ENGINEERING EXHIBIT

Request for Operation of Superpower Station with Increased Digital Power

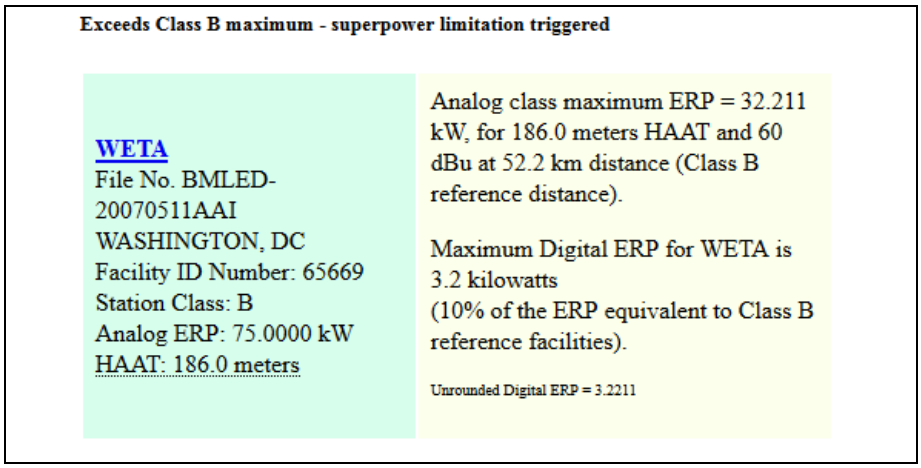
prepared for

Greater Washington Educational Telecommunications Association, Inc.
WETA(FM) Washington, DC
Facility ID 65669

Greater Washington Educational Telecommunications Association, Inc. ("GWETA"), is the licensee of WETA(FM) (Ch. 215B, Washington DC, Facility ID 65669). This statement supports *GWETA's* request to operate WETA with digital power in excess of -20 dBc (decibels below analog carrier power). WETA is licensed (BMLED-20070511AAI) to operate with an effective radiated power ("ERP") of 75 kW analog at an antenna height above average terrain ("HAAT") of 186 meters.

WETA is a so-called "superpower" station in that its licensed analog facility exceeds the maximum Class B parameters of 50 kW at 150 meters. Pursuant to the Media Bureau's January 27, 2010 Order in MM Docket 99-325 (DA 10-208), *GWETA* seeks to operate WETA with a nominal digital power level of -13.7 dBc utilizing separate analog and digital transmitters (high-level combined system). At -13.7 dBc, the proposed nominal digital ERP is 3.2 kW. This matches the maximum digital ERP allowable for WETA of 3.2 kW as determined pursuant to paragraph 15 of DA 10-208 using the calculator[1] on the FCC's website (results reproduced as follows).

[1] "FM Super-Powered Maximum Digital ERP Calculator" at https://www.fcc.gov/media/radio/digital-radio-superpowered-fm-stations .



Exceeds Class B maximum - superpower limitation triggered

WETA
File No. BMLED-20070511AAI
WASHINGTON, DC
Facility ID Number: 65669
Station Class: B
Analog ERP: 75.0000 kW
HAAT: 186.0 meters

Analog class maximum ERP = 32.211 kW, for 186.0 meters HAAT and 60 dBu at 52.2 km distance (Class B reference distance).

Maximum Digital ERP for WETA is 3.2 kilowatts
(10% of the ERP equivalent to Class B reference facilities).

Unrounded Digital ERP = 3.2211

The analog WETA operation will continue to employ an ERP of 75 kW as licensed, and the digital nominal ERP will be 3.2 kW (13.7 dB reduced from the 75 kW ERP analog operation and 10 dB reduced from a conforming Class B facility ERP of 32 kW). See the attached Table 1 for a summary of the proposed technical parameters.

WETA will operate in the MP3 service mode (extended hybrid) with symmetric digital sidebands, thus the total digital sideband ERP is 0.8 dB higher than the nominal digital ERP, per Table 1 of NRSC-G202.[2] The resulting proposed total digital ERP is 12.9 dBc at 3.8 kW. The total digital sideband ERP will be adjusted pursuant to NRSC-G202 should any other service modes be utilized in the future.

GWETA certifies that, with the exception of the digital power level requested, the proposed digital operation will comply with the technical specifications set forth in Appendix B of the First Report and Order in MM Docket 99-325 (FCC 02-286, October 11, 2002). *GWETA* also certifies that WETA's analog ERP will remain as authorized after commencement of operation with the digital power proposed herein.

[2] National Radio Systems Committee NRSC-G202, *FM IBOC Total Digital Sideband Power for Various Configurations,* September, 2010.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed operation was evaluated for human exposure to radiofrequency ("RF") energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). The licensed analog facility is considered plus the additional contribution to RF exposure by the proposed digital operation. The WETA facility employs a Shively "Lindenblad" model 6017-6-.9SS antenna consisting of six elements at 0.83 wavelength spacing. Figure 1 supplies the manufacturer's elevation pattern data for this antenna.

The antenna is centered 139 meters above ground level. The analog ERP is 75 kW and the proposed digital total ERP is 3.8 kW, circularly polarized. Based on OET-65 equation (10), and considering the antenna relative field in downward elevations, the graph in Figure 2 depicts calculated power density levels attributable to WETA at locations near the transmitter site at a height of two meters above ground level. The maximum calculated RF electromagnetic field attributable to the proposed WETA operation will be 1.3 percent of the "uncontrolled / general population" maximum permissible exposure ("MPE") limit at any location two meters above ground level. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

List of Attachments

Table 1	Engineering Data - Increased Digital Power
Figure 1	Antenna Elevation Pattern
Figure 2	Calculated RF Electromagnetic Field

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Table 1

Engineering Data - Increased Digital Power

prepared for

Greater Washington Educational Telecommunications Association, Inc.

WETA(FM) Washington, DC

License File Number:	BMLED-20070511AAI
Licensed Analog ERP:	75 kW (H&V)
Type of Digital Operation:	High-Level Combined, separate analog & digital transmitters
Proposed Nominal Digital ERP:	3.2 kW 13.7 dB reduced from WETA licensed 75 kW analog 10.0 dB reduced from a conforming Class B facility
Proposed Total Digital ERP: (per NRSC-G202)	3.8 kW 12.9 dB reduced from WETA licensed 75 kW analog
Transmitter Power Output:	33 kW analog transmitter 2.02 kW (total) digital transmitter
Technical Contact:	Mike Byrnes (703) 998-2765

Detailed Summary of Digital TPO Calculation

Digital Total Effective Radiated Power:			**3.8** **5.80**	**kW** **dBk**
Antenna System Shively 6017-6-.9SS 6 sections 0.83 wave spaced		**Gain:**	**4.88**	**dBd**
Line and Other Losses				
Transmission Line Andrew HJ11-50, length 137.8 m		Loss:	0.50	dB
Balanced Combiner	(Shively)	Loss:	0.10	dB
Branch Combiner	(Shively)	Loss:	0.18	dB
Analog/Digital Diplexer	(ERI 788)	Loss:	1.35	dB
	Total Losses:		**2.13**	**dB**
Required Digital Transmitter Power Output:			**3.05** **2.02**	**dBk** **kW**

Antenna Mfg.:	Shively Labs			Date: 6/15/2006
Antenna Type:	6017-6-.9SS			
Station:	WETA	Beam Tilt	0	
Frequency:	90.9	Gain (Max)	3.079	4.884 dB
Channel #:	215	Gain (Horizon)	3.079	4.884 dB
Figure:	24351			

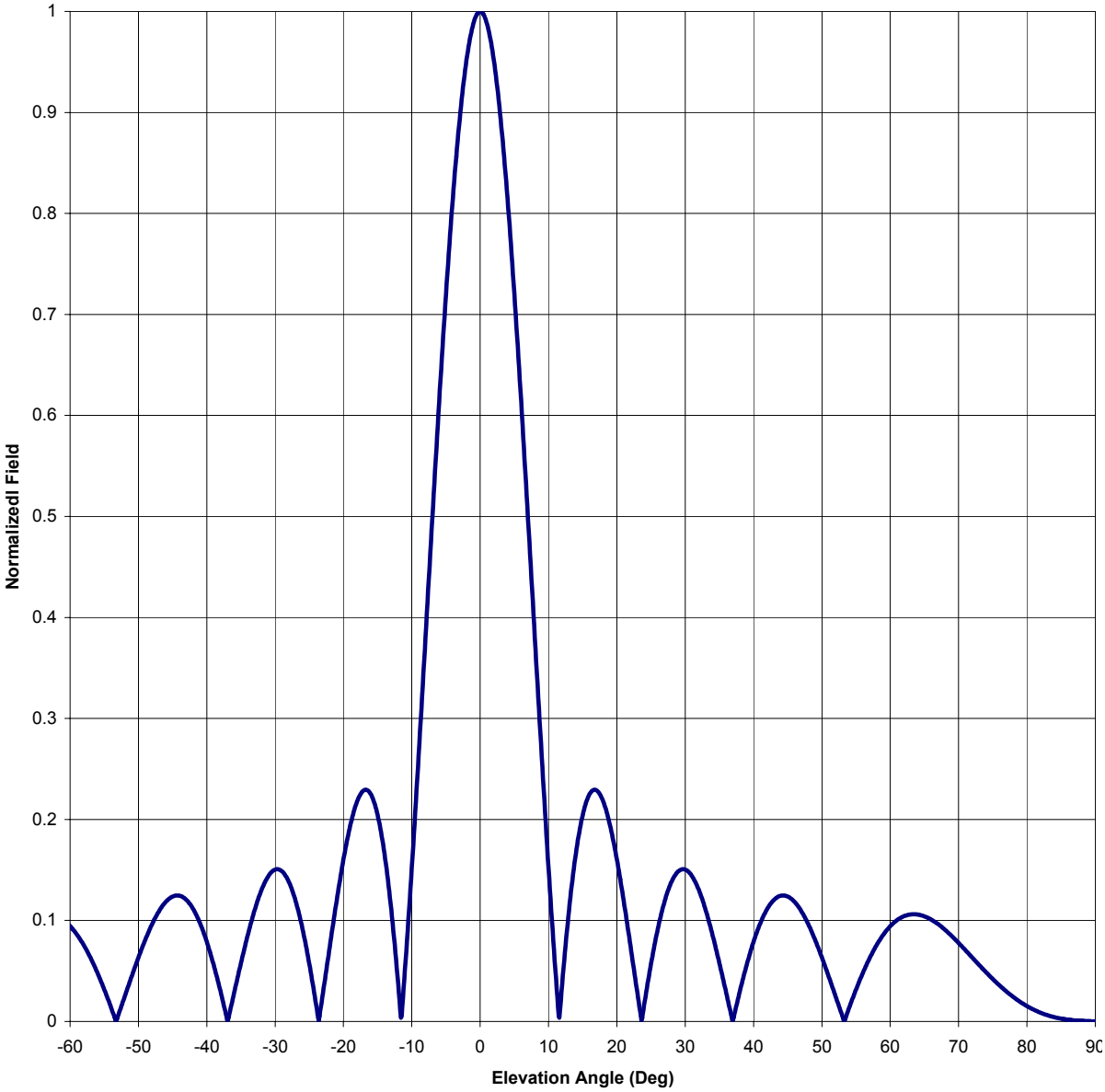

Figure 1
Antenna Elevation Pattern
WETA(FM) Washington, DC
Facility ID 65669
Ch. 215B 90.9 MHz 75 kW 186 m

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October, 2016

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Figure 2
Calculated RF Electromagnetic Field
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Facility ID 65669
Ch. 215B 90.9 MHz 75 kW 186 m

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October, 2016

Graph depicts calculated percentage of General Population/Uncontrolled Maximum Exposure Limit attributable to WETA(FM) for locations 2 meters above ground level.
Calculations conducted pursuant to FCC OET Bulletin Number 65.
Analog ERP = 75 kW H&V Digital ERP = 3.8 kW H&V (total sideband)