

MULLANEY ENGINEERING, INC.

9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

ENGINEERING EXHIBIT EE:

RADIO STATION WROG(FM)
BROADCAST COMMUNICATIONS, INC.
CUMBERLAND, MARYLAND

Ch. 275B 5.4 KW 435 M HAAT

OCTOBER 12, 2006

ENGINEERING STATEMENT IN SUPPORT OF
AN APPLICATION FOR A
CORRECTION OF COORDINATES & HEIGHT
AND INCREASE IN ERP

File No. BLH-19880414KA - Facility ID: 49384

ATTACHED TO EXHIBIT 25 OF FCC FORM 301



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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 a 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 Broadcast Communications, Inc, to prepare the instant engineering exhibit in support of an application for Construction Permit for a correction of FM radio station WROG, licensed to Cumberland, Maryland (FCC Facility ID Number: 49384).

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. I declare under penalty of perjury that the foregoing is true and correct.



John J. Mullaney, Consulting Engineer

Executed on the 12th day of October 2006.

ENGINEERING EXHIBIT EE:

**RADIO STATION WROG(FM)
BROADCAST COMMUNICATIONS, INC.
CUMBERLAND, MARYLAND**

Ch. 275B 5.4 KW 435 M HAAT

NARRATIVE STATEMENT:

I. General:

This engineering statement has been prepared on behalf of Broadcast Communications, Inc., licensee of WROG(FM) on Ch. 275B at Cumberland, Maryland. The purpose of this statement is to request a Construction Permit to **“correct”** (no physical change being made) its geographic coordinates & lower its official antenna height to conform with what actually exists. In addition, WROG also proposes to increase its ERP to the maximum permitted a Class B facility. The facility will operate with an ERP of 5.4 KW and an HAAT of 435 Meters. This application proposes facilities which are in compliance with the contour protection requirements of Section 73.215. However, since the correction of coordinates is within the 3 seconds permitted by Section 73.1690, WROG **is not requesting** processing per Section 73.215. If the staff believes a waiver is required then a waiver is herein requested.

The application is not a major environmental action, as defined by Section 1.1307 of the Commission’s Rules. The proposed facility is in full compliance with both the “controlled” & “un-controlled” FCC Radiation Guidelines.

Answers to questions contained in F.C.C. Form 301, are incorporated in the following paragraphs and figures.

II. Engineering Discussion:

A. Proposed Location:

WROG's antenna is located near Dans Rock on a mountain west of Cumberland, MD. **Figure 1** is a topographic map showing both the license & actual locations. The NAD-27 geographic coordinates are:

Latitude: 39° 35' 59" (+3 seconds from license)

Longitude: 78° 53' 50" (-3 seconds from license)

The Eastern Regional Office of the FAA was notified of this proposal. The current Antenna Structure Registration number is 1036996.

B. Antenna System and Tower:

A dual polarized 2-bay half-wave spaced FM antenna is side mounted near the top of the tower. **Figure 3** is a sketch of the tower.

C. Effective Radiated Power:

Giving consideration for the maximum antenna gain, transmitter power and line loss, the maximum Effective Radiated Power is 5.4 KW for the Horizontal and 5.4 KW for the Vertical Component.

A Class-B FM station is restricted to a maximum of 50 KW (ERP) up to a maximum Height Above Average Terrain (HAAT) of 150 Meters. This proposal will operate with an HAAT that exceeds the maximum and consequently must

reduce its ERP in order to obtain equivalent coverage within the 1.0 mV/m contour.

Current F.C.C. policy permits stations that are beyond 320 kilometers from the Mexican or Canadian Borders to use the F(50,50) curves to determine what reduced power at their HAAT will provide the equivalent maximum 1.0 mV/M coverage allowed.

Using the curve, it was determined that Class B operations at an HAAT of 435 Meters requires the ERP to be no greater than 5.4 KW.

D. Channel Allocation:

Figures 4-A & 4-B are channel studies from the license and actual site proposed in this application. The following is a discussion of the various existing short spacing. The correction of WROG's coordinates does not create a short spacing with any stations that is not already short spaced.

WUSQ 273B - the WROG licensed site is currently short spaced by 2.80 km while the corrected location is **0.01 km further away**. It appears that this short spacing developed as a result of Docket 80-90 which converted the spacing to metric and specifically increased this separation of two 2nd adjacent Class B facilities from 40 miles to 46 miles. The stations are 70.71 km (43.9 miles) apart. The increase in ERP **will increase** the 2nd adjacent channel contour overlap which already exists. However, since WROG has no limitation on its existing license it is permitted to obtain maximum ERP notwithstanding this existing short spacing.

WOKW 275A - is limited to 3 kW and thus, no short spacing exists.

WYFM 275B - obtained the 19.75 km short spacing per 73.215. The correction of coordinates proposed in this application move the stations **0.02 km closer together**. However, no overlap of co-channel contours will result.

WANB-FM 276A - is limited to 3 kW and thus, no short spacing exists.

In all other respects this application is in compliance with Section 73.207(a).

1. Contour Protection:

Figure 5 is a map of the protected 54 dBu and the appropriate interfering contours proposed by the WROG application and the existing facilities of WYFM and WUSQ. No overlap occurs between WROG & WYFM-73.215. There is existing overlap to WUSQ and the increase in ERP by WROG will increase the overlap received by WROG. However, since WROG's correction increases the separation between the stations this increase in overlap is permissible.

E. FM Blanketing Contour:

WROG recognizes its obligation to resolve related interference complaints for a one year period within its 115 dBu "FM Blanketing Contour" as required by Section 73.318 of the FCC Rules.

The radius around the base of the tower in which Blanketing interference is possible is fairly small (0.92 km) and is in a sparsely populated area. Given the relatively minor change, no problems are anticipated.

F. Other Services in Area:

There are no known AM Broadcast Stations within 3.2 kilometers of the proposed site. This is an electronic site and thus, there are several other transmission facilities in the local area.

There are other known FM or TV transmitters within 10 kilometers (6.2 miles) of the existing site, however, based upon the type of transmitter proposed, and the frequency & power involved no intermodulation interference problems with existing transmitting facilities is expected. In the unlikely event some problems would occur, WROG will investigate and correct such cases in accordance with the Commission's Rules.

G. Environmental Assessment Statement:

WROG believes its proposal will not significantly affect the environment since it does not meet any of the criteria specified in Section 1.1307 of the rules. Since an existing tower will be used with no change in overall height the only remaining environmental issue is R.F. Exposure. Specifically the proposed facility:

- 1) Will NOT involve the exposure of workers or the general public to levels of Radio Frequency radiation in excess of the guidelines recommended by the FCC - OET Bulletin 65 (August 25, 1997).

The following is a more detailed discussion of this protection standard:

A. National Environmental Policy Act of 1969:

In 1969, Congress enacted the National Environmental Policy Act (NEPA), which requires the FCC to evaluate the potential environmental significance of the

facilities it regulates and authorizes. Human exposure to Radio Frequency (RF) radiation had been identified as an issue that the FCC must consider.

Beginning with the filing of applications after January 1, 1986, broadcast stations were required to “certify compliance” with FCC prescribed guidelines on human exposure to RF radiation. The FCC standard was based upon the American National Standards Institute’s (ANSI) RF radiation protection guides (ANSI C95.1-1982). These exposure limits are expressed in terms of milli-watts per square centimeter.

In October 1997, the FCC implemented a two tier evaluation criteria utilizing recommendations of the National Council on Radiation Protection and Measurement (NCRP). The “controlled” tier involves areas which have restricted access while the “un-controlled” tier involves areas which have unrestricted access. The Maximum Permissible Exposure (MPE) limits for “controlled” areas are the same as adopted in 1985, while the “un-controlled” limits for FM and TV frequencies are one-fifth or 20% of the limits for “controlled” areas.

These exposure limits are time-averaged over any six minute period and vary depending upon the frequency involved. The following are the Maximum Permissible Exposure (MPE) limits for “controlled” areas:

Frequency Range (MHz)	Power Density (mW/sq.cm)
*****	*****
0.3 to 3	100 AM
3 to 30	900/(Freq ²)
30 to 300	1.0 VHF TV & FM
300 to 1,500	Freq/300 UHF TV
1500 to 100,000	5.0

WROG recognizes that compliance with the above criteria at sites involving multiple AM, FM and/or TV facilities is based upon the contributions of all such facilities. At the site discussed in this application, **the only significant facility** that will exist are the WROG (5.4 kW), WKGO (5.4 kW), WFWN (1.3kW) and W43BP (15 kW) facilities. However, as will be shown, WROG is **categorically excluded** from having to make a complete evaluation of all contributors.

FM Broadcast Stations

For FM Broadcast Stations the following formula is used:

$$D = \frac{\text{SQRT}(F^2 * [\text{HERP} + \text{VERP}])}{1.667 * \text{SQRT}(\text{PD}) * 3.2808}$$

Where:

- D = the closest distance in meters that a human should come to an operating antenna (To obtain feet multiply by 3.2808)
- F = typical relative field factor in downward direction (F=1 is worst case main lobe)
- HERP = Horizontal ERP in watts (above a dipole)
- VERP = Vertical ERP in watts (above a dipole)
- PD = highest Power Density in milli-watts/cm²
- SQRT = Square Root
- Freq = Frequency in mega-cycles/sec. (MHz)

The vertical radiation pattern of the FM antenna specified in this application is very narrow and, therefore, the power density as seen by an observer on the ground near the base of the tower will be less than 20 percent of the total ERP.

The application of the above equation (assuming maximum ERP), in our case, for a frequency of 102.9 MHz and an “un-controlled” Power Density of 0.2 milli-watts results in a minimum distance of 42.5 meters (140 feet) from the antenna. Inasmuch as the lowest element on the proposed antenna will be approximately 48.8 meters (160 feet) above the ground level, it is self-evident that no hazard from radiation will exist to persons at ground level. At approximately 2 meters above the ground and assuming maximum downward radiation, the proposed FM facility contributes 14.9% of the FCC “controlled” standard. For FM, the “un-controlled” standard is 20% and, therefore, this proposal is in full compliance.

Figure 6 is a plot of the predicted RF Exposure at 7 feet above ground level. As can be seen, the use of the 2 bay half-wave spaced FM antenna reduced the exposure at ground level below 13.2 uW/sq.cm or 1.3 percent of the standard for a “controlled” area. For FM, the “un-controlled” standard is 20% and therefore, this proposal is in full compliance.

The tower is surrounded by a locked fence to limit 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 will be posted to ensure safety.

In addition, WROG will establish and enforce work rules and safety procedures applicable in a potential over-exposure area. The rules will establish how close a worker can get to the antenna when it is operating at normal power and specify the power reduction required in order to make other locations safe. 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. All employees, contract and other persons having access to areas of potential exposure will be required to sign a site management guide indicating they are aware of and will comply with all safety rules. All procedures will be reviewed & updated as necessary.

H. Compliance with National Historic Preservation Act - Section 106:

WROG is not making any physical change to its facility so no Section 106 study is required.

I. Compliance with Radio Duopoly Rules:

Broadcast Communications, Inc., is licensee of the following stations:

WROG FM	FID: 49384
WCMD AM	FID: 49381
WANB AM	FID: 32211
WANB-FM	FID: 32210
WKFB AM	FID: 10026
WKHB AM	FID: 72297

It was determined that Cumberland, MD is not located within a Arbitron rated market.

Figure A is a map illustrating the FM 70 dBu & the AM 5 mV/m contours for each of the commonly owned stations/application. The modified WROG FM facility (5.4 kW) only overlaps the existing city grade of WCMD AM. Both stations are licensed to the same community and thus, not subject to a duopoly evaluation.

III. SUMMARY:

Broadcast Communications, Inc., requests a minor 3" correction to the coordinates and height of WROG FM on channel 275B at Cumberland, Maryland. It also requests an increase in the authorized ERP from 3.5 to 5.4 kW. The facility is short spaced but does not have a restriction on its ERP. This engineering proposal is in full compliance with the Commission's Rules.



John J. Mullaney, Consulting Engineer

October 12, 2006.