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**ENGINEERING EXHIBIT EE-1:**

**WATERS & BROCK COMMUNICATIONS, INC.  
DIGITAL CLASS-A TELEVISION STATION**

**WARZ-LD  
DIGITAL CHANNEL 34  
SMITHFIELD-SELMA, NC**

**MODIFICATION OF STATION LICENSE  
MINOR CHANGE APPLICATION**

**AUGUST 2011**

**FCC FACILITY NUMBER  
71089**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
AN APPLICATION FOR AUTHORITY TO CONSTRUCT  
OR MAKE CHANGES IN A  
CLASS A TELEVISION BROADCAST STATION**

**WARZ-LD  
SMITHFIELD-SELMA, NC**

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## **DECLARATION**

I, Timothy Z. Sawyer, declare and that I have provided engineering services in the area of telecommunications since 1969. My qualifications are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting radio telecommunications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained by WATERS & BROCK COMMUNICATIONS, INC., to prepare the instant engineering exhibit in support of **an application for Authority to Construct or Make Changes in a Class A Digital Television Broadcast Station, WARZ-LD FCC Facility ID Number 17089.**

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under the penalty of perjury that the foregoing is true and correct.



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Timothy Z. Sawyer

Executed on the 1<sup>th</sup> day of August 2011

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DIGITAL CLASS-A TELEVISION STATION**

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**AUGUST 2011**

**NARRATIVE STATEMENT:**

**I. GENERAL:**

This engineering statement and the instant engineering exhibit of which it is part has been prepared on behalf of WATERS & BROCK COMMUNICATIONS, INC., (hereinafter "WB").

This engineering exhibit supports an application for modification of station license of a digital Class A television station, WARZ-LD

Station WARZ-LD is licensed (BLDTA-20101008ABP) to operate on digital television channel 34 as a Class-A television station with a directional antenna maximum peak effective radiated power (ERP) of 15-kilowatts and an antenna center of radiation height above mean sea level (RCAMSL) of 161.2 meters.

The proposed facilities will operate on channel 34 with a maximum effective radiated power of 1.25-kilowatt (1,250 watts) and an antenna height above mean sea level of 414.7 meters, using a directional antenna system.

The proposed facilities will be built to comply with the *FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* and the instant proposal is categorically excluded from environmental processing pursuant to the provisions of Section 1.1306 of the Commission's Rules. A more detailed

discussion of environmental factors is included under the heading Environmental Considerations below.

Information requested by exhibits in response to questions on Section III of FCC Form 301-CA is incorporated in the following paragraphs, figures and/or tables.

Processing of this application is requested under the rules currently in effect at the time of filing.

#### **ENGINEERING DISCUSSION**

Figure 1 is a map showing the licensed and proposed 51 dBu (digital) coverage contours. As can be seen on the map, 51 dBu digital contours overlap, therefore, the proposed modification of facilities qualifies for processing under the Commission's rules as a "minor" change application.

#### **PROPOSED FACILITIES**

This application proposes digital operation on its current channel assignment (TV channel 34), at a new but existing transmitter site (FCC ASR#1027322).

The antenna height and maximum digital power (ERP) will be changed, the antenna type and model remains the same as currently in use. The orientation of the main lobe is changed to 130 degrees true from 350 degrees true.

Figure 2 contains a horizontal radiation (relative field) pattern of the proposed directional horizontal radiation pattern. The proposed antenna is a Dielectric "DIE TFU-16DSB-C" employing 1.0 degrees of electrical beam tilt.

**ALLOCATION CONSIDERATIONS**

A study has been conducted to assure that the proposal will not create prohibited interference with other licensed, authorized or pending analog or digital TV, LPTV/translator and Class A TV stations with the exception of **WACN-LP which has agreed to accept interference from this WARZ-LD.**

**Please see Figure 4, incorporated herein.**

Using the procedures outlined in the FCC's OET-69 Bulletin, a 1-kilometer cell size resolution and 2000 U.S. Census, the proposal complies with the current FCC policy and rules.

Each station of concern has been analyzed using the methods described in OET Bulletin No. 69, and the results indicate that no interference (unmasked) or interference above 0.5% of the service population of the station studied will occur, with the exception as previously noted of WACN-LP, Channel 34 which has agreed to accept interference from this proposal.

The results of the OET Bulletin No. 69 styled study are contained with Figure 3.

**ENVIRONMENTAL CONSIDERATIONS**

The applicant believes its proposal will not significantly affect the environment for the following reasons.

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights.

This is an existing communications site with no new construction of towers, support buildings or other environmental sensitive items required. The site and this proposal are exempt from NHPA Section 106 review as no construction will occur that would trigger a review under NHPA Section 106.

Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

Based upon a worst case downward field value of 1.0 for all angles above or below the horizon, and a digital power of 1.25-kilowatts, and an antenna height of 305 meters above ground. The power density level 2-meters above ground is predicted to be 0.0002 mW/cm<sup>2</sup> or less. The computed power density is 0.010% of the Commission's guidelines for a controlled area and 0.051% for an uncontrolled area. This level is well below the Commission's guidelines for maximum exposure levels to electromagnetic fields and no further study is required.

The applicant will fully-cooperate and coordinate with all site users as required by the Commission's rules.

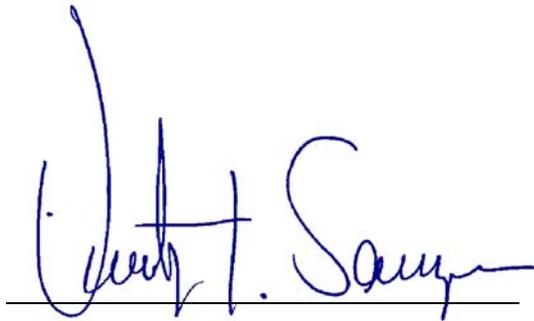
## **II SUMMARY:**

The proposed Class-A Digital Television Station will operate on Channel 34 with a maximum ERP 1.25-kilowatts, utilizing a DIRECTIONAL antenna system. The estimated digital transmitter power output (TPO) is 0.200 KW (200 Watts).

Operation as proposed herein would not cause/increase any normally prohibited contour overlap using a terrain dependant - OET Bulletin No. 69 review, and would not have any significant impact on the environment.

The proposed operation is fully in compliance with all other areas of the Commission's rules and applicable international agreements with the exception of protection to WACN-LP Channel 34 (analog) licensed and pending applications. **WACN-LP has agreed to accept interference from this proposal (see Figure 4).**

01 August 2011



Timothy Z. Sawyer

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TEL.: (301) 921-0115

**WARZ-LP-D.TEST**  
 MOVE TO WRAL-TV TOWER  
 Latitude: 35-40-29 N  
 Longitude: 078-31-40 W  
 Channel: 34 Frequency: 593.0 MHz  
 ERP: 1.25 kW  
 Antenna HAAT: 334.53 m  
 Antenna AMSL Height: 414.7 m  
 Antenna AGL Height: 305.0 m  
 Ground Elevation: 109.7 m  
 Horiz. Pattern: Directional

**Total Population Within Contour: 924,291**  
**Housing Units Within Contour: 384,831**  
**Total Area Within Contour: 4,625 sq. km**

**WARZ DIGITAL CH 34**  
 AT WRAL-DT TOWER SITE  
 1000' FOOT LEVEL AT 1.25 KW ERP  
 FIGURE 1

**WARZ-LP-D.C**  
 BMPDTA20100323AJG  
 Latitude: 35-31-46 N  
 Longitude: 078-18-07 W  
 Channel: 34 Frequency: 593.0 MHz  
 ERP: 15.00 kW  
 Antenna HAAT: 109.44 m  
 Antenna AMSL Height: 161.2 m  
 Antenna AGL Height: 114.3 m  
 Ground Elevation: 46.9 m  
 Horiz. Pattern: Directional

**Total Population Within Contour: 485,090**  
**Housing Units Within Contour: 197,606**  
**Total Area Within Contour: 4,829 sq. km**

**SMITHFIELD - SALEM, NC**

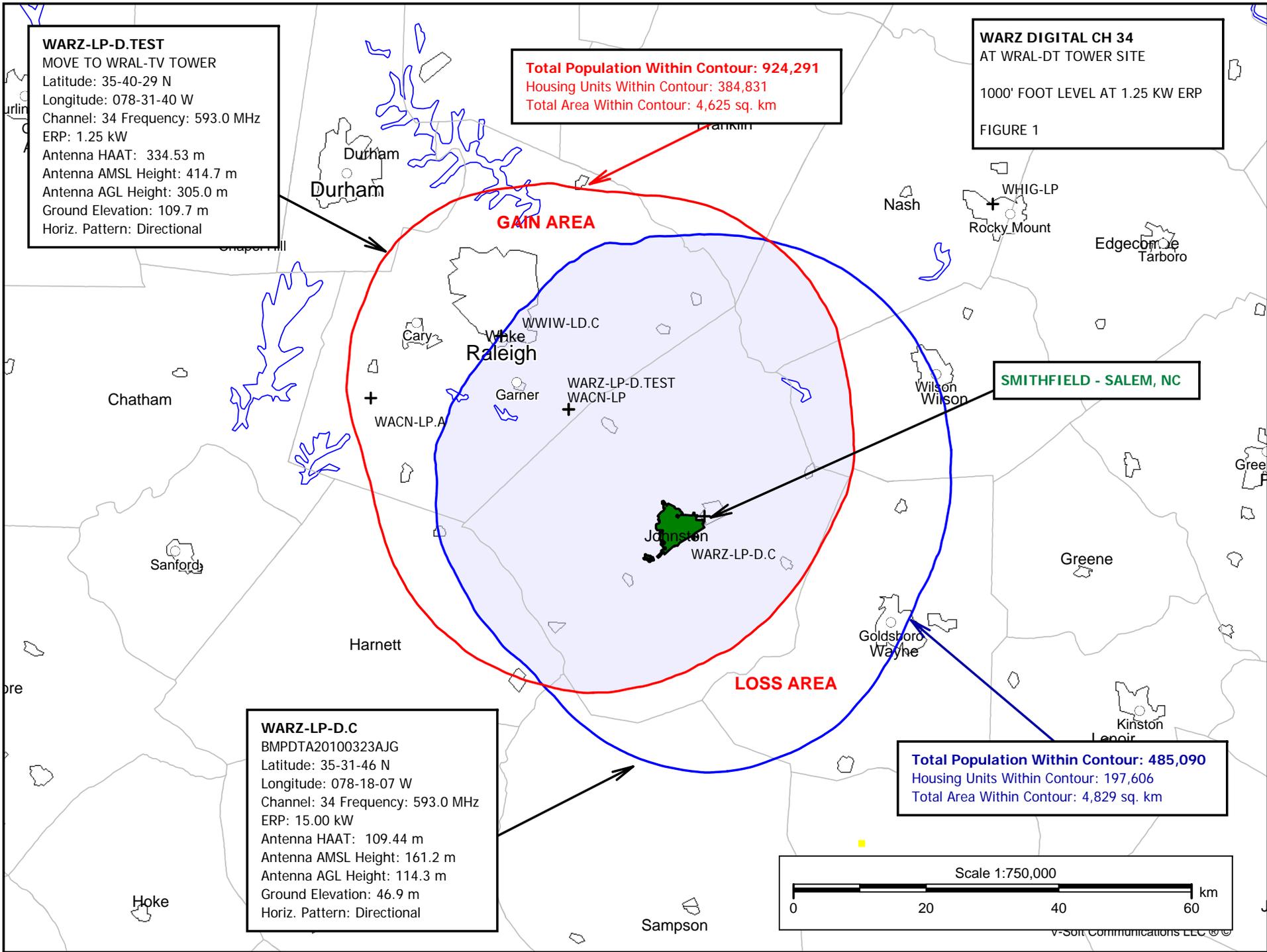


FIGURE 2 Directional Antenna Pattern

Azimuth (deg)	Relative Field
0.0	0.4
10.0	0.398
20.0	0.44
30.0	0.51
40.0	0.59
50.0	0.671
60.0	0.748
70.0	0.818
80.0	0.877
90.0	0.924
100.0	0.958
110.0	0.98
120.0	0.994
130.0	1.0
140.0	0.99
150.0	0.973
160.0	0.946
170.0	0.907
180.0	0.857
190.0	0.792
200.0	0.713
210.0	0.628
220.0	0.547
230.0	0.474
240.0	0.414
250.0	0.378
260.0	0.378
270.0	0.408
280.0	0.449
290.0	0.487
300.0	0.515
310.0	0.527
320.0	0.522
330.0	0.5
340.0	0.467
350.0	0.43

<<MAX

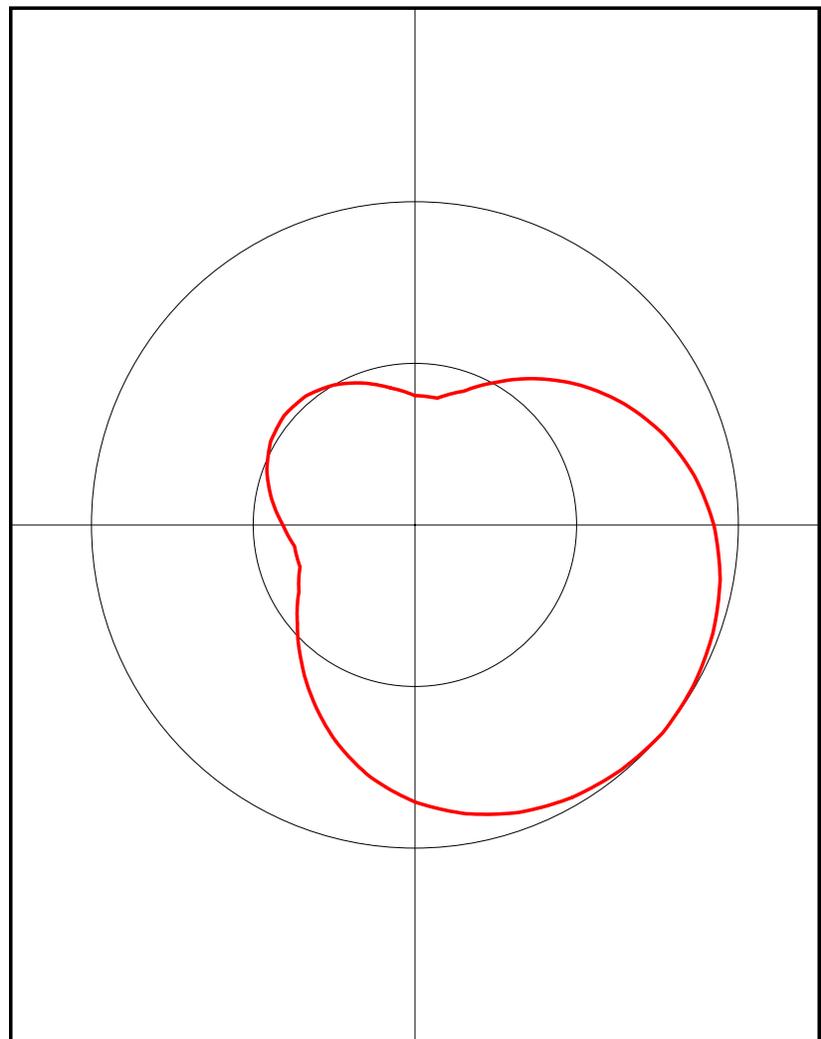


FIGURE 3 - OET BULLETIN 69 INTERFERENCE SUMMARY REPORT  
 Outgoing Interference Population Report

WARZ-LP-D.TEST (34) Smithfield-Selma, NC  
 Broadcast Type: Digital Service: F [Stringent Emission Mask]  
 Lat: 35-40-29 N Lng: 078-31-40 W ERP: 1.25 kW AMSL: 414.7 m  
 TV Outgoing Interference Study  
 Signal Resolution: 1.0 km  
 Consider NTSC Taboo: Yes  
 KWX error points are considered to  
     be interference free coverage.  
 Default # of radials computed for contours: 360  
 Contours calculated using 8 radial HAAT.  
 LR Profile Spacing Increment: 1.0 km  
 Masked interference points are being  
     counted as interference.  
 Using LPTV/translator D/U rules.  
 Pop Centroid DB: 2000 US Census (SF1)

Primary Terrain: NED 3 Second US Terrain  
 Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2000 US Census (SF1)

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 Stations Considered:

Call Letters	City	State	Dist	Azi
1356487-D.A (33)	Lumberton	NC	120.4	202.9
1357455-D.A (34)	Crozet	VA	267.5	356.0
1394186-D.A (34)	Greenville	NC	116.7	80.5
1407250-D.A (34)	Wilmington	NC	152.6	169.6
W34CQ (34Z)	Myrtle Beach	SC	236.0	191.8
W35CC (35-)	Lumberton	NC	120.4	202.9
W35CC-D.C (35)	Lumberton	NC	120.4	202.9
WACN-LP (34Z)	Raleigh	NC	0.0	180.0
WACN-LP.A (34Z)	Raleigh / Durham	NC	29.9	273.2
WCIV-D (34)	Charleston	SC	323.5	199.8
WGHP-D.C (35)	High Point	NC	119.8	277.7
WHIG-LP (33+)	Rocky Mount	NC	71.0	64.1
WMYV-D (33)	Greensboro	NC	119.1	280.7
WPXU-TV-D.C (34)	Jacksonville	NC	161.6	142.2
WPXW-TV-D.C (34)	Manassas	VA	385.4	19.0
WSET-TV-D (34)	Lynchburg	VA	207.3	331.7
WSOC-TV.C (34)	Charlotte	NC	204.8	257.7
WWIW-LD.C (41-)	Raleigh	NC	15.0	317.3
WARZ-LP-D.C (34)	Smithfield-selma	NC	26.0	128.2

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Call	Area	HUnits	Contour	Masked	Ix	Unmasked	Ix	%
1356487-D.A (33)	0.0	0	183,491		0		0	0.00
1357455-D.A (34)	0.0	0	215,378		0		0	0.00
1394186-D.A (34)	0.0	0	207,095		0		0	0.00

1407250-D.A (34)	0.0	0	1,218	0	0	0.00
W34CQ (34Z)	0.0	0	75,394	0	0	0.00
W35CC (35-)	0.0	0	86,448	0	0	0.00
W35CC-D.C (35)	0.0	0	242,012	0	0	0.00
WACN-LP (34Z)	1235.9	218,433	547,080	0	525,537	96.06 *
WACN-LP.A (34Z)	284.3	58,808	295,854	0	135,225	45.71 *
WCIV-D (34)	0.0	0	846,670	0	0	0.00
WGHP-D.C (35)	33.7	5,786	3,091,461	0	11,062	0.36
WHIG-LP (33+)	0.0	0	58,465	0	0	0.00
WMYV-D (33)	21.8	4,800	3,166,638	0	9,418	0.30
WPXU-TV-D.C (34)	24.0	113	590,722	0	246	0.04
WPXW-TV-D.C (34)	0.0	0	7,199,400	0	0	0.00
WSET-TV-D (34)	0.0	0	1,171,346	0	0	0.00
WSOC-TV.C (34)	0.0	0	989,632	0	0	0.00
WWIW-LD.C (41-)	0.0	0	624,859	0	0	0.00

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SEE INTERFERENCE AGREEMENT FIGURE 4 ATTACHED HEREIN.

AGREEMENT TO ACCEPT INTERFERENCE TO WACN-LP CHANNEL 34 FACILITIES AND PENDING WACN-LP CHANNEL 34 APPLICATIONS  
FROM PROPOSED WARZ DIGITAL APPLICATION –

EMAIL COPY BELOW SENT TO HOSSEIN HASHEMZADEH (FCC) ON MARCH 11, 2010  
FROM ROBERT L. OLENDER, ESQ, ON BEHALF OF WACN-LP, WORD OF GOD FELLOWSHIP, INC.

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From: rolender.law@comcast.net  
To: Hossein.Hashemzadeh@fcc.gov  
CC: MullEngr@aol.com  
Sent: 3/11/2010 1:43:05 A.M. Eastern Standard Time  
Subj: WACN

Dear Hossein:

Station WACN-LP has been approached by Jack Mullaney who represents Station WARZ as its consulting engineer, to assist them to expand its authorization for digital operation on Ch. 34 but the existing license on Ch. 34 of WACN-LP prevents such expansion. WACN-LP has a displacement application (BDISDTL-20100128AAB) to change its channel to 21, and we are requesting the FCC to expedite our application and in order to assist WARZ we are willing to accept interference until this displacement application is granted.

Please let us know if this is acceptable to the FCC. Mr. Mullaney can be reached at the below number.

John J. Mullaney (**Jack**)  
**Mullaney Engineering, Inc.**  
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Thanks,

Bob

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