

**Goldman Engineering Management
Auburn, CA**

Minor Modification of License Application

KUMU-FM, Channel 234C1, Honolulu, HI

“One-Step Upgrade” to 234C, Honolulu, HI

PURPOSE OF FILING

This Technical Statement and attached exhibits have been prepared on behalf of Pacific Radio Group, Inc. (“PRG”), Licensee of station KUMU (FM) facility number 31601, Honolulu, HI in support of a minor license modification to relocate from a building top in central Honolulu on channel 234C1 to the common FM radio facility site at Palehua, Hawaii as a fully spaced class C facility. Because the community of license will remain Honolulu, HI, it is not believed a 307(b) showing is necessary. KUMU-FM will be collocated with co-owned KQMQ-FM and three other stations on the same antenna.

PROPOSED SPECIFICATIONS

Licensed Community	Honolulu, HI
Coordinates (NAD83)	21° 23’ 33.6” N Latitude, 158° 05’ 48.1” W Longitude
Channel	234C (94.7 MHz)
Tower Overall AGL Height-	61m
Tower ASR	1218023
Proposed Antenna	Shively 6014-14/1-DA (Existing) – Pattern, Exhibit A
Antenna AGL Height-	39m
Site AMSL Height-	695m
COR AMSL Height	734m
HAAT	565m (per other stations on same antenna)
ERP	100kW

234C ALLOCATION- REFERENCE COORDINATES

The Class 234C reference coordinates for KUMU-FM will remain as they currently are for the 234C1 allotment, within the city limits of Honolulu, Hawaii. The allocation table for the reference coordinates is shown below:

73.207 ALLOCATION STUDY, REFERENCE COORDINATES, 234C, Honolulu, HI
ComStudy 2.2 search of channel 234 (94.7 MHz Class C) at 21-17-09.0 N, 157-50-19.0 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
KAOI-FM (ALLOC)	WAILUKU	HI 236 C	166.92	105.00	115.4	61.9
KDLX* (ALLOC)	MAKAWAO	HI 232 A	164.51	95.00	107.0	69.5
KAOI-FM	WAILUKU	HI 236 C1	174.84	105.00	108.7	69.8
KDLX	MAKAWAO	HI 232 C1	174.84	105.00	108.7	69.8
KHKU	HANAPEPE	HI 232 C2	188.07	105.00	294.4	83.1

234C ALLOCATION- PROPOSED SITE

The proposed KUMU-FM operating facility will be fully spaced under 73.207 to all other full power stations. Following KUMU-FM's relocation, translator K288FB will be short-spaced on the IF frequency 288D (250 watts). The allocation study for KUMU-FM on 234C at the NAD83 transmitter site coordinates is shown below:

73.207 ALLOCATION STUDY, TRANSMITTER COORDINATES, 234C, Honolulu, HI
ComStudy 2.2 search of channel 234 (94.7 MHz Class C) at 21-23-33.6 N, 158-05-48.1 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
KUMU-FM	HONOLULU	HI 234 C1	29.27	270.00	113.9	-240.7 Current LIC
K288FB	HONOLULU	HI 288 D	0.65	22.00	325.4	-21.3 IF Displacement
KESU-LP	LIHUE	HI 235 LP100	147.31	120.00	297.8	27.3
KHKU	HANAPEPE	HI 232 C2	158.42	105.00	294.3	53.4

(LMS As of 2/21/2021)

FAA RECEIVE STATION

The proposed facility will be 0.6km from an FAA receive station. The FAA site is 316deg T from the combined transmitter site. KUMU-FM will be diplexed with other class C facilities which, based upon the existing operation, filters, and highly directional antenna, fully protect the FAA receive site located at (NAD83) 21-23-47.6 N Lat, and 158-06-2.1 W Lon.

Using the common antenna, the maximum composite field strength along the radials from 220deg to 320deg T will be less than 0.2 relative field (4kW). The horizontal pattern plot is attached as Exhibit A.

FCC MONITORING STATION

As with other stations from the common site, the signal level from the proposed KUMU operation must not exceed 27mV/m (88.6 dBu) at the FCC monitoring station at Waipahu, Hawaii. As with other stations operating from the existing combined antenna, protection to the FCC monitoring station will be maintained by virtue of a null in the antenna's vertical pattern. The calculated vertical antenna pattern for KUMU-FM is shown as Exhibit B. The calculated signal strength at the Waipahu FCC monitoring station using the FCC method of computing predicts 5.9mV/m (75.5dBu) at the monitoring station and using Longley-Rice with terrain attenuation clutter predicts 9.3mV/m (79.4dBu). Maps showing compliance with predicted signal levels is shown in exhibits C1 and C2.

COMMUNITY OF LICENSE COVERAGE

70dBu community coverage to Honolulu is demonstrated in Exhibit D from the Reference as well as the proposed site coordinates.

ENVIRONMENTAL CONSIDERATIONS

There are four stations operating from the common antenna mounted to ASR 1218023 (Exhibit E), KUMU-FM will be the fifth station. All stations have a peak ERP of 100kW. Due to the high gain, and depending on the station, antenna inputs range from 3,200 watts to 3,700 watts:

KLHT	91.5MHz
KQMQ	93.1MHz
KAIM	95.5MHz
KORL	101.1MHz
KUMU	94.7MHz (NEW)

The proposed KUMU-FM facility will utilize the existing 14-element Shively directional antenna located at 39m AGL COR and operating at 100kW ERP. Due to the combined and somewhat unusual antenna being used, field measurements to determine the actual RF levels around the antenna will be taken on-site and filed with the formal request for Program Test Authority with the required directional proof information. In locations where the Maximum Public Exposure Level (MPE) is exceeded, a fence will be built (or existing verified as adequate) to prevent public exposure in excess of FCC guidelines. Signs will also be placed in areas exceeding the MPE limit and a policy will be verified to limit occupational exposure in critical locations.

CERTIFICATION

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direct supervision, and that they are true and correct to the best of his knowledge and belief.

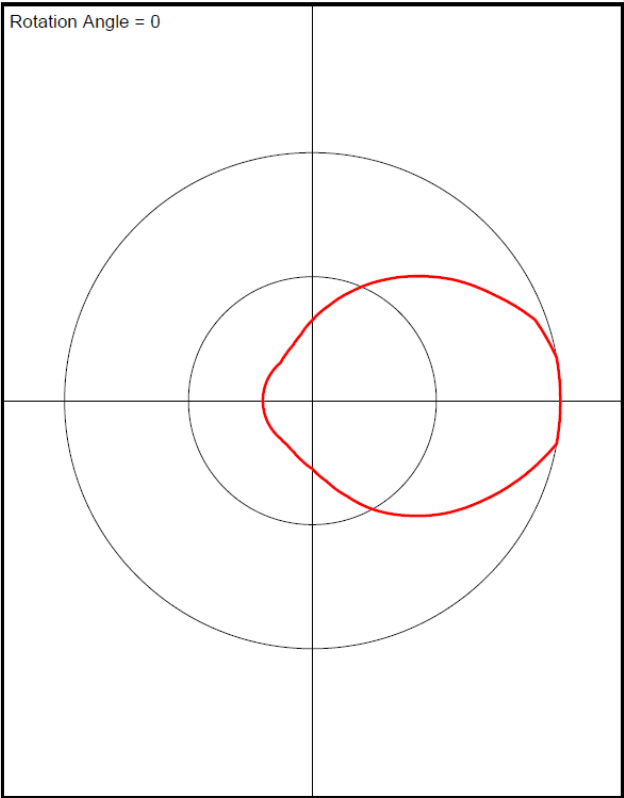
A handwritten signature in black ink, appearing to read "Bertram S. Goldman", with a long horizontal flourish extending to the right.

Bertram S. Goldman
Goldman Engineering Management

EXHIBIT A- Horizontal Pattern Plot

KUMU-FM PROP
Post-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	0.325
5.0	0.3575
10.0	0.39
15.0	0.43
20.0	0.47
25.0	0.515
30.0	0.56
35.0	0.6075
40.0	0.655
45.0	0.705
50.0	0.755
55.0	0.8025
60.0	0.85
65.0	0.9025
70.0	0.955
75.0	0.9775
80.0	1.0
85.0	1.0
90.0	1.0
95.0	1.0
100.0	1.0
105.0	0.95
110.0	0.9
115.0	0.85
120.0	0.8
125.0	0.7525
130.0	0.705
135.0	0.655
140.0	0.605
145.0	0.5575
150.0	0.51
155.0	0.46
160.0	0.41
165.0	0.37
170.0	0.33
175.0	0.3025
180.0	0.275
185.0	0.26
190.0	0.245
195.0	0.2325
200.0	0.22
205.0	0.2125
210.0	0.205
215.0	0.2025
220.0	0.2
225.0	0.2
230.0	0.2
235.0	0.2
240.0	0.2
245.0	0.2
250.0	0.2
255.0	0.2
260.0	0.2
265.0	0.2
270.0	0.2
275.0	0.2
280.0	0.2
285.0	0.2
290.0	0.2
295.0	0.2
300.0	0.2
305.0	0.2
310.0	0.2
315.0	0.2



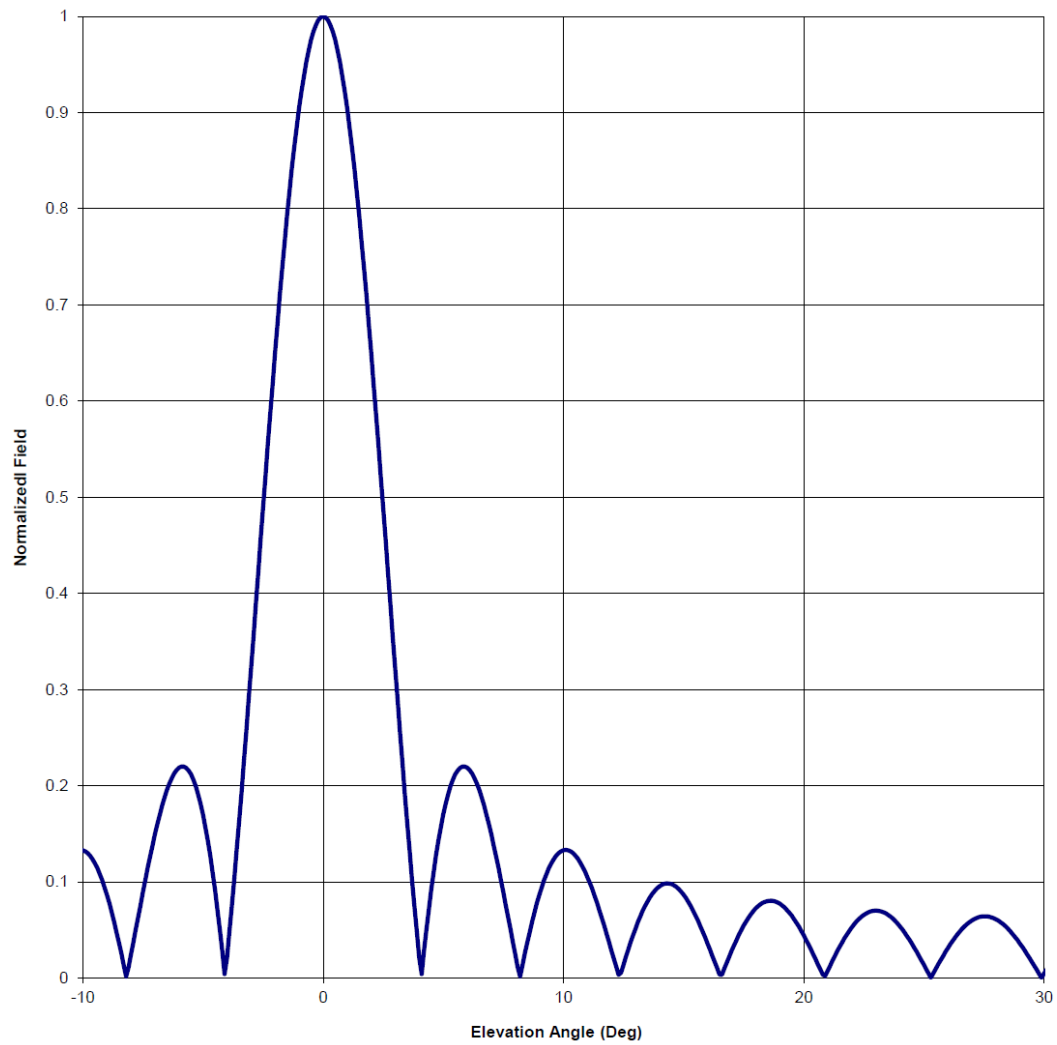
320.0	0.2
325.0	0.2075
330.0	0.215
335.0	0.225
340.0	0.235
345.0	0.2525
350.0	0.27
355.0	0.2975

EXHIBIT B- Vertical Pattern Plot

Antenna Mfg.: Shively Labs
Antenna Type: 6014-14/1-DA
Station: KUMU
Frequency: 94.7
Channel #: 234
Figure: 3

Date: 2/3/2021

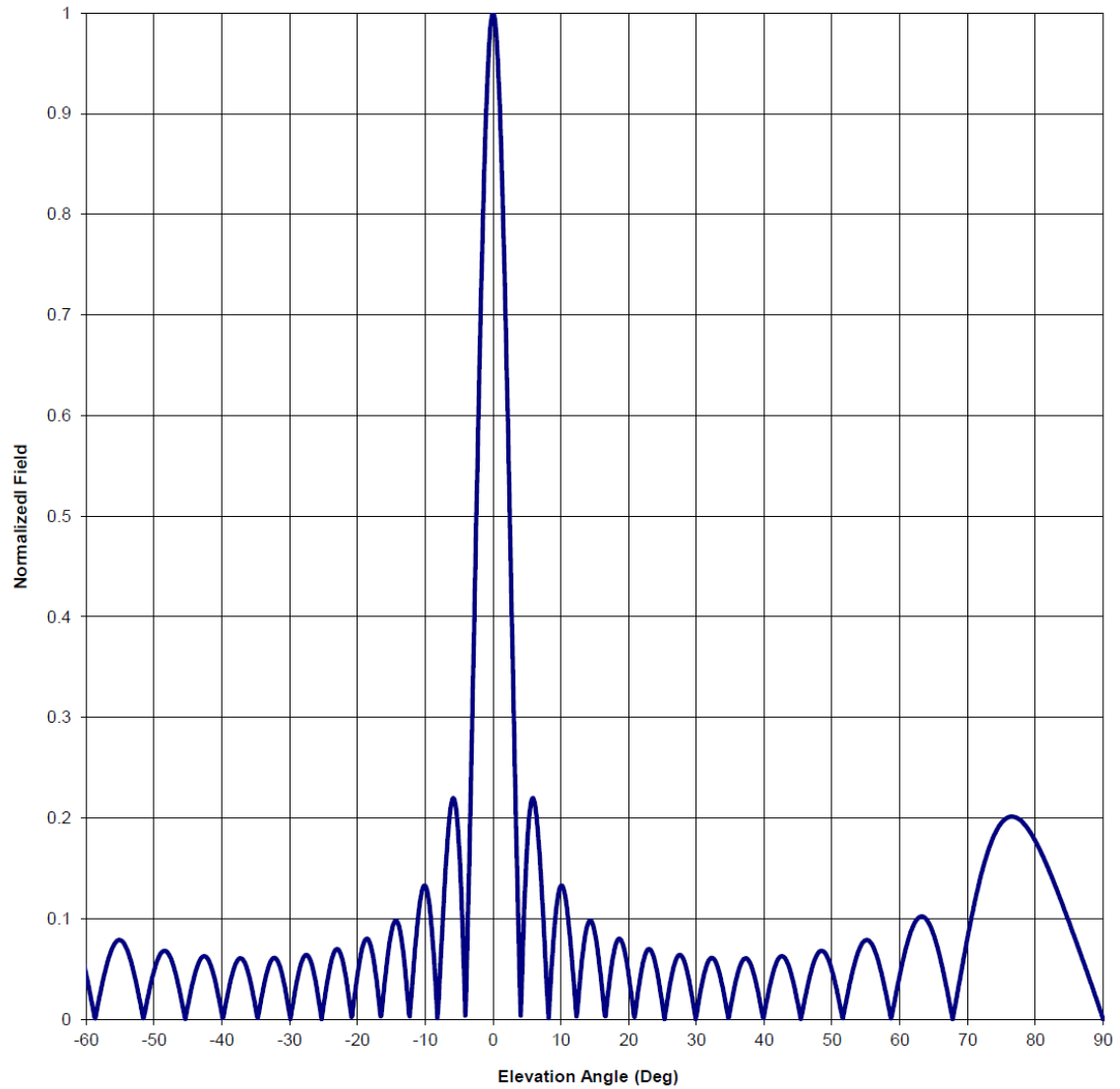
Beam Tilt	0	
Gain (Max)	30.067	14.781 dB
Gain (Horizon)	30.067	14.781 dB



Antenna Mfg.: Shively Labs
Antenna Type: 6014-14/1-DA
Station: KUMU
Frequency: 94.7
Channel #: 234
Figure: 3

Date: 2/3/2021

Beam Tilt	0	
Gain (Max)	30.067	14.781 dB
Gain (Horizon)	30.067	14.781 dB



Antenna Mfg.: Shively Labs
Antenna Type: 6014-14/1-DA

Date: 2/3/2021

Station: KUMU

Beam Tilt 0

Frequency: 94.7

Gain (Max) 30.067

14.781 dB

Channel #: 234

Gain (Horizon) 30.067

14.781 dB

Figure: 3

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.045	0	1.000	46	0.020
-89	0.020	-43	0.061	1	0.904	47	0.050
-88	0.040	-42	0.059	2	0.650	48	0.066
-87	0.059	-41	0.038	3	0.322	49	0.066
-86	0.078	-40	0.005	4	0.021	50	0.049
-85	0.096	-39	0.030	5	0.170	51	0.020
-84	0.114	-38	0.055	6	0.219	52	0.015
-83	0.132	-37	0.060	7	0.149	53	0.047
-82	0.148	-36	0.043	8	0.024	54	0.069
-81	0.164	-35	0.010	9	0.086	55	0.079
-80	0.177	-34	0.027	10	0.133	56	0.073
-79	0.189	-33	0.055	11	0.105	57	0.054
-78	0.197	-32	0.060	12	0.029	58	0.025
-77	0.201	-31	0.041	13	0.051	59	0.010
-76	0.201	-30	0.004	14	0.095	60	0.044
-75	0.195	-29	0.036	15	0.087	61	0.073
-74	0.184	-28	0.061	16	0.036	62	0.093
-73	0.167	-27	0.060	17	0.028	63	0.102
-72	0.144	-26	0.031	18	0.072	64	0.099
-71	0.115	-25	0.014	19	0.077	65	0.084
-70	0.081	-24	0.054	20	0.044	66	0.060
-69	0.045	-23	0.070	21	0.007	67	0.028
-68	0.007	-22	0.052	22	0.052	68	0.007
-67	0.028	-21	0.007	23	0.070	69	0.045
-66	0.060	-20	0.044	24	0.054	70	0.081
-65	0.084	-19	0.077	25	0.014	71	0.115
-64	0.099	-18	0.072	26	0.031	72	0.144
-63	0.102	-17	0.028	27	0.060	73	0.167
-62	0.093	-16	0.036	28	0.061	74	0.184
-61	0.073	-15	0.087	29	0.036	75	0.195
-60	0.044	-14	0.095	30	0.004	76	0.201
-59	0.010	-13	0.051	31	0.041	77	0.201
-58	0.025	-12	0.029	32	0.060	78	0.197
-57	0.054	-11	0.105	33	0.055	79	0.189
-56	0.073	-10	0.133	34	0.027	80	0.177
-55	0.079	-9	0.086	35	0.010	81	0.164
-54	0.069	-8	0.024	36	0.043	82	0.148
-53	0.047	-7	0.149	37	0.060	83	0.132
-52	0.015	-6	0.219	38	0.055	84	0.114
-51	0.020	-5	0.170	39	0.030	85	0.096
-50	0.049	-4	0.021	40	0.005	86	0.078
-49	0.066	-3	0.322	41	0.038	87	0.059
-48	0.066	-2	0.650	42	0.059	88	0.040
-47	0.050	-1	0.904	43	0.061	89	0.020
-46	0.020	0	1.000	44	0.045	90	0.000
-45	0.014			45	0.014		

EXHIBIT C1- KUMU-FM Calculated Signal Level at FCC Monitoring Station (FCC Method)

KUMU PROP- Protection of FCC Waipahu Protected Field Office (FCC)

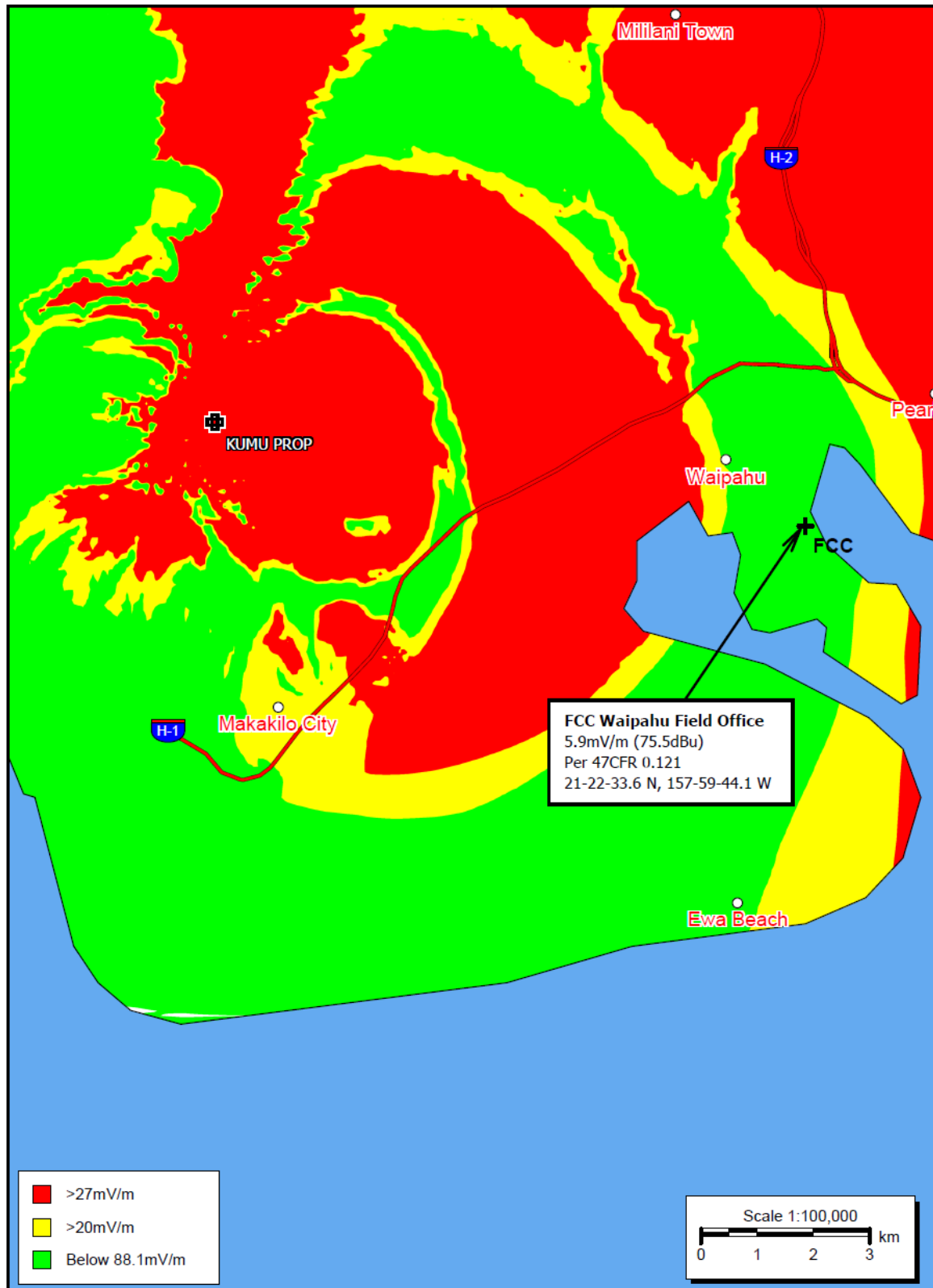


EXHIBIT C2- KUMU-FM Calculated Signal Level at FCC Monitoring Station (Longley-Rice)

KUMU PROP- Protection of FCC Waipahu Protected Field Office- Longley-Rice

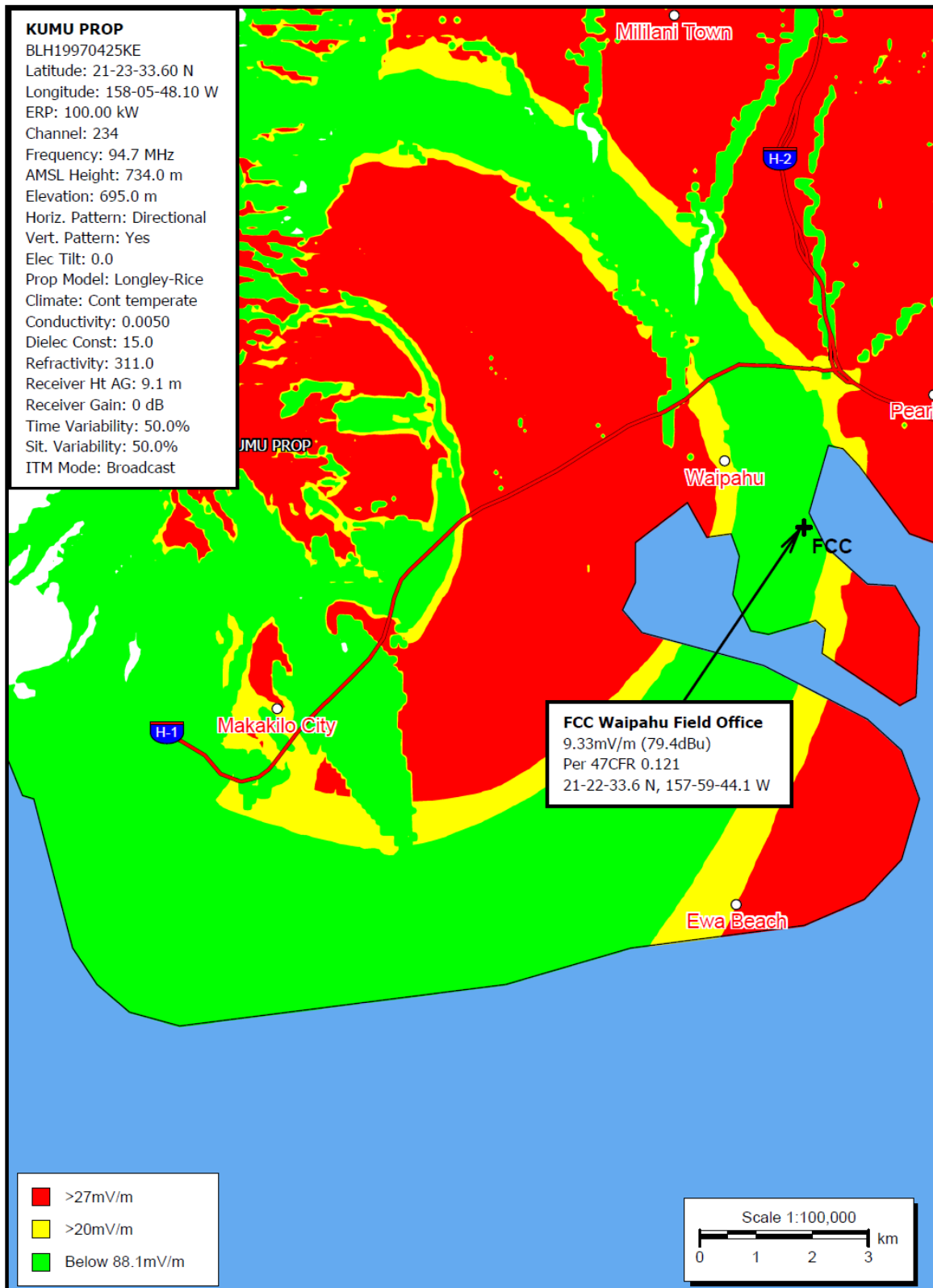


EXHIBIT D- Community of License Coverage, KUMU-FM (234C)

KUMU-FM Proposed Community Coverage 234C, Honolulu, Hawaii



EXHIBIT E- ASR

Registration 1218023[Map Registration](#)

Registration Detail			
Reg Number	1218023	Status	Constructed
File Number	A0217647	Constructed	10/03/2000
EMI	No	Dismantled	
NEPA	No		
Antenna Structure			
Structure Type	TOWER - Free standing or Guyed Structure used for Commu		
Location (in NAD83 Coordinates)			
Lat/Long	21-23-33.6 N 158-05-48.1 W	Address	Palikea Ridge, 26.9 km NW of Honolulu at 292° True
City, State	Makakilo , HI	County	HONOLULU
Zip	96707		
Center of AM Array		Position of Tower in Array	
Heights (meters)			
Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)		
695.1	60.6		
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances		
755.7	60.6		
Painting and Lighting Specifications			
None			
FAA Notification			
FAA Study	00-AWP-2258-OE	FAA Issue Date	09/08/2000
Owner & Contact Information			
FRN		Owner Entity Type	
Owner			
Salem Media of Hawaii 4880 Santa Rosa Road, Suite 300 Camarillo , CA 93012		P: (805)384-4502 F: E: carlg@saalem.cc	
Contact			
Gluck , Carl E 4880 Santa Rosa Road, Suite 300 Camarillo , CA 93012		P: (805)384-4502 F: E: carlg@saalem.cc	
Last Action Status			
Status	Constructed	Received	10/12/2001
Purpose	Notification	Entered	10/12/2001
Mode	Interactive		
Related Applications			
10/12/2001	A0217647 - Notification (NT)		
10/03/2000	A0142982 - New (NE)		