

ENGINEERING EXHIBIT

Incentive Auction Channel Reassignment

Amendment to Application for Digital Television Station Construction Permit (File# 0000025584)

prepared for

Ohio University
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

Ohio University ("Ohio") is the licensee of digital television station WOUC-TV, Channel 35, Facility ID 50141, Cambridge, OH. Reassignment of WOUC-TV from Channel 35 to Channel 6 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice ("CCRPN"*, DA 17-317, released April 13, 2017). *Ohio* has filed an application for construction permit (file# 0000025584) to implement the WOUC-TV post-auction facility on Channel 6. The pending application specifies operation with a directional antenna having maximum effective radiated power ("ERP") of 7.11 kW at 338 meters antenna height above average terrain ("HAAT"). The facility as specified in the pending application complies fully with §73.3700(b)(1)(iii).

The pending application results in an extension of noise limited service contour ("NLSC") that exceeds a distance of one percent beyond that of the *CCRPN* facility. Pursuant to §73.3700(b)(1)(ii), the one percent extension distance is applicable to stations reassigned to another channel within the same band. WOUC-TV is a band change station (from UHF to Low-VHF), and the relevant rule is §73.3700(b)(1)(iii) which does not require the initial construction permit application facility to be limited by the one percent extension distance. Nevertheless, the applicant has been advised by FCC staff that the pending application must be amended to conform to the one percent contour extension limit. The site location is within the Canadian coordination zone (200 km to the Canada border) and staff reports that Canada has consented only to a maximum of one percent contour extension for directional reassigned stations. *Ohio* herein amends the application to reduce the ERP to 1.08 kW.

The proposed Channel 6 operation will employ a new antenna system to be side-mounted on the WOUC-TV tower. The tower structure corresponds to FCC Antenna Structure Registration number 1008520. No change to the overall structure height will result.

The proposed antenna is an elliptically polarized directional Dielectric model CBRA-C4-3/10M-1 (25 percent vertical polarization). *Ohio* proposes to operate WOUC-TV with an effective radiated power (“ERP”) of 1.08 kW at 338 meters antenna height above average terrain (“HAAT”). The maximum horizontally polarized ERP is 1.08 kW and the maximum vertically polarized ERP is 0.27 kW. The vertically polarized component will not exceed the horizontally polarized component at any azimuth. The directional antenna’s azimuthal patterns are depicted in Figures 1 and 1A for horizontal and vertical polarization, respectively.

The proposed antenna system has panel-type radiators oriented in four different azimuths, which will be side-mounted around the tower structure. The directional pattern has a “cardioid” shape intended to emphasize signal levels north, west, and south, while providing reduced power towards the east to avoid creating impermissible interference to other television stations on the same and adjacent channels.

In order to achieve the desired horizontal plane radiation pattern, the number of stacked panel layers at each azimuth is varied. A stack of 3 panels is used at the north, west, and south directions (9 panels total), while a single panel will be oriented to the east where reduced power is required. Electrical beamtilt of 0.75 degree is employed for the dominant stacks (north, west, and south) and there is no beamtilt for east panel. The amount of beamtilt specified in the accompanying FCC Form 2100 Antenna Technical Data section is given as 0.75 degree as that represents the beamtilt along the azimuths of maximum radiation. Elevation pattern plots and data are provided in Figure 2 for the north, west, and south faces, and in Figure 2A for east face.¹

¹As discussed informally with FCC Staff, a response of “No” is provided in the accompanying Form 2100 Antenna Technical Data section question regarding whether the elevation pattern varies for reasons other than the use of mechanical beamtilt. A “yes” response would prompt the upload of pattern data in XML format, a feature which is primarily intended to be associated with DTS facilities. This application does not rely on specific elevation pattern data to comply with coverage or interference requirements; therefore use of the default elevation pattern can be utilized.

A map is supplied as Figure 3 which depicts the standard predicted coverage contours. This map includes the location of Cambridge, WOUC-TV's principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1) as the entire principal community will be encompassed by the 35 dBμ contour.

Interference study per FCC OET Bulletin 69² shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby post-auction full service and Class A television stations and reassignments as required by §73.616. The interference study output report is provided as Table 1. This satisfies §73.3700(b)(iii) for the proposed NLSC extension.

The proposed NLSC extends beyond that of the *CCRPN* parameters of 1.72 kW ERP and 385 meters HAAT along a few azimuths. The *CCRPN* facility specifies the directional antenna pattern corresponding to the WOUC-TV's licensed Channel 35. Due to unavoidable pattern variations between UHF and VHF antennas, WOUC-TV cannot obtain an antenna that replicates the coverage contour reflected in the *CCRPN*. The amount of NLSC extension does not exceed one percent in any direction, and in most directions falls far short of the target *CCRPN* contour. Figure 4 supplies a coverage contour comparison of the proposed WOUC-TV facility to the reassignment facility's contour and a one percent extension distance of the reassignment facility's contour.

The proposed WOUC-TV facility's terrain-limited population provides an 86.6 percent match of the *CCRPN* baseline facility, as detailed in the following table.

Terrain Limited Population - Match of Reassignment		
Population Summary (2010 Census) OET Bulletin 69: TVStudy	Reassignment Parameters	Proposed
Within Noise Limited Contour	1,256,827	1,096,058
Not affected by terrain losses	1,226,752	1,062,270
Match of Reassignment	---	86.59%

²FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 2 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

The population match is less than the 95 percent required for expedited processing. The shortfall is due to the mismatch of directional antenna patterns between the UHF and VHF bands. The proposal as originally submitted (at 7.11 kW ERP) easily complied with the minimum 95 percent population match. The reduction specified herein is made at the request of FCC staff and specifies the maximum ERP possible that does not exceed a one percent contour extension distance. *Ohio* will apply for an expanded WOUC-TV at the appropriate expansion window, and such facility will comply with the 95 percent population match benchmark.

The nearest FCC monitoring station is 397 km distant at Laurel, MD. This exceeds by a large margin 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 authorized AM stations within 3 kilometers of the site.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC’s OET Bulletin Number 65. Based on OET-65 equation (10), and considering the worst-case of 100 percent antenna relative field in downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $0.5 \mu\text{W}/\text{cm}^2$, which is 0.2 percent of the general population/uncontrolled maximum permitted exposure limit. This is well 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 calculated signal density will be even lower when the antenna’s elevation pattern is considered.

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 continue to 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. This

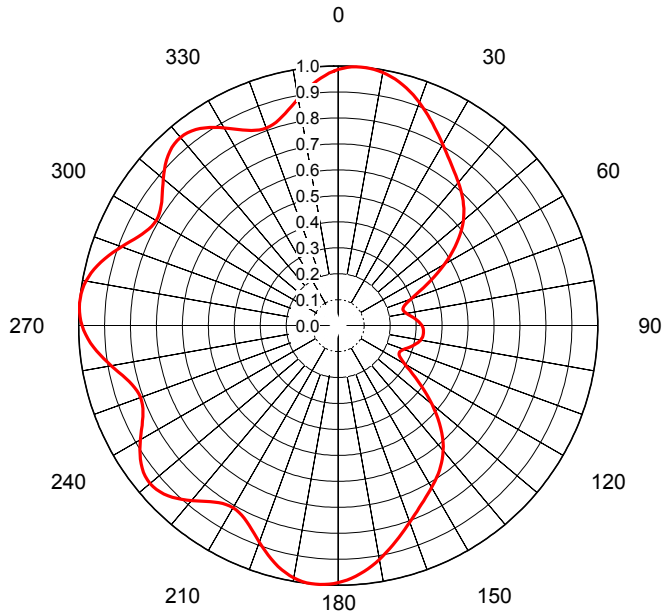
exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

List of Attachments

Figure 1, 1A	Antenna Azimuthal Pattern
Figure 2, 2A	Antenna Elevation Pattern
Figure 3	Proposed Coverage Contours
Figure 4	Proposed Contour Expansion
Table 1	OET Bulletin 69 Interference Study
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	August 22, 2017	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-70930**
Date **28-Jun-17**
Call Letters **WOUC**
Channel **6**
Frequency **85 MHz**
Antenna Type **CBRA-C4-3/10M-1**
Gain **1.62 (2.08dB)**
Calculated

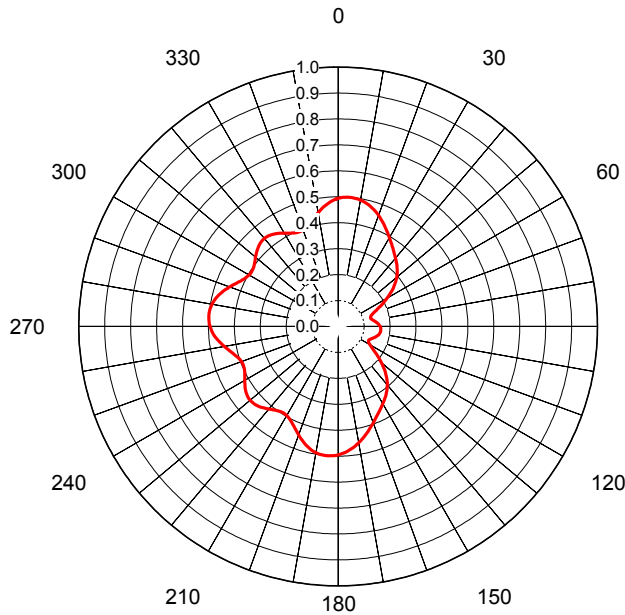
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Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.987	36	0.751	72	0.275	108	0.279	144	0.671	180	0.990	216	0.839	252	0.814	288	0.912
1	0.992	37	0.743	73	0.268	109	0.273	145	0.680	181	0.994	217	0.848	253	0.819	289	0.900
2	0.995	38	0.735	74	0.262	110	0.268	146	0.689	182	0.996	218	0.858	254	0.826	290	0.888
3	0.998	39	0.727	75	0.258	111	0.263	147	0.697	183	0.998	219	0.869	255	0.834	291	0.876
4	1.000	40	0.720	76	0.257	112	0.260	148	0.705	184	1.000	220	0.880	256	0.843	292	0.864
5	1.000	41	0.712	77	0.258	113	0.258	149	0.712	185	1.000	221	0.890	257	0.853	293	0.853
6	1.000	42	0.705	78	0.260	114	0.257	150	0.720	186	1.000	222	0.901	258	0.864	294	0.843
7	0.998	43	0.697	79	0.263	115	0.258	151	0.727	187	0.998	223	0.910	259	0.876	295	0.834
8	0.996	44	0.689	80	0.268	116	0.262	152	0.735	188	0.995	224	0.919	260	0.888	296	0.826
9	0.994	45	0.680	81	0.273	117	0.268	153	0.743	189	0.992	225	0.927	261	0.900	297	0.819
10	0.990	46	0.671	82	0.279	118	0.275	154	0.751	190	0.987	226	0.934	262	0.912	298	0.814
11	0.986	47	0.662	83	0.286	119	0.285	155	0.759	191	0.981	227	0.939	263	0.924	299	0.811
12	0.981	48	0.652	84	0.292	120	0.297	156	0.768	192	0.973	228	0.943	264	0.935	300	0.810
13	0.975	49	0.641	85	0.298	121	0.310	157	0.777	193	0.965	229	0.945	265	0.946	301	0.811
14	0.968	50	0.629	86	0.304	122	0.325	158	0.786	194	0.956	230	0.946	266	0.956	302	0.813
15	0.960	51	0.617	87	0.309	123	0.342	159	0.796	195	0.946	231	0.945	267	0.965	303	0.817
16	0.952	52	0.604	88	0.314	124	0.359	160	0.806	196	0.935	232	0.943	268	0.973	304	0.823
17	0.944	53	0.590	89	0.319	125	0.377	161	0.816	197	0.924	233	0.939	269	0.981	305	0.830
18	0.934	54	0.575	90	0.322	126	0.396	162	0.827	198	0.912	234	0.934	270	0.987	306	0.839
19	0.925	55	0.559	91	0.325	127	0.415	163	0.838	199	0.900	235	0.927	271	0.992	307	0.848
20	0.915	56	0.543	92	0.327	128	0.434	164	0.849	200	0.888	236	0.919	272	0.995	308	0.858
21	0.904	57	0.526	93	0.329	129	0.453	165	0.860	201	0.876	237	0.910	273	0.998	309	0.869
22	0.893	58	0.509	94	0.330	130	0.472	166	0.871	202	0.864	238	0.901	274	1.000	310	0.880
23	0.882	59	0.490	95	0.330	131	0.490	167	0.882	203	0.853	239	0.890	275	1.000	311	0.890
24	0.871	60	0.472	96	0.330	132	0.509	168	0.893	204	0.843	240	0.880	276	1.000	312	0.901
25	0.860	61	0.453	97	0.329	133	0.526	169	0.904	205	0.834	241	0.869	277	0.998	313	0.910
26	0.849	62	0.434	98	0.327	134	0.543	170	0.915	206	0.826	242	0.858	278	0.995	314	0.919
27	0.838	63	0.415	99	0.325	135	0.559	171	0.925	207	0.819	243	0.848	279	0.992	315	0.927
28	0.827	64	0.396	100	0.322	136	0.575	172	0.934	208	0.814	244	0.839	280	0.987	316	0.934
29	0.816	65	0.377	101	0.319	137	0.590	173	0.944	209	0.811	245	0.830	281	0.981	317	0.939
30	0.806	66	0.359	102	0.314	138	0.604	174	0.952	210	0.810	246	0.823	282	0.973	318	0.943
31	0.796	67	0.342	103	0.309	139	0.617	175	0.960	211	0.811	247	0.817	283	0.965	319	0.945
32	0.786	68	0.325	104	0.304	140	0.629	176	0.968	212	0.813	248	0.813	284	0.956	320	0.946
33	0.777	69	0.310	105	0.298	141	0.641	177	0.975	213	0.817	249	0.811	285	0.946	321	0.945
34	0.768	70	0.297	106	0.292	142	0.652	178	0.981	214	0.823	250	0.810	286	0.935	322	0.943
35	0.759	71	0.285	107	0.286	143	0.662	179	0.986	215	0.830	251	0.811	287	0.924	323	0.939

Figure 1
Antenna Azimuthal Pattern
Horizontal Polarization
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

prepared for
Ohio University

August, 2017



AZIMUTH PATTERN Vertical Polarization

In Free Space

Proposal No. **C-70930**
Date **28-Jun-17**
Call Letters **WOUC**
Channel **6**
Frequency **85 MHz**
Antenna Type **CBRA-C4-3/10M-1**
Gain **1.69 (2.27dB)**
Calculated

In free space

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.494	36	0.363	72	0.134	108	0.143	144	0.317	180	0.495	216	0.401	252	0.402	288	0.458
1	0.496	37	0.358	73	0.131	109	0.140	145	0.321	181	0.497	217	0.404	253	0.406	289	0.452
2	0.498	38	0.353	74	0.130	110	0.137	146	0.326	182	0.498	218	0.407	254	0.410	290	0.445
3	0.499	39	0.349	75	0.129	111	0.134	147	0.331	183	0.499	219	0.411	255	0.415	291	0.439
4	0.500	40	0.344	76	0.129	112	0.132	148	0.335	184	0.500	220	0.416	256	0.421	292	0.433
5	0.500	41	0.340	77	0.131	113	0.131	149	0.340	185	0.500	221	0.420	257	0.427	293	0.427
6	0.500	42	0.335	78	0.132	114	0.129	150	0.344	186	0.500	222	0.424	258	0.433	294	0.421
7	0.499	43	0.331	79	0.134	115	0.129	151	0.349	187	0.499	223	0.428	259	0.439	295	0.415
8	0.498	44	0.326	80	0.137	116	0.130	152	0.353	188	0.498	224	0.432	260	0.445	296	0.410
9	0.497	45	0.321	81	0.140	117	0.131	153	0.358	189	0.496	225	0.435	261	0.452	297	0.406
10	0.495	46	0.317	82	0.143	118	0.134	154	0.363	190	0.494	226	0.438	262	0.458	298	0.402
11	0.493	47	0.311	83	0.146	119	0.137	155	0.368	191	0.491	227	0.440	263	0.464	299	0.399
12	0.490	48	0.306	84	0.149	120	0.141	156	0.373	192	0.488	228	0.442	264	0.469	300	0.397
13	0.487	49	0.300	85	0.152	121	0.147	157	0.378	193	0.484	229	0.443	265	0.475	301	0.395
14	0.484	50	0.295	86	0.154	122	0.153	158	0.384	194	0.480	230	0.443	266	0.480	302	0.395
15	0.480	51	0.288	87	0.157	123	0.160	159	0.390	195	0.475	231	0.443	267	0.484	303	0.395
16	0.476	52	0.282	88	0.159	124	0.167	160	0.395	196	0.469	232	0.442	268	0.488	304	0.396
17	0.471	53	0.275	89	0.160	125	0.175	161	0.401	197	0.464	233	0.440	269	0.491	305	0.398
18	0.466	54	0.268	90	0.162	126	0.183	162	0.408	198	0.458	234	0.438	270	0.494	306	0.401
19	0.461	55	0.260	91	0.163	127	0.192	163	0.414	199	0.452	235	0.435	271	0.496	307	0.404
20	0.456	56	0.252	92	0.164	128	0.201	164	0.420	200	0.445	236	0.432	272	0.498	308	0.407
21	0.450	57	0.244	93	0.165	129	0.209	165	0.426	201	0.439	237	0.428	273	0.499	309	0.411
22	0.444	58	0.236	94	0.165	130	0.218	166	0.432	202	0.433	238	0.424	274	0.500	310	0.416
23	0.438	59	0.227	95	0.165	131	0.227	167	0.438	203	0.427	239	0.420	275	0.500	311	0.420
24	0.432	60	0.218	96	0.165	132	0.236	168	0.444	204	0.421	240	0.416	276	0.500	312	0.424
25	0.426	61	0.209	97	0.165	133	0.244	169	0.450	205	0.415	241	0.411	277	0.499	313	0.428
26	0.420	62	0.201	98	0.164	134	0.252	170	0.456	206	0.410	242	0.407	278	0.498	314	0.432
27	0.414	63	0.192	99	0.163	135	0.260	171	0.461	207	0.406	243	0.404	279	0.496	315	0.435
28	0.408	64	0.183	100	0.162	136	0.268	172	0.466	208	0.402	244	0.401	280	0.494	316	0.438
29	0.401	65	0.175	101	0.160	137	0.275	173	0.471	209	0.399	245	0.398	281	0.491	317	0.440
30	0.395	66	0.167	102	0.159	138	0.282	174	0.476	210	0.397	246	0.396	282	0.488	318	0.442
31	0.390	67	0.160	103	0.157	139	0.288	175	0.480	211	0.395	247	0.395	283	0.484	319	0.443
32	0.384	68	0.153	104	0.154	140	0.295	176	0.484	212	0.395	248	0.395	284	0.480	320	0.443
33	0.378	69	0.147	105	0.152	141	0.300	177	0.487	213	0.395	249	0.395	285	0.475	321	0.443
34	0.373	70	0.141	106	0.149	142	0.306	178	0.490	214	0.396	250	0.397	286	0.469	322	0.442
35	0.368	71	0.137	107	0.146	143	0.311	179	0.493	215	0.398	251	0.399	287	0.464	323	0.440

Figure 1A
Antenna Azimuthal Pattern
Vertical Polarization
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

prepared for
Ohio University

August, 2017

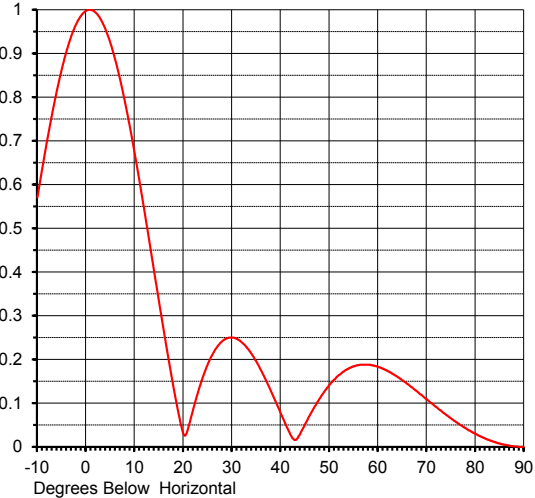
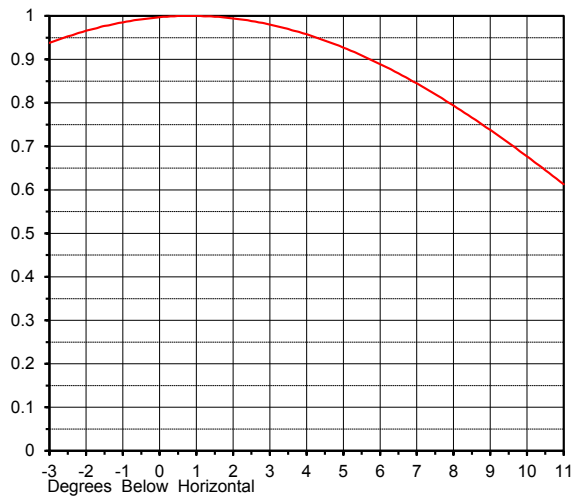
Face A, C and D

ELEVATION PATTERN

Proposal No. **C-70930**
 Date **28-Jun-17**
 Call Letters **WOUC**
 Channel **6**
 Frequency **85 MHz**
 Antenna Type **CBRA-C4-3/10M-1**

RMS Directivity at Main Lobe **3.3 (5.19 dB)**
 RMS Directivity at Horizontal **3.3 (5.19 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **03C033075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.571	10.0	0.671	30.0	0.250	50.0	0.142	70.0	0.109
-9.0	0.637	11.0	0.606	31.0	0.247	51.0	0.154	71.0	0.100
-8.0	0.701	12.0	0.539	32.0	0.239	52.0	0.165	72.0	0.091
-7.0	0.760	13.0	0.470	33.0	0.228	53.0	0.173	73.0	0.082
-6.0	0.815	14.0	0.400	34.0	0.213	54.0	0.180	74.0	0.073
-5.0	0.864	15.0	0.331	35.0	0.195	55.0	0.184	75.0	0.065
-4.0	0.906	16.0	0.263	36.0	0.174	56.0	0.187	76.0	0.057
-3.0	0.941	17.0	0.197	37.0	0.151	57.0	0.188	77.0	0.050
-2.0	0.968	18.0	0.134	38.0	0.127	58.0	0.188	78.0	0.043
-1.0	0.987	19.0	0.076	39.0	0.102	59.0	0.186	79.0	0.036
0.0	0.998	20.0	0.030	40.0	0.077	60.0	0.183	80.0	0.030
1.0	1.000	21.0	0.044	41.0	0.052	61.0	0.179	81.0	0.024
2.0	0.993	22.0	0.086	42.0	0.028	62.0	0.173	82.0	0.019
3.0	0.978	23.0	0.125	43.0	0.016	63.0	0.167	83.0	0.015
4.0	0.955	24.0	0.160	44.0	0.030	64.0	0.160	84.0	0.011
5.0	0.924	25.0	0.189	45.0	0.052	65.0	0.152	85.0	0.008
6.0	0.885	26.0	0.212	46.0	0.073	66.0	0.144	86.0	0.005
7.0	0.840	27.0	0.230	47.0	0.093	67.0	0.136	87.0	0.003
8.0	0.788	28.0	0.242	48.0	0.111	68.0	0.127	88.0	0.001
9.0	0.732	29.0	0.249	49.0	0.127	69.0	0.118	89.0	0.000
								90.0	0.000

Figure 2
Antenna Elevation Pattern
North, South, and East Faces (A, C, D)
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

prepared for
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August, 2017

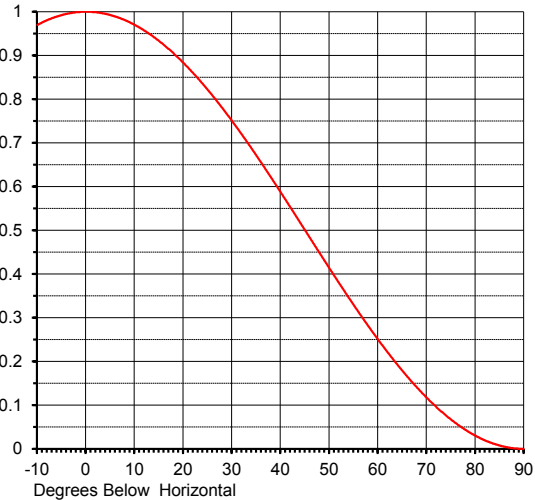
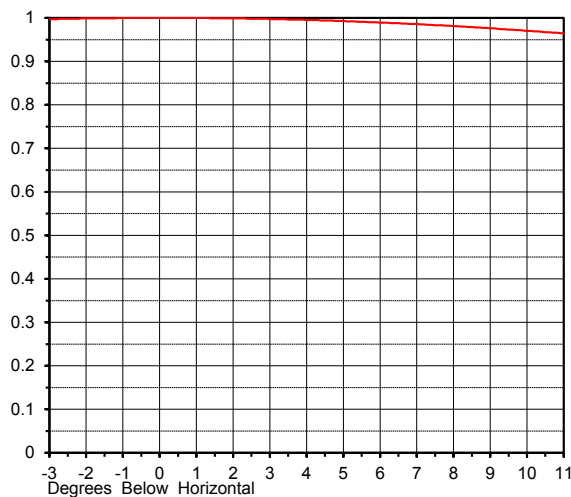
ELEVATION PATTERN

Proposal No. **C-70930**
 Date **28-Jun-17**
 Call Letters **WOUC**
 Channel **6**
 Frequency **85 MHz**
 Antenna Type **CBRA-C4-3/10M-1**

Face B

RMS Directivity at Main Lobe **1.1 (0.41 dB)**
 RMS Directivity at Horizontal **1.1 (0.41 dB)**
Calculated

Beam Tilt **0.00 deg**
 Pattern Number **01C033000**

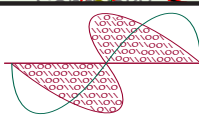


Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.970	10.0	0.970	30.0	0.750	50.0	0.413	70.0	0.117
-9.0	0.976	11.0	0.964	31.0	0.735	51.0	0.396	71.0	0.106
-8.0	0.981	12.0	0.957	32.0	0.719	52.0	0.379	72.0	0.095
-7.0	0.985	13.0	0.949	33.0	0.703	53.0	0.362	73.0	0.085
-6.0	0.989	14.0	0.941	34.0	0.687	54.0	0.345	74.0	0.076
-5.0	0.992	15.0	0.933	35.0	0.671	55.0	0.329	75.0	0.067
-4.0	0.995	16.0	0.924	36.0	0.655	56.0	0.313	76.0	0.059
-3.0	0.997	17.0	0.915	37.0	0.638	57.0	0.297	77.0	0.051
-2.0	0.999	18.0	0.905	38.0	0.621	58.0	0.281	78.0	0.043
-1.0	1.000	19.0	0.894	39.0	0.604	59.0	0.265	79.0	0.036
0.0	1.000	20.0	0.883	40.0	0.587	60.0	0.250	80.0	0.030
1.0	1.000	21.0	0.872	41.0	0.570	61.0	0.235	81.0	0.024
2.0	0.999	22.0	0.860	42.0	0.552	62.0	0.220	82.0	0.019
3.0	0.997	23.0	0.847	43.0	0.535	63.0	0.206	83.0	0.015
4.0	0.995	24.0	0.835	44.0	0.517	64.0	0.192	84.0	0.011
5.0	0.992	25.0	0.821	45.0	0.500	65.0	0.179	85.0	0.008
6.0	0.989	26.0	0.808	46.0	0.483	66.0	0.165	86.0	0.005
7.0	0.985	27.0	0.794	47.0	0.465	67.0	0.153	87.0	0.003
8.0	0.981	28.0	0.780	48.0	0.448	68.0	0.140	88.0	0.001
9.0	0.976	29.0	0.765	49.0	0.430	69.0	0.128	89.0	0.000
								90.0	0.000

Figure 2A
Antenna Elevation Pattern
East Face (B)
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

prepared for
Ohio University

August, 2017



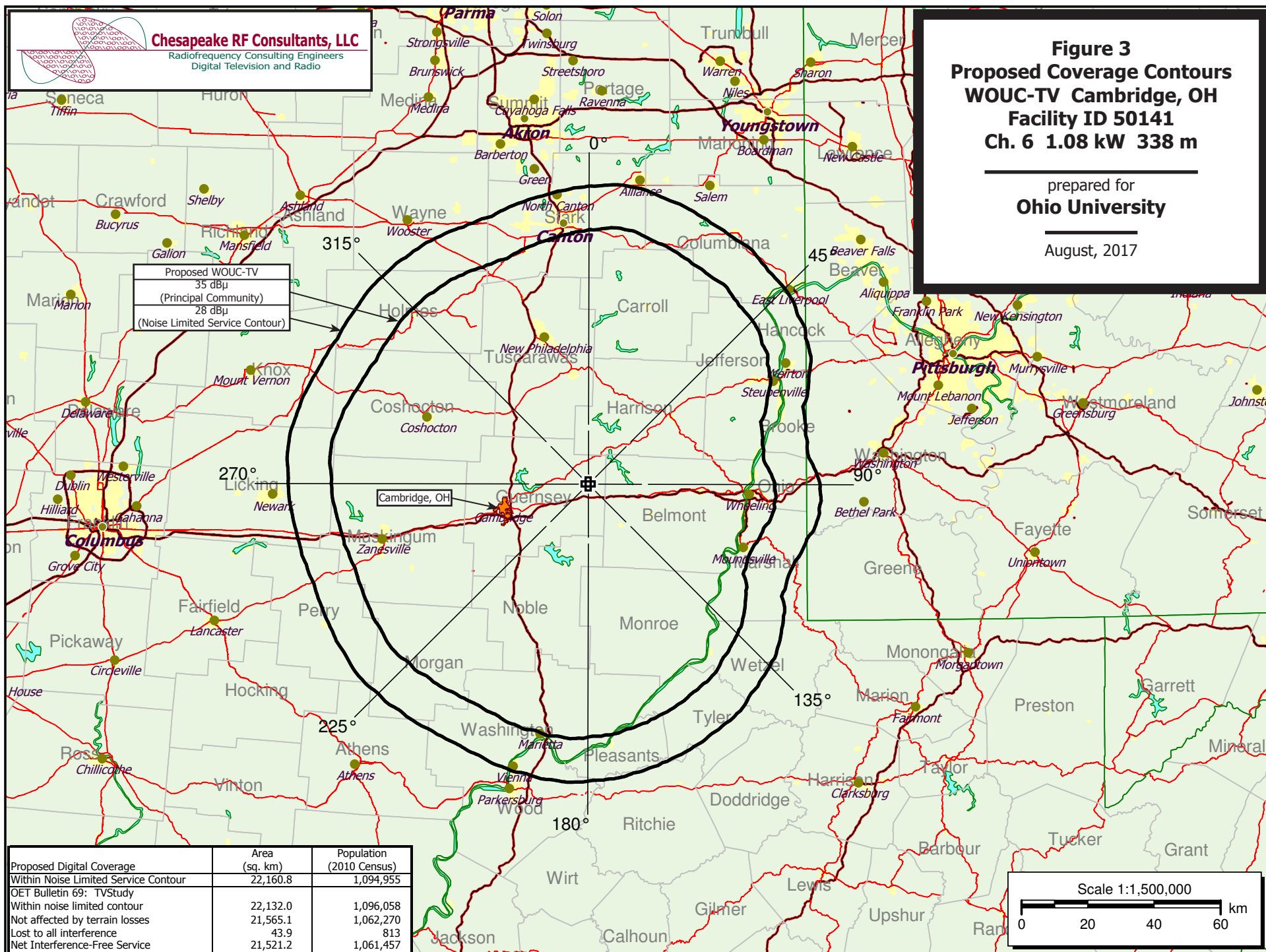
Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 3
Proposed Coverage Contours
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

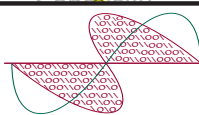
prepared for
Ohio University

August, 2017

Proposed WOUC-TV
35 dBu
(Principal Community)
28 dBu
(Noise Limited Service Contour)



Proposed Digital Coverage	Area (sq. km)	Population (2010 Census)
Within Noise Limited Service Contour	22,160.8	1,094,955
OET Bulletin 69: TVStudy		
Within noise limited contour	22,132.0	1,096,058
Not affected by terrain losses	21,565.1	1,062,270
Lost to all interference	43.9	813
Net Interference-Free Service	21,521.2	1,061,457



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Digital Television and Radio

Figure 4
Proposed Contour Expansion
WOUC-TV Cambridge, OH
Facility ID 50141
Ch. 6 1.08 kW 338 m

prepared for
Ohio University

August, 2017

WOUC-TV Reassignment
1.72 kW 385 m HAAT
28 dBu Contour
(Red - Solid)
28 dBu Distance plus 1%
(Red - Dashed)

Proposed WOUC-TV
28 dBu Contour
(Blue - Solid)

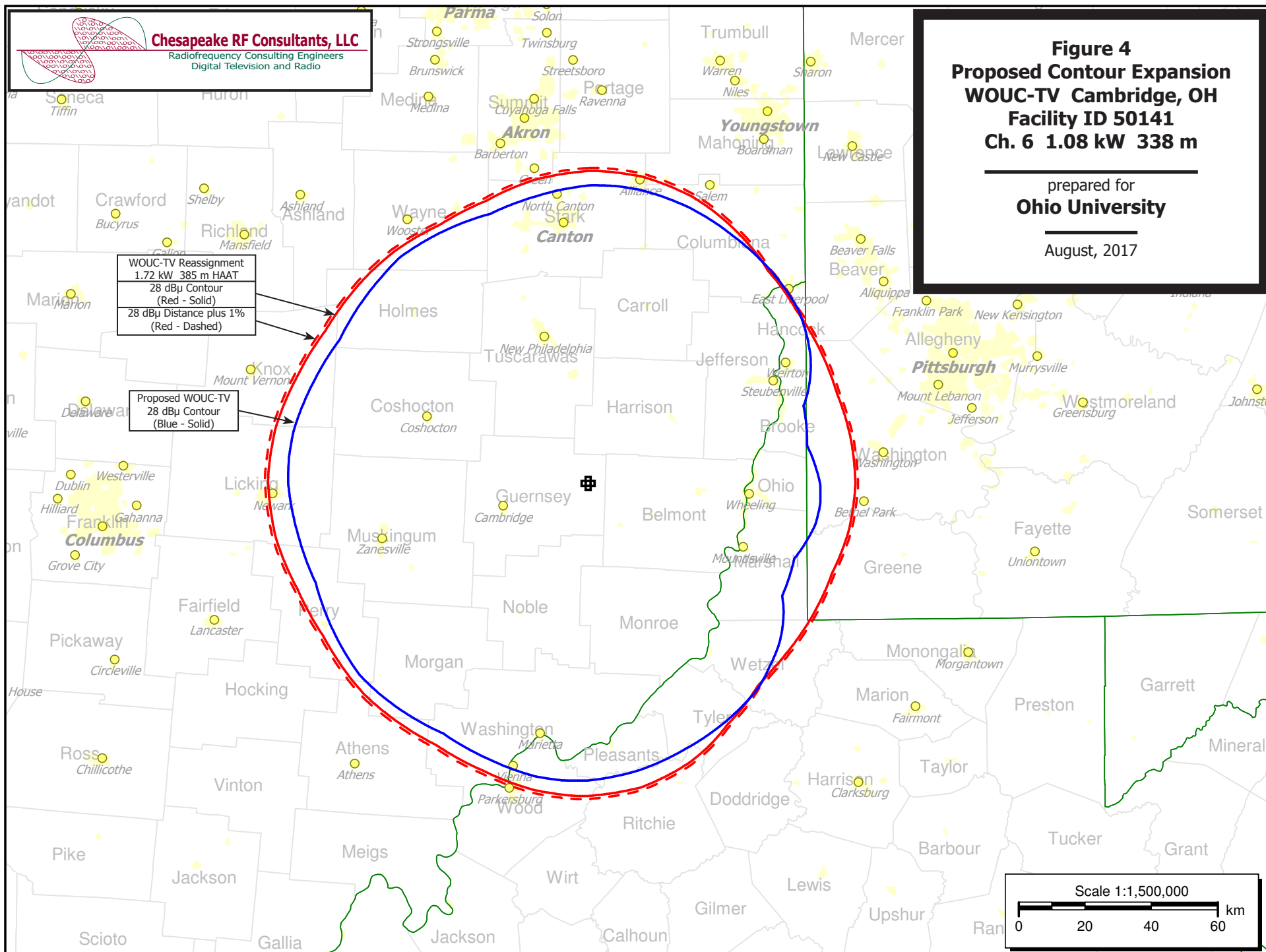
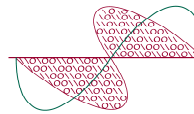


Table 1 WOUC-TV OET Bulletin 69 Interference Study (page 1 of 3)



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Digital Television and Radio

tvstudy v2.2.3 (DAezul)
Database: localhost, Study: WOUC-TV APP at 1.08 kW amend, Model: Longley-Rice
Start: 2017.08.22 11:54:33

Study created: 2017.08.22 11:54:13

Study build station data: LMS TV 2017-08-22 LMSTV

Proposal: WOUC-TV D6 DT APP CAMBRIDGE, OH
File number: WOUC-TV APP at 1.08 kW
Facility ID: 50141
Station data: User record
Record ID: 963
Country: U.S.
Zone: I

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WDTV	D5	DT	LIC	WESTON, WV	BLCDT20090612AJX	119.5 km
WKBS-TV	D6	DT	CP	ALTOONA, PA	BLANK0000026455	247.0
WKBS-TV	D6	DT	BL	ALTOONA, PA	DTVBL13929	247.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D6
Latitude: 40 5 32.00 N (NAD83)
Longitude: 81 17 18.00 W
Height AMSL: 655.2 m
HAAT: 337.8 m
Peak ERP: 1.08 kW
Antenna: DIE-CBRA-C4-3/10M-1 (ID 1001439) 0.0 deg
Elev Pattn: Generic
Elec Tilt: 0.75

28.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1.05 kW	346.4 m	89.6 km
45.0	0.491	340.9	83.4
90.0	0.112	321.5	69.6
135.0	0.327	296.7	77.2
180.0	1.06	337.5	89.3
225.0	0.900	362.4	89.1
270.0	1.05	360.5	90.2
315.0	0.900	336.4	88.0

Proposal service area is within baseline plus 1.0%

**Proposal service area population is less than 95.0% of baseline

**Proposal is within coordination distance of Canadian border

Distance to Canadian border: 199.2 km

Distance to Mexican border: 2134.6 km

Conditions at FCC monitoring station: Laurel MD

Bearing: 103.6 degrees Distance: 396.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 278.0 degrees Distance: 2028.3 km

Study cell size: 2.00 km

Profile point spacing: 1.00 km

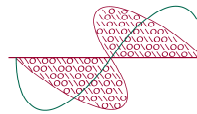
Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

Interference to BLCDT20090612AJX LIC, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WDTV	D5	DT	LIC	WESTON, WV	BLCDT20090612AJX	
Undesireds:	WOUC-TV	D6	DT	BL	CAMBRIDGE, OH	DTVBL50141	119.5 km
	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	119.5
	WMDE	D5	DT	LIC	DOVER, DE	BLANK0000001038	368.5
	WNYB	D5	DT	CP	JAMESTOWN, NY	BLANK0000028124	356.3

Table 1 WOUC-TV OET Bulletin 69 Interference Study
(page 2 of 3)



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WCYB-TV	D5	DT	LIC	BRISTOL, VA		BLCDT20100629AUD	352.7		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
32689.9	962,532	30521.7	850,394	30269.1	845,768	30293.3	848,146	-0.08	-0.28
Undesired		Total IX		Unique IX, before		Unique IX, after			
WOUC-TV D6 DT BL		84.7	2,982	84.7	2,982				
WOUC-TV D6 DT APP		60.6	604			60.6	604		
WMDE D5 DT LIC		67.6	446	67.6	446	67.6	446		
WCYB-TV D5 DT LIC		100.3	1,198	100.3	1,198	100.3	1,198		

Interference to BLANK0000026455 CP, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	WKBS-TV	D6	DT	CP	ALTOONA, PA	BLANK0000026455			
Undesireds:	WOUC-TV	D6	DT	BL	CAMBRIDGE, OH	DTVBL50141	247.0 km		
	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	247.0		
	WPVI-TV	D6	DT	LIC	PHILADELPHIA, PA	BLCDT20111019ACJ	277.3		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
20928.7	827,143	19140.2	761,418	18826.9	758,197	18843.0	758,363	-0.09	-0.02
Undesired		Total IX		Unique IX, before		Unique IX, after			
WOUC-TV D6 DT BL		20.1	204	20.1	204				
WOUC-TV D6 DT APP		4.0	38			4.0	38		
WPVI-TV D6 DT LIC		293.2	3,017	293.2	3,017	293.2	3,017		

Interference to BLANK0000026455 CP, scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	WKBS-TV	D6	DT	CP	ALTOONA, PA	BLANK0000026455			
Undesireds:	WOUC-TV	D6	DT	BL	CAMBRIDGE, OH	DTVBL50141	247.0 km		
	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	247.0		
	WPVI-TV	D6	DT	APP	PHILADELPHIA, PA	BPCDT20120604AEC	277.3		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
20928.7	827,143	19140.2	761,418	18658.2	754,631	18674.3	754,797	-0.09	-0.02
Undesired		Total IX		Unique IX, before		Unique IX, after			
WOUC-TV D6 DT BL		20.1	204	20.1	204				
WOUC-TV D6 DT APP		4.0	38			4.0	38		
WPVI-TV D6 DT APP		461.9	6,583	461.9	6,583	461.9	6,583		

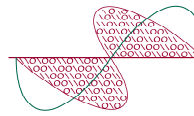
Interference to DTVBL13929 BL, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	WKBS-TV	D6	DT	BL	ALTOONA, PA	DTVBL13929			
Undesireds:	WOUC-TV	D6	DT	BL	CAMBRIDGE, OH	DTVBL50141	247.0 km		
	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	247.0		
	WPVI-TV	D6	DT	LIC	PHILADELPHIA, PA	BLCDT20111019ACJ	277.3		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
21029.2	831,001	19236.7	765,035	18927.4	761,721	18943.5	761,887	-0.09	-0.02
Undesired		Total IX		Unique IX, before		Unique IX, after			
WOUC-TV D6 DT BL		24.1	317	24.1	317				
WOUC-TV D6 DT APP		8.0	151			8.0	151		
WPVI-TV D6 DT LIC		285.2	2,997	285.2	2,997	285.2	2,997		

Interference to DTVBL13929 BL, scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	WKBS-TV	D6	DT	BL	ALTOONA, PA	DTVBL13929			
Undesireds:	WOUC-TV	D6	DT	BL	CAMBRIDGE, OH	DTVBL50141	247.0 km		
	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	247.0		
	WPVI-TV	D6	DT	APP	PHILADELPHIA, PA	BPCDT20120604AEC	277.3		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
21029.2	831,001	19236.7	765,035	18758.7	758,031	18774.8	758,197	-0.09	-0.02
Undesired		Total IX		Unique IX, before		Unique IX, after			
WOUC-TV D6 DT BL		24.1	317	24.1	317				
WOUC-TV D6 DT APP		8.0	151			8.0	151		
WPVI-TV D6 DT APP		453.9	6,687	453.9	6,687	453.9	6,687		

Table 1 WOUC-TV OET Bulletin 69 Interference Study
(page 3 of 3)



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Digital Television and Radio

Interference to proposal, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	
Undesireds:	WDTV	D5	DT	LIC	WESTON, WV	BLCDT20090612AJX	119.5 km
	WKBS-TV	D6	DT	CP	ALTOONA, PA	BLANK0000026455	247.0
	Service area			Terrain-limited		IX-free	Percent IX
22132.0	1,096,058	21565.1		1,062,270	21521.2	1,061,457	0.20 0.08
Undesired				Total IX		Unique IX	Prcnt Unique IX
WDTV D5 DT LIC		23.8		257	19.8	244	0.09 0.02
WKBS-TV D6 DT CP		24.1		569	20.1	556	0.09 0.05

Interference to proposal, scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WOUC-TV	D6	DT	APP	CAMBRIDGE, OH	WOUC-TV APP at 1.08 kW	
Undesireds:	WDTV	D5	DT	LIC	WESTON, WV	BLCDT20090612AJX	119.5 km
	WKBS-TV	D6	DT	BL	ALTOONA, PA	DTVBL13929	247.0
	Service area			Terrain-limited		IX-free	Percent IX
22132.0	1,096,058	21565.1		1,062,270	21517.2	1,060,753	0.22 0.14
Undesired				Total IX		Unique IX	Prcnt Unique IX
WDTV D5 DT LIC		23.8		257	19.8	244	0.09 0.02
WKBS-TV D6 DT BL		28.1		1,273	24.1	1,260	0.11 0.12

Channel and Facility Information

Section	Question	Response
Proposed Community of License	Facility ID	50141
	State	Ohio
	City	CAMBRIDGE
	DTV Channel	6
Facility Type	Facility Type	Noncommercial Educational
	Station Type	Main
Zone	Zone	1

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1008520
Coordinates (NAD83)	Latitude	40° 05' 32.0" N+
	Longitude	081° 17' 18.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	363.9 meters
	Support Structure Height	356.7 meters
	Ground Elevation (AMSL)	341.3 meters
Antenna Data	Height of Radiation Center Above Ground Level	313.9 meters
	Height of Radiation Center Above Average Terrain	337.8 meters
	Height of Radiation Center Above Mean Sea Level	655.2 meters
	Effective Radiated Power	1.08 kW

Antenna
Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	No
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	DIE
	Model	CBRA-C4-3/10M-1
	Rotation	0 degrees
	Electrical Beam Tilt	0.75
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
DTV and DTS: Elevation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	

Directional Antenna Relative Field Values (Pre-rotated Pattern)

Degree	V _A (Authorized Value)	Degree	V _A (Authorized Value)	Degree	V _A (Authorized Value)	Degree	V _A (Authorized Value)
0	0.987	90	0.322	180	0.990	270	0.987
10	0.990	100	0.322	190	0.987	280	0.987
20	0.915	110	0.268	200	0.888	290	0.888
30	0.806	120	0.297	210	0.810	300	0.810
40	0.720	130	0.472	220	0.880	310	0.880
50	0.629	140	0.629	230	0.946	320	0.946
60	0.472	150	0.720	240	0.880	330	0.880
70	0.297	160	0.806	250	0.810	340	0.810
80	0.268	170	0.915	260	0.888	350	0.888

Additional Azimuths

Degree	V _A
95	0.330
5	1.000
275	1.000
185	1.000

Construction
Permit
Certifications

Section	Question	Response
Post-Incentive Auction Expedited Processing	It will operate on the DTV channel for this station as established in the post-incentive auction channel reassignment public notice.	Yes
	It will operate post-incentive auction facilities that do not expand the noise-limited service contour in any direction beyond that established by the post-incentive auction channel reassignment public notice.	No
	It will operate post-incentive auction facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the post-incentive auction channel reassignment public notice.	No
	The antenna structure to be used by this facility has been registered by the Commission and will not require re-registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely affect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	Yes
Environmental Effect	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See Section 1.1306 of 47 C.F.R.)	No
Broadcast Facility	The proposed facility complies with the applicable engineering standards and assignment requirements of 47 C. F.R. Sections 73.616, 73.622(i), 73.623(e), 73.625, 73.1030, and 73.1125.	Yes