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**Engineering Statement
Minor Modification of WIIW-LD
Channel 14 at Nashville, TN
March 2023**

I. Background

This Engineering Statement has been prepared on behalf of Bridge News, LLC, licensee of low-power station WIIW-LD Nashville. This material has been prepared in connection with an application for minor modification of construction permit 0000211886, which in turn was a minor modification of displacement construction permit 0000143395, which authorized a change from Ch29 to Ch14.

II. Interference Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any authorized or pending proposed facilities. This study was performed using the Commission's TVStudy software.

This study was conducted using a study cell size of 0.5 km and a terrain extraction increment of 0.2 km.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations, beyond the allowed values of 0.5% to full-power and Class A stations, and 2.0% to low-power stations. Based on the foregoing interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Study created: 2023.03.31 09:10:16

Study build station data: LMS TV 2023-03-09

Proposal: WIIW-LD D14 LD APP NASHVILLE, TN
File number: WIIW-15KW-ALIVE
Facility ID: 168068
Station data: User record
Record ID: 1472
Country: U.S.

Build options:
Protect pre-transition records not on baseline channel

Individual records excluded:
0000010767 DWIIW-LP N14z TX APP NASHVILLE, TN BLANK0000010767

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WDBB	D14	DT	LIC	BESSEMER, AL	BLANK0000192399	300.2 km
No	WSKC-CD	D14	DC	LIC	ATLANTA, GA	BLANK0000080978	344.3
No	WXSL-LD	D14	LD	LIC	ST. ELMO, IL	BLANK0000179275	363.8
Yes	WLKY	D14	DT	LIC	LOUISVILLE, KY	BLANK0000196798	264.1
No	KNLC	D14	DT	LIC	ST. LOUIS, MO	BLANK0000118216	408.7
No	WTME-LD	D14	LD	LIC	BRUCE, MS	BLANK0000181617	285.4
No	WTME-LD	D14	LD	CP	BRUCE, MS	BLANK0000189592	293.3
No	W14EQ-D	D14z	LD	LIC	TUPELO, MS	BLANK0000158096	273.4
No	W14EG-D	D14	LD	LIC	ROBBINSVILLE, ETC, NC	BLANK0000119375	293.9
Yes	W14EE-D	D14	LD	LIC	ALGOOD, TN	BLANK0000178927	129.6
Yes	W14EE-D	D14	LD	CP	ALGOOD, TN	BLANK0000199082	129.6
Yes	WDSI-TV	D14	DT	LIC	CHATTANOOGA, TN	BLANK0000059350	177.2
No	W14CX-D	D14	LD	LIC	KNOXVILLE, TN	BLDTL20090729ACQ	261.9
No	WLFG	D14	DD	LIC	GRUNDY, VA	BLANK0000071597	434.5
No	WAFF	D15	DT	LIC	HUNTSVILLE, AL	BLANK0000111344	161.7
No	WYYW-CD	D15	DC	LIC	EVANSVILLE, IN	BLDTA20130109AGB	208.3
No	WPBM-CD	D15	DC	LIC	SCOTTSVILLE, KY	BLANK0000087303	104.0
No	WDDY-LD	D15	LD	LIC	CORINTH, MS	BLANK0000203485	215.1
No	WCNT-LP	D15-	LD	CP	CHATTANOOGA, TN	BLANK0000197997	171.8
No	WTNZ	D15	DT	LIC	KNOXVILLE, TN	BLANK0000081278	261.9
Yes	WTNX-LD	D15	LD	LIC	NASHVILLE, TN	BLANK0000154430	8.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D14
Mask: Full Service
Latitude: 36 8 27.00 N (NAD83)
Longitude: 86 51 56.00 W
Height AMSL: 416.9 m
HAAT: 0.0 m
Peak ERP: 15.0 kW
Antenna: ALIVE-ATC-BCE312UA-V1-14 0.0 deg
Elev Pattn: Generic
Elec Tilt: 0.75

48.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	13.5 kW	250.4 m	54.8 km
45.0	13.0	265.5	55.5
90.0	15.0	257.7	55.8
135.0	13.0	230.1	53.4
180.0	13.5	219.0	53.0
225.0	2.52	216.9	44.3

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270.0	0.794	232.4	39.1
315.0	2.52	255.5	46.4

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 241 m

Distance to Canadian border: 713.7 km

Distance to Mexican border: 1479.3 km

Conditions at FCC monitoring station: Powder Springs GA
Bearing: 141.8 degrees Distance: 319.6 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 291.0 degrees Distance: 1661.6 km

No land mobile station failures found

Study cell size: 0.50 km
Profile point spacing: 0.20 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

No IX check failures found.

III. RF Exposure Study

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed WIIW-LD facility were calculated for an elevation of 2 meters above ground using the manufacturer's vertical plane pattern for the horizontally-polarized Alive model ATC-BCE312UA-V1-14 antenna proposed in this application. (This antenna has an 80/20 split of horizontal and vertical power.) The highest calculated power density from the

proposed antenna alone occurs at a point 93 meters from the base of the antenna support structure. At this point the power density from the proposed facility is calculated to be $0.1 \mu\text{W}/\text{cm}^2$, which is <1% of $313 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 14 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of WIIW-LD alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307 of the Commission's Rules exempts applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

March 31, 2023

Erik C. Swanson, P.E.

WIIW-LD Ch14 Nashville

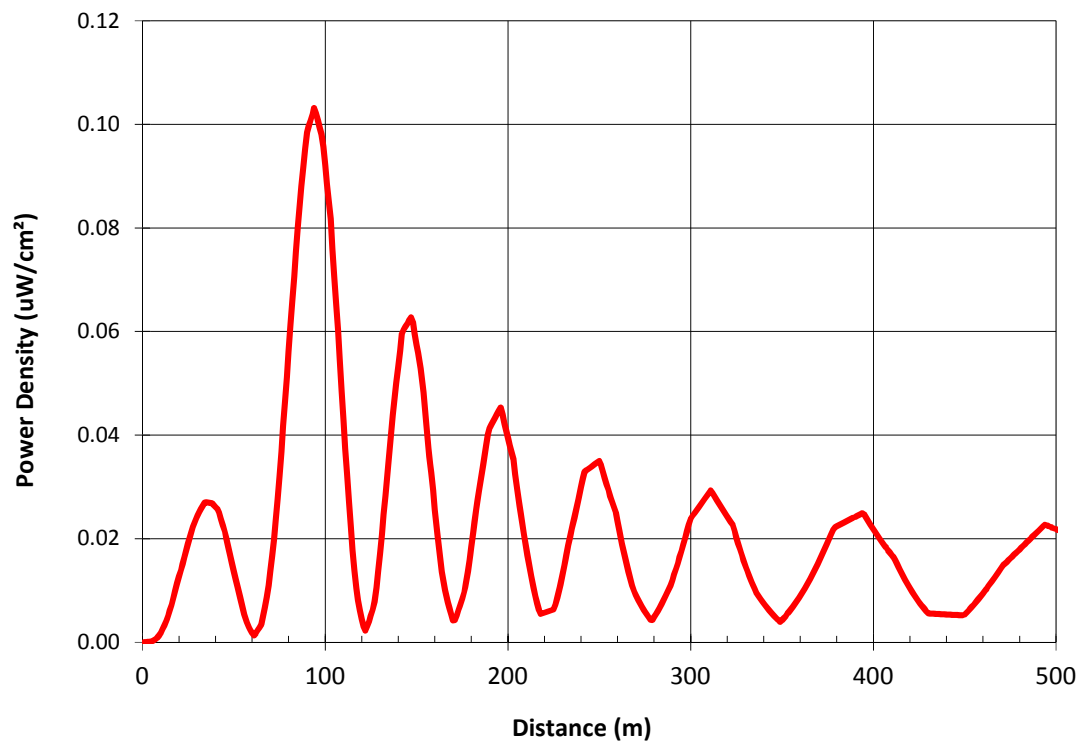
Ground-Level Power Density Calculations

Using Manufacturer's Vertical Plane Pattern

Antenna	ATC-BCE312UA-V1-14	
ERP	15,000 Watts H (avg)	
	3,750 Watts V (avg)	
Antenna AGL	211.2 meters less 2m is	209.2 meters above the reference plane
MBT	0 degrees	

Calculated
Maximum is 0.10 $\mu\text{W}/\text{cm}^2$ at 93 meters from the tower

Power Density vs Distance



WIIW-LD Ch14 Nashville
Ground-Level Power Density Calculations
Using Manufacturer's Vertical Plane Pattern

Distance From Tower (meters)	Hypotenuse (meters)	Depression Angle (with MBT adjust) (degrees)	Interpolated Rel Field	Adjusted ERP (watts)	Power Density uW/cm ²
0	209.20	90.00	0.001	0.0	0.00
1	209.20	89.73	0.002	0.0	0.00
2	209.21	89.45	0.002	0.1	0.00
3	209.22	89.18	0.003	0.1	0.00
4	209.24	88.90	0.003	0.2	0.00
5	209.26	88.63	0.005	0.4	0.00
6	209.29	88.36	0.006	0.7	0.00
7	209.32	88.08	0.008	1.1	0.00
8	209.35	87.81	0.009	1.6	0.00
9	209.39	87.54	0.011	2.4	0.00
10	209.44	87.26	0.013	3.2	0.00
11	209.49	86.99	0.015	4.3	0.00
12	209.54	86.72	0.017	5.4	0.00
13	209.60	86.44	0.019	6.7	0.01
14	209.67	86.17	0.021	8.1	0.01
15	209.74	85.90	0.023	9.7	0.01
16	209.81	85.63	0.025	11.4	0.01
17	209.89	85.35	0.027	13.2	0.01
18	209.97	85.08	0.028	15.1	0.01
19	210.06	84.81	0.030	16.8	0.01
20	210.15	84.54	0.031	18.4	0.01
21	210.25	84.27	0.033	20.0	0.02
22	210.35	84.00	0.034	21.7	0.02
23	210.46	83.73	0.035	23.5	0.02
24	210.57	83.46	0.037	25.3	0.02
25	210.69	83.19	0.038	27.2	0.02
26	210.81	82.92	0.039	28.9	0.02
27	210.94	82.65	0.040	30.1	0.02
28	211.07	82.38	0.041	31.3	0.02
29	211.20	82.11	0.042	32.6	0.02
30	211.34	81.84	0.042	33.6	0.03
31	211.48	81.57	0.043	34.4	0.03
32	211.63	81.30	0.043	35.3	0.03
33	211.79	81.04	0.044	36.2	0.03
34	211.94	80.77	0.044	36.3	0.03
35	212.11	80.50	0.044	36.3	0.03
36	212.27	80.24	0.044	36.3	0.03
37	212.45	79.97	0.044	36.3	0.03
38	212.62	79.70	0.044	35.8	0.03
39	212.80	79.44	0.043	35.4	0.03
40	212.99	79.18	0.043	35.0	0.03
41	213.18	78.91	0.043	34.1	0.03
42	213.37	78.65	0.042	32.4	0.02
43	213.57	78.38	0.041	30.8	0.02
44	213.78	78.12	0.039	29.2	0.02

45	213.99	77.86	0.038	27.3	0.02
46	214.20	77.60	0.037	25.1	0.02
47	214.41	77.34	0.035	23.0	0.02
48	214.64	77.08	0.033	21.0	0.02
49	214.86	76.82	0.032	18.9	0.01
50	215.09	76.56	0.030	16.8	0.01
51	215.33	76.30	0.028	14.8	0.01
52	215.57	76.04	0.026	13.0	0.01
53	215.81	75.78	0.024	10.8	0.01
54	216.06	75.53	0.022	8.9	0.01
55	216.31	75.27	0.019	7.1	0.01
56	216.57	75.01	0.017	5.5	0.00
57	216.83	74.76	0.015	4.4	0.00
58	217.09	74.50	0.014	3.4	0.00
59	217.36	74.25	0.012	2.6	0.00
60	217.63	74.00	0.010	1.9	0.00
61	217.91	73.74	0.012	2.5	0.00
62	218.19	73.49	0.013	3.2	0.00
63	218.48	73.24	0.015	4.0	0.00
64	218.77	72.99	0.016	4.9	0.00
65	219.07	72.74	0.019	7.0	0.00
66	219.36	72.49	0.023	9.6	0.01
67	219.67	72.24	0.026	12.5	0.01
68	219.97	71.99	0.029	15.9	0.01
69	220.29	71.75	0.033	19.9	0.01
70	220.60	71.50	0.036	24.3	0.02
71	220.92	71.25	0.039	29.2	0.02
72	221.24	71.01	0.043	34.5	0.02
73	221.57	70.76	0.047	40.6	0.03
74	221.90	70.52	0.050	47.3	0.03
75	222.24	70.28	0.054	54.4	0.04
76	222.58	70.03	0.057	62.0	0.04
77	222.92	69.79	0.061	69.1	0.05
78	223.27	69.55	0.064	76.4	0.05
79	223.62	69.31	0.067	84.0	0.06
80	223.97	69.07	0.070	92.0	0.06
81	224.33	68.83	0.073	99.4	0.07
82	224.70	68.60	0.075	106.7	0.07
83	225.06	68.36	0.078	114.2	0.08
84	225.43	68.12	0.081	121.9	0.08
85	225.81	67.89	0.083	128.9	0.08
86	226.19	67.65	0.085	134.8	0.09
87	226.57	67.42	0.087	140.8	0.09
88	226.96	67.19	0.089	146.9	0.10
89	227.34	66.95	0.090	152.3	0.10
90	227.74	66.72	0.091	154.7	0.10
91	228.14	66.49	0.092	157.1	0.10
92	228.54	66.26	0.092	159.4	0.10
93	228.94	66.03	0.093	161.8	0.10
94	229.35	65.80	0.093	160.8	0.10
95	229.76	65.58	0.092	159.2	0.10
96	230.18	65.35	0.092	157.7	0.10