

KHRR Application for Modification of Post-Repack Construction Permit

October 29, 2017

Engineering Exhibit

The purpose of this application is to request modification of a post-repack construction permit (LMS file number 0000026323) for operation on channel 16 for KHRR, Tucson, AZ, Facility ID 30601, licensed to NBC Telemundo License LLC.

This application specifies the same top mount antenna location at the same radiation center height of 1387.3 meters AMSL and the same 622.0 meters height above average terrain (HAAT) on the same tower as authorized in construction permit LMS file number 0000026323, but with a maximum effective radiated power (ERP) of 396 kW. A TVStudy 2.2.3 analysis using the default 2 km cell size and 1 km terrain profile point spacing of the proposed increase to 396 kW ERP showed the maximum amount of new interference created to any post-auction baseline facility, any application filed in the replication and first priority windows, and any granted post-auction construction permits in the LMS database dated October 26, 2017 was under 0.5%. The study showed no increase in interference (zero percent) from the proposed facility to population either in Mexico or the U.S. served by the Mexican facilities identified in TVStudy

Antenna System

The proposed facility will use a directional antenna with elliptical polarization. The proposed vertically polarized ERP is 99.0 kW. The vertically polarized ERP will not exceed the horizontally polarized ERP (396 kW) in any direction. Plots and tabulation of antenna data required by FCC Rules Section 73.625(c) are attached.

Environmental Statement

The requested facility will be installed on top an existing tower, located in an antenna farm. The proposed top mount antenna replaces an existing antenna and will not increase the height of the tower above 199 feet.

RF power density from the facility using combined horizontal and vertically polarized ERP was calculated using the procedures described in FCC Office of Engineering and Technology Bulletin 65. The maximum power density at the site, allowing for 4 meter building height and 2 meter person height, is calculated to be 0.0319 mW/cm² or 9.88% of the FCC maximum permissible exposure level of 0.323 mW/cm² at 485 MHz for an uncontrolled environment. The area where this power density is present is not accessible to the public and is protected by a fence and locked gate with required signage. At full power, RF power density on towers closer than 102 meters to this facility is calculated to exceed occupational exposure levels. KHRR will coordinate with other users at the site and reduce power or shut off as required to protect workers on this and nearby towers from RF exposure above the limits specified in FCC rule §1.1310.

Broadcast Facility

Compliance with 73.616:

A study using TVStudy 2.2.3 and the FCC LMS database dated 10/26/2017 showed the proposed facility complies with the interference requirements of Section 73.616 with regards to any post-auction baseline facility, any application filed in the replication and first priority window, and any granted post-auction construction permits when studied with the default settings of 2 km cell size and 1 km terrain profile point spacing.

Compliance with 73.622(i):

The proposed facility will operate on the channel assigned to KHRR for operation post-repack. The proposed KHRR facility has a service area of 34,930.2 square kilometers, which is less than the service area of 58,113.2 square kilometers of KUAT-TV (Facility ID 2731), which is licensed in the same DMA (Tucson), and thus complies with the Section 73.622(f)(5) limit on permissible maximized coverage area and the ERP and HAAT limits in 73.622(f)(8) do not apply. KHRR is currently authorized to use the proposed 396 kW ERP on its current channel (40).

KHRR Application for Modification of Post-Repack Construction Permit (continued)

Compliance with 73.623(e):

Not applicable. This application does not change the assigned channel or location of the authorized station.

Compliance with 73.625:

The proposed facility extends the contour previously approved by the Commission and will place a 48 dB μ V/m principle community contour over Tucson, Arizona, the community of license. See KHRR Proposed Coverage map, attached.

Compliance with 73.1030:

A TVStudy analysis did not identify any requirement for coordination with facilities listed in 73.1030.

Compliance with 73.1125:

The proposed facility extends the contour previously approved by the Commission and will place a 48 dB μ V/m principle community contour over the main studio located at 5151 E. Broadway Blvd, Suite 650, Tucson, AZ 85711. See KHRR Proposed Coverage map, attached.

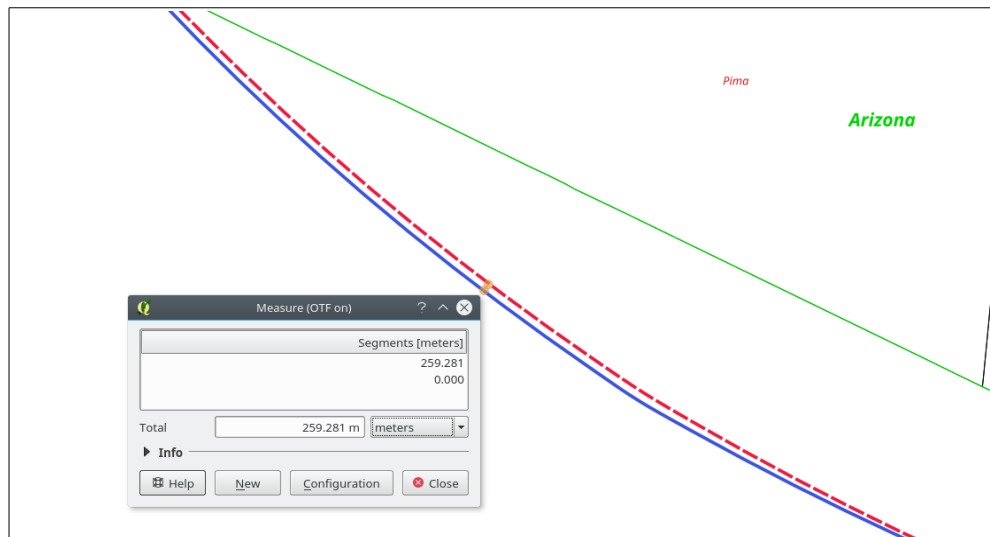
Section 73.1650 Considerations:

This facility is 93.9 km from the Mexican border and within the coordination distance.

A TVStudy analysis shows no new interference to XHCCS, LMS file number BPFS20160315AAE, on channel 16 in Cananea, SO. TVStudy shows unique interference from the KHRR FCC baseline facility to 0 people in the United States and to 4 people in Mexico. The proposed facility does not change this interference.

In the "Exchange of coordination letters with IFT Regarding DTV Transition and Reconfiguration of 600 MHz Spectrum (July 2015)", "Table 6: Pre-Incentive Auction US Post-Transition DTV Allotment Plan" on pages 13 and 14 shows the KHRR coordinated effective radiated power (ERP) is 396 kW based on an antenna at 1383.2 meters AMSL. This application, proposes the coordinated ERP of 396 kW but at a height of 1387.3 meters AMSL. The 4 meter increase in height was due to a more accurate determination of the tower location and ground elevation.

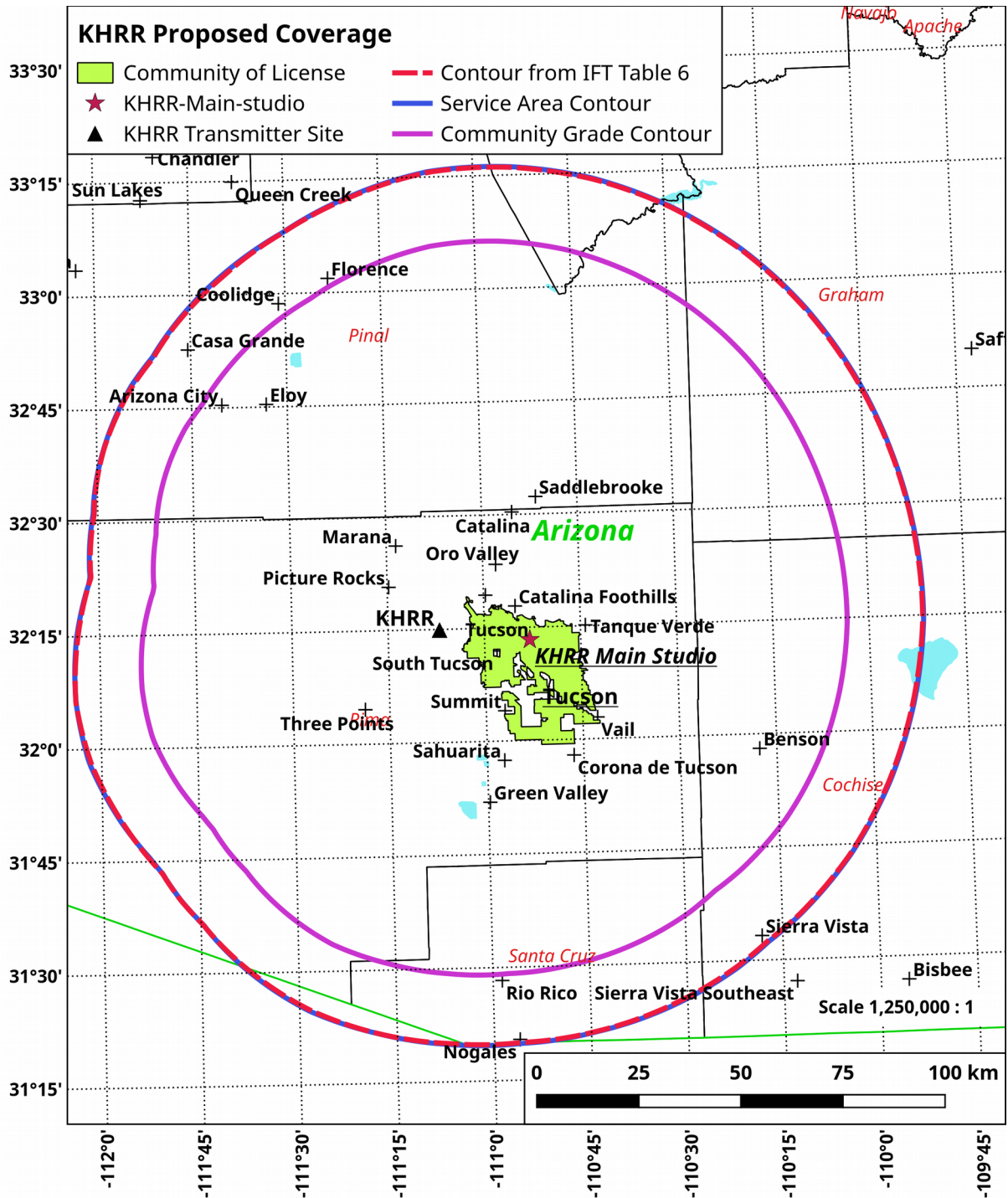
This slight increase in antenna height and small differences in the coordinated antenna pattern and the antenna pattern selected to match the FCC replication pattern result in a very small contour extension beyond the channel 16 contour created using the ERP, antenna height, and antenna pattern from IFT's Table 6. The maximum calculated contour extension in Mexico compared to the contour created from IFT Table 6 is under 300 meters as shown in the map measurement below:



KHRR Application for Modification of Post-Repack Construction Permit (continued)

Section 73.1650 Considerations (continued):

The difference in the contour created using IFT Table 6 parameters (red dashed line) and the proposed Service Area Contour (blue solid line) becomes indistinguishable on a 1,250,000:1 coverage map, as shown in the KHRR Proposed Coverage Map below:



KHRR Application for Modification of Post-Repack Construction Permit

**73.625(c)
October 29, 2017**

AZIMUTH PATTERN (H-Pol): Dielectric TFU-14ETT/VP-R 4C230

Main beam axis of symmetry: 75° true

Electrical Beam Tilt: 0.75

Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak) 2.24 (3.49 dBd)

Main Beam Calculated Max. V-pol Azimuth Pattern Gain (peak) 2.44 (3.88 dBd)

Maximum Main Beam H-Pol. Effective Radiated Power (ERP): 396.0 kW 25.98 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 99.0 kW 19.96 dBk

Tabulation of Azimuth Pattern (Horizontal polarization)

Angle	RF	dBk	ERP kW
0	0.690	22.75	188.5
10	0.790	23.93	247.1
20	0.880	24.87	306.7
30	0.940	25.44	349.9
40	0.980	25.80	380.3
50	1.000	25.98	396.0
60	1.000	25.98	396.0
70	0.990	25.89	388.1
80	0.990	25.89	388.1
90	0.990	25.89	388.1
100	0.990	25.89	388.1
110	0.980	25.80	380.3
120	0.950	25.53	357.4
130	0.890	24.96	313.7
140	0.810	24.15	259.8
150	0.700	22.88	194.0
160	0.590	21.39	137.8
170	0.500	19.96	99.0
180	0.440	18.85	76.7
190	0.390	17.80	60.2
200	0.350	16.86	48.5
210	0.290	15.22	33.3
220	0.230	13.21	20.9
230	0.200	12.00	15.8
240	0.210	12.42	17.5
250	0.220	12.83	19.2
260	0.210	12.42	17.5
270	0.190	11.55	14.3
280	0.170	10.59	11.4
290	0.210	12.42	17.5
300	0.280	14.92	31.0
310	0.350	16.86	48.5
320	0.400	18.02	63.4
330	0.450	19.04	80.2
340	0.500	19.96	99.0
350	0.590	21.39	137.8

Maximum

Angle	RF	dBk	ERP kW
58	1.000	25.98	396.0
251	0.220	12.83	19.2

Minimum

Angle	RF	dBk	ERP kW
233	0.200	12.00	15.8
279	0.170	10.59	11.4

AZIMUTH PATTERN (H-Pol): Dielectric TFU-14ETT/VP-R 4C230

Main beam axis of symmetry: 75° true

Electrical Beam Tilt: 0.75

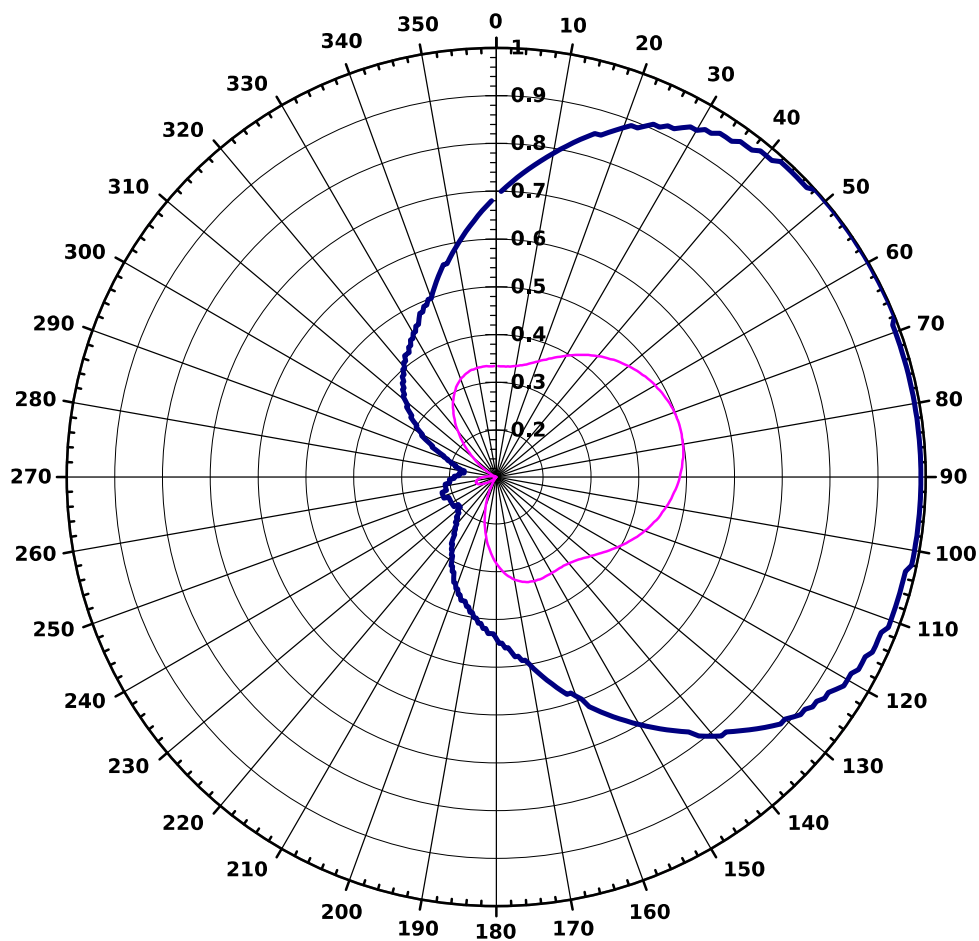
Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak) 2.24 (3.49 dBd)

Main Beam Calculated Max. V-pol Azimuth Pattern Gain (peak) 2.44 (3.88 dBd)

Maximum Main Beam H-Pol. Effective Radiated Power (ERP): 396.0 kW 25.98 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 99.0 kW 19.96 dBk

AZIMUTH PATTERN RELATIVE FIELD:



Blue plot shows azimuth pattern relative field for horizontal polarization

Red plot shows azimuth pattern relative field for vertical polarization

AZIMUTH PATTERN (H-Pol): Dielectric TFU-14ETT/VP-R 4C230

Main beam axis of symmetry: 75° true

Electrical Beam Tilt: 0.75

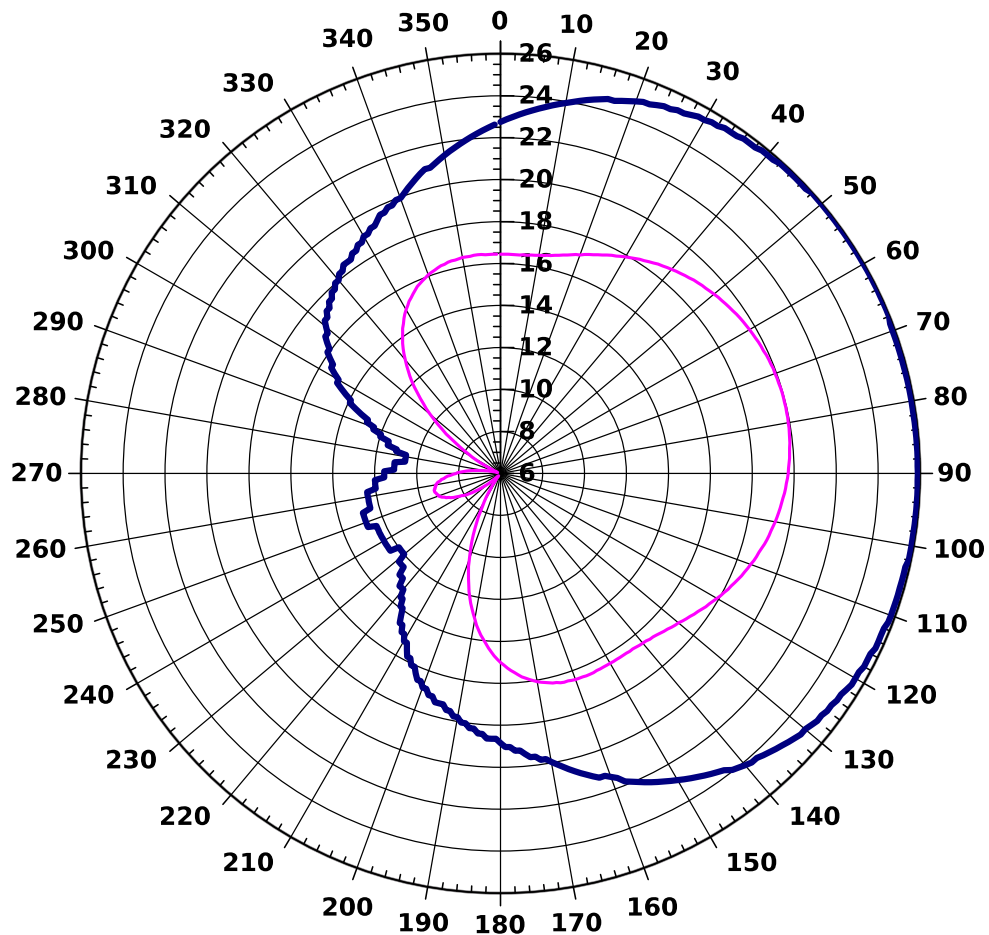
Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak) 2.24 (3.49 dBd)

Main Beam Calculated Max. V-pol Azimuth Pattern Gain (peak) 2.44 (3.88 dBd)

Maximum Main Beam H-Pol. Effective Radiated Power (ERP): 396.0 kW 25.98 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 99.0 kW 19.96 dBk

AZIMUTH PATTERN ERP (dBk)



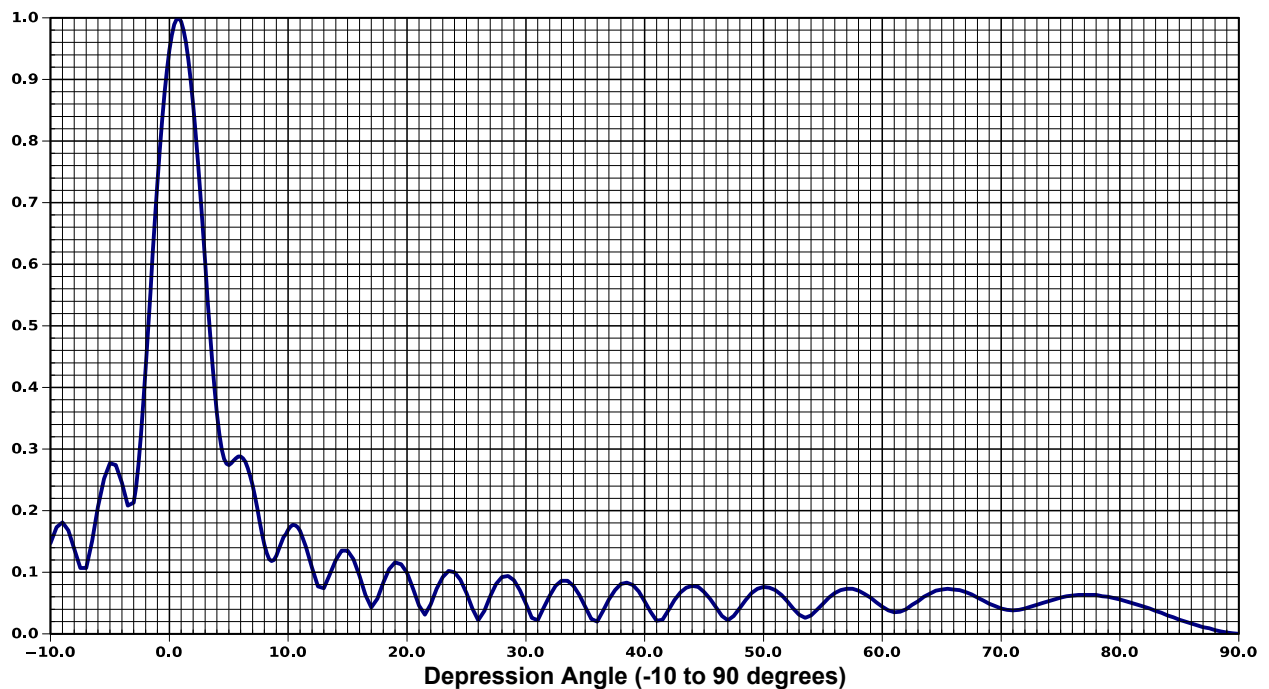
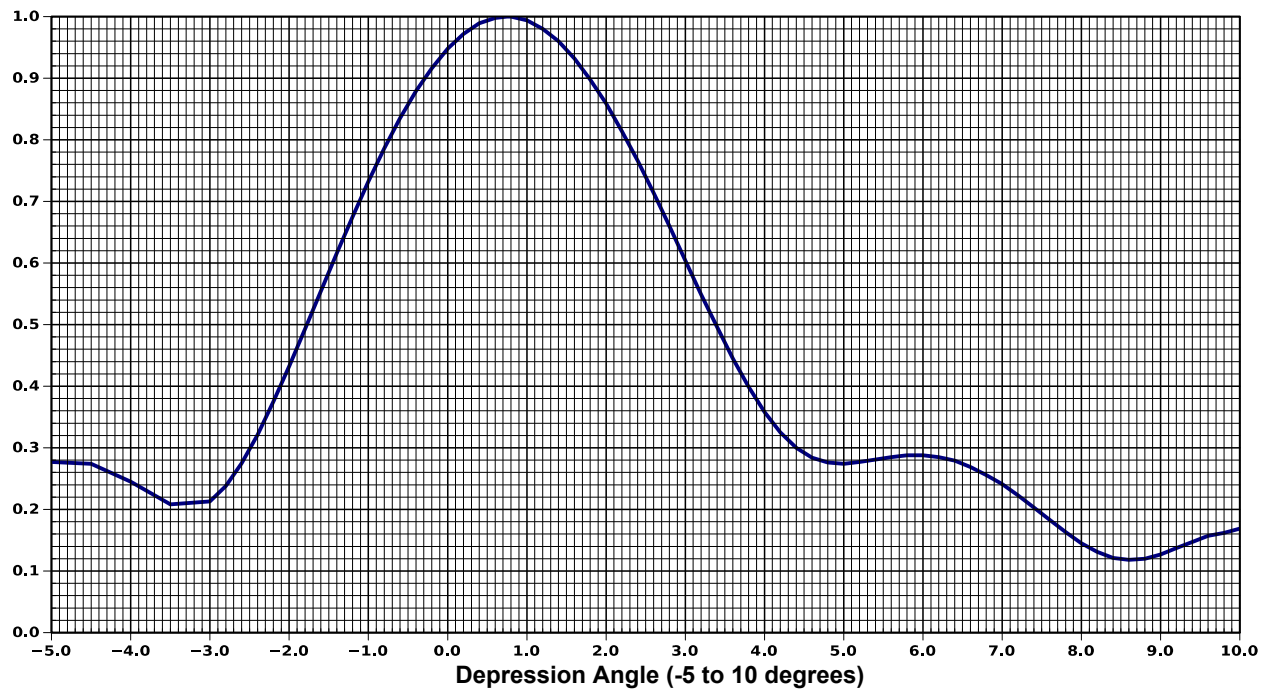
Blue plot shows effective radiated power (dBk) for horizontal polarization

Red plot shows effective radiated power (dBk) for vertical polarization

ELEVATION PATTERN Dielectric TFU-14ETT/VP-R 4C230

Electrical Beam Tilt: 0.75°

Calculated Maximum Elevation Gain (H + V polarization):	13.40	11.27 dBd
RMS Gain at Horizontal (H + V polarization):	12.00	10.79 dBdMaximum
Main Beam H-Pol. Effective Radiated Power (ERP):	396.0 kW	25.98 dBk
Maximum Main Beam V-Pol. Effective Radiated Power (ERP):	99.0 kW	19.96 dBk

Relative Field

ELEVATION PATTERN Dielectric TFU-14ETT/VP-R 4C230

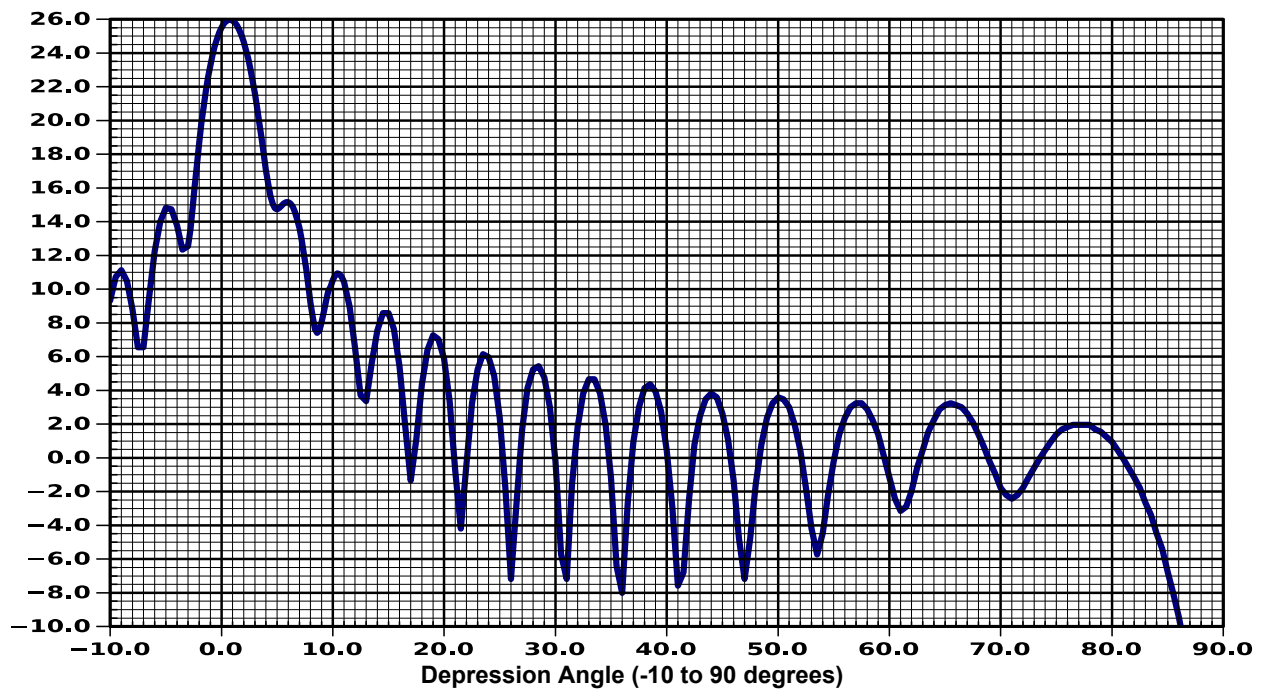
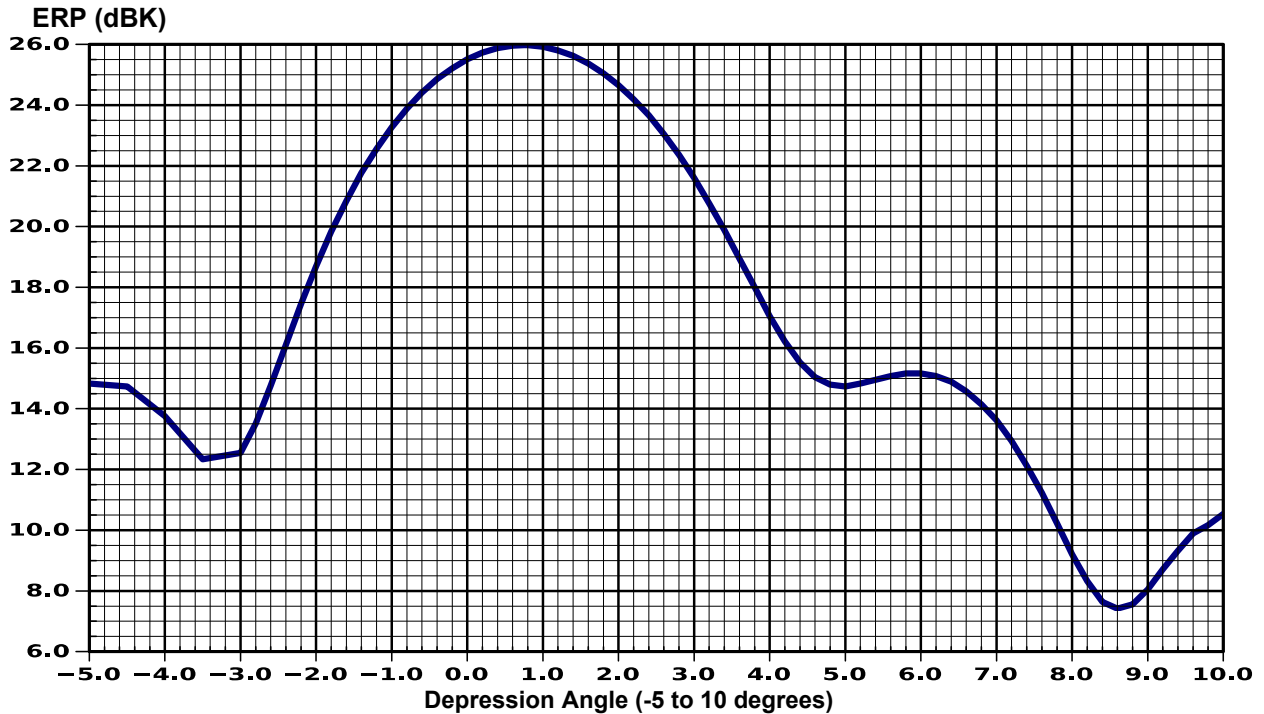
Electrical Beam Tilt: 0.75°

Calculated Maximum Elevation Gain (H + V polarization): 13.40 11.27 dBd

RMS Gain at Horizontal (H + V polarization): 12.00 10.79 dBd

Main Beam H-Pol. Effective Radiated Power (ERP): 396.0 kW 25.98 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 99.0 kW 19.96 dBk



KHRR Application for Modification of Post-Repack Construction Permit**73.625(c)
October 29, 2017****ELEVATION PATTERN Dielectric TFU-14ETT/VP-R 4C230**

Electrical Beam Tilt: 0.75°

Calculated Maximum Elevation Gain (H + V polarization): 13.40 11.27 dBd

RMS Gain at Horizontal (H + V polarization): 12.00 10.79 dBd

Main Beam H-Pol. Effective Radiated Power (ERP): 396.0 kW 25.98 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 99.0 kW 19.96 dBk

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.147	1.00	0.994	8.00	0.145	21.0	0.046	38.5	0.083	56.0	0.066	73.5	0.050
-9.50	0.173	1.20	0.980	8.20	0.131	21.5	0.031	39.0	0.079	56.5	0.071	74.0	0.053
-9.00	0.181	1.40	0.960	8.40	0.121	22.0	0.048	39.5	0.069	57.0	0.073	74.5	0.056
-8.50	0.168	1.60	0.932	8.60	0.118	22.5	0.073	40.0	0.053	57.5	0.073	75.0	0.059
-8.00	0.138	1.80	0.898	8.80	0.120	23.0	0.092	40.5	0.036	58.0	0.070	75.5	0.061
-7.50	0.107	2.00	0.859	9.00	0.127	23.5	0.102	41.0	0.021	58.5	0.065	76.0	0.062
-7.00	0.107	2.20	0.814	9.20	0.137	24.0	0.100	41.5	0.023	59.0	0.059	76.5	0.063
-6.50	0.150	2.40	0.766	9.40	0.147	24.5	0.088	42.0	0.038	59.5	0.051	77.0	0.063
-6.00	0.206	2.60	0.714	9.60	0.157	25.0	0.066	42.5	0.055	60.0	0.044	77.5	0.063
-5.50	0.252	2.80	0.660	9.80	0.162	25.5	0.041	43.0	0.067	60.5	0.038	78.0	0.063
-5.00	0.277	3.00	0.604	10.0	0.169	26.0	0.022	43.5	0.075	61.0	0.035	78.5	0.061
-4.50	0.274	3.20	0.549	10.2	0.174	26.5	0.037	44.0	0.078	61.5	0.036	79.0	0.060
-4.00	0.245	3.40	0.496	10.4	0.177	27.0	0.061	44.5	0.076	62.0	0.040	79.5	0.058
-3.50	0.208	3.60	0.445	10.6	0.176	27.5	0.081	45.0	0.068	62.5	0.047	80.0	0.056
-3.00	0.213	3.80	0.399	10.8	0.173	28.0	0.092	45.5	0.057	63.0	0.053	80.5	0.053
-2.80	0.238	4.00	0.358	11.0	0.167	28.5	0.094	46.0	0.043	63.5	0.060	81.0	0.050
-2.60	0.275	4.20	0.325	11.5	0.141	29.0	0.087	46.5	0.029	64.0	0.065	81.5	0.047
-2.40	0.321	4.40	0.300	12.0	0.107	29.5	0.071	47.0	0.022	64.5	0.070	82.0	0.044
-2.20	0.375	4.60	0.284	12.5	0.077	30.0	0.049	47.5	0.029	65.0	0.072	82.5	0.041
-2.00	0.432	4.80	0.276	13.0	0.074	30.5	0.026	48.0	0.042	65.5	0.073	83.0	0.037
-1.80	0.493	5.00	0.274	13.5	0.096	31.0	0.022	48.5	0.055	66.0	0.072	83.5	0.034
-1.60	0.554	5.20	0.277	14.0	0.120	31.5	0.042	49.0	0.066	66.5	0.071	84.0	0.030
-1.40	0.616	5.40	0.281	14.5	0.135	32.0	0.062	49.5	0.073	67.0	0.068	84.5	0.027
-1.20	0.675	5.60	0.285	15.0	0.135	32.5	0.078	50.0	0.076	67.5	0.064	85.0	0.023
-1.00	0.732	5.80	0.288	15.5	0.121	33.0	0.086	50.5	0.075	68.0	0.059	85.5	0.020
-0.80	0.786	6.00	0.288	16.0	0.094	33.5	0.086	51.0	0.071	68.5	0.054	86.0	0.017
-0.60	0.835	6.20	0.285	16.5	0.063	34.0	0.078	51.5	0.063	69.0	0.049	86.5	0.014
-0.40	0.879	6.40	0.279	17.0	0.043	34.5	0.063	52.0	0.053	69.5	0.045	87.0	0.011
-0.20	0.916	6.60	0.269	17.5	0.057	35.0	0.044	52.5	0.041	70.0	0.041	87.5	0.009
0.00	0.948	6.80	0.256	18.0	0.083	35.5	0.024	53.0	0.031	70.5	0.039	88.0	0.006
0.20	0.972	7.00	0.241	18.5	0.105	36.0	0.020	53.5	0.026	71.0	0.038	88.5	0.004
0.40	0.989	7.20	0.223	19.0	0.116	36.5	0.037	54.0	0.030	71.5	0.039	89.0	0.002
0.60	0.998	7.40	0.203	19.5	0.113	37.0	0.056	54.5	0.039	72.0	0.041	89.5	0.001
0.75	1.000	7.60	0.183	20.0	0.099	37.5	0.071	55.0	0.049	72.5	0.044	90.0	0.000
0.80	1.000	7.80	0.163	20.5	0.074	38.0	0.081	55.5	0.059	73.0	0.047		