

March 2012
FM Translator K285EQ
Reno, Nevada Channel 285D
Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study maps demonstrate compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204. Certain second-adjacent channel considerations are discussed in more detail, below.

The attached spacing study demonstrates compliance with §73.207 of the Commission's Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

KDOT 283C Reno

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KDOT 283C Reno. The proposed site is 30.9 km from the KDOT transmitter site at a bearing of 14 degrees True. Given the KDOT antenna's 947 meter HAAT and 25 kW ERP along this radial, KDOT places an 84.9 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $84.9 + 40 = 124.9$ dBu. The attached map of the proposed transmitter site depicts the 124.9 dBu contour from the proposed facility, extending 62 meters from the antenna per a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KDOT.

New-T 287D Verdi (Application BNPFT-20030317ILP)

The attached allocation study map demonstrates that the proposed K285EQ facility will not receive overlap from the Verdi 287D 100 dBu F(50,10) contour. Indeed, the modification of K285EQ will eliminate any existing overlap received from the Verdi 287D application.

The proposed translator transmitter site is located within the 60 dBu protected contour of the second-adjacent channel application for a new translator on Channel 287D at Verdi. The proposed site is 12.05 km from the Verdi 287D transmitter site at a bearing of 87 degrees True. Given the Verdi 287D antenna's 780 meter HAAT and 0.010 kW ERP along this radial, Verdi 287D places a 62.9 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $62.9 + 40 = 102.9$ dBu.

The nearest occupied structure is located 696 meters WNW of the proposed transmitter site, at an elevation of 5160 feet (1573 meters). This is 122 meters below the proposed radiation center. (The extent of development in this area has been double-checked against recent aerial photography.) Given that the transmitting antenna will be installed at a height of 122 meters above the nearest structure, and taking into consideration the vertical plane pattern of the Kathrein 762 943 2-bay dipole antenna array to be used, the attached calculations demonstrate that the interference area

will not reach ground level at or beyond the nearest structure. An interference zone will exist from 186 to 686 meters from the transmitter site, but this area is unpopulated. This area is depicted on the attached transmitter site map exhibit, as the area between two green circles having a radius of 186 and 686 meters, respectively.

Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to Verdi 287D, and grant of this application would not prejudice a hypothetical future grant of the Verdi application.

KRZQ 287C Fallon Station (CP)

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KRZQ 287C Fallon Station (construction permit). The proposed site is 83.56 km from the KRZQ transmitter site at a bearing of 244 degrees True. Given the KRZQ antenna's 589 meter HAAT and 100 kW ERP along this radial, KRZQ places a 63.3 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $63.3 + 40 = 103.3$ dBu.

The nearest occupied structure is located 696 meters WNW of the proposed transmitter site, at an elevation of 5160 feet (1573 meters). This is 122 meters below the proposed radiation center. (The extent of development in this area has been double-checked against recent aerial photography.) Given that the transmitting antenna will be installed at a height of 122 meters above the nearest structure, and taking into consideration the vertical plane pattern of the Kathrein 762 943 2-bay dipole antenna array to be used, the attached calculations demonstrate that the interference area will not reach ground level at or beyond the nearest structure. An interference zone will exist from 195 to 639 meters from the transmitter site, but this area is unpopulated. (This area extends less far than does the interference area caused to Verdi 287D discussed *supra*, and so is not separately depicted on the attached transmitter site map exhibit.)

Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KRZQ.

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SEARCH PARAMETERS

FM Database Date: 120222

Channel: 285A 104.9 MHz
 Latitude: 39 35 2
 Longitude: 119 47 55
 Safety Zone: 50 km
 Job Title: K285EQ AT RED PEAK

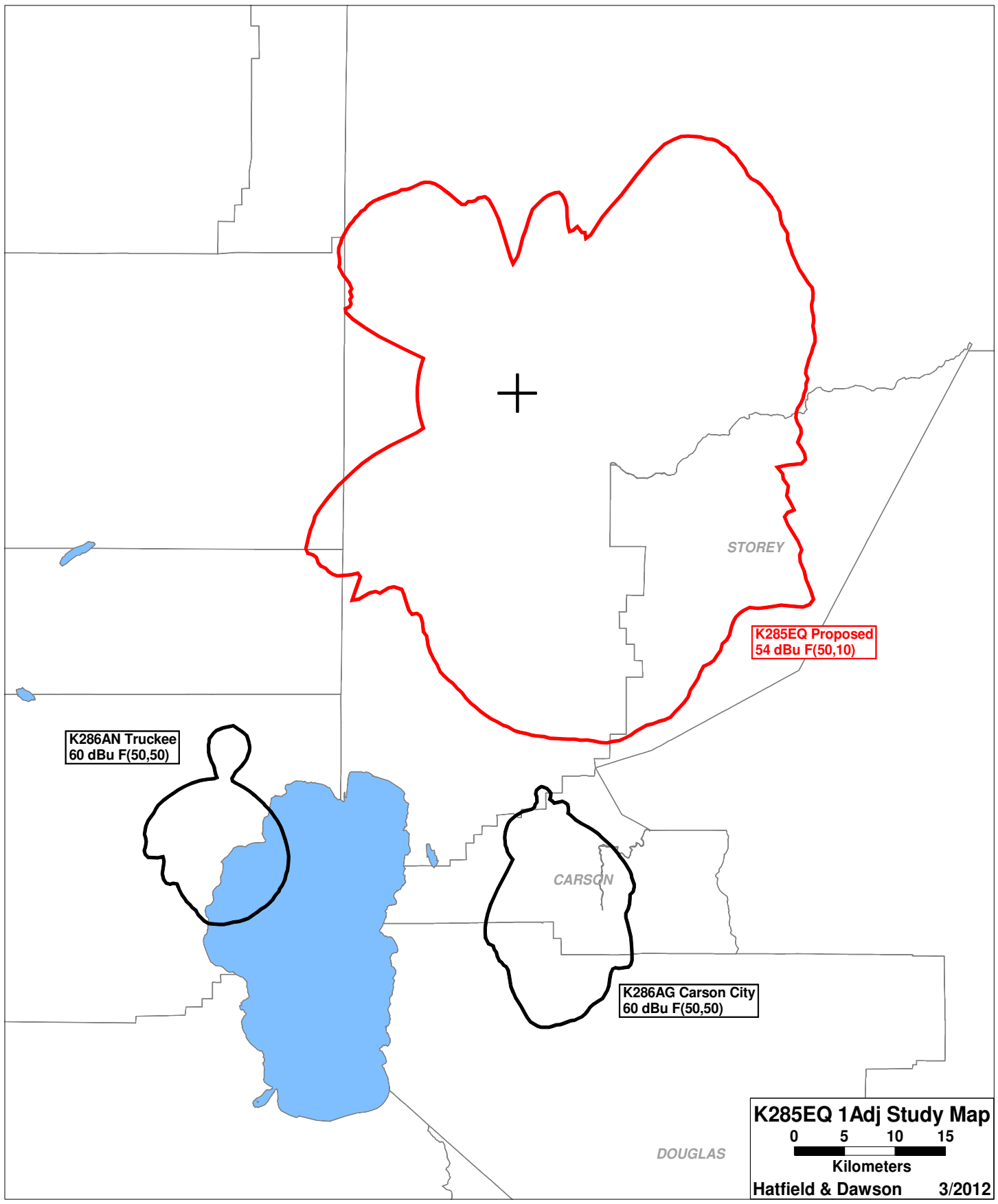
Page 1

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
NEW-T APP	PORTOLA CA	BNPFT-30317GZC	231D 94.1	0.010 734.0	39-46-09 120-26-08	290.9	58.39 0.00	10 CLEAR
NEW-T APP	TRUCKEE CA	BNPFT-30317KZV	231D 94.1	0.010 490.0	39-18-23 120-15-55	232.6	50.63 0.00	10 CLEAR
VAC	FERNLEY NV	RM-10827	231C3 94.1	0.000 0.0	39-37-00 119-08-51	86.1	56.04 44.04	12 CLEAR
NEW-T APP	RENO NV	BNPFT-30317CGQ	231D 94.1	0.010 798.0	39-35-31 119-55-17	274.9	10.59 0.00	10 CLEAR
K232EA LIC	CARSON CITY NV	BLFT-61108AAH	232D 94.3	0.099 370.0	39-12-50 119-46-10	176.5	41.15 0.00	10 CLEAR
KDOT LIC	RENO NV	BMLH-950831KA	283C 104.5	25.000 893.0	39-18-48 119-52-59	193.6	30.90 -64.10	95 SHORT
KYIX LIC	SOUTH OROVILLE CA	BLH-940204KM	285A 104.9	0.260 472.0	39-39-04 121-27-43	273.5	143.03 28.03	115 CLEAR
NEW-T APP	SUSANVILLE CA	BNPFT-30317CWX	285D 104.9	0.010 541.0	40-27-13 120-34-14	326.0	116.91 0.00	0 TRANS
K285EQ LIC	VERDI NV	BLFT-980601TD	285D 104.9	0.024 934.0	39-34-38 119-56-19	266.5	12.05 0.00	0 TRANS
KNCIaux LIC	SACRAMENTO CA	BMLH-960111KN	286B 105.1	50.000 123.0	38-38-31 121-05-25	227.2	153.02 0.00	0 AUX
KNCI LIC	SACRAMENTO CA	BLH-840815CB	286B 105.1	50.000 152.0	38-38-31 121-05-25	227.2	153.02 40.02	113 CLEAR
NEW-T APP	SUSANVILLE CA	BNPFT-30317HAU	286D 105.1	0.010 130.0	40-26-36 120-38-35	323.3	119.60 0.00	0 TRANS
K286AN LIC	TRUCKEE CA	BLFT-40929AFG	286D 105.1	0.010 825.0	39-14-29 120-08-20	217.6	48.01 0.00	0 TRANS
K286AG LIC	CARSON CITY NV	BLFT-981013TN	286D 105.1	0.150 355.0	39-12-50 119-46-10	176.5	41.15 0.00	0 TRANS

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SEARCH PARAMETERS                               FM Database Date: 120222
Channel: 285A    104.9 MHz                      Page    2
Latitude:  39 35  2
Longitude: 119 47 55
Safety Zone:  50 km
Job Title: K285EQ AT RED PEAK
```

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KRZQ CP	FALLON STATION NV	BNPH-10617ACQ	287C 105.3	100.000 600.0	39-54-46 118-55-18	63.7 SS	83.56 -11.44	95 SHORT
NEW-T APP	RENO NV	BNPFT-30317AAY	287D 105.3	0.010 1239.0	39-45-22 119-27-37	56.4	34.76 0.00	0 TRANS
NEW-T APP	VERDI NV	BNPFT-30317ILP	287D 105.3	0.010 944.0	39-34-38 119-56-19	266.5	12.05 0.00	0 TRANS

===== END OF FM SPACING STUDY FOR CHANNEL 285 =====



K286AN Truckee
60 dBu F(50,50)

K285EQ Proposed
54 dBu F(50,10)

K286AG Carson City
60 dBu F(50,50)

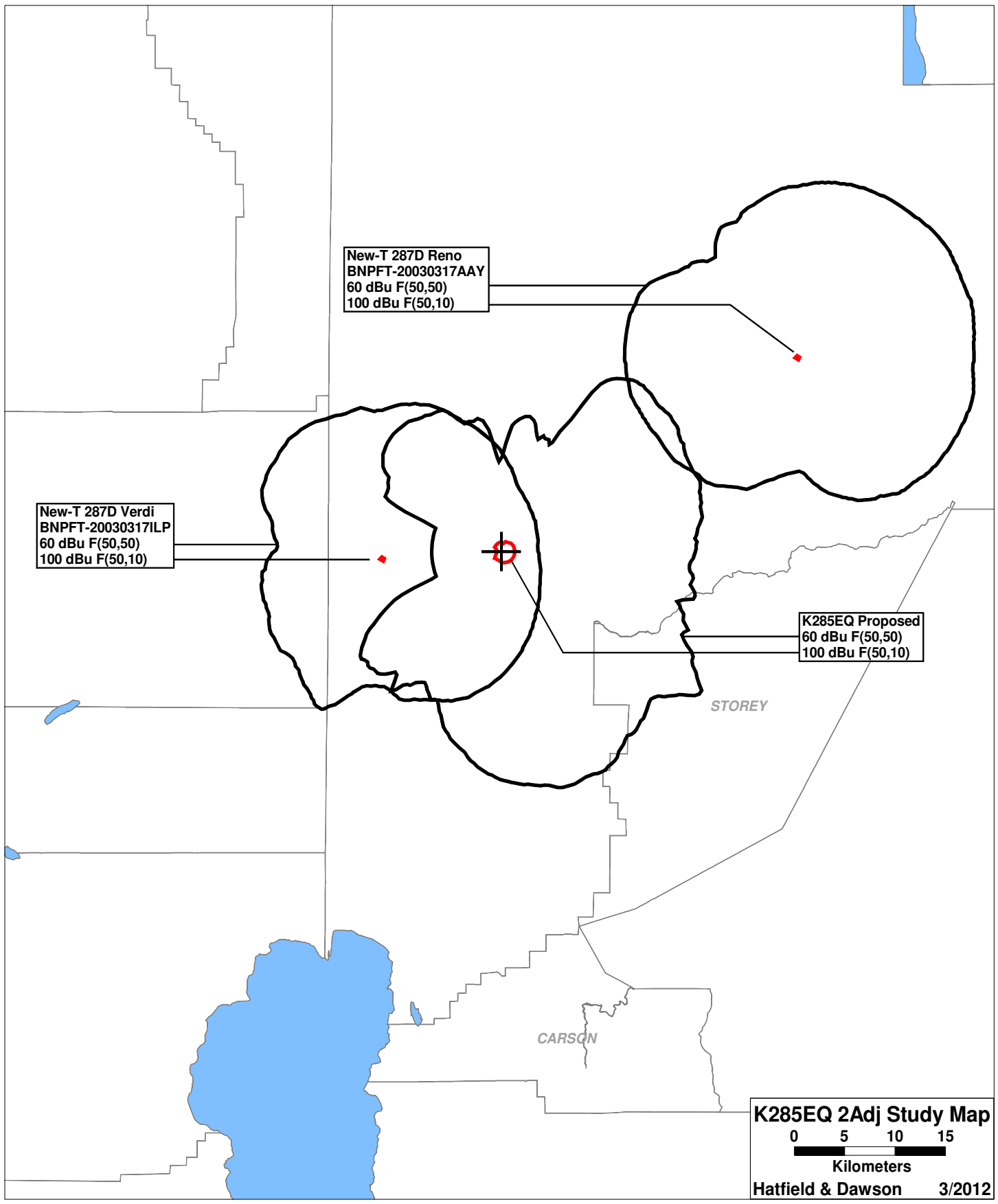
K285EQ 1 Adj Study Map

0 5 10 15

Kilometers

Hatfield & Dawson

3/2012



New-T 287D Reno
BNPFT-20030317AAY
60 dBu F(50,50)
100 dBu F(50,10)

New-T 287D Verdi
BNPFT-20030317ILP
60 dBu F(50,50)
100 dBu F(50,10)

K285EQ Proposed
60 dBu F(50,50)
100 dBu F(50,10)

STOREY

CARSON

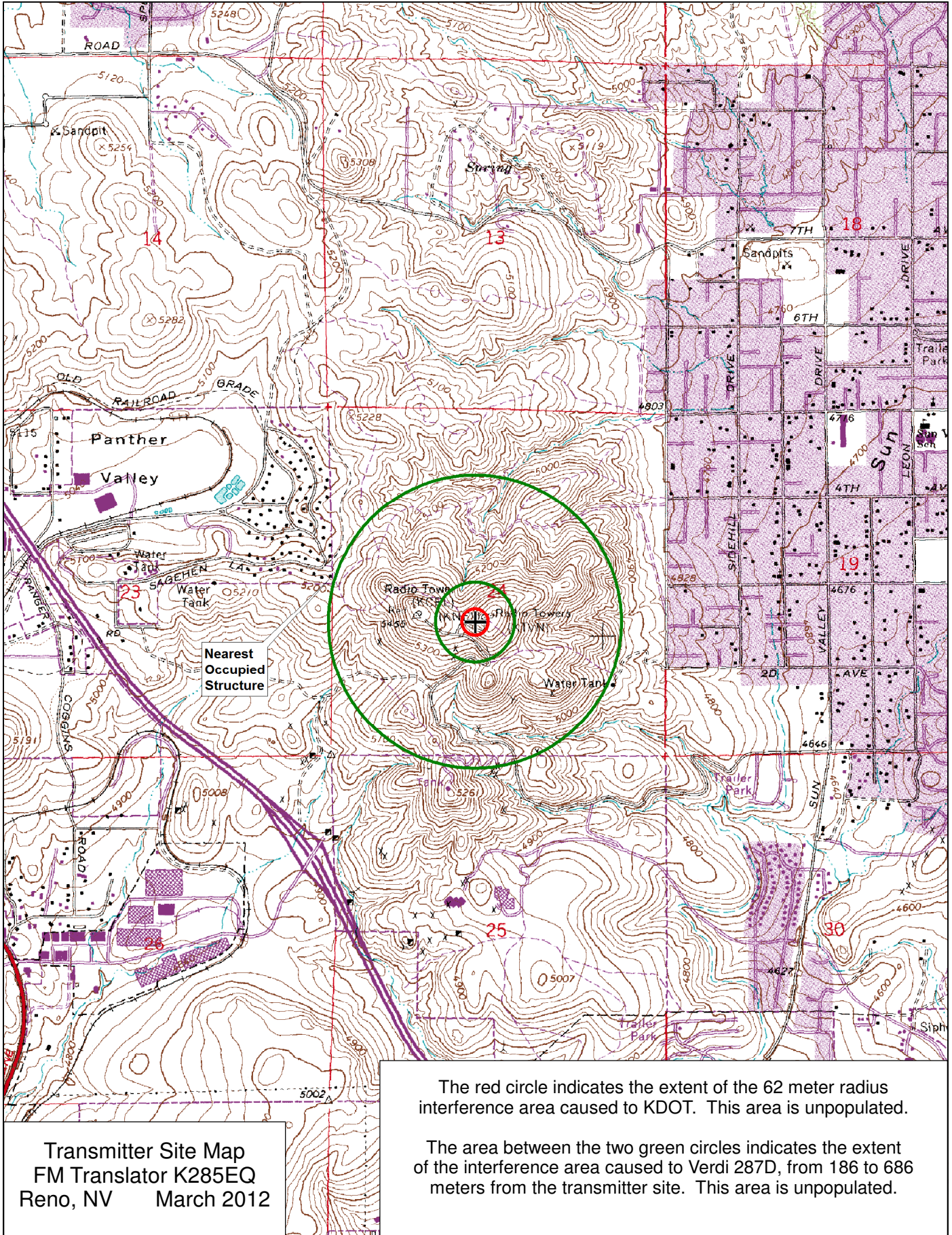
K285EQ 2Adj Study Map

0 5 10 15

Kilometers

Hatfield & Dawson

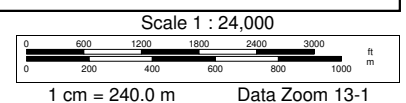
3/2012



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K285EQ Free Space Interference Area Calculator

Interference Area to Verdi 287D

Antenna Height:

122 meters AGL at nearest occupied structure

Contour Level:

102.9 dBu equals 0.1 V/m

ERP in Watts:

240 Watts

Maximum distance

to interfering contour is:

2551.7 feet equals 777.8 meters

Antenna:

2X1 762943

Depression Angle (degrees)	Kathrein 2X1 762943 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 102.9 dBu Contour Along the depression angle	Horizontal Distance	Contour AGL (meters)
-90	0.021	0.1	16.3 meters	0	105.7
-89	0.024	0.1	18.7	0.3	103.3
-88	0.027	0.2	21.0	0.7	101.0
-87	0.031	0.2	24.1	1.3	97.9
-86	0.036	0.3	28.0	2.0	94.1
-85	0.041	0.4	31.9	2.8	90.2
-84	0.045	0.5	35.0	3.7	87.2
-83	0.050	0.6	38.9	4.7	83.4
-82	0.055	0.7	42.8	6.0	79.6
-81	0.059	0.8	45.9	7.2	76.7
-80	0.063	1.0	49.0	8.5	73.7
-79	0.068	1.1	52.9	10.1	70.1
-78	0.071	1.2	55.2	11.5	68.0
-77	0.075	1.4	58.3	13.1	65.2
-76	0.078	1.5	60.7	14.7	63.1
-75	0.082	1.6	63.8	16.5	60.4
-74	0.084	1.7	65.3	18.0	59.2
-73	0.087	1.8	67.7	19.8	57.3
-72	0.089	1.9	69.2	21.4	56.2
-71	0.091	2.0	70.8	23.0	55.1
-70	0.093	2.1	72.3	24.7	54.0
-69	0.094	2.1	73.1	26.2	53.7
-68	0.094	2.1	73.1	27.4	54.2
-67	0.095	2.2	73.9	28.9	54.0
-66	0.095	2.2	73.9	30.1	54.5
-65	0.094	2.1	73.1	30.9	55.7
-64	0.094	2.1	73.1	32.0	56.3
-63	0.093	2.1	72.3	32.8	57.6
-62	0.092	2.0	71.6	33.6	58.8
-61	0.090	1.9	70.0	33.9	60.8
-60	0.087	1.8	67.7	33.8	63.4

(Straight down)

-59	0.084	1.7	65.3	33.6	66.0
-58	0.080	1.5	62.2	33.0	69.2
-57	0.075	1.4	58.3	31.8	73.1
-56	0.070	1.2	54.4	30.4	76.9
-55	0.064	1.0	49.8	28.6	81.2
-54	0.057	0.8	44.3	26.1	86.1
-53	0.049	0.6	38.1	22.9	91.6
-52	0.041	0.4	31.9	19.6	96.9
-51	0.033	0.3	25.7	16.2	102.1
-50	0.022	0.1	17.1	11.0	108.9
-49	0.011	0.0	8.6	5.6	115.5
-48	0.000	0.0	0.0	0.0	122.0
-47	0.012	0.0	9.3	6.4	115.2
-46	0.026	0.2	20.2	14.0	107.5
-45	0.040	0.4	31.1	22.0	100.0
-44	0.055	0.7	42.8	30.8	92.3
-43	0.072	1.2	56.0	41.0	83.8
-42	0.088	1.9	68.4	50.9	76.2
-41	0.106	2.7	82.4	62.2	67.9
-40	0.124	3.7	96.4	73.9	60.0
-39	0.144	5.0	112.0	87.0	51.5
-38	0.166	6.6	129.1	101.7	42.5
-37	0.188	8.5	146.2	116.8	34.0
-36	0.211	10.7	164.1	132.8	25.5
-35	0.235	13.3	182.8	149.7	17.2
-34	0.260	16.2	202.2	167.6	8.9
-33	0.285	19.5	221.7	185.9	1.3 FAIL
-32	0.310	23.1	241.1	204.5	-5.8 FAIL
-31	0.337	27.3	262.1	224.7	-13.0 FAIL
-30	0.364	31.8	283.1	245.2	-19.6 FAIL
-29	0.392	36.9	304.9	266.7	-25.8 FAIL
-28	0.420	42.3	326.7	288.4	-31.4 FAIL
-27	0.450	48.6	350.0	311.8	-36.9 FAIL
-26	0.478	54.8	371.8	334.1	-41.0 FAIL
-25	0.508	61.9	395.1	358.1	-45.0 FAIL
-24	0.537	69.2	417.7	381.6	-47.9 FAIL
-23	0.566	76.9	440.2	405.2	-50.0 FAIL
-22	0.595	85.0	462.8	429.1	-51.4 FAIL
-21	0.624	93.5	485.3	453.1	-51.9 FAIL
-20	0.652	102.0	507.1	476.5	-51.4 FAIL
-19	0.681	111.3	529.7	500.8	-50.4 FAIL
-18	0.708	120.3	550.7	523.7	-48.2 FAIL
-17	0.735	129.7	571.7	546.7	-45.1 FAIL
-16	0.761	139.0	591.9	569.0	-41.1 FAIL
-15	0.785	147.9	610.5	589.7	-36.0 FAIL
-14	0.810	157.5	630.0	611.3	-30.4 FAIL
-13	0.834	166.9	648.7	632.0	-23.9 FAIL
-12	0.856	175.9	665.8	651.2	-16.4 FAIL
-11	0.876	184.2	681.3	668.8	-8.0 FAIL
-10	0.896	192.7	696.9	686.3	1.0 FAIL
-9	0.915	200.9	711.7	702.9	10.7
-8	0.932	208.5	724.9	717.8	21.1
-7	0.948	215.7	737.3	731.8	32.1

-6	0.961	221.6	747.4	743.3	43.9
-5	0.973	227.2	756.8	753.9	56.0
-4	0.983	231.9	764.5	762.7	68.7
-3	0.990	235.2	770.0	768.9	81.7
-2	0.996	238.1	774.7	774.2	95.0
-1	0.999	239.5	777.0	776.9	108.4
0	1.000	240.0	777.8	777.8	122.0

(Horizontal)

K285EQ Free Space Interference Area Calculator

Interference Area to KRZQ

Antenna Height:

122 meters AGL at nearest occupied structure

Contour Level:

103.3 dBu equals 0.1 V/m

ERP in Watts:

240 Watts

Maximum distance

to interfering contour is:

2436.9 feet equals 742.8 meters

Antenna:

2X1 762943

Depression Angle (degrees)	Kathrein 2X1 762943 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 103.3 dBu Contour Along the depression angle	Horizontal Distance	Contour AGL (meters)
-90	0.021	0.1	15.6 meters	0	106.4
-89	0.024	0.1	17.8	0.3	104.2
-88	0.027	0.2	20.1	0.7	102.0
-87	0.031	0.2	23.0	1.2	99.0
-86	0.036	0.3	26.7	1.9	95.3
-85	0.041	0.4	30.5	2.7	91.7
-84	0.045	0.5	33.4	3.5	88.8
-83	0.050	0.6	37.1	4.5	85.1
-82	0.055	0.7	40.9	5.7	81.5
-81	0.059	0.8	43.8	6.9	78.7
-80	0.063	1.0	46.8	8.1	75.9
-79	0.068	1.1	50.5	9.6	72.4
-78	0.071	1.2	52.7	11.0	70.4
-77	0.075	1.4	55.7	12.5	67.7
-76	0.078	1.5	57.9	14.0	65.8
-75	0.082	1.6	60.9	15.8	63.2
-74	0.084	1.7	62.4	17.2	62.0
-73	0.087	1.8	64.6	18.9	60.2
-72	0.089	1.9	66.1	20.4	59.1
-71	0.091	2.0	67.6	22.0	58.1
-70	0.093	2.1	69.1	23.6	57.1
-69	0.094	2.1	69.8	25.0	56.8
-68	0.094	2.1	69.8	26.2	57.3
-67	0.095	2.2	70.6	27.6	57.0
-66	0.095	2.2	70.6	28.7	57.5
-65	0.094	2.1	69.8	29.5	58.7
-64	0.094	2.1	69.8	30.6	59.2
-63	0.093	2.1	69.1	31.4	60.5
-62	0.092	2.0	68.3	32.1	61.7
-61	0.090	1.9	66.8	32.4	63.5
-60	0.087	1.8	64.6	32.3	66.0

(Straight down)

-59	0.084	1.7	62.4	32.1	68.5
-58	0.080	1.5	59.4	31.5	71.6
-57	0.075	1.4	55.7	30.3	75.3
-56	0.070	1.2	52.0	29.1	78.9
-55	0.064	1.0	47.5	27.3	83.1
-54	0.057	0.8	42.3	24.9	87.7
-53	0.049	0.6	36.4	21.9	92.9
-52	0.041	0.4	30.5	18.7	98.0
-51	0.033	0.3	24.5	15.4	103.0
-50	0.022	0.1	16.3	10.5	109.5
-49	0.011	0.0	8.2	5.4	115.8
-48	0.000	0.0	0.0	0.0	122.0
-47	0.012	0.0	8.9	6.1	115.5
-46	0.026	0.2	19.3	13.4	108.1
-45	0.040	0.4	29.7	21.0	101.0
-44	0.055	0.7	40.9	29.4	93.6
-43	0.072	1.2	53.5	39.1	85.5
-42	0.088	1.9	65.4	48.6	78.3
-41	0.106	2.7	78.7	59.4	70.3
-40	0.124	3.7	92.1	70.6	62.8
-39	0.144	5.0	107.0	83.1	54.7
-38	0.166	6.6	123.3	97.2	46.1
-37	0.188	8.5	139.6	111.5	38.0
-36	0.211	10.7	156.7	126.8	29.9
-35	0.235	13.3	174.5	143.0	21.9
-34	0.260	16.2	193.1	160.1	14.0
-33	0.285	19.5	211.7	177.5	6.7
-32	0.310	23.1	230.3	195.3	-0.0 FAIL
-31	0.337	27.3	250.3	214.6	-6.9 FAIL
-30	0.364	31.8	270.4	234.1	-13.2 FAIL
-29	0.392	36.9	291.2	254.7	-19.2 FAIL
-28	0.420	42.3	312.0	275.4	-24.5 FAIL
-27	0.450	48.6	334.2	297.8	-29.7 FAIL
-26	0.478	54.8	355.0	319.1	-33.6 FAIL
-25	0.508	61.9	377.3	342.0	-37.5 FAIL
-24	0.537	69.2	398.9	364.4	-40.2 FAIL
-23	0.566	76.9	420.4	387.0	-42.3 FAIL
-22	0.595	85.0	441.9	409.8	-43.6 FAIL
-21	0.624	93.5	463.5	432.7	-44.1 FAIL
-20	0.652	102.0	484.3	455.1	-43.6 FAIL
-19	0.681	111.3	505.8	478.3	-42.7 FAIL
-18	0.708	120.3	525.9	500.1	-40.5 FAIL
-17	0.735	129.7	545.9	522.1	-37.6 FAIL
-16	0.761	139.0	565.2	543.3	-33.8 FAIL
-15	0.785	147.9	583.1	563.2	-28.9 FAIL
-14	0.810	157.5	601.6	583.8	-23.5 FAIL
-13	0.834	166.9	619.5	603.6	-17.3 FAIL
-12	0.856	175.9	635.8	621.9	-10.2 FAIL
-11	0.876	184.2	650.7	638.7	-2.2 FAIL
-10	0.896	192.7	665.5	655.4	6.4
-9	0.915	200.9	679.6	671.3	15.7
-8	0.932	208.5	692.3	685.5	25.7
-7	0.948	215.7	704.1	698.9	36.2

-6	0.961	221.6	713.8	709.9	47.4
-5	0.973	227.2	722.7	720.0	59.0
-4	0.983	231.9	730.1	728.4	71.1
-3	0.990	235.2	735.3	734.3	83.5
-2	0.996	238.1	739.8	739.3	96.2
-1	0.999	239.5	742.0	741.9	109.0
0	1.000	240.0	742.8	742.8	122.0

(Horizontal)

March 2012
FM Translator K285EQ
Reno, Nevada Channel 285D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 285D (104.9 MHz) with an effective radiated power of 240 watts. Operation is proposed with an antenna to be mounted on an existing tower on Red Peak. Combined operation is proposed with FM translator K241AK.

The antenna support structure does not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

RF Exposure Calculations

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

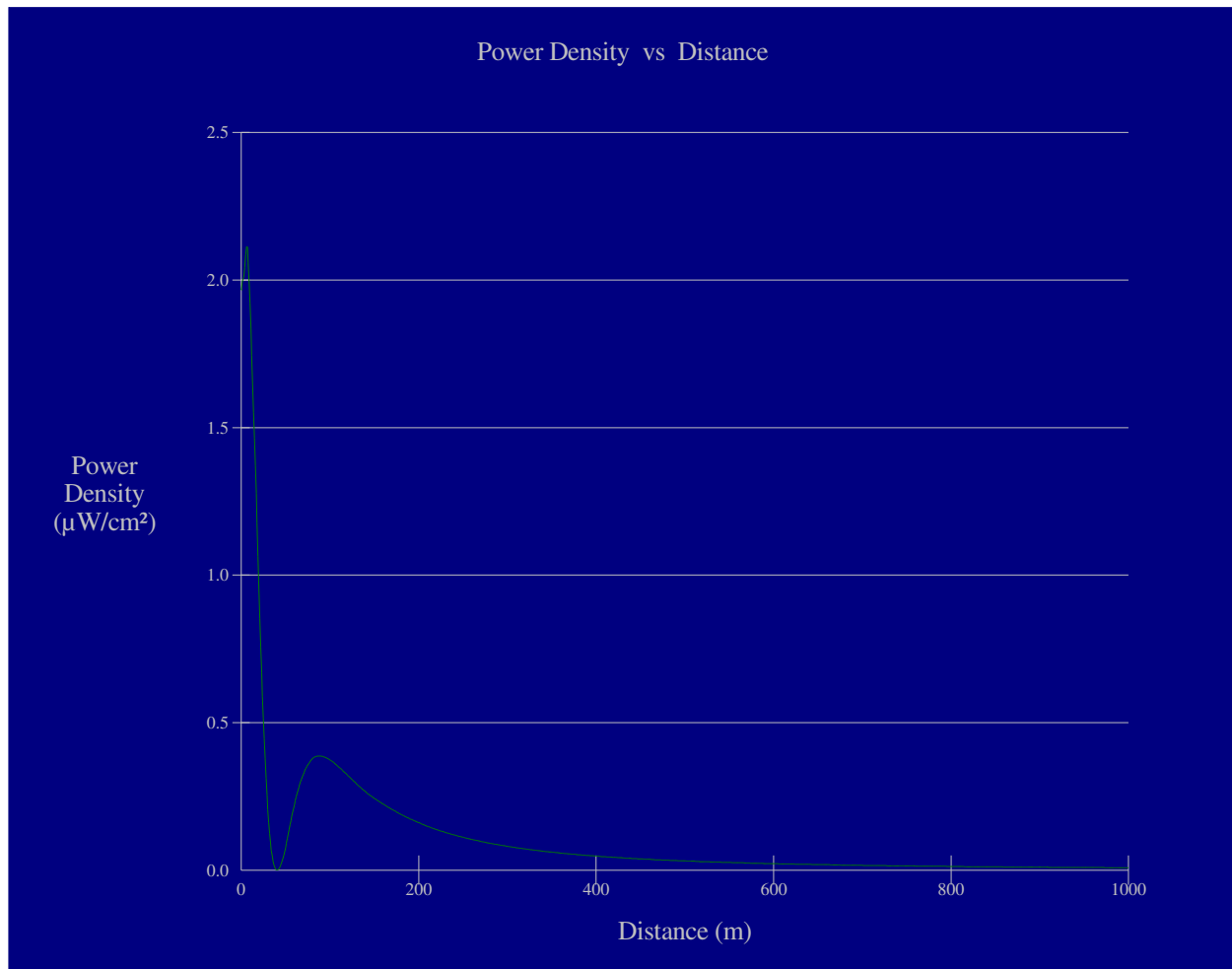
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed K285EQ antenna system assume a Type 1 element pattern, which is the appropriate element pattern for the Kathrein dipole antenna array proposed for use. The highest calculated ground level power density occurs at a distance of 6 meters from the base of the antenna support structure. At this point the power density is calculated to be 2.1 $\mu W/cm^2$, which is 1.1% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K285EQ alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to

be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.



Ground-Level RF Exposure

OET FMModel

K285EQ Reno

Antenna Type: Kathrein 762 943 2-bay dipole array
No. of Elements: 2
Element Spacing: 0.73 wavelength (2.1 meter spacing between bays)

Distance: 1000 meters
Horizontal ERP: zero kW
Vertical ERP: 0.240 kW

Antenna Height: 40 meters AGL

Maximum Calculated Power Density is $2.1 \mu\text{W}/\text{cm}^2$ at 6 meters from the antenna structure.