

**KESSLER AND GEHMAN ASSOCIATES, INC.**

W15BK HANOVER, NH

PAGE 1

ENGINEERING STATEMENT OF RYAN WILLOUR OF THE FIRM OF  
KESSLER AND GEHMAN ASSOCIATES, INC., CONSULTING ENGINEERS IN  
CONNECTION WITH A MINOR MODIFICATION APPLICATION FOR A TV  
TRANSLATOR BROADCAST STATION W15BK  
FCC FILE NUMBER BLTT-19940629JC  
PREPARED FOR THE UNIVERSITY OF NEW HAMPSHIRE  
TO SERVE HANOVER, NEW HAMPSHIRE

**NARRATIVE STATEMENT**

This firm has been employed by The University of New Hampshire (“UNH”) to prepare engineering studies and the engineering portion of FCC Form 346 for a minor modification displacement relief application and digital conversion to the above referenced licensed TV translator broadcast station W15BK.

This application proposes to make the following changes to FCC license number BLTT-19940629JC:

- Change broadcast channel pursuant to section 73.3572(a)(4)(i).
- Convert the facility from analog to digital and employ a stringent emission mask.
- Decrease the ERP.

W15BK<sup>1</sup> is licensed to broadcast from a site location which lies within a full service first adjacent channel protected contour belonging to WPTZ-DT<sup>2</sup> and thus as presently licensed it is predicted to cause them harmful interference. Aside from the channel change, the facility is proposed to convert to digital and will produce a 51dBu protected contour which

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<sup>1</sup> FCC File No. BLTT-19940629JC

<sup>2</sup> FCC file number BPCDT-19991020ACA

will overlap the 74 dBu protected contour of the licensed facility as demonstrated in Exhibit E1. The proposed facility will completely serve the community of license.

### **ENGINEERING ANALYSIS**

In carrying out the engineering studies the following attached exhibits were prepared:

- Map demonstrating the proposed and licensed protected contours (Exhibit E1)
- Exhibits demonstrating interference compliance (Exhibit E2 and E3)
- Environmental impact / RFR hazard analysis and methodology (Exhibit E4)

### **INTERFERENCE ANALYSIS**

The applicant will eliminate any objectionable interference including that caused by intermodulation to facilities in existence or authorized prior to the grant of this application. Exhibit E2 and E3 are comprehensive OET69 interference studies which demonstrate interference compliance to all broadcast facilities pursuant to Sections 74.793(e), 74.793(f), 74.793(g), 74.793(h).

As per §74.709 and 74.794(b) the proposed TV translator station complies with the protection standards to land mobile radio services and provides “out of band” protection to Radio Navigation Satellite Services in the bands L1, L2, and L5 respectively. The proposed facility does not interfere with part 73.1030 facilities.

### **ENVIRONMENTAL IMPACT / RFR HAZARD ANALYSIS**

A theoretical analysis has been made of the human exposure to Radio Frequency Radiation (“RFR”) using the calculation methodology described in *OET Bulletin 65, Edition, 97-01*.

Exhibit E4 demonstrates the following colored contours:

- Green - The Proposed Station's RFR Level as a Percentage of the Maximum Permissible General Population Exposure RFR Limit.
- Red – Maximum Permissible General Population Exposure RFR Limit.
- Blue – 5% of the Maximum Permissible General Population Exposure RFR Limit.

Pursuant to OET Bulletin 65 concerning multiple user transmitter sites, only those transmitters which produce power density levels greater than 5.0% of the maximum general population exposure RFR limit are considered significant contributors. As demonstrated in Exhibit E4, the proposed facility is below 5% of the maximum permissible general population exposure RFR limit threshold at any location 2 meters above the ground, and is not considered a significant contributor to RFR. Thus, contributions to exposure from other RF sources in the vicinity of W15BK were not taken into account. The proposed facility complies with the FCC limits for human exposure to RFR, and thus is categorically excluded from further environmental processing.

The applicant will cooperate with any other users of the tower by reducing the power to the antenna or if necessary completely cutting it off in order to protect maintenance workers on the tower.

**DECLARATION OF ENGINEER**

I, Ryan Wilhour, declare and state that I am a graduate electrical engineer with a Bachelor of Science in Electrical Engineering and my qualifications are a matter of record with the Federal Communication Commission, and that I am an engineer in the firm of Kessler and Gehman Associates, Inc., and that firm has been retained by the University of New Hampshire to prepare the herein application.

**KESSLER AND GEHMAN ASSOCIATES, INC.**

W15BK HANOVER, NH

PAGE 4

The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge. Executed on March 31, 2006.

KESSLER AND GEHMAN ASSOCIATES, INC.



Ryan Wilhour

Consulting Engineer

**Kessler and Gehman Associates, Inc.**

W15BK-LD

W15BK

F(50-90) 51.0 dBu

**W15BK-LD**  
Analog Equiv.  
Latitude: 43-42-30 N  
Longitude: 072-09-16 W  
ERP: 0.05 kW  
Channel: 50  
AMSL Height: 681.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: None

**W15BK**  
BLTT19940629JC  
Latitude: 43-42-30 N  
Longitude: 072-09-16 W  
ERP: 7.30 kW  
Channel: 15+  
AMSL Height: 681.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: None

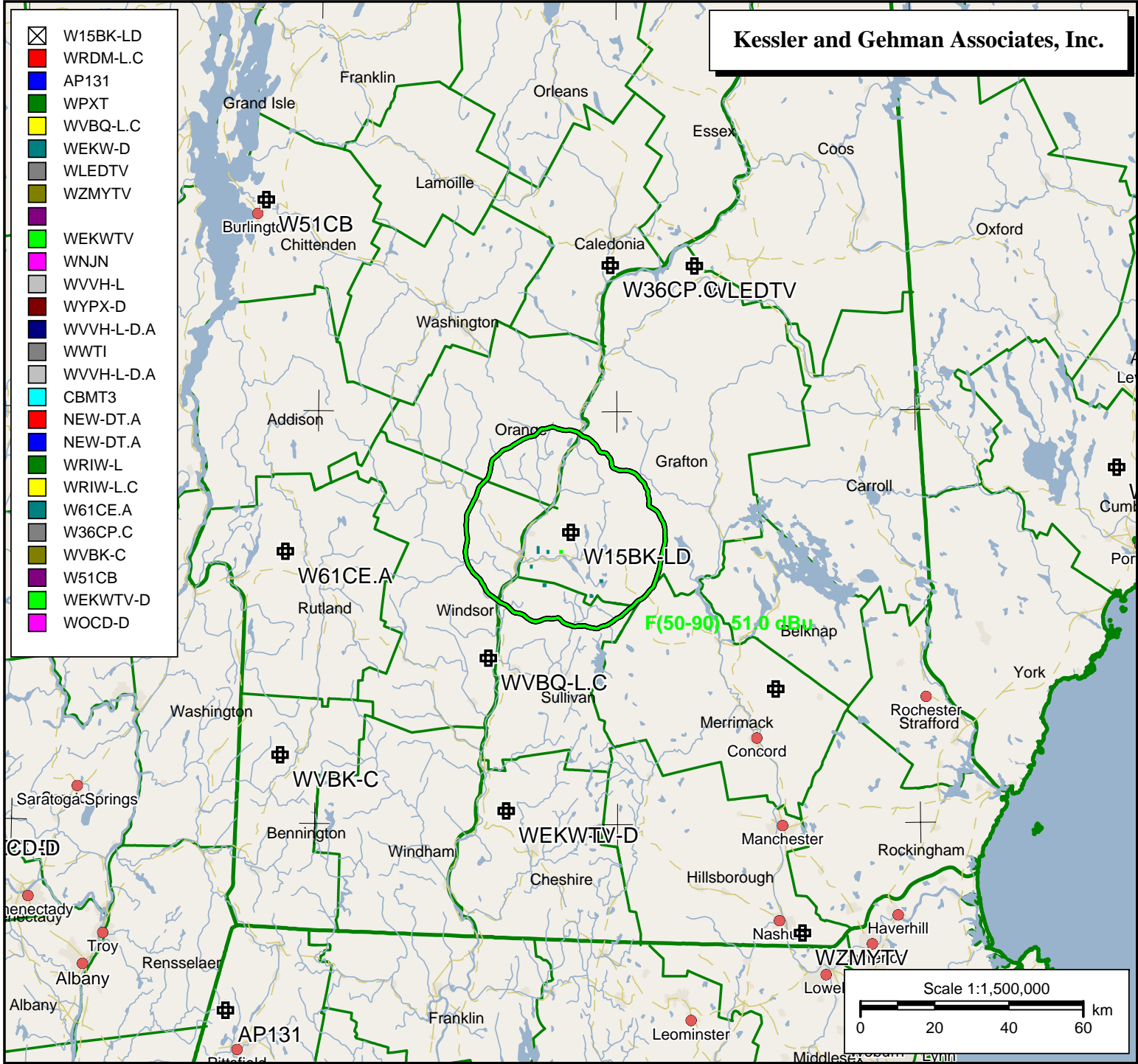
W15BK-LD

F(50-50) 74.0 dBu



Kessler and Gehman Associates, Inc.

**W15BK-LD**  
Proposed  
Latitude: 43-42-30 N  
Longitude: 072-09-16 W  
ERP: 0.05 kW  
Channel: 50  
AMSL Height: 681.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: Longley/Rice  
Climate: Cont temperate  
Conductivity: 0.0050  
Dielec Const: 15.0  
Refractivity: 301.0  
Receiver Ht AG: 10.0 m  
Receiver Gain: 0 dB  
Time Variability: 10.0%  
Sit. Variability: 50.0%  
ITM Mode: Broadcast



# Outgoing Interference Population Report

W15BK-LD (50) Hanover, NH - Analog Equiv.  
 Lat: 43-42-30 N Lng: 072-09-16 W ERP: 0.05 kW AMSL: 681.0 m  
 TV Outgoing Interference Study  
 Signal Resolution: 1.0 km  
 Consider NTSC Taboo: Yes  
 KWX error points are considered to  
 be interference free coverage.  
 # of radials computed for contours: 72  
 Contours calculated using 8 radial HAAT.  
 LR Profile Spacing Increment: 1.0 km  
 Masked interference points are being  
 counted as interference.  
 Using LPTV/translator D/U rules.  
 Pop Centroid DB: 1990 US Census

Study Date: 3-30-2006  
 TV Database Date: 03-25-06

Primary Terrain: V-Soft 3 Second US Terrain

Population Database: 2000 US Census (SF1)

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
WRDM-L.C (50-)	0.0	0	938,552	0	0	0.0
AP131 (51+)	0.0	0	1,342,836	0	0	0.0
WPXT (51Z)	0.0	0	666,185	0	0	0.0
WVBQ-L.C (47Z)	0.0	0	443	0	0	0.0
WEKW-D (49)	6.2	107	735,841	0	252	0.0
WLEDTV (49+)	0.0	0	111,133	0	0	0.0
WZMYTV (50-)	0.0	0	3,561,443	0	0	0.0
(51-)	0.0	0	1,835	0	0	0.0
WEKWTV (52+)	0.0	0	290,727	0	0	0.0
WNJN (50+)	0.0	0	16,615,665	0	0	0.0
WVNH-L (50Z)	0.0	0	8,436	0	0	0.0
WYPX-D (50)	0.0	0	1,110,948	0	0	0.0
WVNH-L-D.A (50)	0.0	0	47,230	0	0	0.0
WWTI (50+)	0.0	0	182,914	0	0	0.0
WVNH-L-D.A (50)	0.0	0	78,763	0	0	0.0
CBMT3 (50Z)	0.0	0	0	0	0	0.0
NEW-DT.A (50Z)	0.0	0	0	0	0	0.0
NEW-DT.A (50Z)	0.0	0	29,206	0	0	0.0
WRIW-L (50Z)	0.0	0	575,210	0	0	0.0
WRIW-L.C (50Z)	0.0	0	707,717	0	0	0.0
W61CE.A (35Z)	0.0	0	68,903	0	0	0.0
W36CP.C (36Z)	0.0	0	18,449	0	0	0.0
WVBK-C (49-)	0.0	0	4,245	0	0	0.0
W51CB (51-)	0.0	0	120,503	0	0	0.0
WEKWTV-D (49)	7.1	104	752,863	0	222	0.0
WOCD-D (50)	0.0	0	940,662	0	0	0.0

## KESSLER & GEHMAN

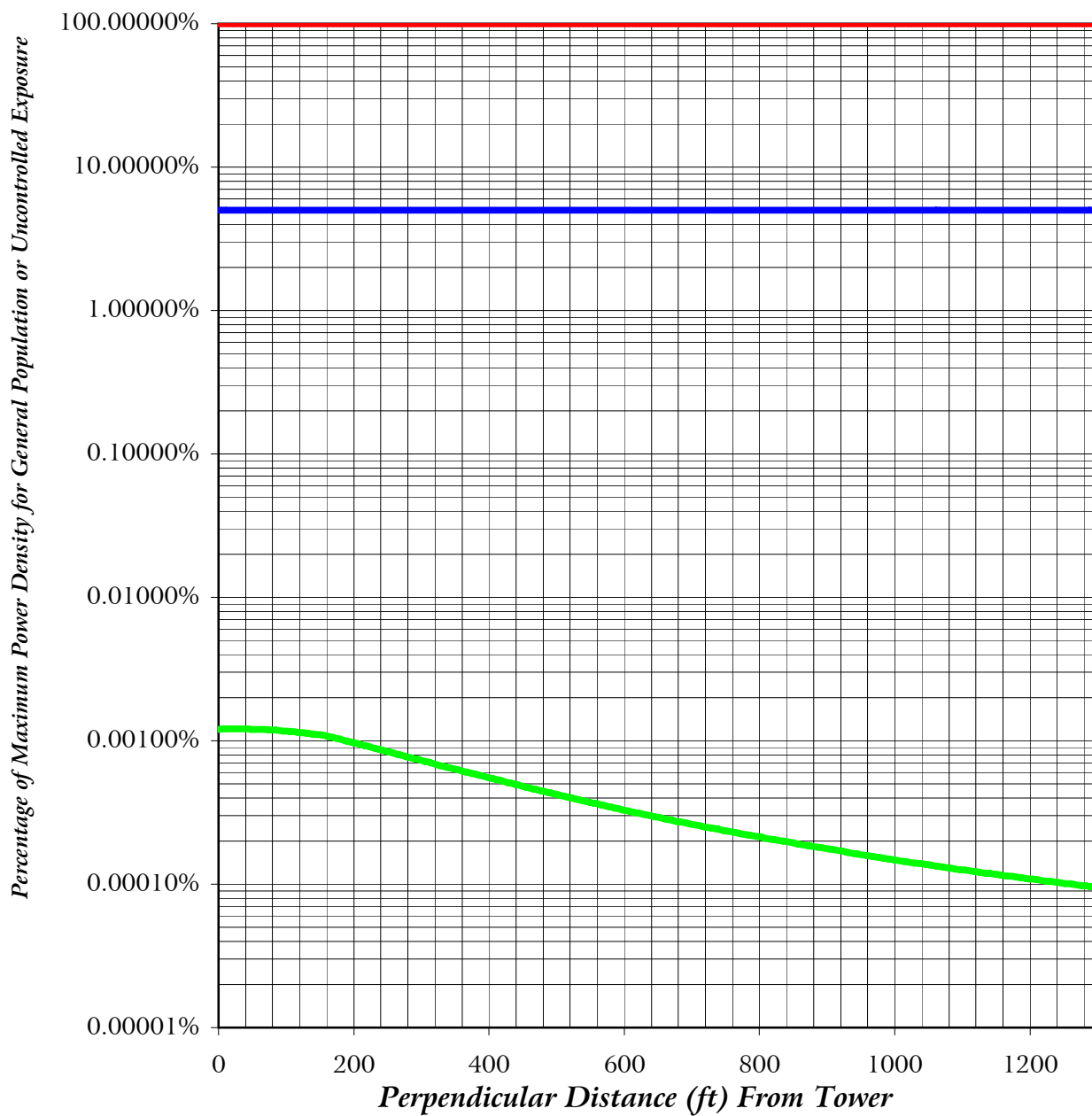
TELECOMMUNICATIONS CONSULTING ENGINEERS  
 507 N.W. 60th Street, Suite C  
 Gainesville, Florida 32607

## W15BK

HANOVER, NEW HAMPSHIRE

EXHIBIT E3

## FAR FIELD EXPOSURE TO RF EMISSIONS



- Maximum Allowable General Population or Uncontrolled Exposure
- 5 % of Maximum General Population or Uncontrolled Exposure
- Percentage of Maximum General Population or Uncontrolled Exposure

**KESSLER & GEHMAN**

TELECOMMUNICATIONS CONSULTING ENGINEERS

507 N.W. 60th Street, Suite C

Gainesville, Florida 32607

W15BK  
HANOVER, NEW HAMPSHIRE

EXHIBIT E4





METHODOLOGY AND EXPLANATION OF  
ENVIRONMENTAL IMPACT / RADIO FREQUENCY RADIATION  
HAZARD ANALYSIS

A theoretical analysis has been conducted of the human exposure to radio frequency radiation ("RFR") using the calculation methodology described in *OET Bulletin 65, Edition 97-01*. The RFR analysis is conducted pursuant to the following methodology:

Terrain<sup>1</sup> extraction is compiled from the proposed tower site to radial lengths of 0.25 miles in 0.001 mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360 degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

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<sup>1</sup> Terrain extraction is based upon a 3 arc second point spacing terrain database.