Technical Report
K245CU.CP Minor Modification

This technical report is submitted for a minor modification to K245CU.CP , FCC file no. BNPFT-20171201AEE. A tower site move with corresponding changes in antenna and ERP are submitted. The translator will continue to serve as a fill-in facility to rebroadcast KDLM(AM) 1340 kHz at Detroit Lakes, MN, FCC facility I.D. no. 37000.

K245CU.CP Modification Analysis:

An overlap study in exhibit E-1 shows the K245CU.CP modification is within the KJJK-FM 243C1 second-adjacent protected contour. The 102.29 F(50-10) +40 dBu interfering contour calculated in exhibit E-2 using the vertical pattern of a Shively 6812C four bay, full wavelength spaced antenna (exhibit E-3) shows the interfering contour lowest point = 4.9 meters above the site elevation, which does not reach any population, major roads or buildings (exhibit E-4). The modified 60 dBu contour overlaps the current K245CU.CP 60 dBu contour and is contained within a 25 mile/40 km radius from the KDLM(AM) daytime tower site (exhibit E-5). The modified 60 dBu contour has less than 50% common overlap to K226CA, which also serves as a fill-in translator for KDLM(AM) (exhibit E-6).

Antenna System:

K245CU.CP is to be relocated to the existing tower, ASR 1276387, at coordinates:

46 43 19N 95 50 37W NAD 27.

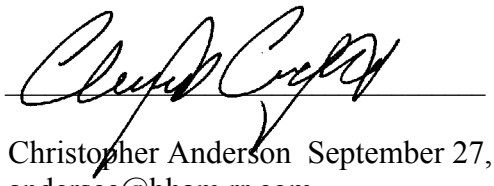
A Shively 6812C four bay, nondirectional antenna will be mounted at a COR AGL of 122 meters, 540 meters AMSL and operate at 0.250 kW ERP.

RF Exposure Calculation:

The RF contribution was calculated using FM Model (exhibit E-7). The worst-case RF is calculated to be 0.68 μW/cm^2 at a distance of 21.8 meters from the base of the tower, which is below the 200 μW/cm^2 maximum permissible for uncontrolled exposure.

Conclusion:

It is concluded that the K245CU.CP modification complies with all Commission rules and policies.



Christopher Anderson September 27, 2018
andersce@bham.rr.com

E-1 K245CU.CP Mod. Overlap Study

REFERENCE CH# 245D - 96.9 MHz, Pwr= 0.25 kW, HAAT= 117.0 M, COR= 540 M DISPLAY DATES
46 43 18.9 N. Average Protected F(50-50)= 13.9 km DATA 09-27-18
95 50 37.2 W. Omni-directional SEARCH 09-27-18

CH CALL / CITY	TYPE ANT / STATE	AZI <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* / (Overlap in km)	*OUT*
245D K245CU	CP _C_	2.0	12.82	46 50 14.0	0.250		---Reference---		
Detroit Lakes	MN	182.0	BNPFT20171201AEE	95 50 16.0		492	Leighton Enterprises, Inc.		
243C1 KJJK-FM	LIC _CN	191.1	54.00	46 14 43.0	100.000	7.2	58.8	33.0	-5.9***(1)**
Fergus Falls	MN	11.0	BLH19811103AE	95 58 46.0	171	556	Leighton Radio Holdings, I		
248C1 KDKK	LIC _CX	69.6	67.71	46 55 51.0	100.000	8.1	63.0	46.2	3.6
Park Rapids	MN	250.2	BLH20040901AAA	95 00 27.0	194	631	De La Hunt Broadcasting Co		
245D K245BY	LIC _C_	283.5	73.43	46 52 22.0	0.250	37.6	11.0	21.3	13.5
Moorhead	MN	102.9	BLFT20150720AAU	96 46 59.0		348	Brooke Ingstad		
244C2 KKCQ-FM	LIC NCX	17.7	103.26	47 36 22.0	25.000	68.3	45.8	20.6	36.1
Bagley	MN	198.0	BLH20140918ADH	95 25 31.0	170	609	R&j Broadcasting, Inc.		
245C1 KMFY	LIC _CN	71.2	192.09	47 15 17.0	100.000	156.7	59.9	21.8	86.6
Grand Rapids	MN	252.9	BLH19820201AJ	93 26 03.0	146	551	West Central Ohio Broadcas		
245C1 KMFY	CP _CX	68.8	197.72	47 20 22.0	100.000	156.7	59.9	27.6	92.4
Grand Rapids	MN	250.6	BPH20180307AAB	93 23 48.0	152	564	West Central Ohio Broadcas		
245C KDLO-FM	LIC _CN	215.3	237.47	44 57 57.0	100.000	188.6	84.9	34.8	105.1
Watertown	SD	34.1	BLH19790226AB	97 35 22.0	479	1030	Alpha 3e Licensee Llc		
246C1 KYCK	LIC _CX	329.3	142.80	47 49 20.0	100.000	82.2	52.9	46.2	68.1
Crookston	MN	148.6	BLH20060406ACA	96 49 13.0	113	369	Leighton Enterprises, Inc.		

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= West Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding.
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 restricted contour.

(1) The +40 102.7 F(50-10) dBu contour within the KJJK-FM 243C1 second adjacent protected contour (exhibit E-2) does not reach any buildings, roads or population, as shown in the aerial photo (exhibit E-4).

E-2 K245CU.CP Mod. +40 dBu Tabulation Within KJJK-FM 243C1

K245CU.CP Detroit Lakes, MN, Showing Protection to KJJK-FM
Geographic Coordinates: N. 46 43 19 W. 95 50 37
74.1204(d) Study - Using NGDC 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.25
Translator or LPFM Antenna Height AG = 122 Meters
K245CU.CP Antenna Model = SHI 6812C-4-FW

Protected Station's Contour = 62.29132 dBu
Translator's or LPFM's full Interference contour 102.29132

Review Azimuth = 0 Degrees True
Horizontal Relative Field at Review Azimuth = 1.000
Translator/LPFM ERP on the horizontal at Review Azimuth = 0.25 kW
Distance between stations = 54.0 km
Protected Station= KJJK-FM, 100 kW, 556 M Meters COR AMSL

Depression Angle From Degree(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)**(1)**
00.00	1.0	1.0	0.2500	851.9302	851.9302	122.000
01.00	0.994	1.0	0.2470	846.8186	846.6896	107.221
02.00	0.978	1.0	0.2391	833.1877	832.6801	092.922
03.00	0.951	1.0	0.2261	810.1856	809.0753	079.598
04.00	0.913	1.0	0.2084	777.8122	775.9175	067.743
05.00	0.866	1.0	0.1875	737.7715	734.9641	057.699
06.00	0.811	1.0	0.1644	690.9154	687.1305	049.780
07.00	0.748	1.0	0.1399	637.2438	632.4939	044.340
08.00	0.68	1.0	0.1156	579.3125	573.6747	041.375
09.00	0.606	1.0	0.0918	516.2697	509.9136	041.238
10.00	0.529	1.0	0.0700	450.6711	443.8243	043.742
11.00	0.45	1.0	0.0506	383.3686	376.3250	048.850
12.00	0.37	1.0	0.0342	315.2142	308.3260	056.463
13.00	0.291	1.0	0.0212	247.9117	241.5577	066.232
14.00	0.213	1.0	0.0113	181.4611	176.0710	078.101
15.00	0.14	1.0	0.0049	119.2702	115.2062	091.131
16.00	0.07	1.0	0.0012	059.6351	057.3249	105.562
17.00	0.006	1.0	0.0000	005.1116	004.8882	120.506
18.00	0.051	1.0	0.0007	043.4484	041.3219	108.574
19.00	0.102	1.0	0.0026	086.8969	082.1626	093.709
20.00	0.146	1.0	0.0053	124.3818	116.8807	079.459
21.00	0.181	1.0	0.0082	154.1994	143.9575	066.740
22.00	0.209	1.0	0.0109	178.0534	165.0882	055.300
23.00	0.229	1.0	0.0131	195.0920	179.5831	045.771
24.00	0.242	1.0	0.0146	206.1671	188.3430	038.144
25.00	0.247	1.0	0.0153	210.4267	190.7114	033.070
26.00	0.245	1.0	0.0150	208.7229	187.5989	030.502
27.00	0.237	1.0	0.0140	201.9075	179.9009	030.336
28.00	0.223	1.0	0.0124	189.9804	167.7428	032.810
29.00	0.204	1.0	0.0104	173.7938	152.0034	037.743
30.00	0.181	1.0	0.0082	154.1994	133.5406	044.900
31.00	0.155	1.0	0.0060	132.0492	113.1882	053.990
32.00	0.126	1.0	0.0040	107.3432	091.0322	065.117
33.00	0.095	1.0	0.0023	080.9334	067.8764	077.921
34.00	0.064	1.0	0.0010	054.5235	045.2021	091.511
35.00	0.032	1.0	0.0003	027.2618	022.3315	106.363
36.00	0.001	1.0	0.0000	000.8519	000.6892	121.499
37.00	0.029	1.0	0.0002	024.7060	019.7311	107.132
38.00	0.058	1.0	0.0008	049.4119	038.9371	091.579
39.00	0.084	1.0	0.0018	071.5621	055.6142	076.964
40.00	0.108	1.0	0.0029	092.0085	070.4826	062.858
41.00	0.129	1.0	0.0042	109.8990	082.9418	049.900
42.00	0.146	1.0	0.0053	124.3818	092.4337	038.772
43.00	0.161	1.0	0.0065	137.1608	100.3130	028.457
44.00	0.172	1.0	0.0074	146.5320	105.4063	020.210
45.00	0.18	1.0	0.0081	153.3474	108.4330	013.567
46.00	0.185	1.0	0.0086	157.6071	109.4831	008.627
47.00	0.186	1.0	0.0086	158.4590	108.0688	006.110
48.00	0.185	1.0	0.0086	157.6071	105.4597	004.875**(1)**
49.00	0.181	1.0	0.0082	154.1994	101.1639	005.624
50.00	0.174	1.0	0.0076	148.2358	095.2842	008.445
51.00	0.165	1.0	0.0068	140.5685	088.4626	012.758
52.00	0.154	1.0	0.0059	131.1972	080.7731	018.615
53.00	0.141	1.0	0.0050	120.1222	072.2913	026.066
54.00	0.127	1.0	0.0040	108.1951	063.5955	034.468
55.00	0.112	1.0	0.0031	095.4162	054.7285	043.840
56.00	0.096	1.0	0.0023	081.7853	045.7338	054.197
57.00	0.08	1.0	0.0016	068.1544	037.1196	064.841
58.00	0.063	1.0	0.0010	053.6716	028.4416	076.484
59.00	0.047	1.0	0.0006	040.0407	020.6225	087.678
60.00	0.03	1.0	0.0002	025.5579	012.7790	099.866
61.00	0.014	1.0	0.0000	011.9270	005.7823	111.568
62.00	0.001	1.0	0.0000	000.8519	000.4000	121.248
63.00	0.016	1.0	0.0001	013.6309	006.1883	109.855
64.00	0.029	1.0	0.0002	024.7060	010.8304	099.794
65.00	0.042	1.0	0.0004	035.7811	015.1217	089.571
66.00	0.053	1.0	0.0007	045.1523	018.3651	080.751
67.00	0.064	1.0	0.0010	054.5235	021.3040	071.811
68.00	0.073	1.0	0.0013	062.1909	023.2971	064.338
69.00	0.08	1.0	0.0016	068.1544	024.4244	058.372
70.00	0.087	1.0	0.0019	074.1179	025.3498	052.352
71.00	0.092	1.0	0.0021	078.3776	025.5172	047.893

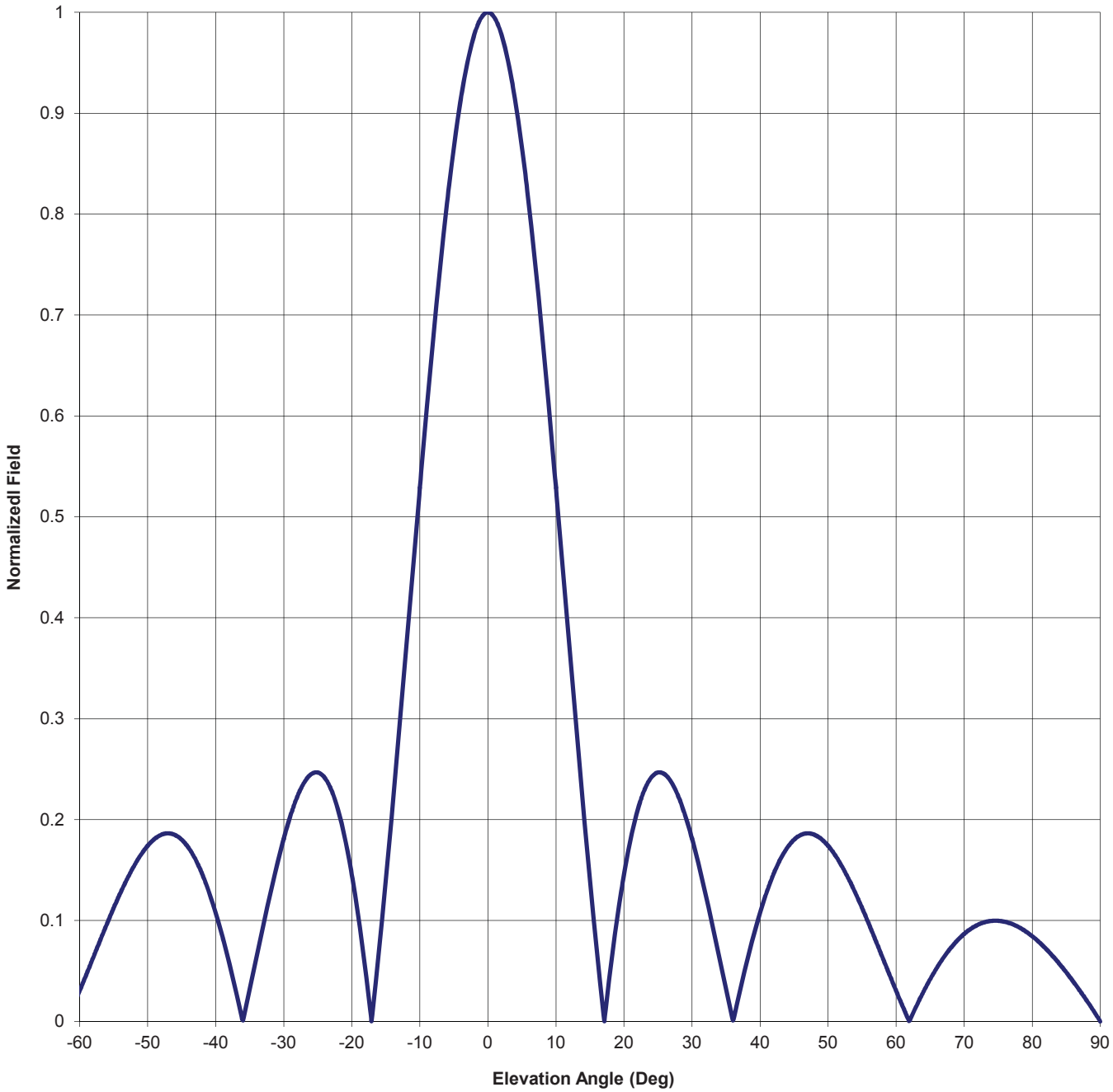
E-2 K245CU.CP Mod. +40 dBu Tabulation Within KJJK, cont.

Depression Angle From Degree(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
72.00	0.096	1.0	0.0023	081.7853	025.2730	044.218
73.00	0.098	1.0	0.0024	083.4892	024.4099	042.159
74.00	0.1	1.0	0.0025	085.1930	023.4824	040.107
75.00	0.1	1.0	0.0025	085.1930	022.0496	039.710
76.00	0.099	1.0	0.0025	084.3411	020.4040	040.164
77.00	0.097	1.0	0.0024	082.6372	018.5893	041.481
78.00	0.094	1.0	0.0022	080.0814	016.6499	043.669
79.00	0.089	1.0	0.0020	075.8218	014.4675	047.571
80.00	0.084	1.0	0.0018	071.5621	012.4266	051.525
81.00	0.079	1.0	0.0016	067.3025	010.5284	055.526
82.00	0.072	1.0	0.0013	061.3390	008.5367	061.258
83.00	0.065	1.0	0.0011	055.3755	006.7486	067.037
84.00	0.057	1.0	0.0008	048.5600	005.0759	073.706
85.00	0.049	1.0	0.0006	041.7446	003.6383	080.414
86.00	0.04	1.0	0.0004	034.0772	002.3771	088.006
87.00	0.03	1.0	0.0002	025.5579	001.3376	096.477
88.00	0.021	1.0	0.0001	017.8905	000.6244	104.120
89.00	0.011	1.0	0.0000	009.3712	000.1636	112.630
90.00	0.0	1.0	0.0000	000.0852	000.0000	121.915

(1) The +40 102.27 F(50-10) dBu contour within the KJJK-FM 243C1 second adjacent protected contour lowest point = 4.9 meters above the site elevation, which does not reach any buildings, roads or population (exhibit E-4).

E-3 K245CU.CP Mod. Antenna Vertical Elevation Pattern and Tabulation

Antenna Mfg.:	**Shively Labs**			**Date: 11/23/2011**
Antenna Type:	**6812**			
Station:	**none**	**Beam Tilt**	**0**	
Frequency:	**93**	**Gain (Max)**	**2.085**	**3.192 dB**
Channel #:	**225.5**	**Gain (Horizon)**	**2.085**	**3.192 dB**
Figure:	**3**			



Antenna Mfg.: Shively Labs **Date:** 11/23/2011

Antenna Type: 6812

Station: none **Beam Tilt** 0

Frequency: 93 **Gain (Max)** 2.085 3.192 dB

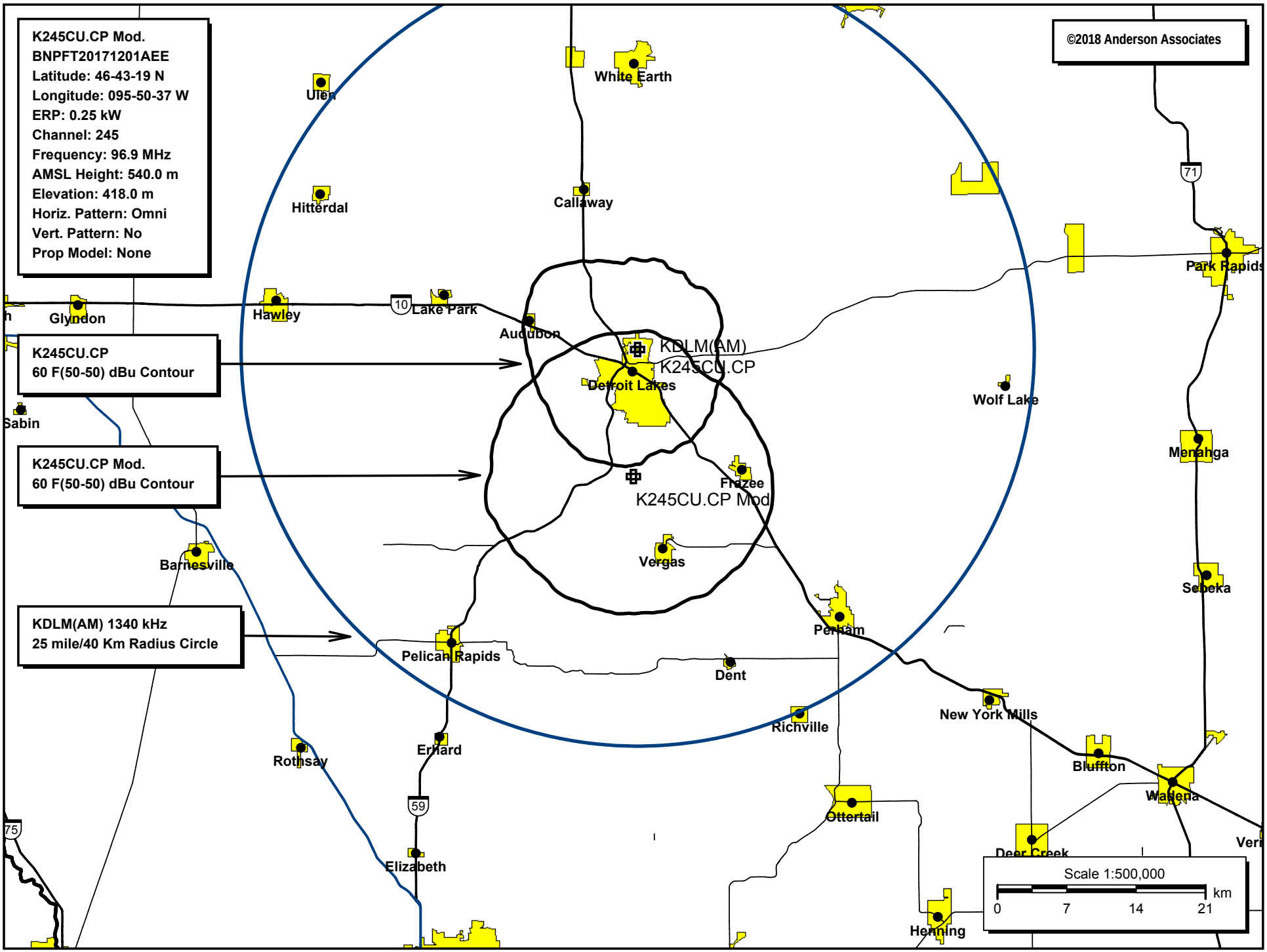
Channel #: 225.5 **Gain (Horizon)** 2.085 3.192 dB

Figure: 3

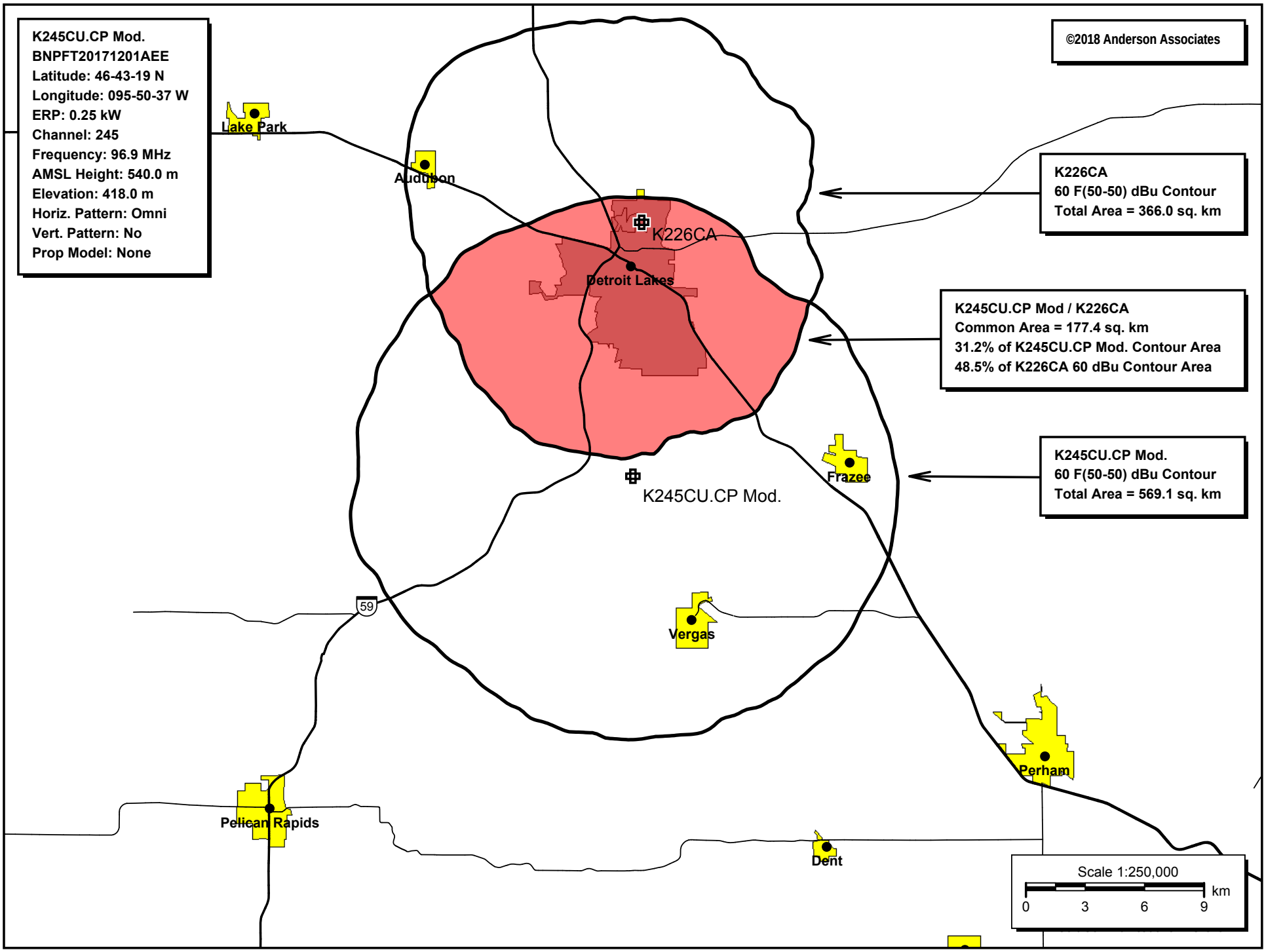
Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.172	0	1.000	46	0.185
-89	0.011	-43	0.161	1	0.994	47	0.186
-88	0.021	-42	0.146	2	0.978	48	0.185
-87	0.030	-41	0.129	3	0.951	49	0.181
-86	0.040	-40	0.108	4	0.913	50	0.174
-85	0.049	-39	0.084	5	0.866	51	0.165
-84	0.057	-38	0.058	6	0.811	52	0.154
-83	0.065	-37	0.029	7	0.748	53	0.141
-82	0.072	-36	0.001	8	0.680	54	0.127
-81	0.079	-35	0.032	9	0.606	55	0.112
-80	0.084	-34	0.064	10	0.529	56	0.096
-79	0.089	-33	0.095	11	0.450	57	0.080
-78	0.094	-32	0.126	12	0.370	58	0.063
-77	0.097	-31	0.155	13	0.291	59	0.047
-76	0.099	-30	0.181	14	0.213	60	0.030
-75	0.100	-29	0.204	15	0.140	61	0.014
-74	0.100	-28	0.223	16	0.070	62	0.001
-73	0.098	-27	0.237	17	0.006	63	0.016
-72	0.096	-26	0.245	18	0.051	64	0.029
-71	0.092	-25	0.247	19	0.102	65	0.042
-70	0.087	-24	0.242	20	0.146	66	0.053
-69	0.080	-23	0.229	21	0.181	67	0.064
-68	0.073	-22	0.209	22	0.209	68	0.073
-67	0.064	-21	0.181	23	0.229	69	0.080
-66	0.053	-20	0.146	24	0.242	70	0.087
-65	0.042	-19	0.102	25	0.247	71	0.092
-64	0.029	-18	0.051	26	0.245	72	0.096
-63	0.016	-17	0.006	27	0.237	73	0.098
-62	0.001	-16	0.070	28	0.223	74	0.100
-61	0.014	-15	0.140	29	0.204	75	0.100
-60	0.030	-14	0.213	30	0.181	76	0.099
-59	0.047	-13	0.291	31	0.155	77	0.097
-58	0.063	-12	0.370	32	0.126	78	0.094
-57	0.080	-11	0.450	33	0.095	79	0.089
-56	0.096	-10	0.529	34	0.064	80	0.084
-55	0.112	-9	0.606	35	0.032	81	0.079
-54	0.127	-8	0.680	36	0.001	82	0.072
-53	0.141	-7	0.748	37	0.029	83	0.065
-52	0.154	-6	0.811	38	0.058	84	0.057
-51	0.165	-5	0.866	39	0.084	85	0.049
-50	0.174	-4	0.913	40	0.108	86	0.040
-49	0.181	-3	0.951	41	0.129	87	0.030
-48	0.185	-2	0.978	42	0.146	88	0.021
-47	0.186	-1	0.994	43	0.161	89	0.011
-46	0.185	0	1.000	44	0.172	90	0.000
-45	0.180			45	0.180		

E-4 K245CU.CP Mod. +40 102.29 F(50-10) dBu Contour Aerial Photo

E-5 K245CU.CP Mod. 60 dBu Contour Plot

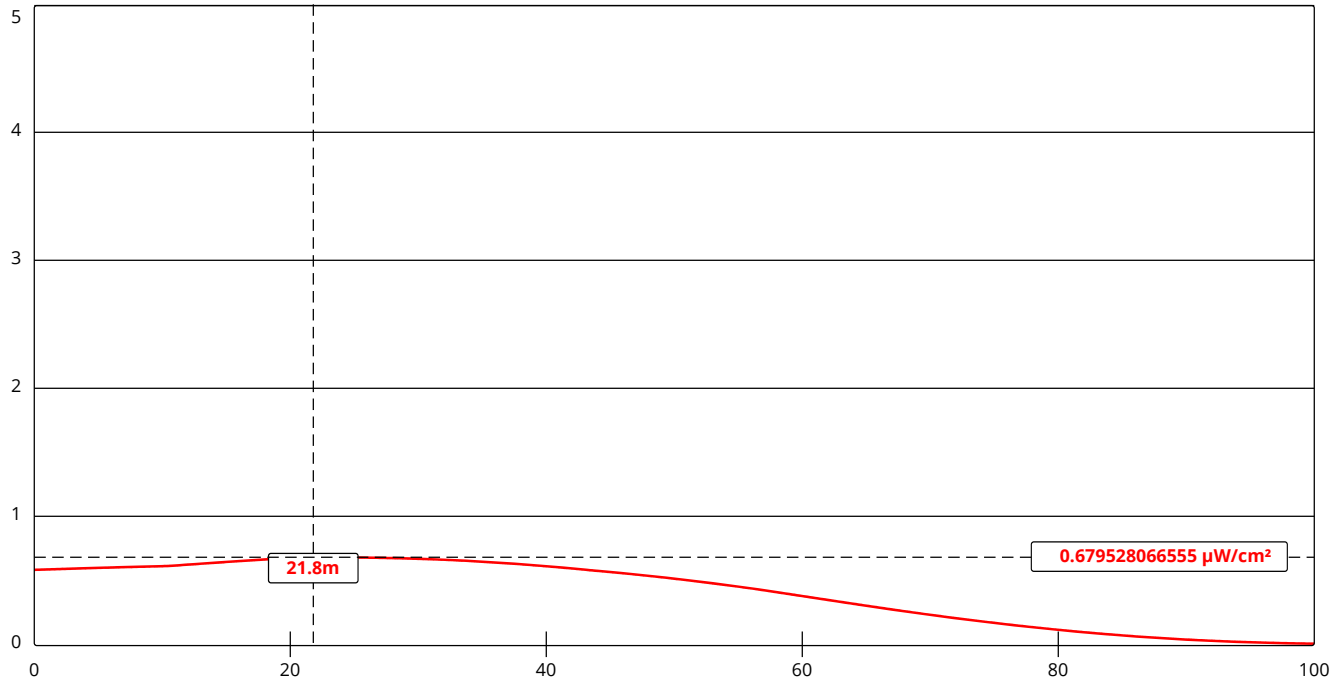


E-6 K245CU.CP Mod. 60 dBu Contour Overlap Plot



E-7 K245CU.CP Mod. RF Calculation

FM Model



Channel Selection	Channel 245 (96.9 MHz)		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other"		
Height (m)	122	Distance (m)	100
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	4	Element Spacing (λ)	1
Num of Points	500		

ASR Registration 1276387

Registration Detail

Reg Number	1276387	Status	Constructed
File Number	A0732041	Constructed	07/12/2011
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	46-43-18.8 N 095-50-38.4 W	Address	.2 km South of Adams Road
City, State	Detroit Lakes , MN		
Zip	56501	County	BECKER
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
417.6	152.1
Overall Height Above Mean Sea Level	**Overall Height Above Ground w/o Appurtenances**
569.7	151.5

Painting and Lighting Specifications

FAA Chapters 4, 8, 12
Paint and Light in Accordance with FAA Circular Number 70/7460-1K

FAA Notification

FAA Study	2011-AGL-3306-OE	FAA Issue Date	07/07/2011

Owner & Contact Information

FRN	0004974358	Owner Entity Type	

Owner

Leighton Enterprises, Inc.
Attention To: John J. Sowada
619 West Germain Street
P.O. Box 1458
St. Cloud , MN 56302

P: (330)251-1450
F:
E: jsowada@aol.com

Contact

Sowada , John J
619 West Germain Street
P.O. Box 1458
St. Cloud , MN 56302

P: (330)251-1450
F:
E: jsowada@aol.com

Last Action Status

Status	Constructed	Received	07/12/2011