



Broadcast Engineering Services of Bonny Doon, Inc.

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Donald E. Mussell Jr. NCE-CBT
Consulting Engineer

Engineering Statement In support of a Minor Change To the Construction Permit for KIPO Honolulu, Hawaii BPED-20050504ACD

Hawaii Public Radio is requesting a modification of its current construction permit for a minor change to KIPO (BPED-20050504ACD). We are cognizant that time is growing short on the construction permit, but have been proceeding with all due haste to clear the numerous local regulatory hurdles. Due to numerous restrictions imposed by the City and County of Honolulu over the past 28 months, Hawaii Public Radio has made and finalized modifications to the construction plans at the new transmitter site. These modifications have changed the physical parameters previously listed in the KIPO construction permit. Actual initial construction at the new transmitter site is now proceeding, and the engineering modifications are confirmed and approved by all local authorities, hence the need for this minor change.

Hawaii Public Radio proposes to reduce the height of the proposed tower, reduce the antenna height above ground, and increase the proposed effective radiated power with a five element, side-mounted, directional antenna system. The proposed tower will be 34 meters in height, and the radiation center above mean sea level is now proposed as 622 meters, and 514 meters above average terrain. The proposed center of the antenna array will be 28 meters above ground. The directional antenna pattern is modified to add further protection to the FCC monitoring station in nearby Waipahu.

The proposed antenna system is a Shively 6814BB-5-.925-SS-DA, a five bay, 9/10 wave spaced design. This antenna will produce a calculated worst-case RFR energy field of 65.476 microwatts per squared centimeter at a distance of 7 meters from the base of the tower support structure. This is just under 33% 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 modify the specified directional antenna to increase the protection to the Waipahu Monitoring station. The original application specified an effective radiated power of 26 kilowatts, directional. This proposal does increase the effective radiated power to 35 kilowatts, but reduces the effective radiated power to 21 kilowatts in the direction of the Waipahu monitoring station. This directional antenna system is designed to reduce the RF level in the direction of the Waipahu facility to 26.5 mV/m or less. The RF limitation at the Waipahu

monitoring facility is 27 mV/m. The resulting signal level from this proposal should satisfy the interference concerns 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.

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, cursive flourish extending to the right.

Donald E. Mussell Jr. NCE-CBT
Consulting Engineer
May 20, 2008

Broadcast Engineering services of Bonny Doon, Inc.
 Don Mussell, Consulting Engineer

Hawaii Public Radio, Inc.
 Minor Change Allocation Study

REFERENCE
 21 20 12.0 N.
 157 49 03.0 W.

CH# 207C0 - 89.3 MHz, Pwr= 35 kw, HAAT= 514.1 M, COR= 622 M
 Average Protected F(50-50)= 76.72 km

DISPLAY DATES
 DATA 04-25-08
 SEARCH 05-18-08

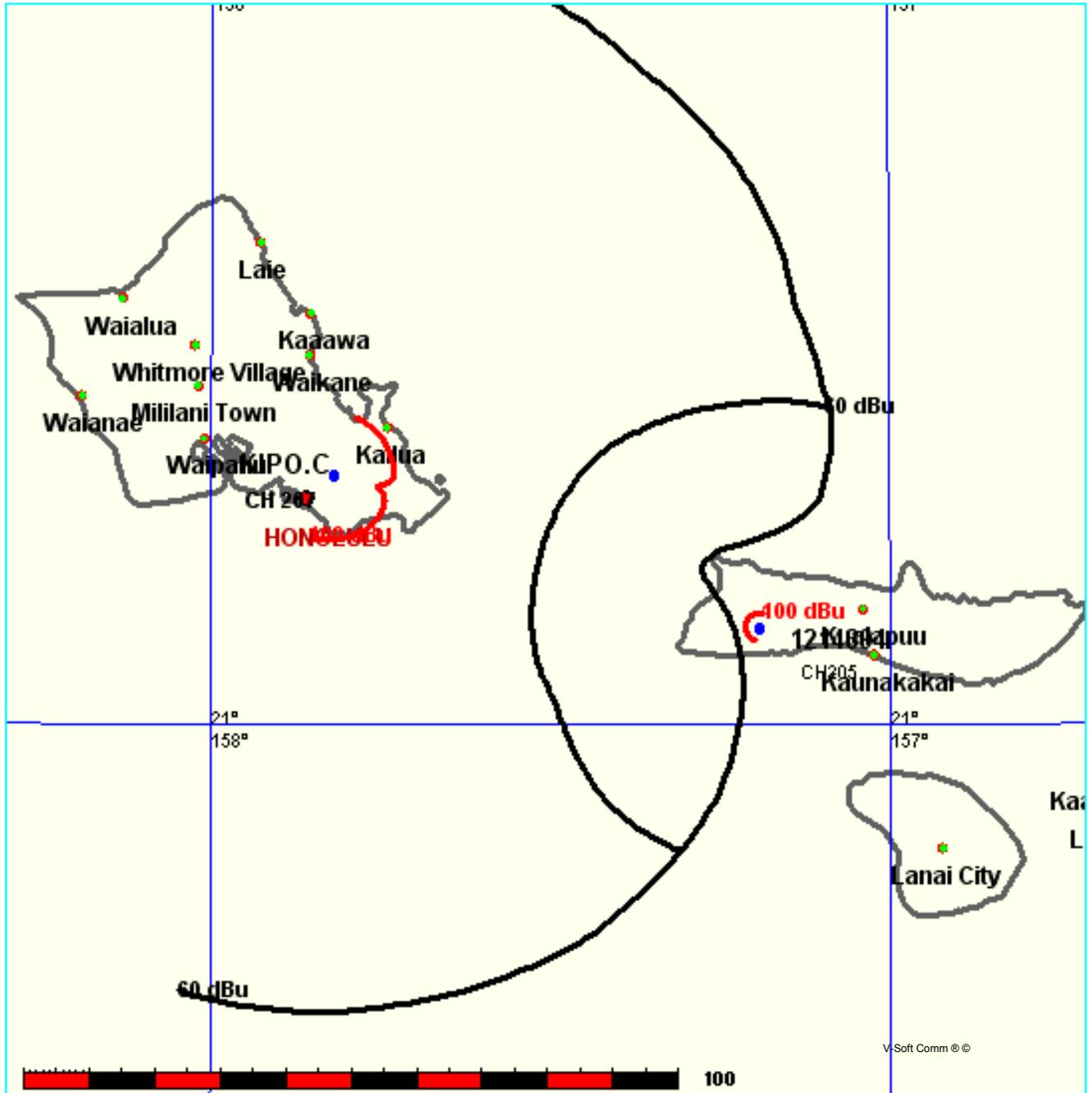
CH CITY	CALL	TYPE	ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
207C0 Honolulu	KIPO	CP	DCX HI	0.0 0.0	0.00 BPED20050504ACD	21 20 12.0 157 49 03.0	26.000 529	160.3 637	70.2 Hawaii Public Radio, Inc.	-232.76*	-235.13*
207C1 Honolulu	KIPO	LIC	DCN HI	283.6 103.5	30.43 BLED19890915KA	21 24 03.0 158 06 10.0	3.300 600	135.9 776	58.3 Hawaii Public Radio, Inc.	-179.40*	-191.18*
205C3 Kaunakakai	1214394	APP	_CX HI	109.2 289.5	68.78 BNPED20071019AOQ	21 07 55.0 157 11 31.0	1.000 360	2.1 421	35.3 Calvary Chapel of Molokai	2.75	25.67
205A Kaunakakai	1205502	APP	_CX HI	107.8 288.1	89.40 BNPED20071017AHK	21 05 22.0 156 59 52.0	3.000 -95	1.6 90	13.2 Molokai Community Service	25.74	68.62
209B1 Lana'i City	1212955	APP	_CX HI	120.7 301.0	109.59 BNPED20071018ARX	20 49 51.9 156 54 39.1	1.000 407	2.0 603	26.9 Lana'i High And Elementary	35.49	73.80
210C3 Lana'i City	1213167	APP	_VX HI	120.7 301.0	114.91 BNPED20071016AIM	20 48 23.0 156 52 01.0	0.250 841	1.1 994	28.2 Calvary Chapel of Twin Fal	41.66	77.79
207A Hana	NEW	CP	_CX HI	108.7 289.4	199.24 BNPED20071018ANO	20 45 09.0 156 00 16.0	0.100 -63	18.6 212	5.6 Hawaii Public Radio, Inc.	117.34	44.41
205C1 Kihei	1210522	APP	NVX HI	116.2 296.8	168.68 BNPED20071012AEF	20 39 36.0 156 21 50.0	69.000	16.9 1439	107.3 Linda Jerome Foundation	82.12	52.76
205C Lahaina	1213988	APP	_VX HI	116.2 296.8	168.68 BNPED20071018AKO	20 39 36.0 156 21 50.0	77.000 670	17.4 1350	107.2 New Life World wide Church	81.56	52.84
209C Kula	1203617	APP	_CX HI	116.2 296.8	168.68 BNPED20071018ANV	20 39 36.0 156 21 50.0	56.000 779	14.3 1365	103.6 Hawaii Public Radio, Inc.	84.68	56.46
209C Puunene	1205139	APP	NVX HI	116.2 296.8	168.68 BNPED20071012AIC	20 39 36.0 156 21 50.0	54.000 772	14.1 1387	103.5 Hoosier Broadcasting Corpo	84.85	56.56
208L1 Paia	KOPO-LP	LIC	___ HI	107.2 287.7	155.63 BLL20060721AAI	20 55 01.0 156 23 16.0	0.100 -79	4.4 33	3.2 Paia Youth Council Inc.	89.91	62.80
205A Kaanapali	1215644	APP	_CX HI	107.4 287.8	127.05 BNPED20071022BBS	20 59 30.0 156 39 03.0	1.100 -28	1.8 120	20.9 Shredding The Darkness	63.78	98.69
207A Hawi	1205380	APP	_VX HI	120.5 301.2	241.40 BNPED20071022AXW	20 13 19.0 155 49 30.0	0.025 133	42.9 346	12.9 North Kohala Community Res	126.41	64.10

Terrain database is NGDC 30 SEC Distance + R = 73.215 or FCC Spacings in KM, Distance + M = Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone = . with 3rd Adj Channels.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtlt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside protected contour.
 "<" = contour overlap

Hawaii Public Radio, Inc.
Contour Study - KIPO and NEW1214394

FMCommander Single Allocation Study
05-18-2008

KIPO.C	CH 207 C0	1214394	CH 205 C3	BNPED20071019AOQ
35.0 kW	622 M COR DA	1.0 kW,	421 M COR	
Prot. =	60 dBu	Prot. =	60 dBu	
Intef. =	100 dBu	Intef. =	100 dBu	



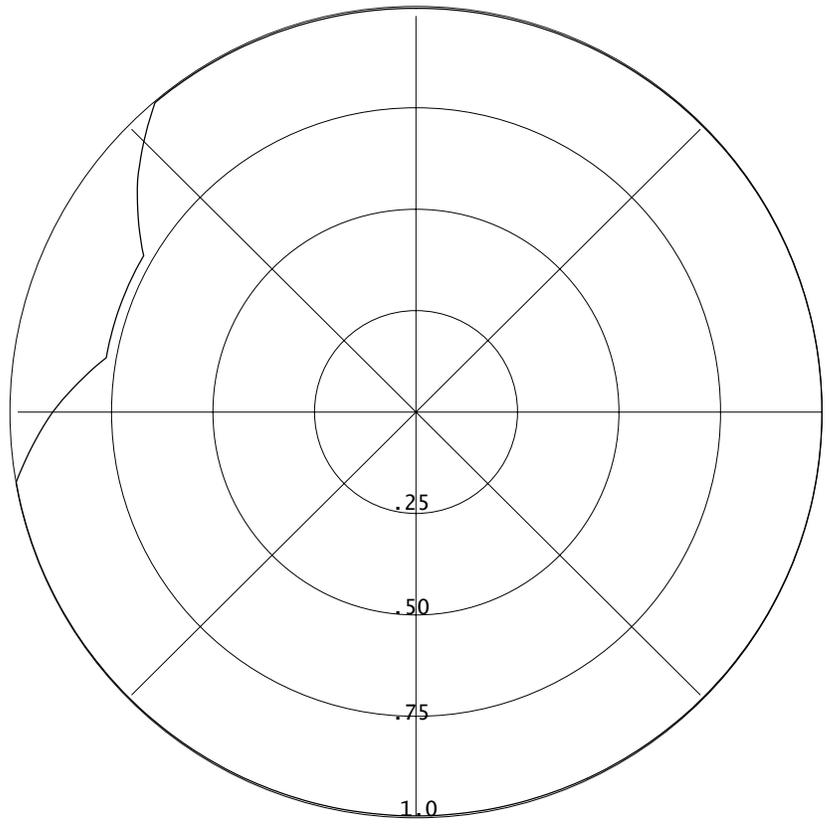
05-19-2008

RMS(V)= .977

Bearing Field in kw

Graph is Percent Relative Field Voltage

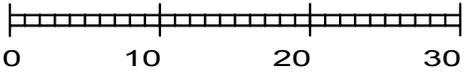
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010	=	35.000
020	=	35.000
030	=	35.000
040	=	35.000
050	=	35.000
060	=	35.000
070	=	35.000
080	=	35.000
090	=	35.000
100	=	35.000
110	=	35.000
120	=	35.000
130	=	35.000
140	=	35.000
150	=	35.000
160	=	35.000
170	=	35.000
180	=	35.000
190	=	35.000
200	=	35.000
210	=	35.000
220	=	35.000
230	=	35.000
240	=	35.000
250	=	35.000
260	=	35.000
270	=	28.036
280	=	21.000
290	=	21.000
300	=	21.000
310	=	28.036
320	=	35.000
330	=	35.000
340	=	35.000
350	=	35.000





1:546,875

Scale in km



Proposed KIPO FCC 26.5 mV/m Limit (50/10)

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

KIPO FCC Contour

Don Mussell NCE CBT - 05/08

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

Antenna: Shively 6800 Series – 5 Bays

Element Spacing: .925

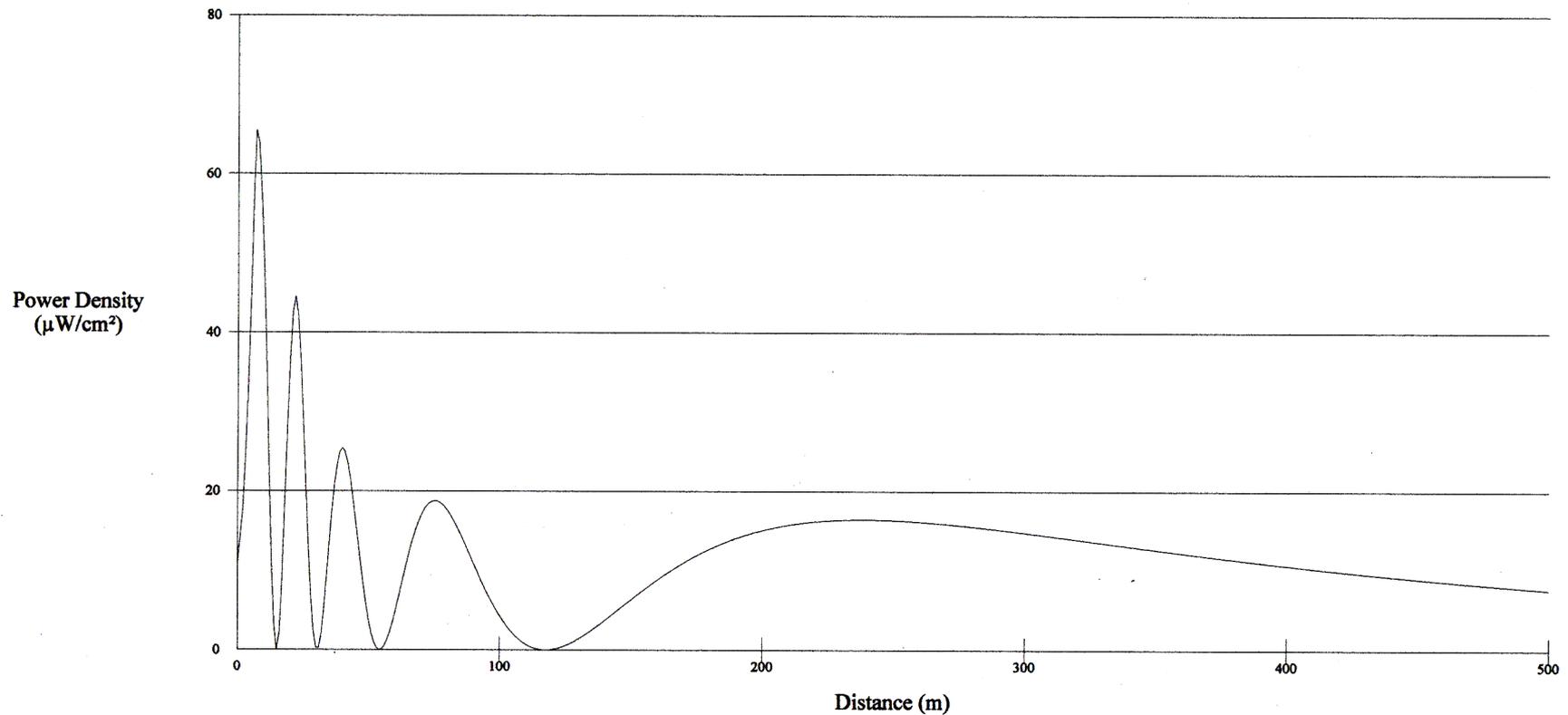
Antenna Height Above Ground: 28 Meters

Effective Radiated Power: 35 Kilowatts

Polarization: Circular

Maximum RFR: 65.476 uW/cm² @ 7 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.



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May 20, 2008