Mullaney, Consulting Engineer

July 6, 2007.

## Table A

### Summary of Technical Facilities Installed

**Call:** KORL-FM  
**City/State:** Waianae, Hawaii (Oahu)  
**Facility ID:** 36242

**Channel:** 266C                    101.1 MHz  
**C.P. Number:** BPH-20060124AMJ

**Coordinates:** 21-23-45 / 158-05-58    NAD-27  
**Tower ASR:** 1218023  
**Tip Height:** 60.6 M AGL  
**Antenna C.R.:** 39 M AGL        734 M AMSL        592 M HAAT

**ERP:**                    100 kW H        100 kW V

**Antenna Make:** Shively    6814-14/1-DA    1.07 lambda spacing  
**Directional:** Yes (not a 73.215)  
**Pattern RMS:** FCC\_CP = 53.0%    Measured= 49.2%    Mea/CP= **92.8%**  
**Ant. Gain:**            32.049 H\_Pol & 25.960 V\_Pol

**System Efficiency:** 79.19%  
                              70' of 3-1/8" Rigid 98.3%    + 20' of 3-1/8" Rigid 99.5%  
                              45' of 4" Heliax        98.8%    + 50' of 1-5/8" Heliax 97.4%  
                              Filter insertion loss= 84.2%

**TPO:**                    3.94 kW