

Consolidated Technical Statement

prepared November 2023 for

NPG of Idaho, Inc.

KIFI-TV Idaho Falls, Idaho



CAVELL
MERTZ
& Associates, Inc.

a division of



Capitol Airspace Group

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Introduction

NPG of Idaho, Inc. (“NPG”) is the licensee of digital full service television station KIFI-TV, Channel 8, Idaho Falls, ID, Facility ID 66258 (file number 0000192346). NPG has filed a Petition for Rulemaking for a channel substitution from channel 8 to channel 18 in the current Community of License (see MB Docket 23-287; RM-11961), which was recently granted and was published in the Federal Register on November 21, 2023. The instant application is for a KIFI facility on channel 18 on its current structure which is located at NAD 83 coordinates 43° 30’ 04.0” N, 112° 39’ 46.0” W with the FCC ASRN of 1060080.

Nature of the Proposal

The proposed antenna system for the KIFI-TV operation is a directional antenna (Dielectric TFU-24EST-R C170) which will be side mounted at 21.7 meters AGL on the existing tower. The proposed digital facility will operate on Channel 18 using a “Full Service” out of channel emission mask, a maximum effective radiated power of 500 kW, and an antenna height of 444 meters HAAT. The antenna pattern is shown in [Figure 1](#) below. The entire antenna specification sheet can be found in [Appendix I](#).

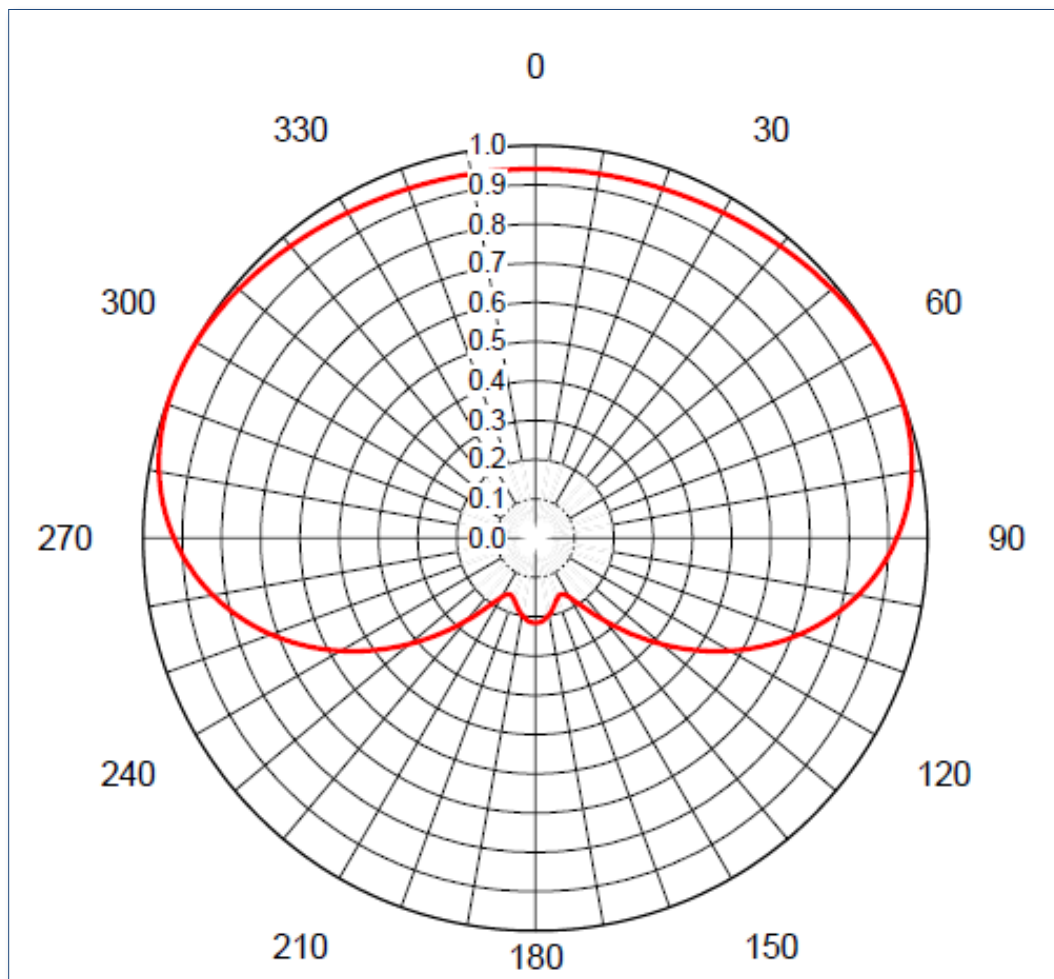


Figure 1 – Dielectric antenna horizontal pattern for TFU-24EST-R C170

It should be noted here that the antenna described in this proposal is different than the one described in the rulemaking that was filed. After RM-11961 was filed, the station was made aware that the intended antenna (Dielectric TFU-25EST/VP-R C170) was too long to fit in the designated aperture on the tower, and that the antenna, as specified, provided too large a windload on the tower for current structural conditions. Upon consultation with the manufacturer, KIFI-TV chose the Dielectric TFU-24EST-R C170 cited in this application. It has the same exact pattern as the antenna previously requested, with the same downtilt. The differences are that it is one bay shorter (24 bays instead of 25 bays), and has no vertical polarization component, so instead of the elliptically polarized antenna that was requested in RM-11961, a horizontally polarized antenna is being requested in the instant application. ERP of 500 kW and HAAT of 444 meters remain the same as in RM-11961.

Coverage of Principal Community

The map in [Figure 2](#) shows that the Principal Community contours F(50,90) 43 dB μ for channel 8 and F(50,90) 48 dB μ for channel 18 completely cover the entirety of the principal community of Idaho Falls, Idaho, for both the licensed facility and the proposed facility. The contours were generated using V-Soft Probe 5 (version 5.41). This proposal is compliant with Rule Section 73.625(c).

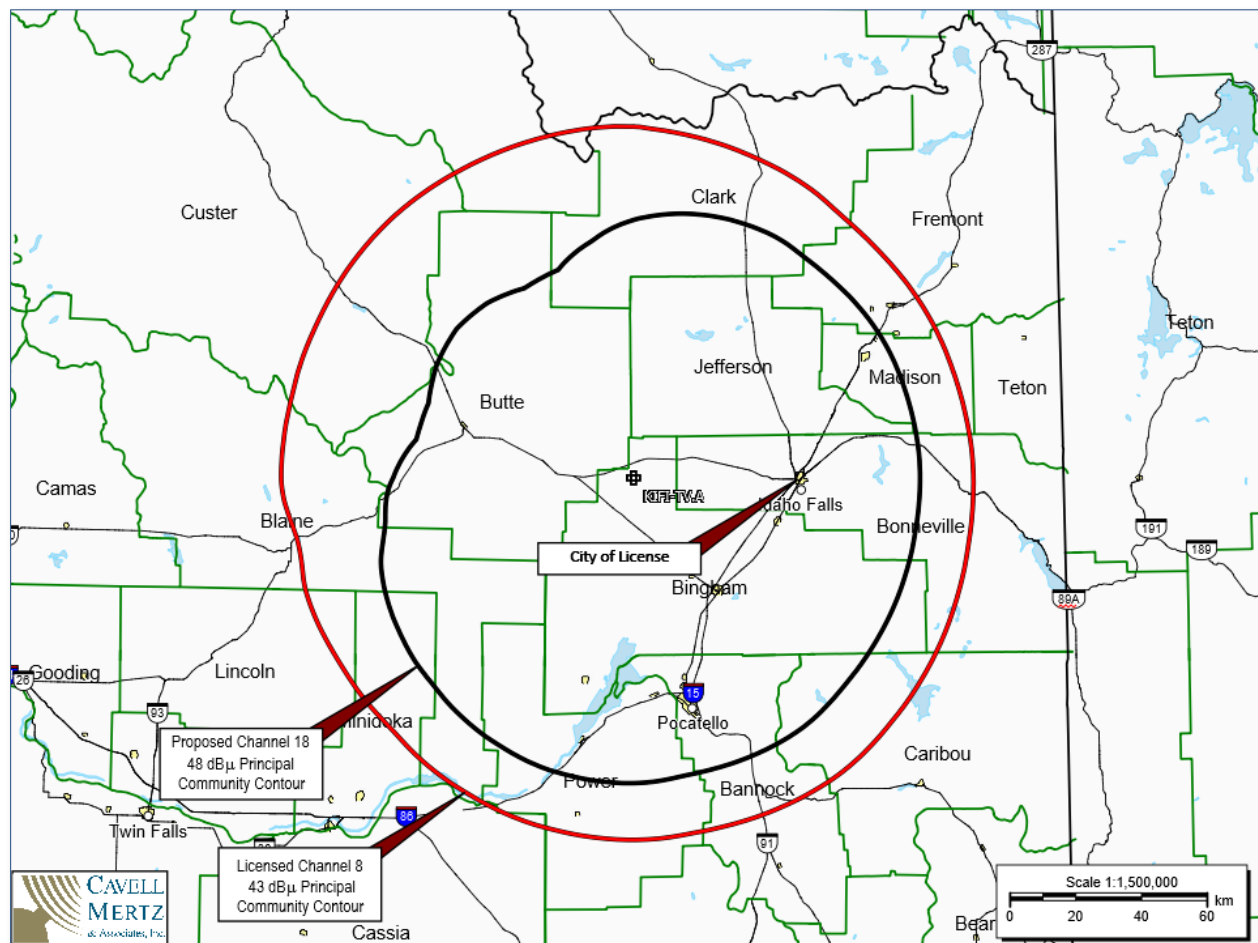


Figure 2 – Community of License Coverage

Interference Analysis

The proposal complies with the Commission's interference protection requirements toward all DTV and Class A stations. A detailed interference study was conducted using the FCC's TV Study program version 2.2.51. The interference study results are provided as **Appendix II** (and provided as a separate attachment in this filing) and show that any new interference does not exceed the Commission's interference limits (0.5 percent to full service and Class A stations). Accordingly, the instant proposal complies with FCC Rules regarding interference protection to DTV, television translator, LPTV and Class A television facilities.

International Coordination

The proposed transmitter site is located more than 611 km from the U.S.-Canadian border. The proposal is also more than 1211 km from the U.S.-Mexican border, which is greater than the required coordination distance specified for full-service television stations. Thus, it is believed that international coordination will not be necessary for the instant proposal.

Other Interference Considerations

The nearest FCC monitoring station is at Ferndale, Washington, at a distance of 971.3 km from the proposed site. This exceeds by a great margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The proposed site is also located outside the areas specified in §73.1030(a)(1) and §73.1030(b). Thus, notification of this proposal to the National Radio Astronomy Observatory at Green Bank, West Virginia, or the Table Mountain Radio Receiving Zone in Boulder County, Colorado is not required. There are no non-directional AM station within 0.8 km or directional AM stations within 3.2 km of the proposed site as described in §1.30002 of the Rules.

Environmental Considerations

This application for minor modification specifies the use of the existing tower at an established transmitter site; no material changes will be required to implement the installation of the KIFI-TV channel 18 antenna at this site. According to the notes contained in FCC Rules Section 1.1306, the use of existing towers and sites is deemed to be an environmentally desirable alternative to the construction of new tower facilities. Accordingly, this proposal may be excluded from the provisions of Section 1.1306 of the FCC's Rules and is not subject to environmental processing.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed operation was evaluated for human exposure to radiofrequency electromagnetic field using the procedures outlined in the Commission's OET Bulletin 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The KIFI-TV Channel 18 antenna center of radiation will be 21.7 meters above ground level. An effective radiated power of 500 kilowatts, horizontally polarized, will be employed utilizing a Dielectric model TFU-24EST-R C170 UHF antenna. Based on the manufacturer's data as shown in **Appendix I**, the graph in [Figure](#)

¹ The TV Study program was configured to perform its calculations using the default cell size of 2.0 km and a terrain profile increment of 0.1 km.

3 is shown below. The “uncontrolled/general population” limit specified in §1.1310 for Channel 18 (center frequency 497 MHz) is 331.3 $\mu\text{W}/\text{cm}^2$.

OET-65’s formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV KIFI-TV facility, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the average power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (10) in OET 65:

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

S = power density in microwatts/ cm^2

ERP = total (average) ERP in Watts

F = relative field factor

D = distance in meters

Using this formula, the antenna’s elevation pattern, and the above assumptions, the proposed facility would contribute a maximum power density of 93.73 $\mu\text{W}/\text{cm}^2$ at two meters above ground at the base of the tower, or 46.87 percent of the general population/uncontrolled MPE limit, and 9.37 percent of the occupational limit.

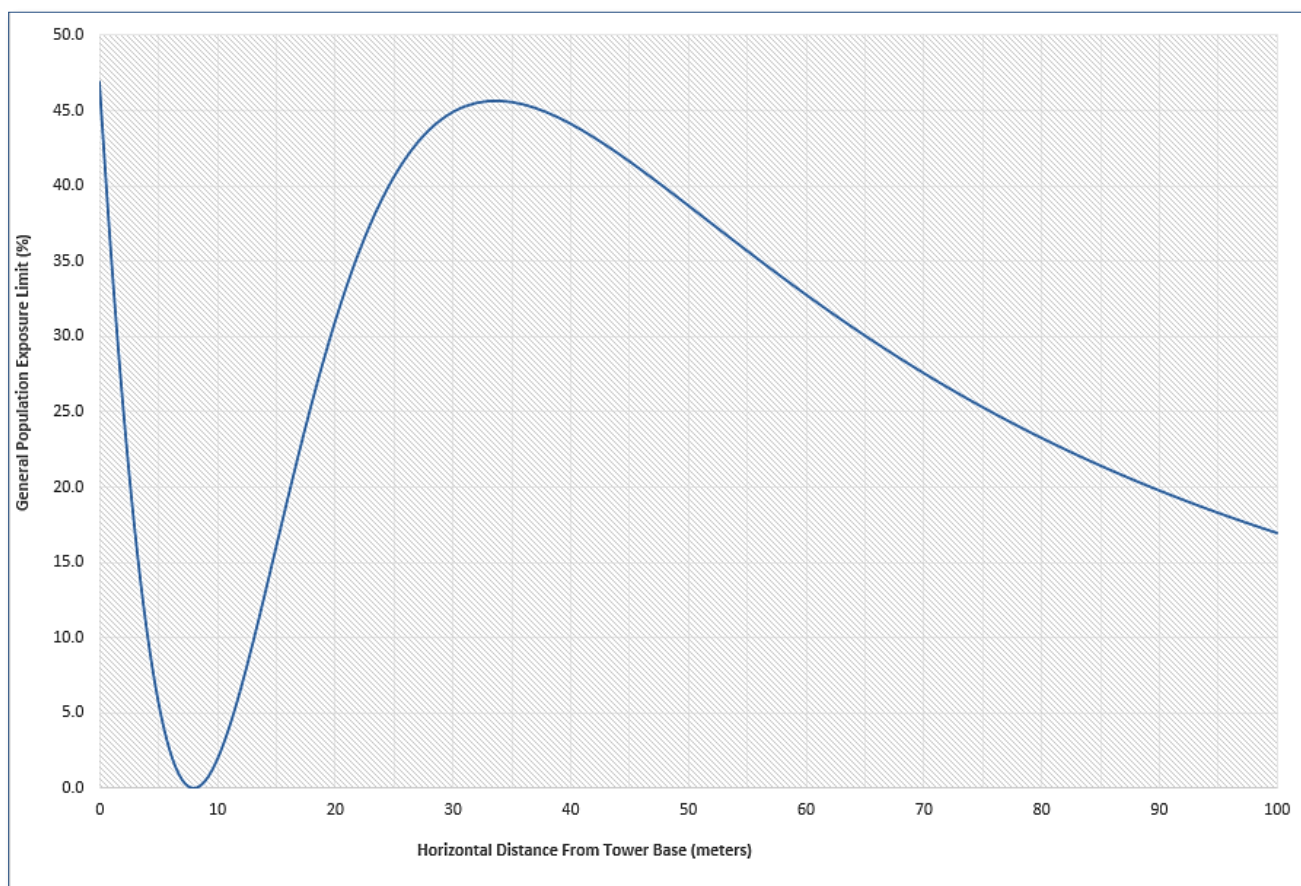


Figure 3 – RF Energy Calculations with Antenna Pattern

The East Butte site at which the KIFI-TV transmitter site is located is one of two peaks at the East Butte location. The KIFI-TV facility is located on the south peak and the location is shared with KISU(TV) and KWFI(FM). There are numerous other FM and TV broadcast facilities located on the northern peak, which are located more than 300 meters from the KIFI-TV facility.

The KIFI-TV transmitter site is part of a volcanic dome and the ground cover in the area is mostly volcanic rock. The location is remote, and the terrain is extremely steep and rugged, which makes it difficult for any access to the transmitter site. The site is in an area controlled by the U.S. Department of Energy. The area is restricted from access by locked gates, and it is marked with RF hazard signage. Multiple RFR Radiation Hazard Warning signs have also been placed at the roadway entrance to the site, in impacted areas around the building and tower base, and in areas where someone might inadvertently hike up to the site (although it would be extremely difficult due to the angle of incline and the extremely loose rock). Access to the site is limited to authorized personnel that are aware of the RF environment. Based on these factors, this site is considered to be a 'controlled environment' for RF hazard evaluation purposes.

Based on the formula above and RFR statements taken from KISU(TV) and KWFI(FM) records, the proposed total RF energy for the site is as follows:

Station	ERP (kW)	Power Density ($\mu\text{W}/\text{cm}^2$)	% of Occupational Limit
KIFI-TV	500	126.54	9.37
KISU(TV)	189	121.25	7.10
KWFI(FM)	100	867.54	86.80

The resulting combined RF exposure will be in excess of maximum occupational exposure at the base of the tower.

Safety of Tower Workers and the General Public

As demonstrated above, members of the general public do not have access to this site and will not be exposed to RF levels in excess of the Commission's guidelines. As also mentioned, the site is behind two sets of locked gates, and multiple warning signs are posted at any possible point where the most intrepid of hikers could conceivably access the site.

With respect to worker safety, a site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower or in areas where high RF levels may be present. Such protective measures will include, but will not be limited to, remote control reduction of power upon advisement of workers approaching the site, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

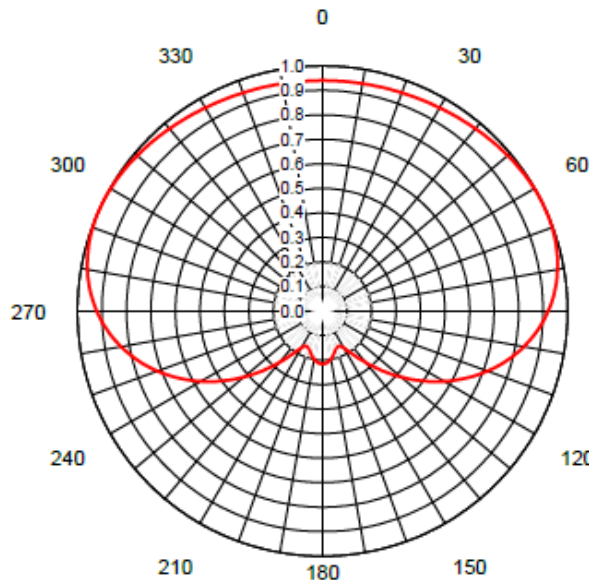
Conclusion

Based on the preceding, it is believed that the instant proposal complies with all Commission Rules and policies.

Appendix I

KIFI-TV Antenna Proposed Information

Dielectric®



AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. C-80018-5
Date 11-Oct-23
Call Letters KIFI
Channel 18
Frequency 497 MHz
Antenna Type TFU-24EST-R C170
Gain 1.67 (2.24dB)
Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.941	36	0.965	72	0.995	108	0.743	144	0.226	180	0.216	216	0.226	252	0.743	288	0.995
1	0.941	37	0.966	73	0.993	109	0.730	145	0.216	181	0.216	217	0.237	253	0.755	289	0.996
2	0.941	38	0.968	74	0.991	110	0.717	146	0.205	182	0.215	218	0.249	254	0.768	290	0.997
3	0.941	39	0.969	75	0.989	111	0.703	147	0.197	183	0.214	219	0.262	255	0.779	291	0.998
4	0.941	40	0.971	76	0.987	112	0.690	148	0.188	184	0.213	220	0.274	256	0.791	292	0.999
5	0.941	41	0.972	77	0.984	113	0.676	149	0.181	185	0.211	221	0.288	257	0.803	293	0.999
6	0.941	42	0.974	78	0.981	114	0.662	150	0.174	186	0.209	222	0.301	258	0.814	294	1.000
7	0.941	43	0.976	79	0.978	115	0.648	151	0.169	187	0.207	223	0.315	259	0.824	295	1.000
8	0.941	44	0.977	80	0.974	116	0.633	152	0.164	188	0.205	224	0.329	260	0.835	296	1.000
9	0.942	45	0.979	81	0.970	117	0.618	153	0.161	189	0.202	225	0.344	261	0.845	297	1.000
10	0.942	46	0.980	82	0.966	118	0.604	154	0.159	190	0.199	226	0.359	262	0.855	298	0.999
11	0.942	47	0.982	83	0.962	119	0.589	155	0.158	191	0.195	227	0.374	263	0.864	299	0.999
12	0.943	48	0.984	84	0.957	120	0.574	156	0.157	192	0.192	228	0.389	264	0.874	300	0.998
13	0.943	49	0.985	85	0.952	121	0.558	157	0.158	193	0.188	229	0.404	265	0.882	301	0.998
14	0.944	50	0.987	86	0.946	122	0.543	158	0.159	194	0.184	230	0.419	266	0.891	302	0.997
15	0.944	51	0.988	87	0.941	123	0.528	159	0.161	195	0.180	231	0.435	267	0.899	303	0.996
16	0.945	52	0.990	88	0.935	124	0.512	160	0.163	196	0.177	232	0.450	268	0.907	304	0.995
17	0.945	53	0.991	89	0.928	125	0.497	161	0.166	197	0.173	233	0.466	269	0.914	305	0.993
18	0.946	54	0.992	90	0.921	126	0.481	162	0.169	198	0.169	234	0.481	270	0.921	306	0.992
19	0.947	55	0.993	91	0.914	127	0.466	163	0.173	199	0.166	235	0.497	271	0.928	307	0.991
20	0.947	56	0.995	92	0.907	128	0.450	164	0.177	200	0.163	236	0.512	272	0.935	308	0.990
21	0.948	57	0.996	93	0.899	129	0.435	165	0.180	201	0.161	237	0.528	273	0.941	309	0.988
22	0.949	58	0.997	94	0.891	130	0.419	166	0.184	202	0.159	238	0.543	274	0.946	310	0.987
23	0.950	59	0.998	95	0.882	131	0.404	167	0.188	203	0.158	239	0.558	275	0.952	311	0.985
24	0.950	60	0.998	96	0.874	132	0.389	168	0.192	204	0.157	240	0.574	276	0.957	312	0.984
25	0.951	61	0.999	97	0.864	133	0.374	169	0.195	205	0.158	241	0.589	277	0.962	313	0.982
26	0.952	62	0.999	98	0.855	134	0.359	170	0.199	206	0.159	242	0.604	278	0.966	314	0.980
27	0.953	63	1.000	99	0.845	135	0.344	171	0.202	207	0.161	243	0.618	279	0.970	315	0.979
28	0.954	64	1.000	100	0.835	136	0.329	172	0.205	208	0.164	244	0.633	280	0.974	316	0.977
29	0.956	65	1.000	101	0.824	137	0.315	173	0.207	209	0.169	245	0.648	281	0.978	317	0.976
30	0.957	66	1.000	102	0.814	138	0.301	174	0.209	210	0.174	246	0.662	282	0.981	318	0.974
31	0.958	67	0.999	103	0.803	139	0.288	175	0.211	211	0.181	247	0.676	283	0.984	319	0.972
32	0.959	68	0.999	104	0.791	140	0.274	176	0.213	212	0.188	248	0.690	284	0.987	320	0.971
33	0.961	69	0.998	105	0.779	141	0.262	177	0.214	213	0.197	249	0.703	285	0.989	321	0.969
34	0.962	70	0.997	106	0.768	142	0.249	178	0.215	214	0.205	250	0.717	286	0.991	322	0.968
35	0.963	71	0.996	107	0.755	143	0.237	179	0.216	215	0.216	251	0.730	287	0.993	323	0.966

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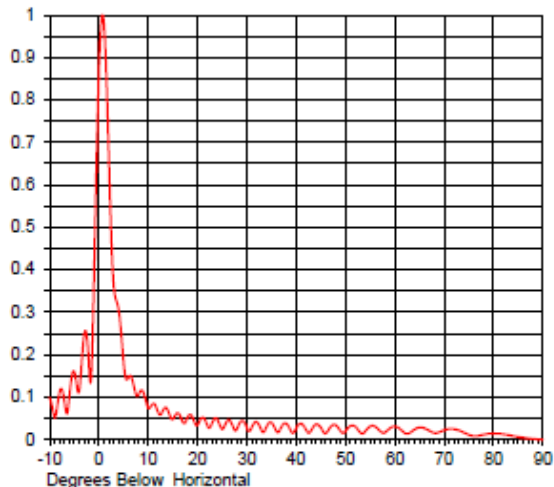
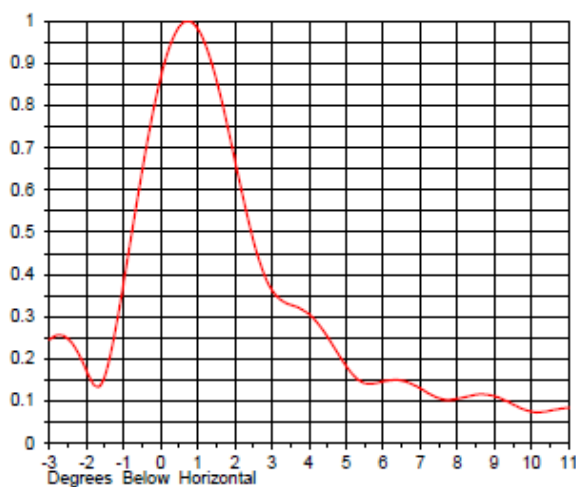
Dielectric®

ELEVATION PATTERN

Proposal No. C-80018-5
Date 11-Oct-23
Call Letters KIFI
Channel 18
Frequency 497 MHz
Antenna Type TFU-24EST-R C170

RMS Directivity at Main Lobe 22.0 (13.42 dB)
RMS Directivity at Horizontal 16.5 (12.17 dB)
Calculated

Beam Tilt 0.75 deg
Pattern Number 24E220075



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.097	10.0	0.075	30.0	0.028	50.0	0.019	70.0	0.022
-9.0	0.052	11.0	0.084	31.0	0.028	51.0	0.032	71.0	0.025
-8.0	0.110	12.0	0.064	32.0	0.041	52.0	0.030	72.0	0.024
-7.0	0.090	13.0	0.068	33.0	0.021	53.0	0.016	73.0	0.021
-6.0	0.099	14.0	0.068	34.0	0.030	54.0	0.019	74.0	0.016
-5.0	0.160	15.0	0.047	35.0	0.039	55.0	0.030	75.0	0.011
-4.0	0.114	16.0	0.062	36.0	0.019	56.0	0.030	76.0	0.008
-3.0	0.245	17.0	0.041	37.0	0.029	57.0	0.020	77.0	0.009
-2.0	0.171	18.0	0.052	38.0	0.037	58.0	0.016	78.0	0.011
-1.0	0.380	19.0	0.052	39.0	0.018	59.0	0.026	79.0	0.013
0.0	0.867	20.0	0.034	40.0	0.026	60.0	0.030	80.0	0.014
1.0	0.982	21.0	0.052	41.0	0.037	61.0	0.025	81.0	0.013
2.0	0.671	22.0	0.033	42.0	0.023	62.0	0.015	82.0	0.012
3.0	0.363	23.0	0.040	43.0	0.020	63.0	0.015	83.0	0.010
4.0	0.306	24.0	0.047	44.0	0.035	64.0	0.023	84.0	0.008
5.0	0.183	25.0	0.024	45.0	0.028	65.0	0.028	85.0	0.006
6.0	0.146	26.0	0.043	46.0	0.014	66.0	0.026	86.0	0.004
7.0	0.130	27.0	0.035	47.0	0.030	67.0	0.020	87.0	0.002
8.0	0.105	28.0	0.025	48.0	0.034	68.0	0.016	88.0	0.001
9.0	0.111	29.0	0.044	49.0	0.020	69.0	0.017	89.0	0.000
								90.0	0.000

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Appendix II

TVStudy Interference Analysis

tvstudy v2.2.5 (4uoc83)
 Database: 192.168.0.58, Study: KIFI_CP, Model: Longley-Rice
 Start: 2023.11.13 12:03:24

Study created: 2023.11.13 12:03:23

Study build station data: LMS TV 2023-11-08

Proposal: KIFI-TV D18 DT APP IDAHO FALLS, ID
 File number: BLANK0000216788
 Facility ID: 66258
 Station data: User record
 Record ID: 1271
 Country: U.S.
 Zone: II

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	KISU-TV	D17	DD	LIC	POCATELLO, ID	BLANK0000017402	0.0 km
No	KCLP-CD	D18	DC	LIC	BOISE, ID	BLANK0000007378	277.8
No	KSVI	D18	DT	LIC	BILLINGS, MT	BLCDT20090205ABS	427.1

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D18
 Latitude: 43 30 4.00 N (NAD83)
 Longitude: 112 39 46.00 W
 Height AMSL: 2012.0 m
 HAAT: 444.0 m
 Peak ERP: 500 kW
 Antenna: Dielectric-TFU-25EST/VP-R C170 (ID 1010815) 130.0 deg
 Elev Pattn: Generic
 Elec Tilt: 0.75

39.1 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	87.8 kW	443.0 m	91.8 km
45.0	449	381.6	101.0
90.0	471	405.6	103.4
135.0	443	466.3	108.0
180.0	487	504.6	112.0
225.0	385	445.3	104.9
270.0	37.5	454.1	86.4
315.0	21.5	455.1	82.7

Distance to Canadian border: 611.1 km

Distance to Mexican border: 1211.8 km

Conditions at FCC monitoring station: Ferndale WA
 Bearing: 312.1 degrees Distance: 971.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 118.7 degrees Distance: 717.3 km

No land mobile station failures found

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 BLANK0000017402 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KISU-TV	D17	DD	LIC	POCATELLO, ID	BLANK0000017402	
Undesireds:	KIFI-TV	D18	DT	APP	IDAHO FALLS, ID	BLANK0000216788	0.0 km
	K17ED-D	D17	DC	LIC	PAYETTE, ID	BLDTA20141002AAE	346.3
	KBYU-TV	D17	DT	LIC	PROVO, UT	BLANK0000064428	318.2
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	30873.6	311,827	27483.6	307,651	27395.8	307,594	0.01 0.00
Undesired				Total IX	Unique IX, before	Unique IX, after	
KIFI-TV D18 DT APP			4.0	0		4.0 0	
KBYU-TV D17 DT LIC			87.8	57	87.8 57	87.8 57	

Interference to proposal scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KIFI-TV	D18	DT	APP	IDAHO FALLS, ID	BLANK0000216788	
	Service area		Terrain-limited		IX-free	Percent IX	
	30864.4	314,687	28603.7	311,387	28603.7	311,387	0.00 0.00