

Exhibit 1
FCC Form 302, Application For License
KOLG-FM Auxiliary Site
Agana, Guam
Catholic Educational Radio
January, 2007

RF Radiation Analysis

KOLG-FM Channel: 215C3 Center of radiation: 10.0 meters AGL
Horizontal ERP: 0.0 kW Vertical ERP: 5.2 kW Antenna Relative Field Factor: 0.25
Uncontrolled Power Density Limit: 200 μWcm^2 Controlled Power Density Limit: 1000 μWcm^2

All calculations use the following formula:

$$S=(2.56)(1.64)(100)(F^2)[(ERP_H)+(ERP_V)/4\pi R^2]$$

Where:

S = power density in micro-watts/square centimeter (μWcm^2)
F = relative field factor in the downward direction of interest (-90° to -60° elevation)
ERP_H = horizontal ERP in watts **ERP_V** = vertical ERP in watts
R = distance from 2 meters above ground to center of radiation in meters
2.56 = value of ground reflection factor **π** = 3.141592654
1.64 = value of the gain of a half-wave dipole relative to an isotropic radiator
100 = units conversion factor

Table A

Distance from Tower Meters	Distance from Antenna Meters	Angle (degrees)	Form Factor	Power Density (calculated)	Percentage (Uncontrolled)	Percentage (Controlled)
0.1	8.0	-89.28 °	0.25	169.633	84.82%	16.96%
1	8.1	-82.87 °	0.25	167.049	83.52%	16.70%
2	8.2	-75.96 °	0.25	159.679	79.84%	15.97%
3	8.5	-69.44 °	0.25	148.742	74.37%	14.87%
4	8.9	-63.43 °	0.25	135.727	67.86%	13.57%
6	10.0	-53.13 °	0.25	108.582	54.29%	10.86%
8	11.3	-45.00 °	0.25	84.830	42.41%	8.48%
10	12.8	-38.66 °	0.25	66.208	33.10%	6.62%
13	15.3	-31.61 °	0.25	46.602	23.30%	4.66%
15	17.0	-28.07 °	0.25	37.572	18.79%	3.76%
17	18.8	-25.20 °	0.25	30.760	15.38%	3.08%
20	21.5	-21.80 °	0.25	23.401	11.70%	2.34%
25	26.2	-17.74 °	0.25	15.759	7.88%	1.58%
30	31.0	-14.93 °	0.25	11.264	5.63%	1.13%
40	40.8	-11.31 °	0.25	6.525	3.26%	0.65%
50	50.6	-9.09 °	0.25	4.235	2.12%	0.42%
65	65.5	-7.02 °	0.25	2.532	1.27%	0.25%
80	80.4	-5.71 °	0.25	1.680	0.84%	0.17%
100	100.3	-4.57 °	0.25	1.079	0.54%	0.11%

All results are based on site information available on date of analysis. The calculations analyze generalized RF exposure conditions. Specific point exposure conditions may exceed generalized conditions, particularly near antenna elements and at guy-cables or guy-anchors. Actual on-site measurements at specific points of concern would take precedence over calculated predictions.

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RF Radiation Analysis

KUAM-FM Channel: 230C2 Center of radiation: 13.0 meters AGL
Horizontal ERP: 5.2 kW Vertical ERP: 5.2 kW Antenna Relative Field Factor: 0.25
Uncontrolled Power Density Limit: 200 μWcm^{-2} Controlled Power Density Limit: 1000 μWcm^{-2}

All calculations use the following formula:

$$S = (2.56)(1.64)(100)(F^2)[(ERP_H) + (ERP_V)/4\pi R^2]$$

Where:

S = power density in micro-watts/square centimeter (μWcm^{-2})
F = relative field factor in the downward direction of interest (-90° to -60° elevation)
ERP_H = horizontal ERP in watts **ERP_V** = vertical ERP in watts
R = distance from 2 meters above ground to center of radiation in meters
2.56 = value of ground reflection factor **π** = 3.141592654
1.64 = value of the gain of a half-wave dipole relative to an isotropic radiator
100 = units conversion factor

Table A

Distance from Tower Meters	Distance from Antenna Meters	Angle (degrees)	Form Factor	Power Density (calculated)	Percentage (Uncontrolled)	Percentage (Controlled)
0.1	11.0	-89.48 °	0.25	179.459	89.73%	17.95%
1	11.0	-84.81 °	0.25	178.003	89.00%	17.80%
2	11.2	-79.70 °	0.25	173.731	86.87%	17.37%
3	11.4	-74.74 °	0.25	167.049	83.52%	16.70%
4	11.7	-70.02 °	0.25	158.514	79.26%	15.85%
6	12.5	-61.39 °	0.25	138.321	69.16%	13.83%
8	13.6	-53.97 °	0.25	117.386	58.69%	11.74%
10	14.9	-47.73 °	0.25	98.264	49.13%	9.83%
13	17.0	-40.24 °	0.25	74.884	37.44%	7.49%
15	18.6	-36.25 °	0.25	62.764	31.38%	6.28%
17	20.2	-32.91 °	0.25	52.967	26.48%	5.30%
20	22.8	-28.81 °	0.25	41.682	20.84%	4.17%
25	27.3	-23.75 °	0.25	29.110	14.56%	2.91%
30	32.0	-20.14 °	0.25	21.270	10.63%	2.13%
40	41.5	-15.38 °	0.25	12.618	6.31%	1.26%
50	51.2	-12.41 °	0.25	8.286	4.14%	0.83%
65	65.9	-9.61 °	0.25	4.997	2.50%	0.50%
80	80.8	-7.83 °	0.25	3.330	1.67%	0.33%
100	100.6	-6.28 °	0.25	2.146	1.07%	0.21%

All results are based on site information available on date of analysis. The calculations analyze generalized RF exposure conditions. Specific point exposure conditions may exceed generalized conditions, particularly near antenna elements and at guy-cables or guy-anchors. Actual on-site measurements at specific points of concern would take precedence over calculated predictions.

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RF Radiation Analysis

KSDA-FM Channel: 220C2 Center of radiation: 29.0 meters AGL
Horizontal ERP: 3.8 kW Vertical ERP: 3.8 kW Antenna Relative Field Factor: 0.25
Uncontrolled Power Density Limit: 200 μWcm^{-2} Controlled Power Density Limit: 1000 μWcm^{-2}

All calculations use the following formula:

$$S = (2.56)(1.64)(100)(F^2)[(ERP_H) + (ERP_V)/4\pi R^2]$$

Where:

S = power density in micro-watts/square centimeter (μWcm^{-2})
F = relative field factor in the downward direction of interest (-90° to -60° elevation)
ERP_H = horizontal ERP in watts **ERP_V** = vertical ERP in watts
R = distance from 2 meters above ground to center of radiation in meters
2.56 = value of ground reflection factor **π** = 3.141592654
1.64 = value of the gain of a half-wave dipole relative to an isotropic radiator
100 = units conversion factor

Table A

Distance from Tower Meters	Distance from Antenna Meters	Angle (degrees)	Form Factor	Power Density (calculated)	Percentage (Uncontrolled)	Percentage (Controlled)
0.1	27.0	-89.79 °	0.25	21.769	10.88%	2.18%
1	27.0	-87.88 °	0.25	21.739	10.87%	2.17%
2	27.1	-85.76 °	0.25	21.650	10.83%	2.17%
3	27.2	-83.66 °	0.25	21.504	10.75%	2.15%
4	27.3	-81.57 °	0.25	21.302	10.65%	2.13%
6	27.7	-77.47 °	0.25	20.745	10.37%	2.07%
8	28.2	-73.50 °	0.25	20.012	10.01%	2.00%
10	28.8	-69.68 °	0.25	19.143	9.57%	1.91%
13	30.0	-64.29 °	0.25	17.672	8.84%	1.77%
15	30.9	-60.95 °	0.25	16.635	8.32%	1.66%
17	31.9	-57.80 °	0.25	15.589	7.79%	1.56%
20	33.6	-53.47 °	0.25	14.056	7.03%	1.41%
25	36.8	-47.20 °	0.25	11.721	5.86%	1.17%
30	40.4	-41.99 °	0.25	9.742	4.87%	0.97%
40	48.3	-34.02 °	0.25	6.814	3.41%	0.68%
50	56.8	-28.37 °	0.25	4.915	2.46%	0.49%
65	70.4	-22.56 °	0.25	3.203	1.60%	0.32%
80	84.4	-18.65 °	0.25	2.226	1.11%	0.22%
100	103.6	-15.11 °	0.25	1.479	0.74%	0.15%

All results are based on site information available on date of analysis. The calculations analyze generalized RF exposure conditions. Specific point exposure conditions may exceed generalized conditions, particularly near antenna elements and at guy-cables or guy-anchors. Actual on-site measurements at specific points of concern would take precedence over calculated predictions.

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RF Radiation Analysis

KUAM-TV Channel: 8 Center of radiation: 28.0 meters AGL
Visual ERP: 22.9 kW Aural ERP: 4.58 kW Antenna Relative Field Factor: 0.2
Uncontrolled Power Density Limit: 200 μWcm^{-2} Controlled Power Density Limit: 1000 μWcm^{-2}

All calculations use the following formula:

$$S=(2.56)(1.64)(100)(F^2)[0.4(ERP_V)+(ERP_A)/4\pi R^2]$$

Where:

S = power density in micro-watts/square centimeter (μWcm^{-2})

F = relative field factor in the downward direction of interest (-90° to -60° elevation)

ERP_V = total peak visual ERP in watts **ERP_A** = total aural ERP in watts

R = distance from 2 meters above ground to center of radiation in meters

2.56 = value of ground reflection factor **π** = 3.141592654

1.64 = value of the gain of a half-wave dipole relative to an isotropic radiator

0.4 = converts NTSC peak visual ERP_V to rms value **100** = units conversion factor

Table A

Distance from Tower Meters	Distance from Antenna Meters	Angle (degrees)	Form Factor	Power Density (calculated)	Percentage (Uncontrolled)	Percentage (Controlled)
0.1	26.0	-89.78 °	0.2	27.162	13.58%	2.72%
1	26.0	-87.80 °	0.2	27.123	13.56%	2.71%
2	26.1	-85.60 °	0.2	27.003	13.50%	2.70%
3	26.2	-83.42 °	0.2	26.806	13.40%	2.68%
4	26.3	-81.25 °	0.2	26.535	13.27%	2.65%
6	26.7	-77.01 °	0.2	25.789	12.89%	2.58%
8	27.2	-72.90 °	0.2	24.814	12.41%	2.48%
10	27.9	-68.96 °	0.2	23.662	11.83%	2.37%
13	29.1	-63.43 °	0.2	21.730	10.87%	2.17%
15	30.0	-60.02 °	0.2	20.380	10.19%	2.04%
17	31.1	-56.82 °	0.2	19.028	9.51%	1.90%
20	32.8	-52.43 °	0.2	17.065	8.53%	1.71%
25	36.1	-46.12 °	0.2	14.114	7.06%	1.41%
30	39.7	-40.91 °	0.2	11.651	5.83%	1.17%
40	47.7	-33.02 °	0.2	8.068	4.03%	0.81%
50	56.4	-27.47 °	0.2	5.781	2.89%	0.58%
65	70.0	-21.80 °	0.2	3.747	1.87%	0.37%
80	84.1	-18.00 °	0.2	2.595	1.30%	0.26%
100	103.3	-14.57 °	0.2	1.720	0.86%	0.17%

All results are based on site information available on date of analysis. The calculations analyze generalized RF exposure conditions. Specific point exposure conditions may exceed generalized conditions, particularly near antenna elements and at guy-cables or guy-anchors. Actual on-site measurements at specific points of concern would take precedence over calculated predictions.

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RF Radiation Analysis

KUAM-DT Channel: 10 Center of radiation: 28.0 meters AGL
ERP: 1.2 kW Antenna Relative Field Factor: 0.20
Uncontrolled Power Density Limit: 200 μWcm^{-2} Controlled Power Density Limit: 1000 μWcm^{-2}

All calculations use the following formula:

$$S = (2.56)(1.64)(100)(F^2)[(ERP)/4\pi R^2]$$

Where:

S = power density in micro-watts/square centimeter (μWcm^{-2})

F = relative field factor in the downward direction of interest (-90° to -60° elevation)

ERP = ERP in watts

R = distance from 2 meters above ground to center of radiation in meters

2.56 = value of ground reflection factor $\pi = 3.141592654$

1.64 = value of the gain of a half-wave dipole relative to an isotropic radiator

100 = units conversion factor

Table A

Distance from Tower Meters	Distance from Antenna Meters	Angle (degrees)	Form Factor	Power Density (calculated)	Percentage (Uncontrolled)	Percentage (Controlled)
0.1	26.0	-89.78 °	0.2	2.965	1.48%	0.30%
1	26.0	-87.80 °	0.2	2.961	1.48%	0.30%
2	26.1	-85.60 °	0.2	2.948	1.47%	0.29%
3	26.2	-83.42 °	0.2	2.926	1.46%	0.29%
4	26.3	-81.25 °	0.2	2.897	1.45%	0.29%
6	26.7	-77.01 °	0.2	2.815	1.41%	0.28%
8	27.2	-72.90 °	0.2	2.709	1.35%	0.27%
10	27.9	-68.96 °	0.2	2.583	1.29%	0.26%
13	29.1	-63.43 °	0.2	2.372	1.19%	0.24%
15	30.0	-60.02 °	0.2	2.225	1.11%	0.22%
17	31.1	-56.82 °	0.2	2.077	1.04%	0.21%
20	32.8	-52.43 °	0.2	1.863	0.93%	0.19%
25	36.1	-46.12 °	0.2	1.541	0.77%	0.15%
30	39.7	-40.91 °	0.2	1.272	0.64%	0.13%
40	47.7	-33.02 °	0.2	0.881	0.44%	0.09%
50	56.4	-27.47 °	0.2	0.631	0.32%	0.06%
65	70.0	-21.80 °	0.2	0.409	0.20%	0.04%
80	84.1	-18.00 °	0.2	0.283	0.14%	0.03%
100	103.3	-14.57 °	0.2	0.188	0.09%	0.02%

All results are based on site information available on date of analysis. The calculations analyze generalized RF exposure conditions. Specific point exposure conditions may exceed generalized conditions, particularly near antenna elements and at guy-cables or guy-anchors. Actual on-site measurements at specific points of concern would take precedence over calculated predictions.

Summary: RF Radiation at Mt. Alutom, Guam

Site elev. 315m AMSL, location 13° 25' 53" N, 144° 42' 36" E

Facility	power in uW/cm2	% Uncontrolled	% Controlled	15 Meters Uncontrolled
KUAM-TV	27.162	13.58%	2.72%	10.87%
KUAM-DT	2.965	1.48%	0.30%	1.19%
KUAM-FM	179.459	89.73%	17.95%	37.44%
KOLG-FM	169.633	84.82%	16.96%	23.30%
KSDA-FM	21.769	10.88%	2.18%	8.84%
TOTALS	400.988	200.49%	40.10%	81.63%

Calculations above are based on analysis of points in space two meters above the ground at the tower base all RF source maxima coincide. The current FCC RF limit for uncontrolled/General Public exposure, $200 \mu\text{Wcm}^2$ for FM & VHF television, is exceeded by 100.49% at these locations.

The following techniques are being employed to bring the site into compliance:

1. The site is a remote location as part of an antenna farm the nearest occupied structure is approximately 0.5 miles away.
2. The tower sits on a steep hill with only one access route.
3. The access road is blocked with a chain and RF radiation sign near the base of the hill. Approximately 48 meters from the base of the tower. At 40 meters the total percentage 17.45% of the uncontrolled limit of $200 \mu\text{Wcm}^2$. This does not exceed acceptable limits.