

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-2:**

**WATERS & BROCK COMMUNICATIONS, INC.  
SMITHFIELD-SELMA, NORTH CAROLINA  
CLASS A MINOR MODIFICATION  
WARZ-LP CH. 34- (CP)**

**NOVEMBER 5, 2002**

**ENGINEERING STATEMENT IN SUPPORT  
OF AN MODIFICATION TO AN EXISTING  
CLASS A STATUS CONSTRUCTION PERMIT/LICENSE**

**FACILITY ID: 71089**

**FILE NO. BLTTA-20001205AFB - Class A Lic**

**FILE NO. BPTTL-19980601TW - Class A CP**

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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 Waters & Brock Communications, Inc., to prepare the instant engineering exhibit in support of an modification to the existing CP/Lic of a Class A Status facility by WARZ-LP at Smithfield-Selma, NC

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.

/s/ John J. Mullaney

John J. Mullaney, Consulting Engineer

Executed on the 5th day of November 2002.

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**NARRATIVE STATEMENT:**

**I. General:**

This engineering statement has been prepared on behalf of Waters & Brock Communications, Inc., licensee of WARZ-LP which holds a “displacement” Class A CP/License to operate on Ch. 34- at Smithfield-Selma, North Carolina. The purpose of this statement is to support a modification of the existing Class A CP/License to substitute a difference antenna manufacturer. The pattern of the replacement antenna is very similar but not an exact match (see coverage map, Figure 1). The original CP expires November 17, 2002. The Ch. 34 antenna is expected to arrive on site Tuesday, 11/12/2002.

FCC policy permits LPTV & Class A applicants to use the techniques described in OET Bulletin 69 (July 1997) to better predict if interference will be caused. Using OET-69 WARZ-LP is fully compliant and qualifies for a Class A license on Ch. 34-. **If a waiver is required WARZ-LP herein requests that waiver.**

The only change proposed herein is the replacement of the proposed antenna/pattern. The Lat/Lon, ERP, antenna height and channel remain as authorized.

## II. Engineering Discussion:

### A. OET Bulletin 69:

The conclusion that no interference is created is based upon the presumed use of the directional receive antenna discussed in OET Bulletin 69. A UHF receive antenna will provide up to 6 dB of additional attenuation to an NTSC and up to 14 dB of additional attenuation to a DTV depending upon the relative angles from the receive point to the full service transmitter site (desired) and to the proposed LPTV site (undesired).

OET Bulletin 69 specifies the following formula to determine the discrimination provided by a receive antenna:  $\text{dB} = 20 \cdot \log_{10}(\cos(\text{Angle}))^4$

where angle is the angular difference between a straight line connecting the receive location with the desired transmitter site and with the undesired transmitter site.

Angle (deg)	dB	Angle (deg)	dB
*****	*****	*****	*****
0	0.0	30	-5.0
5	-0.1	35	-6.9
10	-0.5	40	-9.2
15	-1.2	45	-12.0
20	-2.1	50	-15.3
25	-3.4		

The angular discrimination from WARZ-LP's CP site to all locations within the overlap area exceeds 50 degrees and thus, 14 dB of additional protection is provided to DTV receivers based upon OET-69. Figure 1 is a map which shows the protected 41 dBu contour of the two DTV facilities requiring protection. In addition, it shows the normal 20 dBu interference contour and the 34 dBu

interference which represents the 14 dB correction for the angular discrimination.

A complete analysis using the **Longley-Rice** portion of OET-69 indicates that absolutely no prohibited interference is caused by this proposed modification and that when compared to the Class A CP/Lic the **interference is the same or smaller** as authorized by the current CP/Lic (See Figure 4). It should also be noted that the interference rules permit some minor amount of interference provided it is less than 0.5% of the total population.

Figure 2 & 3 are plots & tabulation of the proposed antenna pattern from Shively (Model 2050-16). The ASR number of the tower is 1205989. At 2 meters above ground level and assuming maximum downward radiation, the proposed LPTV facility contributes 0.81% of the controlled standard and thus, is **categorically excluded** from further consideration since it is less than 5% of the standard.

### **III. SUMMARY:**

Waters & Brock Communications, Inc., herein requests a minor modification of its outstanding CP/Lic for Class A operation by WARZ-LP. This modification completely complies with the FCC rules regarding Class A operation.

/S/ John J. Mullaney  
John J. Mullaney, Consulting Engineer

November 5, 2002.