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**ENGINEERING EXHIBIT EE-1:**

**FREE LIFE MINISTRIES, INC.  
CLASS-A TELEVISION STATION WHFL-CD  
GOLDSBORO, NORTH CAROLINA**

**DIGITAL TELEVISION CHANNEL 43  
MODIFICATION OF STATION LICENSE**

**OCTOBER 2011**

**FCC FACILITY NUMBER: 22485**

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

**WHFL-CD, GOLDSBORO, NC  
CHANNEL 43 DIGITAL TELEVISION**

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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 FREE LIFE MINISTRIES, INC., to prepare the instant engineering exhibit in support of ***an application for authority to Construct or Make Changes in a Class-A Television Broadcast Station, WHFL-LP, FCC Facility ID Number 22485.***

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 6<sup>th</sup> day of October 2011

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**NARRATIVE STATEMENT:**

**I. GENERAL:**

This engineering statement and the instant engineering exhibit of which it is part has been prepared on behalf of FREE LIFE MINISTRIES, INC., (hereinafter "FLM").

This engineering exhibit supports a digital modification of station license application for Class-A Television Station WHFL-CD. Station WHFL-CD currently operates (licensed facility) on digital television channel 43 (BLDTA20100908ACY). FLM proposes to INCREASE its authorized power (ERP) from 7.5-kilowatts to 15.0 kilowatts, utilizing the current authorized site and antenna system. The proposed digital Class-A television station will operate on digital television channel 43 with its licensed non-directional antenna (omni) and a maximum effective radiated power (ERP) of 15.0 kilowatts. The antenna center of radiation height above ground (RCAGL) of 134.1 meters and above mean sea level (RCAMSL) of 155.4 meters remains unchanged.

This proposal/application is to change the maximum effective radiated power of the licensed facility, no other changes are proposed.

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 (digital) 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 present and proposed 51 dBu digital service contour. As can be seen on the map, the 51 dBu digital contour overlaps the current contour as required by the Commission's minor change rules.

As no changes in station location are proposed, the contours must physically overlap as the point of origin of each contour, i.e., the transmitter site remains the same.

**PROPOSED FACILITIES:**

This application proposes maximum LPTV digital operation on channel 43 at the currently authorized transmitter site.

No changes in site location, or channel assignment are proposed, this is a digital on-channel minor change construction permit application to increase station effective radiated power.

The antenna supporting structure is an existing structure with an overall height of 143.3 meters above ground. The tower/supporting structure has been issued FCC tower registration number: 1019370. No changes in the height of the existing structure are required, therefore the FAA has not been notified.

The ground elevation above mean sea level (AMSL) of the site is 21.3 meters. The applicant proposes to use the existing side-mounted nondirectional (omni) antenna with a center of radiation at 134.1 meters above ground. The center of radiation of the antenna above mean sea level (AMSL) is 155.4 meters.

This is an existing communication site that has been authorized for use by WHFL-CD. No new construction will occur at the site.

Figure 2 contains a horizontal radiation (relative field) pattern of the proposed digital nondirectional horizontal radiation pattern. The antenna is an ERI 16-Bay UHF slot antenna, model number ALP16L2-HSOC (ERI ALP16L2-HSOC) employing 0.5 degrees of downward electrical beam tilt. As this is an omni, nondirectional pattern the radiation pattern is not a required submission but is included herein for reference.

**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 full-service TV, LPTV or TV Translator or Class-A TV stations.

Using the procedures outlined in the FCC's OET-69 Bulletin, a 1-kilometer cell size resolution and 1990 U.S. Census, the proposal complies with the current FCC policy (i.e., less than 0.5% new interference caused to other pertinent assignments).

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.

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.

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 0.25 for all angles 15 degrees and greater below the horizon, and a digital power of 15-kilowatts, and an antenna height of 134.1 meters above ground. The power density level 2-meters above ground is predicted to be 0.0007 mW/cm<sup>2</sup> or less. The computed power density is 0.032% of the Commission's guidelines for a controlled area and 0.162% 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:**

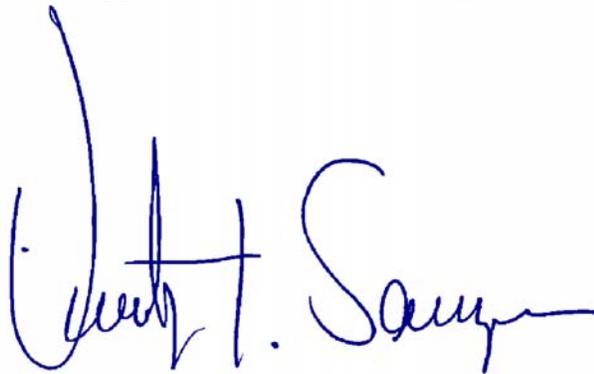
The proposed station will operate on Digital Television Channel 43 with a maximum ERP of 15.0 kilowatts (15,000 Watts), utilizing a NONDIRECTIONAL (OMNI) antenna system.

The estimated digital transmitter power output to produce the requested ERP is 0.86 kw (860 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 will not create any new prohibited interference.

The proposed operation is fully in compliance with all other areas of the Commission's rules and applicable international agreements.

06 October 2011



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Timothy Z. Sawyer

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**WHFL-CD-D APP**  
 APPLICATION  
 Latitude: 35-21-53 N  
 Longitude: 078-01-55 W  
 Channel: 43 Frequency: 647.0 MHz  
 ERP: 15.00 kW  
 Antenna HAAT: 140.0 m  
 Antenna AMSL Height: 155.4 m  
 Antenna AGL Height: 134.1 m  
 Ground Elevation: 21.3 m  
 Horiz. Pattern: Omni

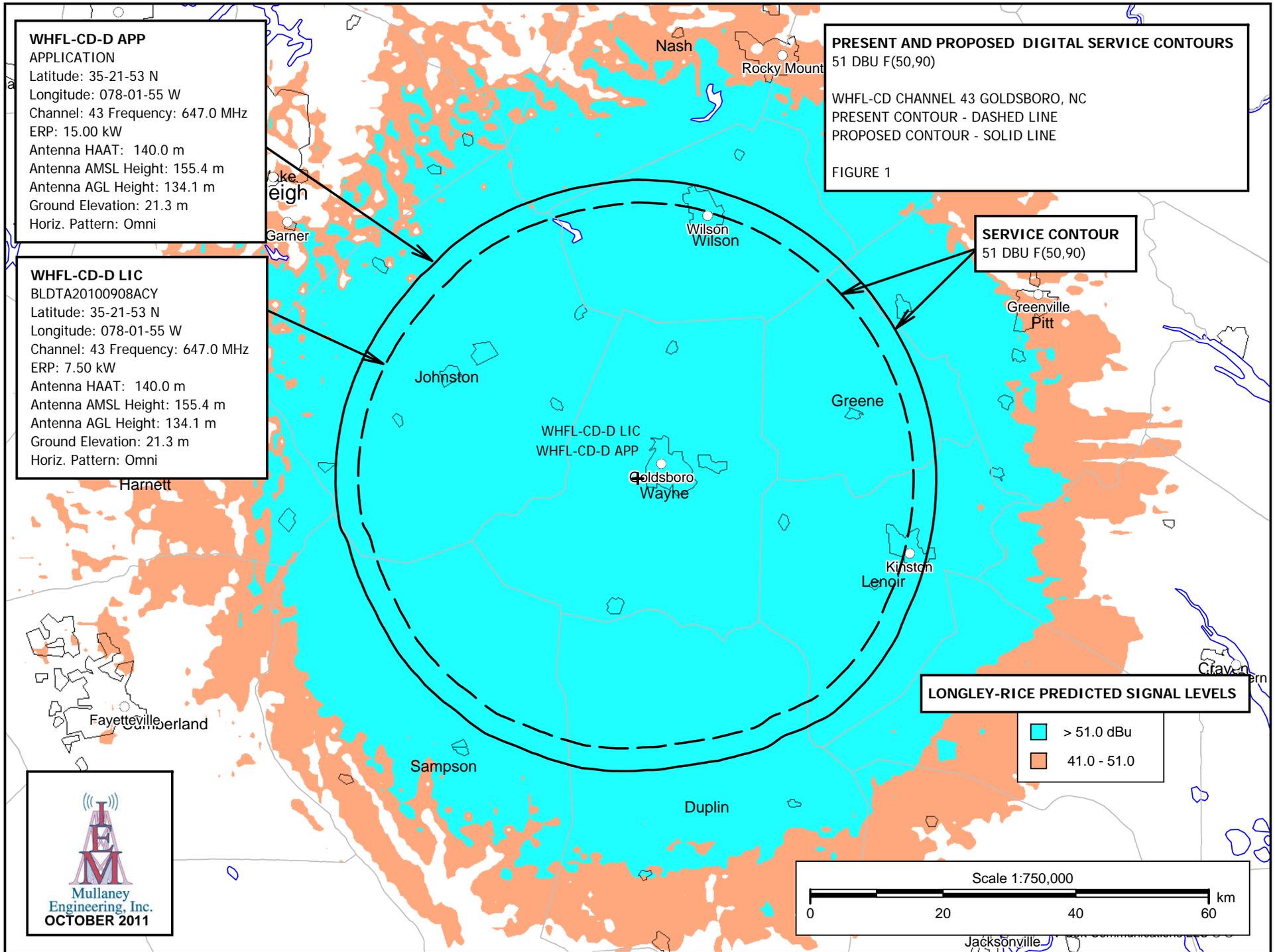
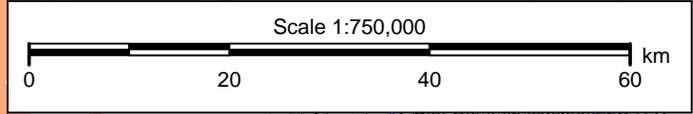
**WHFL-CD-D LIC**  
 BLDTA20100908ACY  
 Latitude: 35-21-53 N  
 Longitude: 078-01-55 W  
 Channel: 43 Frequency: 647.0 MHz  
 ERP: 7.50 kW  
 Antenna HAAT: 140.0 m  
 Antenna AMSL Height: 155.4 m  
 Antenna AGL Height: 134.1 m  
 Ground Elevation: 21.3 m  
 Horiz. Pattern: Omni

**PRESENT AND PROPOSED DIGITAL SERVICE CONTOURS**  
 51 DBU F(50,90)  
 WHFL-CD CHANNEL 43 GOLDSBORO, NC  
 PRESENT CONTOUR - DASHED LINE  
 PROPOSED CONTOUR - SOLID LINE  
 FIGURE 1

**SERVICE CONTOUR**  
 51 DBU F(50,90)

**LONGLEY-RICE PREDICTED SIGNAL LEVELS**

	> 51.0 dBu
	41.0 - 51.0



# NON DIRECTIONAL Antenna Pattern - FIGURE 2

Azimuth (deg)                      Relative Field

0.0	1.0
10.0	1.0
20.0	1.0
30.0	1.0
40.0	1.0
50.0	1.0
60.0	1.0
70.0	1.0
80.0	1.0
90.0	1.0
100.0	1.0
110.0	1.0
120.0	1.0
130.0	1.0
140.0	1.0
150.0	1.0
160.0	1.0
170.0	1.0
180.0	1.0
190.0	1.0
200.0	1.0
210.0	1.0
220.0	1.0
230.0	1.0
240.0	1.0
250.0	1.0
260.0	1.0
270.0	1.0
280.0	1.0
290.0	1.0
300.0	1.0
310.0	1.0
320.0	1.0
330.0	1.0
340.0	1.0
350.0	1.0

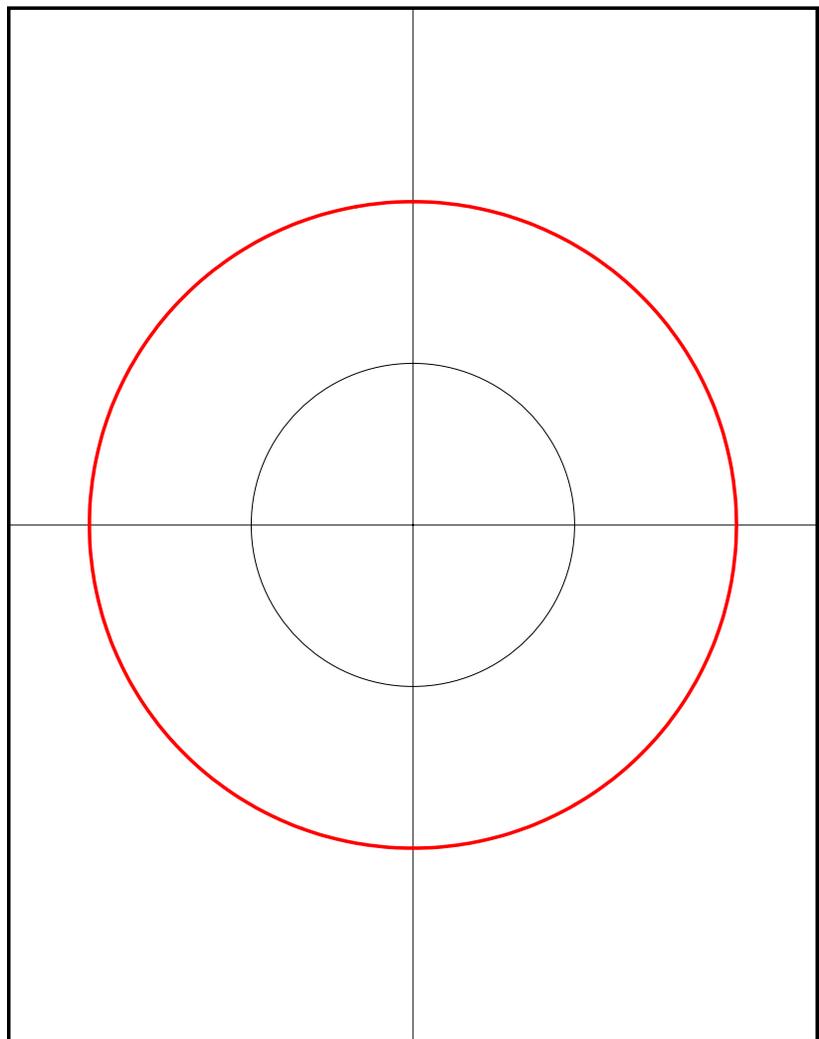


FIGURE 3 - OET BULLETIN 69 - INTERFERENCE STUDY - SUMMARY REPORT

WHFL-CD-D (43) Goldsboro, NC - BLDTA20100908ACY (APP TO MOD LICENSE)  
 Broadcast Type: Digital Service: F [Stringent Emission Mask]  
 Lat: 35-21-53 N Lng: 078-01-55 W ERP: 15.0 kW AMSL: 155.4 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
WRAY-TV-D (42)	Wilson	NC	52.8	348.6
1329620-D.A (42)	Wilmington	NC	123.5	179.1
W42EF-D.C (42)	New Bern	NC	131.1	121.8
WPEM-LP-D.C (42)	Lumberton	NC	119.7	230.5
1413616-D.A (42)	Wilmington	NC	117.2	188.9
WLXI-D (43)	Greensboro	NC	171.6	289.5
W43CR-D.C (43)	Wilmington	NC	137.5	186.0
WECT-TV-D.P (44)	Wilmington	NC	117.2	188.9
W44CN (44Z)	Greenville	NC	57.8	62.1
WZGS-CA-D.C (44)	Raleigh	NC	78.5	306.8
WECT-D (44)	Wilmington	NC	137.6	186.0
W44CN-D.C (44)	Greenville	NC	57.8	62.1
WZGS-CA (44+)	Raleigh	NC	78.5	306.8

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
WRAY-TV-D (42)	112.8	2,361	2,202,896	0	5,232	0.24
1329620-D.A (42)	0.0	0	218,223	0	0	0.00
W42EF-D.C (42)	0.0	0	115,414	0	0	0.00
WPEM-LP-D.C (42)	0.0	0	391,775	0	0	0.00
1413616-D.A (42)	0.0	0	279,530	0	0	0.00
WLXI-D (43)	38.5	2,782	2,328,421	0	5,974	0.26
W43CR-D.C (43)	0.0	0	208,588	0	0	0.00
WECT-TV-D.P (44)	0.0	0	428,023	0	0	0.00
W44CN (44Z)	0.0	0	129,777	0	0	0.00
WZGS-CA-D.C (44)	1.0	0	846,742	0	0	0.00
WECT-D (44)	8.0	3	923,685	0	9	0.00
W44CN-D.C (44)	4.0	0	279,160	0	0	0.00
WZGS-CA (44+)	0.0	0	599,606	0	0	0.00

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 NO PROBLEMS FOUND