

## **ENGINEERING EXHIBIT**

### **Digital Television Station Application for Minor Modification of Construction Permit**

prepared for

**Gray Television Licensee, LLC**

KAZF(DT) Flagstaff, AZ

Facility ID 776273

Ch. 32 100 kW 433 m

*Gray Television Licensee, LLC* (“Gray”) is the permittee of digital television station KAZF, Channel 32, Facility ID 776273, Flagstaff AZ (file# 0000195680). KAZF is an unbuilt new full power television station which arose from FCC Auction 112. KAZF is authorized to operate with 100 kW effective radiated power (“ERP”) with a directional antenna at 444 meters height above average terrain (“HAAT”). It has been determined that other appurtenances on the tower obstruct the authorized antenna height. *Gray* herein seeks a modification of the CP to specify a reduction in antenna height and to specify a slightly different directional antenna model.

As with the current CP, the proposed facility will employ a new antenna to be side-mounted on the tower structure associated with FCC Antenna Structure Registration number 1007647. The proposed site is atop Mormon Mountain, overlooking Flagstaff. No increase to the overall structure height will result.

The proposed antenna center of radiation height above ground level (“AGL”) is 25.6 meters, an 11.0 meter reduction from 36.6 meters AGL as currently authorized. The corresponding antenna HAAT is 433.1 meters.

The proposed antenna is an elliptically polarized directional Dielectric model TFU-16DSB-VP-M-R (30 percent vertical polarization). The maximum horizontally polarized ERP is 100 kW and the maximum vertically polarized ERP is 30 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 antenna's elevation pattern is provided in Figures 2.

Figure 3 supplies a map that demonstrates compliance with §73.625(a)(1) regarding coverage of the entire principal community.

Interference study per FCC OET Bulletin 69<sup>1</sup> shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby full service and Class A television stations as required by §73.616. The interference study output report is provided as Table 1.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

*Gray* will participate in an RF electromagnetic field exposure safety program, along with other broadcasters and FCC licensees that utilize the Mormon Mountain site area. Appropriate exposure abatement and access control procedures will be established and followed, in order to comply with the FCC's exposure limits. *Gray* shall conduct post-construction RF exposure measurements to evaluate the level of RF exposure resulting from the proposed KAZF facility. As necessary, based on these results and considering all emitters, appropriate exposure abatement procedures will be established and followed in order to comply with the FCC's exposure limits. Such abatement procedures may involve the restriction of access to certain areas and/or facility modifications to reduce RF levels.

Considering the abatement program and access control, the general public and workers 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, authorized personnel will be trained and/or supervised as necessary for access to any "controlled" areas. *Gray* will coordinate exposure procedures with all pertinent stations and will reduce power or cease

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<sup>1</sup>FCC 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.

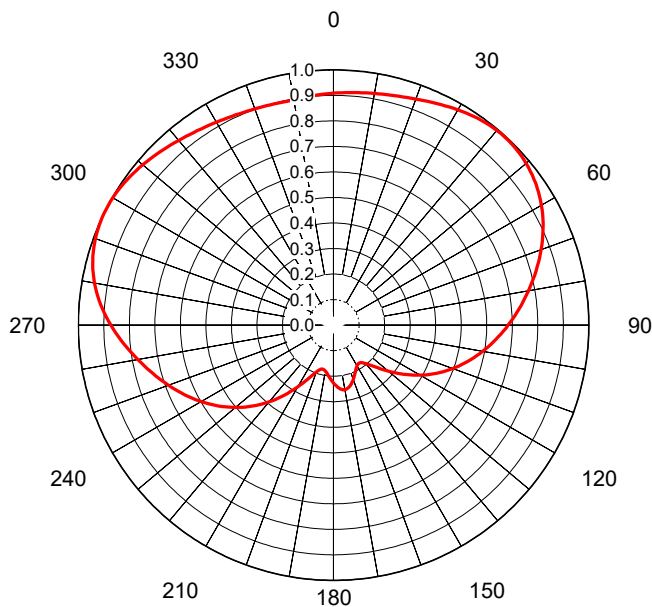
operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

*List of Attachments*

Figure 1, 1A	Antenna Azimuthal Pattern
Figure 2	Antenna Elevation Pattern
Figure 3	Proposed Coverage Contours
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections of FCC Form at Time of Upload

**Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.	June 9, 2023	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



## AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-71931**  
Date **26-Jul-22**  
Call Letters  
Channel **32**  
Frequency **581 MHz**  
Antenna Type **TFU- 16DSB-VP-M-R**  
Gain **1.88 (2.73dB)**  
Calculated

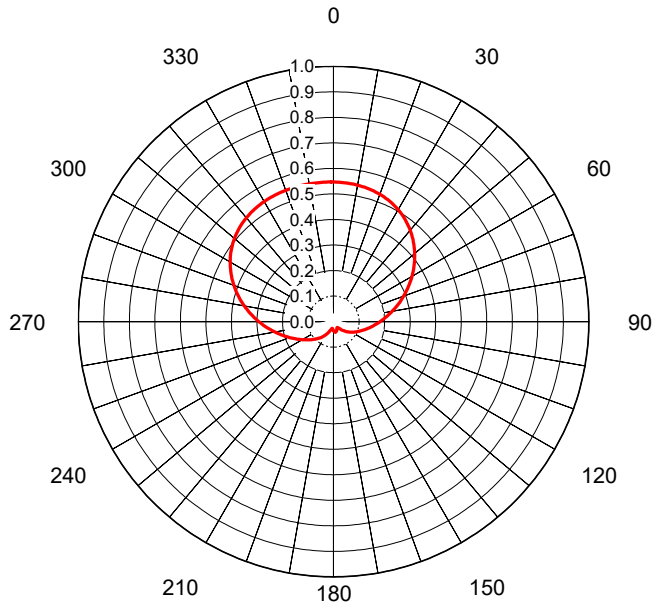
Pattern Number **TLP-M-32 Hpol**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.908	36	0.990	72	0.848	108	0.517	144	0.182	180	0.227	216	0.346	252	0.706	288	0.987
1	0.910	37	0.992	73	0.839	109	0.507	145	0.180	181	0.222	217	0.357	253	0.715	289	0.990
2	0.911	38	0.993	74	0.830	110	0.497	146	0.179	182	0.217	218	0.369	254	0.724	290	0.993
3	0.912	39	0.994	75	0.821	111	0.487	147	0.179	183	0.212	219	0.381	255	0.733	291	0.995
4	0.913	40	0.995	76	0.812	112	0.477	148	0.180	184	0.207	220	0.393	256	0.742	292	0.996
5	0.914	41	0.996	77	0.803	113	0.467	149	0.182	185	0.202	221	0.404	257	0.751	293	0.998
6	0.916	42	0.996	78	0.794	114	0.457	150	0.184	186	0.198	222	0.415	258	0.760	294	0.999
7	0.917	43	0.996	79	0.784	115	0.446	151	0.187	187	0.194	223	0.427	259	0.769	295	1.000
8	0.918	44	0.996	80	0.775	116	0.436	152	0.190	188	0.190	224	0.438	260	0.778	296	1.000
9	0.920	45	0.995	81	0.766	117	0.425	153	0.194	189	0.186	225	0.449	261	0.788	297	1.000
10	0.921	46	0.993	82	0.757	118	0.414	154	0.198	190	0.183	226	0.460	262	0.797	298	1.000
11	0.923	47	0.992	83	0.748	119	0.403	155	0.202	191	0.181	227	0.470	263	0.807	299	0.999
12	0.925	48	0.990	84	0.739	120	0.392	156	0.207	192	0.179	228	0.481	264	0.816	300	0.998
13	0.926	49	0.988	85	0.730	121	0.381	157	0.211	193	0.178	229	0.491	265	0.826	301	0.997
14	0.928	50	0.985	86	0.720	122	0.370	158	0.216	194	0.178	230	0.502	266	0.835	302	0.996
15	0.930	51	0.982	87	0.711	123	0.358	159	0.221	195	0.178	231	0.512	267	0.845	303	0.994
16	0.932	52	0.979	88	0.702	124	0.347	160	0.226	196	0.180	232	0.522	268	0.854	304	0.992
17	0.935	53	0.975	89	0.693	125	0.335	161	0.231	197	0.182	233	0.532	269	0.863	305	0.990
18	0.937	54	0.971	90	0.684	126	0.324	162	0.235	198	0.185	234	0.542	270	0.873	306	0.987
19	0.940	55	0.967	91	0.675	127	0.313	163	0.240	199	0.189	235	0.552	271	0.882	307	0.985
20	0.942	56	0.962	92	0.666	128	0.302	164	0.244	200	0.194	236	0.561	272	0.890	308	0.982
21	0.945	57	0.957	93	0.657	129	0.291	165	0.247	201	0.200	237	0.571	273	0.899	309	0.979
22	0.948	58	0.952	94	0.648	130	0.280	166	0.250	202	0.206	238	0.580	274	0.907	310	0.976
23	0.951	59	0.946	95	0.639	131	0.270	167	0.253	203	0.214	239	0.590	275	0.916	311	0.973
24	0.954	60	0.940	96	0.630	132	0.260	168	0.255	204	0.221	240	0.599	276	0.923	312	0.970
25	0.958	61	0.934	97	0.620	133	0.250	169	0.256	205	0.229	241	0.608	277	0.931	313	0.967
26	0.961	62	0.927	98	0.611	134	0.241	170	0.257	206	0.238	242	0.617	278	0.938	314	0.964
27	0.964	63	0.920	99	0.602	135	0.232	171	0.256	207	0.248	243	0.626	279	0.945	315	0.960
28	0.967	64	0.913	100	0.593	136	0.224	172	0.255	208	0.257	244	0.635	280	0.951	316	0.957
29	0.971	65	0.906	101	0.583	137	0.216	173	0.253	209	0.267	245	0.644	281	0.957	317	0.954
30	0.974	66	0.898	102	0.574	138	0.209	174	0.251	210	0.278	246	0.653	282	0.963	318	0.951
31	0.977	67	0.890	103	0.565	139	0.203	175	0.248	211	0.289	247	0.662	283	0.968	319	0.947
32	0.980	68	0.882	104	0.555	140	0.197	176	0.245	212	0.300	248	0.671	284	0.972	320	0.944
33	0.983	69	0.874	105	0.546	141	0.192	177	0.241	213	0.311	249	0.680	285	0.977	321	0.941
34	0.985	70	0.865	106	0.536	142	0.188	178	0.236	214	0.322	250	0.688	286	0.981	322	0.938
35	0.988	71	0.857	107	0.527	143	0.184	179	0.232	215	0.334	251	0.697	287	0.984	323	0.935

**Figure 1**  
**Antenna Azimuthal Pattern**  
**Horizontal Polarization**  
**KAZF(DT) Flagstaff, AZ**  
**Facility ID 776273**  
**Ch. 32 100 kW 433 m**

prepared for  
**Gray Television Licensee, LLC**

June, 2023



## AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-71931**  
Date **26-Jul-22**  
Call Letters  
Channel **32**  
Frequency **581 MHz**  
Antenna Type **TFU- 16DSB-VP-M-R**  
Gain **2.67 (4.27dB)**  
Calculated

Pattern Number **TLP-M-32 Vpol**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.547	36	0.484	72	0.280	108	0.115	144	0.030	180	0.036	216	0.073	252	0.192	288	0.404
1	0.547	37	0.480	73	0.274	109	0.112	145	0.028	181	0.035	217	0.076	253	0.197	289	0.410
2	0.546	38	0.476	74	0.268	110	0.109	146	0.028	182	0.034	218	0.078	254	0.202	290	0.416
3	0.546	39	0.472	75	0.262	111	0.106	147	0.027	183	0.033	219	0.081	255	0.207	291	0.421
4	0.546	40	0.467	76	0.256	112	0.104	148	0.027	184	0.032	220	0.083	256	0.212	292	0.427
5	0.545	41	0.462	77	0.250	113	0.101	149	0.027	185	0.031	221	0.086	257	0.217	293	0.432
6	0.545	42	0.458	78	0.245	114	0.098	150	0.027	186	0.030	222	0.088	258	0.223	294	0.438
7	0.545	43	0.453	79	0.239	115	0.096	151	0.028	187	0.029	223	0.091	259	0.228	295	0.443
8	0.544	44	0.448	80	0.233	116	0.093	152	0.028	188	0.028	224	0.093	260	0.234	296	0.448
9	0.543	45	0.442	81	0.228	117	0.091	153	0.029	189	0.028	225	0.096	261	0.239	297	0.453
10	0.543	46	0.437	82	0.222	118	0.088	154	0.030	190	0.027	226	0.098	262	0.245	298	0.458
11	0.542	47	0.432	83	0.217	119	0.085	155	0.031	191	0.027	227	0.101	263	0.251	299	0.463
12	0.541	48	0.426	84	0.212	120	0.083	156	0.032	192	0.027	228	0.104	264	0.257	300	0.468
13	0.540	49	0.421	85	0.207	121	0.080	157	0.033	193	0.027	229	0.107	265	0.263	301	0.472
14	0.539	50	0.415	86	0.202	122	0.078	158	0.034	194	0.028	230	0.109	266	0.268	302	0.477
15	0.538	51	0.409	87	0.197	123	0.076	159	0.035	195	0.029	231	0.112	267	0.274	303	0.481
16	0.537	52	0.403	88	0.192	124	0.073	160	0.036	196	0.030	232	0.115	268	0.281	304	0.485
17	0.535	53	0.398	89	0.187	125	0.071	161	0.037	197	0.031	233	0.118	269	0.287	305	0.489
18	0.534	54	0.392	90	0.182	126	0.068	162	0.038	198	0.032	234	0.121	270	0.293	306	0.493
19	0.532	55	0.386	91	0.178	127	0.066	163	0.039	199	0.034	235	0.124	271	0.299	307	0.497
20	0.531	56	0.379	92	0.173	128	0.063	164	0.039	200	0.036	236	0.128	272	0.305	308	0.500
21	0.529	57	0.373	93	0.169	129	0.061	165	0.040	201	0.038	237	0.131	273	0.311	309	0.503
22	0.527	58	0.367	94	0.165	130	0.058	166	0.041	202	0.040	238	0.134	274	0.318	310	0.507
23	0.525	59	0.361	95	0.160	131	0.056	167	0.041	203	0.042	239	0.138	275	0.324	311	0.510
24	0.523	60	0.355	96	0.156	132	0.053	168	0.041	204	0.044	240	0.141	276	0.330	312	0.513
25	0.520	61	0.348	97	0.152	133	0.051	169	0.041	205	0.046	241	0.145	277	0.337	313	0.516
26	0.518	62	0.342	98	0.148	134	0.049	170	0.042	206	0.049	242	0.149	278	0.343	314	0.518
27	0.515	63	0.336	99	0.145	135	0.046	171	0.041	207	0.051	243	0.153	279	0.349	315	0.521
28	0.512	64	0.330	100	0.141	136	0.044	172	0.041	208	0.054	244	0.157	280	0.355	316	0.523
29	0.509	65	0.323	101	0.137	137	0.042	173	0.041	209	0.056	245	0.161	281	0.362	317	0.525
30	0.506	66	0.317	102	0.134	138	0.040	174	0.041	210	0.058	246	0.165	282	0.368	318	0.527
31	0.503	67	0.311	103	0.131	139	0.038	175	0.040	211	0.061	247	0.169	283	0.374	319	0.529
32	0.499	68	0.305	104	0.127	140	0.036	176	0.039	212	0.063	248	0.174	284	0.380	320	0.531
33	0.496	69	0.298	105	0.124	141	0.034	177	0.039	213	0.066	249	0.178	285	0.386	321	0.533
34	0.492	70	0.292	106	0.121	142	0.032	178	0.038	214	0.068	250	0.183	286	0.392	322	0.534
35	0.488	71	0.286	107	0.118	143	0.031	179	0.037	215	0.071	251	0.187	287	0.398	323	0.536

**Figure 1A**  
**Antenna Azimuthal Pattern**  
**Vertical Polarization**  
**KAZF(DT) Flagstaff, AZ**  
**Facility ID 776273**  
**Ch. 32 100 kW 433 m**

prepared for  
**Gray Television Licensee, LLC**

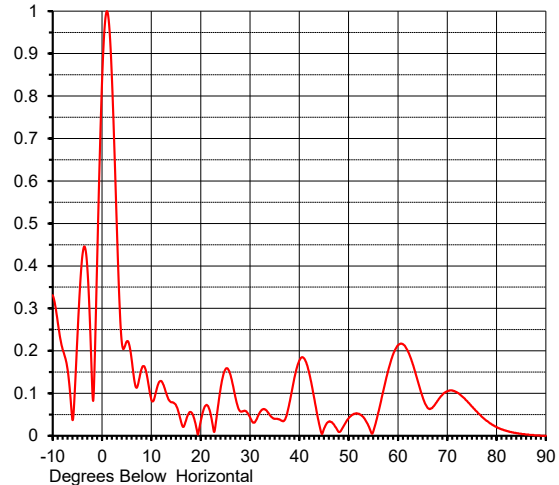
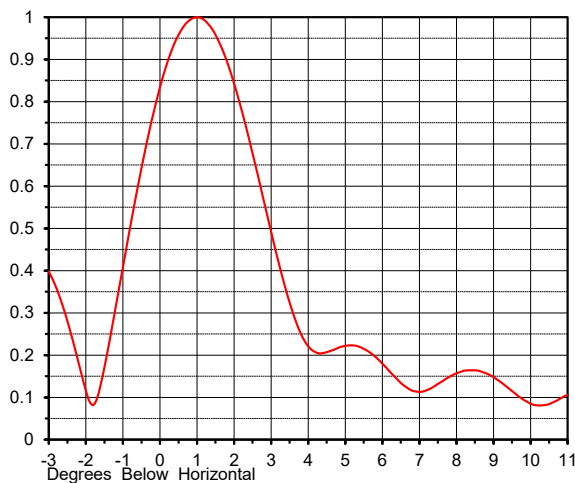
June, 2023

## ELEVATION PATTERN

Proposal No. C-71931  
 Date 26-Jul-22  
 Call Letters  
 Channel 32  
 Frequency 581 MHz  
 Antenna Type TFU- 16DSB-VP-M-R

RMS Directivity at Main Lobe **14.5 ( 11.61 dB )**  
 RMS Directivity at Horizontal **10.1 ( 10.04 dB )**  
 Calculated

Beam Tilt **1.00 deg**  
 Pattern Number **16L145100-32**

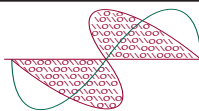


Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.331	10.0	0.085	30.0	0.044	50.0	0.041	70.0	0.105
-9.0	0.269	11.0	0.106	31.0	0.032	51.0	0.051	71.0	0.107
-8.0	0.204	12.0	0.129	32.0	0.055	52.0	0.052	72.0	0.102
-7.0	0.157	13.0	0.101	33.0	0.062	53.0	0.044	73.0	0.093
-6.0	0.037	14.0	0.079	34.0	0.049	54.0	0.024	74.0	0.082
-5.0	0.232	15.0	0.072	35.0	0.040	55.0	0.010	75.0	0.069
-4.0	0.423	16.0	0.034	36.0	0.038	56.0	0.054	76.0	0.057
-3.0	0.398	17.0	0.035	37.0	0.037	57.0	0.104	77.0	0.045
-2.0	0.116	18.0	0.056	38.0	0.077	58.0	0.152	78.0	0.035
-1.0	0.408	19.0	0.026	39.0	0.136	59.0	0.191	79.0	0.027
0.0	0.834	20.0	0.034	40.0	0.177	60.0	0.213	80.0	0.021
1.0	1.000	21.0	0.071	41.0	0.182	61.0	0.216	81.0	0.015
2.0	0.843	22.0	0.052	42.0	0.148	62.0	0.200	82.0	0.012
3.0	0.492	23.0	0.024	43.0	0.090	63.0	0.169	83.0	0.009
4.0	0.221	24.0	0.108	44.0	0.029	64.0	0.130	84.0	0.006
5.0	0.222	25.0	0.156	45.0	0.016	65.0	0.092	85.0	0.005
6.0	0.180	26.0	0.145	46.0	0.033	66.0	0.066	86.0	0.003
7.0	0.113	27.0	0.093	47.0	0.027	67.0	0.066	87.0	0.002
8.0	0.157	28.0	0.058	48.0	0.009	68.0	0.082	88.0	0.001
9.0	0.148	29.0	0.059	49.0	0.023	69.0	0.096	89.0	0.000
								90.0	0.000

**Figure 2**  
**Antenna Elevation Pattern**  
**KAZF(DT) Flagstaff, AZ**  
**Facility ID 776273**  
**Ch. 32 100 kW 433 m**

prepared for  
**Gray Television Licensee, LLC**

June, 2023

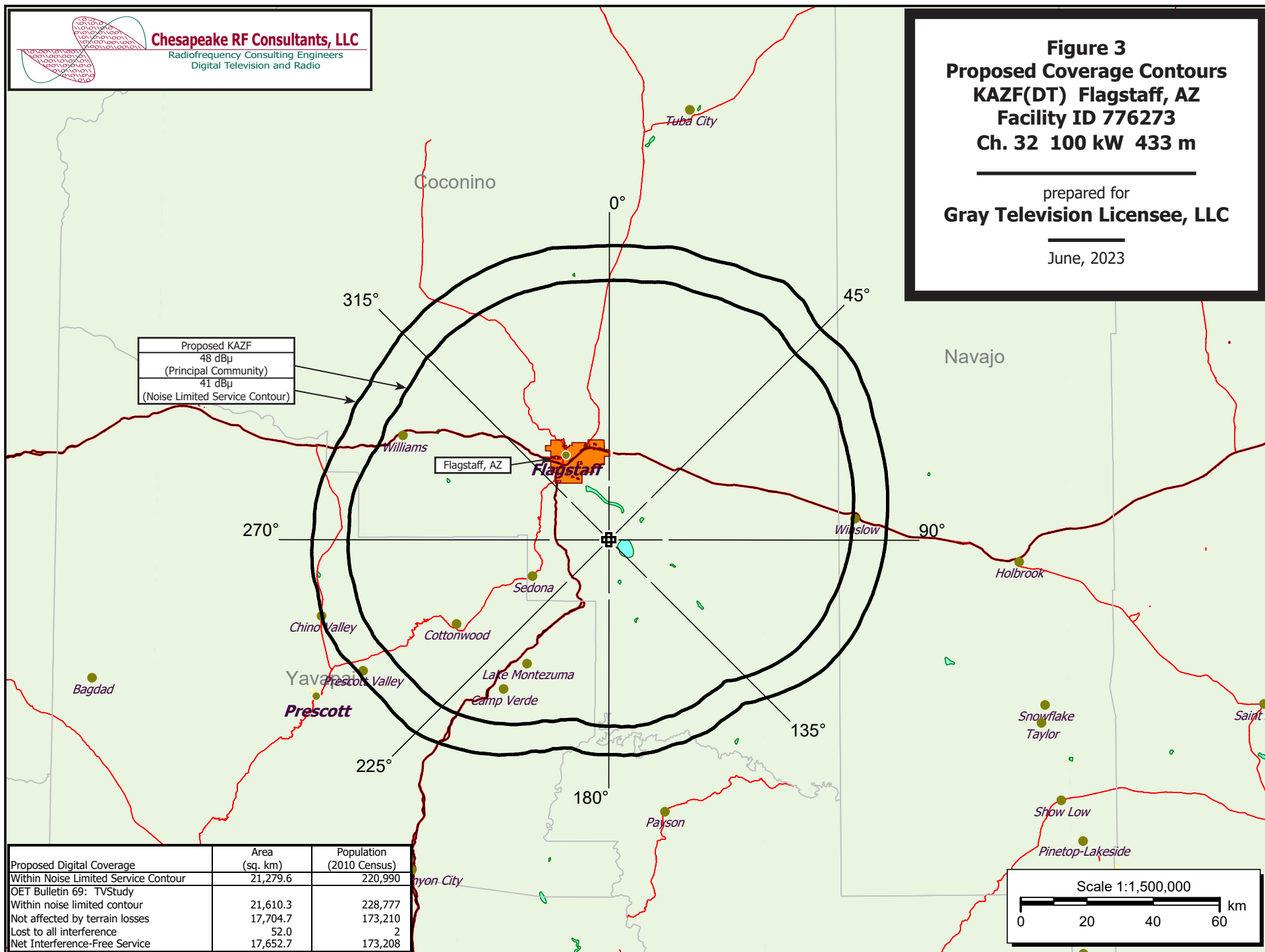


**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

**Figure 3**  
**Proposed Coverage Contours**  
**KAZF(DT) Flagstaff, AZ**  
**Facility ID 776273**  
**Ch. 32 100 kW 433 m**

prepared for  
**Gray Television Licensee, LLC**

June, 2023



**Table 1 KAZF TVStudy Analysis of Proposal**  
(page 1 of 2)



tvstudy v2.2.5 (4uoc83)  
Database: localhost, Study: KAZF 1007647 prop, Model: Longley-Rice  
Start: 2023.06.09 15:11:02

Study created: 2023.06.09 15:11:02

Study build station data: LMS TV 2023-06-09

Proposal: KAZF D32 DT APP FLAGSTAFF, AZ  
File number: KAZF 1007647 prop  
Facility ID: 776273  
Station data: User record  
Record ID: 8  
Country: U.S.  
Zone: II

Search options:  
Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KPPX-TV	D31	DT	LIC	TOLLESON, AZ	BLANK0000035245	188.7 km
Yes	KOLD-TV	D32	DT	LIC	TUCSON, AZ	BLCDT20030911AAI	293.1
Yes	KMCC	D32	DD	LIC	LAUGHLIN, NV	BLANK0000216254	282.8
No	KTVW-DT	D33	DT	LIC	PHOENIX, AZ	BLANK0000186957	188.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D32  
Latitude: 34 58 7.60 N (NAD83)  
Longitude: 111 30 30.60 W  
Height AMSL: 2609.9 m  
HAAT: 433.1 m  
Peak ERP: 100 kW  
Antenna: C-71931 TFU-16DSB-VP-M-R 20220726 0.0 deg  
Elev Pattn: Generic  
Elec Tilt: 1.00

40.5 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	82.4 kW	451.0 m	89.5 km
45.0	98.4	453.0	90.9
90.0	46.8	421.3	84.2
135.0	5.69	381.6	68.0
180.0	5.15	347.3	65.3
225.0	20.0	512.0	83.0
270.0	76.2	473.4	90.3
315.0	92.2	425.4	89.0

Distance to Canadian border: 1559.2 km

Distance to Mexican border: 364.1 km

Conditions at FCC monitoring station: Douglas AZ  
Bearing: 155.4 degrees Distance: 422.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 42.1 degrees Distance: 794.2 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%



**Table 1 KAZF TVStudy Analysis of Proposal**  
(page 2 of 2)

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Interference to BLCDT20030911AAI LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KOLD-TV	D32	DT	LIC	TUCSON, AZ	BLCDT20030911AAI	
Undesireds:	KAZF	D32	DT	BL	FLAGSTAFF, AZ	DTVBL776273	321.2 km
	KAZF	D32	DT	APP	FLAGSTAFF, AZ	KAZF 1007647 prop	293.1
	KPPX-TV	D31	DT	LIC	TOLLESON, AZ	BLANK0000035245	162.0
	KTVW-DT	D33	DT	LIC	PHOENIX, AZ	BLANK0000186957	162.1
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
37049.1	1,216,228	25424.7	887,754	25268.2	887,739	25272.2	-0.02
2.3	8	2.3	8	2.3	8	2.3	0.00
(in Mexico)							
Undesired		Total IX		Unique IX, before		Unique IX, after	
KAZF D32 DT BL		4.0	0	4.0	0		
KAZF D32 DT APP		0.0	0			0.0	0
KPPX-TV D31 DT LIC		152.5	15	60.3	1	60.3	1
KTVW-DT D33 DT LIC		92.2	14	0.0	0	0.0	0

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Interference to BLANK0000216254 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KMCC	D32	DD	LIC	LAUGHLIN, NV	BLANK0000216254	
Undesireds:	KAZF	D32	DT	BL	FLAGSTAFF, AZ	DTVBL776273	263.4 km
	KAZF	D32	DT	APP	FLAGSTAFF, AZ	KAZF 1007647 prop	282.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
39724.5	2,064,588	27086.9	2,010,201	26805.8	2,010,190	26934.5	-0.48
Undesired		Total IX		Unique IX, before		Unique IX, after	
KAZF D32 DT BL		281.1	11	281.1	11		
KAZF D32 DT APP		152.4	11			152.4	11

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Interference to proposal scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KAZF	D32	DT	APP	FLAGSTAFF, AZ	KAZF 1007647 prop	
Undesireds:	KMCC	D32	DD	LIC	LAUGHLIN, NV	BLANK0000216254	282.8 km
Service area		Terrain-limited		IX-free		Percent IX	
21610.3	228,777	17704.7	173,210	17652.7	173,208	0.29	0.00
Undesired		Total IX		Unique IX		Prcnt Unique IX	
KMCC D32 DD LIC		52.1	2	52.1	2	0.29	0.00

Channel and  
Facility  
Information

Section	Question	Response
Facility ID	776273	
State	Arizona	
City	FLAGSTAFF	
DTV Channel	32	
Facility Type	Facility Type	Commercial
	Station Type	Main
Zone	Zone	2

Antenna Location  
Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1007647
Coordinates (NAD83)	Latitude	34° 58' 07.6" N+
	Longitude	111° 30' 30.6" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	88.1 meters
	Support Structure Height	60.9 meters
	Ground Elevation (AMSL)	2584.3 meters
Antenna Data	Height of Radiation Center Above Ground Level	25.6 meters
	Height of Radiation Center Above Average Terrain	433.1 meters
	Height of Radiation Center Above Mean Sea Level	2609.9 meters
	Effective Radiated Power	100 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:	Dielectric
	Model	TFU-16DSB-VP-M-R
	Rotation	0 degrees
	Electrical Beam Tilt	1.0
	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	Value	Degree	Value	Degree	Value	Degree	Value
0	0.908	90	0.684	180	0.227	270	0.873
10	0.921	100	0.593	190	0.183	280	0.951
20	0.942	110	0.497	200	0.194	290	0.993
30	0.974	120	0.392	210	0.278	300	0.998
40	0.995	130	0.280	220	0.393	310	0.976
50	0.985	140	0.197	230	0.502	320	0.944
60	0.940	150	0.184	240	0.599	330	0.918
70	0.865	160	0.226	250	0.688	340	0.901
80	0.775	170	0.257	260	0.778	350	0.895

Additional Azimuths

Degree	V <sub>A</sub>
42	0.996
297	1.000