

Technical Statement  
and Exhibits  
in support of a  
NEW Commercial FM Translator  
Construction Permit

Completes Short Form Application  
BNPFT-20030317KXY

Channel 280

Durant, OK

August 29, 2013

**EXHIBIT I-A**  
**LPFM PRECLUSION SHOWING**  
**NEW COMMERCIAL FM TRANSLATOR**  
**CHANNEL 280**  
**DURANT, OK**

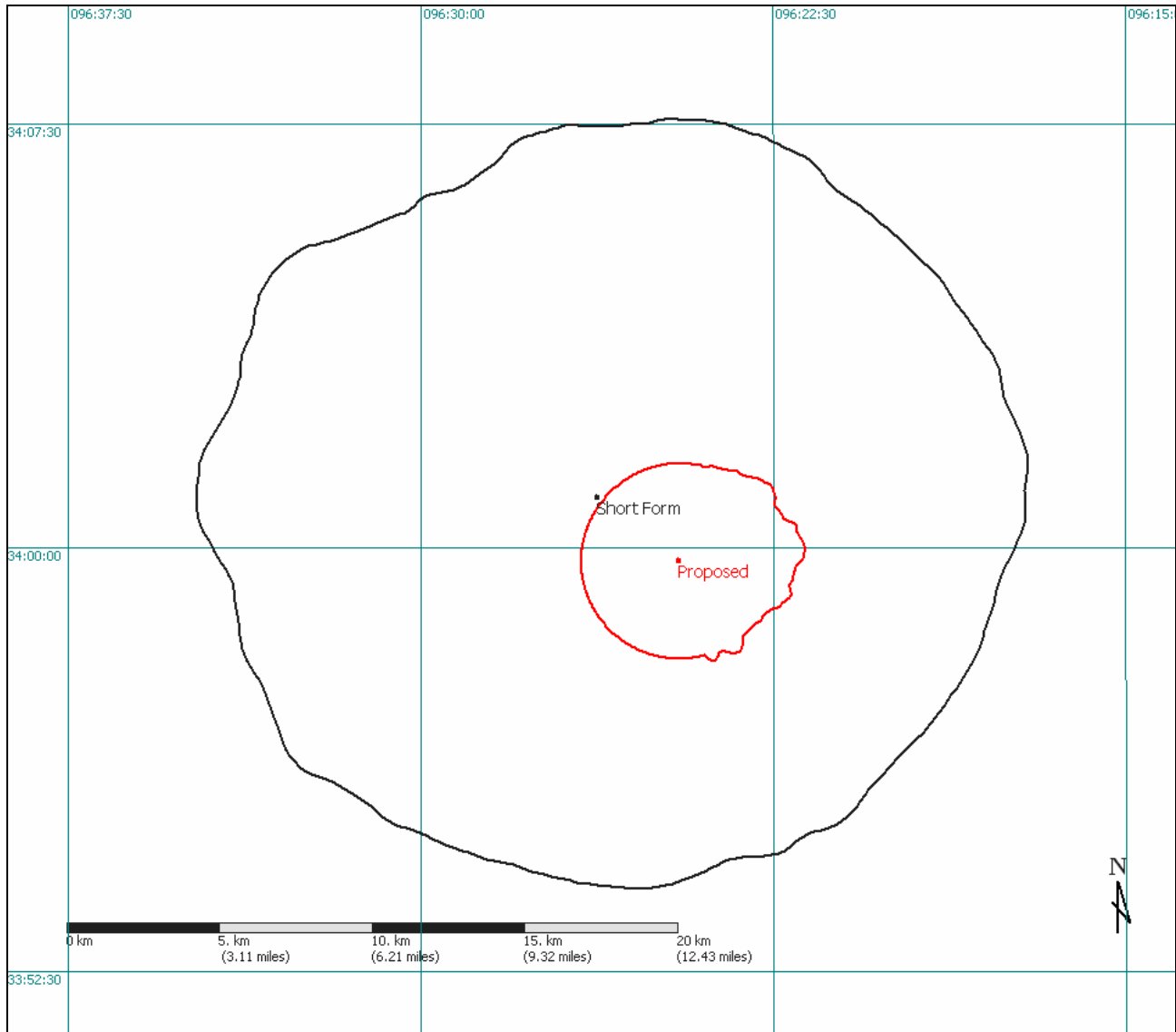
The proposed transmitter site is at least 39 kilometers from all Market Grids,<sup>1</sup> and therefore cannot preclude any LPFM licensing opportunities in any grid.

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<sup>1</sup> The term “Market Grid” is the 30x30 or 20x20 minute grid specified in Appendices A and B for each studied market. *See Fourth Report and Order*, 27 FCC Rcd at 3398-3406.

**EXHIBIT I-B**  
**MINOR MODIFICATION ANALYSIS**  
**NEW COMMERCIAL FM TRANSLATOR**  
**CHANNEL 280**  
**DURANT, OK**

The instant application proposes to change the site for the translator. No channel change is requested.



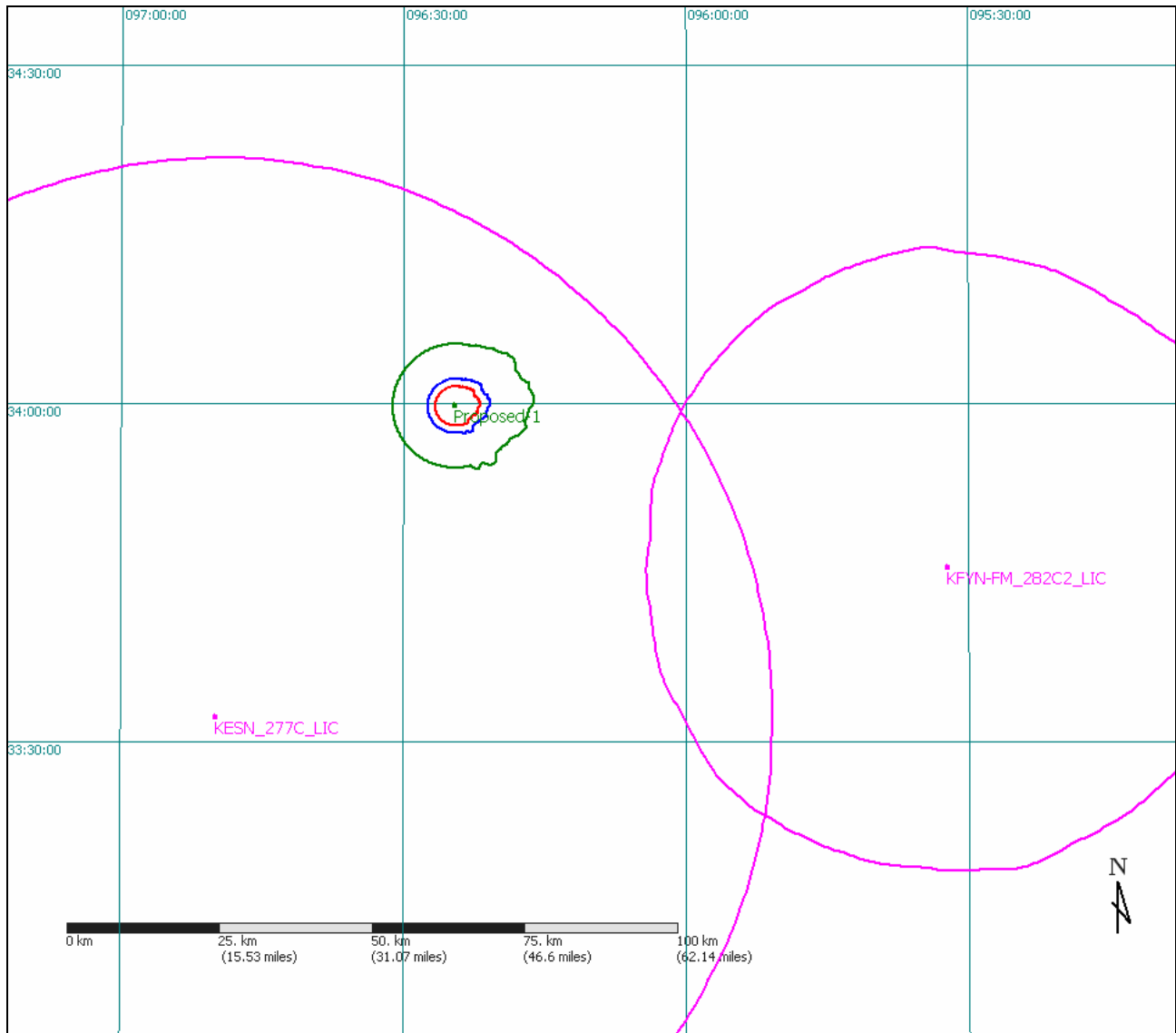
The proposed 60 dBu contour of the facility (red) is completely within the 60 dBu contour of the underlying short form application (black). Therefore, the proposed modification to the transmitter site for the facility is considered a minor change and may also be requested at this time.

## EXHIBIT III-12

### INTERFERENCE AND OVERLAP REQUIREMENTS NEW COMMERCIAL FM TRANSLATOR CHANNEL 280 DURANT, OK

It is proposed to locate the transmit antenna on an unregistered tower in Durant, OK.

The following illustration demonstrates the no prohibited contour overlap exists between the facility proposed herein and any other station or translator other than KESN (FID #58265).



The green contours represent co-channel interfering (40 dBu) to co-channel protected (60 dBu) contours. Blue contours represent first-adjacent channel interfering (54 dBu) to first-adjacent protected (60 dBu) contours. Magenta contours represent second and third-adjacent channel

interfering (100 dBu) to second and third-adjacent protected (60 dBu) contours. Red contours represent co-channel protected (60 dBu) to co-channel interfering (40 dBu) contours.

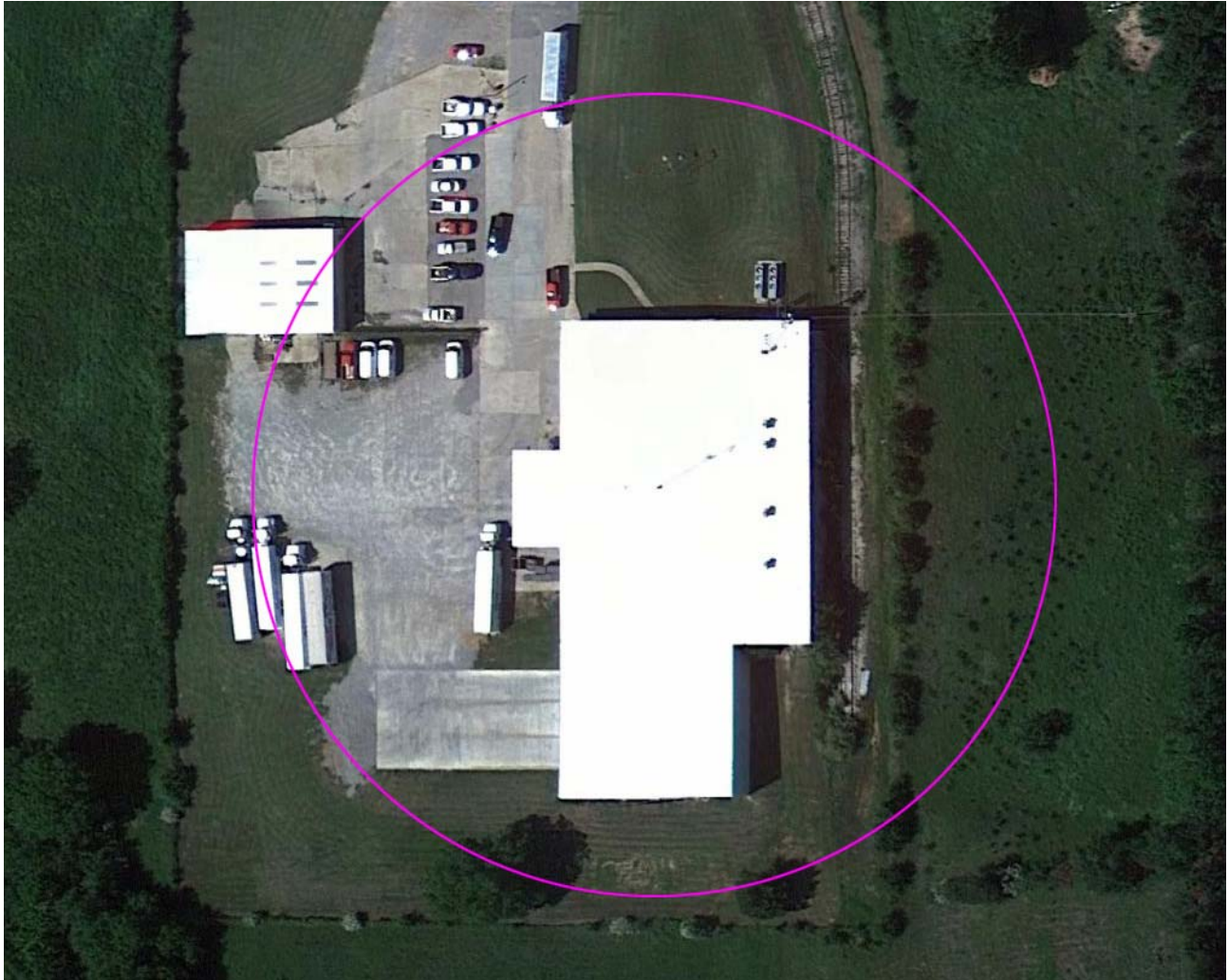
Section 74.1204(d) states

“[t]he 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.”

The following analysis demonstrates that a lack of population and/or other factors allow this proposal to be compliant with 74.1204. The process commonly called “Living Way”, as recently described in FCC 08-242 in connection with BPFT-19981001TA, allows for the use of U/D Analysis, also known as “signal strength ratio methodology.”

In this instant case, the facilities of KESN are on a third adjacent channel to the proposed translator. KESN is authorized to broadcast with 98 kilowatts at 606 meters HAAT from a site that is 64.26 kilometers from the proposed translator site. The predicted strength of KESN at the proposed translator site is 71.4 dBu. Therefore, 111.4 dBu (71.4 dBu + 40 dBu) is the lowest value predicted to cause interference to KESN.

The aerial image below illustrates the area of predicted interference without accounting for the elevation pattern of the proposed antenna. The structure on which the tower is mounted and a small portion of another building are within this area. Neither structure is higher than 30 feet.



The facility proposed herein will utilize four-bay Shively 6812B antenna that employs half-wave spacing. (The elevation pattern for the antenna as prepared by Shively accompanies the instant application.)

The following table depicts the predicted signal strength from the proposed translator both at ground level, and at receiving antenna locations up to 14 meters (46 feet) above ground level. The 14 meter “artificial plane” is significantly higher than any structure within the potential free-space zone of interference.

**Proposed Antenna:** Shively 6812B 4-bay half-wave  
**Proposed Power:** 0.01 kW  
**Antenna Height AGL:** 25 meters  
**Interference Contour:** 111.4 dBu  
**Artificial Rcv Antenna Height:** 14 meters  
**Distance (Free Space) Equation:**  $= (10^{((106.92 - [\text{desired dBu}] + [\text{ERP in dBk}]) / 20)}) * 1000$   
**Field Strength (dBu) Equation**  $= 106.92 - (20 * (\text{LOG10}[\text{DistMeters} / 1000])) + [\text{ERP in dBk}]$

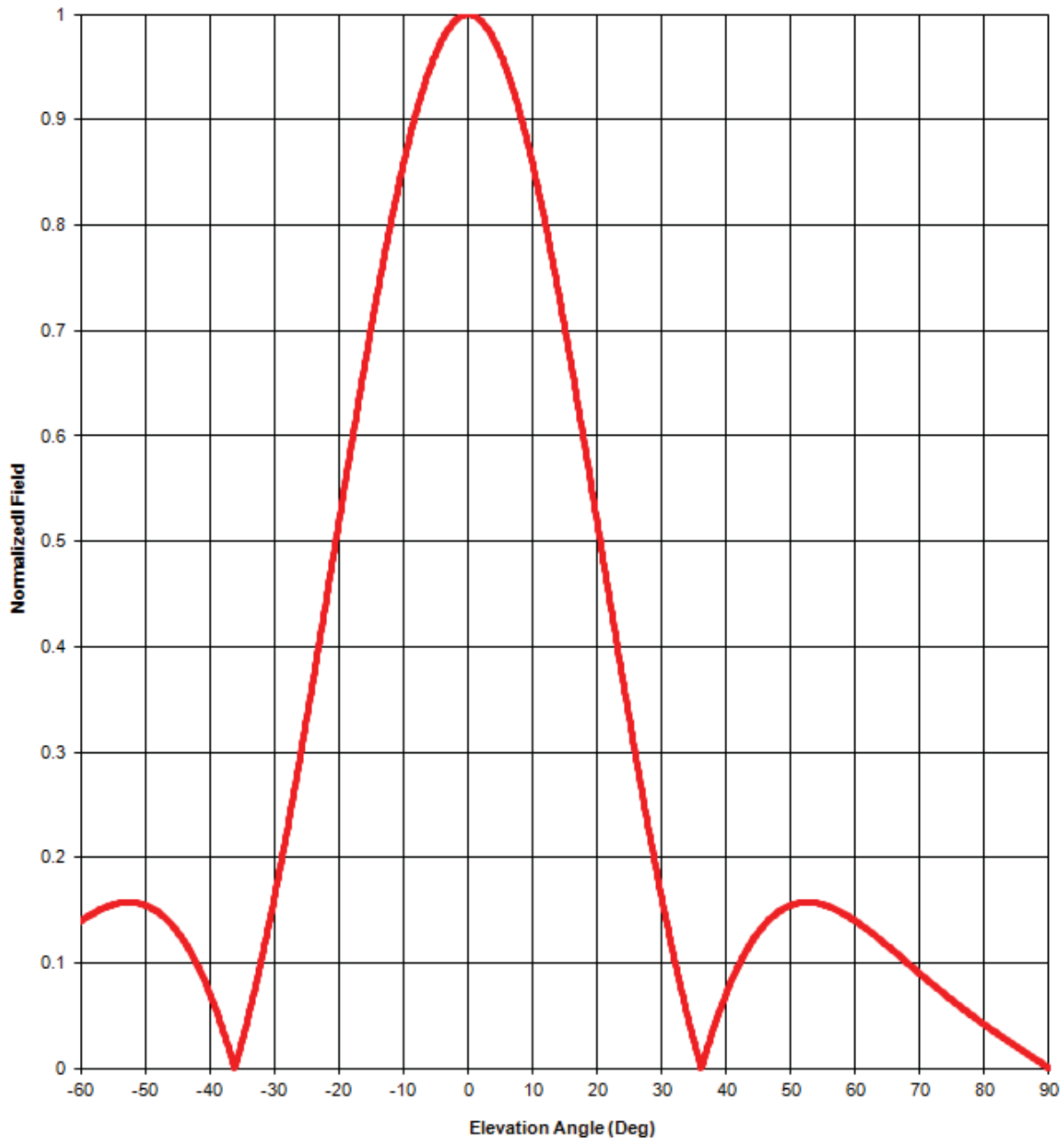
Depression				Distance				
Angle	Antenna			from Ant.	Distance from Ant. to	Field Strength in dBu @	Distance from Ant. to	Field Strength in dBu @
Below	Relative	ERP	ERP	to Interf	Artificial Plane	Artificial Plane	Ground Level	Ground Level
Horizon	Field	in kW	in dBk	Contour				
0°	0.999	0.010	-	59.64 m	infinite	---	infinite	---
-5°	0.963	0.009	-	57.49 m	126.21 m	104.57 dBu	286.84 m	97.44 dBu
-10°	0.858	0.007	-	51.23 m	63.35 m	109.56 dBu	143.97 m	102.42 dBu
-15°	0.703	0.005	-	41.97 m	42.50 m	111.29 dBu	96.59 m	104.16 dBu
-20°	0.519	0.003	-	30.99 m	32.16 m	111.08 dBu	73.10 m	103.95 dBu
-25°	0.331	0.001	-	19.76 m	26.03 m	109.01 dBu	59.16 m	101.88 dBu
-30°	0.162	0.000	-	9.67 m	22.00 m	104.26 dBu	50.00 m	97.13 dBu
-35°	0.026	0.000	-	1.55 m	19.18 m	89.56 dBu	43.59 m	82.43 dBu
-40°	0.071	0.000	-	4.24 m	17.11 m	99.28 dBu	38.89 m	92.15 dBu
-45°	0.130	0.000	-	7.76 m	15.56 m	105.36 dBu	35.36 m	98.23 dBu
-50°	0.155	0.000	-	9.25 m	14.36 m	107.58 dBu	32.64 m	100.45 dBu
-55°	0.155	0.000	-	9.25 m	13.43 m	108.17 dBu	30.52 m	101.04 dBu
-60°	0.140	0.000	-	8.36 m	12.70 m	107.77 dBu	28.87 m	100.63 dBu
-65°	0.116	0.000	-	6.93 m	12.14 m	106.53 dBu	27.58 m	99.40 dBu
-70°	0.090	0.000	-	5.37 m	11.71 m	104.64 dBu	26.60 m	97.51 dBu
-75°	0.065	0.000	-	3.88 m	11.39 m	102.05 dBu	25.88 m	94.92 dBu
-80°	0.041	0.000	-	2.45 m	11.17 m	98.21 dBu	25.39 m	91.08 dBu
-85°	0.021	0.000	-	1.25 m	11.04 m	92.50 dBu	25.10 m	85.37 dBu
-90°	0.001	0.000	-	0.06 m	11.00 m	66.09 dBu	25.00 m	58.96 dBu

As can be determined by the columns colored green, at no location from ground level to 14 meters above the ground does the predicted signal of the proposed translator exceed that of 40 dB greater than KESN.

The Applicant respectfully submits that since a lack of population exists in the area of actual interference, the processing pursuant to 47 C.F.R § 74.1204(d) is appropriate for the instant application.



## Elevation pattern



Antenna model: 6812b, 4-bay half-wave-spaced

Test frequency: 98.1 MHz

Gain (maximum):

Power	dB
1.14	0.58 dB

[Document No. 6812b 4-bay hw \(130701\)](#)

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Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field
1	0.999	19	0.556	37	0.018	55	0.155	73	0.075
2	0.994	20	0.519	38	0.037	56	0.153	74	0.070
3	0.987	21	0.481	39	0.055	57	0.151	75	0.065
4	0.976	22	0.443	40	0.071	58	0.147	76	0.060
5	0.963	23	0.405	41	0.086	59	0.144	77	0.055
6	0.947	24	0.368	42	0.099	60	0.140	78	0.050
7	0.929	25	0.331	43	0.111	61	0.136	79	0.046
8	0.908	26	0.296	44	0.121	62	0.131	80	0.041
9	0.884	27	0.261	45	0.130	63	0.126	81	0.037
10	0.858	28	0.227	46	0.137	64	0.121	82	0.033
11	0.831	29	0.194	47	0.143	65	0.116	83	0.029
12	0.801	30	0.162	48	0.148	66	0.111	84	0.025
13	0.770	31	0.132	49	0.152	67	0.106	85	0.021
14	0.737	32	0.103	50	0.155	68	0.101	86	0.016
15	0.703	33	0.076	51	0.157	69	0.095	87	0.012
16	0.667	34	0.050	52	0.158	70	0.090	88	0.008
17	0.631	35	0.026	53	0.158	71	0.085	89	0.004
18	0.594	36	0.003	54	0.157	72	0.080	90	0.000

## Elevation Pattern Tabulation

Antenna 6812b, 4-bay half-wave-spaced

Relative Field at 0° Depression = 1.000

## **EXHIBIT III-15**

### **RF EXPOSURE ANALYSIS NEW COMMERCIAL FM TRANSLATOR CHANNEL 280 DURANT, OK**

The proposed facility was 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 facility will operate on an existing tower with a radiation centerline at 25.0 meters above ground level (AGL) and an ERP of 10 watts with circular polarization. The Applicant intends to use a four-bay Shively 6812B antenna. The antenna will employ half-wave spacing.

The antenna will be mounted on an existing tower that sits atop an occupied building. The antenna centerline is 19 meters above the roof.

At 2 meters above the roof and 14.2 meters from the base of the tower, this proposal will contribute 7.57 microwatts per square centimeter, or less than 3.8 percent of the allowable ANSI limit for uncontrolled exposure, and 0.008 percent of the allowable limit for controlled exposure. This figure is significantly 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, 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 by a substantial fence and locked gate. 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.

