THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE
MICHAEL H. MEHIGAN, PE

JAMES B. HATFIELD, PE
BENJAMIN F. DAWSON III, PE
CONSULTANTS

HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
9500 GREENWOOD AVE. N.
SEATTLE, WASHINGTON 98103

TELEPHONE (206) 783-9151
FACSIMILE (206) 789-9834
E-MAIL hatdaw@hatdaw.com

MAURY L. HATFIELD, PE
(1942-2009)
PAUL W. LEONARD, PE
(1925-2011)

Engineering Statement
Post-Auction Technical Facilities for KTFF-DT
Channel 23 at Porterville, CA
October 2017

Expansion Application

This Engineering Statement has been prepared on behalf of Unimas Fresno LLC ("Unimas"), licensee of digital television station KTFF-DT at Porterville, California. KTFF-DT presently operates on Channel 48. The Commission's *Channel Reassignment Public Notice* (DA 17-314), released on April 13, 2017, specified the station's post-auction facilities on Channel 23.

This application specifies expansion facilities, and is being filed during the second filing window for alternate channels and expanded facilities.

Compliance with §73.622(f) *DTV maximum power and antenna heights*

Processing is requested pursuant to the provisions of §73.622(f)(5), which allows for technical facilities up to those needed to provide the same geographic coverage as the largest station within the market.

The table below demonstrates that the geographic coverage of the proposed noise limited contour will not exceed that of the largest station within the Fresno-Visalia market.

	Geographic Coverage in United States (km^2)
KTFF-DT Ch23 330 kW at 1124m HAAT	40,075.7
KNSO(DT) Ch11 45 kW at 622m HAAT	47,181.6

Interference Study

An interference study has been conducted using the Commission's TVStudy software. The results of the study demonstrate that this proposal will have no additional interference impact on other stations.

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Study created: 2017.10.19 13:55:23

Study build station data: LMS TV 2017-10-18 (53)

    Proposal: KTFF-DT D23 DT APP PORTERVILLE, CA
 File number: KTFF-XP-330
 Facility ID: 35512
Station data: User record
   Record ID: 265
     Country: U.S.
        Zone: II

Stations affected by proposal:

Call      Chan  Svc Status  City, State              File Number             Distance
KNXT      D22   DT  CP      VISALIA, CA              BLANK0000028226           0.0 km
KNXT      D22   DT  BL      VISALIA, CA              DTVBL16950                0.0
KQCA      D23   DT  CP      STOCKTON, CA             BLANK0000024621         321.5
KQCA      D23   DT  BL      STOCKTON, CA             DTVBL10242              321.5

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

    Channel: D23
   Latitude:  36 17 13.50 N (NAD83)
  Longitude: 118 50 19.00 W
Height AMSL: 1781.0 m
       HAAT: 804.0 m
   Peak ERP: 330 kW
    Antenna: DIE-TFU-20DSB-M/VP-R 0.0 deg
Elev Pattrn: Generic
      Tilts: elec 1.0, mech 1.0 @ 250.0 deg

39.7 dBu contour:
Azimuth      ERP       HAAT   Distance
  0.0 deg    116 kW   796.1 m  111.9 km
 45.0       12.0      123.1     56.3
 90.0       11.1      103.6     54.2
135.0        100      817.1    111.2
180.0        298     1076.7    130.2
225.0        286     1158.0    132.9
270.0        280     1325.4    138.4
315.0        306     1091.7    131.1

Database HAAT does not agree with computed HAAT
Database HAAT: 804 m   Computed HAAT: 811 m

ERP exceeds maximum
ERP: 330 kW   ERP maximum: 194 kW
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**Proposal service area extends beyond baseline plus 1.0%
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 1381.3 km

Distance to Mexican border: 429.8 km

Conditions at FCC monitoring station: Livermore CA
Bearing: 302.6 degrees   Distance: 304.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 66.1 degrees   Distance: 1259.1 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%

No IX check failures found.
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Facilities Proposed

The proposed operation will be on Channel 23 with a maximum lobe effective radiated power of 330 kilowatts (H pol) and 82.5 kW (V pol). Operation is proposed with a Dielectric model TFU-20DSB-M/VP-R antenna, which will be mounted on an existing tower at the Blue Ridge communications site. An FCC Antenna Structure Registration Number is not required for this tower.

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.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground using the manufacturer's vertical plane pattern for the Dielectric model TFU-20DSB-M/VP-R antenna. The highest calculated power density from the proposed antenna alone occurs at at a point 11 meters from the base of the antenna support structure. At this point the power density is calculated to be 143.3 μW/cm², which is 41% of 349.3 μW/cm² (the FCC maximum for uncontrolled environments at the Channel 23 frequency).

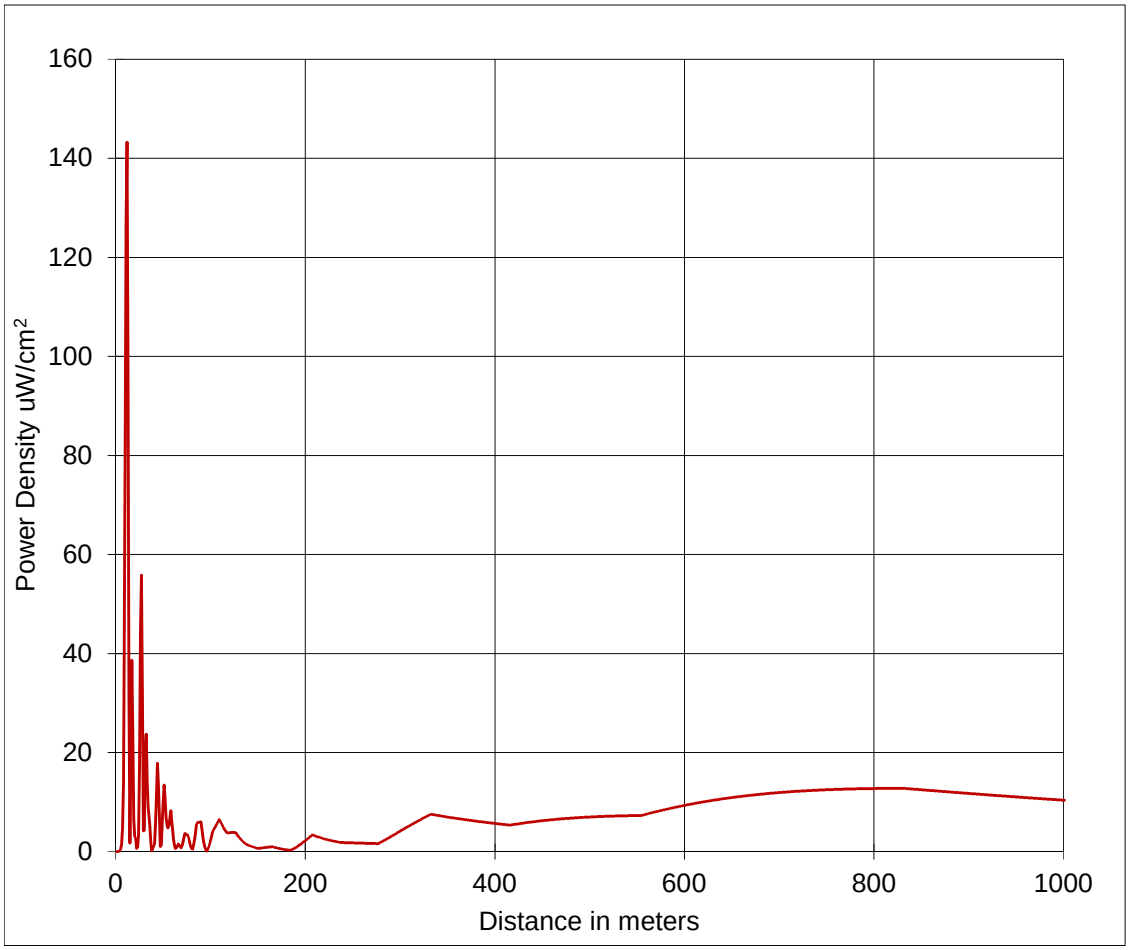
There are a number of other FM and TV stations at the Blue Ridge communications site, including one other full-power station which will be changing channel as a part of the repack. Measurements conducted in connection with the KTFF-DT renewal application in 2006 (see BRCT-20060804AFV) found a maximum reading of 40% of the uncontrolled environment MPE, with the majority of

readings being 20% or less of the uncontrolled environment MPE. At that time, analog KTFF-TV was still operating on channel 61 with 2400 kW ERP. The analog operation has long since shut down, and it is anticipated that the total site exposure resulting from the instant proposal would be found to be commensurately lower than what was measured in 2006.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. 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.

KTFF-DT Ch23 Porterville
Ground-Level Power Density Calculations
Using Manufacturer's Vertical Plane Pattern

Antenna	TFU-20DSB-M/VP-R			
ERP	330000	Watts H (avg)		
	82500	Watts V (avg)		
Antenna AGL	31	meters less 2m is	29	meters above the reference plane
Calculated Maximum is	143.3	uW/cm² at	11	meters from the tower



Distance From Tower (meters)	Hypotenuse (meters)	Depression Angle (degrees)	Interp Rel Field	Adjusted ERP (watts)	Power Density uW/cm²
0	29.00	90.00	0.000	0.0	0.00
1	29.02	88.03	0.000	0.0	0.00
2	29.07	86.05	0.001	0.4	0.02
3	29.15	84.09	0.003	3.5	0.14
4	29.27	82.15	0.006	13.4	0.52

5	29.43	80.22	0.010	37.7	1.46
6	29.61	78.31	0.017	125.6	4.78
7	29.83	76.43	0.030	374.6	14.06
8	30.08	74.58	0.050	1034.0	38.17
9	30.36	72.76	0.073	2206.6	79.96
10	30.68	70.97	0.093	3581.5	127.16
11	31.02	69.23	0.100	4125.0	143.26
12	31.38	67.52	0.084	2900.2	98.37
13	31.78	65.85	0.048	941.7	31.15
14	32.20	64.23	0.011	54.2	1.75
15	32.65	62.65	0.039	637.0	19.97
16	33.12	61.11	0.055	1267.5	38.60
17	33.62	59.62	0.045	823.9	24.36
18	34.13	58.17	0.024	229.5	6.58
19	34.67	56.77	0.016	111.8	3.11
20	35.23	55.41	0.016	100.8	2.71
21	35.81	54.09	0.008	24.0	0.63
22	36.40	52.82	0.009	31.5	0.79
23	37.01	51.58	0.018	137.7	3.36
24	37.64	50.39	0.042	736.9	17.38
25	38.29	49.24	0.069	1952.5	44.50
26	38.95	48.12	0.078	2534.8	55.82
27	39.62	47.05	0.061	1528.0	32.52
28	40.31	46.01	0.022	203.2	4.18
29	41.01	45.00	0.023	218.2	4.33
30	41.73	44.03	0.051	1079.6	20.72
31	42.45	43.09	0.056	1276.9	23.67
32	43.19	42.18	0.044	790.2	14.15
33	43.93	41.31	0.035	518.9	8.98
34	44.69	40.46	0.033	449.2	7.52
35	45.45	39.64	0.029	340.5	5.51
36	46.23	38.85	0.019	141.3	2.21
37	47.01	38.09	0.006	12.5	0.19
38	47.80	37.35	0.009	35.0	0.51
39	48.60	36.63	0.013	70.8	1.00
40	49.41	35.94	0.016	110.8	1.52
41	50.22	35.27	0.032	434.7	5.76
42	51.04	34.62	0.047	892.6	11.45
43	51.87	34.00	0.059	1434.0	17.81
44	52.70	33.39	0.052	1127.2	13.56
45	53.54	32.80	0.039	639.7	7.46
46	54.38	32.23	0.015	90.8	1.03
47	55.23	31.68	0.017	119.3	1.31
48	56.08	31.14	0.037	560.4	5.95
49	56.94	30.62	0.048	969.7	9.99
50	57.80	30.11	0.057	1343.3	13.43
51	58.67	29.62	0.051	1093.0	10.61
52	59.54	29.15	0.042	726.3	6.85
53	60.42	28.69	0.038	587.7	5.38
54	61.29	28.24	0.036	533.1	4.74
55	62.18	27.80	0.038	595.0	5.14
56	63.06	27.38	0.044	810.8	6.81

57	63.95	26.97	0.049	1007.3	8.23
58	64.85	26.57	0.043	748.8	5.95
59	65.74	26.18	0.036	534.0	4.13
60	66.64	25.80	0.029	345.0	2.60
61	67.54	25.43	0.022	191.3	1.40
62	68.45	25.07	0.014	84.9	0.61
63	69.35	24.72	0.016	107.0	0.74
64	70.26	24.38	0.020	162.7	1.10
65	71.18	24.04	0.024	228.1	1.50
66	72.09	23.72	0.022	200.4	1.29
67	73.01	23.40	0.020	162.3	1.02
68	73.93	23.10	0.018	128.9	0.79
69	74.85	22.80	0.022	193.9	1.16
70	75.77	22.50	0.028	333.1	1.94
71	76.69	22.22	0.035	505.2	2.87
72	77.62	21.94	0.040	658.0	3.65
73	78.55	21.67	0.040	649.0	3.51
74	79.48	21.40	0.039	640.3	3.39
75	80.41	21.14	0.039	631.9	3.27
76	81.34	20.89	0.036	535.5	2.70
77	82.28	20.64	0.030	360.8	1.78
78	83.22	20.39	0.023	223.3	1.08
79	84.15	20.16	0.017	120.6	0.57
80	85.09	19.93	0.016	110.3	0.51
81	86.03	19.70	0.027	291.0	1.31
82	86.98	19.48	0.037	551.2	2.43
83	87.92	19.26	0.046	885.5	3.83
84	88.87	19.05	0.056	1289.1	5.45
85	89.81	18.84	0.059	1418.7	5.88
86	90.76	18.63	0.059	1458.5	5.92
87	91.71	18.43	0.060	1497.9	5.95
88	92.66	18.24	0.061	1537.0	5.98
89	93.61	18.05	0.062	1575.9	6.01
90	94.56	17.86	0.054	1222.8	4.57
91	95.51	17.68	0.045	817.2	2.99
92	96.46	17.50	0.035	498.7	1.79
93	97.42	17.32	0.025	262.4	0.92
94	98.37	17.15	0.016	103.8	0.36
95	99.33	16.98	0.009	34.9	0.12
96	100.28	16.81	0.017	124.5	0.41
97	101.24	16.65	0.025	266.0	0.87
98	102.20	16.48	0.033	456.4	1.46
99	103.16	16.33	0.041	692.9	2.18
100	104.12	16.17	0.049	972.9	3.00
101	105.08	16.02	0.056	1293.9	3.91
102	106.04	15.87	0.060	1464.1	4.35
103	107.00	15.72	0.063	1611.6	4.70
104	107.97	15.58	0.065	1763.3	5.05
105	108.93	15.44	0.068	1919.0	5.40
106	109.90	15.30	0.071	2078.4	5.75
107	110.86	15.16	0.074	2241.2	6.09
108	111.83	15.03	0.076	2407.2	6.43