

## **EXHIBIT 13**

### **TECHNICAL NARRATIVE KTNR – LD MARANATHA CHURCH OF LAREDO INC FAC ID 182828 BNPDTL20090825CBM**

#### **Channel move from 40 to channel 2**

Licensee of KTNR – LD, channel 40 is proposing this application to move from channel 40 to VHF channel 2. This move is due to the recent FCC repack of DTV stations. FCC has re-purposed ch 40 frequency for other services. Applicant is requesting that this application be treated as a displacement move.

Channel 2 Interference study was conducted using software that uses routines similar to that of the FCC and as shown in an exhibit submitted with this application, no interference is created to any existing station, application, or allocation.

This exhibit includes aerial photo of proposed site, channel 2 interference study, community coverage, antenna patterns, environmental RFE study, and FCC TOWAIR determination.

Tower is an existing constructed tower. This application will not present any changes to this tower other than the addition of the transmitter antenna system and will not have an impact on the environment.

#### **Mexico**

This application complies with US / Mexico Treaty and protects all applications, allotments, and licensed facilities.

#### **Technical Information**

Tower height 60 meters.

Antenna tower location:

(NAD 83) 27 – 24 – 01 N, 99 – 26 – 52 W

Antenna location elevation GMSL 148 meters

Antenna RCAGL 50 meters

RCAMSL 198 meters

Maximum ERP 3.0 kW (H)

Antenna is a composite made with 4 SCALA K5234827. Major lobes are 0, 90, 180 and 270 degrees. Both Horizontal and Vertical patterns are part of this narrative.

## Environmental – RF Exposure

A RCAGL of 50 meters, less 2 meters, specified in this application, the RFE is calculated using the formula

$$S = \frac{33.4 (F^2) ERP}{R^2}$$

R = 48 meters

ERP = 3.0 KW

F = 0.3

S = 3.92  $\mu\text{W}/\text{cm}^2$  which is 1.96% of the 200  $\mu\text{W}/\text{cm}^2$  maximum allowable for uncontrolled public access.

Applicant will properly secure site with fencing, locked access gate, and appropriate signage. Applicant will reduce ERP or cease operations as necessary to protect persons that have access to the site, tower and antenna. No other RF radiators are on this tower.

### TOWAIR Determination Results

[HELP](#)

[New Search](#) [Printable Page](#)

#### \*\*\* NOTICE \*\*\*

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results	
Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.	
Your Specifications	
NAD83 Coordinates	
Latitude	27-24-01.0 north
Longitude	099-26-52.0 west
Measurements (Meters)	
Overall Structure Height (AGL)	60
Support Structure Height (AGL)	60
Site Elevation (AMSL)	148
Structure Type	
GTOWER - Guyed Structure Used for Communication Purposes	

#### [Tower Construction Notifications](#)

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

**INTERFERENCE STUDY  
CHANNEL 2  
KTNR -D**

<b>KTNR -D</b>						<b>KW</b>						
<b>Callsign</b>	<b>Fac ID</b>	<b>ARN</b>	<b>City</b>	<b>Class</b>	<b>Type</b>	<b>ERP</b>	<b>Sep Type</b>	<b>Status</b>	<b>Bearing</b>	<b>Dist</b>	<b>Prot</b>	<b>Clearance</b>
KNHB-LP	42755	4806	UVALDE	LP DTV	CP	3.000	D/M	Clean	2.98	213.7	245	-31.3
K03IP-D	181218	BNPDVL-20090825BZE	ROMA	LP DTV	CP	0.300	D/M	Clean	154.3	119	110	9
KLAO-LD	20563	BDISDVL-20110901AAA	CORPUS CHRISTI	LP DTV	CP	3.000	D/M	Clean	77.15	207.4	110	97.4
KLAO-LD	20563	BLDVL-20121227AEF	CORPUS CHRISTI	LP DTV	LIC	0.100	D/M	Clean	77.15	207.4	110	97.4
KEAP-LP	16131	BLTVL-20000203ABB	EAGLE PASS	LP NTSC	LIC	0.034	C/M	Clean	325.88	179.8	245	143
<b>K03JP-D</b>												
<b>Callsign</b> <b>!KTNR-LD</b>	<b>Fac ID</b> <b>182828</b>	<b>ARN</b> <b>BNPDTL20090825CBM</b>	<b>City</b> <b>LAREDO</b>	<b>Class</b> <b>LP DTV</b>	<b>Type</b> <b>CP</b>	<b>ERP</b> <b>3.000</b>	<b>Sep Type</b> <b>D/M</b>	<b>Status</b> <b>Clean</b>	<b>Bearing</b> <b>334.54</b>	<b>Dist</b> <b>119</b>	<b>Prot</b> <b>110</b>	<b>Clearance</b> <b>9</b>
<b>KEAP-LP</b>												
<b>Callsign</b> <b>!KTNR-LD</b>	<b>Fac ID</b> <b>182828</b>	<b>ARN</b> <b>BNPDTL20090825CBM</b>	<b>City</b> <b>LAREDO</b>	<b>Class</b> <b>LP DTV</b>	<b>Type</b> <b>CP</b>	<b>ERP</b> <b>3.000</b>	<b>Sep Type</b> <b>C/M</b>	<b>Status</b> <b>Clean</b>	<b>Bearing</b> <b>145.39</b>	<b>Dist</b> <b>179.8</b>	<b>Prot</b> <b>245</b>	<b>Clearance</b> <b>119.7</b>
<b>KLAO-LD</b> (3 Kw CP)												
<b>Callsign</b> <b>!KTNR-LD</b>	<b>Fac ID</b> <b>182828</b>	<b>ARN</b> <b>BNPDTL20090825CBM</b>	<b>City</b> <b>LAREDO</b>	<b>Class</b> <b>LP DTV</b>	<b>Type</b> <b>CP</b>	<b>ERP</b> <b>3.000</b>	<b>Sep Type</b> <b>D/M</b>	<b>Status</b> <b>Clean</b>	<b>Bearing</b> <b>258.1</b>	<b>Dist</b> <b>207.4</b>	<b>Prot</b> <b>110</b>	<b>Clearance</b> <b>97.4</b>
<b>KNHB-LP</b>												
<b>Callsign</b> <b>!KTNR-LD</b>	<b>Fac ID</b> <b>182828</b>	<b>ARN</b> <b>BNPDTL20090825CBM</b>	<b>City</b> <b>LAREDO</b>	<b>Class</b> <b>LP DTV</b>	<b>Type</b> <b>CP</b>	<b>ERP</b> <b>3.000</b>	<b>Sep Type</b> <b>D/M</b>	<b>Status</b> <b>Clean</b>	<b>Bearing</b> <b>183.04</b>	<b>Dist</b> <b>213.7</b>	<b>Prot</b> <b>245</b>	<b>Clearance</b> <b>-31.3</b>

D/U	Rx Gain	Rx F/B	Zone	Band	Ch#	Adj	Matrix	Svc Contour	Svc dBu	Int Contour	Int dBu	Old Pop%	New Pop%	Total Pop	Old Pop	New Pop
15	10	4	0	VLO	2	Co	LR	F(50,90)	43	-	-	0.00%	0.00%	64267	64267	64267
-12	10	4	0	VLO	3	A+1	LR	F(50,90)	43	-	-	0.00%	0.00%	33978	33978	33978
-12	10	4	0	VLO	3 T	A+1	LR	F(50,90)	43	-	-	0.00%	0.00%	362423	362423	362423
-12	10	4	0	VLO	3 T	A+1	LR	F(50,90)	43	-	-	0.00%	0.00%	307133	307133	307133
0	0	6	0	VLO	-3	A+1	LR	F(50,50)	62	F(50,10)	52	0.00%	0.00%	24379	24379	24379

D/U	Rx Gain	Rx F/B	Zone	Band	Ch#	Adj	Matrix	Svc Contour	Svc dBu	Int Contour	Int dBu	Old Pop%	New Pop%	Total Pop	Old Pop	New Pop
-7	10	4	0	VLO	2 T	A-1	LR	F(50,90)	43	-	-	0.00%	0.00%	132043	132043	132043

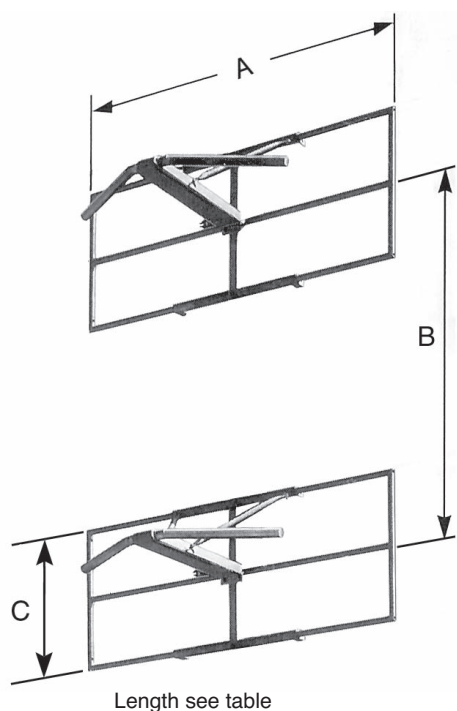
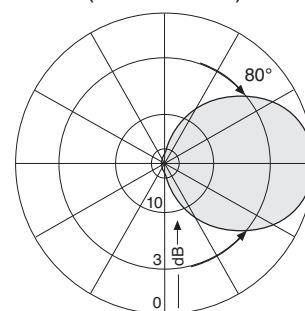
D/U	Rx Gain	Rx F/B	Zone	Band	Ch#	Adj	Matrix	Svc Contour	Svc dBu	Int Contour	Int dBu	Old Pop%	New Pop%	Total Pop	Old Pop	New Pop
2	10	4	0	VLO	2 T	Co	LR	F(50,90)	43	F(50,10)	41	0.00%	0.00%	131073	131073	131073

D/U	Rx Gain	Rx F/B	Zone	Band	Ch#	Adj	Matrix	Svc Contour	Svc dBu	Int Contour	Int dBu	Old Pop%	New Pop%	Total Pop	Old Pop	New Pop
-12	10	4	0	VLO	2 T	A-1	LR	F(50,90)	43	-	-	0.00%	0.00%	132043	132043	132043

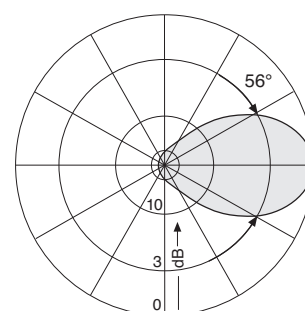
D/U	Rx Gain	Rx F/B	Zone	Band	Ch#	Adj	Matrix	Svc Contour	Svc dBu	Int Contour	Int dBu	Old Pop%	New Pop%	Total Pop	Old Pop	New Pop
15	10	4	0	VLO	2 T	Co	LR	F(50,90)	43	-	-	0.00%	0.00%	132043	132043	132043



- Especially suitable for triangular and round masts.

Radiation Patterns  
(at mid-band)

Horizontal Radiation Pattern



Vertical Radiation Pattern

Order No.	602037 K5234817	602038 K5234827	602039 K5234837	602040 K5234847	602041 K5234857	602042 K5234867
Input	2 x 7-16 female					
Max. power	6 kW					
Frequency	47 – 54 MHz	54 – 61 MHz	60 – 68 MHz	66 – 72 MHz	76 – 82 MHz	82 – 88 MHz
Channel	2	3	4	4	5	6
System B, Europa System M, N, America		2	3			
VSWR	< 1.15					
Gain (at mid-band)	7 dBd					
Impedance	50 Ω					
Polarization	Horizontal					
Weight	148 kg	137 kg	125 kg	117 kg	103 kg	97 kg
Wind load in kN (at 160 km/h)						
frontal	2.50	2.20	2.00	1.85	1.60	1.45
lateral	1.30	1.20	1.10	1.00	0.90	0.85
Max. wind velocity	225 km/h					
Dimensions in mm						
A	3360	2960	2640	2470	2165	2015
B	3200	2800	2500	2340	2040	1900
C	1330	1180	1060	995	875	820

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Grounding:	Via mounting parts.
Scope of supply:	Antenna consisting of two half-wave dipoles with reflector screens.
Special features:	The antenna is shipped dismounted.
Ice protection:	Even under icy conditions the antenna keeps operating due to the radomes covering the feed areas.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for triangular and round masts.

**Please note:**

**As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.**

The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an antenna by wind at maximum velocity.

Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an antenna or even cause it to fall to the ground.

Cylindrical bodies can show crosswind response, which can cause the supporting structure to oscillate and to be damaged. Prismatic bodies, even with non-circular cross-section can show crosswind response, which can cause the supporting structure to oscillate (see EN 1991-1-4 or EN 1993-3-1).

These facts must be considered during the site planning process.

The maximum wind velocities listed should be understood in the sense of working values according to DIN and EN standards. These values include a safety factor (1.5) below the ultimate limit state (elastic limit or permanent deformation). For these wind velocities we guarantee the mechanical safety and the electrical integrity of our antennas.

**The installation team must be properly qualified and also be familiar with the relevant national safety regulations.**

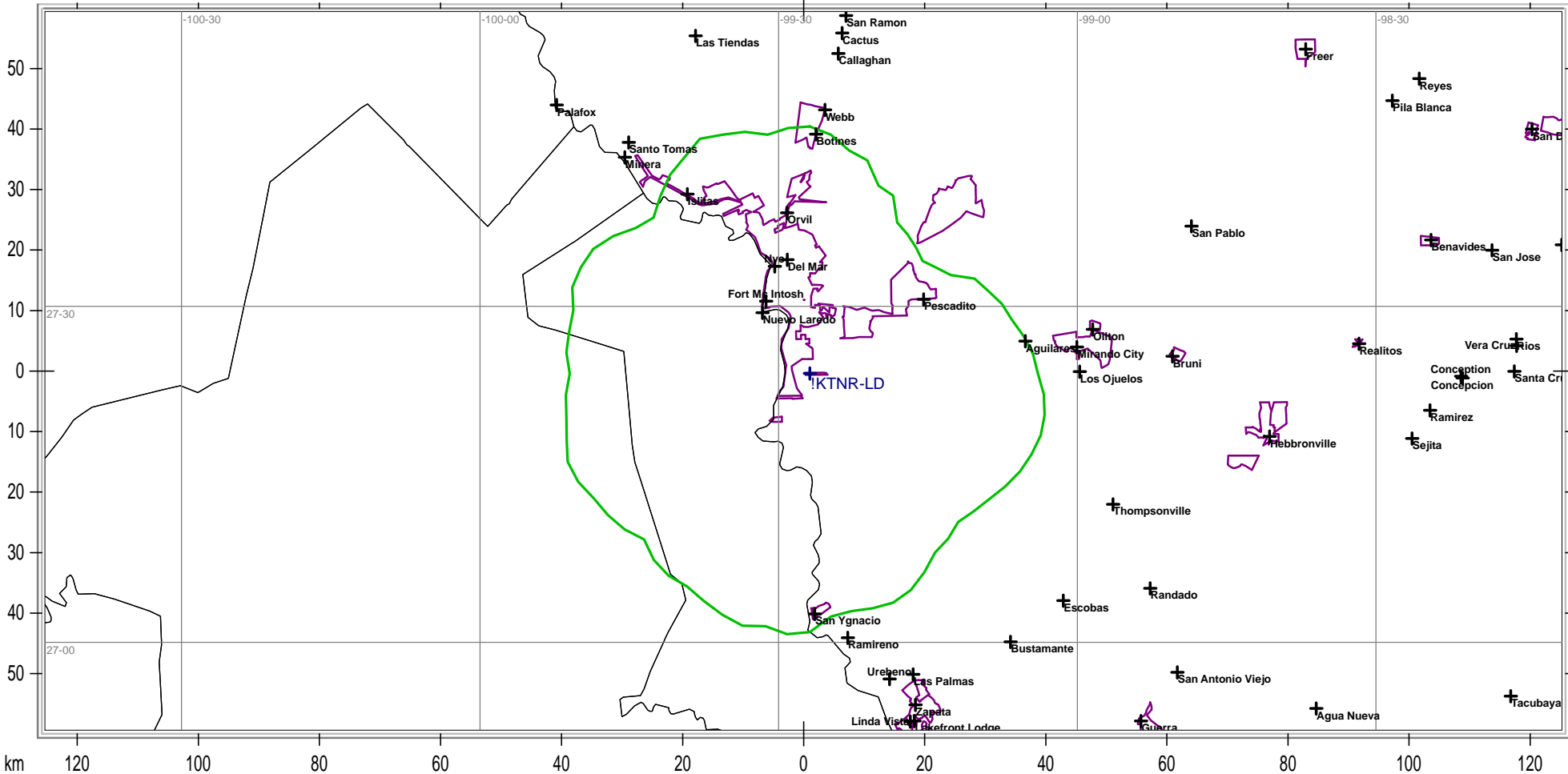
**The details given in our data sheets have to be followed carefully when installing the antennas and accessories.**

**The limits for the coupling torque of RF-connectors, recommended by the connector manufacturers must be obeyed.**

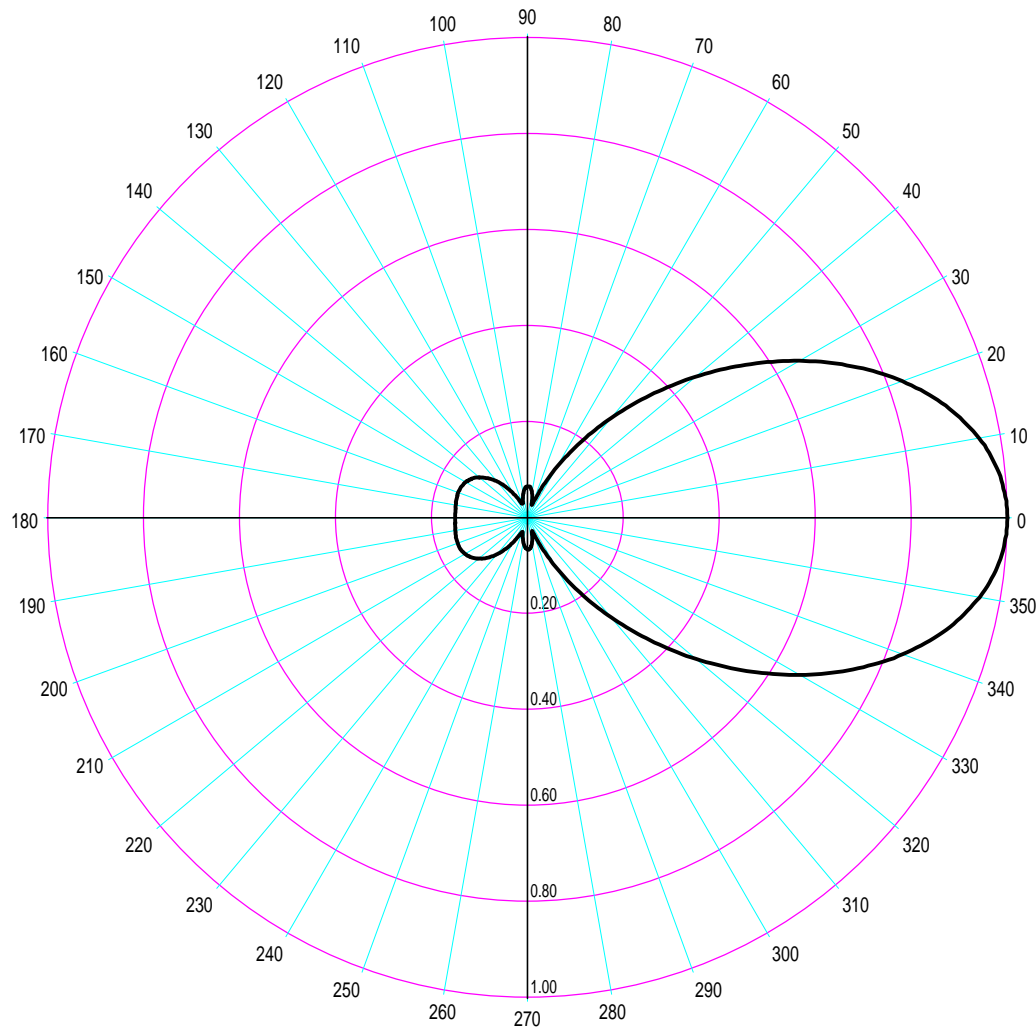
**Any previous datasheet issues have now become invalid.**

Our quality assurance system and our environmental management system apply to the entire company and are certified by TÜV according to EN ISO 9001 and EN ISO 14001.



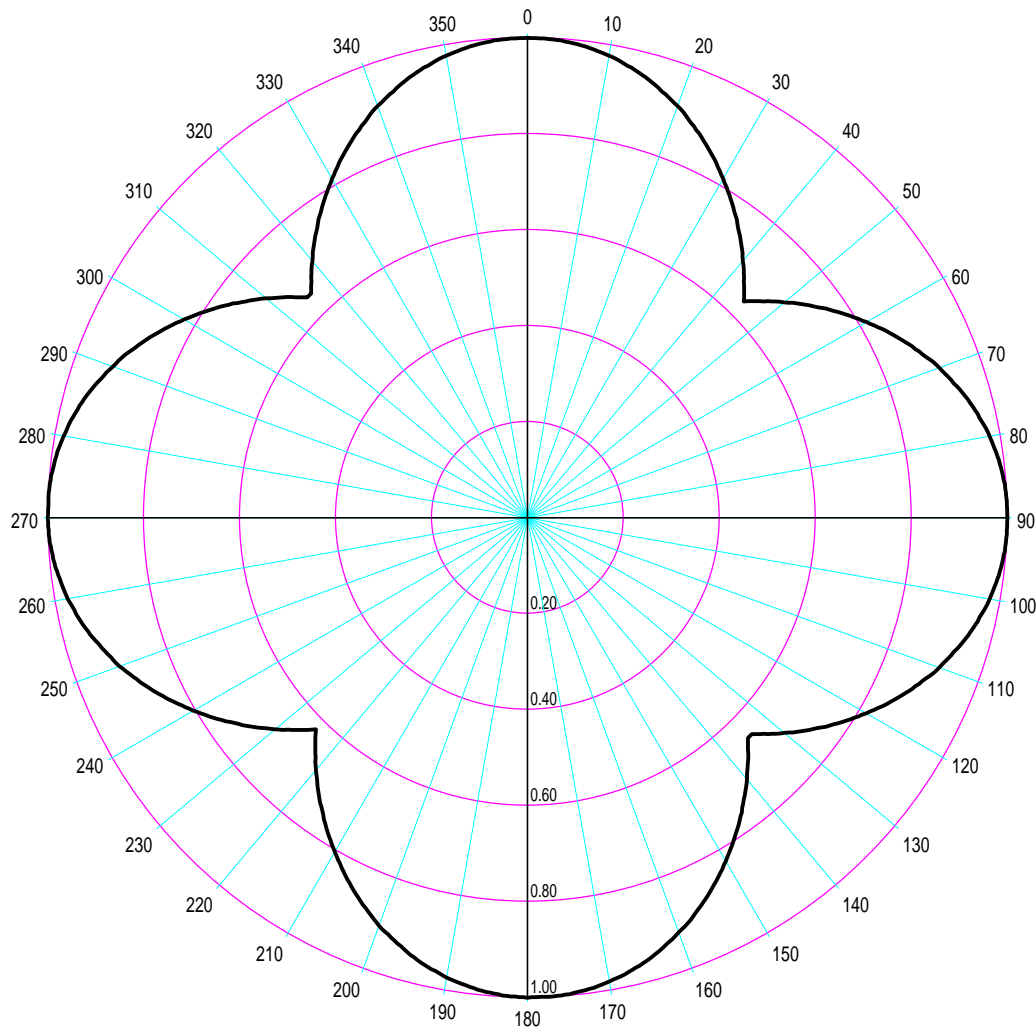


 State Borders
  City Borders
  Lat/Lon Grid



Azim	Rel.FS	ERP [kW]	dBk
0.0	1.000	3.008	4.783
5.0	0.989	2.942	4.687
10.0	0.955	2.744	4.383
15.0	0.902	2.447	3.887
20.0	0.831	2.077	3.175
25.0	0.746	1.674	2.238
30.0	0.654	1.287	1.095
35.0	0.555	0.927	-0.331
40.0	0.457	0.628	-2.019
45.0	0.361	0.392	-4.067
50.0	0.271	0.221	-6.558
55.0	0.191	0.110	-9.596
60.0	0.121	0.044	-13.561
65.0	0.065	0.013	-18.959
70.0	0.031	0.003	-25.390
75.0	0.035	0.004	-24.336
80.0	0.053	0.008	-20.731
85.0	0.064	0.012	-19.093
90.0	0.065	0.013	-18.959
95.0	0.062	0.012	-19.369
100.0	0.051	0.008	-21.066
105.0	0.039	0.005	-23.396
110.0	0.031	0.003	-25.390
115.0	0.038	0.004	-23.621
120.0	0.056	0.009	-20.253
125.0	0.077	0.018	-17.487
130.0	0.098	0.029	-15.392
135.0	0.116	0.040	-13.928
140.0	0.131	0.052	-12.872
145.0	0.142	0.061	-12.171
150.0	0.149	0.067	-11.753
155.0	0.153	0.070	-11.523
160.0	0.154	0.071	-11.467
165.0	0.153	0.070	-11.523
170.0	0.152	0.070	-11.580
175.0	0.151	0.069	-11.637
180.0	0.151	0.069	-11.637

Azim	Rel.FS	ERP [kW]	dBk
185.0	0.152	0.070	-11.580
190.0	0.153	0.070	-11.523
195.0	0.155	0.072	-11.410
200.0	0.155	0.072	-11.410
205.0	0.155	0.072	-11.410
210.0	0.151	0.069	-11.637
215.0	0.144	0.062	-12.050
220.0	0.133	0.053	-12.740
225.0	0.118	0.042	-13.779
230.0	0.100	0.030	-15.217
235.0	0.079	0.019	-17.264
240.0	0.058	0.010	-19.948
245.0	0.040	0.005	-23.176
250.0	0.032	0.003	-25.114
255.0	0.039	0.005	-23.396
260.0	0.052	0.008	-20.897
265.0	0.062	0.012	-19.369
270.0	0.067	0.014	-18.695
275.0	0.064	0.012	-19.093
280.0	0.053	0.008	-20.731
285.0	0.036	0.004	-24.091
290.0	0.032	0.003	-25.114
295.0	0.067	0.014	-18.695
300.0	0.122	0.045	-13.490
305.0	0.192	0.111	-9.551
310.0	0.272	0.223	-6.526
315.0	0.362	0.394	-4.043
320.0	0.458	0.631	-2.000
325.0	0.557	0.933	-0.300
330.0	0.655	1.291	1.108
335.0	0.748	1.683	2.261
340.0	0.832	2.082	3.186
345.0	0.903	2.453	3.897
350.0	0.956	2.749	4.392
355.0	0.989	2.942	4.687



Azim	Rel.FS	ERP [kW]	dBk
0.0	1.000	3.008	4.783
5.0	0.994	2.972	4.731
10.0	0.977	2.871	4.581
15.0	0.950	2.715	4.338
20.0	0.913	2.508	3.992
25.0	0.867	2.261	3.543
30.0	0.815	1.998	3.006
35.0	0.759	1.733	2.388
40.0	0.698	1.466	1.660
45.0	0.637	1.221	0.866
50.0	0.698	1.466	1.660
55.0	0.759	1.733	2.388
60.0	0.815	1.998	3.006
65.0	0.867	2.261	3.543
70.0	0.913	2.508	3.992
75.0	0.950	2.715	4.338
80.0	0.977	2.871	4.581
85.0	0.994	2.972	4.731
90.0	1.000	3.008	4.783
95.0	0.994	2.972	4.731
100.0	0.977	2.871	4.581
105.0	0.950	2.715	4.338
110.0	0.913	2.508	3.992
115.0	0.867	2.261	3.543
120.0	0.815	1.998	3.006
125.0	0.759	1.733	2.388
130.0	0.698	1.466	1.660
135.0	0.649	1.267	1.028
140.0	0.711	1.521	1.820
145.0	0.770	1.784	2.513
150.0	0.826	2.052	3.123
155.0	0.877	2.314	3.643
160.0	0.920	2.546	4.059
165.0	0.956	2.749	4.392
170.0	0.981	2.895	4.616
175.0	0.997	2.990	4.757
180.0	1.000	3.008	4.783


Azim	Rel.FS	ERP [kW]	dBk
185.0	0.992	2.960	4.713
190.0	0.973	2.848	4.545
195.0	0.943	2.675	4.273
200.0	0.905	2.464	3.916
205.0	0.857	2.209	3.443
210.0	0.804	1.945	2.888
215.0	0.746	1.674	2.238
220.0	0.686	1.416	1.510
225.0	0.624	1.171	0.687
230.0	0.686	1.416	1.510
235.0	0.746	1.674	2.238
240.0	0.804	1.945	2.888
245.0	0.857	2.209	3.443
250.0	0.905	2.464	3.916
255.0	0.943	2.675	4.273
260.0	0.973	2.848	4.545
265.0	0.992	2.960	4.713
270.0	1.000	3.008	4.783
275.0	0.997	2.990	4.757
280.0	0.981	2.895	4.616
285.0	0.956	2.749	4.392
290.0	0.920	2.546	4.059
295.0	0.877	2.314	3.643
300.0	0.826	2.052	3.123
305.0	0.770	1.784	2.513
310.0	0.711	1.521	1.820
315.0	0.649	1.267	1.028
320.0	0.698	1.466	1.660
325.0	0.759	1.733	2.388
330.0	0.815	1.998	3.006
335.0	0.867	2.261	3.543
340.0	0.913	2.508	3.992
345.0	0.950	2.715	4.338
350.0	0.977	2.871	4.581
355.0	0.994	2.972	4.731



**KTNR**

Aerial Photo  
Proposed LP DTV channel 2

**Legend**

 KTNR Location

KTNR Location

Mangana-Hein Rd

6073F

6073E

Google Earth

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200 m

