

TECHNICAL EXHIBIT  
APPLICATION FOR  
MODIFICATION OF CONSTRUCTION PERMIT  
FCC FILE NO. BPH-19971022MC  
FM STATION WBZS  
SHAWSVILLE, VIRGINIA  
CH 273A 0.15 KW (MAX-DA) 591 M

Technical Narrative

The technical exhibit of which this narrative is part was prepared in support of an application for a modification of the construction permit for FM station WBZS at Shawsville, Virginia. Station WBZS is currently authorized (BPH-19971022MC, Facility ID 89133) to operate on channel 273A (102.5 MHz) with a non-directional antenna maximum effective radiated power (ERP) of 0.8 kilowatts (kW) and an antenna height above average terrain (HAAT) of 276 meters. The purpose of this instant application is to change transmitter site, increase HAAT to 591 meters, decrease ERP to 0.15 kW and install a directional antenna (DA). No other changes are proposed.

Processing under Section 73.215 is requested with respect to short-spacings with the licensed operation of WJXX on channel 274B at Appomattox, Virginia and a channel 274C1 reservation for WJXX also at Appomattox. The instant application is considered a "minor" change in facilities in accordance with Section 73.3573(a)(1)(i) and 73.3573(g).

Paragraph 4 - Antenna Structure Registration Number

Based on the FCC's TOWAIR program, the antenna supporting structure will not require registration. The results of the TOWAIR program are attached as Figure 1.

Paragraph 12 - Directional Antenna Relative Field Values

Figure 2 is a graph of the horizontal plane relative field for the proposed WBZS hypothetical directional antenna.

Response to Paragraph 14 - Community Coverage

Figure 3 is a map which demonstrates that the proposed WBZS operation complies with the provisions of Section 73.315 and provides the entire community of Shawsville, Virginia with a 70-dBu signal.

Response to Paragraph 16 - Interference

Figure 4 is a separation study from the proposed transmitter site coordinates. As shown, the proposed transmitter site complies with the minimum distance separation requirements of Section 73.207 for Class A operation on channel 273A towards all existing, authorized and proposed stations and allotments, with the exceptions of the licensed operation of WJXX on channel 274B at Appomattox, Virginia and a channel 274C1 reservation for WJXX also at Appomattox. With respect to these short-spacings, it is proposed to utilize the contour protection provisions of Section 73.215. Figure 5 demonstrates that the proposed WBZS operation on channel 273A at Shawsville complies with the contour protection provisions of Section 73.215 with respect to the licensed channel 274B and reserved channel 274C1 operations of WJXX.<sup>1</sup> Contour locations were based on the NGDC 30-second terrain database.

Response to Paragraph 17 - Environmental Considerations

The proposed WBZS facilities were evaluated in terms of potential radiofrequency radiation exposure at 2 meters above ground level in accordance with OST Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation". This Bulletin provides assistance in determining whether FCC-regulated transmitting facilities, operations or devices comply with limits for human exposure to radiofrequency (RF) electromagnetic fields.

A Shively 1-bay directional antenna will be side-mounted at the 21 meter level on the supporting structure. As shown on Figure 6, attached, the maximum vertical plane relative field for depression angles towards the tower base (-60° to -90° elevation) is less than 0.55. Therefore using a

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<sup>1</sup> The distances between the proposed WBZS transmitter site and the WJXX licensed channel 274B and reserved channel 274C1 sites comply with the minimum distance separation requirement of Section 73.215(e).

"worst-case" vertical relative field value of 0.55, a total ERP of 0.3 kW (horizontal plus vertical) and an antenna center or radiation height above the ground level of 21 meters, the calculated power density at 2 meters above the base of the tower is 0.0084 milliwatt per square centimeter ( $\text{mW}/\text{cm}^2$ ), or 4.2 percent of the Commission's recommended limit for "uncontrolled" exposure areas ( $0.2 \text{ mW}/\text{cm}^2$  for FM frequencies). Therefore, based on the responsibility threshold of 5%, the proposal will comply with the RF emission rules.

Access to the transmitting site will be restricted and appropriately marked with warning signs. Furthermore, procedures will be in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

Finally, it is noted that this technical exhibit only addresses the potential for radiofrequency electromagnetic field exposure.

If there are any questions, or additional information is required, please contact the office of the undersigned.



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April 8, 2013

## TOWAIR Determination Results

### \*\*\* NOTICE \*\*\*

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

#### **DETERMINATION Results**

**Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.**

#### **Your Specifications**

##### **NAD83 Coordinates**

Latitude	37-11-42.0 north
Longitude	080-09-22.0 west

##### **Measurements (Meters)**

Overall Structure Height (AGL)	22.9
Support Structure Height (AGL)	18.3
Site Elevation (AMSL)	1146.1

##### **Structure Type**

LTOWER - Lattice Tower

#### **Tower Construction Notifications**

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

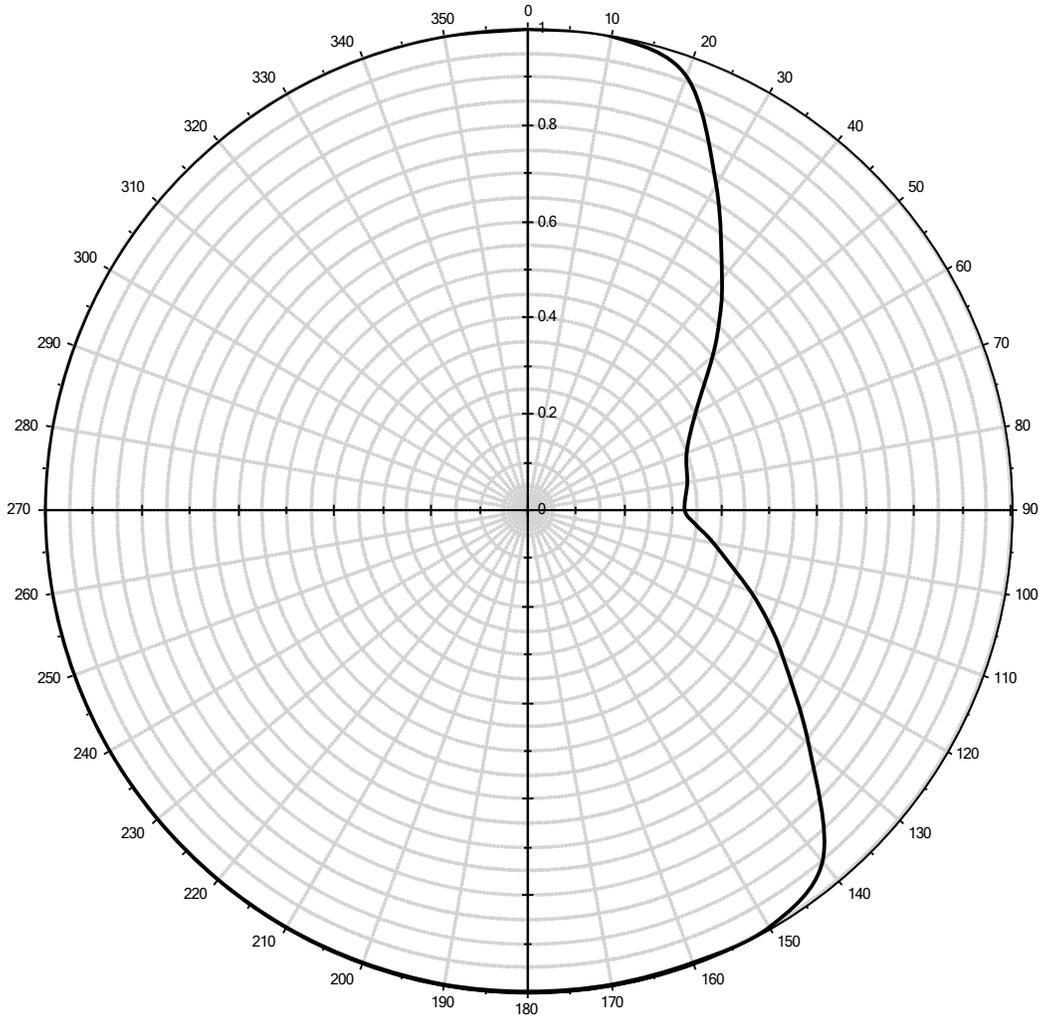
# DA Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



Antenna ID: 550109

**WBZS HYPOTHETICAL  
DIRECTIONAL ANTENNA  
PATTERN, MAX. ERP 0.15 KW**



**Note: display reflects rotation of 0.00°**

0° 1.000	60° 0.400	120° 0.610	180° 1.000	240° 1.000	300° 1.000	45° 0.561
10° 1.000	70° 0.350	130° 0.760	190° 1.000	250° 1.000	310° 1.000	95° 0.350
20° 0.960	80° 0.335	140° 0.950	200° 1.000	260° 1.000	320° 1.000	115° 0.549
30° 0.780	90° 0.325	150° 1.000	210° 1.000	270° 1.000	330° 1.000	
40° 0.625	100° 0.390	160° 1.000	220° 1.000	280° 1.000	340° 1.000	
50° 0.500	110° 0.490	170° 1.000	230° 1.000	290° 1.000	350° 1.000	

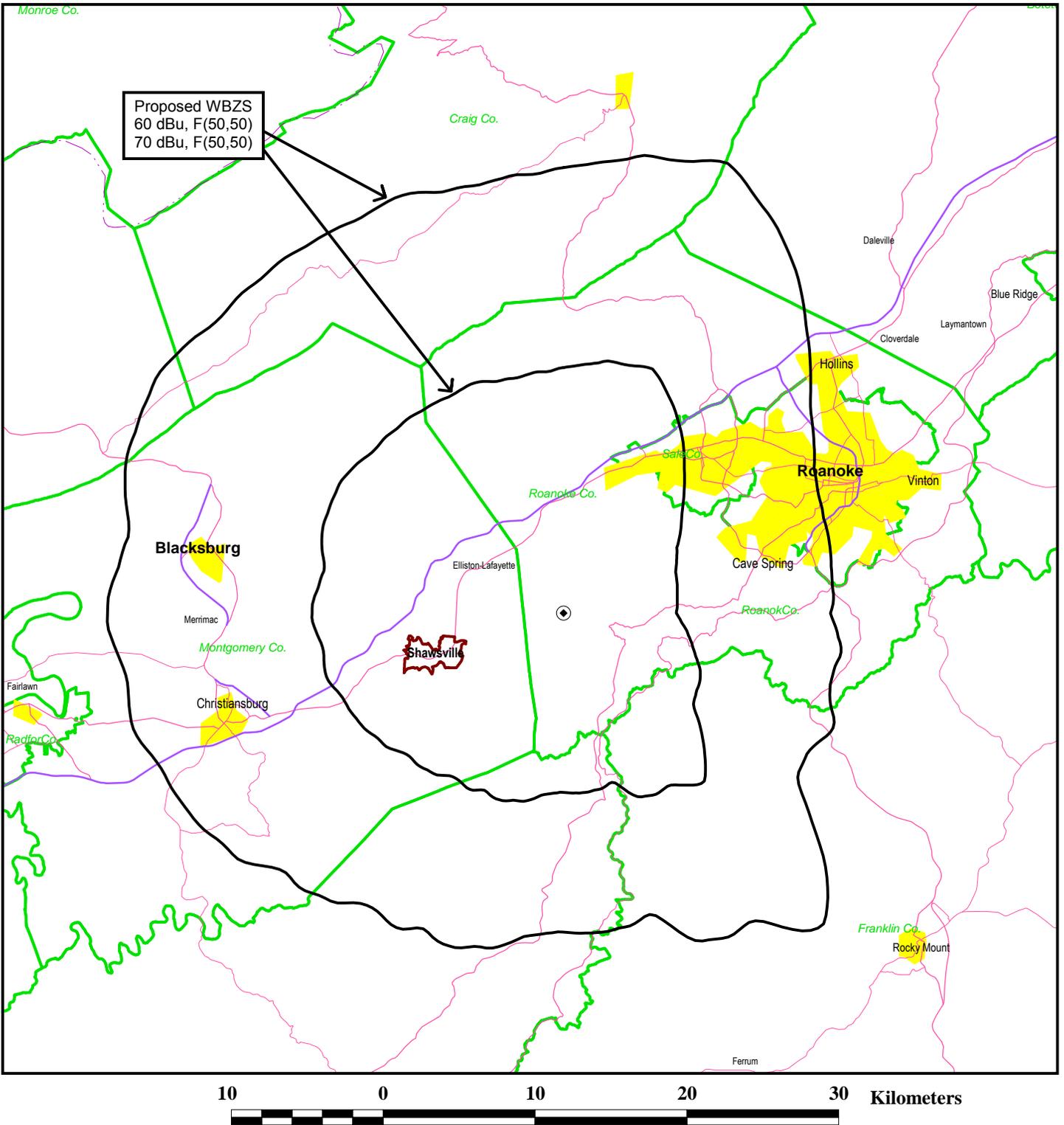
**Antenna Make:** SHI

**Standard Pattern:**

**Antenna Model:** IDEALIZED

**Last Change Date:**

Figure 3



COMPLIANCE WITH SECTION 73.315

STATION WBZS  
SHAWSVILLE, VIRGINIA  
CH 273A 0.15 KW (DA) 591 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

SECTION 73.207 SEPARATION STUDY - PROPOSED WBZS, CH 273A, SHAWSVILLE, VA

Channel: 273 Coordinates: 037-11-42 080-09-23 (NAD 27)  
 Class: A Buffer Distance: 20 km

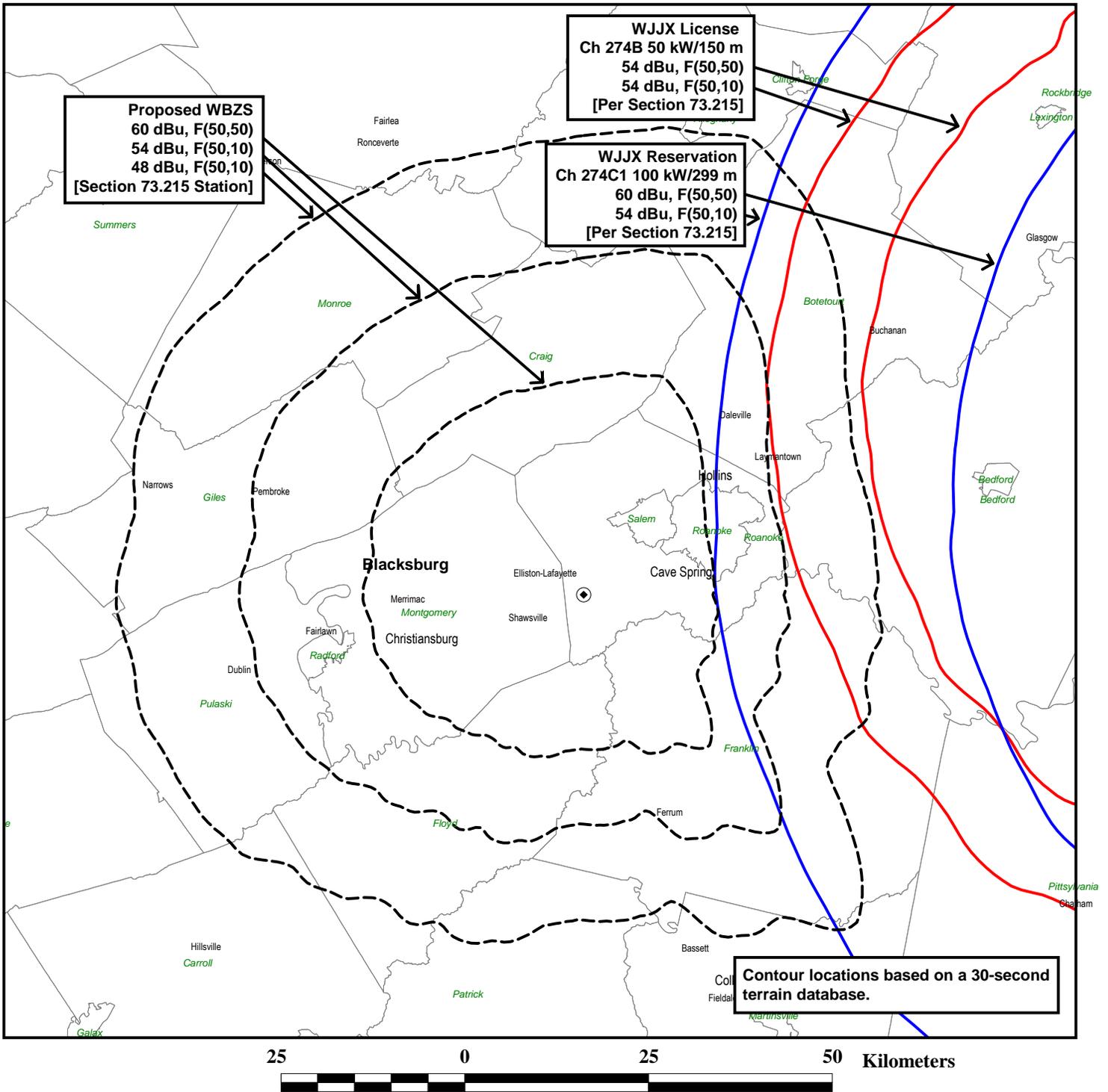
Date: 04/08/2013  
 Page: 1 of 1

Callsign	Status	Chan.	Serv.	Freq.	City	State	Latitude	Dist.(km)	Sep.(km)	Spacing(km)	
Fac. ID	ARN			Class DA	Ant. ID	ERP(kW)	HAAT(m)	Longitude	Bear.(deg)	73.215	Comment
<b>WJMH</b>	LIC	271	FM	102.1	REIDSVILLE	NC	036-16-33	103.81	86	17.81	
40754	BMLH	20010731ACA		C0 N		100	367	079-56-26	169.28	<b>80 N</b>	<b>CLEAR</b>
<b>WMTD-FM</b>	LIC	272	FM	102.3	HINTON	WV	037-42-53	91.04	72	19.04	
6012	BLH	19960415KC		A N		0.37	388	080-57-09	309.67	<b>49 N</b>	<b>CLEAR</b>
<b>WBZS</b>	CP	273	FM	102.5	SHAWSVILLE	VA	037-14-47	16.08	115	-98.92	
89133	BPH	19971022MC		A N		0.8	276	080-19-33	290.9	<b>92 N</b>	<b>SHORT<sup>1</sup></b>
<b>WOLD-FM</b>	LIC	273	FM	102.5	MARION	VA	036-54-10	127.35	115	12.35	
19477	BMLH	20080222AAU		A N		0.44	367	081-32-27	255.6	<b>92 N</b>	<b>CLEAR</b>
<b>WJJX</b>	RSV	274	FA	102.7	APPOMATTOX	VA	037-19-55	121.64	133	-11.36	
36094				C1				078-47-45	82.38	<b>111 N</b>	<b>SHORT<sup>2</sup></b>
<b>WJJX</b>	LIC	274	FM	102.7	APPOMATTOX	VA	037-28-07	106.25	113	-6.75	
36094	BLH	19890602KC		B N		22	227	079-00-27	72.98	<b>96 N</b>	<b>SHORT<sup>2</sup></b>

<sup>1</sup> Current Authorization

<sup>2</sup> It is proposed to utilize the contour protection provisions of Section 73.215 with respect to this short-spacing. See Figure 5. The proposal complies with the minimum distance separation requirements of 73.215(a).

Figure 5



**SECTION 73.215 COMPLIANCE**

FM STATION WBZS  
SHAWSVILLE, VIRGINIA  
CH 273A 0.15 KW (DA) 591 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

# Shively Labs®

Antenna Mfr.: Shively Labs

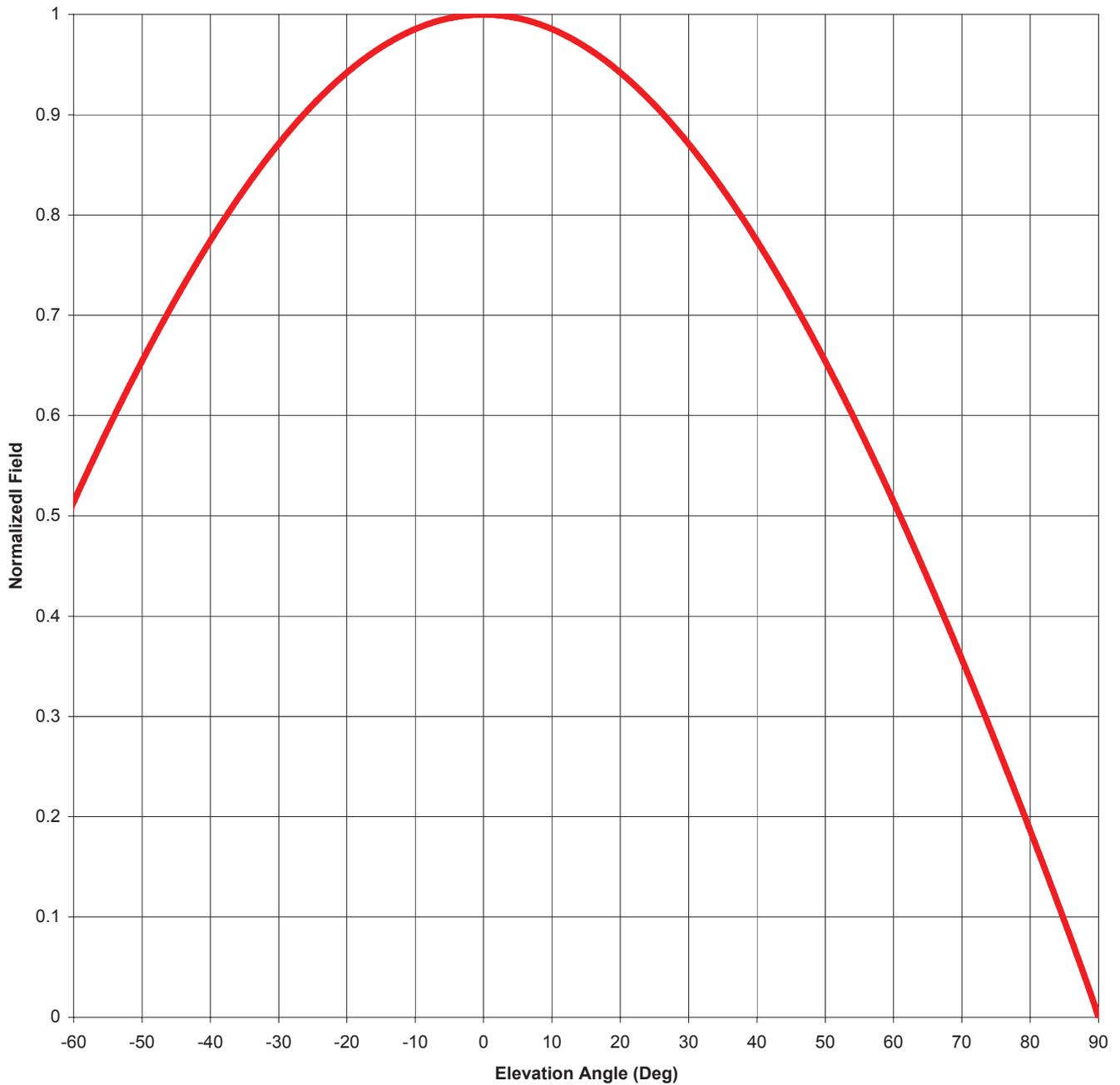
Date: 12/30/2004

Antenna Type: 6014, 6015, 6510, 6513, 6600, 68xx 1-Bay, full-wave-spaced

Frequency: 98.1

6014, 6015, 68xx Gain (Max) 0.46 -3.37 dB

6510, 6513, 6600 Gain (Max) 0.92 -0.36 dB



## Elevation Pattern Tabulation, Sidemount Single-Bay Antennas, Full-Wave-Spaced

Includes Models 6014, 6015, 66xx series except 6602B, 65xx series, 68xx series except 6812B & 6832.

Relative Field at 0° Depression = 1.000

Degrees	Rel. Field								
1	1.000	19	0.948	37	0.806	55	0.586	73	0.307
2	0.999	20	0.942	38	0.796	56	0.572	74	0.290
3	0.999	21	0.936	39	0.785	57	0.558	75	0.273
4	0.998	22	0.930	40	0.774	58	0.544	76	0.256
5	0.996	23	0.924	41	0.763	59	0.529	77	0.239
6	0.995	24	0.917	42	0.752	60	0.514	78	0.221
7	0.993	25	0.910	43	0.741	61	0.499	79	0.204
8	0.991	26	0.903	44	0.729	62	0.484	80	0.186
9	0.988	27	0.895	45	0.717	63	0.469	81	0.168
10	0.985	28	0.887	46	0.705	64	0.453	82	0.151
11	0.982	29	0.879	47	0.693	65	0.437	83	0.133
12	0.979	30	0.871	48	0.680	66	0.422	84	0.114
13	0.975	31	0.862	49	0.667	67	0.406	85	0.096
14	0.971	32	0.854	50	0.654	68	0.390	86	0.078
15	0.967	33	0.845	51	0.641	69	0.373	87	0.059
16	0.963	34	0.835	52	0.628	70	0.357	88	0.040
17	0.958	35	0.826	53	0.614	71	0.341	89	0.021
18	0.953	36	0.816	54	0.600	72	0.324	90	0.000