



Broadcast Engineering Services of Bonny Doon, Inc.

415 Emerald Forest Lane
Bonny Doon, California 95060
(831) 420-1571 dmsml@well.com

Donald E. Mussell Jr. NCE-CBT
Consulting Engineer

Engineering Statement In support of a Minor Change To the licensed facility of KHPR Honolulu, Hawaii BMLED-20040330BFA

Hawaii Public Radio is requesting a minor change to KHPR (BMLED-20040330BFA). The current transmitter site presents continuing difficulty from a maintenance and access perspective. With the completion of Hawaii Public Radio's new transmitter facility at nearby Pu'u O'hi'a, it is now possible to move the KHPR transmitter to a more accessible location with backup power and nearly identical coverage over the city of Honolulu.

Hawaii Public Radio proposes to move to an existing tower site and increase the effective radiated power to 42 kilowatts, using a five element, pole-mounted, directional antenna system. The existing tower is 34 meters in height, and the radiation center above mean sea level is 622 meters, and 514 meters above average terrain. The center of the antenna array is 28 meters above ground. The directional antenna pattern is designed to provide protection to the FCC monitoring station in nearby Waipahu. KHPR would be combined with the FM facilities of KIPO, Honolulu (BLED-20080905ACH).

The proposed antenna system is a Shively 6810BB-5-.925-SS-DA, a five bay, 9/10 wave spaced design. This antenna will produce a calculated worst-case RFR energy field of 78.67 microwatts per squared centimeter at a distance of 7.2 meters from the base of the tower support structure. Combined with the existing facilities of KIPO, the total calculated RFR level at the tower site will be just over 144 microwatts per squared centimeter. This is just over 72% of the public limit, and is therefore compliant with the FCC rules concerning RFR both on and adjacent to the proposed tower location.

In addition, to satisfy the concerns and limitations of the FCC's Waipahu monitoring station, also on the island of Oahu, the applicant will utilize the specified directional antenna to provide the required protection to the Waipahu Monitoring station. This directional antenna system is designed to reduce the RF level in the direction of the Waipahu facility. The RF limitation at the Waipahu monitoring facility is 27 mV/m. The distance to the monitoring station is 19.33 kilometers. The straight-line radial between the proposed tower site and the monitoring station is 284.11 degrees true, with an average height above average terrain of 563.7 meters. The effective radiated power in the 284 degree azimuth will be 25.2 KW, which produces a calculated level of 26.8 mV/m at the monitoring station. The resulting signal level from this proposal should

comply with the specified limitations at the monitoring facility. The proposed directional antenna pattern is attached to this engineering statement, and a tabulation of power levels and azimuths are also attached.

An allocation study was performed to verify clearances to other authorized facilities in the state of Hawaii. Three conflicts were found, all of which arose during the filing window of 2007. All three of these conflicts are short spaced to the existing KHPR licensed facility, do not comply with FCC Rule 73.509(a), and continue to be short-spaced to this proposed modification. There are no other conflicts with the existing or proposed KHPR facilities.

Hawaii Public Radio is ready to construct the facility with these specified changes. Once this modification is granted, construction will commence on the transmission facilities and will be completed well within the time limitations imposed by the underlying construction permit.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. Mussell Jr.', with a stylized flourish at the end.

Donald E. Mussell Jr. NCE-CBT
Consulting Engineer
December 5, 2008

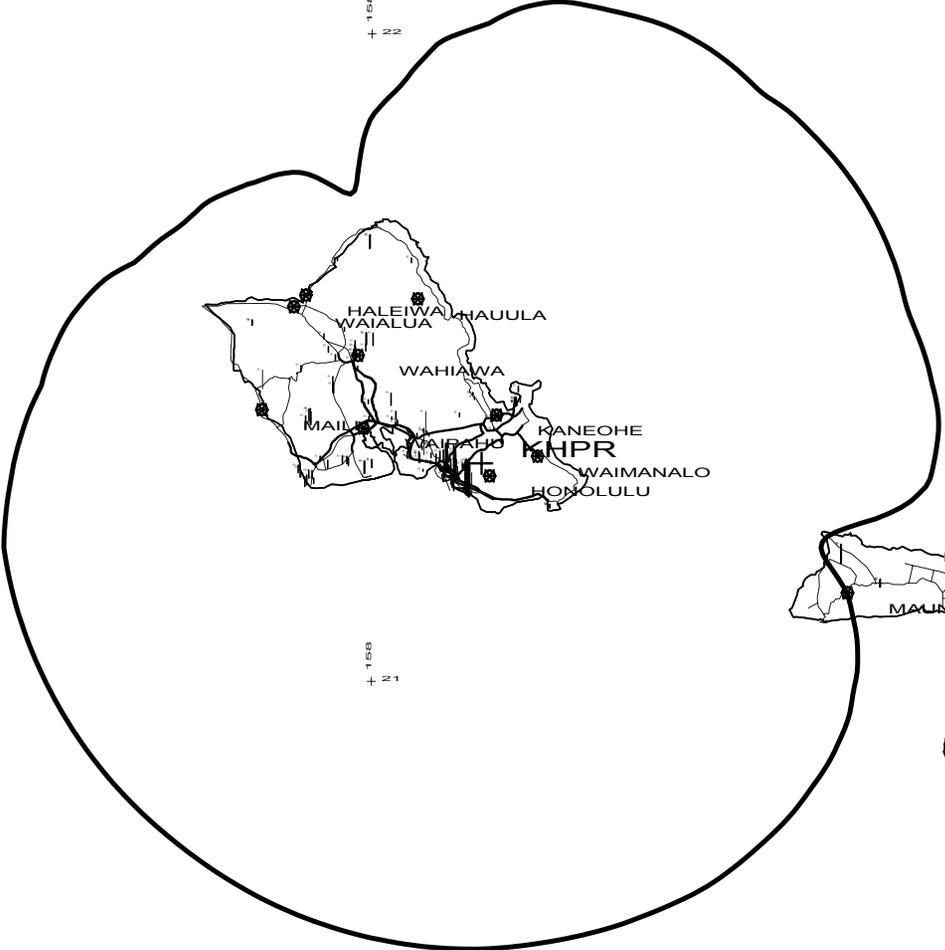


KAPAA

+ 159
N
21

60 dBu .5
+ 158
W
22

+ 157
W
22



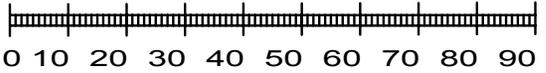
+ 159
N
21

+ 158
W
21

+ 157
W
21

1:1,406,250

Scale in km

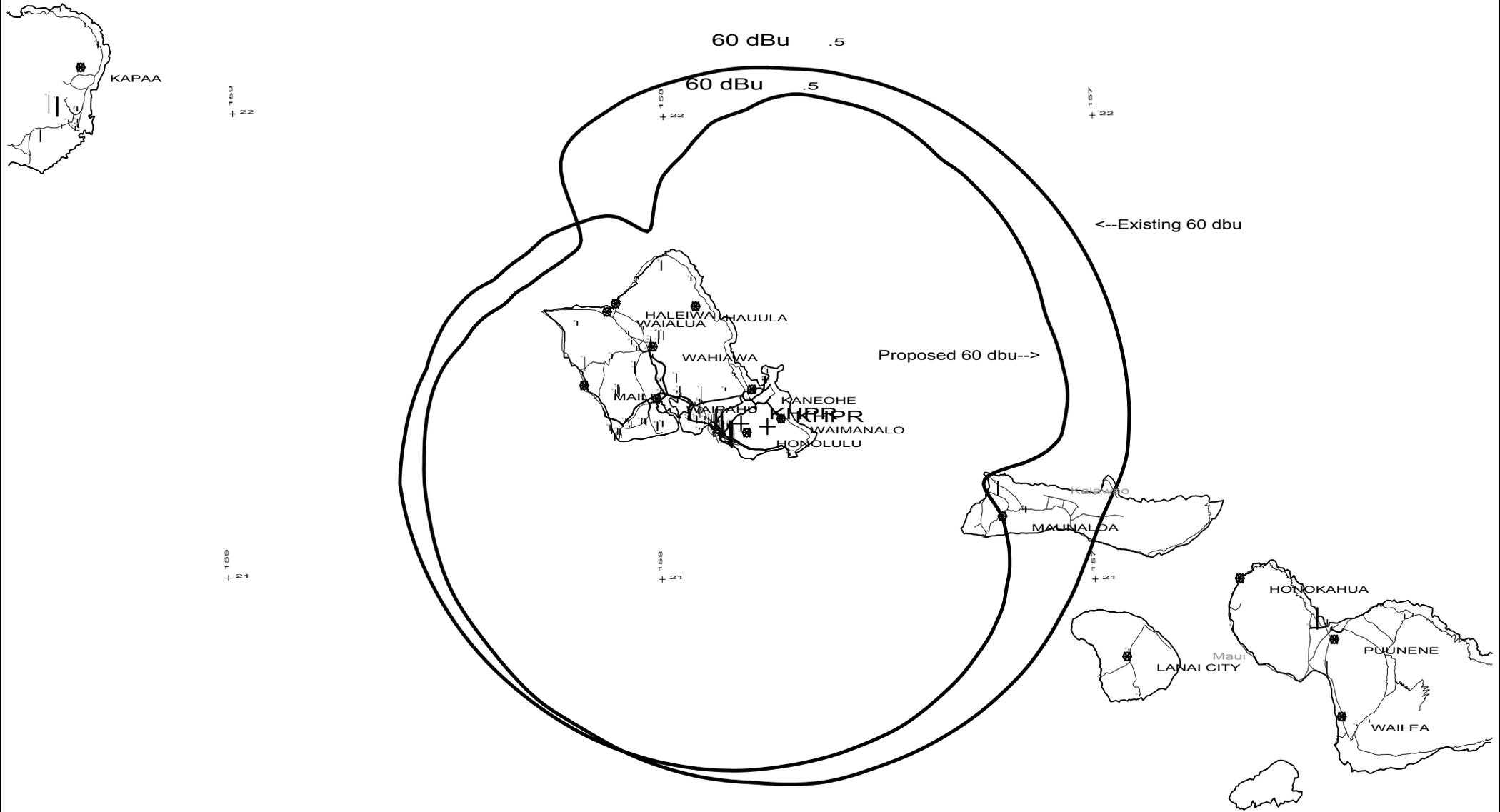


KHPR Minor Change

N. Lat. 21 20 12 W. Lng. 157 49 03

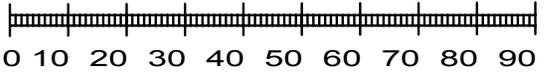
KHPR Honolulu

Hawaii Public Radio



1:1,406,250

Scale in km



KHPR Minor Change

N. Lat. 21 20 12 W. Lng. 157 49 03

KHPR Honolulu

Hawaii Public Radio

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Hawaii Public Radio, Inc.

KHPR at Tantalus

REFERENCE
21 20 12.0 N.
157 49 03.0 W.

CH# 201C0 - 88.1 MHz, Pwr= 42 kW, HAAT= 514.0 M, COR= 622 M
Average Protected F(50-50)= 78.69 km
Standard Directional

DISPLAY DATES
DATA 12-03-08
SEARCH 12-04-08

| CH CITY | CALL | TYPE STATE | ANT AZI <-- | DIST FILE # | LAT LNG | PWR(kw) HAAT(M) | INT(km) COR(M) | PRO(km) LICENSEE | *IN* (Overlap in km) | *OUT* |
|----------------------|---------|---------------|-------------------|----------------------------|---------------------------|--------------------|-------------------|---------------------|-------------------------|----------|
| 201C Honolulu | KHPR | LIC _C_ | 96.4 276.4 | 6.35 BMLED20040330BFA | 21 19 49.0 157 45 24.0 | 35.000 645 | 174.3 771 | 81.0 | -231.92* | -225.79* |
| 203C1 Pearl City | 1224012 | APP NVX HI | 282.8 102.6 | 29.97 BNPED20071012AEH | 21 23 45.0 158 05 58.0 | 49.000 570 | 11.4 715 | 87.5 | -57.44*< | -65.96*< |
| 201A Lahaina | 1211735 | APP NVX IN | 110.0 290.4 | 124.25 BNPED20071012AEI | 20 57 06.0 156 41 38.0 | 6.000 50 | 76.4 50 | 20.6 | -23.70< | -61.26< |
| 201A Keokea | 1211591 | APP NVX HI | 116.2 296.8 | 168.68 BNPED20071012AHS | 20 39 36.0 156 21 50.0 | 0.380 772 | 122.0 1387 | 50.4 | -28.52< | -51.01< |
| 06Z2C Kailua Kona | KLEI | LI DHY HI | 132.0 312.7 | 267.42 BLCT19880427KF | 19 42 56.0 155 55 00.0 | 52.500 887 | 140.9 1760 | 141.9 | 264.5R | -15.4M |
| 201C2 Kailua-kona | 1214519 | APP _CX HI | 132.0 312.6 | 266.68 BNPED20071019ARO | 19 43 16.0 155 55 15.0 | 0.500 854 | 127.8 1674 | 54.1 | 59.21 | 38.35 |
| 203A Lahaina | 1214609 | APP _CX HI | 112.9 293.3 | 128.05 BNPED20071022ATS | 20 53 07.0 156 40 58.0 | 0.200 -147 | 1.0 23 | 6.7 | 53.50 | 111.97 |
| 203A Lahaina | 1214342 | APP NCX HI | 112.5 292.9 | 129.77 BNPED20071018ASJ | 20 53 10.0 156 39 52.0 | 0.250 -21 | 1.1 210 | 19.0 | 55.32 | 101.45 |
| 255L1 Kaunakakai | KIOM-LP | LIC _ HI | 108.2 288.5 | 87.09 BLL20030617AAR | 21 05 26.0 157 01 15.0 | 0.100 | 0.0 29 | 0.0 | 21.5R | 65.6M |
| 06Z2C Kailua Kona | KLEI | CP DHN HI | 132.0 312.6 | 266.68 BPCT20030207AAE | 19 43 16.0 155 55 15.0 | 8.300 864 | 140.9 1674 | 54.9 | 264.5R | 70.8M |
| 204A Kahului | 1208305 | APP _VX HI | 109.6 290.1 | 146.61 BNPED20071012AAD | 20 53 24.6 156 29 20.2 | 6.000 -70 | 1.6 97 | 15.8 | 73.74 | 121.77 |

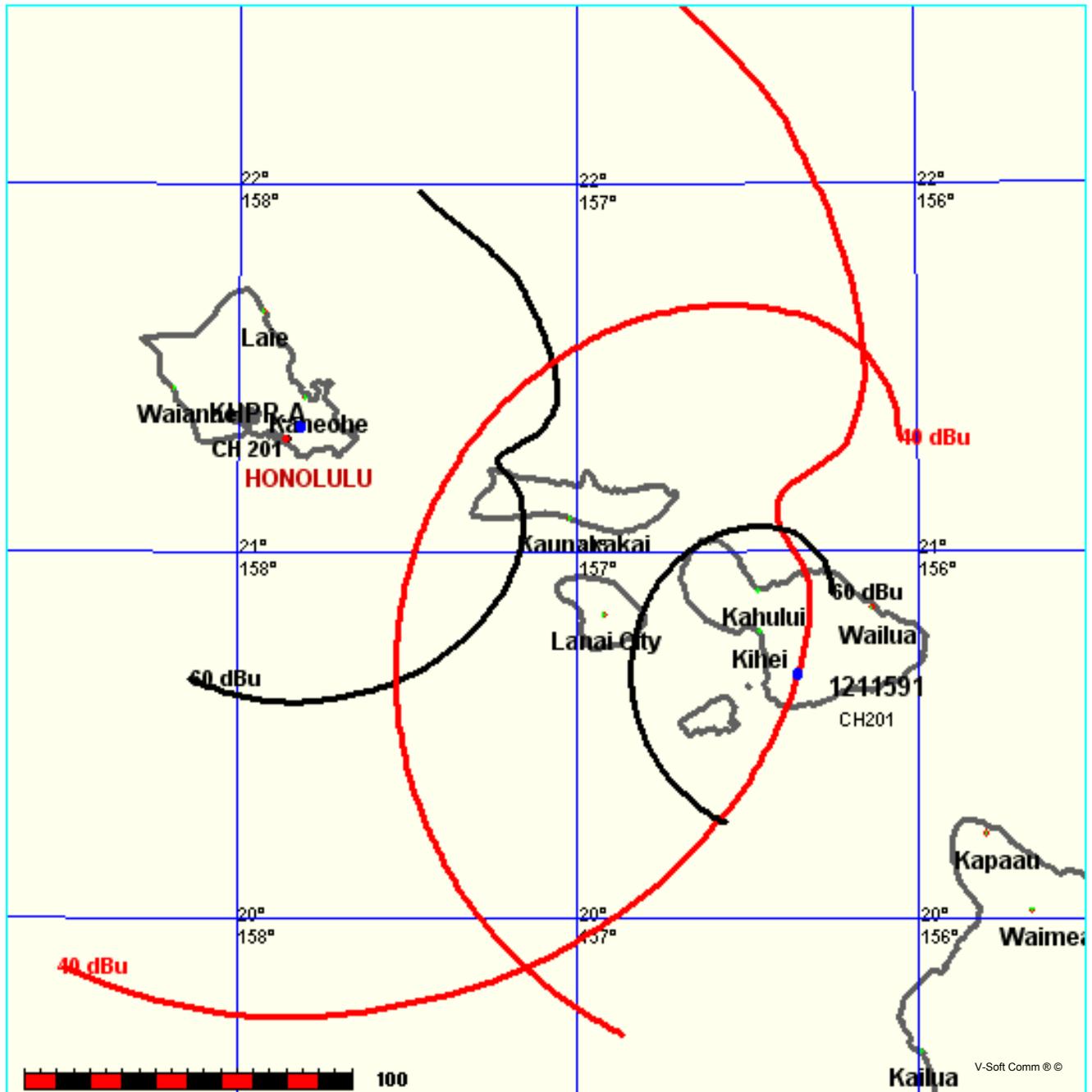
Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone = , Co to 3rd adjacent.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.
"<" = Contour Overlap

Hawaii Public Radio, Inc.
KHPR vs 1211591

FMCommander Single Allocation Study - 12-05-2008 -
KHPR.A's Overlaps (In= -28.52 km, Out= -51.01 km)

KHPR.A CH 201 C0 DA
Lat= 21 20 12.0, Lng= 157 49 03.0
42.0 kW 514 M HAAT, 622 M COR
Prot.= 60 dBu, Intef.= 40 dBu

1211591 CH 201 A 73.215 N BNPED20071012AHS
Lat= 20 39 36.0, Lng= 156 21 50.0
0.38 kW 772 M HAAT, 1387 M COR
Prot.= 60 dBu, Intef.= 40 dBu

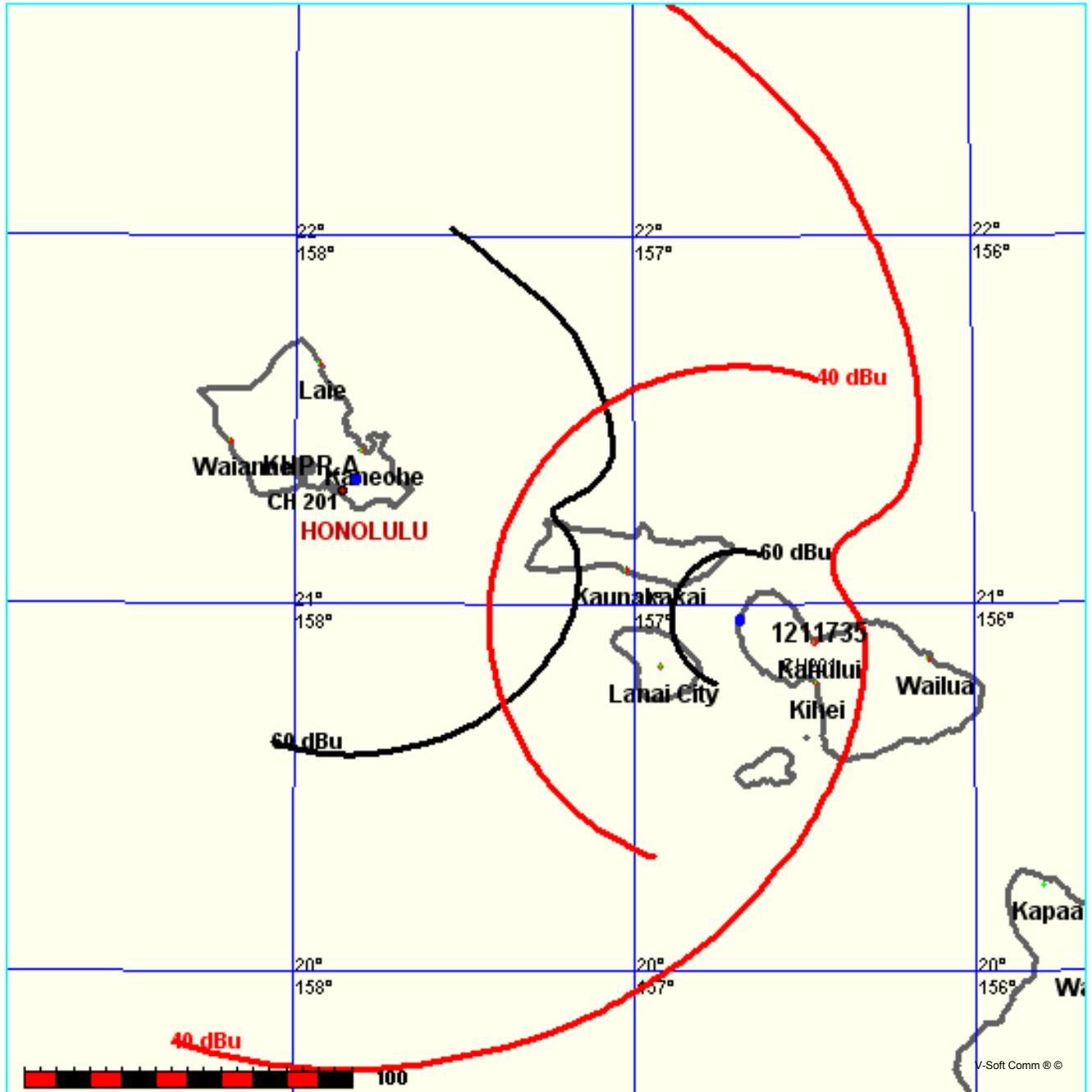


Hawaii Public Radio, Inc.
KHPR vs 1211735

FMCommander Single Allocation Study - 12-05-2008 -
KHPR.A's Overlaps (In= -23.7 km, Out= -61.26 km)

KHPR.A CH 201 C0 DA
Lat= 21 20 12.0, Lng= 157 49 03.0
42.0 kW 514 M HAAT, 622 M COR
Prot.= 60 dBu, Intef.= 40 dBu

1211735 CH 201 A 73.215 N BNPED20071012AEI
Lat= 20 57 06.0, Lng= 156 41 38.0
6.0 kW 50 M HAAT, 50 M COR
Prot.= 60 dBu, Intef.= 40 dBu

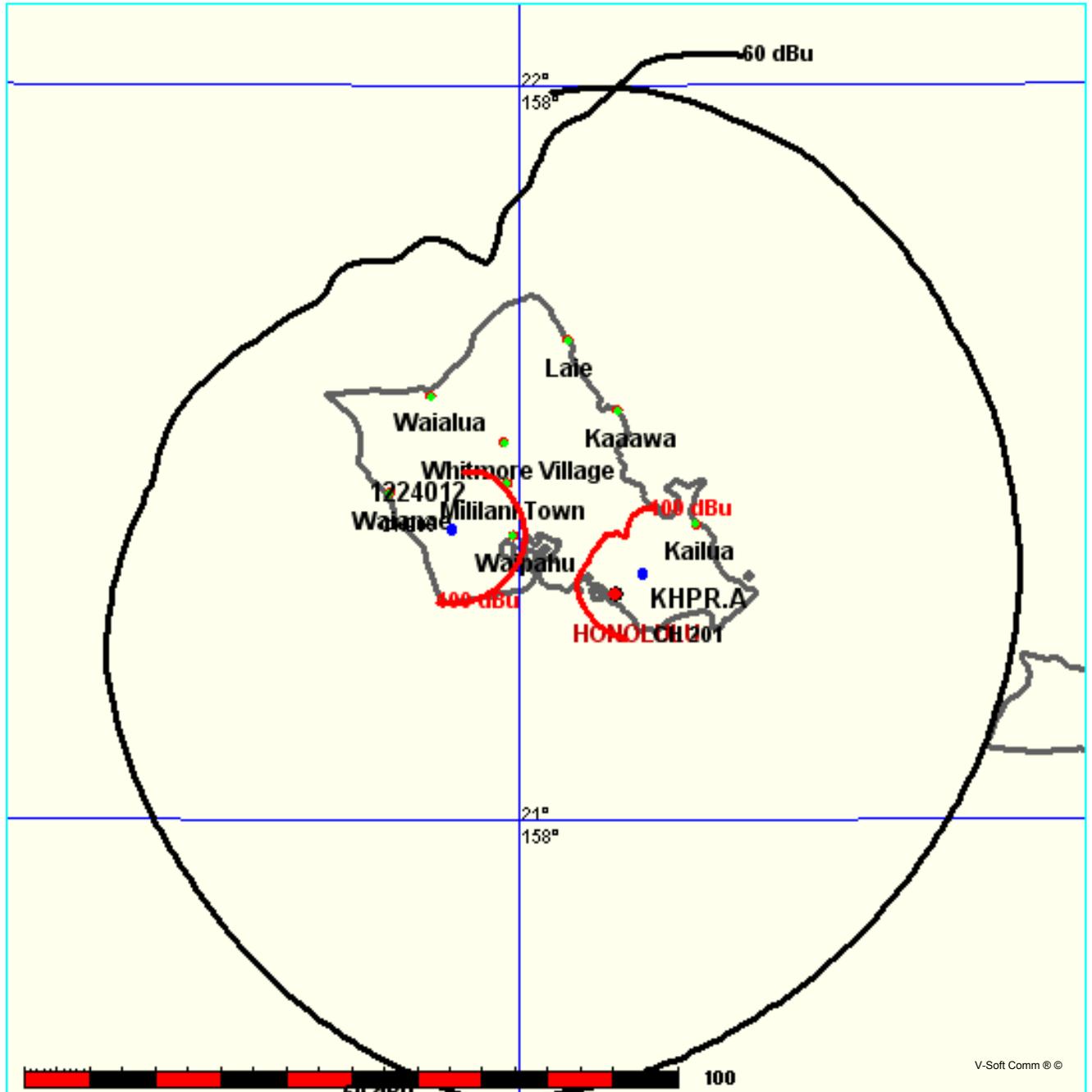


Hawaii Public Radio, Inc.
KHPR vs 1224012

FMCommander Single Allocation Study - 12-05-2008 -
KHPR.A's Overlaps (In= -57.44 km, Out= -65.96 km)

KHPR.A CH 201 C0 DA
Lat= 21 20 12.0, Lng= 157 49 03.0
42.0 kW 514 M HAAT, 622 M COR
Prot.= 60 dBu, Intef.= 100 dBu

1224012 CH 203 C1 73.215 N BNPED20071012AEH
Lat= 21 23 45.0, Lng= 158 05 58.0
49.0 kW 570 M HAAT, 715 M COR
Prot.= 60 dBu, Intef.= 100 dBu

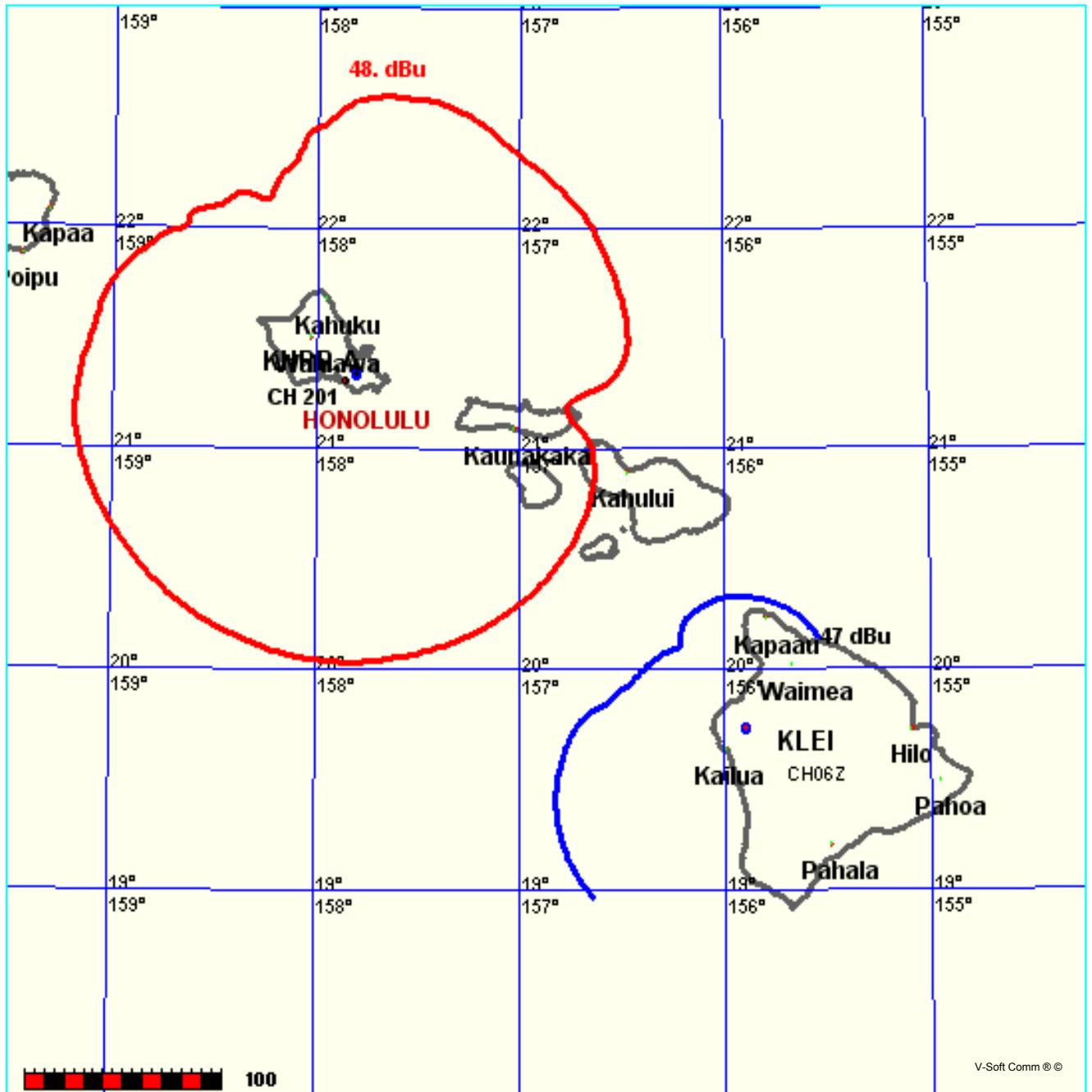


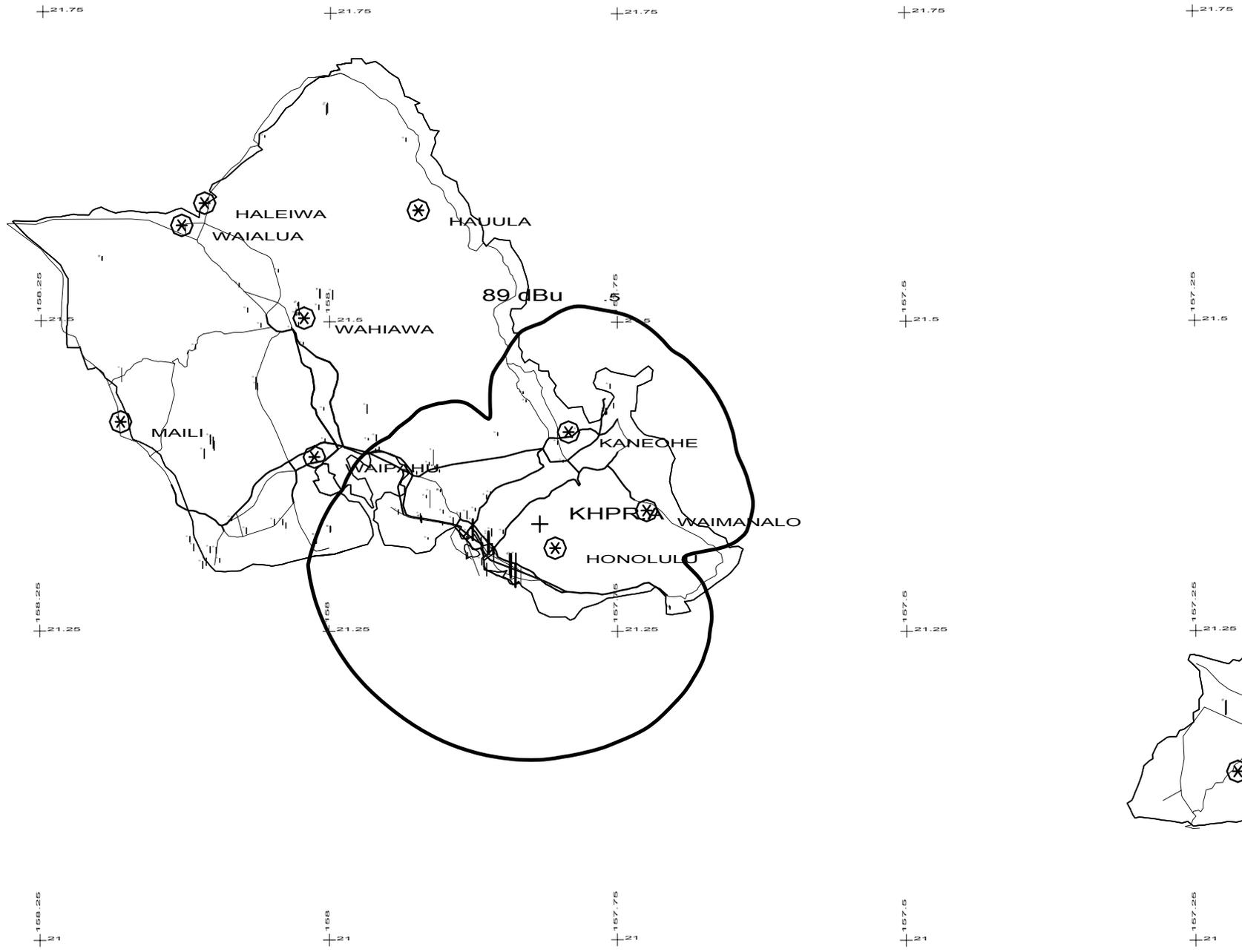
Hawaii Public Radio, Inc.
KHPR vs KLEI-TV

FMCommander Single Allocation Study - 12-05-2008 -
KHPR.A's Overlaps (In= 0.0 km, Out= 0.0 km)

KHPR.A CH 201 C0 DA
Lat= 21 20 12.0, Lng= 157 49 03.0
42.0 kW 514 M HAAT, 622 M COR
Intef. = 48.0 dBu Prot. = 47 dBu

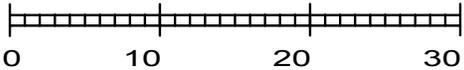
KLEI CH 06Z 2C DA BPCT20030207AAE
Lat= 19 43 16.0, Lng= 155 55 15.0
8.3 kW 864 M HAAT, 1674 M COR





1:546,875

Scale in km



KHPR Minor Change

N. Lat. 21 20 12 W. Lng. 157 49 03

KHPR-FCC Protection

Hawaii Public Radio

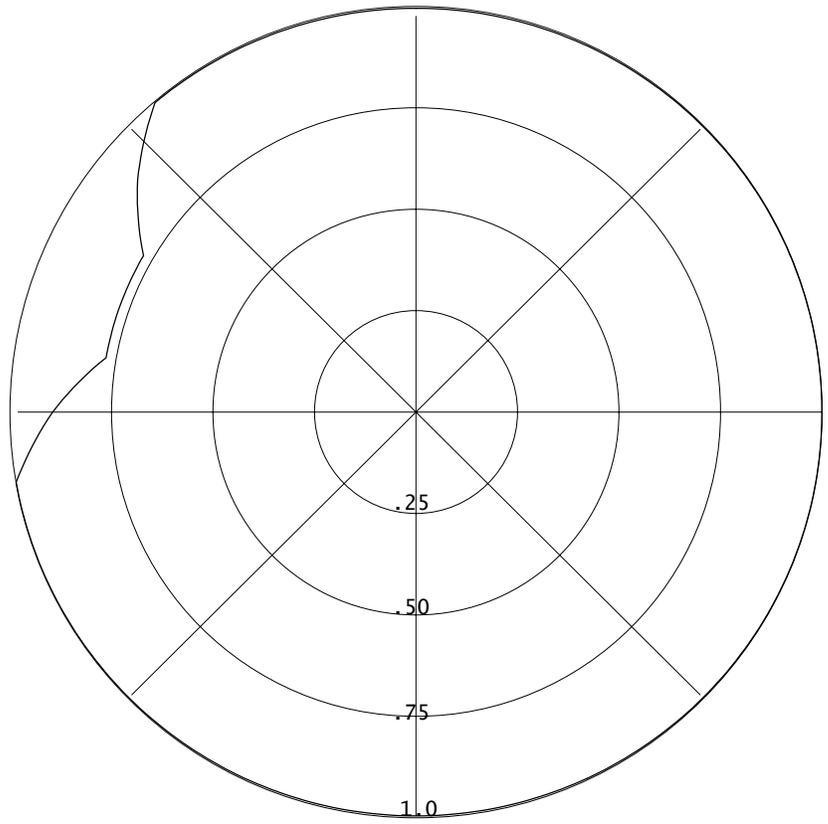
12-05-2008

RMS(V)= .977

Bearing Field in kw

Graph is Percent Relative Field Voltage

| | | |
|-----|---|--------|
| 000 | = | 42.000 |
| 010 | = | 42.000 |
| 020 | = | 42.000 |
| 030 | = | 42.000 |
| 040 | = | 42.000 |
| 050 | = | 42.000 |
| 060 | = | 42.000 |
| 070 | = | 42.000 |
| 080 | = | 42.000 |
| 090 | = | 42.000 |
| 100 | = | 42.000 |
| 110 | = | 42.000 |
| 120 | = | 42.000 |
| 130 | = | 42.000 |
| 140 | = | 42.000 |
| 150 | = | 42.000 |
| 160 | = | 42.000 |
| 170 | = | 42.000 |
| 180 | = | 42.000 |
| 190 | = | 42.000 |
| 200 | = | 42.000 |
| 210 | = | 42.000 |
| 220 | = | 42.000 |
| 230 | = | 42.000 |
| 240 | = | 42.000 |
| 250 | = | 42.000 |
| 260 | = | 42.000 |
| 270 | = | 33.643 |
| 280 | = | 25.226 |
| 290 | = | 25.226 |
| 300 | = | 25.226 |
| 310 | = | 33.643 |
| 320 | = | 42.000 |
| 330 | = | 42.000 |
| 340 | = | 42.000 |
| 350 | = | 42.000 |



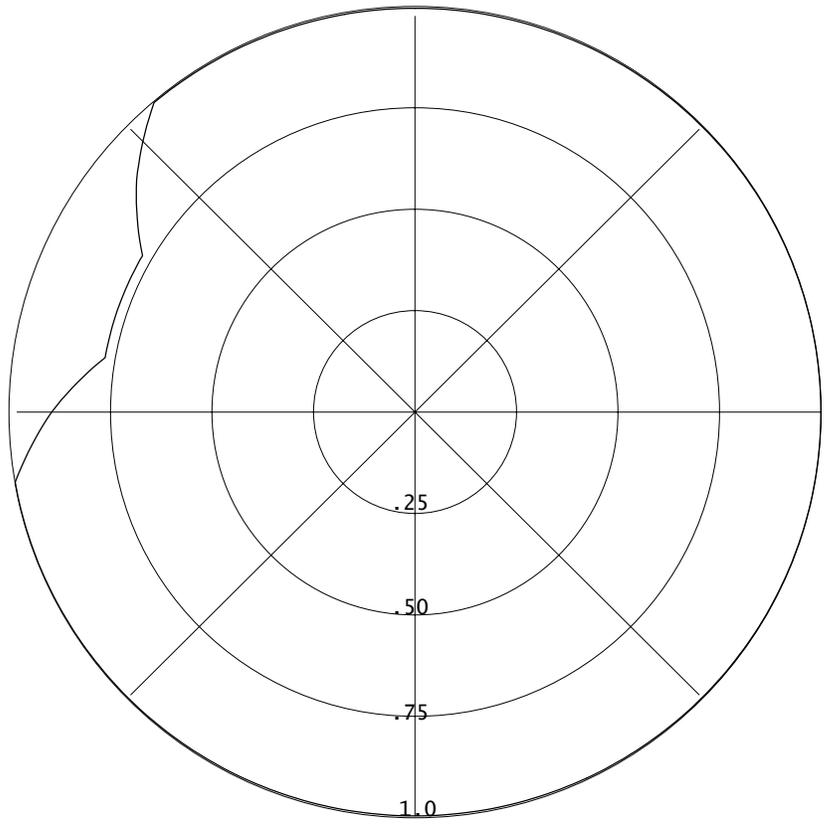
12-05-2008

RMS(V)= .977

Bearing Field % Voltage

Graph is Percent Relative Field Voltage

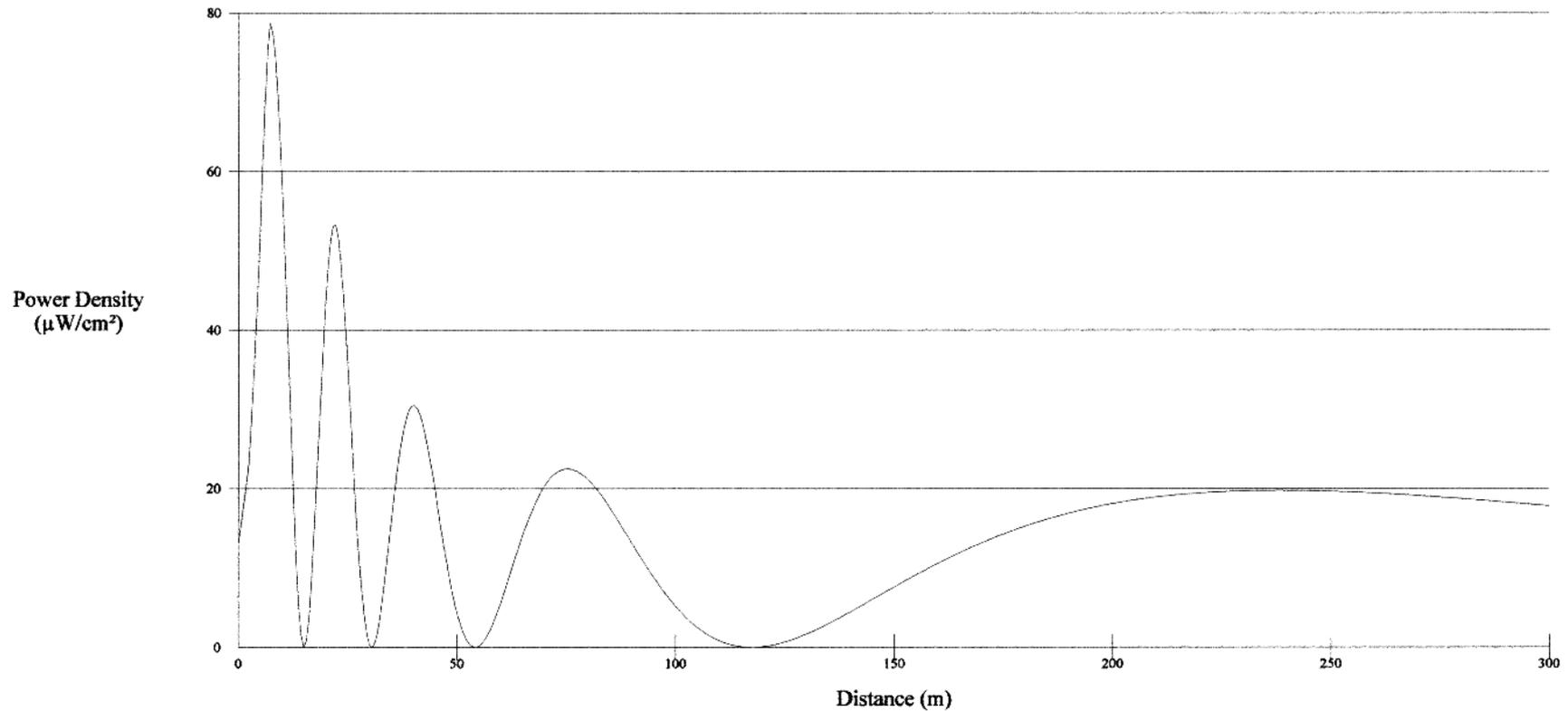
| | | |
|-----|---|-------|
| 000 | = | 1.000 |
| 010 | = | 1.000 |
| 020 | = | 1.000 |
| 030 | = | 1.000 |
| 040 | = | 1.000 |
| 050 | = | 1.000 |
| 060 | = | 1.000 |
| 070 | = | 1.000 |
| 080 | = | 1.000 |
| 090 | = | 1.000 |
| 100 | = | 1.000 |
| 110 | = | 1.000 |
| 120 | = | 1.000 |
| 130 | = | 1.000 |
| 140 | = | 1.000 |
| 150 | = | 1.000 |
| 160 | = | 1.000 |
| 170 | = | 1.000 |
| 180 | = | 1.000 |
| 190 | = | 1.000 |
| 200 | = | 1.000 |
| 210 | = | 1.000 |
| 220 | = | 1.000 |
| 230 | = | 1.000 |
| 240 | = | 1.000 |
| 250 | = | 1.000 |
| 260 | = | 1.000 |
| 270 | = | 0.895 |
| 280 | = | 0.775 |
| 290 | = | 0.775 |
| 300 | = | 0.775 |
| 310 | = | 0.895 |
| 320 | = | 1.000 |
| 330 | = | 1.000 |
| 340 | = | 1.000 |
| 350 | = | 1.000 |



KHPR Honolulu, Hawaii
Proposed Antenna RFR Graph – FCC FM Model Program

Antenna: Shively 6800 Series – 5 Bays
Element Spacing: .925
Antenna Height Above Ground: 28 Meters
Effective Radiated Power: 42 Kilowatts
Polarization: Circular
Maximum RFR: 78.67 uW/cm² @ 7.2 Meters

Power Density vs Distance



**AFFIDAVIT AND QUALIFICATIONS OF
DONALD E. MUSSELL JR.**

State of California)
Bonny Doon)
County of Santa Cruz)

Donald E. Mussell Jr. affirms that he is a consulting radio and electronics engineer; that he is Certified as a Broadcast Engineer, Class 1, by the National Association of Radio and Telecommunications Engineers, Inc., License #E1-00619, issued in 1985;

That he is recognized as a Broadcast Technologist by the Society of Broadcast Engineers, License # 22301, and a member of the Society of Broadcast Engineers since 1980;

That he held a First Class Radiotelephone License from 1975 until 1985, when it was replaced by a lifetime General Class Radiotelephone license (PG-12-20588), issued by the Federal Communications Commission in January of 1985;

That he has submitted many applications to the Federal Communications Commission for broadcast and auxiliary broadcast construction permits and licenses, and that his experience in Radio and Television broadcast engineering extends over four decades;

That he declares, under penalty of perjury, that the foregoing engineering exhibits were prepared by him or under his direction and supervision; and that the statements contained therein are true and correct to the best of his belief and knowledge.



Donald E. Mussell Jr. NCE-CBT
Consulting Engineer
December 5, 2008