

September 2012
FM Translator K259BG
Chehalis, Washington Channel 259D
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 map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KDDS-FM 257C Elma. The proposed site is 69.82 km from the KDDS-FM transmitter site at a bearing of 158 degrees True. Given the KDDS-FM antenna's 886 meter HAAT and 64 kW ERP along this radial, KDDS-FM places a 71 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $71 + 40 = 111$ dBu. The attached map of the proposed transmitter site depicts the 111 dBu contour from the proposed facility. Given that the transmitting antenna will be installed at a height of 46 meters above ground, and taking into consideration the vertical plane pattern of the Scala FMV-2 antenna, the attached calculations made using Free Space methodology demonstrate that the interference area will not reach ground level. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KDDS-FM.

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.

SEARCH PARAMETERS

FM Database Date: 120919

Channel: 259A 99.7 MHz
 Latitude: 46 43 52
 Longitude: 123 1 28
 Safety Zone: 50 km
 Job Title: K259BG CHEHALIS

Page 1

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KSWL LIC	CHEHALIS WA	BLED-00618AWV	205C3 88.9	1.000 306.0	46-33-16 123-03-26	187.3	19.80 7.80	12 CLOSE
KGHE LIC	ELMA WA	BLED-20224ABW	206A 89.1	0.255 94.0	46-57-31 123-35-18	300.7	49.90 39.90	10 CLEAR
KDDSaux LIC	ABERDEEN WA	BXLH-00822ABQ	257C1 99.3	0.680 615.0	46-58-31 123-08-21	342.2	28.52 0.00	0 AUX
KDDS-FM LIC	ELMA WA	BMLH-90211ABR	257C 99.3	64.000 742.0	DA 47-18-46 123-22-15	338.0 SS	69.82 -25.18	95 SHORT
KDDSaux LIC	ELMA WA	BXMLH-81014ACE	257C 99.3	41.000 620.0	DA 47-19-12 123-20-41	339.8	69.85 0.00	0 AUX
KWJJaux LIC	PORTLAND OR	BLH-920212KC	258C1 99.5	23.000 312.0	45-29-20 122-41-40	169.4	140.41 0.00	0 AUX
KWJJ-FM LIC	PORTLAND OR	BLH-911106KG	258C1 99.5	52.000 386.0	45-29-20 122-41-40	169.4	140.41 7.41	133 CLOSE
NEW	VICTORIA BC	-	259A 99.7	1.200 143.0	DA 48-30-20 123-28-23	350.5	200.15 49.15	151 CLEAR
K259BT LIC	TILLAMOOK OR	BLFT-00617AHZ	259D 99.7	0.013 443.0	45-27-59 123-55-11	206.5	156.70 0.00	0 TRANS
K259BG LIC	CHEHALIS WA	BLFT-70906AEM	259D 99.7	0.250 72.0	DA 46-43-52 123-01-28	0.0	0.00 0.00	0 TRANS
KLMY CP	LONG BEACH WA	BPH-10520ADX	259C3 99.7	25.000 71.0	46-18-51 124-03-07	239.8 SS	91.46 -50.54	142 SHORT
KLMY LIC	LONG BEACH WA	BLH-10511AFM	259C3 99.7	15.000 71.0	46-18-51 124-03-07	239.8 SS	91.46 -50.54	142 SHORT
KGHO-LP CP	HOQUIAM WA	BPL-10812ABT	260L1 99.9	0.100 3.0	46-58-22 123-51-10	293.4	68.65 12.65	56 CLEAR

SEARCH PARAMETERS

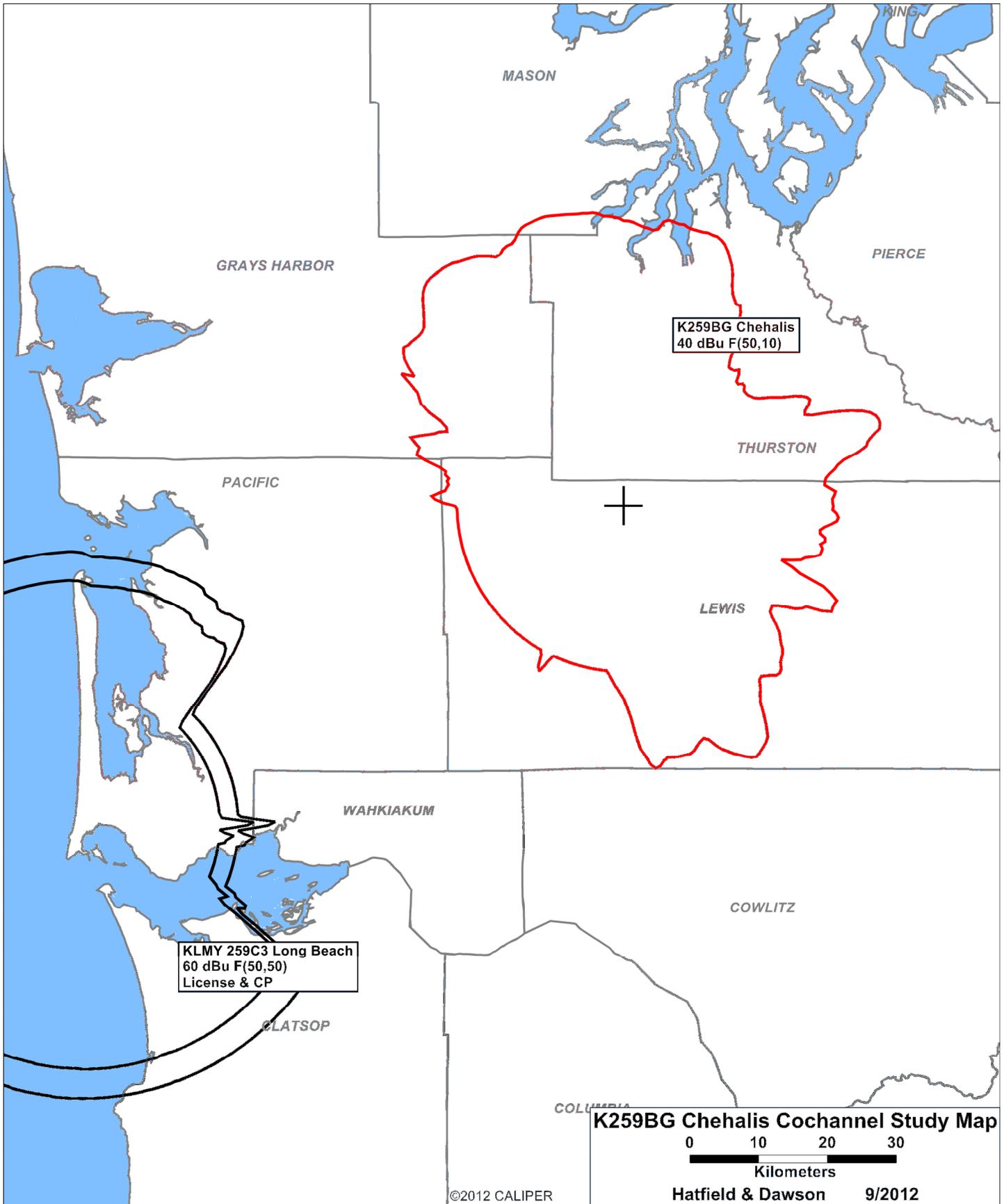
FM Database Date: 120919

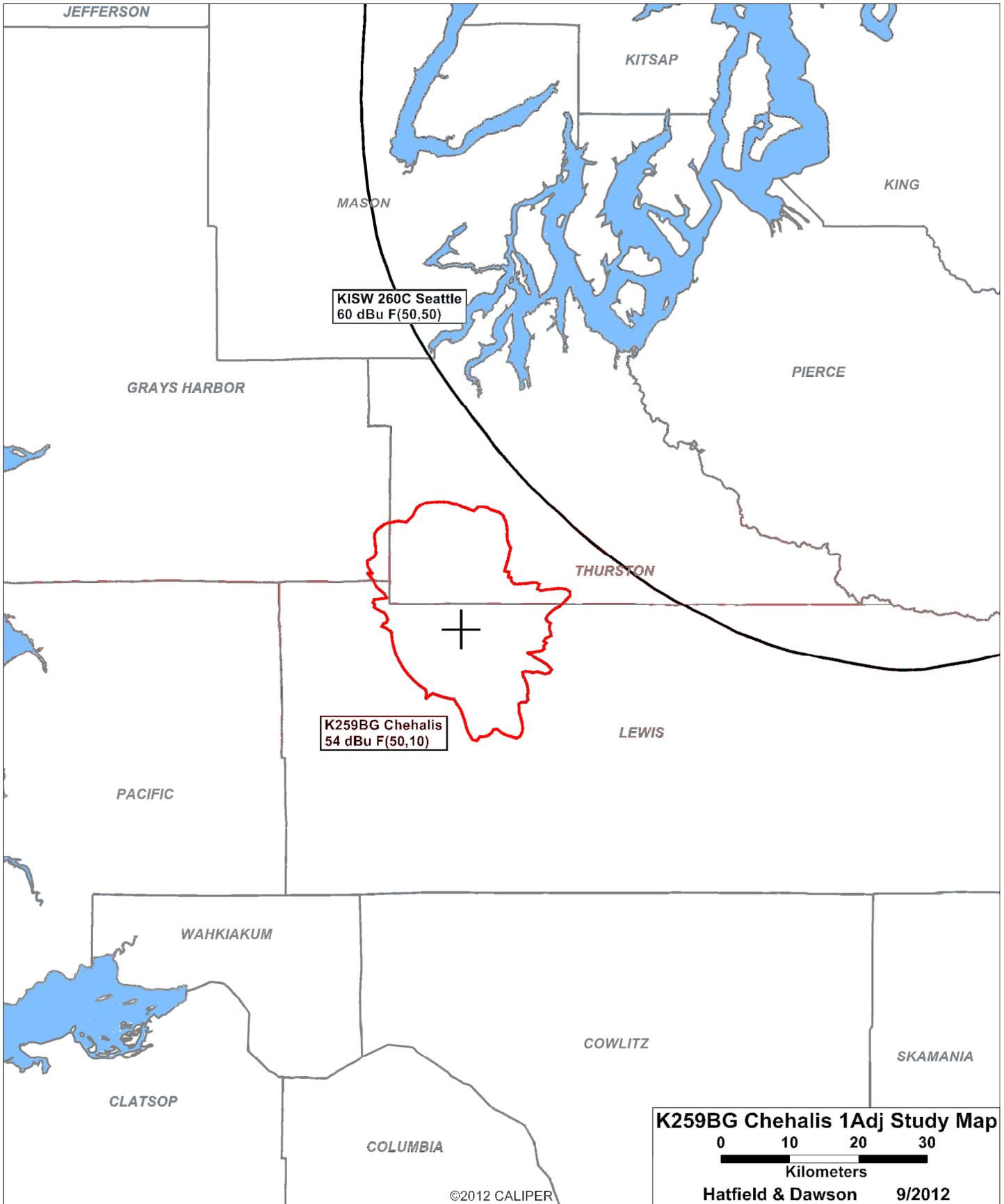
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Page 2

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KISWaux LIC	SEATTLE WA	BXLH-01018ACN	260C 99.9	50.000 388.0	47-32-35 122-06-25	37.2	113.99 0.00	0 AUX
KISW LIC	SEATTLE WA	BLH-80730AKM	260C 99.9	68.000 707.0	47-30-14 121-58-29	42.4 SS	117.16 -47.84	165 SHORT
K207DB CP	ABERDEEN WA	BNPFT-00104ABZ	261D 100.1	0.170 143.0	46-46-09 123-45-58	274.6	56.83 0.00	0 TRANS
KKRZ LIC	PORTLAND OR	BLH-11214AAE	262C 100.3	100.000 470.0	45-31-21 122-44-45	170.8	136.06 41.06	95 CLEAR
KKRZaux LIC	PORTLAND OR	BXLH-30617ABD	262C 100.3	40.000 409.0	45-31-21 122-44-46	170.8	136.05 0.00	0 AUX
NEW-T APP	LONGVIEW WA	BNPFT-30317MEI	262D 100.3	0.080 69.0	46-56-44 122-56-36	14.5	24.63 0.00	0 TRANS
NEW-T APP	MCCLEARY WA	BNPFT-30312BEX	262D 100.3	0.007 758.0	46-58-31 123-08-16	342.4	28.49 0.00	0 TRANS
NEW-T APP	ORTING WA	BNPFT-30310ASW	262D 100.3	0.010 517.0	47-02-52 122-08-33	62.0	75.88 0.00	0 TRANS
NEW-T APP	TACOMA WA	BNPFT-30317KIH	262D 100.3	0.250 7.0	47-12-26 122-19-26	44.9	75.13 0.00	0 TRANS

==== END OF FM SPACING STUDY FOR CHANNEL 259 =====





KISW 260C Seattle
60 dBu F(50,50)

K259BG Chehalis
54 dBu F(50,10)

K259BG Chehalis 1Adj Study Map

0 10 20 30

Kilometers

Hatfield & Dawson 9/2012

K259BG Free Space Interference Area Calculator Interference Area to KDDS-FM (Second Adjacent)

Antenna Height: 46 meters AGL
 Contour Level: 111 dBu equals 0.4 V/m
 ERP in Watts: 250 Watts

Maximum distance
 to interfering contour is: 1024.9 feet equals 312.4 meters

Antenna: FMV2

Depression Angle (degrees)	Scala FMV2 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 111 dBu Contour Along the depression angle	Horizontal Distance	Contour AGL (meters)
-90	0.001	0.0	0.2 meters	0	45.8
-89	0.000	0.0	0.1	0.0	45.9
-88	0.000	0.0	0.0	0.0	46.0
-87	0.000	0.0	0.0	0.0	46.0
-86	0.000	0.0	0.0	0.0	46.0
-85	0.000	0.0	0.1	0.0	45.9
-84	0.001	0.0	0.2	0.0	45.8
-83	0.001	0.0	0.4	0.0	45.6
-82	0.002	0.0	0.6	0.1	45.4
-81	0.003	0.0	0.8	0.1	45.2
-80	0.004	0.0	1.1	0.2	44.9
-79	0.005	0.0	1.5	0.3	44.5
-78	0.006	0.0	1.9	0.4	44.1
-77	0.008	0.0	2.4	0.5	43.7
-76	0.009	0.0	2.8	0.7	43.3
-75	0.011	0.0	3.4	0.9	42.7
-74	0.013	0.0	4.0	1.1	42.2
-73	0.015	0.1	4.7	1.4	41.6
-72	0.017	0.1	5.4	1.7	40.9
-71	0.019	0.1	6.0	2.0	40.3
-70	0.022	0.1	6.9	2.3	39.6
-69	0.025	0.2	7.7	2.8	38.8
-68	0.027	0.2	8.5	3.2	38.1
-67	0.030	0.2	9.3	3.7	37.4

(Straight down)

-66	0.033	0.3	10.2	4.2	36.7
-65	0.036	0.3	11.2	4.7	35.9
-64	0.038	0.4	12.0	5.3	35.2
-63	0.042	0.4	13.0	5.9	34.4
-62	0.044	0.5	13.8	6.5	33.8
-61	0.047	0.5	14.6	7.1	33.2
-60	0.049	0.6	15.4	7.7	32.7
-59	0.052	0.7	16.1	8.3	32.2
-58	0.054	0.7	16.8	8.9	31.7
-57	0.055	0.8	17.2	9.4	31.5
-56	0.057	0.8	17.7	9.9	31.3
-55	0.058	0.8	18.0	10.3	31.3
-54	0.058	0.8	18.1	10.7	31.3
-53	0.059	0.9	18.3	11.0	31.4
-52	0.058	0.8	18.1	11.2	31.7
-51	0.057	0.8	17.9	11.2	32.1
-50	0.055	0.8	17.2	11.1	32.8
-49	0.053	0.7	16.7	10.9	33.4
-48	0.051	0.6	15.8	10.6	34.3
-47	0.047	0.6	14.7	10.0	35.2
-46	0.043	0.5	13.5	9.4	36.3
-45	0.039	0.4	12.2	8.7	37.3
-44	0.034	0.3	10.7	7.7	38.6
-43	0.029	0.2	9.1	6.7	39.8
-42	0.024	0.1	7.6	5.6	40.9
-41	0.019	0.1	6.0	4.5	42.1
-40	0.014	0.1	4.4	3.4	43.2
-39	0.010	0.0	3.0	2.3	44.1
-38	0.006	0.0	1.8	1.4	44.9
-37	0.003	0.0	0.8	0.6	45.5
-36	0.001	0.0	0.2	0.2	45.9
-35	0.000	0.0	0.0	0.0	46.0
-34	0.001	0.0	0.3	0.3	45.8
-33	0.004	0.0	1.2	1.0	45.3
-32	0.009	0.0	2.8	2.3	44.5
-31	0.016	0.1	5.1	4.4	43.4
-30	0.027	0.2	8.3	7.2	41.9
-29	0.040	0.4	12.4	10.8	40.0
-28	0.055	0.8	17.2	15.2	37.9
-27	0.074	1.4	23.3	20.7	35.4
-26	0.097	2.3	30.2	27.2	32.7
-25	0.122	3.7	38.3	34.7	29.8
-24	0.151	5.7	47.3	43.2	26.8
-23	0.183	8.4	57.2	52.7	23.6
-22	0.219	12.0	68.3	63.4	20.4
-21	0.257	16.5	80.3	75.0	17.2

-20	0.297	22.1	92.8	87.2	14.2
-19	0.341	29.1	106.6	100.8	11.3
-18	0.385	37.1	120.4	114.5	8.8
-17	0.432	46.6	134.8	128.9	6.6
-16	0.480	57.5	149.9	144.1	4.7
-15	0.527	69.5	164.7	159.1	3.4
-14	0.575	82.8	179.8	174.4	2.5
-13	0.624	97.3	194.9	189.9	2.2
-12	0.673	113.2	210.2	205.6	2.3
-11	0.718	128.8	224.2	220.1	3.2
-10	0.762	145.2	238.1	234.5	4.7
-9	0.804	161.4	251.0	247.9	6.7
-8	0.843	177.8	263.5	260.9	9.3
-7	0.877	192.3	274.0	271.9	12.6
-6	0.908	206.0	283.6	282.1	16.4
-5	0.935	218.7	292.2	291.1	20.5
-4	0.957	229.1	299.0	298.3	25.1
-3	0.977	238.7	305.3	304.9	30.0
-2	0.989	244.3	308.8	308.6	35.2
-1	0.995	247.7	311.0	310.9	40.6
0	1.000	250.0	312.4	312.4	46.0

(Horizontal)

September 2012
FM Translator K259BG
Chehalis, Washington Channel 259D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 259D (99.7 MHz) with an effective radiated power of 250 watts. Operation is proposed with an antenna to be mounted on an existing tower on Cook Hill with FCC Antenna Structure Registration Number 1062288.

RF Exposure Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation of K259BG will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

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 K259BG antenna system have been made assuming that the antenna will radiate 100% power straight down to a point 2 meters above the base of the tower (44 meters below the antenna). Under this “worst case” calculation, the highest calculated ground level power density from K259BG occurs at the base of the antenna support structure. At this point the power density is calculated to be $4.3 \mu\text{W}/\text{cm}^2$, which is 0.4% of $1000 \mu\text{W}/\text{cm}^2$ (the FCC standard for controlled environments) and 2.2% of $200 \mu\text{W}/\text{cm}^2$ (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 K259BG 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 exposure in excess of FCC guidelines.