

ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of TRINITY BROADCASTING OF WASHINGTON, licensee of full-power digital television station KTBW-DT, Channel 14 in Tacoma, Washington, in support of its Application for Construction Permit to specify operation on its post-repack channel, Channel 21. No change in site location or antenna height is proposed herein.

It is proposed to mount an ERI horizontally-polarized slotted cylinder antenna at the 72-meter level of the existing 101-meter tower on which the present KTBW-DT antenna is mounted. The proposed effective radiated power for the facility is 107 kW, which is the allotted repack power level for KTBW-DT. Exhibit B is a map upon which the predicted service contours are plotted. As shown, the community of Tacoma is completely encompassed by the proposed 48 dBu city-grade service contour.

Azimuth and elevation pattern information for the proposed antenna is provided in Exhibit C. Since the facility proposed herein essentially specifies the repack allotment facility assigned to KTBW-DT, no interference study is included herein. A power density calculation appears as Exhibit D.

Since no change in the overall height or location of the existing KTBW-DT tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1032950 to this tower.

EXHIBIT A

I declare under penalty of perjury that the foregoing statements and the attached exhibits, which were prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher", with a stylized, cursive-like script.

KEVIN T. FISHER

May 22, 2017

**CONTOUR POPULATION**

**2015 U.S. CENSUS DATA**

**CITY-GRADE : 4,323,601 (1,800,106 HH)**

**NOISE-LIMITED : 4,525,118 (1,883,953 HH)**

**SMITHANDFISHER**

**FCC NOISE-LIMITED  
SERVICE CONTOUR**

**FCC CITY-GRADE  
CONTOUR**

**EXHIBIT B  
PREDICTED SERVICE CONTOURS  
PROPOSED KTBW-DT  
CH. 21 - TACOMA, WASHINGTON**

Scale 1:1,100,000

0 8 16 24 mi

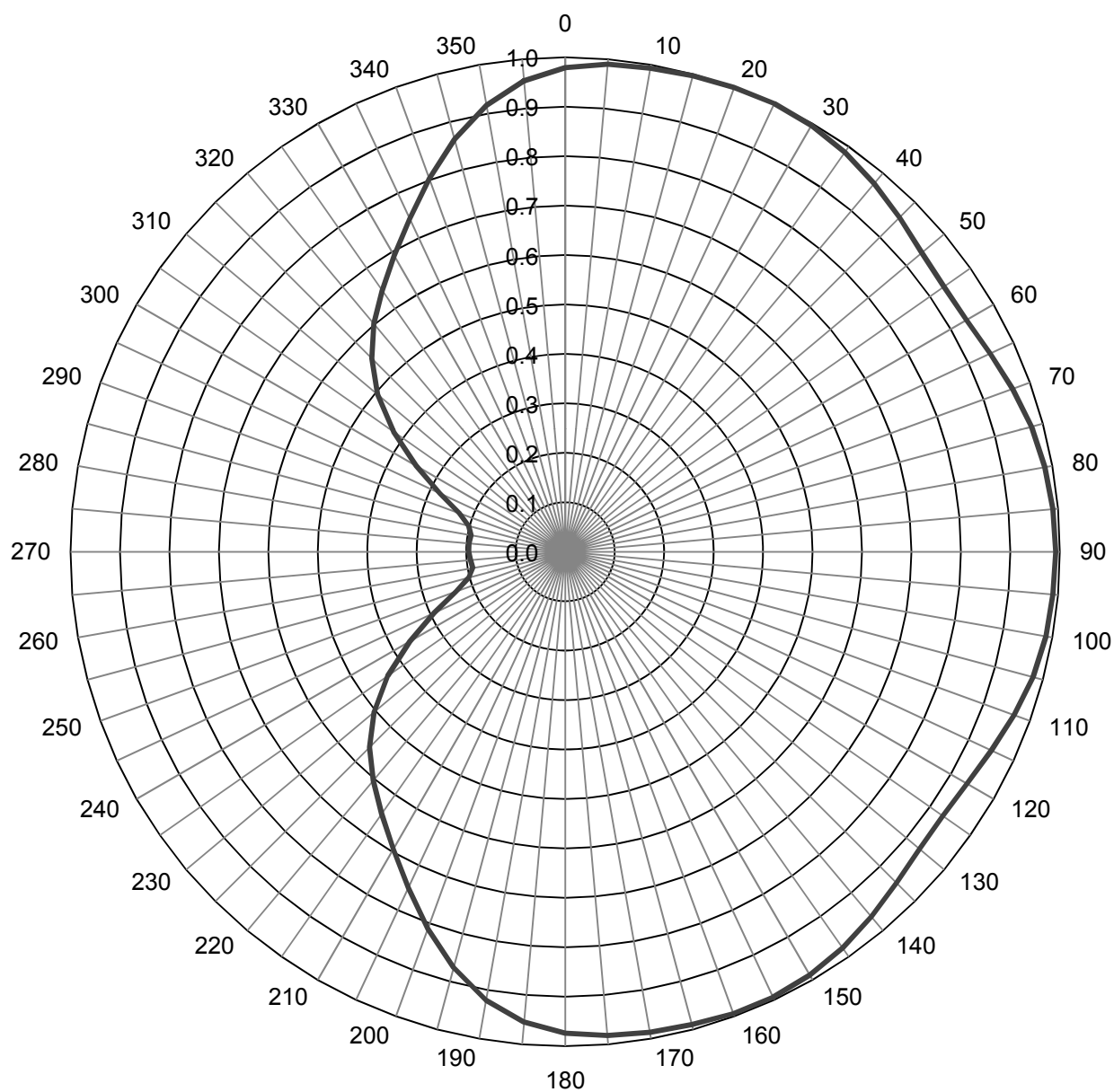
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**Azimuth Pattern**

Type:	ATW-C1	Polarization:	Horizontal
Directivity:	1.52 numeric (1.82 dB)	Frequency:	21 (ATSC)
Peak(s) at:		Location:	Tacoma, WA
		NOTE: Pattern shape and directivity may vary with channel and mounting configuration.	

Relative Field



**Tabulated Data for Azimuth Pattern**Type: ATW-C1

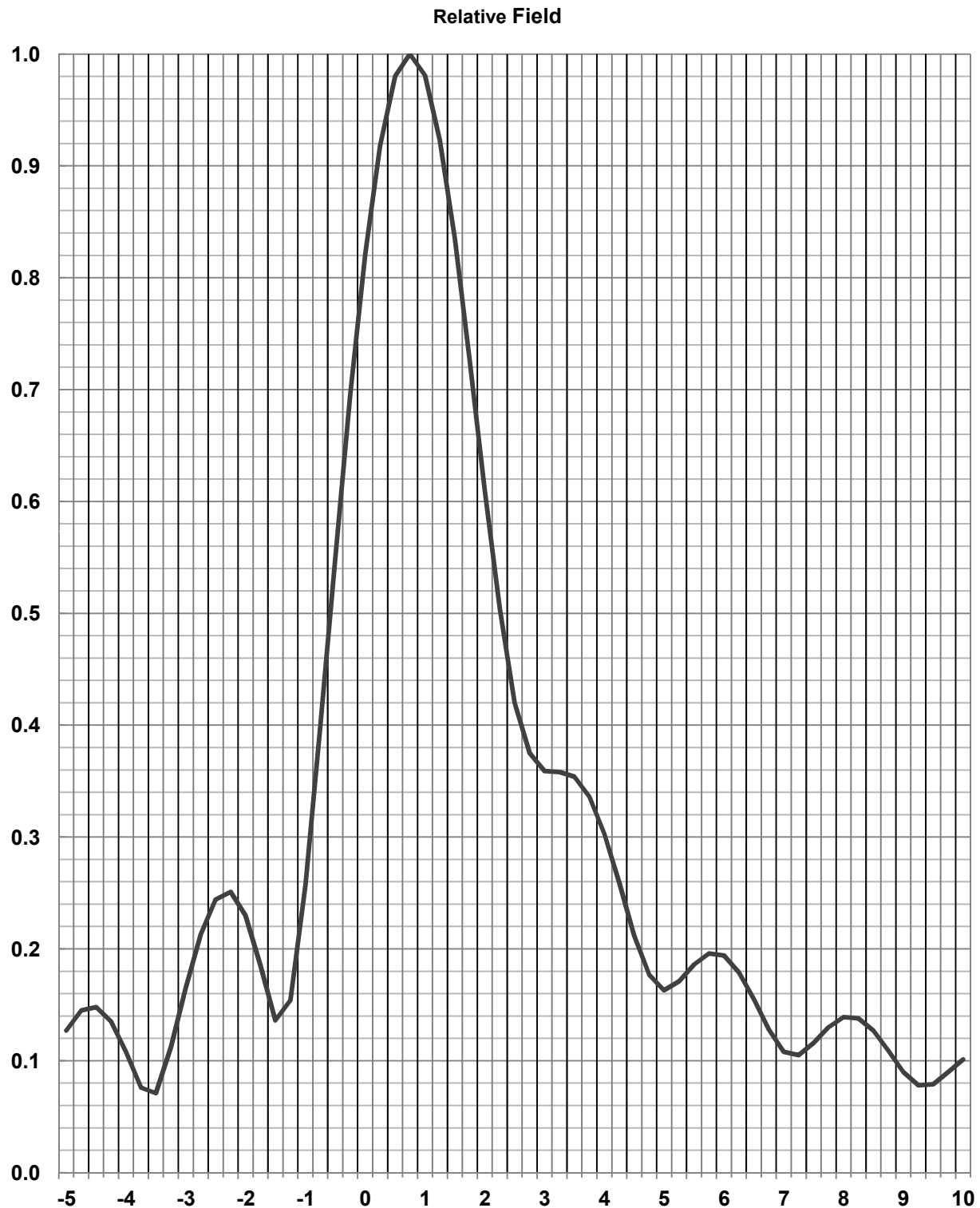
Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0	0.979	-0.18	100	0.987	-0.11	200	0.811	-1.82	300	0.348	-9.17
2	0.985	-0.13	102	0.984	-0.14	202	0.787	-2.08	302	0.378	-8.45
4	0.988	-0.10	104	0.981	-0.17	204	0.762	-2.36	304	0.408	-7.79
6	0.991	-0.08	106	0.976	-0.21	206	0.738	-2.64	306	0.438	-7.17
8	0.992	-0.07	108	0.971	-0.26	208	0.716	-2.90	308	0.467	-6.61
10	0.993	-0.06	110	0.966	-0.30	210	0.695	-3.16	310	0.495	-6.11
12	0.995	-0.04	112	0.960	-0.35	212	0.675	-3.41	312	0.520	-5.68
14	0.996	-0.03	114	0.954	-0.41	214	0.656	-3.66	314	0.543	-5.30
16	0.997	-0.03	116	0.948	-0.46	216	0.638	-3.90	316	0.564	-4.97
18	0.998	-0.02	118	0.943	-0.51	218	0.621	-4.14	318	0.584	-4.67
20	0.999	-0.01	120	0.938	-0.56	220	0.604	-4.38	320	0.602	-4.41
22	1.000	0.00	122	0.935	-0.58	222	0.587	-4.63	322	0.620	-4.15
24	1.000	0.00	124	0.933	-0.60	224	0.568	-4.91	324	0.637	-3.92
26	1.000	0.00	126	0.932	-0.61	226	0.549	-5.21	326	0.654	-3.69
28	0.998	-0.02	128	0.933	-0.60	228	0.527	-5.56	328	0.672	-3.45
30	0.996	-0.03	130	0.935	-0.58	230	0.504	-5.95	330	0.691	-3.21
32	0.993	-0.06	132	0.939	-0.55	232	0.479	-6.39	332	0.711	-2.96
34	0.989	-0.10	134	0.944	-0.50	234	0.452	-6.90	334	0.732	-2.71
36	0.984	-0.14	136	0.950	-0.45	236	0.423	-7.47	336	0.755	-2.44
38	0.978	-0.19	138	0.956	-0.39	238	0.393	-8.11	338	0.778	-2.18
40	0.972	-0.25	140	0.963	-0.33	240	0.363	-8.80	340	0.803	-1.91
42	0.965	-0.31	142	0.969	-0.27	242	0.333	-9.55	342	0.827	-1.65
44	0.959	-0.36	144	0.975	-0.22	244	0.305	-10.31	344	0.852	-1.39
46	0.952	-0.43	146	0.981	-0.17	246	0.279	-11.09	346	0.875	-1.16
48	0.946	-0.48	148	0.985	-0.13	248	0.255	-11.87	348	0.897	-0.94
50	0.941	-0.53	150	0.989	-0.10	250	0.235	-12.58	350	0.917	-0.75
52	0.938	-0.56	152	0.992	-0.07	252	0.219	-13.19	352	0.935	-0.58
54	0.935	-0.58	154	0.994	-0.05	254	0.206	-13.72	354	0.950	-0.45
56	0.934	-0.59	156	0.994	-0.05	256	0.198	-14.07	356	0.962	-0.34
58	0.935	-0.58	158	0.994	-0.05	258	0.192	-14.33	358	0.972	-0.25
60	0.937	-0.57	160	0.994	-0.05	260	0.190	-14.42	360	0.979	-0.18
62	0.941	-0.53	162	0.993	-0.06	262	0.190	-14.42			
64	0.945	-0.49	164	0.991	-0.08	264	0.191	-14.38			
66	0.951	-0.44	166	0.990	-0.09	266	0.192	-14.33			
68	0.957	-0.38	168	0.988	-0.10	268	0.194	-14.24			
70	0.963	-0.33	170	0.987	-0.11	270	0.195	-14.20			
72	0.968	-0.28	172	0.985	-0.13	272	0.195	-14.20			
74	0.974	-0.23	174	0.983	-0.15	274	0.195	-14.20			
76	0.978	-0.19	176	0.981	-0.17	276	0.194	-14.24			
78	0.982	-0.16	178	0.978	-0.19	278	0.193	-14.29			
80	0.985	-0.13	180	0.974	-0.23	280	0.193	-14.29			
82	0.988	-0.10	182	0.968	-0.28	282	0.195	-14.20			
84	0.990	-0.09	184	0.960	-0.35	284	0.198	-14.07			
86	0.991	-0.08	186	0.950	-0.45	286	0.205	-13.76			
88	0.991	-0.08	188	0.937	-0.57	288	0.215	-13.35			
90	0.992	-0.07	190	0.921	-0.71	290	0.228	-12.84			
92	0.992	-0.07	192	0.903	-0.89	292	0.246	-12.18			
94	0.991	-0.08	194	0.882	-1.09	294	0.267	-11.47			
96	0.990	-0.09	196	0.860	-1.31	296	0.291	-10.72			
98	0.989	-0.10	198	0.836	-1.56	298	0.318	-9.95			

Specification Number: 20170227-653

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**Elevation Pattern**

Type:	ATW-18-H3H	Polarization:	Horizontal
Directivity:		Frequency:	21 (ATSC)
Main Lobe:	18.00 numeric (12.55 dB)	Location:	Tacoma, WA
Horizontal:	12.13 numeric (10.84 dB)	Beam Tilt:	0.75 degrees



POWER DENSITY CALCULATION  
PROPOSED KTBW-DT  
CHANNEL 21 – TACOMA, WASHINGTON

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Tacoma facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 107 kW, an antenna radiation center 72 meters above ground, and the specific elevation pattern of the proposed ERI antenna, maximum power density two meters above ground of  $0.0041 \text{ mW/cm}^2$  is calculated to occur 23 meters from the base of the tower. Since this is only 1.2 percent of the  $0.34 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 21 (512-518 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.