

TECHNICAL EXHIBIT  
APPLICATION FOR MODIFICATION OF DTV CONSTRUCTION PERMIT  
IN SUPPORT OF ITS POST-TRANSITION FACILITY  
STATION KGMD-DT  
HILO, HAWAII  
CH 9     2 KW (MAX-DA)     31 M

Technical Narrative

This Technical Exhibit supports an application for digital television (DTV) station KGMD-DT for its final DTV at Hilo, Hawaii. This application requests a construction permit (CP) for a digital television operation on channel 9 at Hilo with a directional antenna and an effective radiated power (ERP) of 2.0 kilowatts.

Proposed Facilities

Station KGMD-DT proposes to operate on DTV channel 9 from its licensed analog transmitter site. The antenna height above average terrain for the channel 9 DTV operation is 31 meters.

The proposed DTV transmitter site will be located at its licensed analog transmitter site. Therefore, the proposed site location is:

19° 43' 00" North Latitude  
155° 08' 13" West Longitude

A sketch of antenna and pertinent elevations are included as Figure 1.

Figure 2 is a map showing the DTV predicted coverage contour. The extent of the contour has been calculated using the normal FCC prediction method. The Hilo city limits were derived from information contained in the 2000 U.S. Census of Population and Housing.

#### Post-Transition Allocation Considerations

The proposed KGMD(DT) operation meets the FCC's interference standards to pertinent DTV Appendix B allotments using the procedures outlined in the FCC's OET-69 Bulletin and a 2 kilometer grid cell size as shown by the analysis provided in Figure 3.

#### Population Served

The herein proposed KGMD-DT facility is predicted to serve 76,535 persons, post-transition based upon the 2000 Census. KGMD-DT's associated Appendix B facility is predicted to serve 79,000 persons. Therefore, the herein proposed KGMD-DT facility would serve 97% of KGMD-DT's Appendix B population.

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Radiofrequency Electromagnetic Field Exposure

The proposed KGMD-DT facilities were evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level to workers and the general public. The radiation center for the proposed KGMD-DT antenna is located 76 meters above ground level. The maximum effective radiated power is 2.0 kilowatts. A "worst case" relative field value of 0.25 is assumed for the antenna's downward radiation. The calculated power density at a point 2 meters above ground level is  $0.0006 \text{ mW/cm}^2$ . This is less than 5 percent of the Commission's recommended limit of  $0.2 \text{ mW/cm}^2$  for channel 9 for an "uncontrolled" environment.

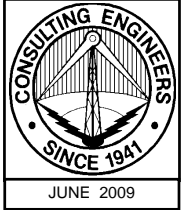
Access to the transmitting site is restricted and appropriately marked with warning signs. As this will be a multi-user site an agreement between the stations will control access. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

It is noted that this statement only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already have been provided to the FCC by the tower owner.

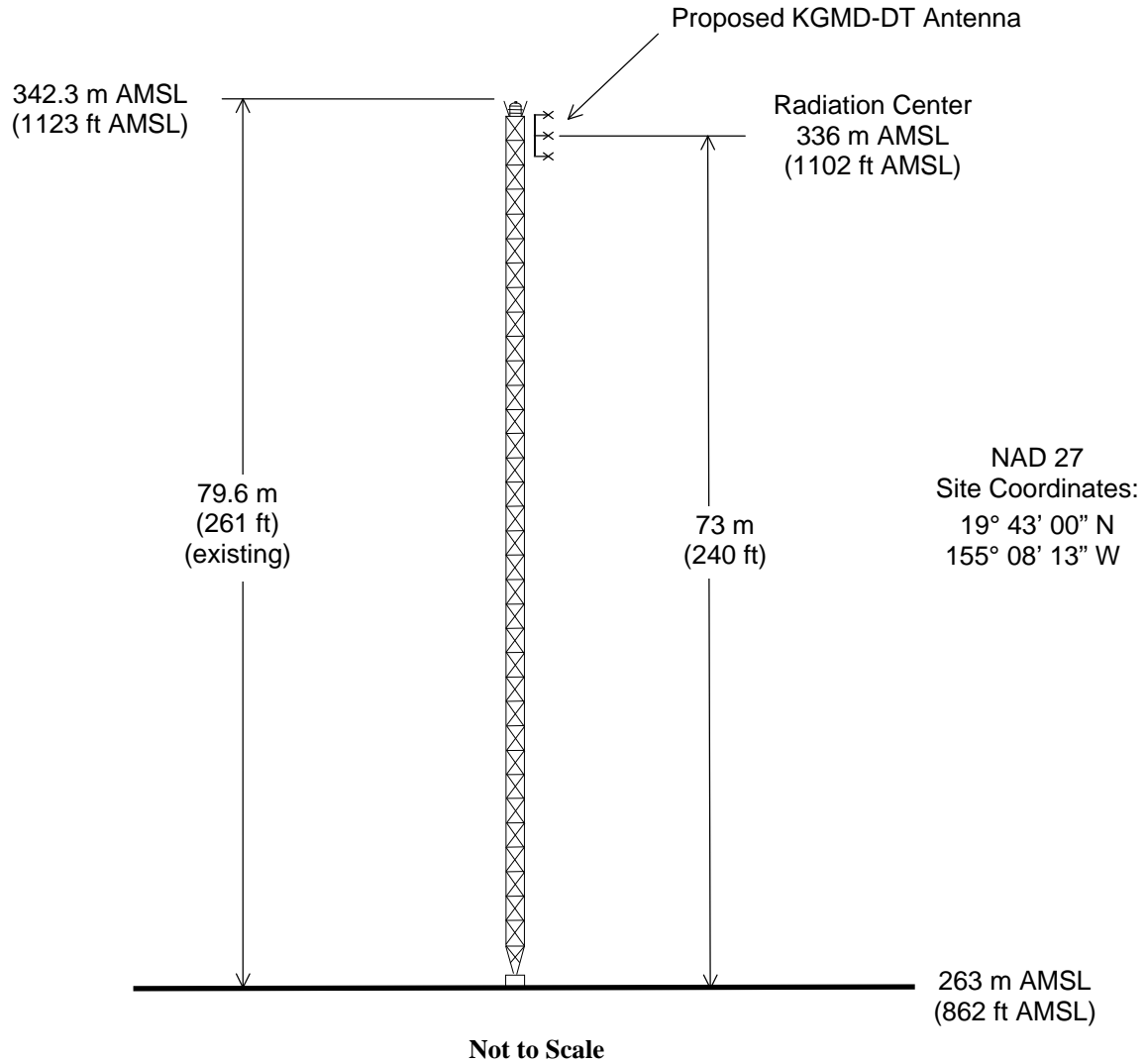
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June 2, 2009



ASRN: 1029536



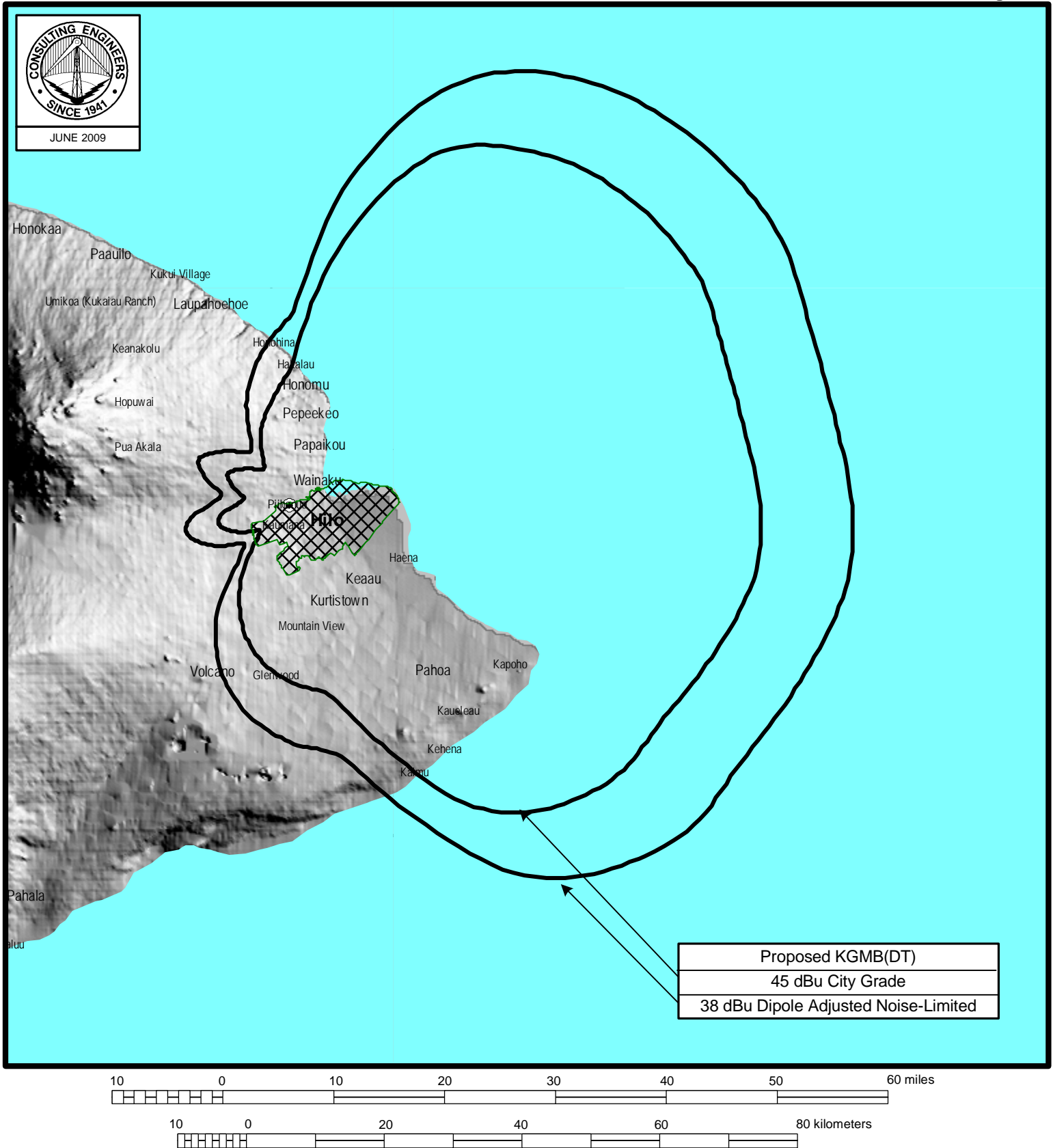
## ANTENNA AND SUPPORTING STRUCTURE

DTV STATION KGMD-DT

HILO, HAWAII

CH 9 2.0 KW (MAX-DA) 31 M

du Treil, Lundin &amp; Rackley, Inc. Sarasota, Florida



## **PREDICTED COVERAGE CONTOURS**

STATION KGMD-DT

HILO, HAWAII

CH 9 2 KW (MAX-DA) 31 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida

Figure 3

TW Census data selected 2000  
Post Transition Data Base Selected /export/home/cdb/pt\_tvdb.sff

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 06-02-2009 Time: 15:32:19

Record Selected for Analysis

KHAW USERRECORD-01 HILO HI US  
Channel 09 ERP 2. kW HAAT 123. m RCAMSL 00336 m  
Latitude 019-43-00 Longitude 0155-08-13  
Status APP Zone 2 Border  
Dir Antenna Make CDB Model 00000000085487 Beam tilt N Ref Azimuth 0.  
Last update Cutoff date Docket  
Comments  
Applicant

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	36.0 dBu F(50,90) (km)
0.0	0.228	33.0	30.7
45.0	1.866	306.8	80.1
90.0	1.813	316.5	80.5
135.0	1.892	207.7	74.3
180.0	0.855	33.0	38.4
225.0	0.003	33.0	11.7
270.0	0.005	33.0	12.7
315.0	0.005	33.0	12.9

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

SPACING VIOLATION FOUND BETWEEN STATION

KHAW 09 HILO HI USERRECORD01

and station

SHORT TO: KGMD-TV 09 HILO HI DTVPLN DTVP0193  
19 -43-00 155 -08-13  
Req. separation 273.6 Actual separation 0.0 Short 273.6 km

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Figure 3

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Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is 2.96km from AM station
HILO          HI NEW      Status:   Antenna: DA2
Proposed station is 2.96km from AM station
HILO          HI NEW      Status:   Antenna: DA2
Proposed station is 2.96km from AM station
HILO          HI NEW      Status:   Antenna: DA2
Proposed station is 2.96km from AM station
HILO          HI NEW      Status:   Antenna: DA2

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                          Start of Interference Analysis

Channel      Proposed Station
Call         City/State      ARN
09          KHAW          HILO HI      USERRECORD01

Stations Potentially Affected by Proposed Station

Chan  Call      City/State      Dist(km) Status Application Ref. No.
10    KMEB      WAILUKU HI      165.4  CP MOD BMPEDT   -20080620AMY
10    KMEB      WAILUKU HI      161.0  PLN   DTVPLN    -DTVP0251

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Analysis of Interference to Affected Station  1

Analysis of current record
Channel      Call         City/State      Application Ref. No.
10          KMEB      WAILUKU HI      BMPEDT   -20080620AMY

Stations Potentially Affecting This Station

Chan  Call      City/State      Dist(km) Status Application Ref. No.
09    KGMD-TV  HILO HI      165.4  PLN   DTVPLN    -DTVP0193
11    KHAW-TV  HILO HI      165.4  CP    BPCDT     -20080317AHO
11    KHAW-TV  HILO HI      169.9  PLN   DTVPLN    -DTVP0309
11    KHET     HONOLULU HI  198.4  CP MOD BMPEDT   -20080620AMZ
11    KHET     HONOLULU HI  198.4  PLN   DTVPLN    -DTVP0310
09    KHAW     HILO HI      165.4  APP   USERRECORD-01
Proposal causes no interference

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Analysis of Interference to Affected Station  2

Analysis of current record
Channel      Call         City/State      Application Ref. No.
10          KMEB      WAILUKU HI      DTVPLN    -DTVP0251

Stations Potentially Affecting This Station

Chan  Call      City/State      Dist(km) Status Application Ref. No.
09    KGMD-TV  HILO HI      161.0  PLN   DTVPLN    -DTVP0193
11    KHAW-TV  HILO HI      161.0  CP    BPCDT     -20080317AHO
11    KHAW-TV  HILO HI      165.2  PLN   DTVPLN    -DTVP0309
11    KHET     HONOLULU HI  206.0  CP MOD BMPEDT   -20080620AMZ
11    KHET     HONOLULU HI  206.0  PLN   DTVPLN    -DTVP0310
09    KHAW     HILO HI      161.0  APP   USERRECORD-01
Proposal causes no interference

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Figure 3

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Analysis of Interference to Affected Station   3

Analysis of current record
Channel      Call      City/State      Application Ref. No.
   09      KHAW      HILO HI      USERRECORD-01

Stations Potentially Affecting This Station

Chan  Call      City/State      Dist(km) Status  Application Ref. No.
  10  KMEB      WAILUKU HI      165.4  CP MOD  BMPEDT      -20080620AMY
  10  KMEB      WAILUKU HI      161.0  PLN    DTVPLN      -DTVP0251

Total scenarios =   1

Result key:      1
Scenario      1  Affected station      3
Before Analysis

Results for:  9A HI HILO      USERRECORD01      APP
      HAAT 123.0 m, ATV ERP      2.0 kW

      POPULATION      AREA (sq km)
within Noise Limited Contour      77304      8555.8
not affected by terrain losses      76535      7960.2
lost to NTSC IX      0      0.0
lost to additional IX by ATV      0      0.0
lost to ATV IX only      0      0.0
lost to all IX      0      0.0

Potential Interfering Stations Included in above Scenario      1

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FINISHED FINISHED FINISHED FINISHED FINISHED FINISHED
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