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**FM Translator K245DB
Channel 245D at Soldotna, AK
To Rebroadcast KSLD(AM) 1140 kHz Soldotna, AK
October 2021**

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 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.

KKIS-FM 243C3 Soldotna

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KKIS-FM 243C3 Soldotna. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KKIS-FM 243C3	7.42 km 262 deg True	10 kW 118 meters	87.2 dBu F(50,50)	127.2 dBu	48.4 meters Free Space

The 127.2 dBu contour extends 48.4 meters from the antenna per a Free Space calculation. However, taking into account the elevation pattern of the ERI LPX-2E antenna, the attached

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calculations demonstrate that the 127.2 dBu contour will not reach ground level in the vicinity of the tower. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KKIS-FM.

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SEARCH PARAMETERS                               FM Database Date: 20211005
Channel: 245A      96.9 MHz                      Page 1
Latitude: 60 30 52.3 (NAD83)
Longitude: 151 11 33.4
Safety Zone: 50 km
Job Title: K245DB SOLDOTNA
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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KKIS-FM LIC	SOLDOTNA AK	BMLH-20140812AAO	243C3 96.5	10.000 79.0	60 31 23.9 151 3 31.0	82.4	7.42 -34.58	42 SHORT
K244EG LIC	ANCHORAGE AK	BLFT-20131114AKK	244D 96.7	0.250 0.0	61 8 46.0 149 52 35.9	44.9	100.39 0.00	0 TRANS
K245DB CP	SOLDOTNA AK	BNPFT-20180418AF	245D 96.9	0.250 0.0	60 30 49.9 151 11 29.0	137.9	0.10 0.00	0 TRANS
K246CD LIC	MOOSE PASS AK	BLFT-20170113AAA	246D 97.1	0.250 0.0	60 24 28.5 149 22 30.3	96.0	100.71 0.00	0 TRANS
KEAG LIC	ANCHORAGE AK	BLH-20061205ADT	247C1 97.3	55.000 19.0	61 7 10.0 149 53 50.9	45.7	97.53 22.53	75 CLEAR

===== END OF FM SPACING STUDY FOR CHANNEL 245 =====

K245DB Free Space Interference Area Calculator

Interference Area to KKIS-FM 243C3

Antenna Height: 42 meters AGL
 Contour Level: 127.2 dBu equals 2.3 V/m
 ERP in Watts: 250 Watts

Maximum distance
 to interfering contour is: 158.7 feet equals 48.4 meters

Antenna: LPX-2

Depression Angle (degrees)	ERI LPX-2 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 127.2 dBu Contour Along the depression angle	Horizontal Distance (meters)	Contour AGL (meters)
-90	0.126	4.0	6.1 meters	0	35.9
-89	0.141	5.0	6.8	0.1	35.2
-88	0.156	6.1	7.5	0.3	34.5
-87	0.172	7.4	8.3	0.4	33.7
-86	0.187	8.7	9.0	0.6	33.0
-85	0.202	10.2	9.8	0.9	32.3
-84	0.217	11.8	10.5	1.1	31.6
-83	0.232	13.5	11.2	1.4	30.9
-82	0.247	15.3	12.0	1.7	30.2
-81	0.262	17.2	12.7	2.0	29.5
-80	0.277	19.2	13.4	2.3	28.8
-79	0.292	21.3	14.1	2.7	28.1
-78	0.307	23.6	14.9	3.1	27.5
-77	0.321	25.8	15.5	3.5	26.9
-76	0.336	28.2	16.3	3.9	26.2
-75	0.350	30.6	16.9	4.4	25.6
-74	0.364	33.1	17.6	4.9	25.1
-73	0.377	35.5	18.2	5.3	24.6
-72	0.391	38.2	18.9	5.8	24.0
-71	0.404	40.8	19.5	6.4	23.5
-70	0.416	43.3	20.1	6.9	23.1
-69	0.429	46.0	20.8	7.4	22.6
-68	0.440	48.4	21.3	8.0	22.3
-67	0.452	51.1	21.9	8.5	21.9
-66	0.462	53.4	22.4	9.1	21.6
-65	0.472	55.7	22.8	9.7	21.3
-64	0.482	58.1	23.3	10.2	21.0
-63	0.490	60.0	23.7	10.8	20.9
-62	0.498	62.0	24.1	11.3	20.7
-61	0.505	63.8	24.4	11.8	20.6
-60	0.511	65.3	24.7	12.4	20.6
-59	0.516	66.6	25.0	12.9	20.6
-58	0.520	67.6	25.2	13.3	20.7
-57	0.523	68.4	25.3	13.8	20.8
-56	0.525	68.9	25.4	14.2	20.9
-55	0.525	68.9	25.4	14.6	21.2
-54	0.524	68.6	25.4	14.9	21.5
-53	0.522	68.1	25.3	15.2	21.8
-52	0.518	67.1	25.1	15.4	22.2
-51	0.513	65.8	24.8	15.6	22.7
-50	0.506	64.0	24.5	15.7	23.2
-49	0.497	61.8	24.0	15.8	23.9

-48	0.487	59.3	23.6	15.8	24.5
-47	0.475	56.4	23.0	15.7	25.2
-46	0.461	53.1	22.3	15.5	26.0
-45	0.445	49.5	21.5	15.2	26.8
-44	0.428	45.8	20.7	14.9	27.6
-43	0.409	41.8	19.8	14.5	28.5
-42	0.387	37.4	18.7	13.9	29.5
-41	0.364	33.1	17.6	13.3	30.4
-40	0.339	28.7	16.4	12.6	31.5
-39	0.312	24.3	15.1	11.7	32.5
-38	0.284	20.2	13.7	10.8	33.5
-37	0.253	16.0	12.2	9.8	34.6
-36	0.221	12.2	10.7	8.7	35.7
-35	0.187	8.7	9.0	7.4	36.8
-34	0.151	5.7	7.3	6.1	37.9
-33	0.114	3.2	5.5	4.6	39.0
-32	0.076	1.4	3.7	3.1	40.1
-31	0.036	0.3	1.7	1.5	41.1
-30	0.006	0.0	0.3	0.3	41.9
-29	0.048	0.6	2.3	2.0	40.9
-28	0.091	2.1	4.4	3.9	39.9
-27	0.135	4.6	6.5	5.8	39.0
-26	0.180	8.1	8.7	7.8	38.2
-25	0.226	12.8	10.9	9.9	37.4
-24	0.272	18.5	13.2	12.0	36.6
-23	0.317	25.1	15.3	14.1	36.0
-22	0.363	32.9	17.6	16.3	35.4
-21	0.409	41.8	19.8	18.5	34.9
-20	0.455	51.8	22.0	20.7	34.5
-19	0.499	62.3	24.1	22.8	34.1
-18	0.544	74.0	26.3	25.0	33.9
-17	0.587	86.1	28.4	27.2	33.7
-16	0.629	98.9	30.4	29.3	33.6
-15	0.669	111.9	32.4	31.3	33.6
-14	0.708	125.3	34.3	33.2	33.7
-13	0.745	138.8	36.0	35.1	33.9
-12	0.781	152.5	37.8	37.0	34.1
-11	0.814	165.6	39.4	38.7	34.5
-10	0.845	178.5	40.9	40.3	34.9
-9	0.873	190.5	42.2	41.7	35.4
-8	0.899	202.1	43.5	43.1	35.9
-7	0.922	212.5	44.6	44.3	36.6
-6	0.942	221.8	45.6	45.3	37.2
-5	0.960	230.4	46.4	46.3	38.0
-4	0.974	237.2	47.1	47.0	38.7
-3	0.985	242.6	47.7	47.6	39.5
-2	0.994	247.0	48.1	48.1	40.3
-1	0.998	249.0	48.3	48.3	41.2
0	1.000	250.0	48.4	48.4	42.0

Facilities Proposed

The proposed operation will be on Channel 245D (96.9 MHz) with an effective radiated power of 250 watts. Operation is proposed with a 2-element circularly-polarized omni-directional antenna. The antenna will be side-mounted on an existing tower.

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.

DETERMINATION Results							
PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 6499.85 MTRS (6.49990 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	60-33-47.00N	151-15-30.00W	KENAI MUNI	KENAI-COOK INLET KENAI, AK	25.6	2394.1999999999998
PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7188.70 MTRS (7.18869 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	60-34-30.00N	151-14-18.00W	KENAI MUNI	KENAI-COOK INLET KENAI, AK	25.6	2394.1999999999998
PASS SLOPE(25:1): NO FAA REQ-HELIPORT 6676.64 MTRS (6.67659 KM) AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
HELI	B	60-29-34.00N	151-04-44.00W	SOLDOTNA HOSPITAL H	KENAI-COOK INLET SOLDOTNA, AK	30.2	24.399999999999999
Your Specifications							
NAD83 Coordinates							
Latitude						60-30-52.3 north	
Longitude						151-11-33.4 west	
Measurements (Meters)							
Overall Structure Height (AGL)						48.8	
Support Structure Height (AGL)						48.8	
Site Elevation (AMSL)						16	
Structure Type							
LTOWER - Lattice Tower							

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 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 3 element pattern, which is the element pattern for the ERI LPX-2E antenna proposed for use. The highest calculated ground level power density occurs at a distance of 27 meters from the base of the antenna support structure. At this point the power density is calculated to be 1.5 $\mu W/cm^2$, which is 0.75% 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 alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307 of the Commission's Rules exempts applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's 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.

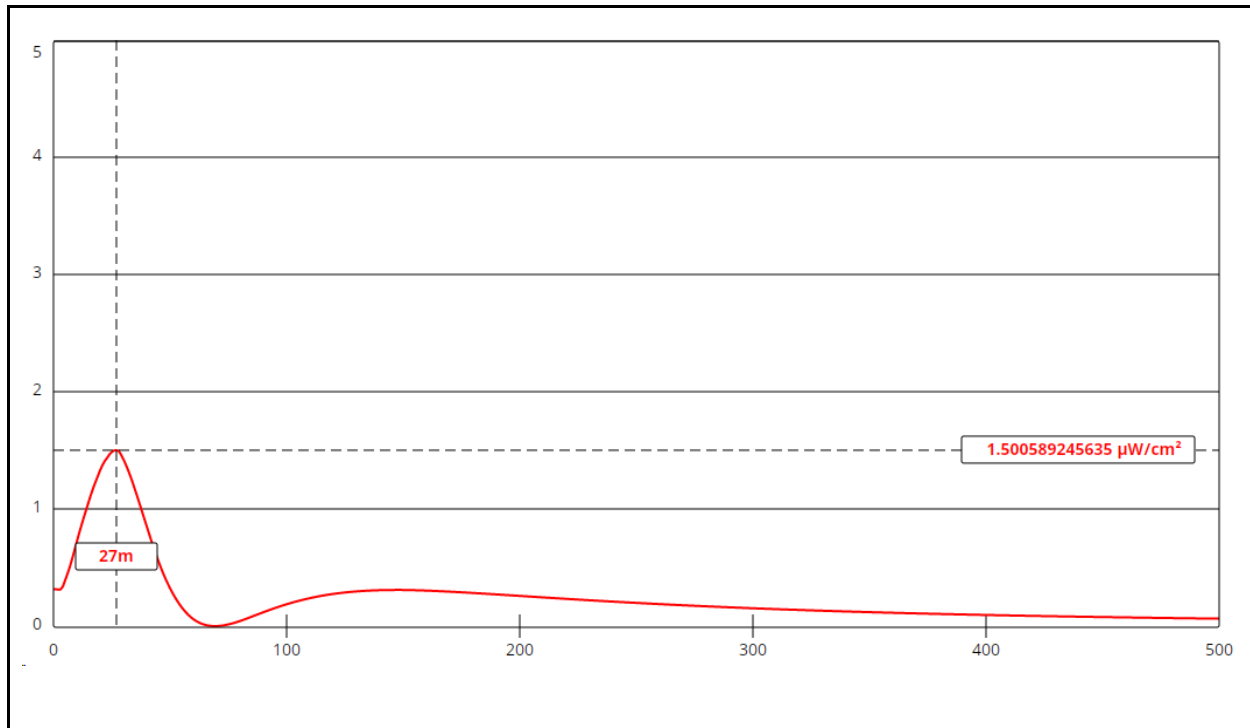
The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

Nearby AM Station KSRM

The FM translator antenna will be installed on an 48.8 meter tall tower adjacent to the studio/transmitter building at antenna site of KSRM 920 kHz Soldotna, which operates nondirectional fulltime. While the tower on which K245DB will be installed is less than one

wavelength from the KSRM antenna, the tower is less than 60 electrical degrees tall (which would be 54.31 meters) at the wavelength of the AM station. Per §1.30002 of the Commission's Rules, this is not classified as a significant modification, and no further analysis is required with respect to potential impact on KSRM.

KSRM operates with 5 kilowatts nondirectional day and night. The AM tower is 93.6 electrical degrees tall, or 26% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for this station is 2 meters from the tower base. The tower is fenced to at least this distance.



Ground-Level RF Exposure

OET FMModel

K245DB Soldotna

Antenna Type: ERI LPX-2E "rototiller" (Type 3)
No. of Elements: 2
Element Spacing: 1.0 wavelength

Distance: 500 meters
Horizontal ERP: 250 W
Vertical ERP: 250 W

Antenna Height: 42 meters AGL

Maximum Calculated Power Density is $1.5 \mu\text{W}/\text{cm}^2$ at 27 meters from the antenna structure.

