

Exhibit 12.1 - Copy of Existing Antenna Structure Registration

Registration Detail

Reg Number	1002165	Status	Granted
File Number	A0567214	Constructed	01/01/1991
FAA Study	2007-AGL-7003-OE	EMI	No
FAA Issue Date	09/14/2007	NEPA	No

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Communications Purposes

Location (in NAD83 Coordinates)

Lat/Long 43-34-33.0 N 084-46-29.0 W 64 KM W OF BLUE GRASS RD OLD US RT 27

City, State MOUNT PLEASANT , MI

Center of
AM Array

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
242.9	169.2
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
412.1	168.2

Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 9

Paint and Light in Accordance with FAA Circular Number 70/7460-1G

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Owner & Contact Information

FRN	0002733764	Licensee ID	L00053639
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Owner

CENTRAL MICHIGAN UNIVERSITY DBA = PUBLIC
BROADCASTING

Attention To: RANDALL KAPENGA
3965 E BROOMFIELD
MOUNT PLEASANT , MI 48859

P: (517)774-3105
E:

Contact

P:
E:

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Last Action Status

Status	Granted	Received	10/25/2007
Purpose	Modification	Entered	10/25/2007
Mode	Interactive		

Related Applications

10/25/2007	A0567214 - Modification (MD)
08/26/1996	A0002389 - New (NE)

.

Comments

Comments



Exhibit 12.2

Vertical Plan of Antenna System

The site is located west of Blue Grass Road & Old US 27
the city of Mount Pleasant, Isabella County, Michigan.

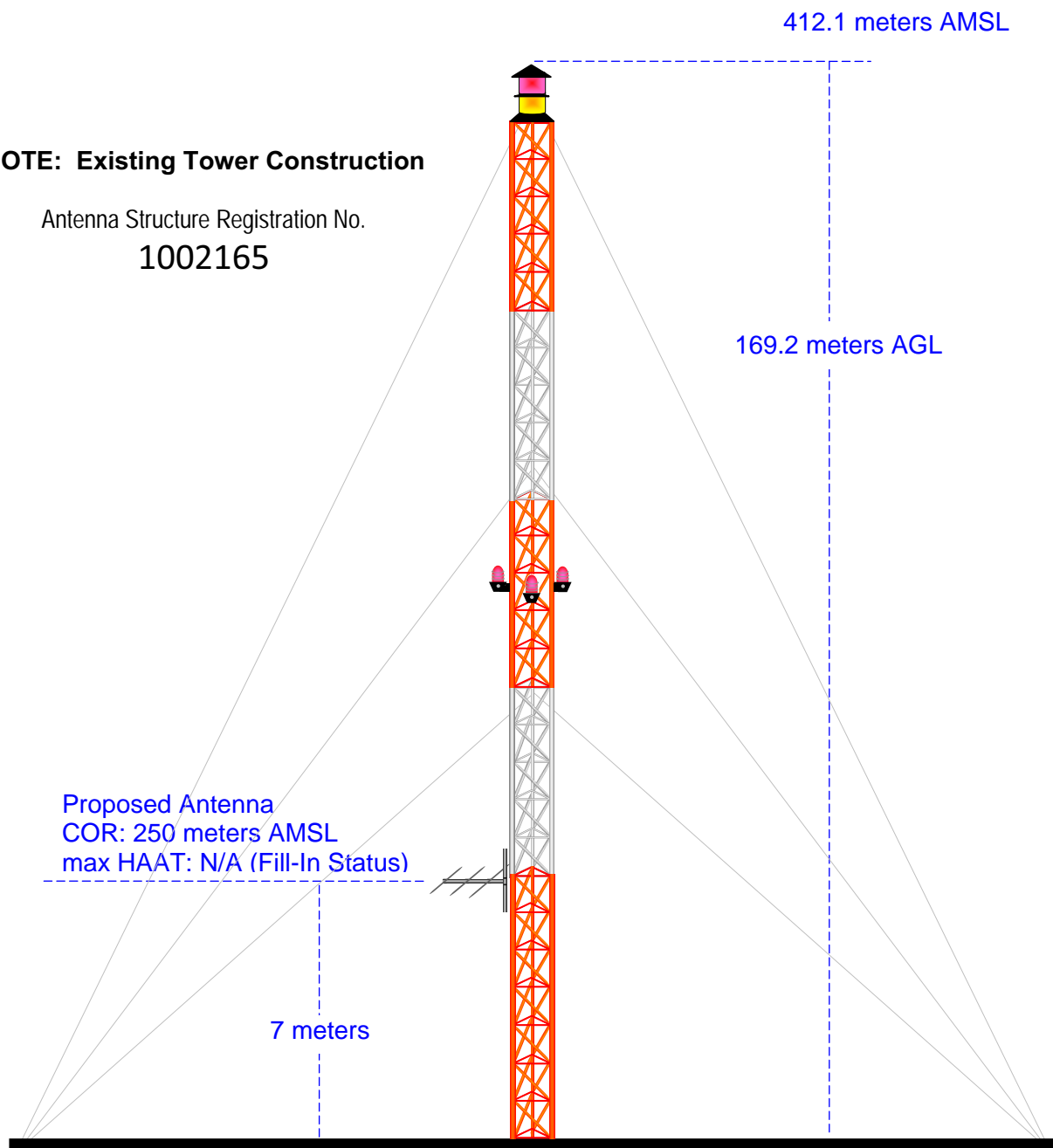
Site Location (NAD 27)

NL: 43° 34' 33"

WL: 84° 46' 29"

NOTE: Existing Tower Construction

Antenna Structure Registration No.
1002165



Ground Elevation = 242.9 m AMSL
Drawing is not to Scale

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036

Exhibit 12.3 Present vs Proposed Contour Study

W214BH.L
BLFT20040217ABW
Latitude: 43-35-46 N
Longitude: 084-45-55 W
ERP: 0.10 kW
Channel: 214
Frequency: 90.7 MHz
AMSL Height: 244.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model:

60 dBu Contour
Total Population: 33,884
Total Area: 99.86 sq. km

CH267D.P
Proposed Operation
Latitude: 43-34-33 N
Longitude: 084-46-29 W
ERP: 0.01 kW
Channel: 214
Frequency: 90.7 MHz
AMSL Height: 250.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model:

60 dBu Contour
Total Population: 20,856
Total Area: 17.37 sq. km

Present 60 dBu Contour

Proposed 60 dBu Contour

Mount Pleasant
W214BH.L

CH267D.P

Rosebush

Real City

Isabel

Shepherd

Scale 1:125,000

0 1 2 3 km



Exhibit 12.4 Proposed vs Primary Service Contour Study

CH267D.P
Proposed Operation
Latitude: 43-34-33 N
Longitude: 084-46-29 W
ERP: 0.01 kW
Channel: 267
Frequency: 101.3 MHz
AMSL Height: 250.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model:

WMHW-FM.L
BLED20070919ABY
Latitude: 43-34-33 N
Longitude: 084-46-29 W
ERP: 13.00 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 380.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model:

WMHW-FM.C
BPED20070905ACK
Latitude: 43-34-33 N
Longitude: 084-46-29 W
ERP: 9.10 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 404.5 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model:

Proposed 60 dBu Contour

Primary Licensed 60 dBu Contour

Primary Construction Permit 60 dBu Contour

Clare

Isabella

Midland

Mount Pleasant

CH267D.P
WMHW-FM.L
WMHW-FM.C

Montcalm

Gratiot

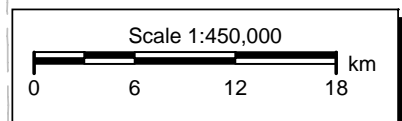


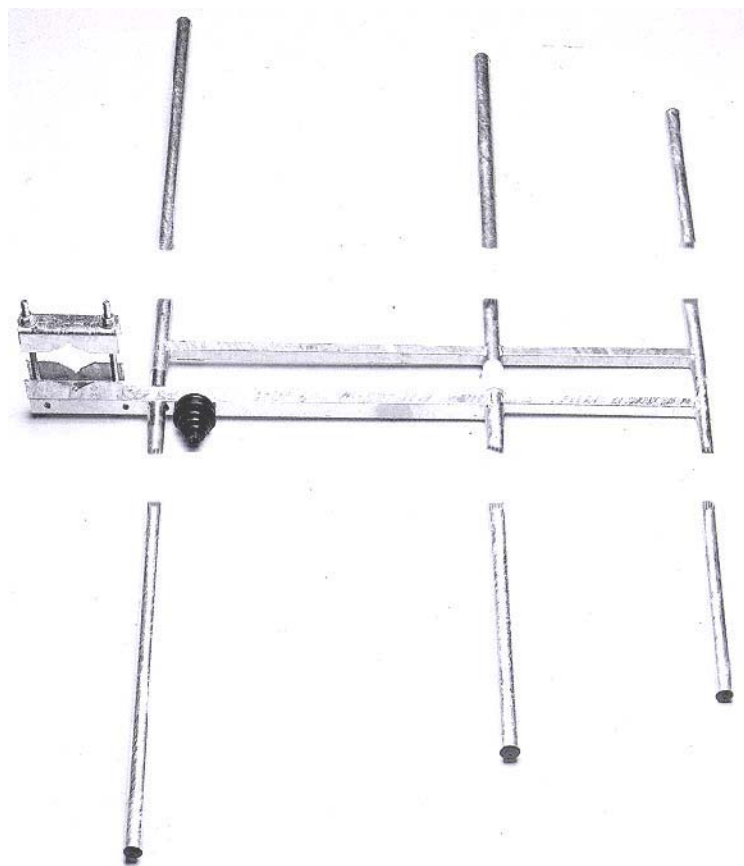
Exhibit 12.5

Tabulation of Proposed Allocation

REFERENCE		CH# 267D - 101.3 MHz, Pwr= 0.01 kW, HAAT= 7.3 M, COR= 250 M								DISPLAY DATES	
43 34 33.0 N.		Average Protected F(50-50)= 3.15 km								DATA	10-03-09
84 46 29.0 W.		Standard Directional								SEARCH	10-07-09
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap	in km)
267B	WBFX	LIC	_CN	218.6	75.9	43 02 28.0	50.000	133.1	60.0	-58.8*<	9.3
Grand Rapids		MI		38.2	BLH5400	85 21 28.0	128	378	Cc Licenses, Llc		
269A	WPRJ	LIC	_CX	43.6	36.2	43 48 39.0	4.600	2.7	28.1	30.6	7.9
Coleman		MI		223.8	BLH20050808ACN	84 27 50.0	114	328	Come Together Ministries,		
265A	WWRB	LIC	_CN	280.0	57.9	43 39 49.0	6.000	2.7	27.4	52.9	30.4
Big Rapids		MI		99.5	BLH19920206KG	85 28 54.0	97	406	Mentor Partners, Inc.		
Class B1 with respect to Canada-Accepted by Canada 900907											
265A	WLUN	LIC	_CN	61.0	62.7	43 50 46.0	2.600	2.5	27.5	57.5	35.0
Pinconning		MI		241.5	BLH19940225KA	84 05 32.0	151	352	Michigan Radio Communicati		
267A	R12109	ADD	___	70.9	127.7	43 56 28.0	6.000	87.5	28.9	37.6	90.4
Caseville		MI		251.9		83 16 17.0	100	282	Edward Czelada		
proposed in lieu of 289A @ Caseville, MI in docket 01-229											
264B	WITL-FM	LIC	_CN	167.3	102.5	42 40 33.0	26.500	5.8	64.8	95.1	37.6
Lansing		MI		347.5	BLH19850610KF	84 30 00.0	196	465	Citadel Broadcasting Compa		
267A	R58838	ADD	___	75.7	134.4	43 51 44.0	6.000	88.7	29.9	43.1	96.6
Pigeon		MI		256.8		83 09 17.0	100	301	Katherine Pyeatt		
266A	WQON	LIC	_CN	3.4	110.8	44 34 15.0	3.400	44.4	29.3	63.2	77.1
Roscommon		MI		183.4	BLH19900322KB	84 41 33.0	135	501	Gannon Broadcasting System		
Class B1 with respect to Canada											
268A	WWBN	LIC	NCX	112.6	107.0	43 12 00.0	1.800	40.9	27.2	64.4	77.5
Tuscola		MI		293.5	BLH20021023AAC	83 33 30.0	149	384	Regent Broadcasting Of Fli		
269A	WHZZ	LIC	_C_	169.8	99.8	42 41 29.0	4.100	2.7	29.1	95.6	70.6
Lansing		MI		349.9	BLH19990811KD	84 33 29.0	121	386	The Macdonald Broadcasting		
269B1	WMRR	LIC	_CN	255.8	130.6	43 16 38.0	12.000	3.8	44.1	124.9	86.4
Muskegon Heights		MI		74.7	BLH19940902KB	86 20 05.0	145	335	Cc Licenses, Llc		
Proposed to Canada as Class B 950911											
268C2	WMJZ-FM	LIC	_CX	10.2	163.1	45 01 10.0	50.000	73.3	48.0	86.6	110.7
Gaylord		MI		190.4	BLH20031015ADR	84 24 28.0	150	511	Darby Advertising, Inc.		
270C1	WLDR-FM	APP	_CX	331.4	151.8	44 46 13.0	100.000	7.9	62.3	140.8	89.2
Traverse City		MI		150.7	BPH20090220ADT	85 41 43.0	199	431	Great Northern Broadcastin		
270C1	WLDR-FM	LIC	_CX	331.4	151.8	44 46 13.0	100.000	7.7	61.6	141.0	90.0
Traverse City		MI		150.7	BMLH20090105AGN	85 41 43.0	192	423	Great Northern Broadcastin		
266B	WRIF	LIC	_CX	134.2	174.7	42 28 14.0	27.000	79.5	66.9	93.6	104.9
Detroit		MI		315.3	BMLH20050408ABC	83 15 01.0	268	480	Greater Boston Radio, Inc.		
268A	WMTE-FM	LIC	_C_	300.6	141.3	44 12 41.0	6.000	35.6	23.5	103.0	114.0
Manistee		MI		119.5	BMLH20001002AGF	86 17 53.0	80	275	Lake Michigan Broadcasting		

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone = 2, Co to 3rd adjacent.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.

Exhibit 12.6 - Reprint of Directional Antenna Data from Antenna Manufacturer (Actual DA Pattern Rotated to 0.0°T)



NICOM
BKY3/P
Medium Power
Portable
Broadband FM
Directional Antenna
Antena Portátil
Direccional
de FM Banda Ancha

This broadband dipole antenna constructed of stainless steel is designed to last a long time in any weather condition. Because of its sturdy construction it can support up to 2 kw of input power with the appropriate connector. Since it has a wide angle of radiation it is strongly recommended for omni-directional arrays. Due to the fact that it is easily disassembled and reassembled, it can be placed in a compact container making it very portable and

inexpensive to ship.

Esta antena dipolo de banda ancha, fabricada de acero inoxidable fue concebida para ser duradera en cualquier condición de clima. Debido a su robusta construcción puede soportar hasta 2 kw de potencia de entrada con el conector apropiado. Esta antena es recomendada para formaciones omnidireccionales ya que tiene un gran ángulo de irradiación. Dado al hecho que es fácil de armar y desarmar esta antena puede ser enviada en un contenedor muy compacto rendiendola portátil y económica para envíos.

TECHNICAL SPECIFICATIONS

Antenna type	3 element directional antenna
Frequency range	87.5 - 108 MHz
Bandwidth	20 MHz
Impedance	50 Ohms
Connectors	N type (1 kw) - EIA 7/8 (2 kw)
Power rating	2000 Watts max.
VSWR	< 1.2 max.
Polarization	vertical or horizontal
Gain	4.5 dB (referred to half-wave dipole)
H plane	150 degrees
V plane	70 degrees

Front-to-back ratio	18 dB
Lightning protection	all parts grounded
Max wind velocity	130 mph (208 km/h)
Wind load	48.4 Lbs (22 kg)
Wind surface	2.0 ft ² (0.19 m ²)
Materials (external)	stainless steel
Mounting	from 2" to 4"
Weight	20 Lbs (9 kg)
Dimensions	50"×72"×3" (1250×1800×60mm)
Packing	53"×19"×4" (1300×480×100mm)

Radiation Patterns (at mid-band)

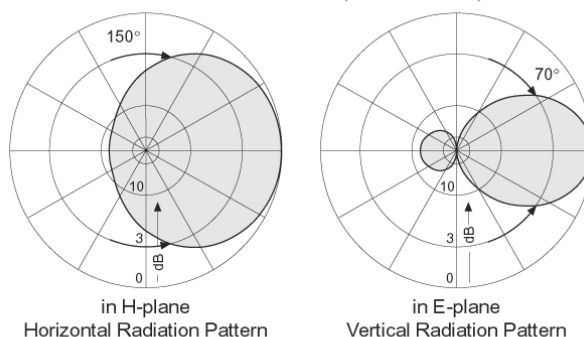


Exhibit 12.6 - Reprint of Directional Antenna Data from Antenna Manufacturer (Actual DA Pattern Rotated to 0.0°T)

TX station: BKY/3
Frequency: 98.00 MHz

Site name:

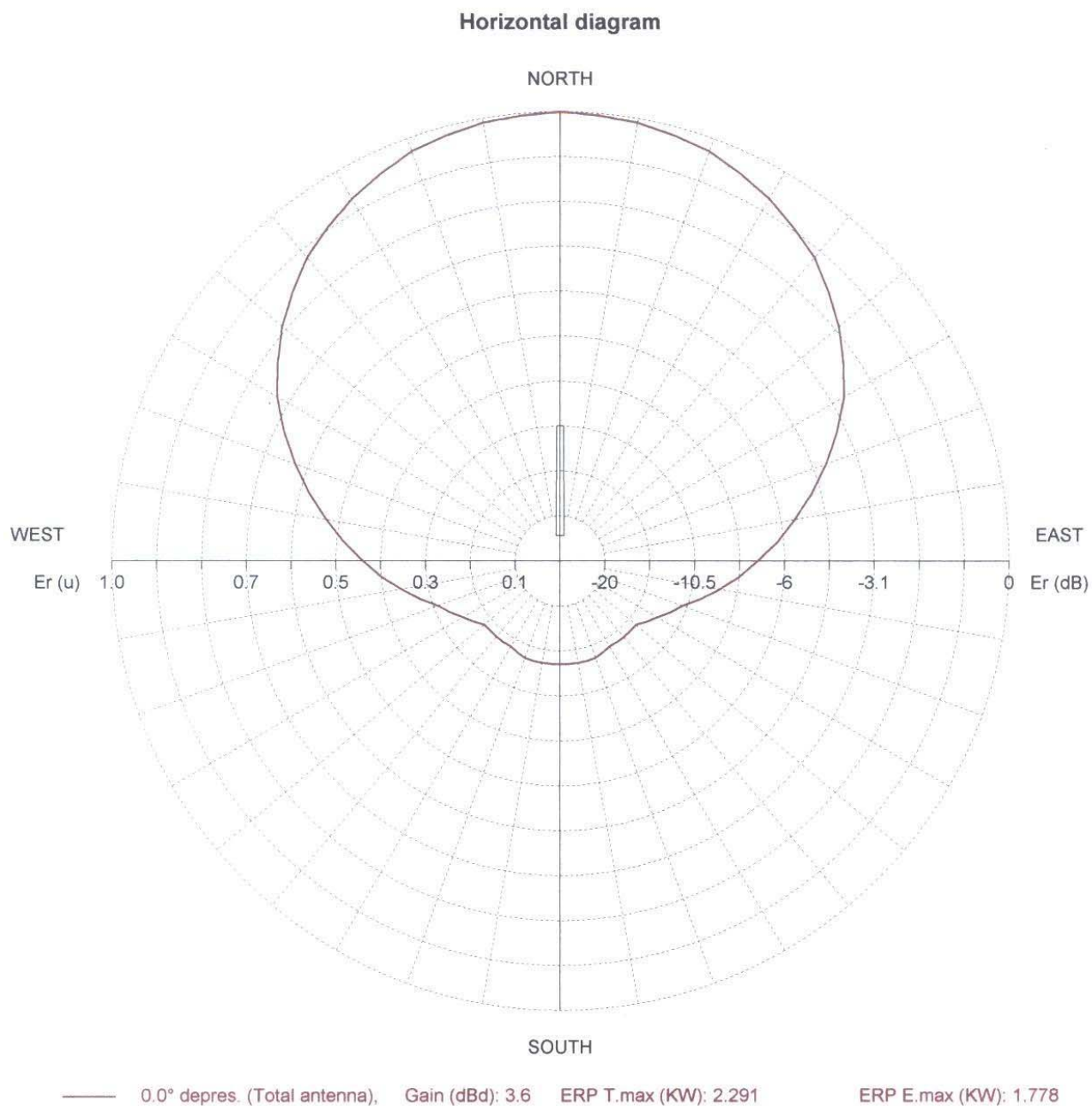


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TX station: BKY/3

Site name:

Frequency: 98.00 MHz

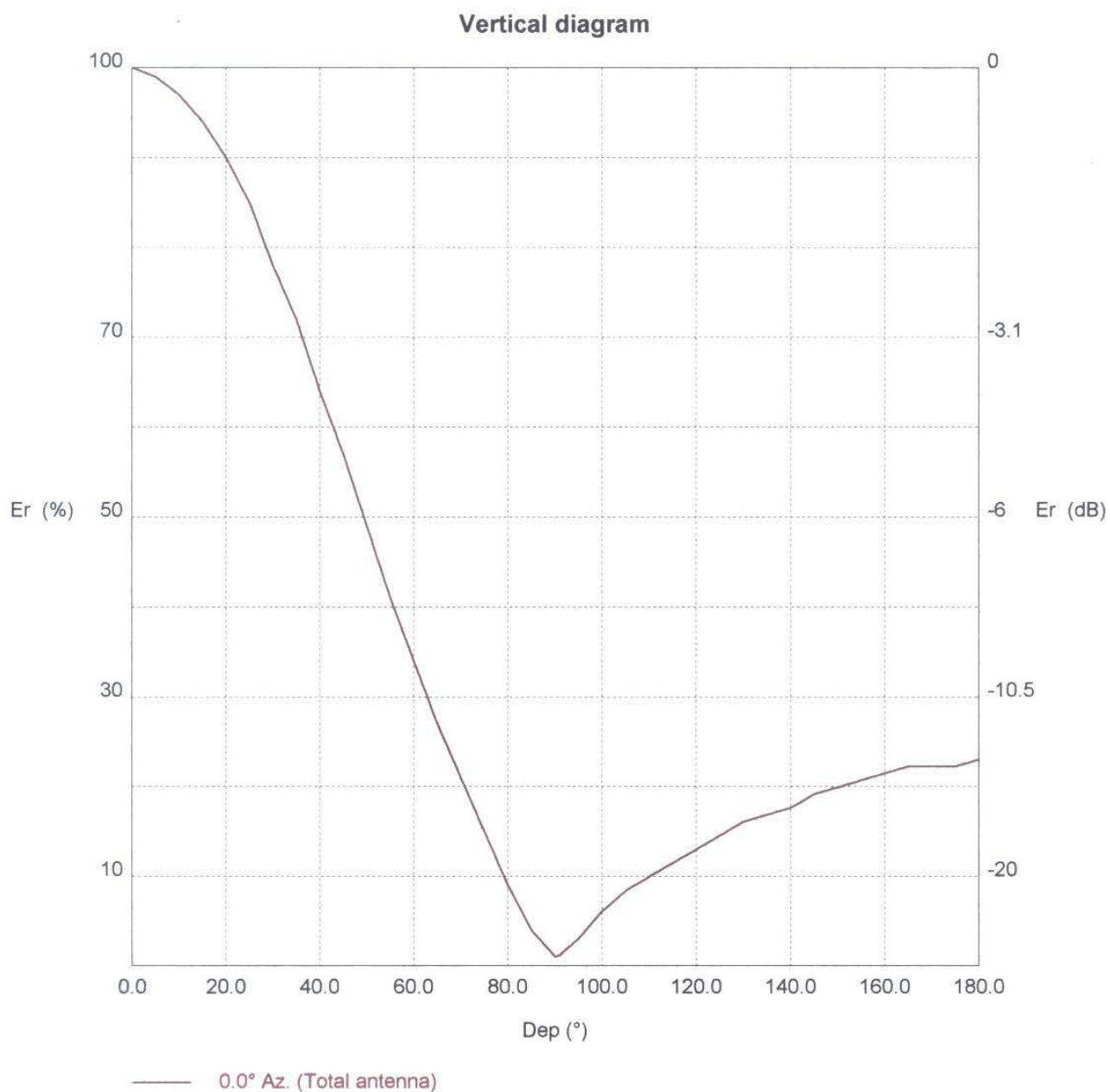


Exhibit 12.6 - Reprint of Directional Antenna Data from Antenna Manufacturer (Actual DA Pattern Rotated to 0.0°T)

TX station: BKY/3

Site name:

Frequency: 98.00 MHz

Vertical diagram at an azimuth of 0° degrees

Dep (°)	Er (%)	ERP (KW)	Dep (°)	Er (%)	ERP (KW)	Dep (°)	Er (%)	ERP (KW)
0.0	100.0	1.78	60.0	34.0	0.21	120.0	13.0	0.03
2.0	99.6	1.76	62.0	31.2	0.17	122.0	13.6	0.03
4.0	99.2	1.75	64.0	28.4	0.14	124.0	14.3	0.04
6.0	98.6	1.73	66.0	25.8	0.12	126.0	14.9	0.04
8.0	97.8	1.70	68.0	23.4	0.10	128.0	15.5	0.04
10.0	97.0	1.67	70.0	21.0	0.08	130.0	16.1	0.05
12.0	95.8	1.63	72.0	18.6	0.06	132.0	16.4	0.05
14.0	94.6	1.59	74.0	16.2	0.05	134.0	16.7	0.05
16.0	93.2	1.54	76.0	13.8	0.03	136.0	17.0	0.05
18.0	91.6	1.49	78.0	11.4	0.02	138.0	17.3	0.05
20.0	90.0	1.44	80.0	9.0	0.01	140.0	17.6	0.06
22.0	88.0	1.38	82.0	7.0	0.01	142.0	18.2	0.06
24.0	86.0	1.32	84.0	5.0	0.00	144.0	18.9	0.06
26.0	83.6	1.24	86.0	3.4	0.00	146.0	19.3	0.07
28.0	80.8	1.16	88.0	2.2	0.00	148.0	19.6	0.07
30.0	78.0	1.08	90.0	1.0	0.00	150.0	19.9	0.07
32.0	75.6	1.02	92.0	1.7	0.00	152.0	20.2	0.07
34.0	73.2	0.95	94.0	2.6	0.00	154.0	20.5	0.08
36.0	70.4	0.88	96.0	3.7	0.00	156.0	20.9	0.08
38.0	67.2	0.80	98.0	4.9	0.00	158.0	21.2	0.08
40.0	64.0	0.73	100.0	6.1	0.01	160.0	21.5	0.08
42.0	61.2	0.67	102.0	7.1	0.01	162.0	21.8	0.08
44.0	58.4	0.61	104.0	8.0	0.01	164.0	22.1	0.09
46.0	55.4	0.55	106.0	8.7	0.01	166.0	22.2	0.09
48.0	52.2	0.48	108.0	9.4	0.02	168.0	22.2	0.09
50.0	49.0	0.43	110.0	10.0	0.02	170.0	22.2	0.09
52.0	45.8	0.37	112.0	10.6	0.02	172.0	22.2	0.09
54.0	42.6	0.32	114.0	11.2	0.02	174.0	22.2	0.09
56.0	39.6	0.28	116.0	11.8	0.02	176.0	22.4	0.09
58.0	36.8	0.24	118.0	12.4	0.03	178.0	22.7	0.09

TX station: BKY/3

Site name:

Frequency: 98.00 MHz

Horizontal diagram at 0.0° depres. (Total antenna)

Az (°)	Er (%)	ERP (KW)	Az (°)	Er (%)	ERP (KW)	Az (°)	Er (%)	ERP (KW)
0.0	100.0	1.78	120.0	25.0	0.11	240.0	25.0	0.11
10.0	99.0	1.74	130.0	22.0	0.09	250.0	29.0	0.15
20.0	97.0	1.67	140.0	22.0	0.09	260.0	36.0	0.23
30.0	93.0	1.54	150.0	22.0	0.09	270.0	44.0	0.34
40.0	88.0	1.38	160.0	23.0	0.09	280.0	53.0	0.50
50.0	81.0	1.17	170.0	23.0	0.09	290.0	63.0	0.71
60.0	73.0	0.95	180.0	23.0	0.09	300.0	73.0	0.95
70.0	63.0	0.71	190.0	23.0	0.09	310.0	81.0	1.17
80.0	53.0	0.50	200.0	23.0	0.09	320.0	88.0	1.38
90.0	44.0	0.34	210.0	22.0	0.09	330.0	93.0	1.54
100.0	36.0	0.23	220.0	22.0	0.09	340.0	97.0	1.67
110.0	29.0	0.15	230.0	22.0	0.09	350.0	99.0	1.74