

MULLANEY ENGINEERING, INC.

9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

ENGINEERING EXHIBIT EE-LIC:

**RADIO STATION KRDO-FM
OPTIMA COMMUNICATIONS, INC.
SECURITY, COLORADO**

Ch. 288C2 1.6 KW-DA 682 M HAAT

SEPTEMBER 19, 2007

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

File No. BMPH-20070604ACS - Facility ID: 50402
QUESTION 7 - EXHIBIT 8 OF FCC FORM 302-FM



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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., has been requested by Optima Communications, Inc., to prepare the instant engineering exhibit in support of a license application for Station KRDO-FM (FCC Facility ID Number: 50402).

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 19th day of September 2007.

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NARRATIVE STATEMENT:

This engineering statement has been prepared on behalf of Optima Communications, Inc., permittee of Radio Station KRDO-FM at Security, Colorado (Facility ID 50402). 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-20040203AAC). In accordance with the rules governing directional antenna facilities [Section 73.1620(a)(2)] KRDO-FM is currently **operating at one half (50%) of the authorized ERP** and will continue to do so until formal full power program test authority is issued by the Staff.

Table A is a summary of the technical facilities installed.

Figure 1 is a plot of the composite (H/V) directional horizontal plane pattern for the FM antenna which has been installed by KRDO-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 pattern

composite pattern is 78.6% while the RMS of the composite CP pattern is 88.1%. Dividing the measured by the CP RMS $[78.6/88.1]$ yields 89.2% and thus, **exceeds the 85% minimum** specified by the rules [Section 73.1690(C)(2)(ii)].

“Special Conditions”

In accordance with the Special Operating Conditions on the construction permit, KRDO-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.

KRDO-FM understands that the CP was granted under Section 73.215 regarding contour protection of at least one other station.

Compliance with the RF Exposure rules was conditioned on the use of a 2 bay half-wave spaced FM antenna manufactured by Propagation Systems, Inc. (PSI). That exact antenna has been installed.

Required Certifications

Appendix A is a statement by a qualified local engineer that the antenna has been assembled in accordance with the manufacturer’s instructions. It is further stated that RF exposure signs are in place and no workers were exposed during construction.

Appendix B is a statement by the antenna manufacturer (PSI) in which it provides the “as built” measured horizontal and vertical patterns. That certification provides the horizontal/vertical power gains and RMS values. The required orientation of the directional antenna is stated to be **N-175.6-E**. That statement also describes the methods used to measure the pattern.

Appendix C is a statement from a local surveyor certifying that the antenna is oriented on a bearing of **N-175.6-E**.

“As Built” - Differences

The constructed facility differs from those originally authorized only in the fact that the vertical ERP of 1.47 kW is slightly lower than the authorized ERP of 1.60 kW. However, this difference is permitted to be adjusted when filing the license application.

Environmental Assessment Statement

This facility is in **full compliance** with the FCC’s criteria for human exposure to RF Energy. The antenna is located at an established tower farm which is surrounded by a locked fence to limit inadvertent access. Workers employed to climb the tower or work in a potential overexposure location will not be permitted to enter the work area until cleared by the station manager or other responsible person. Appropriate warning signs are posted to ensure safety. If deemed to be necessary, the station will establish and enforce work rules and safety procedures applicable in a potential over-exposure area. It is recognized

that maintenance or installation work on or near the antenna may require the station to completely shutdown or switch temporarily to an auxiliary antenna or an auxiliary transmitter site.

SUMMARY

Optima Communications, Inc., licensee of Radio Station KRDO-FM herein files its license application indicating that construction has been completed and that except as noted the facility complies with its outstanding construction permit. KRDO-FM is **waiting formal full power authorization** of program test authority.



John J. Mullaney, Consulting Engineer

September 19, 2007.

Table A

Summary of Technical Facilities Installed

Call:	KRDO-FM		
City/State:	Security, Colorado		
Facility ID:	50402		
Channel:	288C2	105.5 MHz	
C.P. Number:	BMPH-20070604ACS		
Coordinates:	38-44-40 / 104-51-41 NAD-27		
Tower ASR:	1023337		
Tip Height:	67.0 M AGL		
Antenna C.R.:	63 M AGL	2,937 M AMSL	682 M HAAT
ERP:	1.60 kW H	1.47 kW V	
Antenna Make:	PSI PSIFMR-2-DA-HWS 0.5 lambda spacing		
OMNI/DA:	DA N-175.6-E		
COMPOSITE RMS:	88.1 % CP 78.6% Measured Pattern 89.3% Mea/CP		
Ant. Gain:	1.12 H / 1.03 V		