

ENGINEERING EXHIBIT

Application for Construction Permit New Replacement Digital Television Translator

prepared for

Bluestone License Holdings Inc.

WCYB-TV Bristol, VA

Facility ID 2455

Replacement Digital Translator

Kingsport, TN Ch. 21 15 kW

Bluestone License Holdings Inc. (“Bluestone”) is the licensee of television station WCYB-TV, Facility ID 2455, Bristol, VA. WCYB-TV is operating on its post-transition digital Channel 5, its pre-transition analog channel. Pursuant to the procedures adopted in MB Docket 08-253,¹ *Bluestone* herein proposes to construct a new replacement digital television translator station on Channel 21 to aid in serving Kingsport, TN.

Since ceasing analog operations on the transition date, WCYB-TV has received numerous calls regarding reception problems, including issues with indoor reception at locations within Kingsport and other nearby areas. Kingsport is partially terrain blocked from the main WCYB-TV transmitter.

The proposed facility will operate on Channel 21 using a “stringent” out of channel emission mask. **Figure 1** depicts the 51 dB μ coverage contour of the proposed translator, along with the WCYB-TV digital Channel 5 noise limited contour (BLCDT-20090622AEE pending) and the pre-transition analog Channel 5 Grade B contour (BLCT-20020708AAW). The translator’s service contour will not extend beyond WCYB-TV’s former analog Grade B contour.

The proposed antenna is a Dielectric model TFU-8DSB-A and will employ circular polarization. The effective radiated power is 15 kW, nondirectional. The proposed antenna system

¹Report and Order, *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Replacement Digital Low Power Television Translator Stations*, MB Docket 08-253, FCC 09-36, released May 8, 2009.

will be side-mounted on an existing antenna support structure. The overall structure elevation is less than 61 meters above ground and passes the FCC's TOWAIR program for the transmitter location, thus FCC antenna structure registration is not necessary. No change to the overall structure height is proposed.

Detailed interference studies per OET Bulletin 69² show that the proposal complies with the Commission's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in **Table 1**, show that any new interference does not exceed the Commission's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations). Accordingly, the instant proposal complies with §§73.6012 – 73.6020 regarding interference protection to digital television, low power television, television translator, Class A television, and land mobile facilities.

The nearest FCC monitoring station is 354 km distant at Powder Springs, GA. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with "quiet" zones specified in §73.1030(a) and (b). There are no AM stations within 3.2 kilometers of the site, based on information contained within the Commission's database. The site location is beyond the border areas requiring international coordination.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

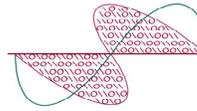
The proposed transmitting antenna will be side-mounted on an existing structure, with no change to the structure's overall height. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules.

²FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number 65. Based on OET-65 equation (10), and considering the antenna's relative field in downward elevations (**Figure 2**), the calculated power density attributable to the proposed translator facility at locations near the transmitter site at a height of two meters above ground level is depicted in the attached **Figure 3**.

Figure 3 indicates that the highest calculated RF electromagnetic field level attributable to the proposed translator facility is 4.76 percent of the uncontrolled / general public maximum permissible exposure limit at any location two meters above ground, which occurs at a distance of 22.3 meters horizontally away from the base of the tower structure. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.



Certification

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.

A handwritten signature in blue ink, appearing to read "Joseph M. Davis". The signature is fluid and cursive, with a large initial "J" and "D".

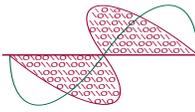
Joseph M. Davis, P.E.
February 2, 2010

Chesapeake RF Consultants, LLC
11993 Kahns Road
Manassas, VA 20112
703-650-9600

List of Attachments

- | | |
|----------|---|
| Figure 1 | Coverage Contour Comparison |
| Figure 2 | Antenna Elevation Pattern |
| Figure 3 | Calculated RF Electromagnetic Field |
| Table 1 | Interference Analysis Results Summary |
| Form 346 | Saved Version of Engineering Sections from FCC Form at Time of Upload |

This material was entered February 2, 2010 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

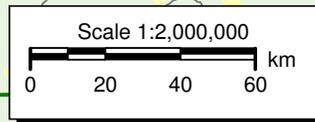
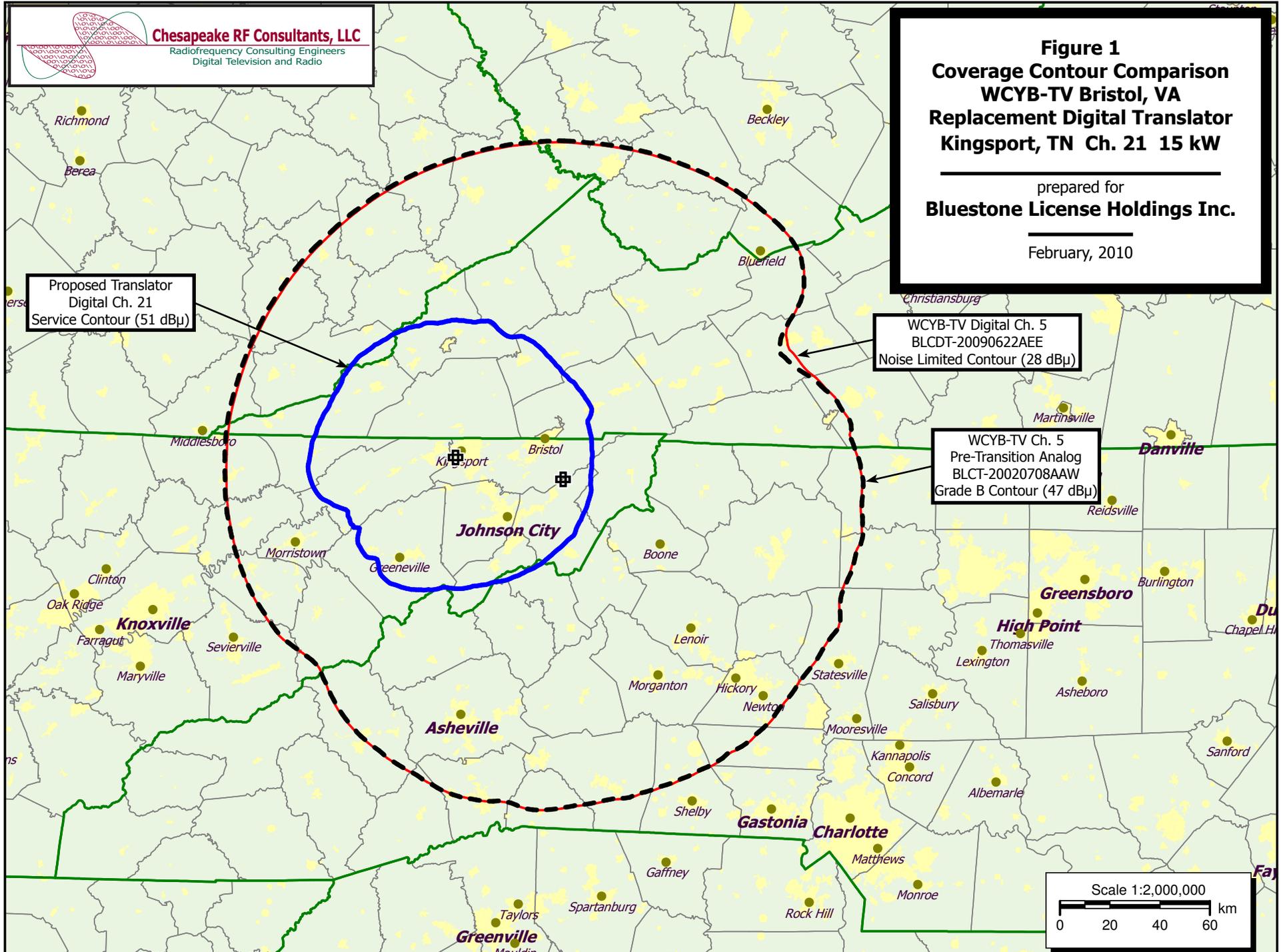


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Coverage Contour Comparison
WCYB-TV Bristol, VA
Replacement Digital Translator
Kingsport, TN Ch. 21 15 kW

prepared for
Bluestone License Holdings Inc.

February, 2010



ELEVATION PATTERN

RMS Gain at Main Lobe	7.5 (8.75 dB)	Beam Tilt	2.00 Degrees
RMS Gain at Horizontal	5.5 (7.40 dB)	Frequency	515.00 MHz
Calculated / Measured	Calculated	Drawing #	08B075200-90

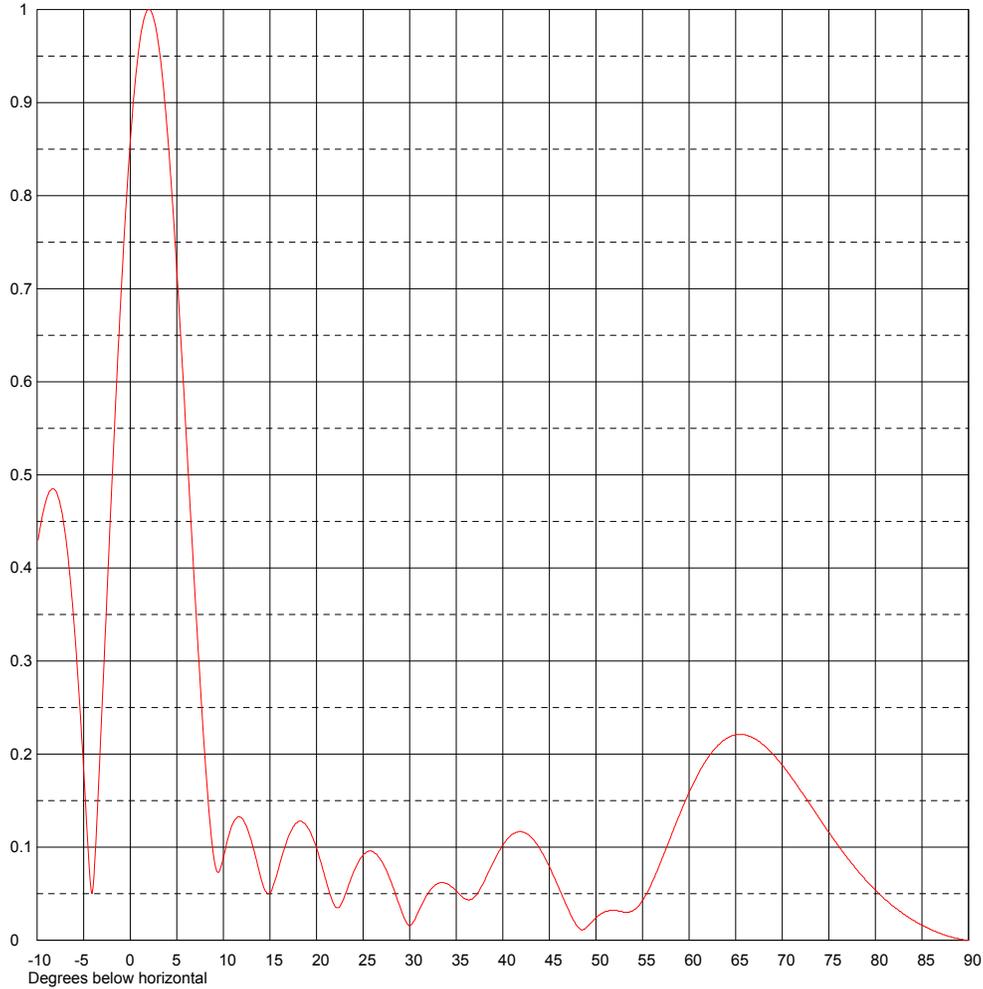


Figure 2
Antenna Elevation Pattern
WCYB-TV Bristol, VA
Replacement Digital Translator
Kingsport, TN Ch. 21 15 kW

prepared for
Bluestone License Holdings Inc.

February, 2010



Figure 3
Calculated RF Electromagnetic Field
WCYB-TV Bristol, VA
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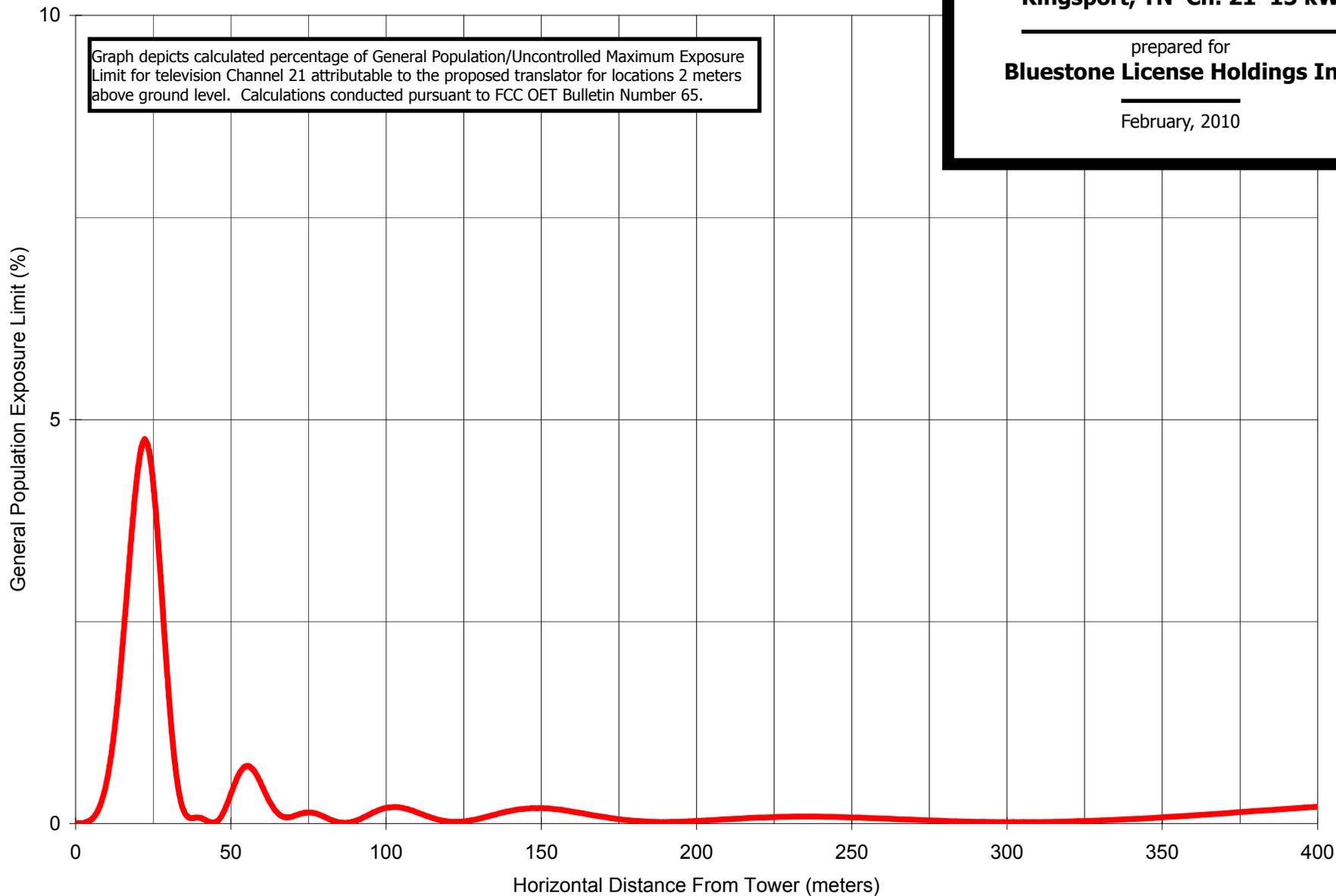


Table 1

Interference Analysis Results Summary

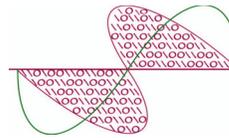
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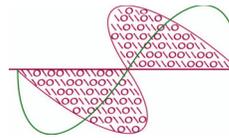
Radiofrequency Consulting Engineers
Digital Television and Radio

WCYB-RD	USERRECORD-01	KINGSPORT	TN US
Channel 21	ERP 15. kW	HAAT 288. m	RCAMSL 00732 m
STRINGENT MASK			
Latitude	036-31-32	Longitude	0082-35-17
Nondirectional Antenna			

Ch.	Call	City/State	Dist (km)	Status	Application Ref. No.	---Population (2000 Census)---	
						Baseline	New Interference
14	W14AS	WEST ASHEVILLE NC	104.8	LIC	BLTT-19890109IG	---	none
14	WAPG-CA	GREENEVILLE TN	57.0	LIC	BLTTA-20030709AAE	---	none
14	W14AQ	HARROGATE TN	96.4	LIC	BLTTL-19900206JD	---	none
18	W51CK	ASHEVILLE NC	110.2	APP	BPTTL-20011023AAO	---	none
18	W18AN	HARROGATE TN	96.4	LIC	BLTTL-19890608IC	---	none
20	W20BO	TALBERT KY	134.1	LIC	BLTTL-20001213ABH	---	none
20	WCCB	HICKORY NC	143.2	APP	BDRTCDT-20090824AHX	---	none
20	W08BJ	MARION, ETC. NC	131.6	CP	BDISDTT-20091015AAP	255,721	44 (0.02%)
20	WBXX-TV	CROSSVILLE TN	163.4	CP	BPCDT-20080619AKH	1,761,854	989 (0.06%)
20	NEW	GARY WV	129.9	APP	BNPDTL-20090825BLX	---	none
21	WPBA	ATLANTA GA	346.1	LIC	BLEDT-20041013ABK	---	none
21	NEW	AUGUSTA GA	358.9	APP	BNPDTL-20090825BBR	---	none
21	NEW	AUGUSTA GA	358.9	APP	BNPDTL-20090825ADK	---	none
21	WKSJ-LD	SUMMERVILLE/TRION GA	335.2	LIC	BLDTL-20100104AAD	---	none
21	WUPX-TV	MOREHEAD KY	179.3	LIC	BLCDT-20040901ACJ	1,013,937	155 (0.02%)
21	W21CK-D	CHARLOTTE NC	213.3	LIC	BLDTA-20071129AEP	---	none
21	W21CK-D	CHARLOTTE NC	213.3	CP	BPDTA-20090825BHN	---	none
21	WACN-LP	PITTSBORO NC	320.0	APP	BDISDTL-20100128AAB	---	none
21	WWIW-LD	RALEIGH NC	364.0	CP	BDCCDTL-20081215AAQ	---	none
21	W21CI	STATESVILLE NC	172.0	APP	BDFCDTT-20060331AVP	---	none
21	W21CI	STATESVILLE NC	172.0	LIC	BLTT-20070308ABW	---	none
21	WBNS-TV	COLUMBUS OH	384.9	APP	BPCDT-20080620ANA	---	none
21	WBNS-TV	COLUMBUS OH	384.9	LIC	BLCDT-20021025ABK	---	none
21	W21CA	COLUMBIA SC	310.8	CP	BDFCDTT-20060403AOF	---	none
21	W21CA	COLUMBIA SC	310.8	LIC	BLTTL-20031001ALE	---	none
21	WWMB	FLORENCE SC	380.2	CP MOD	BMPCDT-20080620ALY	---	none
21	WHNS	GREENVILLE SC	149.6	APP	BMPCDT-20080619AFO	2,018,945	636 (0.03%)
21	WHNS	GREENVILLE SC	149.6	CP	BPCDT-20080225ABE	1,843,899	691 (0.04%)
21	W21BZ	COLLEGEDALE TN	279.4	CP	BPTTA-20030304AAR	---	none
21	W21BZ	COLLEGEDALE TN	279.4	LIC	BLTTA-20010111AAI	---	none

Table 1
Interference Analysis Results Summary

(page 2 of 2)



Chesapeake RF Consultants, LLC

Radiofrequency Consulting Engineers
 Digital Television and Radio

Ch.	Call	City/State	Dist (km)	Status	Application Ref. No.	---Population (2000 Census)---	
						Baseline	New Interference
21	W21BZ	COLLEGEDALE TN	279.4	CP	BDFCDTA-20090824AET	---	none
21	WUXP-TV	NASHVILLE TN	377.4	LIC	BLCDDT-20060414AAU	---	none
21	W21AC	CENT.ROCKINGHAM COUN VA	398.8	LIC	BLTT-19840131IH	---	none
21	NEW	CROZET VA	381.6	APP	BNPDTL-20090825ATD	---	none
21	WJDW-LP	TAZEWELL VA	119.7	LIC	BLTTL-20041116AEW	---	none
21	WOCW-LP	CHARLESTON WV	221.5	LIC	BLTTL-20051114AGM	---	none
21	W26BK	CHARLESTON WV	218.6	APP	BPTTL-20011022AAO	---	none
21	W21CJ	CLARKSBURG WV	365.8	LIC	BLTTL-20050915ACQ	---	none
21	W69ED	HUNTINGTON WV	207.2	APP	BPTTL-20011019AAW	---	none
22	WCNC-TV	CHARLOTTE NC	182.8	LIC	BLCDDT-20031211ABN	---	none
22	WCNC-TV	CHARLOTTE NC	182.8	APP	BPCDDT-20080617AEH	---	none
22	WJZC-LP	SEVIERVILLE TN	112.4	LIC	BLTTL-19901017JE	---	none
23	W23BQ	ASHEVILLE, ETC. NC	108.0	LIC	BLTT-20000222ABJ	---	none
23	WJDG-LP	GRUNDY VA	137.1	LIC	BLTTL-20081202ADP	---	none
24	W24BT	TALBERT KY	86.4	LIC	BLTTL-20001130ACC	---	none
24	WLNN-LP	BOONE NC	85.2	LIC	BLTTL-19970516JB	---	none
24	WDTT-LP	KNOXVILLE TN	136.0	LIC	BLTTL-20070731CPA	---	none
24	WDTT-LP	LENOIR CITY TN	136.0	APP	BSTA-20070205AAI	---	none
25	WJJV-LP	ASHEVILLE NC	111.2	LIC	BLTTL-19990120JB	---	none
25	W25AY	JEFFERSON NC	98.5	LIC	BLTT-19910123ID	---	none
25	WKPT-LP	KINGSPORT TN	0.1	APP	BSTA-20060331AXC	---	none
25	WKPT-LP	KINGSPORT TN	0.1	LIC	BLTT-19871119IB	---	none
28	WJDP-LP	GATLINBURG TN	125.2	LIC	BLTTL-20070122AAC	---	none
28	WEZK-LP	KNOXVILLE TN	133.4	LIC	BLTTL-20001011ACO	---	none

SECTION III - ENGINEERING DATA (Digital)

TECHNICAL SPECIFICATIONS

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

TECH BOX

1. Channel Number:
21

2. Translator Input Channel No. : 5

3. Primary station proposed to be rebroadcast:

Facility Identifier	Call Sign	City	State	Channel
2455	WCYB-TV	BRISTOL	VA	5

4. Antenna Location Coordinates: (NAD 27)
Latitude:
Degrees 36 Minutes 31 Seconds 32 North South
Longitude:
Degrees 82 Minutes 35 Seconds 17 West East

5. Antenna Structure Registration Number:
 Not Applicable [Exhibit 10] Notification filed with FAA

6. Antenna Location Site Elevation Above Mean Sea Level: 680 meters

7. Overall Tower Height Above Ground Level: 55 meters

8. Height of Radiation Center Above Ground Level: 52 meters

9. Maximum Effective Radiated Power (ERP): 15 kW

10. Transmitter Output Power: 5 kW

11. a. Transmitting Antenna:
Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under [CDBS Public Access](http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm) (http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search.
 Nondirectional Directional "Off-the-shelf" Directional composite
Manufacturer DIE Model TFU-8DSB-A CIRCULARLY POLARIZED
b. Electrical Beam Tilt: 2 degrees Not Applicable

c. Directional Antenna Relative Field Values: N/A (Nondirectional or Directional "Off-the-shelf")
Rotation (Degrees): No Rotation

Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
0		10		20		30		40		50	
60		70		80		90		100		110	
120		130		140		150		160		170	
180		190		200		210		220		230	
240		250		260		270		280		290	
300		310		320		330		340		350	
Additional Azimuths											

[Relative Field Polar Plot](#)

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

12. Out-of-channel Emission Mask: Simple Stringent

CERTIFICATION

13. **Interference** : The proposed facility complies with all of the following applicable rule sections. 47.C.F.R Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030. Yes No
See Explanation in [Exhibit 11]

14. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an **Exhibit is required.** Yes No
See Explanation in [Exhibit 12]
By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.

Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreements(s) with 700 MHz public safety regional planning committee(s) and state administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.

Pursuant to Section 74.786(e), the applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.

PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.

SECTION III PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.		Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature		Date 2/2/2010	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 11993 KAHNS ROAD			
City MANASSAS		State or Country (if foreign address) VA	Zip Code 20112 -
Telephone Number (include area code) 7036509600		E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	