

TECHNICAL EXHIBIT  
MINOR MODIFICATION OF CONSTRUCTION PERMIT  
STATION WPBN-DT (FACILITY ID 21253)  
TRAVERSE CITY, MICHIGAN

MARCH 14, 2002

CH 50 78 KW (MAX-DA) 230 M

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Technical Narrative

This Technical Exhibit was prepared on behalf of digital television station WPBN-DT at Traverse City, Michigan, in support of an application for minor modification of construction permit. Station WPBN-DT is authorized to operate on channel 50 with a non-directional antenna maximum effective radiated power (ERP) of 1000 kW and an antenna height above average terrain (HAAT) of 379 meters (BPCDT-19991025ADJ). The proposed WPBN-DT facility will operate with a directional ERP of 78 kW and an antenna HAAT of 230 meters.

Proposed Facilities

This application proposes to change transmitter site, reduce antenna ERP and HAAT and change to a directional antenna. The proposed transmitter site is located 56 kilometers north of the current site (NAD 27 coordinates: 44-46-36 N, 85-41-02 W). The FCC antenna structure registration number is 1031838. The proposed facilities (78 kW, 230 m) comply with Section 73.622(f)(8)(i) of the FCC rules concerning maximum allowable ERP and antenna height for DTV stations.

There are no directional AM broadcast stations within 3.2 kilometers or non-directional AM stations within 1 kilometer of the proposed WPBN-DT transmitter site. There

are no full service TV stations within 16 kilometers of the proposed site. The following is a list of full service FM stations within 16 kilometers of the proposed site.

<u>Station</u>	<u>Channel</u>	<u>Bearing(°True)</u>	<u>Distance(km)</u>
WNMC-FM, Traverse City, MI	214A	0	0.0
WBYB, Leland, MI	232C2	171	0.5
WLDR-FM, Traverse City, MI	270C1	232	1.2
WCCW-FM, Traverse City, MI	298C2	207	1.2
WLJN-FM, Traverse City, MI	210C2	90	1.7
WICA, Traverse City, MI	218C3	169	2.3

No adverse impact is expected to any other surrounding station. Furthermore, the applicant recognizes its responsibility to correct problems that may result from its proposed operation.

The proposed site is located kilometers from the Canadian border. The proposed WPBN-DT operation (78 kW/230 m) qualifies as a Class C operation with as defined in the Letter of Understanding (LOU). The proposed WPBN-DT Class C operation is believed to be in compliance with the LOU as it meets the minimum separation requirements to all Canadian stations. Therefore, it is not believed that Canadian coordination is required; however if the FCC differs, coordination is respectfully requested.

The transmitter site is more than 2,100 kilometers from the Mexican border. The closest FCC monitoring station is at Allegan, Michigan, approximately 242 kilometers to the south. The closest point of the National Radio Quiet Zone (VA/WV) is more than 700 kilometers to the east-northeast. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 1,600 kilometers to the west-southwest. The closest radio astronomy site operating on TV channel 37 is at North Liberty Iowa, more than 500 kilometers to the southwest. These separations are sufficient to not be a concern for coordination purposes.

#### Allocation Considerations

Interference calculations have been made using the procedures outlined in the FCC's OET-69 bulletin, using a 2 kilometer grid spacing. The proposed WPBN-DT operation

does not cause excessive (greater than 2%, up to 10% total) calculated interference to any analog or DTV assignment. Below is the list of stations considered in the OET-69 analysis.

Stations Potentially Affected by Proposed WPBN-DT						
Chan	Call	City/State	Bear (°T)	Dist (km)	Status	App. Ref. No.
49	WWUP-DT	SAULT SAINTE MARIE MI	40	188.8	STA	BDSTA-20011102ABK
49	WWUP-DT	SAULT STE. MARIE MI	40	188.9	PLN	DTVPLN-DTVP1353
50	WPWR-TV	GARY IN	207	358.7	LIC	BLCT-19870128KL
50	WKBD	DETROIT MI	142	318.3	CP	BPCT-19970106KE
50	WKBD	DETROIT MI	142	318.3	LIC	BLCT-2092
50	NEW	GREEN BAY WI	262	186.0	ADD	BPRM-20000717ACL
50	WISC-DT	MADISON WI	240	362.8	CP	BPCDT-19991027ABG
50	WISC-DT	MADISON WI	240	362.8	PLN	DTVPLN-DTVP1396
51	WLUK-DT	GREEN BAY WI	258	187.2	PLN	DTVPLN-DTVP1426

From the above list of stations considered, the table below shows the calculated interference caused to each station. Only stations that are predicted to receive interference from the proposed WPBN-DT operation are shown in the interference table.

Study Station	Baseline	Net Population Change/Interference
50 NEW GREEN BAY WI (ADD)	750,559	-24,323 (3.2%) <b>Less Net Interference</b>

The proposed WPBN-DT operation does not cause calculated interference to any other analog or DTV station. Therefore, it is believed the proposal complies with the FCC’s “de minimis” interference policy.

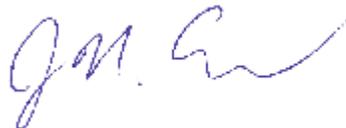
With respect to Class A TV station protection, the proposal has been evaluated according to the requirements of Section 73.613 of the FCC Rules. The analysis reveals no potential impact to any Class A stations.

Environmental Considerations

The proposed WPBN-DT facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna is located 134.1 meters above ground level.

The proposed maximum ERP is 78 kW. A conservative relative field value of 0.2 was assumed for the calculation (see Figure 2C). Therefore, the “worst-case” calculated power density at a point 2 meters above ground level will be 0.0060 mW/cm<sup>2</sup>. This is 1.3% of the FCC's recommended limit of 0.46 mW/cm<sup>2</sup> for channel 50 for an “uncontrolled” environment.

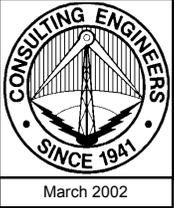
Access to the transmitting site will be restricted and appropriately marked with warning signs. As this will be a multi-user site, an agreement will control site access. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down. The proposed WPBN-DT operation appears to be otherwise categorically excluded from environmental processing.



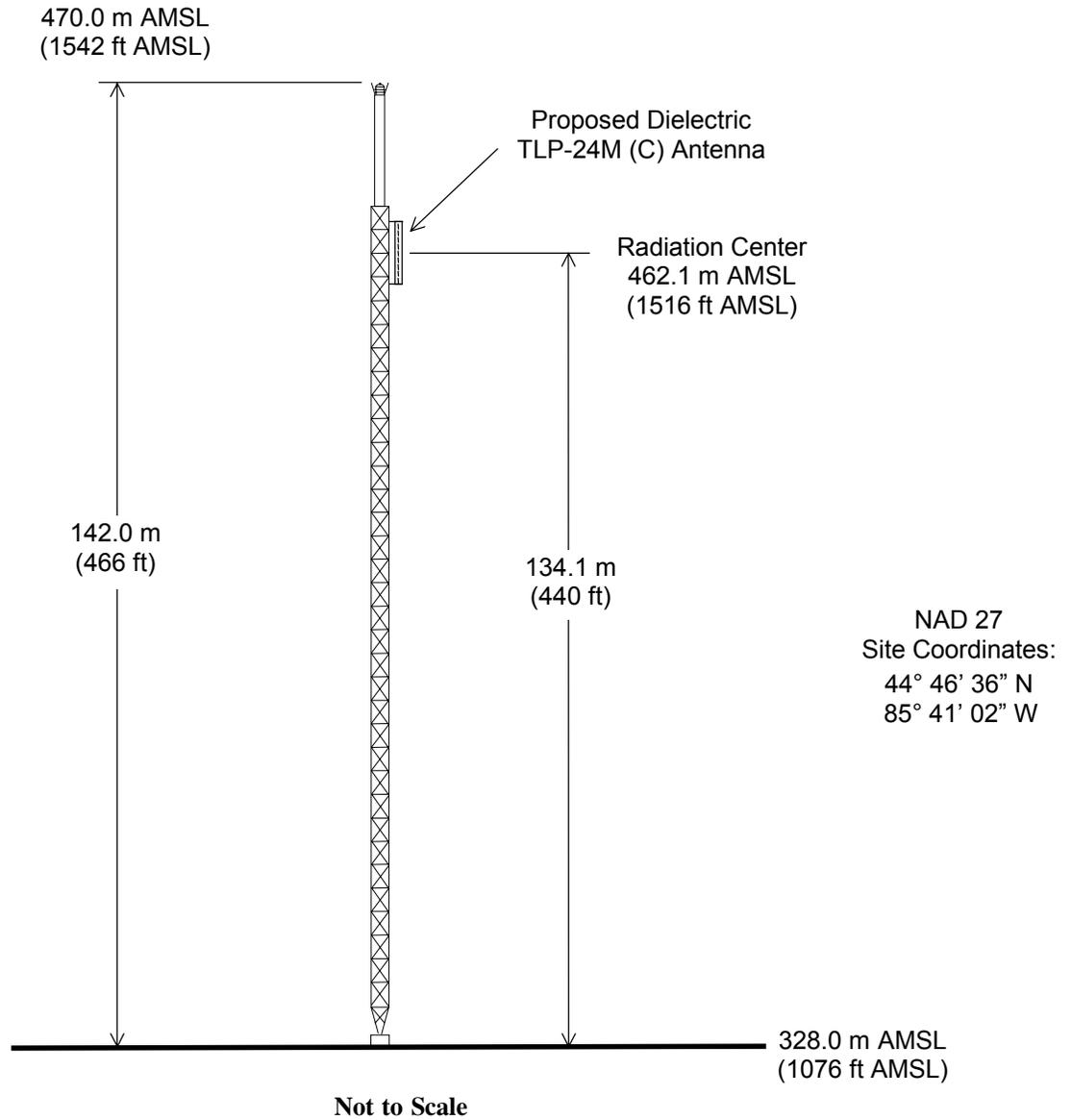
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March 14, 2002



Registration No. 1031838



# ANTENNA AND SUPPORTING STRUCTURE

STATION WPBN-DT

TRAVERSE CITY, MICHIGAN

CH 50 78 KW (MAX-DA) 230 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Date **14 Mar 2002**  
Call Letters **WPBN-DT** Channel **50**  
Location **Traverse City, MI**  
Customer  
Antenna Type **TLP-24M (C)**

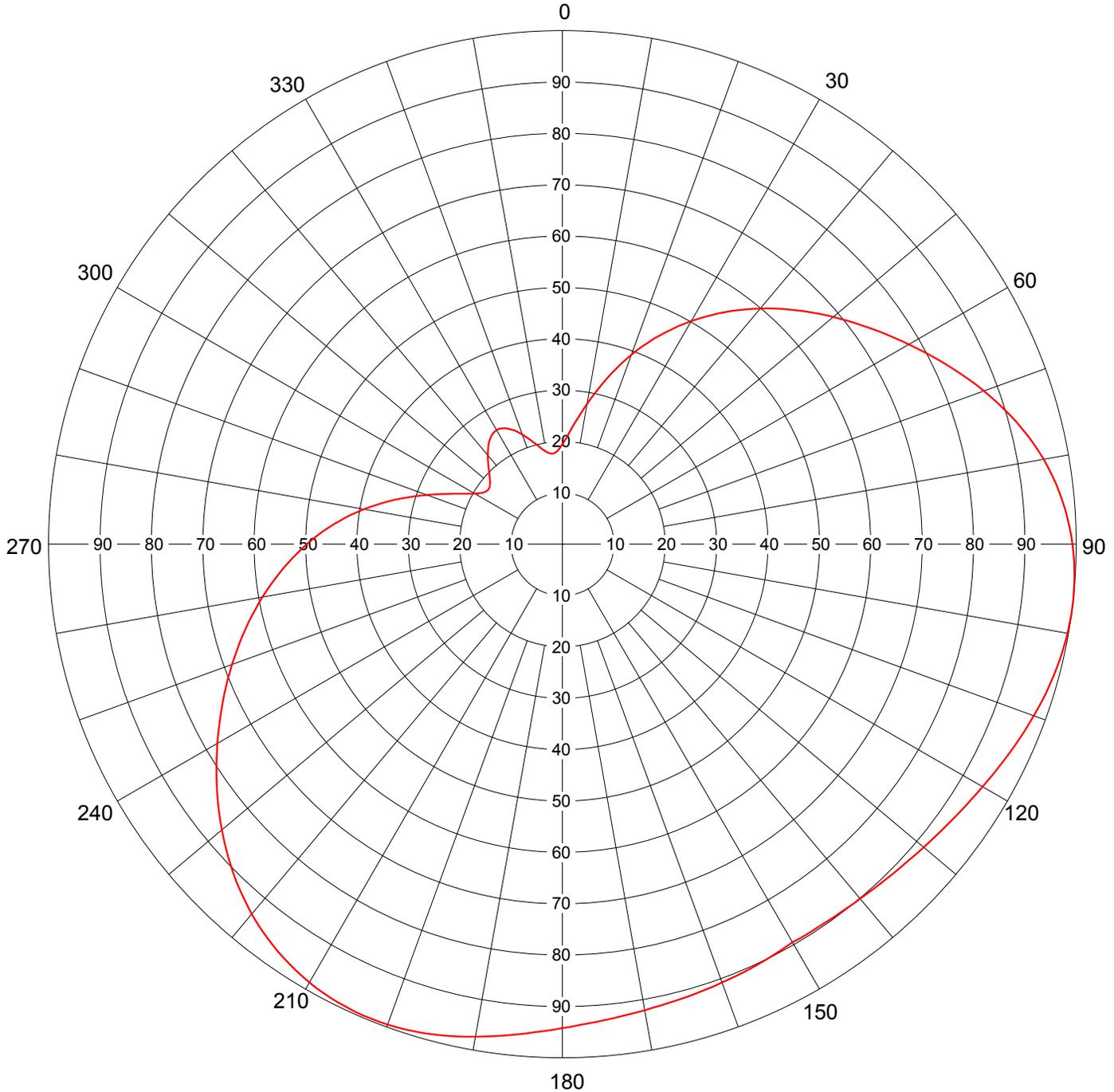
### AZIMUTH PATTERN

RMS Gain at Main Lobe  
Calculated / Measured

**1.90 (2.79 dB)**  
**Calculated**

Frequency  
Drawing #

**689 MHz**  
**TLP-M**



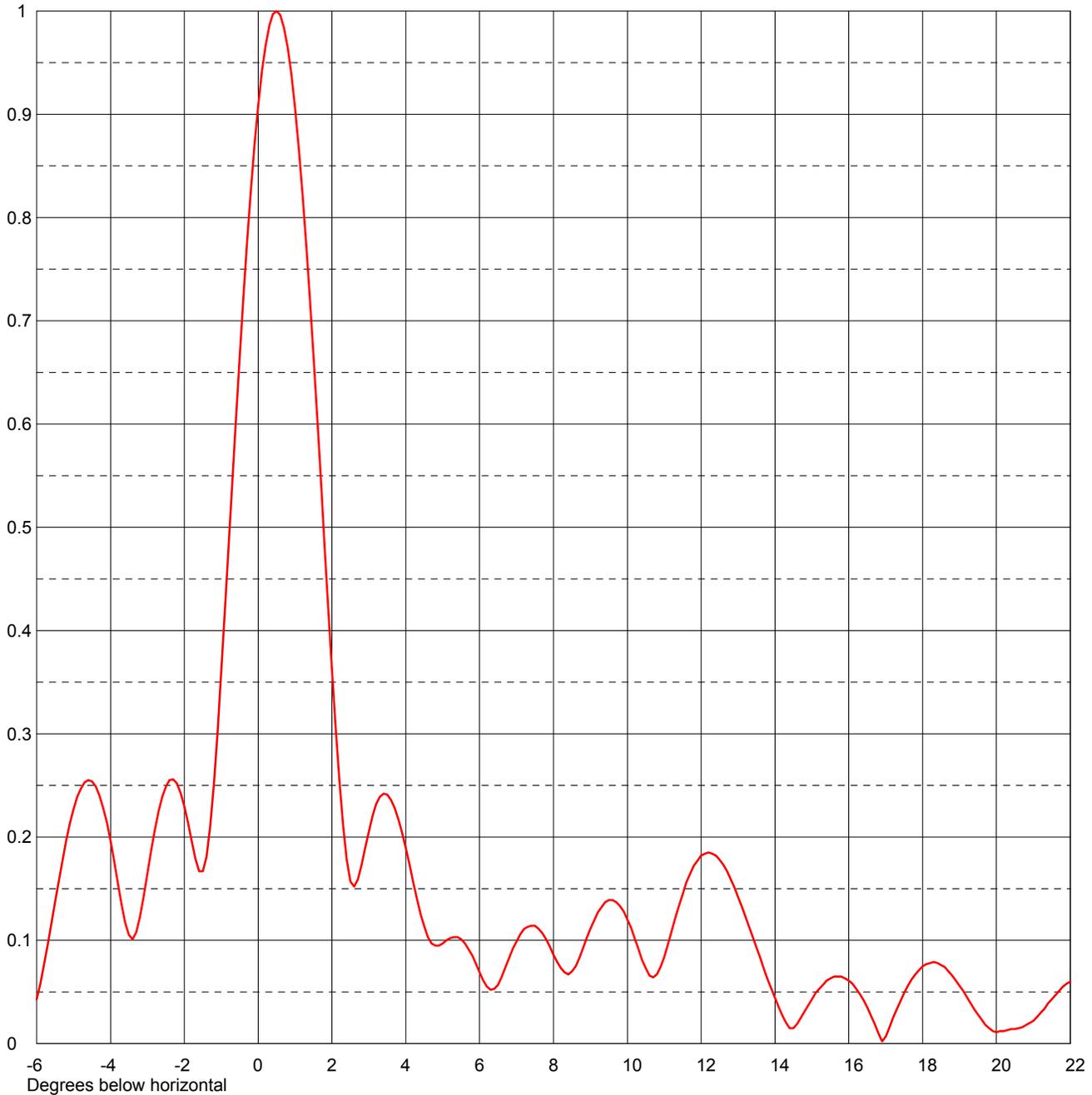
Remarks:



Date **14 Mar 2002**  
Call Letters **WPBN-DT** Channel **50**  
Location **Traverse City, MI**  
Customer  
Antenna Type **TLP-24M (C)**

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>23.0 (13.62 dB)</b>	Beam Tilt	<b>0.50 Degrees</b>
RMS Gain at Horizontal	<b>19.0 (12.79 dB)</b>	Frequency	<b>689.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>24L230050</b>



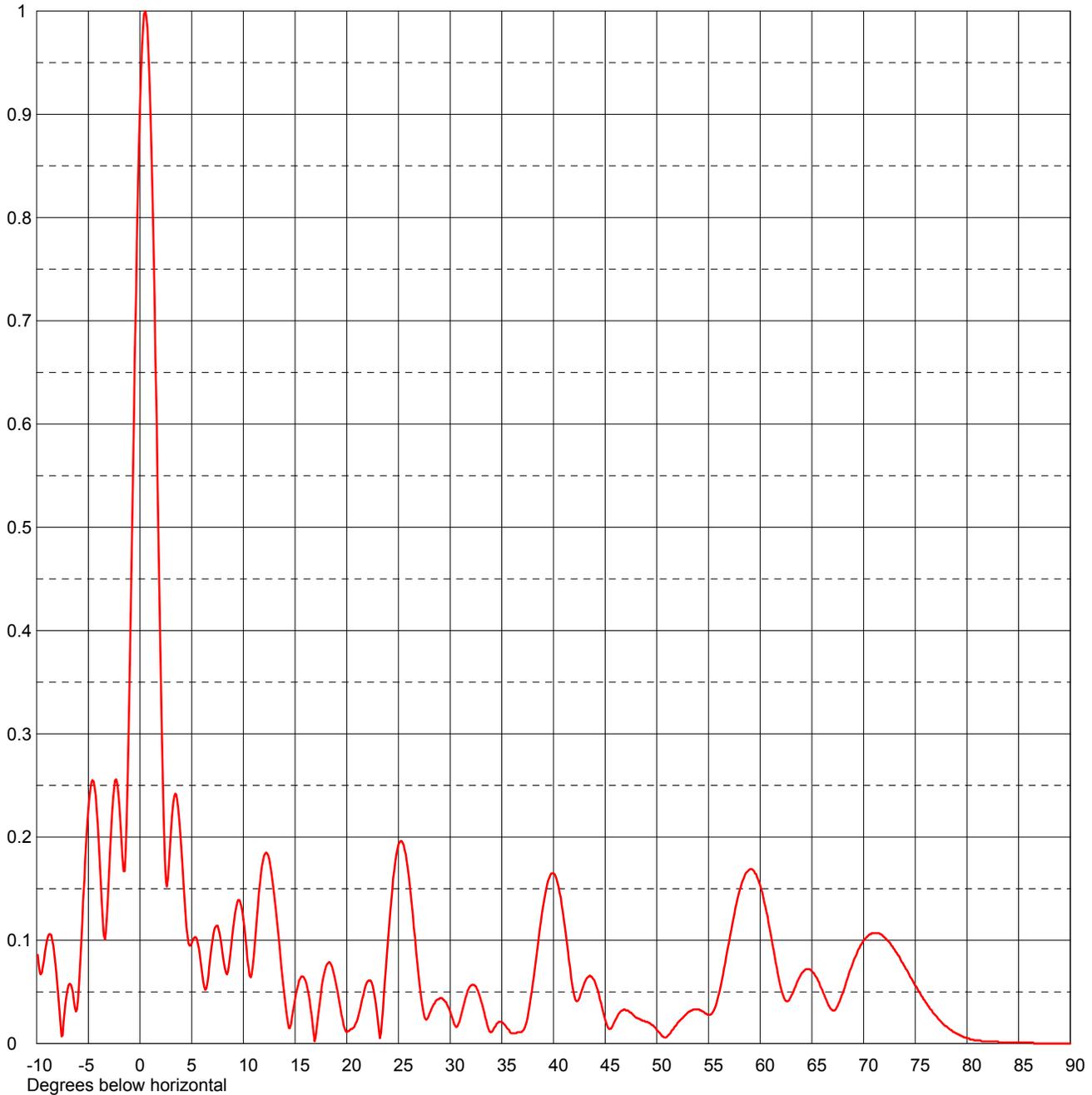
Remarks:



Date **14 Mar 2002**  
Call Letters **WPBN-DT** Channel **50**  
Location **Traverse City, MI**  
Customer  
Antenna Type **TLP-24M (C)**

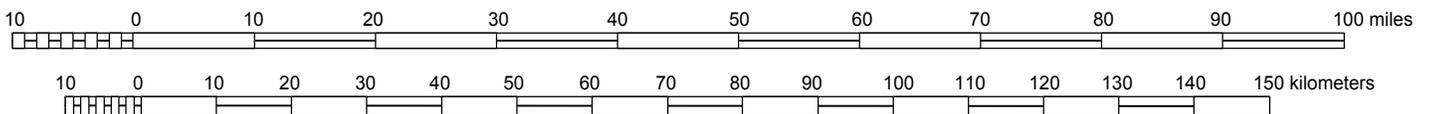
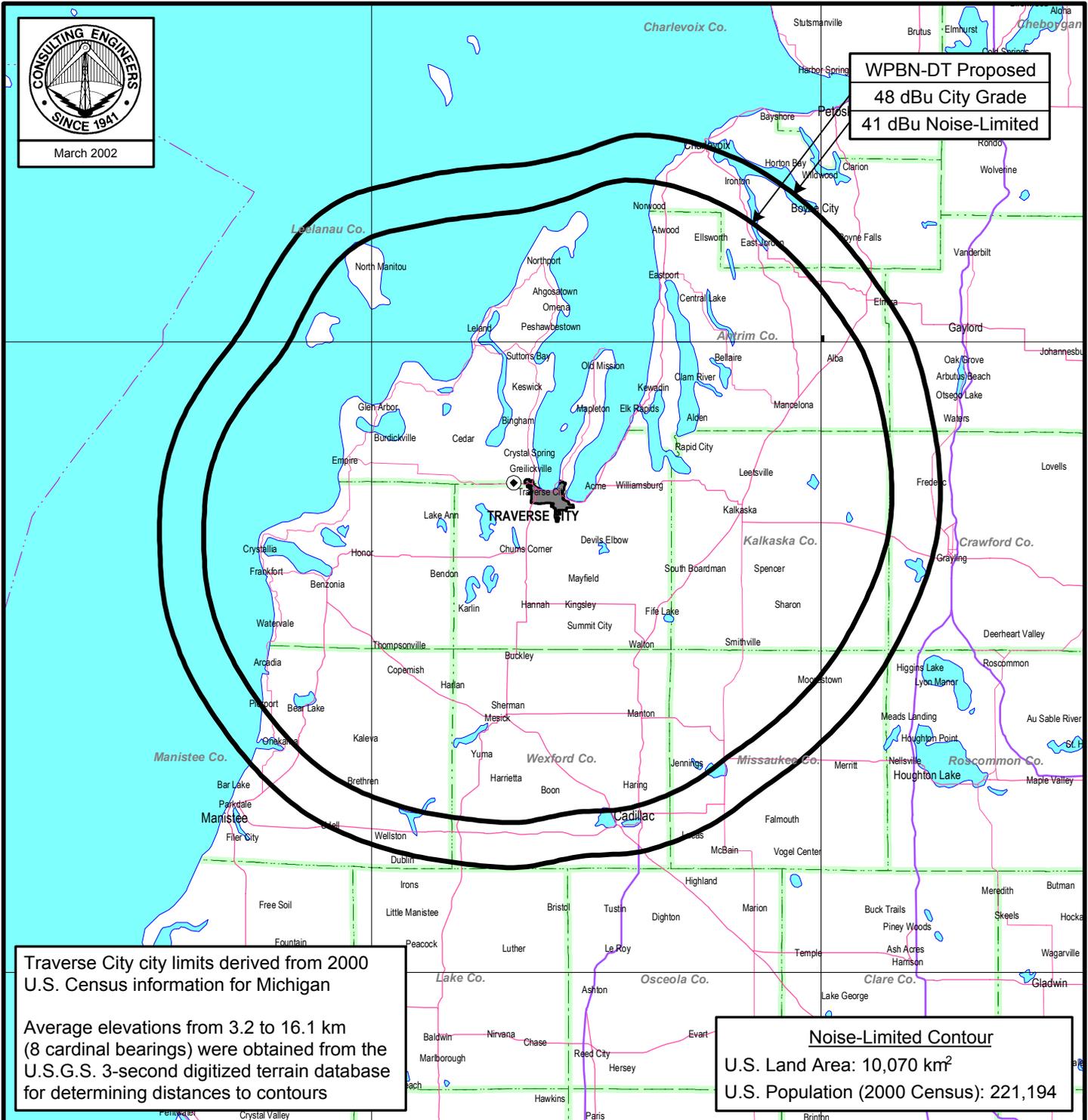
### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>23.0 (13.62 dB)</b>	Beam Tilt	<b>0.50 Degrees</b>
RMS Gain at Horizontal	<b>19.0 (12.79 dB)</b>	Frequency	<b>689.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>24L230050-90</b>



Remarks:

Figure 3



**PREDICTED F(50,90) COVERAGE CONTOURS**

STATION WPBN-DT

TRAVERSE CITY, MICHIGAN

CH 50 78 KW (MAX-DA) 230 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida