



ENGINEERING STUDY
MINOR LICENSE MODIFICATION
K291CZ, Wailuku, HI

TECHNICAL STATEMENT

This technical statement and attached exhibits were prepared on behalf of Pacific Radio Group, Inc, ("PRG") licensee of K291CZ, Facility ID 202651. This proposal is to relocate the translator to a commonly owned PRG tower. The proposed facility will continue to rebroadcast KNUI (AM), facility ID 49956.

Facilities Requested

Location (NAD83)	20° 42' 07.5" N Latitude, 156° 21' 43.9" W Longitude
Channel	291D (106.1MHz)
Tower Overall AGL Height-	45.7m
Tower ASR	N/A (Existing tower owned by Pacific Media Group)
Proposed Antenna	Jampro Java
Antenna AGL Height-	44m
Site AMSL Height-	848m
COR AMSL Height	892m
ERP	250 W Directional (EXHIBIT A)

COMPLIANCE WITH 74.1204(a) [contour overlap]

The translator on channel 291D will be fully compliant with 74.1204(a). A table showing the allocation is attached as Exhibit B.

COMPLIANCE WITH 74.1204(d)

The proposed K291CZ will be compliant with 74.1204(d). As shown in Exhibit C, there will be no location at ground level where the signal from K291CZ will be more than 40dB above either KRYL (FM) (293C1) or KPMW (FM) (288C2).

COMPLIANCE WITH 74.1201(g)

Exhibit D demonstrates that the proposed translator remains entirely contained within the 2mV/m contour of KNUI (AM), Facility ID 49956.

COMPLIANCE WITH 74.1233 [Minor Change]

Exhibit D demonstrates that the proposed K291CZ 60dBu contour overlaps the 60dBu of the presently licensed K291CZ.

ENVIRONMENTAL EXHIBIT

The proposed translator facility will utilize a directional antenna located on an existing tower. The attachment of the proposed translator antenna will not alter the existing structure significantly for purposes of the Nationwide Programmatic Agreement and the NHPA Section 106.

The proposed K291CZ facility will utilize a Jampro Java log-periodic antenna located at 40m AGL, Based upon the FCC “FM Model for Windows”¹ program using a worst-case ring-stub antenna, the proposed operation will produce 7 $\mu\text{W}/\text{cm}^2$ at a distance of 10.2m from the base of the tower at

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


ground level or 3.5% of the MPE level. There are multiple non-excluded antennas on the tower.

Because the projected MPE is well under 5%, this translator can be considered independently of other RF sources on the tower.

Based upon the information above, it is calculated that the facility will be in compliance with FCC guidelines and is excluded from further Environmental Assessment under 47CFR 1.1306 and 1.1307.

The proposed FM translator along with other users at the site 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

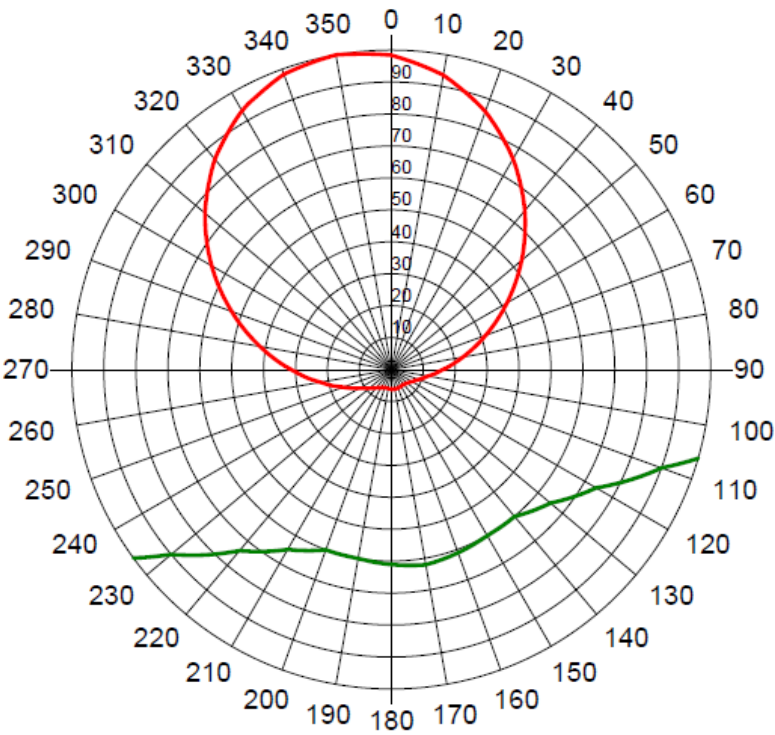
A handwritten signature in cursive script, reading "Bert Goldman". The signature is written in dark ink and is positioned above the printed name.

Bert Goldman

Technical Consultant

EXHIBIT A- ANTENNA PATTERN

PRG Translator pattern



Azi	Rel	dBk	kW	dB	Azi	Rel	dBk	kW	dB
0	0.984	-6.16	0.242	-0.14	180	0.061	-30.31	0.001	-24.29
10	0.936	-6.60	0.219	-0.57	190	0.060	-30.46	0.001	-24.44
20	0.860	-7.33	0.185	-1.31	200	0.060	-30.46	0.001	-24.44
30	0.762	-8.38	0.145	-2.36	210	0.065	-29.76	0.001	-23.74
40	0.650	-9.76	0.106	-3.74	220	0.074	-28.64	0.001	-22.62
50	0.532	-11.50	0.071	-5.48	230	0.090	-26.94	0.002	-20.92
60	0.417	-13.62	0.043	-7.60	240	0.116	-24.73	0.003	-18.71
70	0.313	-16.11	0.024	-10.09	250	0.160	-21.94	0.006	-15.92
80	0.226	-18.94	0.013	-12.92	260	0.226	-18.94	0.013	-12.92
90	0.160	-21.94	0.006	-15.92	270	0.313	-16.11	0.024	-10.09
100	0.116	-24.73	0.003	-18.71	280	0.417	-13.62	0.043	-7.60
110	0.090	-26.94	0.002	-20.92	290	0.532	-11.50	0.071	-5.48
120	0.074	-28.64	0.001	-22.62	300	0.650	-9.76	0.106	-3.74
130	0.065	-29.76	0.001	-23.74	310	0.762	-8.38	0.145	-2.36
140	0.060	-30.46	0.001	-24.44	320	0.860	-7.33	0.185	-1.31
150	0.060	-30.46	0.001	-24.44	330	0.936	-6.60	0.219	-0.57
160	0.061	-30.31	0.001	-24.29	340	0.984	-6.16	0.242	-0.14
170	0.062	-30.17	0.001	-24.15	350	1.000	-6.02	0.250	0.00

Rotation Angle = 0

EXHIBIT B- ALLOCATION STUDY

ComStudy 2.2 search of channel 291 (106.1 MHz Class D) at 20-46-20.4 N, 156-14-39.8 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
KRYL	HAIKU	HI 293 C1	7.51	0.00	193.1	-24.75 dB Exhibit C
KPMW	HALIIMAILE	HI 288 C2	7.47	0.00	242.4	-14.35 dB Exhibit C
KLEO	KAHALUU	HI 291 C	121.18	0.00	163.8	4.04 dB
KPOI-FM	HONOLULU	HI 290 C	204.90	0.00	290.2	11.67 dB
KPOI-FM	HONOLULU	HI 290 C	204.52	0.00	290.1	13.88 dB
KLEO-FM1	HONOKAA	HI 291 D	112.40	0.00	133.7	28.05 dB
K292HM	HONOLULU	HI 292 D	182.01	0.00	290.3	28.62 dB

LMS as of 7/10/2023

EXHIBIT C- 74.1204(d) Compliance

Compliance to KRYL

K291CZ Wailuku, HI, Showing Protection to KRYL, Channel: 293
Geographic Coordinates: N. 204207.5 W. 1562143.9
74.1204(d) Study - Using NED 03 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.25 kW, Channel: 291
Translator or LPFM Antenna Height AG = 44 meters
K291CZ Antenna Azimuth Model = Vertical Model Name = JAVA

Protected Station's Contour = 80.8587 dBu
Translator's or LPFM's full Interference contour 120.8587

Review Azimuth = 0 Degrees True
Horizontal Relative Field at Review Azimuth = 1.000
Translator/LPFM ERP on the horizontal at Review Azimuth = 0.25 kW
Distance between stations = 10.6 km
Protected Station= KRYL, .34 kW, 2978 M meters COR AMSL

Depression Angle From Degree (Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kW)	Dist to IX Contour Along Dep. Angle (m)	Dist to IX Contour From Tower Base (m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.2500	100.4697	100.4697	040.000
05.00	0.98	1.0	0.2401	098.4603	098.0856	031.419
10.00	0.95	1.0	0.2256	095.4462	093.9961	023.426
15.00	0.895	1.0	0.2003	089.9204	086.8564	016.727
20.00	0.82	1.0	0.1681	082.3851	077.4167	011.823
25.00	0.735	1.0	0.1351	073.8452	066.9265	008.792
30.00	0.645	1.0	0.1040	064.8029	056.1210	007.599
35.00	0.563	1.0	0.0791	056.5142	046.2937	007.585
40.00	0.47	1.0	0.0552	047.2207	036.1732	009.647
45.00	0.36	1.0	0.0324	036.1691	025.5754	014.425
50.00	0.25	1.0	0.0156	025.1174	016.1452	020.759
55.00	0.155	1.0	0.0060	015.5728	008.9322	027.244
60.00	0.085	1.0	0.0018	008.5399	004.2700	032.604
65.00	0.045	1.0	0.0005	004.5211	001.9107	035.902
70.00	0.02	1.0	0.0001	002.0094	000.6873	038.112
75.00	0.01	1.0	0.0000	001.0047	000.2600	039.030
80.00	0.01	1.0	0.0000	001.0047	000.1745	039.011
85.00	0.01	1.0	0.0000	001.0047	000.0876	038.999
90.00	0.01	1.0	0.0000	001.0047	000.0000	038.995

Compliance to KPMW

K291CZ Wailuku , HI, Showing Protection to KPMW , Channel: 288
 Geographic Coordinates: N. 204207.5 W. 1562143.9
 74.1204(d) Study - Using NED 03 SEC Terrain Database
 Translator or LPFM Maximum Licensed ERP = 0.25 kW, Channel: 291
 Translator or LPFM Antenna Height AG = 44 meters
 K291CZ Antenna Azimuth Model = Vertical Model Name = JAVA

Protected Station's Contour = 101.2502 dBu
 Translator's or LPFM's full Interference contour 141.2502

Review Azimuth = 0 Degrees True
 Horizontal Relative Field at Review Azimuth = 1.000
 Translator/LPFM ERP on the horizontal at Review Azimuth = 0.25 kW
 Distance between stations = 7.1 km
 Protected Station= KPMW, 21 kW, 1255 M meters COR AMSL

Depression Angle From Degree (Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle (m)	Dist to IX Contour From Tower Base (m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.2500	009.6042	009.6042	040.000
05.00	0.98	1.0	0.2401	009.4121	009.3763	039.180
10.00	0.95	1.0	0.2256	009.1240	008.9854	038.416
15.00	0.895	1.0	0.2003	008.5957	008.3028	037.775
20.00	0.82	1.0	0.1681	007.8754	007.4005	037.306
25.00	0.735	1.0	0.1351	007.0591	006.3977	037.017
30.00	0.645	1.0	0.1040	006.1947	005.3648	036.903
35.00	0.563	1.0	0.0791	005.4023	004.4253	036.901
40.00	0.47	1.0	0.0552	004.5140	003.4579	037.098
45.00	0.36	1.0	0.0324	003.4575	002.4448	037.555
50.00	0.25	1.0	0.0156	002.4010	001.5434	038.161
55.00	0.155	1.0	0.0060	001.4886	000.8539	038.781
60.00	0.085	1.0	0.0018	000.8164	000.4082	039.293
65.00	0.045	1.0	0.0005	000.4322	000.1827	039.608
70.00	0.02	1.0	0.0001	000.1921	000.0657	039.820
75.00	0.01	1.0	0.0000	000.0960	000.0249	039.907
80.00	0.01	1.0	0.0000	000.0960	000.0167	039.905
85.00	0.01	1.0	0.0000	000.0960	000.0084	039.904
90.00	0.01	1.0	0.0000	000.0960	000.0000	039.904

EXHIBIT D- 74.1233 COMPLIANCE

K291CZ Lic Vs. Proposed- 250 watts (KNUI-AM)

