

CITY OF LICENSE
FACILITY ID
PREPARED FOR
VERSION
JOB

Seattle WA
195500
HOLLOW EARTH RADIO
1.0
117050

CONSOLIDATED

ENGINEERING EXHIBIT

FCC Form 318 - Section VI - LPFM Engineering, Tech Box

**ENGINEERING STATEMENT
PROPOSED MINOR MODIFICATION
OF CONSTRUCTION PERMIT BMPL-20170524ABN
KHUH-LP, SEATTLE, WA
Hollow Earth Radio**

SUMMARY:

This proposed minor-modification is for a slightly taller support structure, and a one-bay antenna. The ERP would drop to 15 watts. No other changes are proposed.

This proposal is short-spaced to two second-adjacent stations. Contour protection is provided by the D/U method, in compliance with 73.807(e)(1). See **Exhibit 11**. A waiver of second-adjacent spacing is hereby requested.

EXPEDITED PROCESSING REQUESTED:

The underlying Construction Permit expires 9/19/17. The applicant is ready and able to construct immediately upon FCC approval. Expedited processing is requested.

PERTINENT SPECIFICATIONS NOT INCLUDED IN SECTION VI - TECH BOX:

HAAT: 77 meters

ERP: 16 watts

DATA SOURCE: V-Soft FMCommander with HAAT Method 0(zero); FCC 30 Second
Terrain

SUPPORT STRUCTURE: Pole on building

EXHIBIT 11 INTERFERENCE

KHUH-LP - taller tower
Hollow Earth Radio

REFERENCE		DISPLAY DATES
47 36 48.0 N.	CLASS = L1 Int = L1	DATA 09-02-17
122 18 14.0 W.	Current Spacings to 2nd Adj.	SEARCH 09-02-17
----- Channel 285 - 104.9 MHZ -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
KCMS	LIC 287C1	Edmonds	WA 117.4	16.66	73.0	-56.3
KLSW	LIC 283C2	Covington	WA 117.8	16.75	53.0	-36.3
KHUH-LP	CP 285L1	Seattle	WA 0.0	0.00	24.0	-24.0
KUBE	LIC-Z 285C3	Eatonville	WA 177.7	86.04	78.0	8.0
KZQM	CP -D 285A	Sequim	WA 313.6	83.31	67.0	16.3

PROTECTED ZONES REPORT:

Protected zones report for KHUH-LP.C on channel 285L1 09-02-2017
 Lat. 47 36 48.0 Lng. 122 18 14.0, ERP= 0.015 kw, HAAT= 77 m

Distance to border = 102.2 km.

Facility is okay with respect to AM station towers.

Closest AM Facility is KKDZ, SEATTLE, WA, L, DAN at 217.2° at a distance of 6.9 km

Facility is okay with respect to FCC monitoring stations.

Closest FCC Monitoring Station is 150.4 km = Ferndale, WA

Facility is okay toward West Virginia Quiet Zone. Distance to center = 3638.4 km

Facility is okay toward Table Mountain. Distance to Center = 1603.6 km, Azimuth = 115.1 Degrees True

CONTOUR PROTECTION TO 2ND-ADJACENT STATIONS:

Contour protection to 2nd-adjacent stations KLSW and KCMS is provided using the ratio method. The F(50/50) contour of KLSW is 83.31dBu at the proposed site. The F(50/50) contour of KCMS is 92.23dBu at the proposed site. Using the appropriate U/D ratio of 40dB vs. KLSW , the corresponding “worst-case” interfering contour of the proposed LPFM is 123.31dBu.

BROWN BROADCAST SERVICES

INCORPORATED
 Michael D. Brown 3740 S.W. Comus St. Portland, Oregon 97219-7418 503-245-6065

The proposed 1-bay, SWR FMEC would be mounted on a 8 meter pole 6 meter building, with a rad center of 8 meters above the roof, or 14m AGL. Using elevation pattern data provided by SWR, the distance to the 123.31dBu contour at various depression angles is tabulated in

Exhibit 11a.

The center of radiation would be 11 meters above the uppermost populated area, the 2nd floor of the building just to the west of the studio/transmitter location. **Exhibit 11a** show that the interfering contour remains above the uppermost populated surfaces.

Therefore, there are no populated areas within the interference zone.

Exhibit 11a

2nd ADJACENT INTERFERENCE PROTECTION TO POPULATED AREAS

CALL LETTERS OR FILE NUMBER	KHUU-LP
PROPOSED COMMUNITY OF LICENSE	Seattle, WA
INTERFERING CONTOUR OF PROPOSAL - dBu	123.31
INTERFERING CONTOUR OF PROPOSAL - <V/m	1.4639
2nd-ADJ STN REQUIRING INTERFERENCE PROT. (worst case)	KLSW
PROP. ERP (W)	15
ANTENNA MODEL	SWR FMEC/1
NOTES	

Depression Angle Below Horizon (dg)	Relative Field	ERP (W)	Angular Dist. to IX Contour (m)	Vertical Dist. to IX (below antenna)(m)	Horiz Dist. to IX Contour (m)	Vertical Dist Below Antenna to Uppermost Populated Area (m)	Clearance of IX Above Populated Areas (m)
0	1	15.00	18.55	0.0	18.5	11	11.0
5	0.997	14.91	18.49	1.6	18.4	11	9.4
10	0.986	14.58	18.29	3.2	18.0	11	7.8
15	0.969	14.08	17.97	4.7	17.4	11	6.3
20	0.946	13.42	17.55	6.0	16.5	11	5.0
25	0.916	12.59	16.99	7.2	15.4	11	3.8
30	0.879	11.59	16.30	8.2	14.1	11	2.8
35	0.837	10.51	15.52	8.9	12.7	11	2.1
40	0.789	9.34	14.63	9.4	11.2	11	1.6
45	0.736	8.13	13.65	9.7	9.7	11	1.3
50	0.679	6.92	12.59	9.6	8.1	11	1.4
55	0.616	5.69	11.42	9.4	6.6	11	1.6
60	0.555	4.54	10.20	8.8	5.1	11	2.2
65	0.48	3.46	8.90	8.1	3.8	11	2.9
70	0.408	2.50	7.57	7.1	2.6	11	3.9
75	0.333	1.66	6.18	6.0	1.6	11	5.0
80	0.256	0.98	4.75	4.7	0.8	11	6.3
85	0.178	0.48	3.30	3.3	0.3	11	7.7
90	0	0.00		0.0	0.0	11	11.0

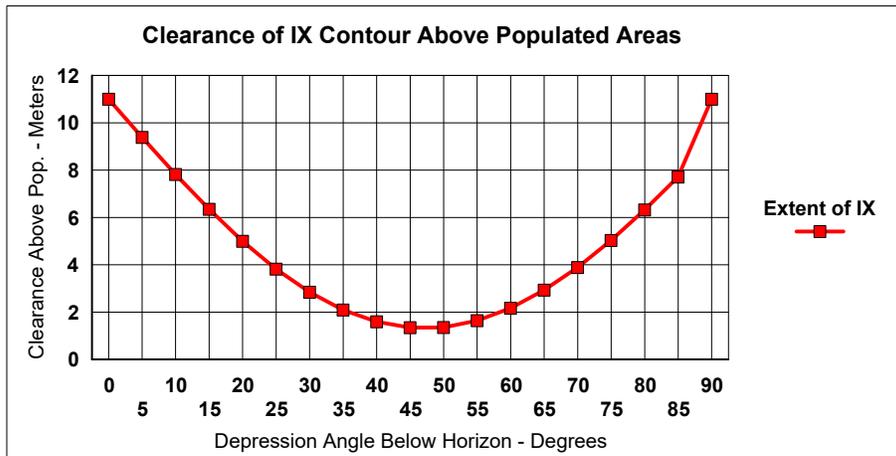
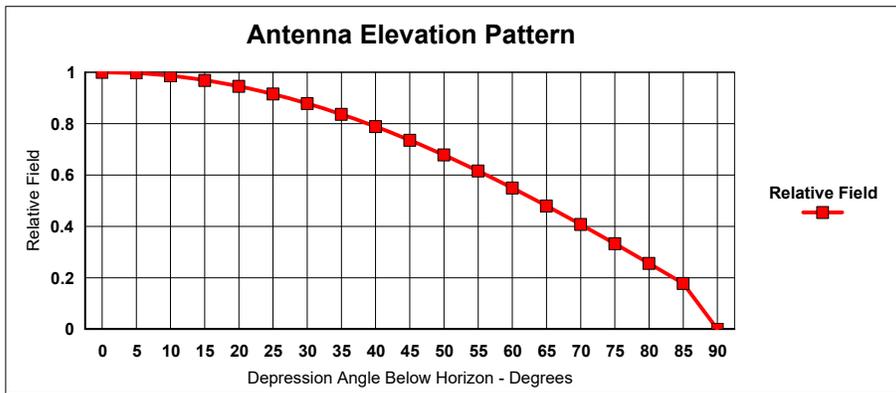


EXHIBIT 14

ENVIRONMENTAL PROTECTION ACT / NIER ANALYSIS

The applicant proposes mounting an SWR FMEC/1 one-bay antenna, mounted 8 meters above the roof of a 6 meter building on a 8 meter pole. The antenna system would be 11 meters above the highest populated area - the uppermost floor of the building immediately to the west.

RF exposures were calculated using FM Model (online edition), using the appropriate “EPA Type 2: Opposed V Dipole” setting. FM Model predicted a peak exposure of $3.4\mu\text{W}/\text{cm}^2$ at 9.2 meters from the pole base, for persons on the uppermost populated floor of the adjacent building. This represents 1.7 % of the Maximum Permissible Exposure (MPE) of $200\mu\text{W}/\text{cm}^2$ for uncontrolled environments. §1.1307(b)(3) exempts applicants from preparing an Environmental Assessment when the predicted exposure levels would be less than 5% of the FCC limits.

The roof itself is a controlled/occupational area and is only accessed for maintenance. The predicted peak exposure at roof level is $7.7\mu\text{W}/\text{cm}^2$ - also a safe level. If work above roof level becomes necessary, the transmitter power will be reduced or operation will cease, as necessary, so as to not exceed the RF exposure limits. RF warning signs will be posted at the pole.