

## **Non-Interference Compliance**

Regarding Facility id 148303

Channel 286

### **Description of Exhibit 13 Contents**

This exhibit demonstrates that the proposed facility complies with contour overlap and interference protection provisions in all of the applicable rule sections and that this application for a construction permit is in full compliance with 47 C.F.R. § 74.1204.

**Let it be noted that should any actual real world interference occur, the applicant acknowledges that it will promptly suspend operation of this translator in accordance with 47 C.F.R. § 74.1203.**

Page 2 of this exhibit is an explanation of the method used to demonstrate compliance with contour overlap and interference provisions based on 47 C.F.R. § 74.1204(d), which states:

*[A]n application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.*

Page 3 contains a tabulation of the vertical radiation pattern of the proposed antenna and the minimum ground clearance of the interfering contour based on this pattern.

Page 4 includes a tabulation of the vertical radiation pattern for the proposed antenna provided by the antenna manufacturer.

Page 5 of this exhibit contains the tabulated data from the interference analysis, which shows all stations whose protected contours come within 50 km of the 34 dBμ F(50,10) contour of the proposed translator. These tabulated values were calculated using data from the FCC's CDBS files and 30 arc second terrain data. The column labeled "Adj" shows the number of channels difference between the entry and the proposed translator. The column labeled "Dist" shows the distance in km. The column labeled "Overlap" shows the area of contour overlap in square kilometers.

Page 6 of this exhibit is a portion of a USGS 1:24,000 scale 7.5 minute quadrangle at full scale with the calculated area of interference overlaid. The sheet includes the quadrangle name and measurement scale at the bottom-left corner (note: "Mt" refers to meters). The area of interference was calculated using the free space equation and 120 radials.

Page 7 of this exhibit is an aerial photo of the vicinity surrounding the proposed translator's tower site.

**Note: the tallest buildings within the zone of predicted interference are less than 15ft (4.6m). The proposal provides 7.2m ground clearance so a lack of population has been demonstrated within the area of interference and this application is therefore in full compliance with 47 C.F.R. § 74.1204.**

## Compliance with 47 C.F.R. § 74.1204(d)

All authorized second and third adjacent stations with which the proposed translator has contour overlap are tabulated below. Column four show the station's signal level at the proposed translator's tower site, and column five gives the minimum value within the entire standard interfering contour of the proposed translator (100 dBμ for most classes, 94 for class B, 97 for class B1). The minimum second or third adjacent F(50,50) contour within the proposed translator's standard interfering contour was used to calculate the proposed translator's actual "worst-case" interfering contour.

<b>Application_id</b>	<b>File Number</b>	<b>Callsign</b>	<b>Contour at Tower</b>	<b>Min. Contour</b>
1541898	BMLFT20130219ABN	W288BJ	66.4	66.4
506020	BLH20000706ADN	WRVR	79.8	79.6
Minimum F(50,50) Contour of Adjacent Station within Proposed Translator's Standard Interfering Contour				<b>66.4</b>

FCC 02-244 at Section II.A.5 states that "when demonstrating that 'no actual interference will occur due to . . . other factors,' pursuant to Section 74.1204(d), an applicant may use the undesired-to-desired signal ratio method." The undesired-to-desired ratio for second and third adjacent stations required by § 74.1204(a) is 40 dB. Since the minimum protected contour strength within the proposed translator's standard interference contour is **66.4 dBμ**, this makes the proposed translator's worst-case interfering contour **106.4 dBμ**. By the free-space equation, this contour is calculated to extend a maximum of **530.8 m** from the transmit antenna.

The maximum horizontal plane of the interfering contour was calculated for 120 radials and plotted on the pertinent portion of a USGS quadrangle (page 6 of this exhibit). However, the field strength of the proposed translator's antenna varies with angle of depression from horizontal. The antenna relative fields are tabulated on the following page at 5 degree increments, starting at 5 degrees below horizontal. Antenna relative field strength data was provided and certified by the manufacturer of the proposed antenna. Using a free-space calculation that neglects any loss due to reflection, the vertical ground clearance of the proposed translator's interference contour has been tabulated. As shown on the following page, the area of interference clears the tower ground level (TGL) by **7.2 m** at the lowest point. The applicant has taken into account USGS quadrangles and relevant aerial photography in stating that no structures, except possibly tower support structures, puncture the area of interference

**Note: the tallest buildings within the zone of predicted interference are less than 15ft (4.6m). The proposal provides 7.2m ground clearance so a lack of population has been demonstrated within the area of interference and this application is therefore in full compliance with 47 C.F.R. § 74.1204.**

<b>Antenna Manufacturer:</b>	<b>NIC</b>
<b>Antenna Model:</b>	<b>BKG77-4(.75) @165°</b>
<b>CORAGL:</b>	<b>68 m</b>
<b>Maximum ERP:</b>	<b>0.25 kW</b>
<b>Interfering Contour:</b>	<b>106.4 dBμ</b>
<b>Max Int. Contour Distance:</b>	<b>530.8 m</b>
<b>Min Ground Clearance:</b>	<b>7.2 m</b>

The following table shows how the interfering contour ground clearance was calculated.

The formula used to calculate the vertical radiation pattern for the multi-bay antenna array is the exact formula used by the FCC's Office of Engineering and Technology in the FM Model program used to calculate ground-level power density for multi-bay antenna arrays for purposes of compliance with OET65. According to the source code of FM Model, this formula was "derived from Kraus (eqn 4-51 & 5-52), Gailey and Tell, and material from Ben Dawson, Hatfield and Dawson."

The *Depression Angle* is the angle below horizontal for the radial.

The *Single-Bay Relative Field* value is the relative field value for the depression angle either provided by the antenna manufacturer or interpolated from the values provided by the manufacturer.

The *Relative Field Multiplier* is equal to  $\text{Sin}(N * S\pi\text{Sin}\phi) / (N * \text{Sin}(S\pi\text{Sin}\phi))$ , where N is the number of antenna elements in the array, S is the spacing between elements,  $\pi$  is the ratio of a circle's circumference to its diameter, and  $\phi$  is the Depression Angle.

The *Relative Field Value for the Array* is the absolute value of the product of the Relative Field Factor and the Single-Bay Relative Field value for that radial.

The *ERP on the Radial* is the square of the *Relative Field Value for the Array* multiplied by the maximum ERP.

The *Contour Direct Distance* is found by using the free space equation.

The *Horizontal and Vertical Contour Distances* are calculated from the *Direct Distance* using trigonometry.

The *Contour Ground Clearance* is the *Vertical Contour Distance* subtracted from the overall antenna height above the ground.

Depression Angle (degree)	Single-Bay Relative Field	Relative Field Multiplier	Relative Field for Array	ERP on Radial (W)	Contour Direct Distance (m)	Contour Horizontal Distance (m)	Contour Vertical Distance (m)	Contour Ground Clearance (m)
5	0.999	0.8976	0.897	201.0	476.0	474.2	41.5	24.5
10	0.982	0.6271	0.616	94.8	326.9	321.9	56.8	9.2
15	0.954	0.2820	0.269	18.1	142.8	137.9	37.0	29.0
20	0.918	-0.0283	0.026	0.2	13.8	13.0	4.7	61.3
25	0.871	-0.2221	0.193	9.4	102.7	93.1	43.4	22.6
30	0.818	-0.2706	0.221	12.2	117.5	101.8	58.8	7.2
35	0.758	-0.1970	0.149	5.6	79.3	64.9	45.5	20.5
40	0.691	-0.0559	0.039	0.4	20.5	15.7	13.2	52.8
45	0.616	0.0934	0.058	0.8	30.5	21.6	21.6	44.4
50	0.538	0.2070	0.111	3.1	59.1	38.0	45.3	20.7
55	0.465	0.2647	0.123	3.8	65.3	37.5	53.5	12.5
60	0.391	0.2672	0.104	2.7	55.5	27.7	48.0	18.0
65	0.313	0.2287	0.072	1.3	38.0	16.1	34.4	31.6
70	0.239	0.1682	0.040	0.4	21.3	7.3	20.1	45.9
75	0.176	0.1036	0.018	0.1	9.7	2.5	9.4	56.6
80	0.128	0.0487	0.006	0.0	3.3	0.6	3.3	62.7
85	0.103	0.0126	0.001	0.0	0.7	0.1	0.7	65.3
90	0.105	0.0000	0.000	0.0	0.0	0.0	0.0	66.0
Min Ground Clearance (m):								7.2



BK077

<b>Vertical</b>	-66	0.297	54	0.479	174	0.468
<b>Values</b>	-63	0.345	57	0.436	177	0.479
-180 0.487	-60	0.391	60	0.391		
-177 0.478	-57	0.436	63	0.345		
-174 0.467	-54	0.479	66	0.297		
-171 0.460	-51	0.523	69	0.253		
-168 0.454	-48	0.568	72	0.211		
-165 0.447	-45	0.616	75	0.176		
-162 0.439	-42	0.661	78	0.145		
-159 0.429	-39	0.706	81	0.120		
-156 0.419	-36	0.745	84	0.105		
-153 0.402	-33	0.783	87	0.100		
-150 0.385	-30	0.818	90	0.105		
-147 0.369	-27	0.852	93	0.118		
-144 0.359	-24	0.881	96	0.134		
-141 0.350	-21	0.910	99	0.151		
-138 0.338	-18	0.934	102	0.168		
-135 0.326	-15	0.954	105	0.185		
-132 0.314	-12	0.972	108	0.202		
-129 0.303	-9	0.987	111	0.219		
-126 0.290	-6	0.999	114	0.236		
-123 0.278	-3	0.999	117	0.252		
-120 0.265	0	1.000	120	0.265		
-117 0.251	3	0.999	123	0.278		
-114 0.236	6	0.999	126	0.290		
-111 0.218	9	0.987	129	0.304		
-108 0.202	12	0.972	132	0.314		
-105 0.185	15	0.954	135	0.327		
-102 0.168	18	0.934	138	0.338		
-99 0.151	21	0.910	141	0.350		
-96 0.134	24	0.881	144	0.360		
-93 0.118	27	0.852	147	0.370		
-90 0.105	30	0.818	150	0.386		
-87 0.100	33	0.783	153	0.403		
-84 0.105	36	0.745	156	0.420		
-81 0.120	39	0.706	159	0.430		
-78 0.145	42	0.661	162	0.440		
-75 0.176	45	0.616	165	0.448		
-72 0.211	48	0.568	168	0.455		
-69 0.253	51	0.523	171	0.461		

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Lower than SWR

# **Adjacent Channel Study** **For Station K269EN, Facility\_id: 148303**

## **Co-channel through third adjacent:**

App_id	Fac_id	File_Number	Call	Licensee	Class	City	State	Status	ERP	RCAMSL	Char	Adj	Dist	Overlap
1541898	140009	BMLFT-20130219AB	W288BJ	MEMPHIS FIRST VENTURES, LP	D	MEMPHIS	TN	LIC	0.25	217	288	2	11.2	1.1721
506020	34375	BLH-20000706ADN	WRVR	ENTERCOM LICENSE, LLC	C1	MEMPHIS	TN	LIC	100	322	283	3	28.5	1.1721
1585314	194644	BNPL-20131114AIS	WTRA-LP	TIPTON - ROSEMARK ACADEMY,	L1	ROSEMARK	TN	CP	0	129	286	0	41.1	0
1587577	195067	BNPL-20131112AJZ	WTLT-LP	COLLIERVILLE COMMUNITY COM	L1	COLLIERVILLE	TN	CP	0	127	287	1	42.6	0
983557	36143	BLH-20040330BFG	KAKJ	L.T. SIMES II & RAYMOND SIMES	A	MARIANNA	AR	LIC	6	163	287	1	69.8	0
75171	71608	BLH-19850103LB	KCLT	WEST HELENA BROADCASTERS	A	WEST HELENA	AR	LIC	3	149	285	1	85	0
200702	53472	BLH-19940705KE	KDXY	SAGA COMMUNICATIONS OF AR	C3	LAKE CITY	AR	LIC	13.5	212	285	1	85.4	0
1621145	84091	BLH-20140121NHZ	WOXF	GEORGE S. FLINN, JR.	A	OXFORD	MS	LIC	1.6	256	286	0	97.9	0
540101	6200	BLH-20001211ACG	WQLJ	TELESOUTH COMMUNICATIONS,	A	WATER VALLEY	MS	LIC	4.7	213	288	2	109.3	0
1399278	154926	BLFT-20100923AEV	W289AP	LL JAMES MEDIA, LLC	D	CLARKSDALE	MS	LIC	0.25	95	289	3	111.2	0
588758	43243	BMLED-20011017AE	KJLV	EDUCATIONAL MEDIA FOUNDAT	C3	HOXIE	AR	LIC	25	180	287	1	131.2	0
620963	88063	BLH-20021219ABJ	KFLI	GEORGE S. FLINN, JR.	C3	DES ARC	AR	LIC	25	161.3	284	2	140.7	0

## **Intermediate Frequencies (53 and 54 channels difference):**

App_id	Fac_id	File_Number	Call	Licensee	Class	City	State	Status	ERP	RCAMSL	Channel	Adj	Dist	Clr
1654138	19237	BPH-20140721AEP	KJIW-FM	ELIJAH MONDY,JR.	C2	HELENA	AR	CP	50	200	233	53	53.5	38.5
429842	19237	BLH-19991201ABK	KJIW-FM	ELIJAH MONDY,JR.	C3	HELENA	AR	LIC	14	180	233	53	80.6	68.6





Facility id: 148303;  
Area of Interference;

#### ROAD CLASSIFICATION

- |                  |                 |
|------------------|-----------------|
| Heavy-duty       | Light-duty      |
| Medium-duty      | Unimproved dirt |
| Interstate Route | U.S. Route      |
|                  | State Route     |



QUADRANGLE LOCATION

### WEST MEMPHIS, ARK.-TENN.

NW/4 MEMPHIS 15' QUADRANGLE  
35090-B2-TF-024

1966

REVISED 1993

DMA 2954 II NW-SERIES V884

Revisions shown in purple compiled from aerial photographs taken 1990 and other sources. This information not field checked. Map edited 1993

West Memphis; AR,TN; Scale: 1" = 0.379Mi 610Mt 2,000Ft, 1 Mi = 2.640", 1 cm = 240Mt



