

Technical Report W249AH Minor Modification

This technical report is submitted for a minor modification to W249AH, FCC file no. BLFT-20080422ABD. A move to another tower site with corresponding changes in COR, antenna and ERP are submitted for the translator to operate within the 25 mile/40 km radius of WKTP(AM) 1590 kHz at Jonesborough, TN, FCC facility I.D. 27498 and serve as its fill in.

W249AH Modification Analysis:

An overlap study (exhibit E-1) shows the W249AH modification is within the WTFM(FM) 253C second-adjacent protected contour. A tabulation of the 146.83 +40 dBu F(50-10) contour (exhibit E-2) using the vertical elevation pattern of the Scala CL-FM single bay antenna (exhibit E-3) shows the interfering contour will not reach the ground to affect any population, roads or buildings (exhibit E-4). The 60 dBu contour is contained within a 25 mile/40 km radius of the primary WKTP(AM) tower site (exhibit E-5).

Antenna System:

The W249AH modification is located on the existing tower, ASR 1054538, at coordinates:

36 25 53N 082 08 16W NAD 27.

A Scala CL-FM single bay, vertically-polarized, directional antenna (exhibit E-6) will be mounted at a COR AGL of 47 meters, 1319 meters AMSL and operate at 0.250 kW ERP.

RF Exposure Calculation:

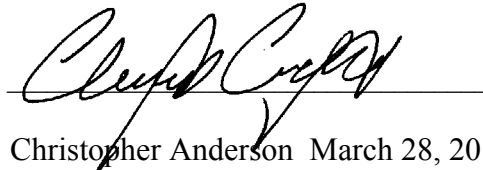
The RF contribution was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (height of radiation center in meters}^2\text{)}}$$

Using a worst case vertical (F) factor of 1.0, the RF is calculated to be 4.12 $\mu\text{W/cm}^2$ to the ground, which is below 5% of the 200 $\mu\text{W/cm}^2$ maximum permissible for general public exposure allowing exclusion from consideration.

Conclusion:

It is concluded that the W249AH modification complies with all Commission rules and policies.



Christopher Anderson March 28, 2017
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E-1 W249AH Mod. Overlap Study

REFERENCE 36 25 53.0 N. 82 08 16.0 W.		CH# 249D - 97.7 MHz, Pwr= 0.25 kW DA, HAAT= 670.5 M, COR= 1319 M Average Protected F(50-50)= 34.35 km Standard Directional								DISPLAY DATES DATA 03-20-17 SEARCH 03-20-17	
CH CITY	CALL	TYPE STATE	ANT AZI	DI ST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*	
249D Johnson City	W249AH	CP DC_ TN	225.0 44.8	25.54 BPFT20140218ABM	36 16 07.0 82 20 21.0	0.250	61.5 1006	18.1 Holston Valley Broadcasting	-63.4*	-84.5*	
249D Johnson City	W249AH	LIC DC_ TN	225.0 44.8	25.54 BLFT20080422ABD	36 16 07.0 82 20 21.0	0.040 388	55.3 1006	15.6 Holston Valley Broadcasting	-57.2*	-82.7*	
247D Kingsport	W247CH	LIC DC_ TN	46.3 226.3	0.44 BLFT20161114ADP	36 26 03.0 82 08 03.0	0.250	1.0 1328	32.9 Appalachian Educational Co	-3.6*	-32.5*(1)	
249C3 Richlands	WRIC-FM	LIC NCX VA	14.8 195.0	82.79 BLH20070509AAM	37 09 04.0 81 53 56.0	3.200 229	94.1 922	37.8 Rr & Wt Broadcasting, Inc.	-26.0*	23.3	
251D Bristol	W250BG	LIC _C_ TN	353.3 173.3	18.40 BLFT20080926ACV	36 35 45.0 82 09 42.0	0.250 77	1.1 638	13.8 Holston Valley Broadcasting	3.7	4.0(2)	
249D Asheville	W249AR	LIC _C_ NC	207.4 27.1	105.26 BLFT20000811AAU	35 35 23.0 82 40 26.0	0.100 358	72.2 1089	22.3 Entercom License, LIC	7.3	8.2	
250L1 Greeneville	WOFB-LP	LIC _ TN	244.2 63.8	67.04 BLL20160616ABU	36 10 03.0 82 48 38.0	0.029 55	493	26.5 Our Father's Business, Inc	10.9		
248C Knoxville	WJXB-FM	LIC _CY TN	254.3 73.2	167.65 BLH19890928KC	36 00 36.0 83 55 57.0	100.000 395	119.2 706	80.8 Midwest Communications, In	11.6	32.2	
247C North Wilkesboro	WKBC-FM	LIC DE_ NC	113.3 293.9	98.72 BLH19970711KA	36 04 34.0 81 07 43.0	100.000 403	11.7 803	81.3 Wilkes Broadcasting Compan	84.0	17.2	
250C Concord	WPEG	LIC DEX NC	143.0 323.6	148.18 BMLH20121024AAF	35 21 44.0 81 09 19.0	95.000 491	112.7 727	73.8 Wpow License Limited Partn	28.1	67.5	
250C3 Hyden	WKIC	LIC _CX KY	312.6 132.0	125.91 BLH20111223AAD	37 11 36.0 83 11 04.0	2.000 346	57.9 748	39.5 Leslie County Broadcasting	34.3	37.8	
251C Galax	WBRF	LIC DEN VA	82.7 263.5	118.31 BLH19910423KA	36 33 34.0 80 49 25.0	100.000 535	9.6 1149	72.3 Blue Ridge Radio, Inc.	105.7	45.9	

Terrain database is USGS 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= East Zone, 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 restricted contour.

- 1) The 146.83 +40 dBu F(50-10) contour within the W247CH second-adjacent protected contour lowest point above the site elevation = 45.4 meters and will not reach any buildings, roads or population, as shown in exhibits E-2 and E-3.
- 2) A contingent application for W250BG to channel 251 is to be filed with this application.

E-2 W249AH Mod. +40 dBu Tabulation Within W247AH

W249AH Mod. Johnson City, TN
74.1204(d) Showing
Translator or LPFM Maximum Licensed ERP = 0.25
Translator or LPFM Antenna Height AG = 47 Meters
W249AH Mod. Antenna Model = SCALA CL-FM-V-1

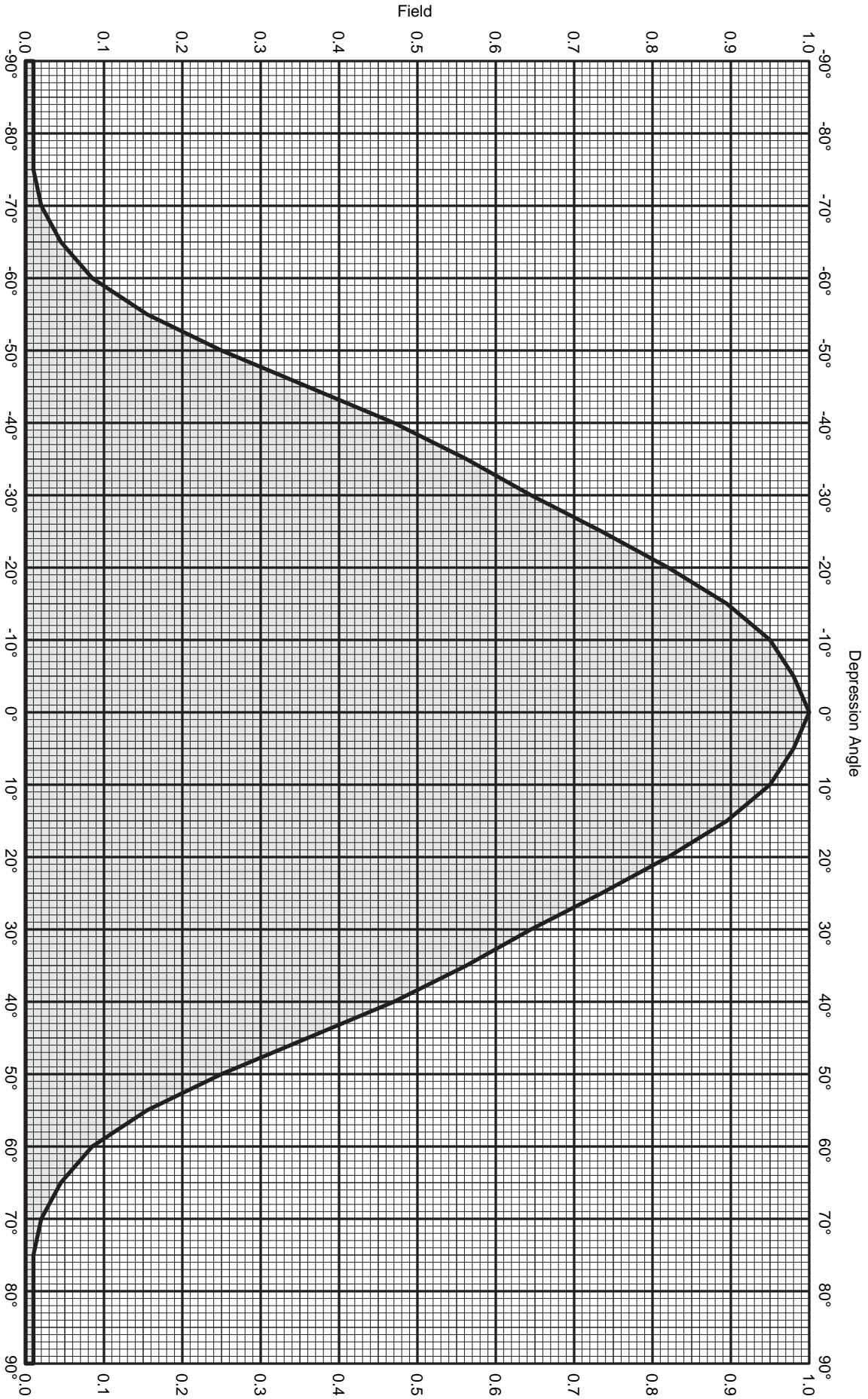
Protected Station's Contour = 106.8305 dBu
Translator's or LPFM's full Interference contour 146.8305

Review Azimuth = 270 Degrees True
Relative Field on the horizon at Review Azimuth = 1.000
Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW
Distance between stations = 0.4 km
Protected Station= W247CH, .25 kW, 1328 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle (m)	Dist to IX Contour From Tower Base (m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.2500	005.0518	005.0518	047.000
05.00	0.98	1.0	0.2401	004.9508	004.9319	046.569
10.00	0.95	1.0	0.2256	004.7992	004.7263	046.167
15.00	0.895	1.0	0.2003	004.5213	004.3673	045.830
20.00	0.82	1.0	0.1681	004.1425	003.8926	045.583
25.00	0.735	1.0	0.1351	003.7131	003.3652	045.431
30.00	0.645	1.0	0.1040	003.2584	002.8219	045.371 (1)
35.00	0.562	1.0	0.0790	002.8391	002.3257	045.372
40.00	0.47	1.0	0.0552	002.3743	001.8188	045.474
45.00	0.36	1.0	0.0324	001.8186	001.2860	045.714
50.00	0.25	1.0	0.0156	001.2629	000.8118	046.033
55.00	0.155	1.0	0.0060	000.7830	000.4491	046.359
60.00	0.085	1.0	0.0018	000.4294	000.2147	046.628
65.00	0.045	1.0	0.0005	000.2273	000.0961	046.794
70.00	0.02	1.0	0.0001	000.1010	000.0346	046.905
75.00	0.01	1.0	0.0000	000.0505	000.0131	046.951
80.00	0.01	1.0	0.0000	000.0505	000.0088	046.950
85.00	0.01	1.0	0.0000	000.0505	000.0044	046.950
90.00	0.01	1.0	0.0000	000.0505	000.0000	046.949

1) The 146.83 dBu F(50-10) contour lowest point above the site elevation = 45.4 meters above the site elevation, which will not reach any population, roads or buildings, as shown in the aerial photo in Exhibit E-3.

E-3 W249AH Mod. Antenna Vertical Elevation Pattern



CL-FM Log-periodic

FM

7.0 dBd (9.15 dBi)

Vertical polarization



KATHREIN
SCALA DIVISION

Post Office Box 4580
Medford, OR 97501 (USA)
Phone: (541) 779-6500
Fax: (541) 779-3991
<http://www.kathrein-scala.com>



CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)

Vertical polarization

Vertical radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-33.00	0.00	-45	0.360	-8.87	-1.87	0.65
-89	0.010	-40.00	-33.00	0.00	-44	0.382	-8.36	-1.36	0.73
-88	0.010	-40.00	-33.00	0.00	-43	0.404	-7.87	-0.87	0.82
-87	0.010	-40.00	-33.00	0.00	-42	0.426	-7.41	-0.41	0.91
-86	0.010	-40.00	-33.00	0.00	-41	0.448	-6.97	0.03	1.01
-85	0.010	-40.00	-33.00	0.00	-40	0.470	-6.56	0.44	1.11
-84	0.010	-40.00	-33.00	0.00	-39	0.488	-6.22	0.78	1.20
-83	0.010	-40.00	-33.00	0.00	-38	0.507	-5.90	1.10	1.29
-82	0.010	-40.00	-33.00	0.00	-37	0.525	-5.59	1.41	1.38
-81	0.010	-40.00	-33.00	0.00	-36	0.544	-5.29	1.71	1.48
-80	0.010	-40.00	-33.00	0.00	-35	0.562	-5.00	2.00	1.59
-79	0.010	-40.00	-33.00	0.00	-34	0.579	-4.75	2.25	1.68
-78	0.010	-40.00	-33.00	0.00	-33	0.595	-4.50	2.50	1.78
-77	0.010	-40.00	-33.00	0.00	-32	0.612	-4.26	2.74	1.88
-76	0.010	-40.00	-33.00	0.00	-31	0.628	-4.03	2.97	1.98
-75	0.010	-40.00	-33.00	0.00	-30	0.645	-3.81	3.19	2.09
-74	0.012	-38.42	-31.42	0.00	-29	0.663	-3.57	3.43	2.20
-73	0.014	-37.08	-30.08	0.00	-28	0.681	-3.34	3.66	2.32
-72	0.016	-35.92	-28.92	0.00	-27	0.699	-3.11	3.89	2.45
-71	0.018	-34.89	-27.89	0.00	-26	0.717	-2.89	4.11	2.58
-70	0.020	-33.98	-26.98	0.00	-25	0.735	-2.67	4.33	2.71
-69	0.025	-32.04	-25.04	0.00	-24	0.752	-2.48	4.52	2.83
-68	0.030	-30.46	-23.46	0.00	-23	0.769	-2.28	4.72	2.96
-67	0.035	-29.12	-22.12	0.01	-22	0.786	-2.09	4.91	3.10
-66	0.040	-27.96	-20.96	0.01	-21	0.803	-1.91	5.09	3.23
-65	0.045	-26.94	-19.94	0.01	-20	0.820	-1.72	5.28	3.37
-64	0.053	-25.51	-18.51	0.01	-19	0.835	-1.57	5.43	3.49
-63	0.061	-24.29	-17.29	0.02	-18	0.850	-1.41	5.59	3.62
-62	0.069	-23.22	-16.22	0.02	-17	0.865	-1.26	5.74	3.75
-61	0.077	-22.27	-15.27	0.03	-16	0.880	-1.11	5.89	3.88
-60	0.085	-21.41	-14.41	0.04	-15	0.895	-0.96	6.04	4.01
-59	0.099	-20.09	-13.09	0.05	-14	0.906	-0.86	6.14	4.11
-58	0.113	-18.94	-11.94	0.06	-13	0.917	-0.75	6.25	4.21
-57	0.127	-17.92	-10.92	0.08	-12	0.928	-0.65	6.35	4.32
-56	0.141	-17.02	-10.02	0.10	-11	0.939	-0.55	6.45	4.42
-55	0.155	-16.19	-9.19	0.12	-10	0.950	-0.45	6.55	4.52
-54	0.174	-15.19	-8.19	0.15	-9	0.956	-0.39	6.61	4.58
-53	0.193	-14.29	-7.29	0.19	-8	0.962	-0.34	6.66	4.64
-52	0.212	-13.47	-6.47	0.23	-7	0.968	-0.28	6.72	4.70
-51	0.231	-12.73	-5.73	0.27	-6	0.974	-0.23	6.77	4.75
-50	0.250	-12.04	-5.04	0.31	-5	0.980	-0.18	6.82	4.81
-49	0.272	-11.31	-4.31	0.37	-4	0.984	-0.14	6.86	4.85
-48	0.294	-10.63	-3.63	0.43	-3	0.988	-0.10	6.90	4.89
-47	0.316	-10.01	-3.01	0.50	-2	0.992	-0.07	6.93	4.93
-46	0.338	-9.42	-2.42	0.57	-1	0.996	-0.03	6.97	4.97
					0	1.000	0.00	7.00	5.01

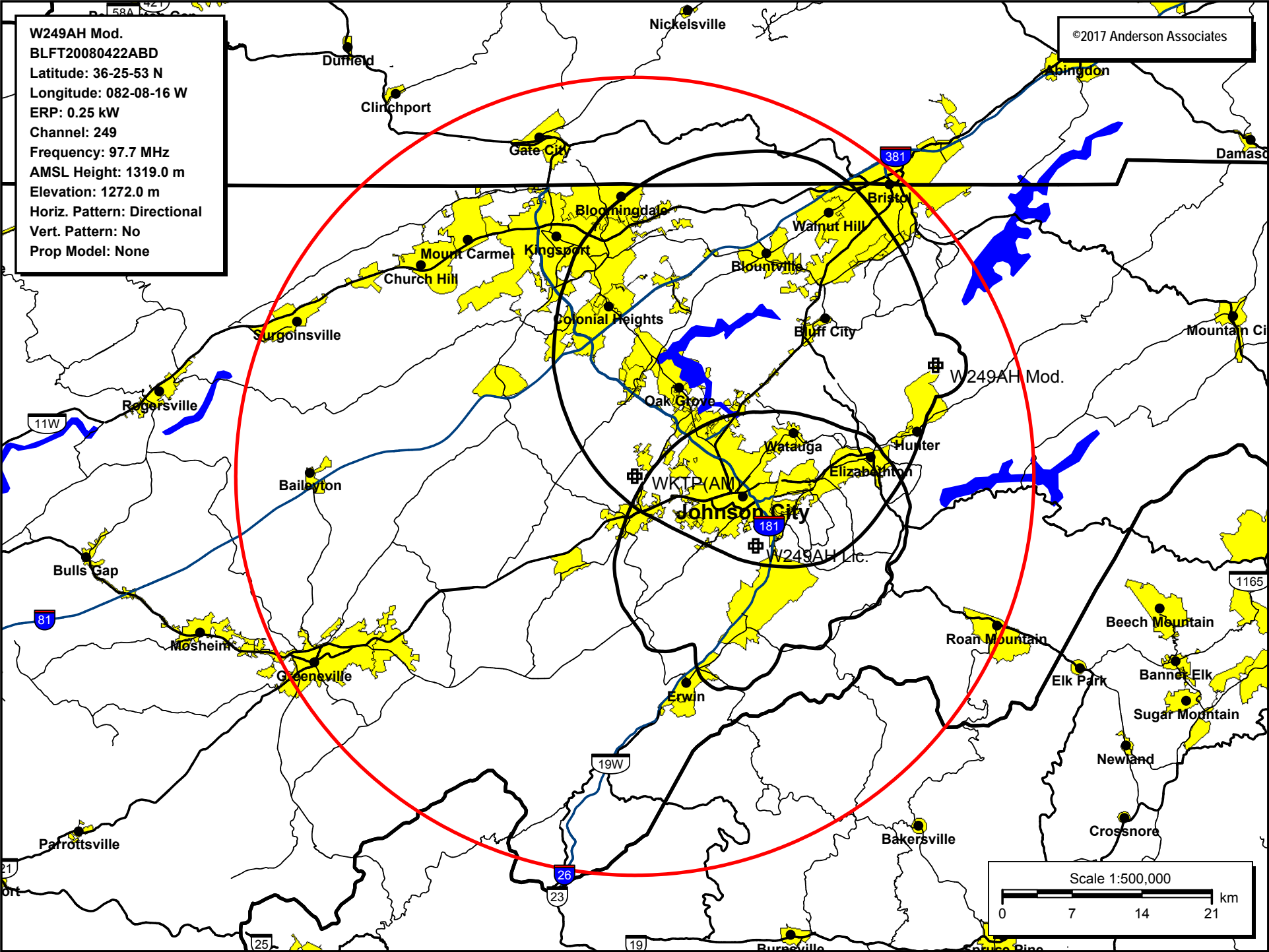


Google Earth

feet
meters | 100 50



E-5 W249AH Mod. 60 dBu Contour Plot

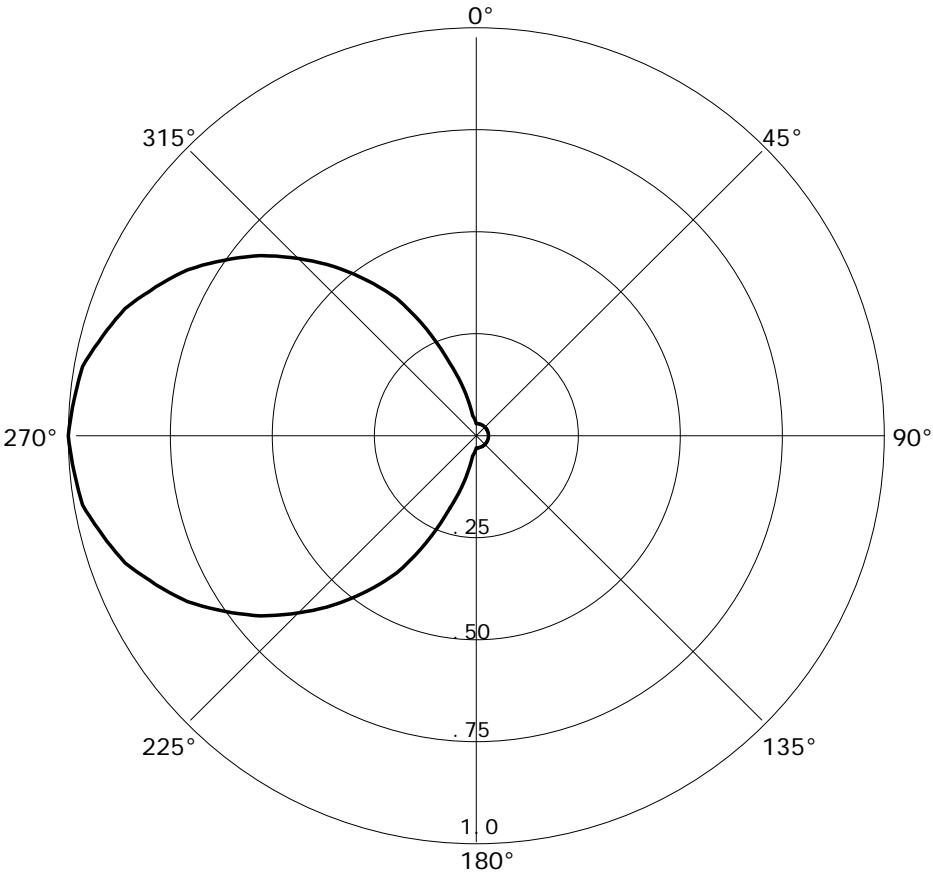


E-6 W249AH Mod. Directional Antenna Pattern

RMS(V) = .466

Graph is Relative Field

Azi	Field	dBk	kW
000	0.030	-36.478	0.000
010	0.030	-36.478	0.000
020	0.030	-36.478	0.000
030	0.030	-36.478	0.000
040	0.030	-36.478	0.000
050	0.030	-36.478	0.000
060	0.030	-36.478	0.000
070	0.030	-36.478	0.000
080	0.030	-36.478	0.000
090	0.030	-36.478	0.000
100	0.030	-36.478	0.000
110	0.030	-36.478	0.000
120	0.030	-36.478	0.000
130	0.030	-36.478	0.000
140	0.030	-36.478	0.000
150	0.030	-36.478	0.000
160	0.030	-36.478	0.000
170	0.030	-36.478	0.000
180	0.030	-36.478	0.000
190	0.050	-32.041	0.001
200	0.190	-20.446	0.009
210	0.390	-14.199	0.038
220	0.544	-11.309	0.074
230	0.690	-09.244	0.119
240	0.817	-07.776	0.167
250	0.916	-06.783	0.210
260	0.980	-06.196	0.240
270	1.000	-06.021	0.250
280	0.980	-06.196	0.240
290	0.916	-06.783	0.210
300	0.817	-07.776	0.167
310	0.690	-09.244	0.119
320	0.544	-11.309	0.074
330	0.390	-14.199	0.038
340	0.190	-20.446	0.009
350	0.050	-32.041	0.001



Registration 1054538

Registration Detail

Reg Number	1054538	Status	Constructed
File Number	A0064160	Constructed	10/01/1994
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	36-25-53.0 N 082-08-15.0 W	Address	6247 PANHANDLE ROAD
City, State	HUNTER , TN		
Zip	37643	County	CARTER
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
1271.9	68.8
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
1340.7	51.6

Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 13

Paint and Light in Accordance with FAA Circular Number 70/7460-1J

FAA Notification

FAA Study	98-ASO-2328-OE	FAA Issue Date	07/14/1998
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Owner & Contact Information

FRN	0001770163	Owner Entity Type
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Owner

HOLSTON VALLEY BROADCASTING
CORPORATION
Attention To: JOHN O. DAVIS
222 COMMERCE STREET
KINGSPORT , TN 37660

P: (423)246-9578
F:
E:

Contact

P:
F:
E:

Last Action Status

Status	Constructed	Received	07/24/1998
Purpose	New	Entered	07/24/1998