

ENGINEERING STATEMENT  
RE FCC FORM 312  
MAIN FORM - SCHEDULE B  
NEW SATELLITE UPLINK TRUCK  
ON BEHALF OF  
WATERMAN BROADCASTING CORPORATION OF FLORIDA  
WBBH-TV, FORT MYERS, FLORIDA

NOVEMBER 2012

COHEN, DIPPELL AND EVERIST, P.C.  
CONSULTING ENGINEERS  
RADIO AND TELEVISION  
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington )  
 ) ss  
District of Columbia )

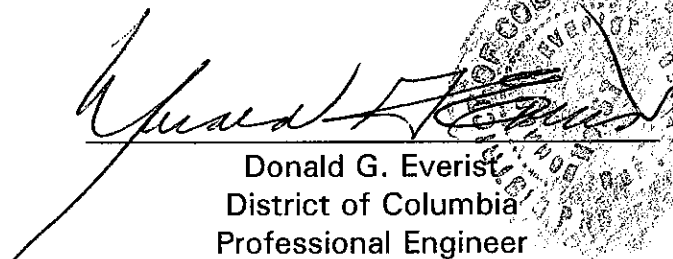
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1420 N Street, N.W., Suite One, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

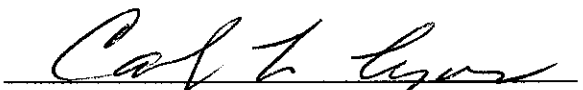
That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

  
Donald G. Everist  
District of Columbia  
Professional Engineer  
Registration No. 5714

Subscribed and sworn to before me this 20<sup>th</sup> day of November, 2012.



  
Notary Public

My Commission Expires: 2/28/2013

This engineering statement has been prepared on behalf of Waterman Broadcasting Corporation of Florida, licensee of television station WBBH and proposes to construct a transportable transmit Ku-band satellite uplink truck for its DTV operations.

The accompanying FCC Form 312 and Schedule B provide the technical information requested.

The details requested in accordance with Attachment 3 of FCC Public Notice, DA 87-732, are provided below.

1) Applicant:

Waterman Broadcasting Corp / DBA WBBH-TV  
3719 Central Avenue  
Fort Myers, Fl 33901

Contact Information

Paul Tanner - Truck Operator  
239-707-2450

2) Site Location:

500 mile radius centered on N 26° 36' 27", W 81° 51' 48" (NAD-83)

3) Type of Domestic Service:

- |                       |                               |
|-----------------------|-------------------------------|
| a) Class of Station - | Vehicle-mounted earth station |
| b) Regulatory Class - | Private                       |
| c) Type of Facility - | Transmit/Receive              |

4) Geographic Coordinates:

N/A – Transportable

- 
- 5) Frequency Bands: Transmit 14.0-14.5 GHz  
Receive 11.7-12.2 GHz
- 6) Points of Communications: ALSAT
- 7) Site Elevation Above Mean Sea Level: N/A - Transportable
- 8) Frequency Coordination Limits:
- a) Range of Satellite Arc:
- 1) Western Limit - 129°
- 2) Eastern Limit - 70°
- Based on typical operation
- b) Antenna Elevation Angle at:
- 1) Western Limit - 22.7° min
- 2) Eastern Limit - 48.6° min
- c) Earth Station Azimuth:
- 1) Western Limit - 247.4° (true)
- 2) Eastern Limit - 154.9° (true)
- d) Maximum EIRP Density Towards Horizon: -24.64 dBw/4 kHz
- 9) Transmitting Equipment:
- a) Number of high power amplifiers 1
- b) Manufacturer and Model No.: Advantech Wireless, Model  
SSPB-KS-2200G-100W
- c) Maximum Transmitter Power Output (watts): 100 watts

10) Antenna Facilities:

- a) Antenna: Conforms to Section 25.209 of FCC Rules
- b) Use of antenna: Occasional
- c) Antenna size: 1.6 meters
- d) Type of feed: Switchable Wide Band Offset Feed Horn
- e) Manufacturer and Model No.: AVL Technologies 1610K-11
- f) Antenna gain in dBi and the frequency at which it is measured:  
43.7 dBi min, measured at 11.95 GHz and 45.7 dBi @ 14.25 GHz
- g) Maximum antenna height above ground: 3.65 meters

11) Remote Control Operation: No

12) Receiving System Noise Temperature: 40° K @ 30 degrees elevation

13) Specifics of Operation

- a) Frequency Limits: 14-14.5GHz, 11.7-12.2 GHz
- b) Earth Station Antenna Polarization: ±95° for 2 port and 3 port feeds  
± 50° for 2 port wideband and 4 port feeds
- c) Emission Designator: H&V 36MOG7W digital

- |    |   |                 |
|----|---|-----------------|
| d) | Maximum EIRP for each RF carrier in the main-beam:  | 65.6 dBw        |
| e) | Maximum EIRP density for each carrier in main-beam: |                 |
|    |   | 26.06 dBw/4 kHz |
| f) | Description of each RF carrier:                     | MPEG-2/MPEG-4   |

### Environmental Assessment

Based on the off-axis radiation characteristics of the 1.6 meter truck-mounted AVL Technologies parabolic uplink antenna from the antenna manufacturer, the proposed operation complies with Section 1.1307 of the FCC Rules as it meets the provisions of the limits adopted by the Commission for Maximum Permissible Exposure (“MPE”)<sup>1</sup> at all locations surrounding the truck at two meters above ground level.

For an antenna input power of 97.7 Watts, the radio frequency power density outside of the 1.6 meter diameter project cylinder in front of the antenna will be less than 5  $\mu\text{W}/\text{cm}^2$ .

The antenna is attached atop a van as shown in Exhibit E-1 of this engineering statement. As such, the center of radiation for the antenna is located 3.65 meters (12 feet) above ground level. The radio frequency power density levels behind the antenna system, and at 2 meters above ground level around the van, will be less than 5  $\mu\text{W}/\text{cm}^2$ . The transmitting system will be placed in the non-operative mode when authorized personnel are working on the top of the van.

WBBH-TV will ensure that its portable uplink system will be operated in such a way as to contribute less than 1% of the allowable MPE limit to site areas containing non-categorically excluded stations. In order to obtain proper illumination of the satellite, the proposed uplink will be operated such that the major on-axis 1.6 meter cylinder, plus its accompanying 5° cone, will

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<sup>1</sup>See Appendix A of OET Bulletin No. 65, Edition 97-01, August 1997.

be located well away from buildings or towers. The minimum vertical operating angle to any domestic satellite will be at least 11° above the horizon.

For a 1.6 meter diameter parabolic antenna at 14.25 GHz, an antenna input power of 97.7 watts (49.9 dBm) and antenna gain of 45.7 dBi, the results of the five equations follows:

1.	<u>Extent of Near Field</u>	<u>(Equation)</u>	<u>Page</u>
	$R(nf) = D^2 / 4 \text{ Lambda}$ = 30.4 m (99.7 feet)	(12)	27
2.	<u>Maximum Near Field On-Axis Power Density</u>		
	$S(nf) = 16\eta P / \text{Pi } D^2$ = 12.64 mW/cm <sup>2</sup> , for $\eta = 0.65$	(13)	28
3.	<u>Distance to Beginning of Far Field Region</u>		
	$R(ff) = 0.6 D^2 / \text{Lambda}$ = 73 m (239.5 feet)	(16)	29
4.	<u>Transition Region</u>		
	$S=[S(nf) R (nf)] / R$ = 12.64 mW/cm <sup>2</sup> @ 30.4 m to 5.41 mW/cm <sup>2</sup> at 73.0 m	(17)	29
5.	<u>Far Field</u>		
	$S = PG / 4 \text{ Pi } R^2$ = 5.41 mW/cm <sup>2</sup> at 73.1 m		

The following table describes computed on-axis and off-axis radiofrequency radiation levels for the near field, far field, and transition zones based on the formula contained in FCC OET Bulletin No. 65 (Edition 97.01).

<u>Region</u>	<u>Distance</u> meters	<u>On-Axis</u> <u>Radiation</u> <u>Level</u> mW/cm <sup>2</sup>	<u>Hazard Assessment</u>
Far Field	169.8	1	Complies with MPE
Far Field	150	1.28	Complies with MPE
Far Field	125	1.85	Complies with MPE
Far Field	100	2.89	Complies with MPE
Far Field	75.9	5	Potential Hazard

Far Field	75	5.14	Potential Hazard
Far Field	73	5.41	Potential Hazard
Transition Field*	70	5.5	Potential Hazard
Transition Field*	60	6.42	Potential Hazard
Transition Field*	50	7.7	Potential Hazard
Transition Field*	45	8.56	Potential Hazard
Transition Field*	40	9.63	Potential Hazard
Transition Field*	35	11	Potential Hazard
Near Field*	30.4	12.64	Potential Hazard
Between Main Reflector and Subreflector*	–	N/A	Potential Hazard
Reflector Surface*		19.44	Per antenna manufacturer
Off-Axis, at least* 1.6 m from antenna beam		0.126	Complies with MPE Per antenna manufacturer

\*Assumes aperture efficiency of 65.0%

An environmental assessment (“EA”) is, therefore, categorically excluded under Section 1.1307 of the FCC Rules and Regulations since the applicant indicates:

- (a)(1) to (a)(8)      The proposed operation is truck-mounted portable unit and not subject to these subsections.
- (b)      Workers and the general public will not be subjected to RF radiation levels in excess of the FCC adopted limits for Maximum Permissible Exposure (MPE) as set forth in Table 1, Limits for MPE of Appendix A of OET Bulletin No. 65, Edition 97-01, August 1997. Authorized personnel will be alerted to areas of the truck where potential radiation levels are in excess of the MPE standard. The transmitting equipment will be placed in the non-operative mode when authorized personnel are on the truck bed. Workers will ensure that uplink operations will contribute less than 1% of the applicable RF exposure limit to the site areas of any non-categorically excluded facilities including AM and FM radio stations, TV stations, LPTV and TV translator stations, FM booster stations with ERP > 100 watts, ITFS, MDS, and MMDS stations with ERP > 200 watts, experimental stations, and other satellite earth stations. The operation will be in full accordance with FCC Public Notice, Report No. DS-1202 entitled, Guidelines for Filing Domestic Satellite Earth Station Applications, Released June 10, 1992.



Environmental Considerations

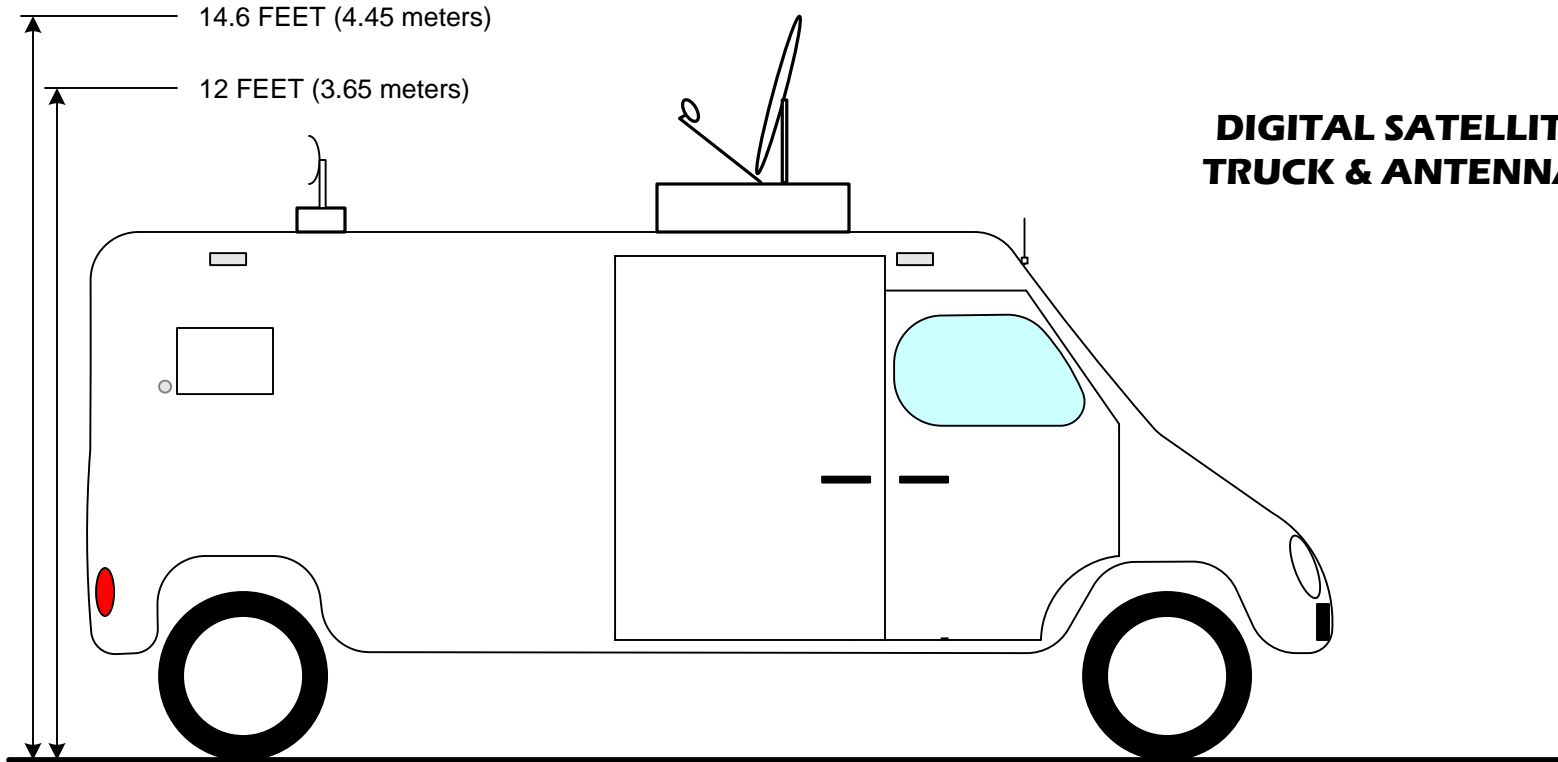
The facility will not be located in any officially designated wilderness area or wildlife preserve. The facility does not protect, shelter, or affect any threatened or endangered species nor will it result in the destruction or adverse modification of proposed or existing critical habitats. The facility will not affect districts, sites, buildings, structures or objects significant in American history, architecture, archaeology, engineering or culture.

The facility will not affect Indian religious sites and is not located in a flood plain. Construction of the facility will not involve significant change in surface features, nor be equipped with high intensity white lights or located in a residential neighborhood.

The station will not cause exposure to workers or the general public to levels of radio frequency radiation in excess of Maximum Permissible Exposure limits.

The applicant anticipates that the facility will meet or exceed MPE objectives of the OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, Edition 97-01, August 1997. Even so, during operation, all personnel will be restricted from areas where hazardous radiation will be encountered. Equipment shielding and warning signs will be employed as needed.

EXHIBIT E-1  
DIGITAL SATELLITE  
VAN AND ANTENNA PROFILE  
WBBH-TV, FT. MYERS, FLORIDA  
SEPTEMBER 2012



**DIGITAL SATELLITE UPLINK  
TRUCK & ANTENNA PROFILE**