

# Comprehensive Engineering Exhibit

## Minor Modification of BMPFT- 20131025AER

### Facility ID No. 60141

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This exhibit is for the Minor Modification of translator application BMPFT- 20131025AER to change the antenna pattern only. No change in location, height, power, or channel is being requested from what is presently permitted.

### Antenna Location

The existing antenna of K272EL is to be shared with this permitted facility. This directional antenna modification is to harmonize the antenna pattern of the facilities.

Below as **Figure 1** is an overlap and spacing study from which it can be determined that this proposal is within the protected contour of **second** adjacent channel stations KKCW and KFIS and thus the potential for interference exists.

It is noted that because of the proximity of KRYP operating on channel 226 this proposal is limited to 99 watts. Further, station KNRQ has applied to license facilities, BLH20130729AIJ, which will receive no interference from this proposal.

Concerning potential interference created: Section 74.1204(d) states that “The provisions of this section concerning prohibited overlap will not apply where the area of such overlap lies entirely over water. In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.”

We will demonstrate that a lack of population and/or other factors allow this proposal to be compliant with 74.1204. The process commonly called “Living Way”, allows for the use of U/D Analysis, also known as “signal strength ratio methodology” to be utilized. In this instant case the facilities of to be protected are second adjacent and are to be afforded protection from signals 40 dB stronger than they present in the location of the proposed antenna location.

In **Figure 2** is a map showing the predicted 97.0 dBu signal contours the protected facility at the proposed translator antenna location. This proposal is only predicted to cause predicted interference to the protected facility by having a signal exceeding 137.0 dBu in a habitable area. Utilizing the line of sight equation shown in **Figure 3** it has been determined that a 137.0 dBu signal developed by 99 watts, as proposed, emitted by the proposed antenna mounted 168 meters above ground, will not reach ground level or any habitable space. With examination of the images in **Figure 4** it can be determined that no habitable space extends above this height within the confines of this contour. Thus the provisions of the rules section concerning prohibited overlap will not apply as it has been demonstrated

that no actual interference will occur due to a lack of population and other factors as applied in this instant proposal.

As KKCW is co-located with this proposal and operates with a power 900 times greater than proposed herein, the signal to be protected is also protected in the same way as afforded KFIS.

## **Radiation Statement**

The proposed facilities were evaluated in terms of potential radio frequency radiation exposure at ground level in accordance with OET Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio frequency Radiation."

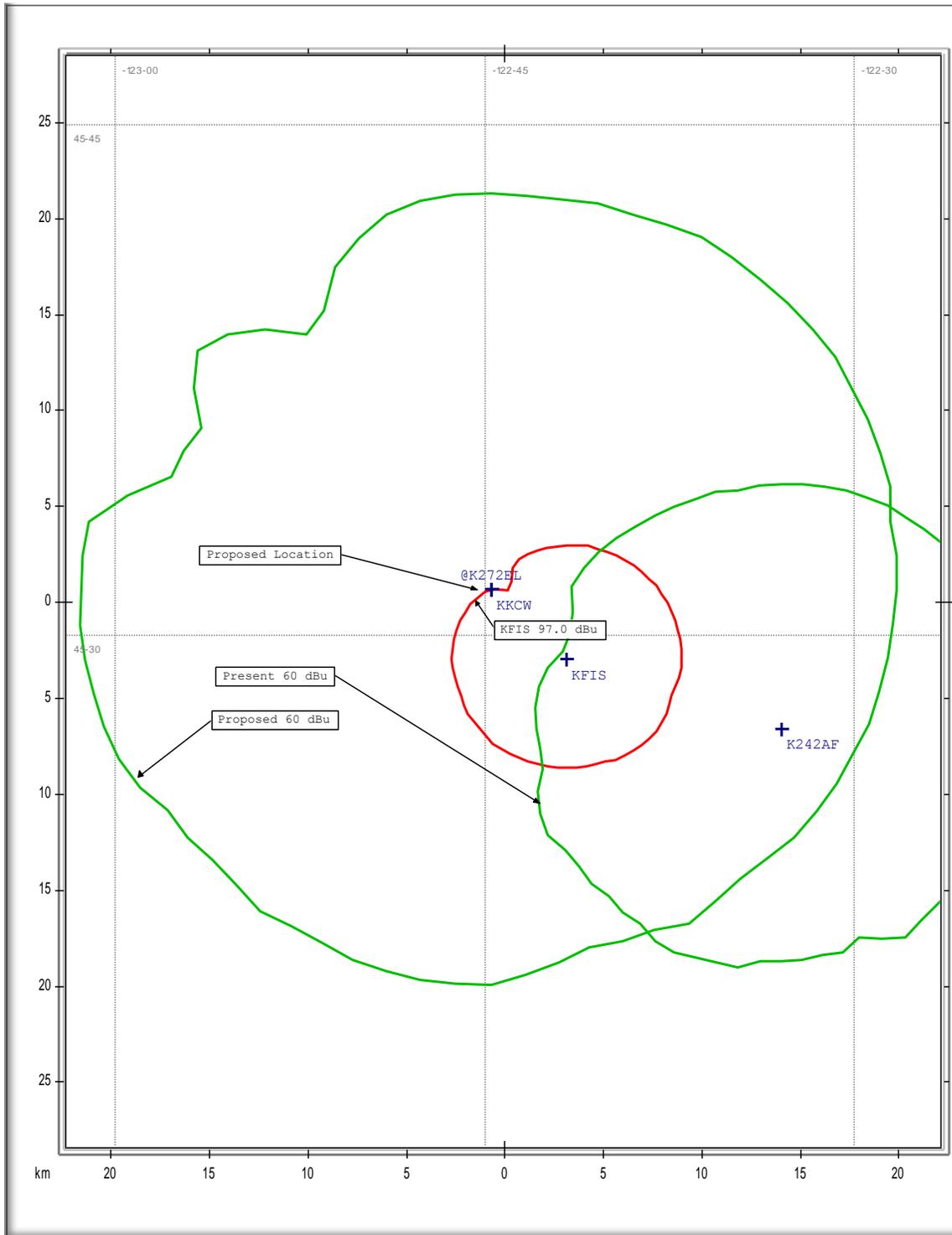
The proposed antenna system is an **ERI Model LP-1E-DA 1**- element antenna, 168 meters above ground. As this element type is not modeled in any current computer program, for purposes of this analysis the FM Model program has been set to calculate values for a "worst case" type of antenna element array, "Ring Stub", operated with an effective radiated power of 0.099 Kilowatts in the vertical plane. At 2 meters above the surface, at 45 meters from the base of the tower, this proposal will contribute worst case, 0.14 microwatts per square centimeter, or 0.014 percent of the allowable ANSI limit for controlled exposure, and 0.07 percent of the allowable limit for uncontrolled exposure. This figure is less than 5% of the applicable FCC exposure limit at all locations extending out from the base of the tower. Section 1.1307(b)(3) excludes applications when the calculated level is predicted to be less than 5% of the applicable exposure limit. It is therefore believed that this proposal is in compliance with OET Bulletin Number 65 as required by the Federal Communications Commission.

Further, the applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The site itself is restricted from public access. The applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

**Figure 1. Overlap and Spacing Study**

Facility_id	Callsign	Channel	ERP_w	ARN	Class	Status	Dist_km	Sep	Clr	Comments
68210	KKCW	277	95000	BLH-20011214AAF	C	LIC	0	0	-72.43 dB	Living Way
50553	KFIS	281	6900	BLH-20020306AAK	C2	LIC	5.48	0	-39.35 dB	Living Way
60141	K242AF	279	99	BMPFT-20131025AER	D	CP MOD	0	0	-22.26 dB	This Facility
82062	KRYP	226	1550	BLH-20060208AMG	C3	LIC	5.48	12	-6.5	<99watts
0	KRYP*	226	0	FM ALLOTMENT-RM-10668	C3	RSV	14.34	12	2.3	Clear
148828	K279BU	279	10	BNPFT-20130328ATL	D	CP	94.23	0	6.24 dB	Clear
61987	KNRQ	279	100000	BLH-20130729AIJ	C0	LIC	171.44	0	8.46 dB	Clear
61987	KNRQ	279	0	FM ALLOTMENT	C0	RSV	104.67	0	11.43 dB	Clear
56236	KVAS-FM	280	11000	BLH-20060213ACC	C3	LIC	110.06	0	18.31 dB	Clear
18513	KHTP	279	67000	BLH-20080730AKI	C	LIC	228.06	0	19.08 dB	Clear

**Figure 2. Signal Contours**



**Figure 3. Interference Signal Distance Calculations**

ERP	0.099	kw		
Calculated IX contour	137	dbu		
			Distance to interfering contour meters (hypot)	Height of IX meters
Relative Field	Downward ERP			
1	0.0990		9.8587	167.828

**Figure 4. View of Instant Proposal Location**

