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**Proposed Translator
Channel 277D at Albemarle, NC
To Rebroadcast WZKY(AM) 1580 kHz Albemarle, NC
November 2017**

Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study maps demonstrate compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The attached spacing study demonstrates compliance with §73.207 of the Commission's Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

WSOC-FM 279C0 Charlotte

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station WSOC-FM 279C0 Charlotte. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
WSOC-FM 279C0	47.40 km 72 deg True	100 kW 431 meters	74.86 dBu F(50,50)	114.86 dBu	200.3 meters Free Space

Given that the transmitting antenna will be installed at a height of 74 meters above ground, and

taking into consideration the vertical plane pattern of the Nicom BKG77-2 half-wave-spaced antenna, the attached Free Space calculations demonstrate that the interference area will not reach ground level. There is no population within this contour. Therefore, the proposed facility satisfies the requirements of §74.1204(d) with respect to WSOC-FM.

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SEARCH PARAMETERS

FM Database Date: 171109

Channel: 277A 103.3 MHz
 Latitude: 35 23 13
 Longitude: 80 11 32
 Safety Zone: 50 km
 Job Title: ALBEMARLE 277

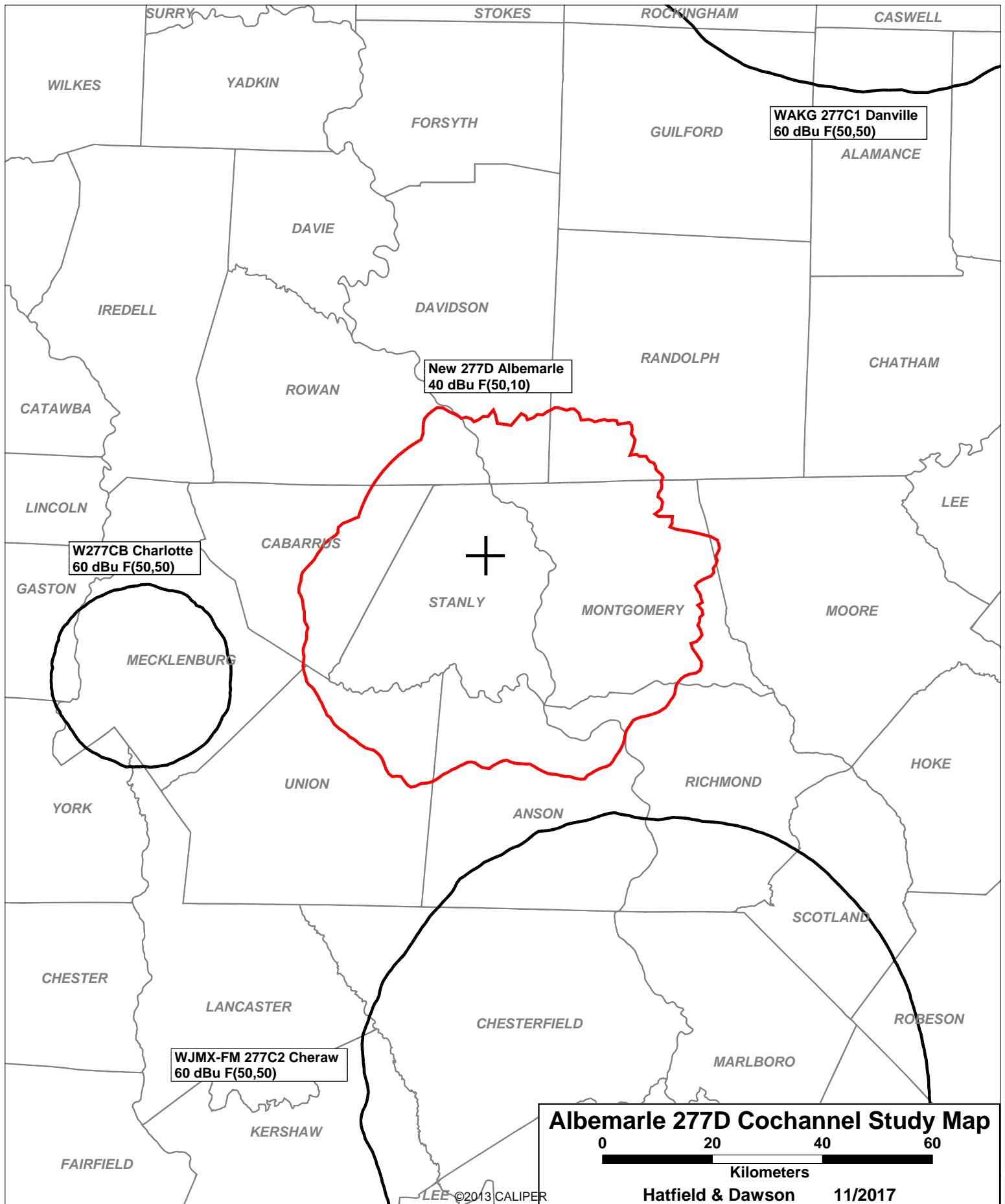
Page 1

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
WQNC LIC	HARRISBURG NC	BLH-30917ADE	224C3 92.7	10.500 154.0	35-16-20 080-45-54	256.4 SS	53.61 41.61	12 CLEAR
W224CP LIC	HIGH POINT NC	BLFT-41204ABE	224D 92.7	0.010 160.0	35-55-10 080-01-47	13.9	60.89 0.00	0 TRANS
W274BO LIC	GREENSBORO NC	BLFT-40428AAV	274D 102.7	0.010 158.0	36-06-43 080-06-11	5.7	80.84 0.00	0 TRANS
W274AL LIC	HIGH POINT NC	BLFT-70403AAP	274D 102.7	0.010 212.0	35-45-17 079-57-11	27.8	46.21 0.00	0 TRANS
WLKO LIC	HICKORY NC	BMLH-20608AAZ	275C1 102.9	31.000 468.0	35-24-26 081-07-47	271.8	85.20 10.20	75 CLEAR
W276CN LIC	ELKIN NC	BLFT-60420ADF	276D 103.1	0.120 0.0	36-14-37 080-51-09	328.2	112.23 0.00	0 TRANS
WUAG LIC	GREENSBORO NC	BLED-880819KC	276D 103.1	0.018 79.0	36-03-51 079-48-37	24.5	82.70 0.00	0 CLS=D
WLHC LIC	ROBBINS NC	BLH-30609AAG	276A 103.1	6.000 100.0	35-26-33 079-26-37	84.6	68.27 -3.73	72 SHORT
WEOM-LP LIC	THOMASVILLE NC	BLL-40722ABL	276L1 103.1	0.100 6.9	35-56-34 080-06-51	6.5	62.07 6.07	56 CLOSE
NEW-T APP	ALBEMARLE NC	BNPFT-70726AAP	277D 103.3	0.250 0.0	35-23-13 080-11-32	0.0	0.00 0.00	0 TRANS
W277CB LIC	CHARLOTTE NC	BLFT-90626AAL	277D 103.3	0.250 186.0	35-11-56 080-52-36	251.6	65.66 0.00	0 TRANS
WKVS LIC	LENOIR NC	BLH-61003ABC	277A 103.3	0.910 257.0	35-58-30 081-33-07	298.4 SS	139.31 24.31	115 CLEAR
W277DD LIC	SALISBURY NC	BLFT-61202AAL	277D 103.3	0.250 76.0	35-40-45 080-30-25	318.9	43.20 0.00	0 TRANS
WXTZ-LP LIC	YADKINVILLE NC	BLL-50727AAO	277L1 103.3	0.033 51.3	36-07-01 080-43-45	329.3	94.44 27.44	67 CLEAR

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SEARCH PARAMETERS                               FM Database Date: 171109
Channel: 277A 103.3 MHz                        Page 2
Latitude: 35 23 13
Longitude: 80 11 32
Safety Zone: 50 km
Job Title: ALBEMARLE 277
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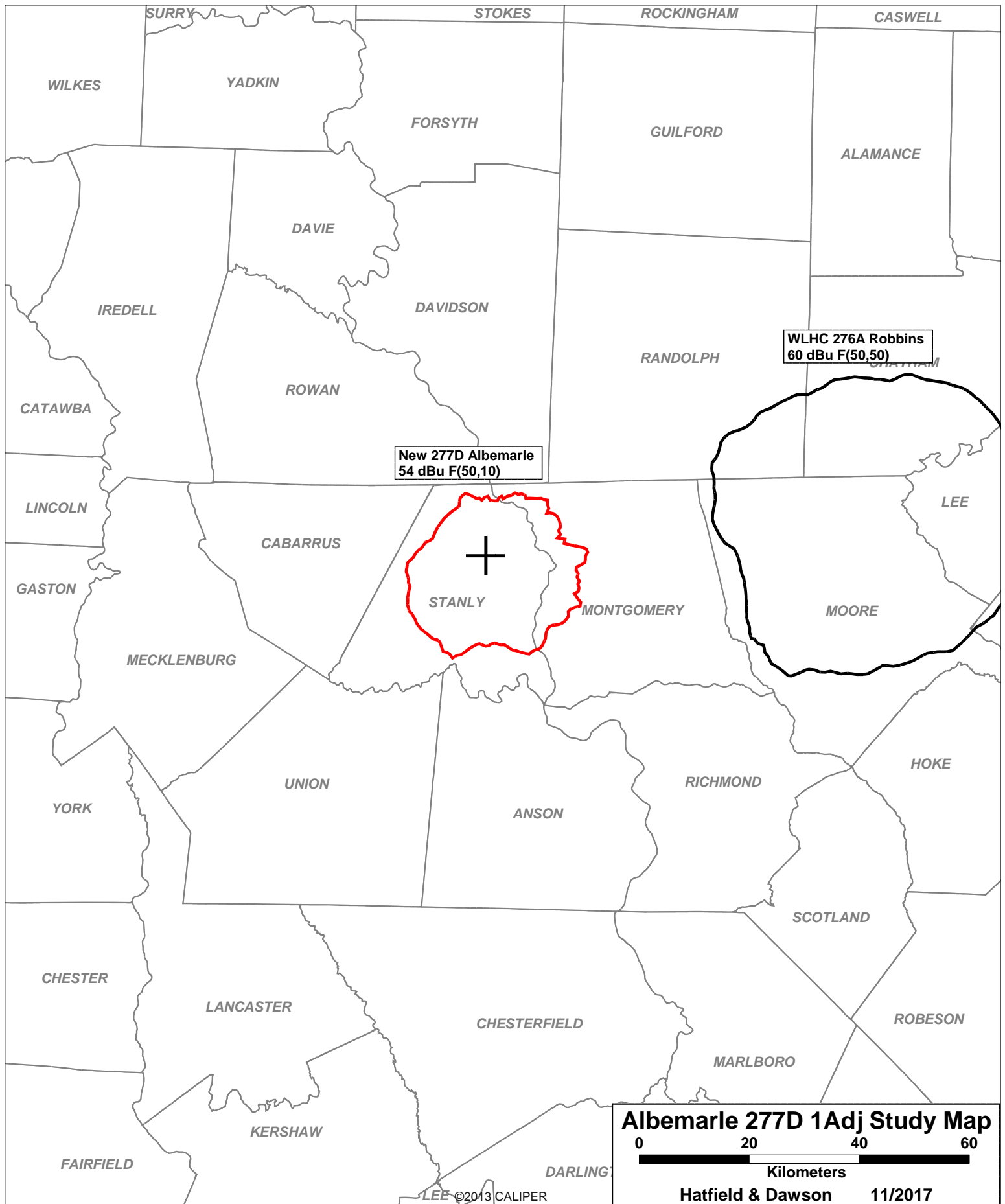
Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
WJMX-FM LIC	CHERAW SC	BLH-921118KA	277C2 103.3	50.000 150.0	34-30-18 079-54-18	165.0	101.30 -64.70	166 SHORT
WAKG LIC	DANVILLE VA	BLH-900904KB	277C1 103.3	100.000 199.0	36-44-28 079-23-05	25.5	166.94 -33.06	200 SHORT
WRCQ LIC	DUNN NC	BLH-900207KB	278C2 103.5	48.000 153.0	35-03-09 078-38-54	104.4	145.38 39.38	106 CLEAR
W278AM LIC	SEDALIA NC	BLFT-980127TC	278D 103.5	0.010 247.0	35-58-09 079-49-29	27.0	72.66 0.00	0 TRANS
W278BM LIC	WINSTON-SALEM NC	BLFT-50203AAY	278D 103.5	0.200 95.0	36-04-26 080-15-18	355.8	76.43 0.00	0 TRANS
WSOC-FM LIC	CHARLOTTE NC	BMLH-40821ABX	279C0 103.7	100.000 411.0	35-15-06 080-41-12	251.6	47.40 -38.60	86 SHORT

===== END OF FM SPACING STUDY FOR CHANNEL 277 =====



Albemarle 277D Cochannel Study Map

Hatfield & Dawson 11/2017



Albemarle 277D Free Space Interference Area Calculator

Interference Area to WSOC-FM

Antenna Height: 73 meters AGL
 Contour Level: 114.86 dBu equals 0.6 V/m
 ERP in Watts: 250 Watts

Maximum distance
 to interfering contour is: 657.2 feet equals 200.3 meters

Antenna: BKG77-2 1/2

Depression Angle (degrees)	Nicom BKG77-2 1/2 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 114.86 dBu Contour Along the depression angle	Horizontal Distance (meters)	Contour AGL (meters)
-90	0.009	0.0	1.8 meters	0	71.2
-89	0.009	0.0	1.8	0.0	71.2
-88	0.009	0.0	1.8	0.1	71.2
-87	0.009	0.0	1.8	0.1	71.2
-86	0.009	0.0	1.8	0.1	71.2
-85	0.009	0.0	1.8	0.2	71.2
-84	0.009	0.0	1.8	0.2	71.2
-83	0.008	0.0	1.6	0.2	71.4
-82	0.008	0.0	1.6	0.2	71.4
-81	0.008	0.0	1.6	0.3	71.4
-80	0.008	0.0	1.6	0.3	71.4
-79	0.007	0.0	1.4	0.3	71.6
-78	0.007	0.0	1.4	0.3	71.6
-77	0.006	0.0	1.2	0.3	71.8
-76	0.005	0.0	1.0	0.2	72.0
-75	0.004	0.0	0.8	0.2	72.2
-74	0.002	0.0	0.4	0.1	72.6
-73	0.001	0.0	0.2	0.1	72.8
-72	0.002	0.0	0.4	0.1	72.6
-71	0.004	0.0	0.8	0.3	72.2
-70	0.007	0.0	1.4	0.5	71.7
-69	0.010	0.0	2.0	0.7	71.1
-68	0.014	0.0	2.8	1.1	70.4
-67	0.018	0.1	3.6	1.4	69.7
-66	0.023	0.1	4.6	1.9	68.8
-65	0.028	0.2	5.6	2.4	67.9
-64	0.033	0.3	6.6	2.9	67.1
-63	0.039	0.4	7.8	3.5	66.0
-62	0.046	0.5	9.2	4.3	64.9
-61	0.053	0.7	10.6	5.1	63.7
-60	0.061	0.9	12.2	6.1	62.4
-59	0.070	1.2	14.0	7.2	61.0
-58	0.079	1.6	15.8	8.4	59.6
-57	0.088	1.9	17.6	9.6	58.2
-56	0.099	2.5	19.8	11.1	56.6
-55	0.110	3.0	22.0	12.6	55.0
-54	0.121	3.7	24.2	14.2	53.4
-53	0.133	4.4	26.6	16.0	51.7
-52	0.146	5.3	29.2	18.0	50.0
-51	0.160	6.4	32.1	20.2	48.1
-50	0.174	7.6	34.9	22.4	46.3
-49	0.189	8.9	37.9	24.8	44.4

-48	0.205	10.5	41.1	27.5	42.5
-47	0.221	12.2	44.3	30.2	40.6
-46	0.238	14.2	47.7	33.1	38.7
-45	0.256	16.4	51.3	36.3	36.7
-44	0.274	18.8	54.9	39.5	34.9
-43	0.293	21.5	58.7	42.9	33.0
-42	0.313	24.5	62.7	46.6	31.0
-41	0.333	27.7	66.7	50.3	29.2
-40	0.354	31.3	70.9	54.3	27.4
-39	0.375	35.2	75.1	58.4	25.7
-38	0.396	39.2	79.3	62.5	24.2
-37	0.418	43.7	83.7	66.9	22.6
-36	0.440	48.4	88.1	71.3	21.2
-35	0.463	53.6	92.7	76.0	19.8
-34	0.485	58.8	97.2	80.5	18.7
-33	0.508	64.5	101.8	85.3	17.6
-32	0.530	70.2	106.2	90.0	16.7
-31	0.553	76.5	110.8	95.0	15.9
-30	0.577	83.2	115.6	100.1	15.2
-29	0.598	89.4	119.8	104.8	14.9
-28	0.620	96.1	124.2	109.7	14.7
-27	0.642	103.0	128.6	114.6	14.6
-26	0.664	110.2	133.0	119.5	14.7
-25	0.686	117.6	137.4	124.5	14.9
-24	0.707	125.0	141.6	129.4	15.4
-23	0.728	132.5	145.8	134.2	16.0
-22	0.750	140.6	150.2	139.3	16.7
-21	0.771	148.6	154.4	144.2	17.7
-20	0.791	156.4	158.4	148.9	18.8
-19	0.810	164.0	162.3	153.4	20.2
-18	0.828	171.4	165.9	157.7	21.7
-17	0.846	178.9	169.5	162.1	23.5
-16	0.864	186.6	173.1	166.4	25.3
-15	0.881	194.0	176.5	170.5	27.3
-14	0.896	200.7	179.5	174.2	29.6
-13	0.911	207.5	182.5	177.8	31.9
-12	0.925	213.9	185.3	181.2	34.5
-11	0.939	220.4	188.1	184.6	37.1
-10	0.952	226.6	190.7	187.8	39.9
-9	0.961	230.9	192.5	190.1	42.9
-8	0.969	234.7	194.1	192.2	46.0
-7	0.976	238.1	195.5	194.1	49.2
-6	0.982	241.1	196.7	195.6	52.4
-5	0.988	244.0	197.9	197.2	55.8
-4	0.992	246.0	198.7	198.2	59.1
-3	0.995	247.5	199.3	199.0	62.6
-2	0.998	249.0	199.9	199.8	66.0
-1	0.999	249.5	200.1	200.1	69.5
0	1.000	250.0	200.3	200.3	73.0

Facilities Proposed

The proposed operation will be on Channel 277D (103.3 MHz) with an effective radiated power of 0.250 kilowatts. Diplexed operation is proposed with a new translator on Channel 297D at Albemarle.

Operation is proposed with a 2-element circularly-polarized omnidirectional antenna. The antenna will be side-mounted on an existing tower with FCC Antenna Structure Registration Number 1007033. This is tower used by AM station WSPC.

RF Exposure Calculations

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.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 2 element pattern, which is the element pattern for the Nicom BKG77-2 antenna proposed for use. The highest calculated ground level power density occurs at a distance of 132 meters from the base of the antenna support structure. At this point the power density is calculated to be 0.3 $\mu W/cm^2$, which is 0.15% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

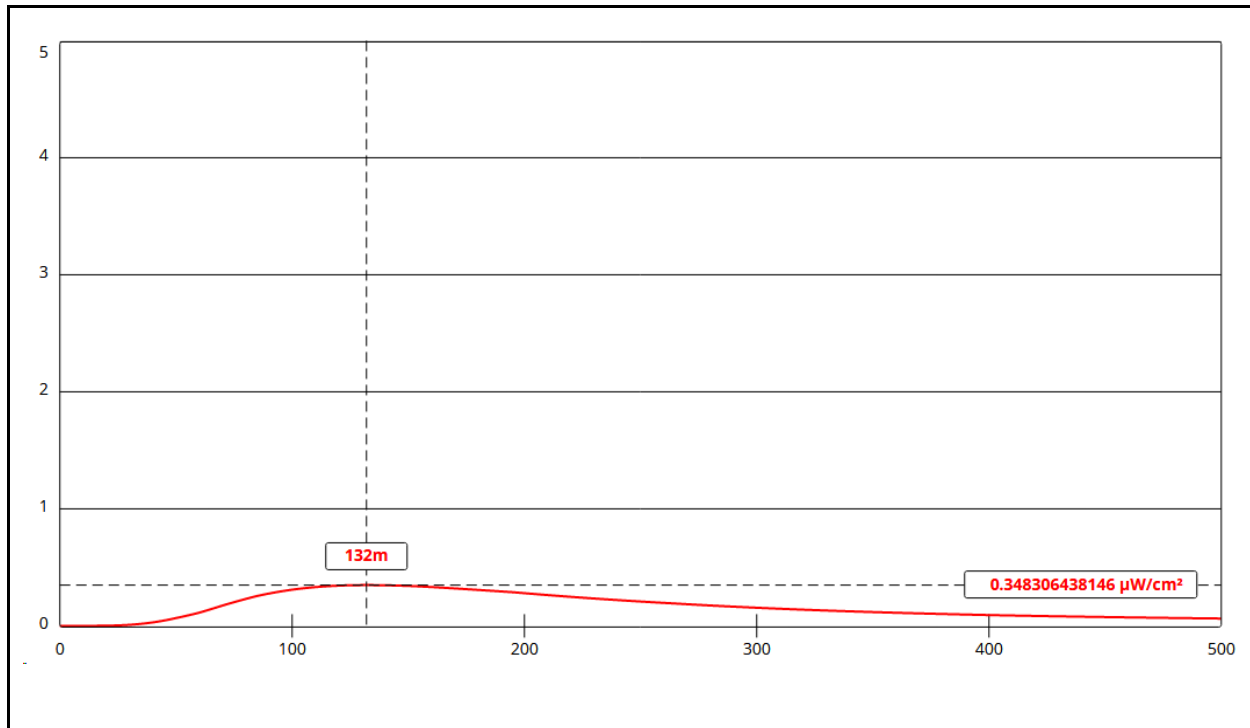
These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit

at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes 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.

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.

AM Station WSPC

The translator antenna will be installed on the tower used by AM station WSPC 1010 kHz. WSPC operates with 1 kilowatt nondirectional daytime, 64 watts nondirectional nighttime. The radiator is 92.4 electrical degrees tall, or 25.7% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for this station is 1 meter from the tower base. The tower is fenced to at least this distance.



Ground-Level RF Exposure

OET FMModel

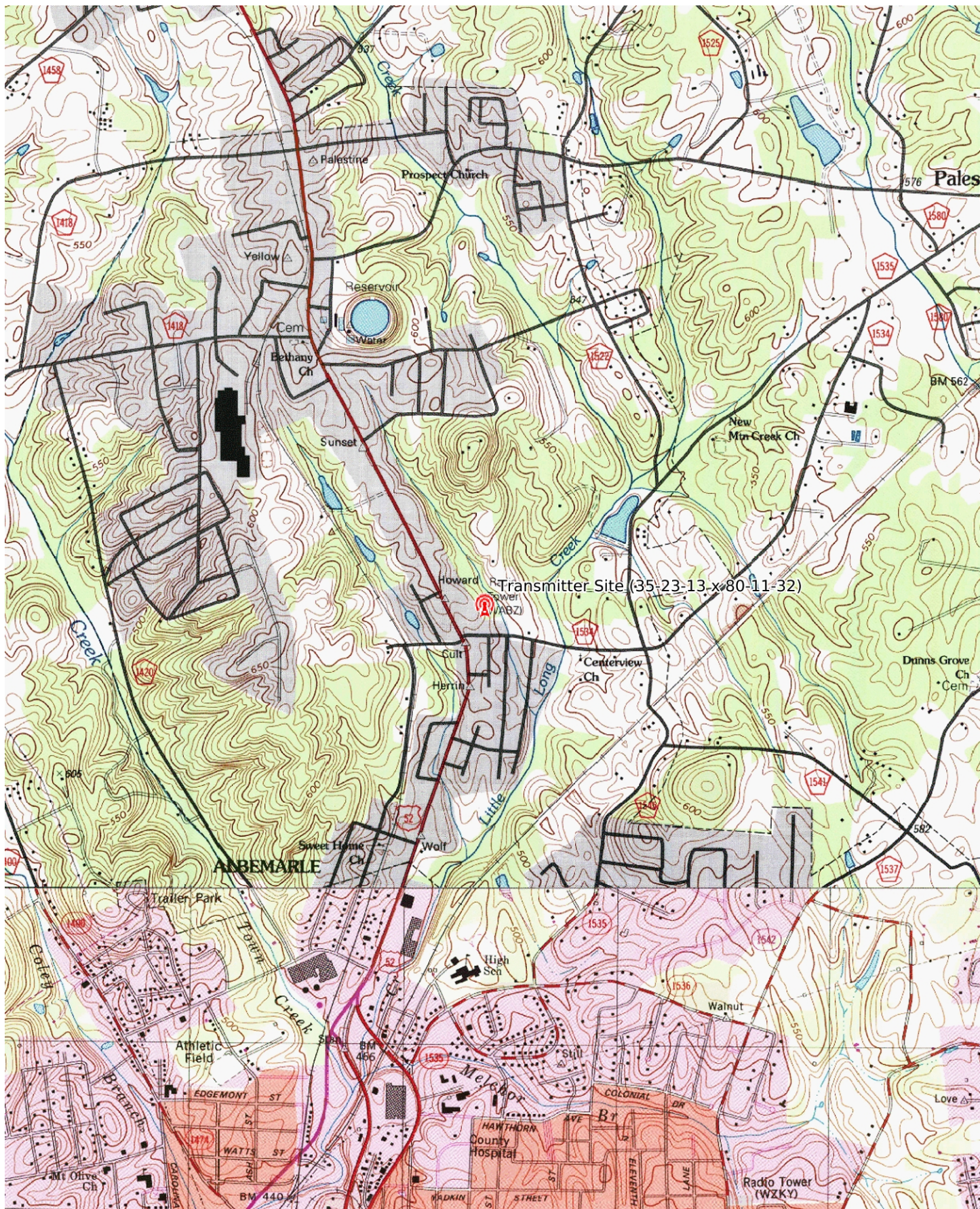
Albemarle 277D

Antenna Type: Nicom BKG77-2 (Type 2)
No. of Elements: 2
Element Spacing: 0.5 wavelength

Distance: 500 meters
Horizontal ERP: 250 watts
Vertical ERP: 250 watts

Antenna Height: 73 meters AGL

Maximum Calculated Power Density is $0.3 \mu\text{W}/\text{cm}^2$ at 132 meters from the antenna structure.



Mercator Projection
NAD27 Conus
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