



ENGINEERING STUDY

Minor License Modification

KLHI-FM, Kahului, HI

Fac ID # 166083

Pacific Radio Group, Inc

July 2023

License Modification KLHI-FM

Kahului, HI

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TECHNICAL STATEMENT

This technical statement and attached exhibits were prepared on behalf of Pacific Radio Group, Inc, (PRG) in support of a modification of the license for FM radio station KLHI-FM on Channel 223C2, Facility ID#166083, licensed to the community of Kahului, Hawaii on the Island of Maui.

PRG wishes to relocate to a tower it owns approximately 5km from the currently licensed site. Because the proposed site is lower on the >10,000ft Haleakala Mountain, the HAAT is reduced to 133m even though the antenna AMSL height will be over 850m and the height above the population is over 800m. KLHI will remain a class C2 station.

TECHNICAL PARAMETERS

Facilities Proposed

Location (NAD83)	20° 42' 07.5" N Latitude, 156° 21' 43.9" W Longitude
Channel	223C2 (92.5MHz)
Tower Overall AGL Height-	45.7m
Tower ASR	N/A (Existing tower owned by Pacific Media Group)
Proposed Antenna	6-level Jampro Java
Antenna AGL Height-	19m
Site AMSL Height-	848m
COR AMSL Height	867m
HAAT	133m
ERP	26kW Directional (EXHIBIT A)

47 CFR § 73.207 COMPLIANCE

Exhibit B demonstrates that as a C2 facility, KLHI-FM is fully compliant under 73.207 spacing. PRG proposes to voluntarily use a directional antenna to conserve energy over uninhabited portions of the service area and the ocean. The station will use a directional antenna even though under 73.207, the station could operate in non-directional mode with 50kW at 150m HAAT. The proposed directional antenna will be measured on the manufacturer's test range at the station's operating frequency (or modeled using NEC as permitted), and the measured pattern will be submitted with the station's license application. For the purpose of this application, an envelope pattern encompassing the final measured pattern is described in the LMS application and the attached Exhibit A.

COMMUNITY COVERAGE

As demonstrated in Exhibit C, the proposed facility will cover 100% of Kahului, HI in area and population with the FCC f50,50 70dBu signal.

ENVIRONMENTAL CONSIDERATIONS

The proposed antenna will be attached to an existing tower. The tower is owned by Pacific Media Group. The tower is not registered.

The attachment of the proposed antenna will not alter the existing proposed tower structure for purposes of the Nationwide Programmatic Agreement and the NHPA Section 106. There will be a total of 5 full-power stations diplexed on the same antenna on the proposed tower: NEW 202C3 (5kW ERP), KJKS (51kW ERP), KJMD (26kW ERP), KPOA (26kW ERP), and KLHI-FM (26kW ERP).

The total power level of all full-power stations will be 159kW Vertical and 69kW Horizontal ERP and will operate at 19m AGL. PRG proposes operating with a 6-level Jampro Java directional

antenna. Based upon the FCC “FM Model”¹ Power Density vs. Distance calculator using an “EPA Type 3, Opposed U Dipole” type antenna setting (closest to the computed vertical pattern), the maximum power density at 2m AGL contributed by the proposed antenna is expected to be 199.1 $\mu\text{W}/\text{cm}^2$ or 100% of the permitted 200 $\mu\text{W}/\text{cm}^2$ limit for uncontrolled exposure. Because the predicted exposure is at the allowable limit, and because the actual vertical pattern predicts a lower NIER, it is respectfully requested to allow the stations to operate at $\frac{1}{2}$ power initially while actual on-site NIER measurements are made. Final measured NIER readings and proof of mitigation if the RF fields are excessive for allowable public access will be submitted with a request for PTA. A fence will be erected around the base of the tower to prevent unauthorized public access. There are no tall buildings near the proposed tower.

Based upon the preceding evaluation, it is believed that the proposed antenna will be excluded from further Environmental Assessment under 47CFR 1.1306 and 1.1307.

The proposed FM station along with other users at the site will maintain an occupational safety policy and agrees to reduce power or cease operation during periods of maintenance to avoid potentially harmful exposure of personnel to non-ionizing RF radiation.

Respectfully Submitted

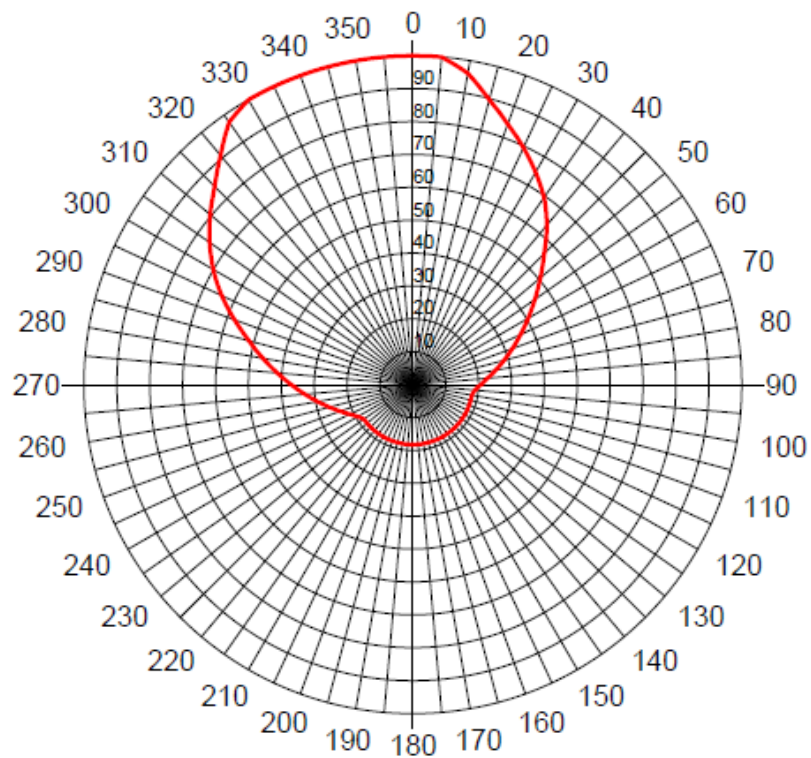
A handwritten signature in dark ink, appearing to read "Bert Goldman", with a long, sweeping horizontal line extending to the right.

Bert Goldman
Technical Consultant

¹ <https://www.fcc.gov/general/fm-model>

EXHIBIT A- Antenna Pattern

PRG Composite Antenna Pattern



Azi	Rel	dBk	kW	dB	Azi	Rel	dBk	kW	dB
0	1.000	17.08	51.0	0.00	180	0.182	2.28	1.7	-14.80
10	0.961	16.73	47.1	-0.34	190	0.182	2.28	1.7	-14.80
20	0.843	15.59	36.2	-1.49	200	0.182	2.28	1.7	-14.80
30	0.746	14.53	28.4	-2.55	210	0.182	2.28	1.7	-14.80
40	0.634	13.11	20.5	-3.96	220	0.182	2.28	1.7	-14.80
50	0.505	11.14	13.0	-5.93	230	0.182	2.28	1.7	-14.80
60	0.405	9.22	8.4	-7.85	240	0.193	2.79	1.9	-14.29
70	0.322	7.22	5.3	-9.85	250	0.235	4.51	2.8	-12.57
80	0.255	5.22	3.3	-11.85	260	0.295	6.46	4.4	-10.61
90	0.206	3.35	2.2	-13.72	270	0.370	8.43	7.0	-8.64
100	0.182	2.28	1.7	-14.80	280	0.463	10.39	10.9	-6.69
110	0.182	2.28	1.7	-14.80	290	0.576	12.29	16.9	-4.79
120	0.182	2.28	1.7	-14.80	300	0.701	13.99	25.0	-3.09
130	0.182	2.28	1.7	-14.80	310	0.805	15.19	33.0	-1.89
140	0.182	2.28	1.7	-14.80	320	0.910	16.25	42.2	-0.82
150	0.182	2.28	1.7	-14.80	330	1.000	17.08	51.0	0.00
160	0.182	2.28	1.7	-14.80	340	1.000	17.08	51.0	0.00
170	0.182	2.28	1.7	-14.80	350	1.000	17.08	51.0	0.00

Rotation Angle = 0

EXHIBIT B- ALLOCATION STUDY (LMS)

ComStudy 2.2 search of channel 223 (92.5 MHz Class C2) at 20-42-07.5 N, 156-21-43.9 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
KSSK-FM	WAIPAHU	HI 222 C	195.87	188.00	293.4	7.9
KMWB	CAPTAIN COOK	HI 226 C0	118.00	89.00	157.1	29.0
KJHF	KUALAPUU	HI 276 C2	58.30	20.00	285.9	38.3
KHWI	HOLUALOA	HI 221 C1	118.00	79.00	157.1	39.0

LMS as of 7/4/23

EXHIBIT C Community Coverage

KLHI-FM Proposed Community Coverage

