

# **KVDA Application for Modification of Post-Repack Construction Permit**

## **October 27, 2017**

### Engineering Exhibit

The purpose of this application is to request modification of the post-repack construction permit (LMS File number 0000026831) for channel 15 for KVDA, San Antonio, TX, Facility ID 64969, licensed to NBC Telemundo License LLC.

This application specifies the same side mount antenna location at the same radiation center height of 615.1 meters AMSL and the same 451.0 meter height above average terrain (HAAT) on the same tower as authorized in construction permit LMS file number 0000026831, but with a maximum effective radiated power (ERP) of 805 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 805 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%.

### Antenna System

The proposed facility will use a directional antenna with elliptical polarization. The proposed vertically polarized ERP is 402.5 kW. The vertically polarized ERP will not exceed the horizontally polarized ERP (805 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 an existing tower located in an antenna farm. The proposed side mount antenna will not increase the height of the tower.

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 RF power density anywhere on the ground including extra heights of 10 meters for buildings and 2 meters for a person is calculated to be 0.00259 mw/cm<sup>2</sup> or 0.81% of the maximum permissible exposure (MPE) level of 0.319 mw/cm<sup>2</sup> at 479 MHz for an uncontrolled environment. At full power in the main beam of the antenna, RF power density is calculated to drop below the maximum public exposure level at distances greater than 356 meters from the antenna and below the maximum permissible occupational (controlled environment) exposure level of 1.597 mw/cm<sup>2</sup> at distances greater than 159 meters from the antenna. There are no other towers within these distances. Access to the tower site is restricted with fencing and a locked gate. KVDA will reduce power or shut off as required to protect workers on the tower 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 KVDA for operation post-repack. The proposed KVDA facility has a service area of 34,351.6 square kilometers, which is less than the service area of 41,796.6 square kilometers of KSAT-TV, which is licensed in the same DMA (San Antonio), 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.

#### *Compliance with 73.623(e):*

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

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

### *Compliance with 73.625:*

The proposed facility extends the contour previously approved by the Commission and will place a 48 dB $\mu$ V/m principle community contour over San Antonio, Texas, the community of license. See KVDA Proposed Coverage map, attached.

### *Compliance with 73.1030:*

A TVStudy analysis did not identify any requirement for coordination with the 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 $\mu$ V/m principle community contour over the main studio located at 6234 San Pedro Avenue, San Antonio, Texas. KVDA Proposed Coverage map, attached.

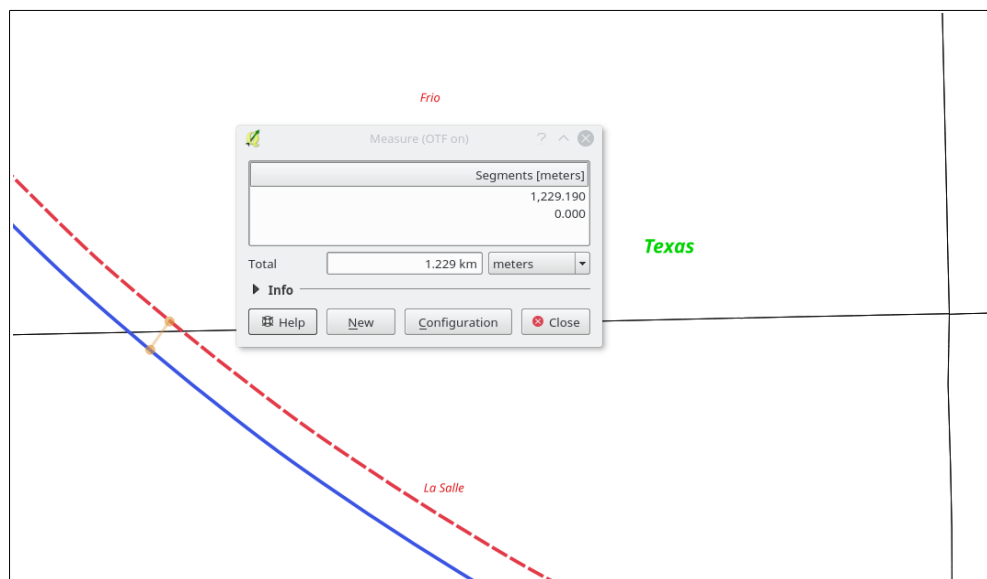
### *Compliance with 73.1650:*

This facility is 218.9 km from the Mexican border and within the coordination distance.

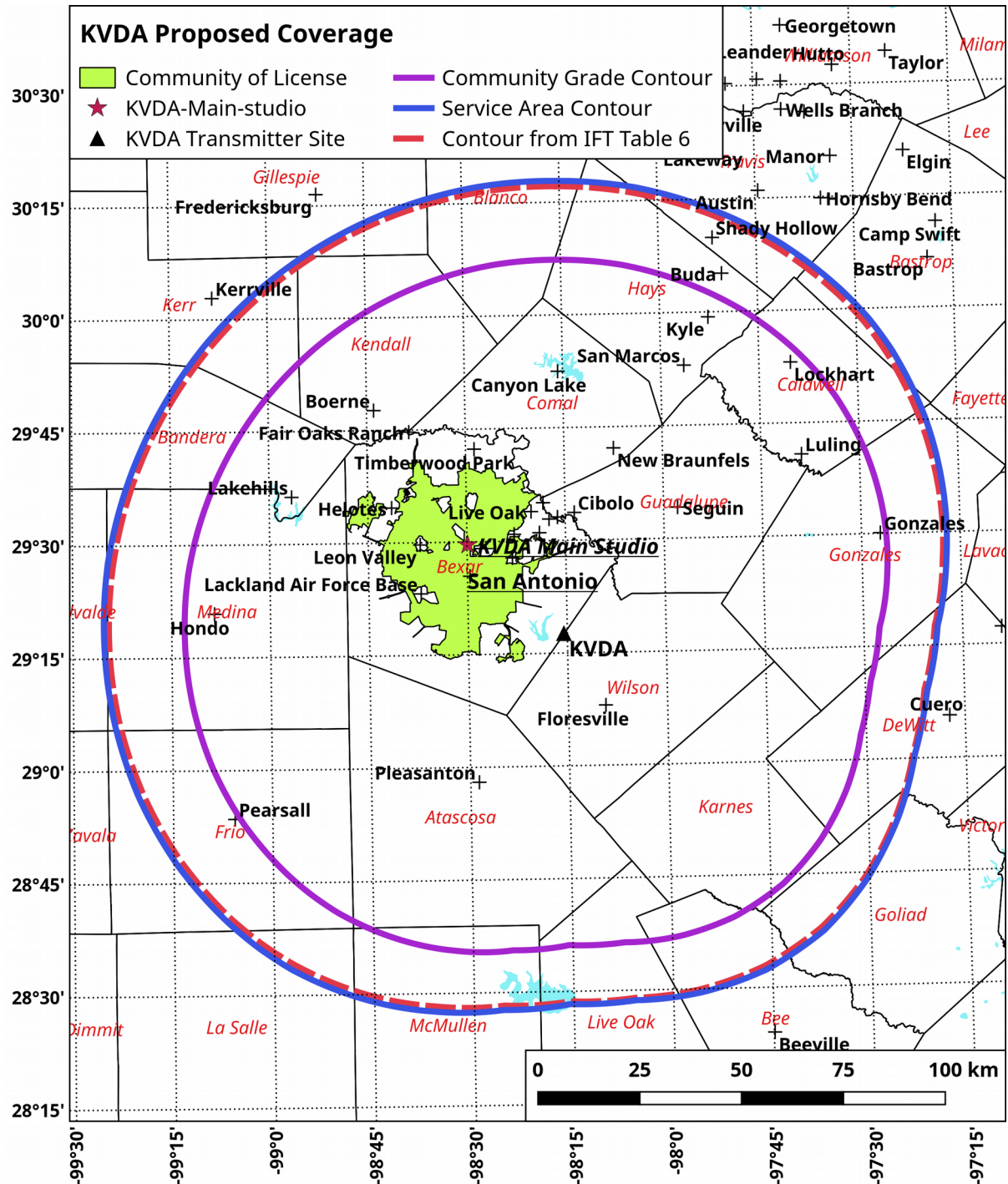
A TVStudy analysis shows no new interference to “LICITACION D15”, LMS file number BPFS20131206AEK in Ciudad Acuna, CI from this proposal. TVStudy predicts interference to 53 people in Mexico and no people in the U.S. from the FCC baseline allocation and those numbers are not changed by this proposal.

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 23 and 24 shows the KVDA coordinated effective radiated power (ERP) is 1,000 kW based on an antenna at 575 meters AMSL. This application, proposes a lower ERP of 805 kW but at a height of 615.1 meters AMSL in an open spot on the tower previously authorized for the KVDA analog facility.

The additional height, even at the lower ERP, and slightly different coordinated pattern results in a slight extension of the predicted service area contour of KVDA in some directions. This can be seen on the FCC coverage map on the following page. The maximum proposed contour (blue line) extension in the direction of Mexico is only slightly over 1.2 km beyond the contour calculated on the same (coordinated) channel (15) using the ERP, antenna height, antenna pattern, and orientation shown in IFT’s Table 6 (dashed red line). As can be seen, in some directions, such as due South, there is little or no extension. The screenshot below shows the maximum extension in the direction of Mexico measured where the contours cross the Frio – La Salle county line:



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AZIMUTH PATTERN (H-Pol): Dielectric TFU-18JSC/VP-R 4C200

Main beam axis of symmetry: 315° true

Electrical Beam Tilt: 0.75

Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak) 1.91 (2.81 dBd)

Maximum Main Beam H-Pol. Effective Radiated Power (ERP) 805.0 kW 29.06 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 402.5 kW 26.05

Tabulation of Azimuth Pattern (Horizontal polarization)

Angle	RF	dBk	ERP kW
0	0.950	26.09	726.5
10	0.930	25.90	696.2
20	0.890	25.52	637.6
30	0.850	25.12	581.6
40	0.790	24.48	502.4
50	0.720	23.68	417.3
60	0.630	22.52	319.5
70	0.530	21.02	226.1
80	0.430	19.20	148.8
90	0.340	17.16	93.1
100	0.300	16.07	72.5
110	0.310	16.36	77.4
120	0.360	17.66	104.3
130	0.400	18.57	128.8
140	0.420	19.00	142.0
150	0.400	18.57	128.8
160	0.350	17.41	98.6
170	0.290	15.78	67.7
180	0.270	15.16	58.7
190	0.320	16.64	82.4
200	0.420	19.00	142.0
210	0.530	21.02	226.1
220	0.640	22.66	329.7
230	0.730	23.80	429.0
240	0.810	24.70	528.2
250	0.870	25.32	609.3
260	0.910	25.71	666.6
270	0.940	25.99	711.3
280	0.970	26.27	757.4
290	0.980	26.36	773.1
300	0.990	26.44	789.0
310	1.000	26.53	805.0
320	1.000	26.53	805.0
330	0.990	26.44	789.0
340	0.980	26.36	773.1
350	0.970	26.27	757.4

**Maximum**

Angle	RF	dBk	ERP kW
140	0.420	19.00	142.0
315	1.000	26.53	805.0

**Minimum**

Angle	RF	dBk	ERP kW
102	0.300	16.07	72.5
180	0.270	15.16	58.7

AZIMUTH PATTERN (H-Pol): Dielectric TFU-18JSC/VP-R 4C200

Main beam axis of symmetry: 315° true

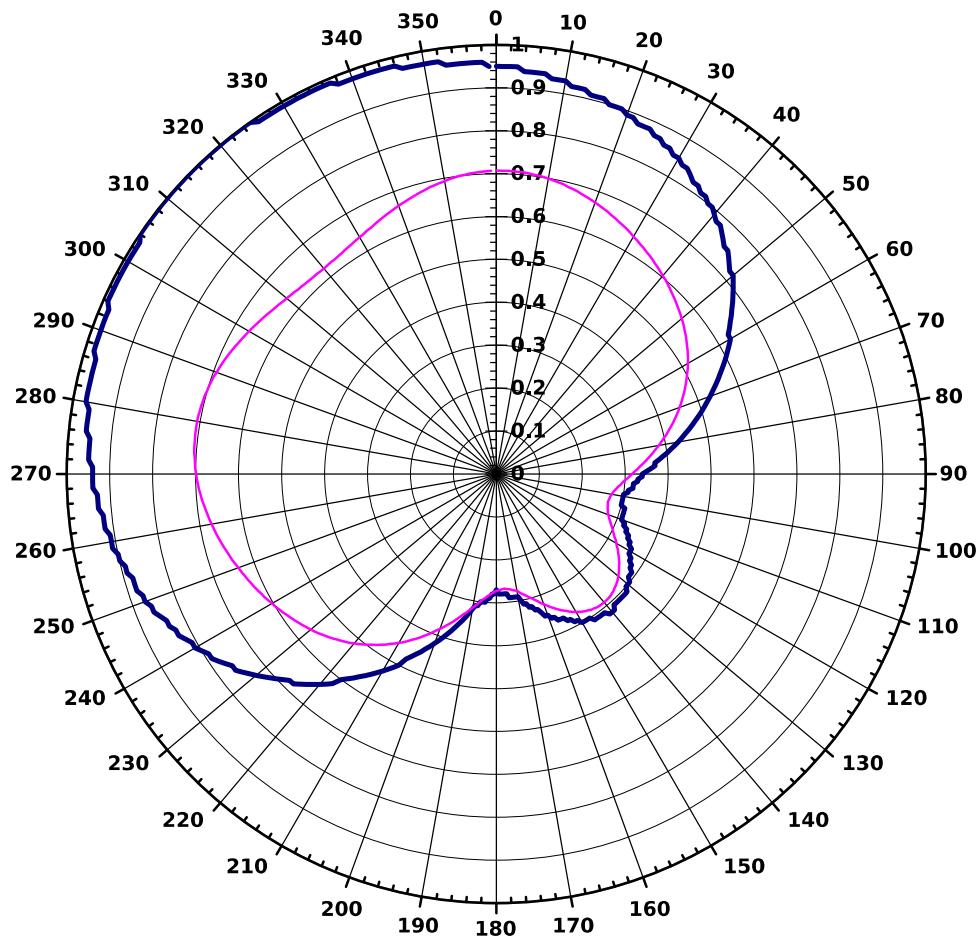
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Azimuth Pattern – Relative Field:



Blue plot shows azimuth pattern relative field for horizontal polarization

Red plot shows azimuth pattern relative field for vertical polarization

(Polar pattern only updated November 6, 2017)

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Main beam axis of symmetry: 315° true

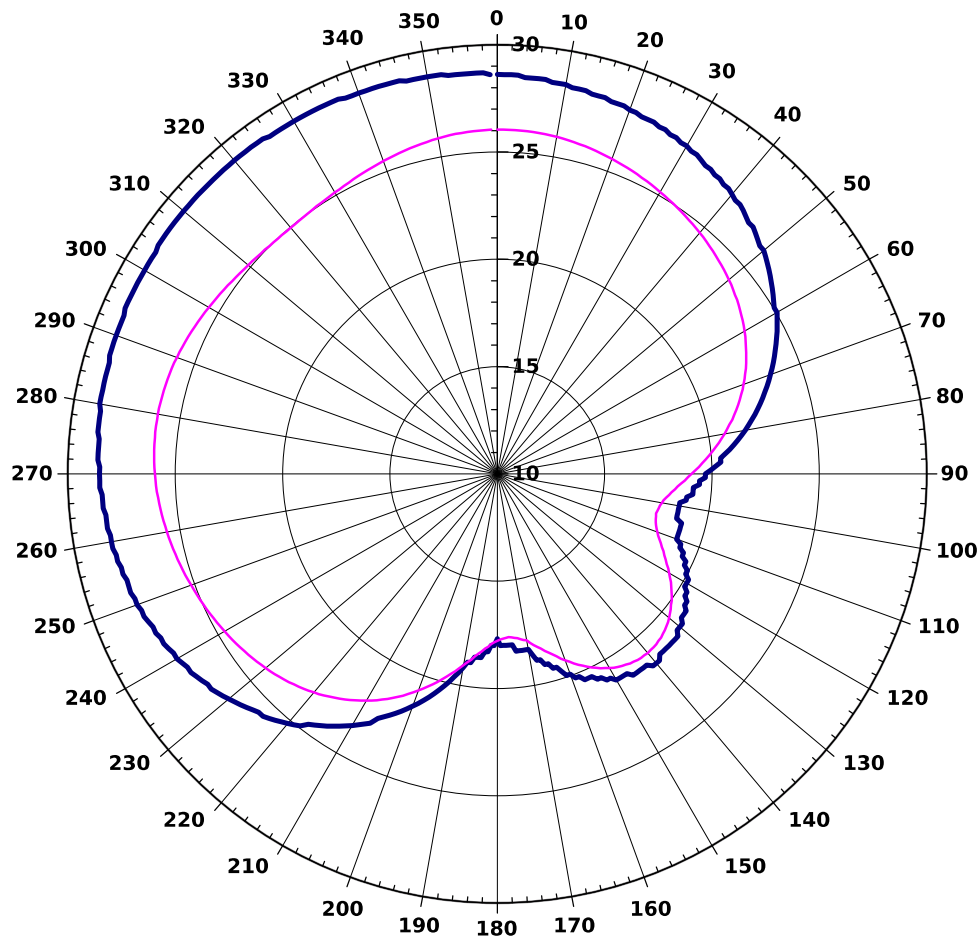
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Azimuth Pattern – ERP (dBk):



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

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

(Polar pattern only updated November 6, 2017)

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ELEVATION PATTERN Dielectric TFU-18JSC/VP-R 4C200

Electrical Beam Tilt: 0.75°

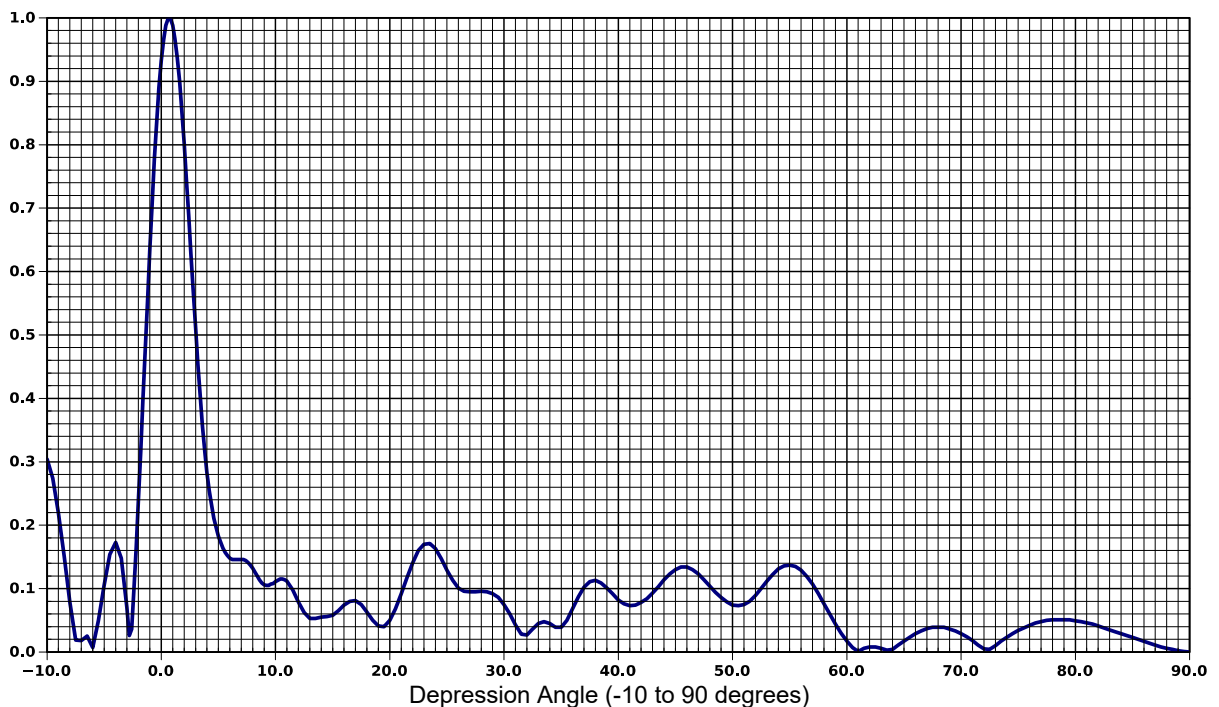
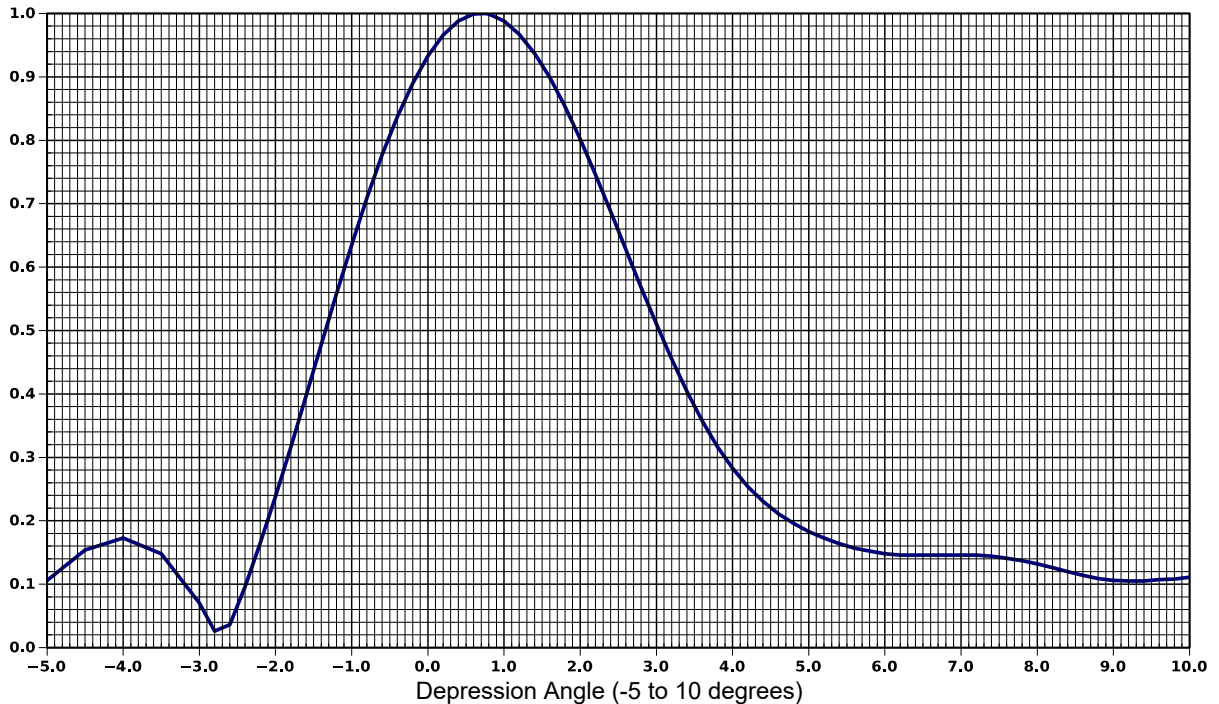
Calculated Maximum Elevation Gain (H + V polarization): 15.51 11.91 dBd

RMS Gain at Horizontal (H + V polarization): 13.50 11.30 dBd

Maximum Main Beam H-Pol. Effective Radiated Power (ERP) 805.0 kW 29.06 dBk

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Relative Field



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ELEVATION PATTERN Dielectric TFU-18JSC/VP-R 4C200

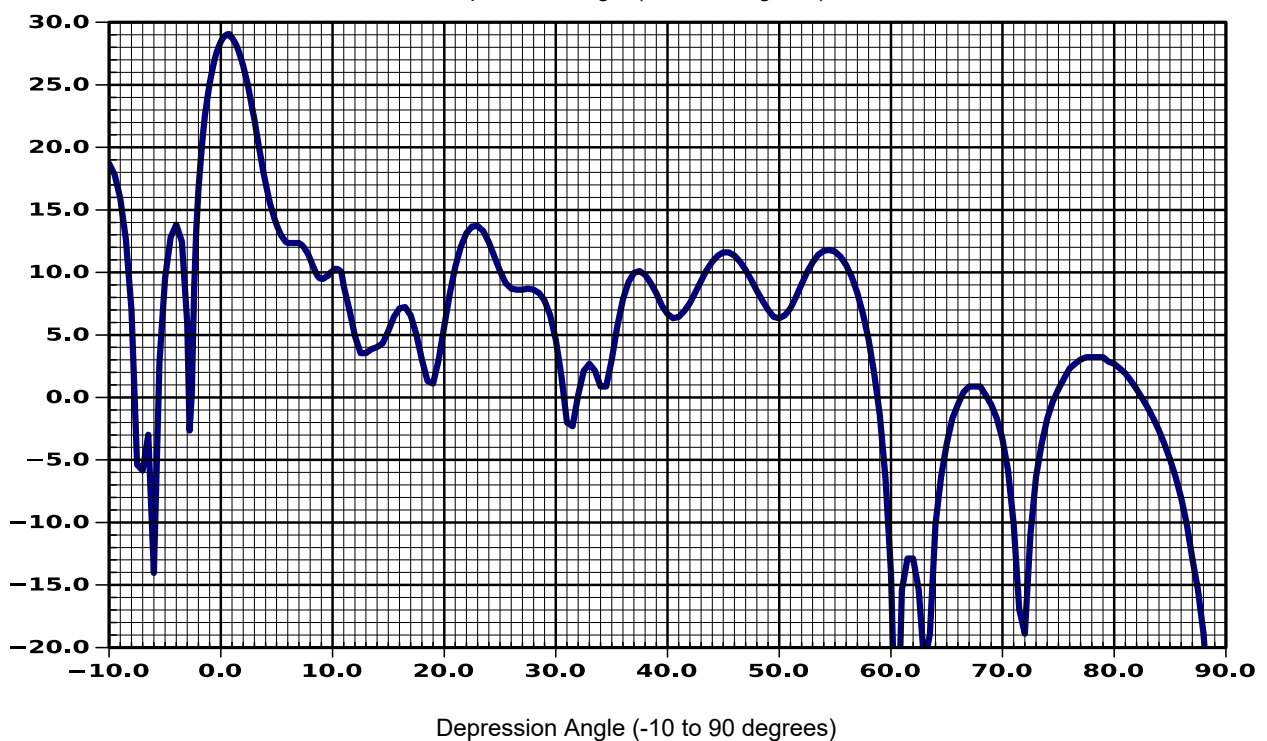
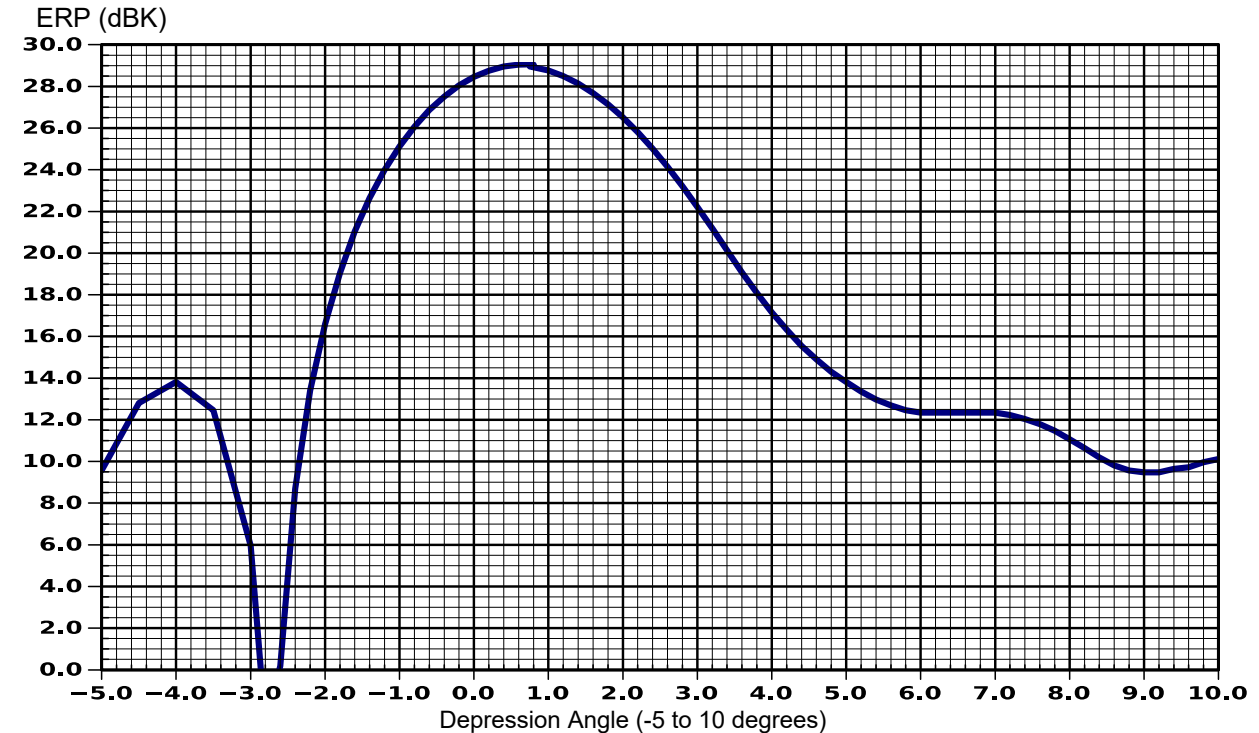
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Tabulated Elevation Pattern:

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.304	1.00	0.988	8.00	0.132	21.0	0.092	38.5	0.109	56.0	0.129	73.5	0.017
-9.50	0.274	1.20	0.967	8.20	0.126	21.5	0.117	39.0	0.101	56.5	0.119	74.0	0.023
-9.00	0.220	1.40	0.937	8.40	0.120	22.0	0.141	39.5	0.092	57.0	0.107	74.5	0.029
-8.50	0.151	1.60	0.899	8.60	0.114	22.5	0.160	40.0	0.082	57.5	0.092	75.0	0.034
-8.00	0.079	1.80	0.853	8.80	0.109	23.0	0.170	40.5	0.076	58.0	0.076	75.5	0.038
-7.50	0.019	2.00	0.802	9.00	0.106	23.5	0.171	41.0	0.073	58.5	0.060	76.0	0.042
-7.00	0.018	2.20	0.746	9.20	0.105	24.0	0.163	41.5	0.074	59.0	0.044	76.5	0.046
-6.50	0.025	2.40	0.688	9.40	0.105	24.5	0.147	42.0	0.078	59.5	0.030	77.0	0.048
-6.00	0.007	2.60	0.628	9.60	0.107	25.0	0.129	42.5	0.084	60.0	0.017	77.5	0.050
-5.50	0.049	2.80	0.568	9.80	0.108	25.5	0.113	43.0	0.093	60.5	0.007	78.0	0.051
-5.00	0.106	3.00	0.510	10.0	0.111	26.0	0.101	43.5	0.103	61.0	0.001	78.5	0.051
-4.50	0.154	3.20	0.455	10.2	0.113	26.5	0.096	44.0	0.114	61.5	0.006	79.0	0.051
-4.00	0.173	3.40	0.404	10.4	0.115	27.0	0.095	44.5	0.123	62.0	0.008	79.5	0.051
-3.50	0.148	3.60	0.358	10.6	0.115	27.5	0.095	45.0	0.130	62.5	0.008	80.0	0.049
-3.00	0.070	3.80	0.317	10.8	0.114	28.0	0.096	45.5	0.134	63.0	0.006	80.5	0.048
-2.80	0.026	4.00	0.283	11.0	0.112	28.5	0.095	46.0	0.134	63.5	0.003	81.0	0.046
-2.60	0.036	4.20	0.254	11.5	0.098	29.0	0.092	46.5	0.130	64.0	0.004	81.5	0.044
-2.40	0.096	4.40	0.231	12.0	0.079	29.5	0.086	47.0	0.123	64.5	0.011	82.0	0.041
-2.20	0.165	4.60	0.211	12.5	0.062	30.0	0.075	47.5	0.114	65.0	0.017	82.5	0.038
-2.00	0.238	4.80	0.196	13.0	0.053	30.5	0.060	48.0	0.104	65.5	0.023	83.0	0.035
-1.80	0.316	5.00	0.183	13.5	0.053	31.0	0.043	48.5	0.094	66.0	0.029	83.5	0.032
-1.60	0.397	5.20	0.173	14.0	0.055	31.5	0.028	49.0	0.086	66.5	0.033	84.0	0.029
-1.40	0.478	5.40	0.164	14.5	0.056	32.0	0.027	49.5	0.079	67.0	0.037	84.5	0.026
-1.20	0.558	5.60	0.157	15.0	0.058	32.5	0.036	50.0	0.074	67.5	0.039	85.0	0.023
-1.00	0.635	5.80	0.152	15.5	0.065	33.0	0.045	50.5	0.073	68.0	0.039	85.5	0.020
-0.80	0.709	6.00	0.148	16.0	0.074	33.5	0.048	51.0	0.075	68.5	0.039	86.0	0.017
-0.60	0.777	6.20	0.146	16.5	0.080	34.0	0.045	51.5	0.080	69.0	0.036	86.5	0.014
-0.40	0.837	6.40	0.146	17.0	0.081	34.5	0.039	52.0	0.089	69.5	0.033	87.0	0.011
-0.20	0.890	6.60	0.146	17.5	0.075	35.0	0.039	52.5	0.100	70.0	0.029	87.5	0.008
0.00	0.933	6.80	0.146	18.0	0.063	35.5	0.050	53.0	0.112	70.5	0.024	88.0	0.006
0.20	0.966	7.00	0.146	18.5	0.050	36.0	0.068	53.5	0.122	71.0	0.018	88.5	0.004
0.40	0.988	7.20	0.146	19.0	0.041	36.5	0.087	54.0	0.131	71.5	0.011	89.0	0.002
0.60	0.999	7.40	0.144	19.5	0.040	37.0	0.102	54.5	0.136	72.0	0.005	89.5	0.001
0.75	1.000	7.60	0.141	20.0	0.050	37.5	0.111	55.0	0.137	72.5	0.004	90.0	0.000
0.80	0.999	7.8	0.137	20.5	0.068	38.0	0.113	55.5	0.135	73.0	0.010		