

WZCO
BNPED-20071017AKC
Chadbourn, North Carolina
Application for Modified Construction Permit for Noncommercial FM Station
On Channel 210 Class C2
by
Columbus County Schools

Exhibit 18
Allocations

January 2013

© 2013 Columbus County Schools

Timothy L. Warner, Inc.
Post Office Box 8045
Asheville, North Carolina 28814-8045
(828) 258-1238
twarner@tlwinc.net

Table of Contents

Description	Page
Declaration	2
Narrative.....	3
Directional Antenna	3
Allocations	4
Source of Data.....	4
Area and Population	5
Table 1: Allocations	6
Allocation Study.....	Figure 1
Directional Antenna Pattern.....	Figure 2
Area and Population	Figure 3

Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Exhibit 18, Allocations, for Columbus County Schools, and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



Timothy L. Warner, P.E.
Post Office Box 8045
Asheville, North Carolina 28801
(828) 258-1238
twarner@tlwinc.net
18 January 2013

Narrative

This Exhibit provides details of the allocations for the proposed modified facilities of WZCO, Chadbourn, North Carolina. The authorization file number is BNPED-20071017AKC. This proposal complies fully with the requirements of 74 C.F.R. 73.509.

The change is limited to the addition of a horizontally polarized component with a directional maximum Effective Radiated Power (“ERP”) of 4.5 kilowatts to the authorized maximum vertically polarized ERP of 25 kilowatts.

Directional Antenna

This application proposes a directional antenna. The pattern is that authorized in BNPED-20071017AKC. The composite horizontal plane pattern is plotted as Figure 2. The antenna will comply with the requirements of §73.316. A complete proof of performance from an antenna manufacturer will be provided in the license application. The antenna will be mounted to the tower as specified in the manufacturer’s mounting instructions. The antenna will not be mounted on the top of an antenna tower which includes a top-mounted platform larger than the nominal cross-sectional area of the tower in the horizontal plane. No other antenna of any type will be mounted on the same tower level as a directional antenna, and that no antenna of any type will be mounted within any horizontal or vertical distance specified by the antenna manufacturer as being necessary for proper directional operation. Antenna installation will be supervised by an engineer experienced in directional antennas. The supervising engineer will provide a statement of qualifications and a statement that the antenna

was assembled and installed according to the manufacturer's instruction. A registered land surveyor will verify the orientation of the antenna and provide a statement that the antenna is properly oriented. There are no other FM or TV broadcasting antennas within 60 meters of the proposed site. There are no AM broadcasting antennas within 3.2 kilometers of the proposed site.

Allocations

This application proposes service to Chadbourn, North Carolina, on channel 210 as a Class C2 facility. There is no change in the composite directional pattern, maximum ERP, or height. The Allocations Table in this exhibit provides a list of the stations, construction permits, allocations, and applications studied. All are protected by this application. Figure 1 is a graphic presentation of the allocations.

Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's CDBS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. Terrain data is extracted from the V-Soft Communications NED 03 terrain database. The NED 03 database is derived from the USGS National Elevation Data 30 meter terrain database. The USGS National Elevation Dataset has been developed by merging the highest-resolution, best-quality elevation data available across the United States into a seamless raster format. NED is the result of the maturation of the USGS effort to provide

1:24,000-scale Digital Elevation Model (DEM) data for the conterminous US and 1:63,360-scale DEM data for Alaska.

All population data is from 2010 U.S. Census PL data files. Population is counted by considering the location of the centroid of each census block. The data for each block is counted if it falls within the area being counted.

Area and Population

The area within the proposed 60 dBu F(50,50) service contour is calculated by a computer program which sums the areas within the contours based on 360 radials. The population is calculated by the centroid method and is also listed on the Figure.

Table 1: Allocations

Allocations Study Columbus County Schools CH# 210C2- 89.9 MHz, Pwr= 25 kW DA, HAAT= 113.0 M, COR= 139 M Average Protected F(50-50)= 41.1 km Standard Directional											
REFERENCE										DISPLAY DATES	
34 32 17.0 N.										DATA 01-17-13	
78 42 36.0 W.										SEARCH 01-17-13	
CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap	*OUT* in km)
210C2 Chadbourn	WZCO	CP	DVX NC	0.0 0.0	BNPED20071017AKC	34 32 17.0 78 42 36.0	25.000 113	68.6 139	21.7 Columbus County Schools	-90.2*	-90.2*
209C3 Wilmington	WDVV	LIC	DVX NC	122.7 303.1	73.06 BLED20060908AAM	34 10 52.0 78 02 33.0	13.500 106	46.9 114	23.7 Caroloma Christian Radio I	2.2	1.1
209C3 Wilmington	WDVV	CP	DCX NC	122.7 303.1	73.06 BPED20100106AFN	34 10 52.0 78 02 33.0	13.500 106	46.9 114	23.7 Caroloma Christian Radio I	2.2	1.1
211C1 Conway	WHMC-FM	CP	DCX SC	209.4 29.1	74.90 BPED20091027ACK	33 56 58.0 79 06 31.0	63.000 213	50.6 233	30.4 South Carolina Educational	1.1	1.4
211C3 Buies Creek	WCCE	LIC	DVX NC	351.5 171.4	75.48 BLED20090105AFR	35 12 39.0 78 50 01.0	15.000 92	55.3 135	34.7 Radio Training Network, In	1.3	10.9
211C3 Buies Creek	WCCE	CP	DCX NC	351.5 171.4	75.48 BPED20100204ACK	35 12 39.0 78 50 01.0	15.000 92	55.3 135	34.7 Radio Training Network, In	1.3	10.9
211C3 Jacksonville	WJKA	LIC	DVX NC	82.7 263.3	100.33 BLED20080527AEH	34 38 52.0 77 37 28.0	17.000 86	53.6 96	34.2 American Family Associatio	6.4	4.4
211C1 Conway	WHMC-FM	LIC	DEY SC	209.4 29.2	74.72 BLED19850215LP	33 57 05.0 79 06 31.0	30.000 215	39.0 235	25.8 South Carolina Educational	8.2	6.2
208A Lumberton	WLPS-FM	CP	CX NC	296.4 116.2	40.78 BPED20120629ACS	34 42 02.0 79 06 32.0	4.000 98	2.5 144	26.1 Billy Ray Locklear Evangel	7.3	11.7
208A Lumberton	WLPS-FM	LIC	DVX NC	296.4 116.2	40.78 BLED20060321AFM	34 42 02.0 79 06 32.0	2.000 134	2.2 179	25.4 Billy Ray Locklear Evangel	7.6	12.4
209C Raleigh	WCPE	LIC	CY NC	7.6 187.7	156.97 BLED20031103AAJ	35 56 25.0 78 28 45.0	100.000 359	114.9 462	78.0 Educational Information Co	14.3	41.4
210C1 Davidson	WDAV	CP	DCX NC	298.2 116.9	219.09 BPED20121213AIG	35 26 54.0 80 50 23.0	100.000 246	168.6 474	69.1 The Trustees Of Davidson C	16.3	59.8
210C1 Davidson	WDAV	LIC	DC NC	298.2 116.9	219.09 BLED20050902AAD	35 26 54.0 80 50 23.0	100.000 246	168.6 474	69.1 The Trustees Of Davidson C	16.3	59.8
213C3 Wilmington	WWIL-FM	CP	CX NC	121.1 301.5	63.06 BPED20121203BFM	34 14 37.0 78 07 24.0	4.000 189	3.1 198	34.2 Carolina Christian Radio,	26.2	25.7
209C Columbia	WMHK	LIC	DCN SC	256.0 74.8	195.29 BLED19940323KA	34 05 49.0 80 45 51.0	100.000 426	125.0 507	83.9 Columbia Bible College Bro	30.8	51.7
213C3 Wilmington	WWIL-FM	LIC	EX NC	122.7 303.1	73.06 BLED20060522ACP	34 10 52.0 78 02 33.0	20.000 100	3.7 106	35.5 Carolina Christian Radio,	35.8	34.4
210C2 Newport	NEW	CP	VX NC	82.9 264.1	197.58 BNPED20071015AFC	34 44 21.0 76 34 08.0	34.000 91	119.3 91	39.7 Brice's Creek Bible Church	37.8	42.7
213C3 Dillon	WDLL	LIC	DVX SC	253.8 73.3	81.44 BLED20071002ABH	34 19 53.0 79 33 37.0	25.000 84	3.4 104	32.3 American Family Associatio	39.4	44.6
207A Spring Lake	WZRI	LIC	DVX NC	342.0 161.8	73.86 BLED20050509ACO	35 10 14.0 78 57 44.0	2.000 55	1.5 116	16.3 Educational Media Foundati	51.5	54.6

Terrain database is NED 03 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference Zone= - Zone 2, Co to 3rd adjacent.
 All separation margins (if shown) include rounding
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside protected contour.
 « = Station meets FCC minimum distance spacing for its class.

Figure 1: Allocations Study
Columbus County Schools

FMCommander Full Allocation Study - NED 03 SEC

01-17-2013

WZCO.C CH 210 C2 DA

Lat= 34 32 17.0, Lng= 78 42 36.0

25.0 kW 113 M HAAT, 139 M COR

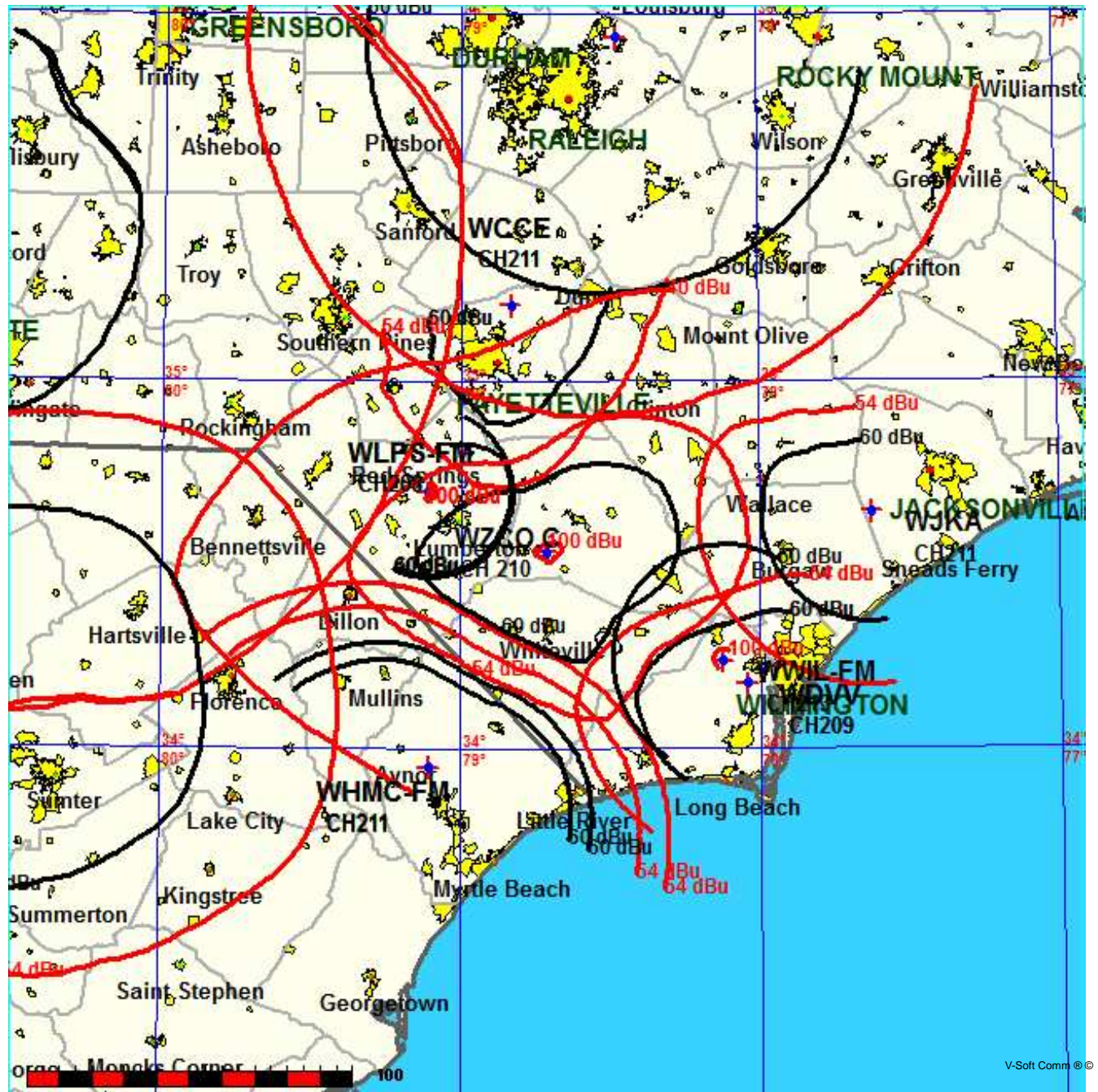


Figure 2: WZCO Directional Antenna Pattern
Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	0.27
10.0	0.339
20.0	0.427
30.0	0.537
40.0	0.667
50.0	0.84
60.0	1.0
70.0	1.0
80.0	1.0
90.0	1.0
100.0	0.888
110.0	0.705
120.0	0.56
130.0	0.48
135.0	0.473
140.0	0.492
150.0	0.591
160.0	0.711
170.0	0.618
180.0	0.498
190.0	0.444
200.0	0.426
210.0	0.43
220.0	0.452
230.0	0.504
240.0	0.6
250.0	0.748
260.0	0.942
265.0	1.0
270.0	0.945
280.0	0.757
290.0	0.602
300.0	0.478
310.0	0.38
320.0	0.301
330.0	0.241
340.0	0.224
350.0	0.234

Rotation Angle = 0

