

## **KTAZ Amended App. for Modification of Post-Repack Construction Permit**

### **February 5, 2018**

#### Description of Amended Application

The purpose of this amendment is to modify the previously filed application (FCC file number 0000034901) for modification of the post-repack construction permit (FCC file number 0000026902) for operation on channel 29 for KTAZ, Phoenix, AZ, Facility ID 81458, licensed to NBC Telemundo License LLC. After tower mapping, structural analysis and final support structure design, the center of radiation of the new antenna authorized in the construction permit and requested in the application for modification was determined to 5.6 meters lower in height above ground than originally specified. Additional information to support Mexican coordination was added.

The corrected height above ground level (AGL) is 103.3 meters and the correct height above mean sea level (AMSL) is 904.3 meters. The new height above average terrain was recalculated using the ptelev command line utility in TVStudy and determined to be 546.2 meters, a reduction of 5.8 meters from the HAAT previously requested and authorized in the granted construction permit. The tower heights and location as specified in Antenna Structure Registration (ASR) number 1204586 do not change.

This amendment does not change the antenna pattern or the requested effective radiated power. The contour distance is slightly reduced from that originally requested. An updated coverage map is attached.

The original RF exposure study was done with a conservative height of 103.5 meters (lower than the 108.9 height specified in the construction permit and modification application) The environmental statement is updated to reflect calculated power density at the most recent determined antenna height of 103.3 meters AGL.

#### Antenna System

The proposed facility will use a directional antenna with elliptical polarization. The proposed vertically polarized effective radiated power (ERP) is 297.4 kW. The vertically polarized ERP will not exceed the horizontally polarized ERP (595 kW) in any direction. Plots and tabulation of antenna data required by FCC Rules Section 73.625(c) is attached. The antenna system is unchanged from application FCC file number 0000034901.

#### Environmental Statement (updated to reflect slightly lower antenna height)

The requested facility will be installed on an existing tower (ASR # 1204586) located in an antenna farm. No tower construction other than strengthening the existing tower to meet current standards is required for this facility. No overall increase in tower height is required for this application.

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. This analysis reflects the most recent and accurate determination of antenna height above ground of 103.3 meters. The maximum power density at any location on the ground or on a roof-top or structure up to 10m above ground after allowing for terrain height variation around the site is  $0.01135 \text{ mW/cm}^2$ , or 3.02% of the public exposure limit of  $0.375 \text{ mW/cm}^2$  at 563 MHz for an uncontrolled environment as specified in FCC rule §1.1310. This power density is present on the roof of buildings along a road accessible only through a locked gate with posted warning signs.

At full power, RF power density on nearby towers from this facility may exceed occupational exposure levels. KTAZ will comply with the site RF exposure plan. Power will be reduced or shut off as required to protect workers on the tower from RF exposure above the limits specified in FCC rule §1.1310.

## **KTAZ Amended App. for Modification of Post-Repack Construction Permit (continued)**

### Broadcast Facility

#### *Compliance with 73.616 (Updated to reflect study with new antenna height):*

A study using TVStudy 2.2.4 and the FCC LMS database dated 01/30/2018 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, any granted post-auction construction permit, and any pending Class A or full service TV applications in the 01/30/2018 LMS database when studied with the default settings of 2 km cell size and 1 km terrain profile point spacing.

#### *Compliance with 73.622(i) (updated to reflect lower antenna height):*

The proposed facility will operate on the channel assigned to KTAZ for operation post-repack. The proposed KTAZ facility has a service area of 36085.5 square kilometers, which is less than the service area of 47,137.6 square kilometers for KSAZ-TV, which is licensed in the same DMA (Phoenix) 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.

#### *Compliance with 73.625:*

The proposed facility will place a 48 dBμv/m principle community contour over Phoenix, AZ, the community of license. See KTAZ Proposed Coverage map, attached.

#### *Compliance with 73.1030:*

A TVStudy analysis did not identify any requirement for coordination or notification with any of the facilities listed in Section 73.1030.

#### *Compliance with 73.1125:*

The proposed facility will place a 48 dBμv/m principle community contour over the main studio located at 4625 S. 33rd Place, Phoenix, AZ 85040. See KTAZ Proposed Coverage map, attached.

#### *Section 73.1650 Considerations (updated to reflect lower antenna height, added coordination data):*

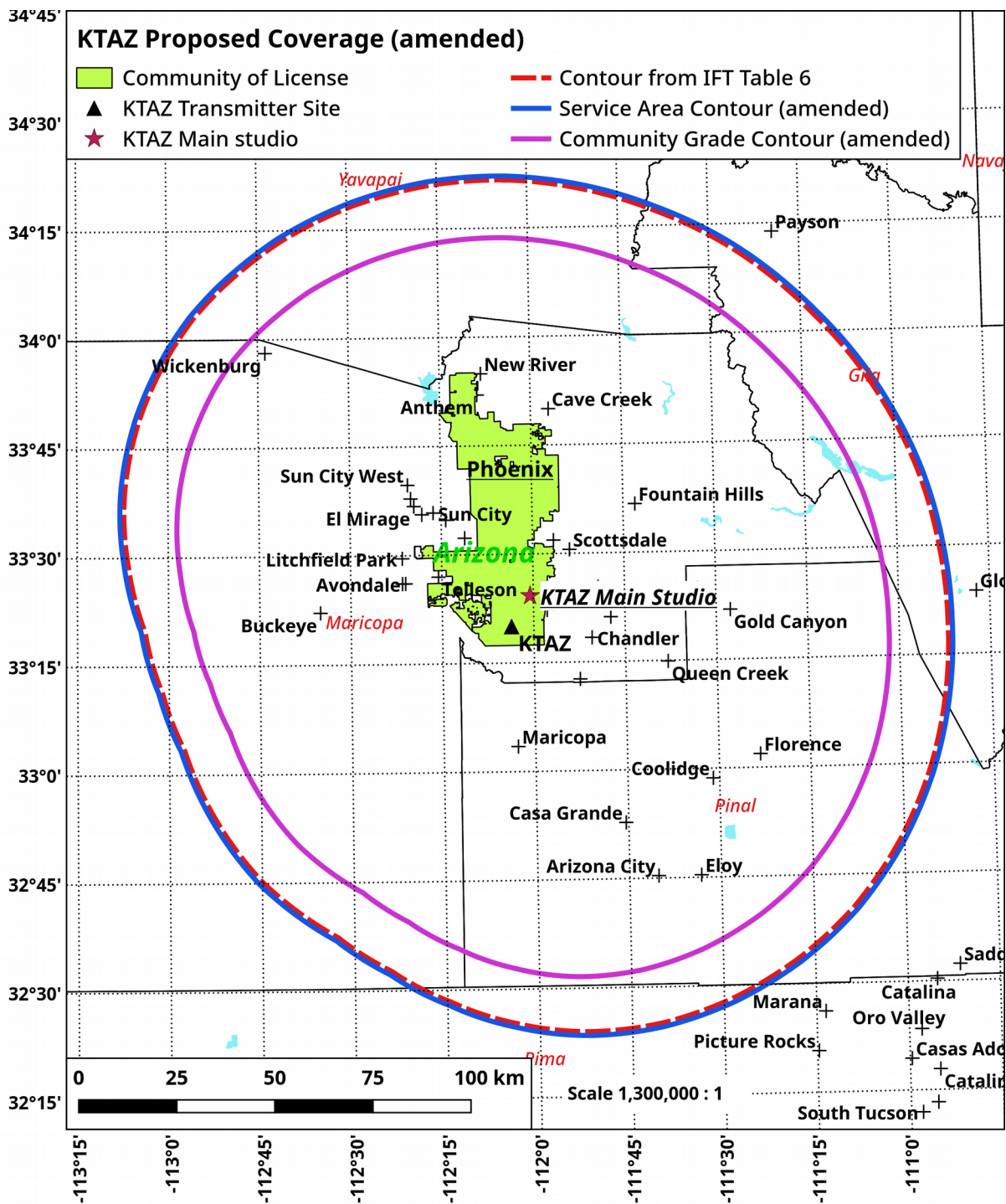
This facility is 176.1 km from the Mexican border and thus is within coordination distance. While the proposed antenna height AMSL of 904.3 meters and ERP of 595 kW slightly exceed the antenna height of 899.5 meters and ERP of 550 kW shown on Pages 11 and 12 in "Exchange of coordination letters with IFT Regarding DTV Transition and Reconfiguration of 600 MHz Spectrum (July 2015)", "Table 6: Pre-Incentive Auction US Post-Transition DTV Allotment Plan" ("Table 6"), a TVStudy analysis showed no additional interference from the proposed facility to any Mexican TV station.

The attached KTAZ Proposed Coverage Map shows the contour of a channel 29 facility created using the antenna height AMSL, ERP, and antenna pattern described IFT "Table 6" as a dash red line and illustrates the small extension of the proposed KTAZ service area (solid blue line) beyond this contour.

#### *(Added:)*

"Table 6" Pages 13 and 14 show the KTAZ channel 29 assignment was also coordinated for use by KUAT-TV in Tucson (located between the KTAZ site and the Mexican border) at an ERP of 800 kW at an antenna height of 2651.1 meters AMSL. The proposed KTAZ facility contour does not extend past Pima county to the south while the coordinated KUAT-TV contour extends into Mexico. Therefore, the proposed KTAZ facility should be considered in compliance with the IFT coordination letters.

**KTAZ Amended App. for Modification of Post-Repack Construction Permit (continued)**  
 (Map updated to show contours at lower antenna height)



**KTAZ Application for Modification of Post-Repack Construction Permit****73.625(c)  
November 2, 2017**AZIMUTH PATTERN (H-Pol): Dielectric TFU-14ETT/VP-R 4C165

Main beam axis of symmetry: 50° true

Electrical Beam Tilt: 1.20°

Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak) 1.63 (2.13 dBd)

Maximum Main Beam H-Pol. Effective Radiated Power (ERP): 595.0 kW 27.75 dBk

Maximum Main Beam V-Pol. Effective Radiated Power (ERP): 297.4 kW 24.73 dBk

**Tabulation of Azimuth Pattern (Horizontal polarization)**

Angle	RF	dBk	ERP kW
0	0.980	27.57	571.4
10	0.960	27.39	548.4
20	0.940	27.21	525.7
30	0.940	27.21	525.7
40	0.930	27.11	514.6
50	0.930	27.11	514.6
60	0.930	27.11	514.6
70	0.940	27.21	525.7
80	0.940	27.21	525.7
90	0.960	27.39	548.4
100	0.980	27.57	571.4
110	1.000	27.75	595.0
120	1.000	27.75	595.0
130	0.980	27.57	571.4
140	0.920	27.02	503.6
150	0.840	26.23	419.8
160	0.740	25.13	325.8
170	0.620	23.59	228.7
180	0.490	21.55	142.9
190	0.380	19.34	85.9
200	0.300	17.29	53.6
210	0.260	16.04	40.2
220	0.260	16.04	40.2
230	0.260	16.04	40.2
240	0.260	16.04	40.2
250	0.260	16.04	40.2
260	0.300	17.29	53.6
270	0.380	19.34	85.9
280	0.490	21.55	142.9
290	0.620	23.59	228.7
300	0.740	25.13	325.8
310	0.840	26.23	419.8
320	0.920	27.02	503.6
330	0.980	27.57	571.4
340	1.000	27.75	595.0
350	1.000	27.75	595.0

**Maximum**

Angle	RF	dBk	ERP kW
115	1.000	27.75	595.0
345	1.000	27.75	595.0

**Minimum**

Angle	RF	dBk	ERP kW
50	0.930	27.11	514.6
230	0.260	16.04	40.2

AZIMUTH PATTERN (H-Pol): Dielectric TFU-14ETT/VP-R 4C165

Main beam axis of symmetry: 50° true

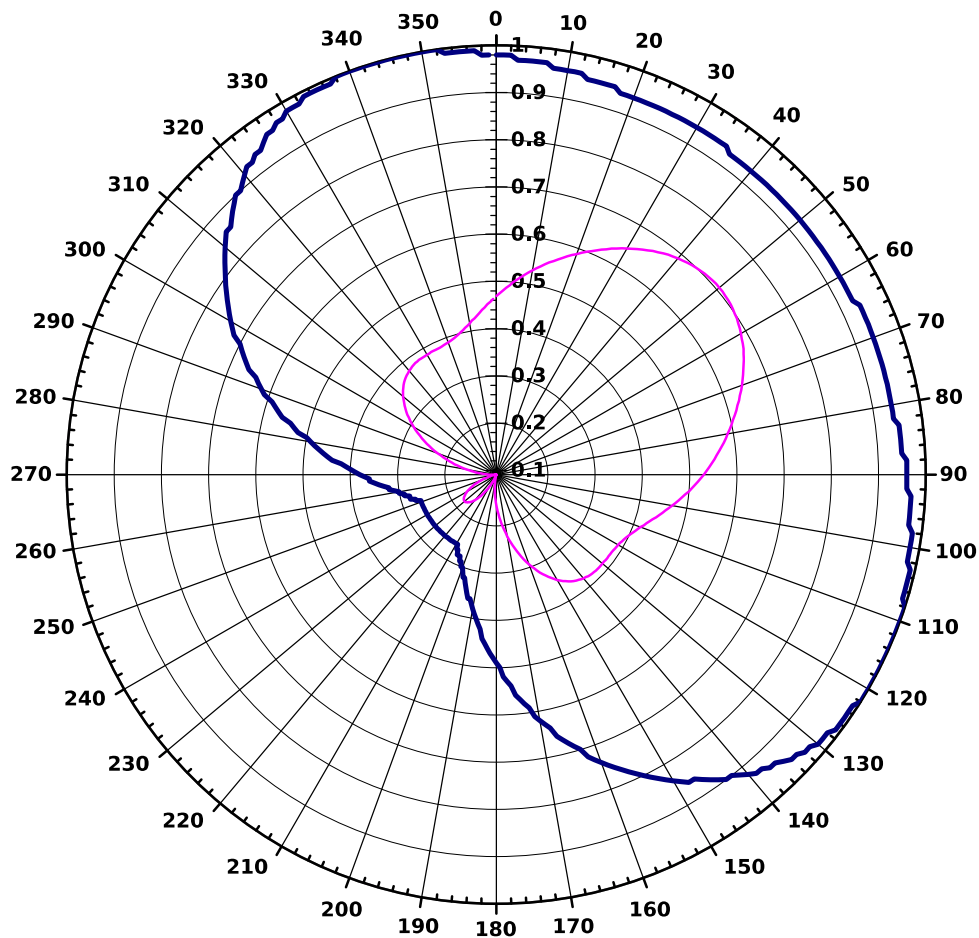
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## AZIMUTH PATTERN RELATIVE FIELD



Blue plot shows azimuth pattern relative field for horizontal polarization

Red plot shows azimuth pattern relative field for vertical polarization

AZIMUTH PATTERN (H-Pol): Dielectric TFU-14ETT/VP-R 4C165

Main beam axis of symmetry: 50° true

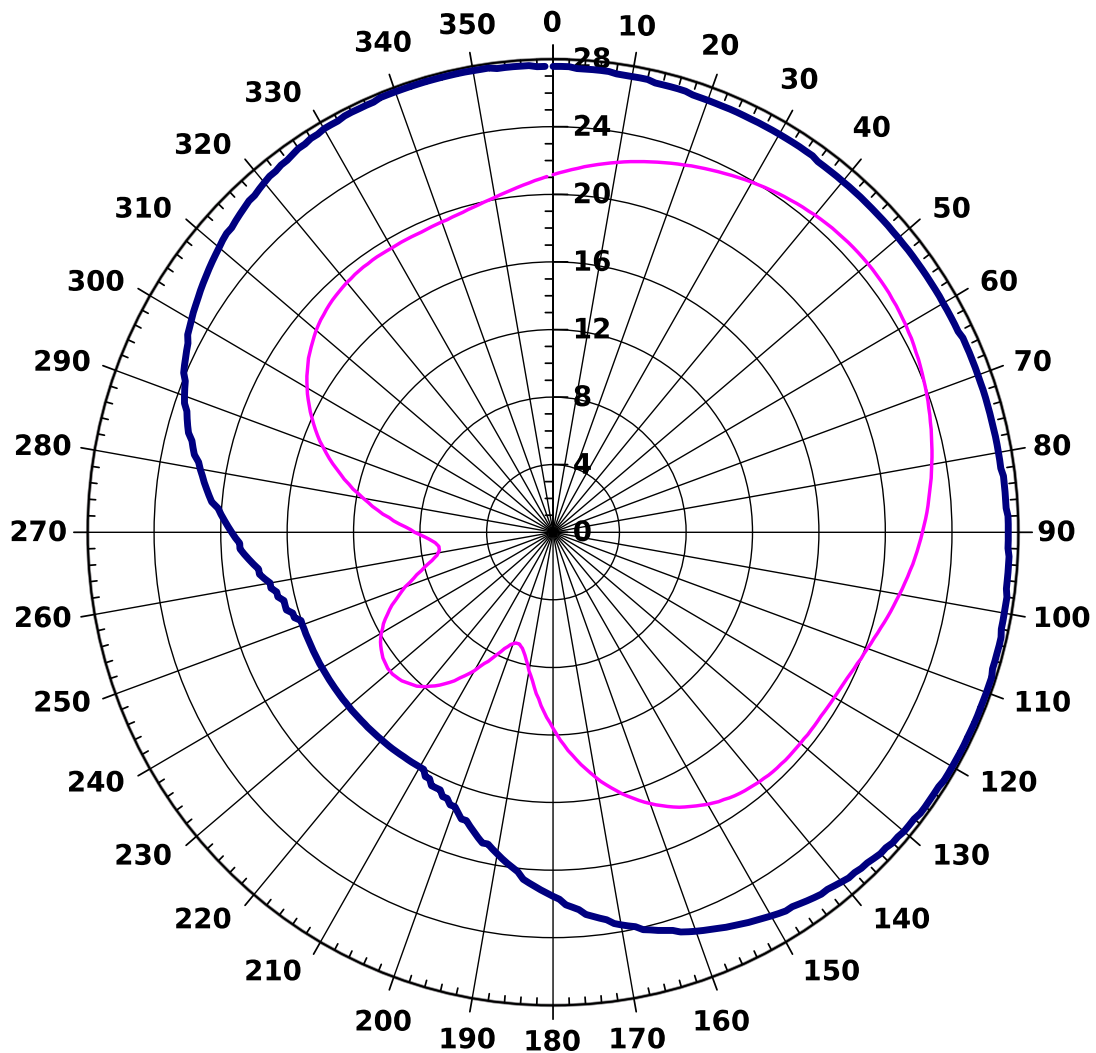
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## AZIMUTH PATTERN ERP (dBk)



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

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

**KTAZ Application for Modification of Post-Repack Construction Permit**

**73.625(c)  
November 2, 2017**

**ELEVATION PATTERN Dielectric TFU-14ETT/VP-R 4C165**

Electrical Beam Tilt: 1.20°

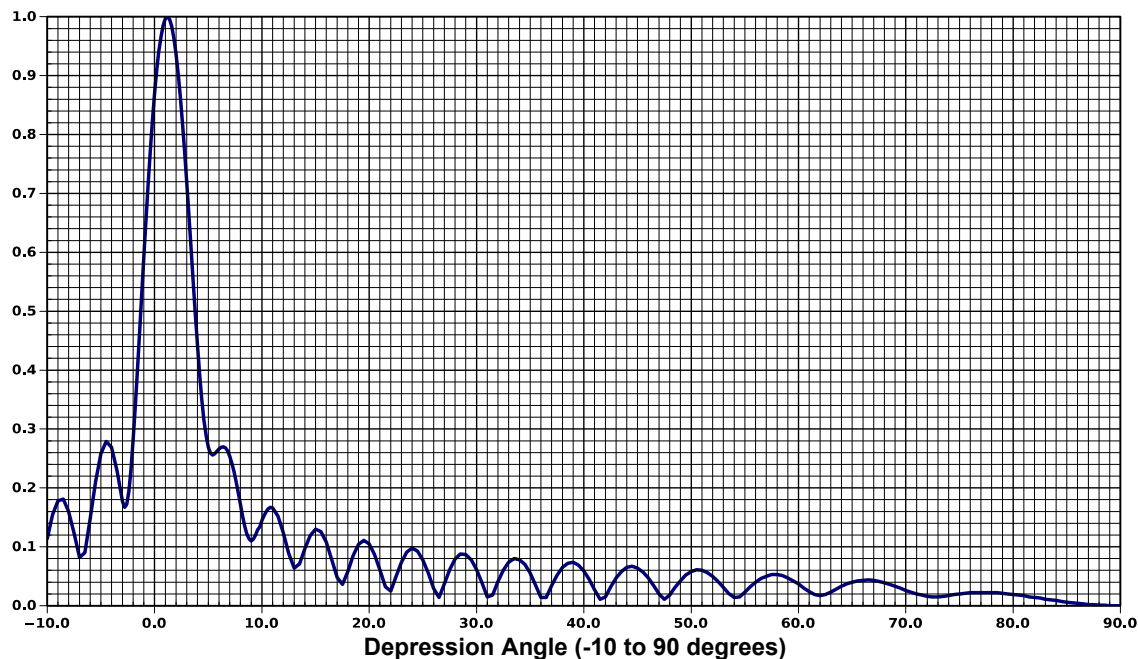
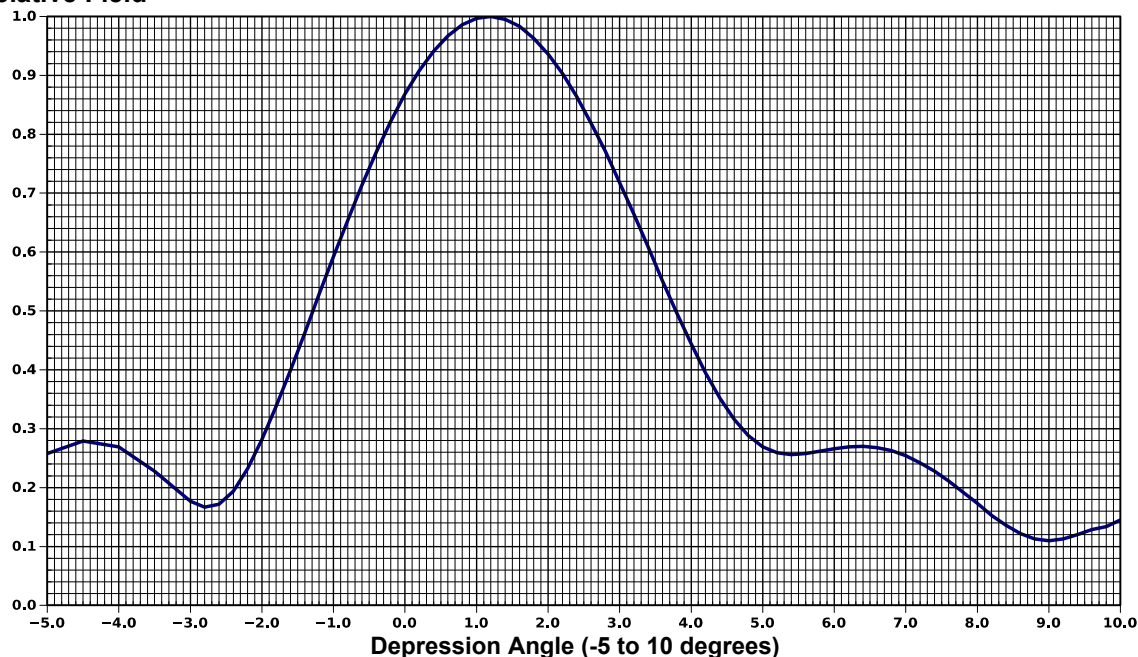
Calculated Maximum Elevation Gain (H + V polarization): 14.20 11.52 dBd

RMS Gain at Horizontal (H + V polarization): 10.70 10.29 dBd

Maximum Main Beam H-Pol. Effective Radiated Power (ERP): 595.0 kW 27.75 dBk

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**Relative Field**



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November 2, 2017**

ELEVATION PATTERN Dielectric TFU-14ETT/VP-R 4C165

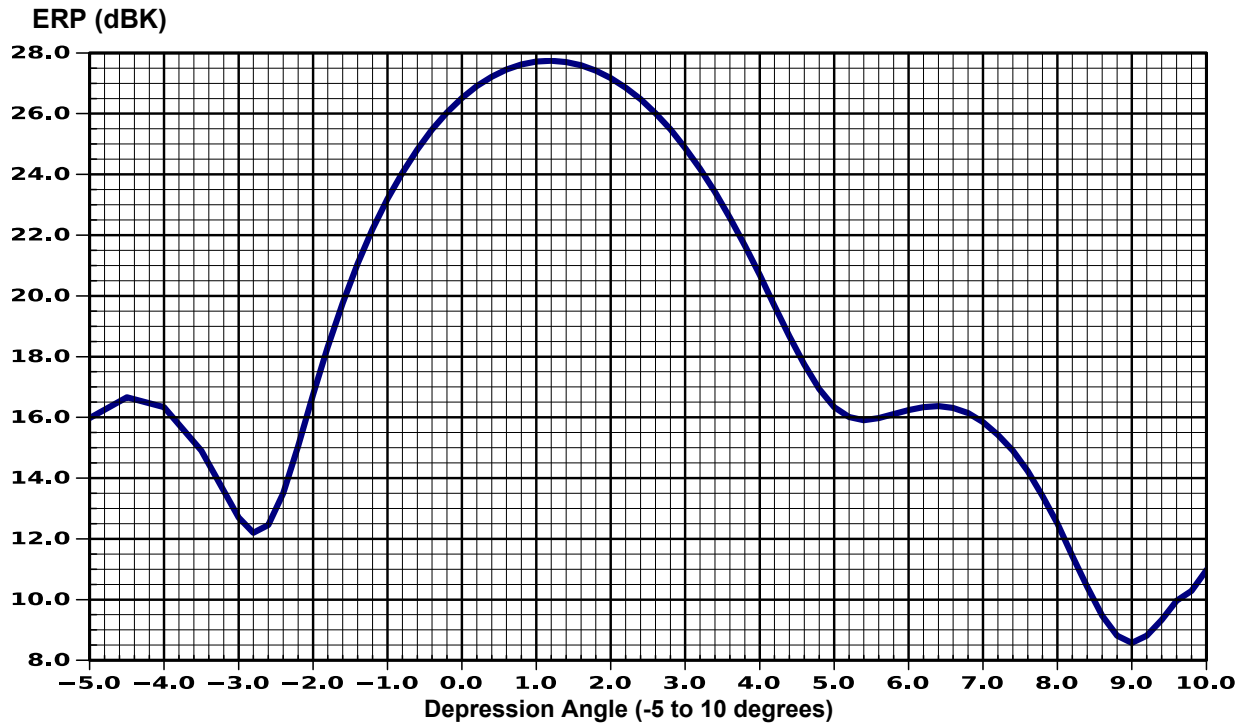
Electrical Beam Tilt: 1.20°

Calculated Maximum Elevation Gain (H + V polarization): 14.20 11.52 dBd

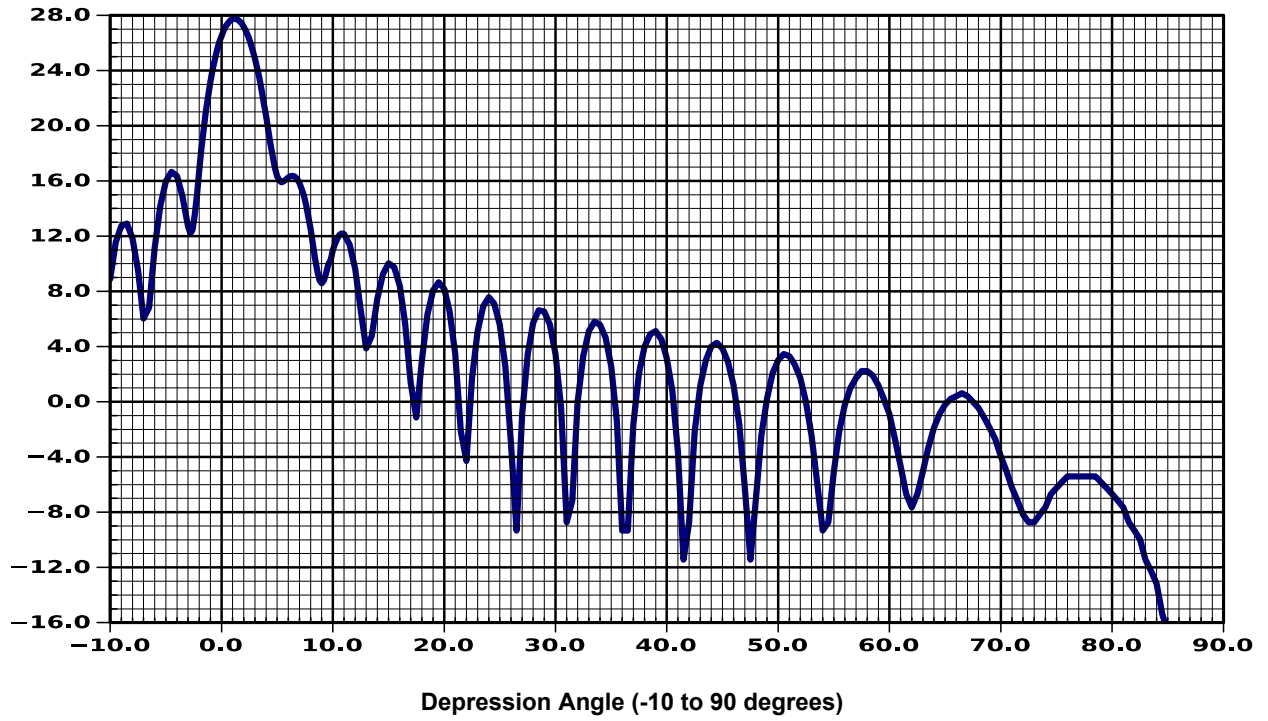
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**Elevation Pattern Tabulation**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.114	1.2	1.000	8.2	0.153	21.5	0.032	39.0	0.074	56.5	0.046	74.0	0.017
-9.5	0.155	1.4	0.995	8.4	0.136	22.0	0.025	39.5	0.069	57.0	0.050	74.5	0.019
-9.0	0.178	1.6	0.983	8.6	0.122	22.5	0.050	40.0	0.059	57.5	0.053	75.0	0.020
-8.5	0.181	1.8	0.963	8.8	0.113	23.0	0.074	40.5	0.045	58.0	0.053	75.5	0.021
-8.0	0.160	2.0	0.936	9.0	0.110	23.5	0.091	41.0	0.027	58.5	0.051	76.0	0.022
-7.5	0.122	2.2	0.903	9.2	0.113	24.0	0.098	41.5	0.011	59.0	0.047	76.5	0.022
-7.0	0.082	2.4	0.864	9.4	0.120	24.5	0.093	42.0	0.015	59.5	0.042	77.0	0.022
-6.5	0.090	2.6	0.819	9.6	0.129	25.0	0.078	42.5	0.032	60.0	0.037	77.5	0.022
-6.0	0.148	2.8	0.771	9.8	0.134	25.5	0.055	43.0	0.047	60.5	0.030	78.0	0.022
-5.5	0.210	3.0	0.718	10.0	0.145	26.0	0.029	43.5	0.058	61.0	0.024	78.5	0.022
-5.0	0.258	3.2	0.664	10.2	0.153	26.5	0.014	44.0	0.065	61.5	0.019	79.0	0.021
-4.5	0.279	3.4	0.608	10.4	0.160	27.0	0.037	44.5	0.067	62.0	0.017	79.5	0.020
-4.0	0.269	3.6	0.551	10.6	0.165	27.5	0.061	45.0	0.064	62.5	0.019	80.0	0.019
-3.5	0.228	3.8	0.496	10.8	0.167	28.0	0.079	45.5	0.057	63.0	0.023	80.5	0.018
-3.0	0.177	4.0	0.444	11.0	0.166	28.5	0.088	46.0	0.047	63.5	0.028	81.0	0.017
-2.8	0.167	4.2	0.395	11.5	0.152	29.0	0.087	46.5	0.034	64.0	0.033	81.5	0.015
-2.6	0.172	4.4	0.352	12.0	0.124	29.5	0.078	47.0	0.020	64.5	0.037	82.0	0.014
-2.4	0.194	4.6	0.316	12.5	0.089	30.0	0.061	47.5	0.011	65.0	0.040	82.5	0.013
-2.2	0.232	4.8	0.288	13.0	0.064	30.5	0.039	48.0	0.018	65.5	0.042	83.0	0.011
-2.0	0.282	5.0	0.269	13.5	0.071	31.0	0.015	48.5	0.031	66.0	0.043	83.5	0.010
-1.8	0.338	5.2	0.259	14.0	0.097	31.5	0.018	49.0	0.042	66.5	0.044	84.0	0.009
-1.6	0.399	5.4	0.256	14.5	0.119	32.0	0.041	49.5	0.052	67.0	0.043	84.5	0.007
-1.4	0.463	5.6	0.258	15.0	0.130	32.5	0.060	50.0	0.058	67.5	0.041	85.0	0.006
-1.2	0.528	5.8	0.262	15.5	0.126	33.0	0.074	50.5	0.061	68.0	0.039	85.5	0.005
-1.0	0.592	6.0	0.266	16.0	0.108	33.5	0.080	51.0	0.060	68.5	0.036	86.0	0.004
-0.8	0.654	6.2	0.269	16.5	0.079	34.0	0.078	51.5	0.056	69.0	0.033	86.5	0.003
-0.6	0.714	6.4	0.270	17.0	0.048	34.5	0.070	52.0	0.050	69.5	0.030	87.0	0.002
-0.4	0.770	6.6	0.268	17.5	0.036	35.0	0.055	52.5	0.041	70.0	0.026	87.5	0.002
-0.2	0.822	6.8	0.263	18.0	0.058	35.5	0.035	53.0	0.031	70.5	0.023	88.0	0.001
0.0	0.868	7.0	0.254	18.5	0.085	36.0	0.014	53.5	0.021	71.0	0.020	88.5	0.001
0.2	0.908	7.2	0.242	19.0	0.104	36.5	0.014	54.0	0.014	71.5	0.018	89.0	0.000
0.4	0.941	7.4	0.228	19.5	0.111	37.0	0.034	54.5	0.015	72.0	0.016	89.5	0.000
0.6	0.967	7.6	0.211	20.0	0.105	37.5	0.052	55.0	0.023	72.5	0.015	90.0	0.000
0.80	0.986	7.8	0.192	20.5	0.087	38.0	0.065	55.5	0.032	73.0	0.015		
1.0	0.997	8.0	0.173	21.0	0.061	38.5	0.072	56.0	0.040	73.5	0.016		