

# **ENGINEERING EXHIBIT**

## **Application for Modification of Digital Television Station Construction Permit** prepared for **Multimedia Holdings Corporation**

KNAZ-TV Flagstaff, Arizona  
Facility ID 24749  
Ch. 22 283 kW 465 m

### **Table of Contents**

FCC Form 301, Section III-D - DTV Engineering

#### **Exhibit 45**

Statement A	Proposed Antenna System, Allocation Considerations
Figure 1	Antenna Horizontal Plane Radiation Pattern
Figure 2, 2A	Vertical Plane (Elevation) Radiation Pattern
Figure 3	Proposed Coverage Contours

#### **Exhibit 47**

Statement B	Environmental Considerations
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*This material supplies a "hard copy" of the engineering portions of this application as entered October 15, 2009 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

**SECTION III-D - DTV Engineering**

**Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.**

**Pre-Transition Certification Checklist:** An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to change pre-transition facilities. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

**Post-Transition Expedited Processing.** An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.

1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:	
(a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.	<input checked="" type="radio"/> Yes <input type="radio"/> No
(b) It will operate a pre-transition facility from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input type="radio"/> No
(c) It will operate a pre-transition facility with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input type="radio"/> No
(d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
(e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. Applicant must <b>submit the Exhibit</b> called for in Item 13.	<input checked="" type="radio"/> Yes <input type="radio"/> No
3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community.	<input checked="" type="radio"/> Yes <input type="radio"/> No
4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable.	<input checked="" type="radio"/> Yes <input type="radio"/> No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	<input checked="" type="radio"/> Yes <input type="radio"/> No

**SECTION III-D - DTV Engineering****TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1.	Channel Number:
	DTV ?? Analog TV if any

2.	Zone: <input type="radio"/> I <input checked="" type="radio"/> II <input type="radio"/> III																																																																																																																								
3.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 34 Minutes 58 Seconds 6 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 111 Minutes 30 Seconds 28 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																																								
4.	Antenna Structure Registration Number: 1007647 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA																																																																																																																								
5.	Antenna Location Site Elevation Above Mean Sea Level: 2579 meters																																																																																																																								
6.	Overall Tower Height Above Ground Level: 87.7 meters																																																																																																																								
7.	Height of Radiation Center Above Ground Level: 52 meters																																																																																																																								
8.	Height of Radiation Center Above Average Terrain : 465 meters																																																																																																																								
9.	Maximum Effective Radiated Power (average power): 283 kW																																																																																																																								
10.	Antenna Specifications:  a. Manufacturer DIE Model TFU-24DSB-B(C)  b. Electrical Beam Tilt: 1.25 degrees <input type="checkbox"/> Not Applicable  c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). [Exhibit 43]  d. Polarization: <input checked="" type="radio"/> Horizontal <input type="radio"/> Circular <input type="radio"/> Elliptical  e. Directional Antenna Relative Field Values: <input type="checkbox"/> Not applicable (Nondirectional)  [For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.] [Relative Field Values]  <div style="text-align: center;"><b>10e. Directional Antenna Relative Field Values</b>  [Fill in this subform for a composite directional (not off-the-shelf) antenna, only.]</div> <table border="1"><tr><td colspan="12">e. Directional Antenna Relative Field Values:</td></tr><tr><td colspan="12">Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation</td></tr><tr><td>Degrees</td><td>Value</td><td>Degrees</td><td>Value</td><td>Degrees</td><td>Value</td><td>Degrees</td><td>Value</td><td>Degrees</td><td>Value</td><td>Degrees</td><td>Value</td></tr><tr><td>0</td><td>0.569</td><td>10</td><td>0.571</td><td>20</td><td>0.586</td><td>30</td><td>0.607</td><td>40</td><td>0.627</td><td>50</td><td>0.64</td></tr><tr><td>60</td><td>0.645</td><td>70</td><td>0.641</td><td>80</td><td>0.631</td><td>90</td><td>0.613</td><td>100</td><td>0.592</td><td>110</td><td>0.579</td></tr><tr><td>120</td><td>0.57</td><td>130</td><td>0.579</td><td>140</td><td>0.61</td><td>150</td><td>0.65</td><td>160</td><td>0.699</td><td>170</td><td>0.759</td></tr><tr><td>180</td><td>0.817</td><td>190</td><td>0.869</td><td>200</td><td>0.914</td><td>210</td><td>0.951</td><td>220</td><td>0.975</td><td>230</td><td>0.993</td></tr><tr><td>240</td><td>1</td><td>250</td><td>0.996</td><td>260</td><td>0.981</td><td>270</td><td>0.955</td><td>280</td><td>0.92</td><td>290</td><td>0.876</td></tr><tr><td>300</td><td>0.826</td><td>310</td><td>0.771</td><td>320</td><td>0.714</td><td>330</td><td>0.661</td><td>340</td><td>0.615</td><td>350</td><td>0.583</td></tr><tr><td>Additional</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	e. Directional Antenna Relative Field Values:												Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation												Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	0	0.569	10	0.571	20	0.586	30	0.607	40	0.627	50	0.64	60	0.645	70	0.641	80	0.631	90	0.613	100	0.592	110	0.579	120	0.57	130	0.579	140	0.61	150	0.65	160	0.699	170	0.759	180	0.817	190	0.869	200	0.914	210	0.951	220	0.975	230	0.993	240	1	250	0.996	260	0.981	270	0.955	280	0.92	290	0.876	300	0.826	310	0.771	320	0.714	330	0.661	340	0.615	350	0.583	Additional											
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	Azimuths	
	<a href="#">Relative Field Polar Plot</a>	
	If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. <b>Exhibit required.</b>	[Exhibit 44]
11.	<p>Does the proposed facility satisfy the pre-transition interference protection provisions of 47 C.F.R. Section 73.623(a) (Applicable only if <b>Certification Checklist</b> Items 1(a), (b), or (c) are answered "No.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616?</p> <p>If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.</p>	<input checked="" type="radio"/> Yes <input type="radio"/> No [Exhibit 45]
12.	If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if <b>Certification Checklist</b> item 3 is answered "No.")	[Exhibit 46]
13.	<p><b>Environmental Protection Act. Submit in an Exhibit</b> the following:</p> <p>If <b>Certification Checklist</b> Item 2 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.</p> <p>By checking "Yes" to <b>Certification Checklist</b> Item 2, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p> <p>If <b>Certification Checklist</b> Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.</p>	[Exhibit 47]
<b>PREPARERS CERTIFICATION ON SECTION III MUST BE COMPLETED AND SIGNED.</b>		

### SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name ROBERT J. CLINTON	Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature	Date 10/15/2009	
Mailing Address CAVELL, MERTZ & ASSOCIATES, INC. 7839 ASHTON AVENUE		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -2883
Telephone Number (include area code) 7033929090	E-Mail Address (if available) BCLINTON@CAVELLMERTZ.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S.

CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

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## Exhibits

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### Exhibit 44

**Description:** EXHIBIT 44 - DIRECTIONAL ANTENNA

PLEASE SEE EXHIBIT 45 - STATEMENT A FOR DIRECTIONAL ANTENNA DETAILS.

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### Attachment 44

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### Exhibit 45

**Description:** EXHIBIT 45 - STATEMENT A

EXHIBIT 45 - STATEMENT A - NATURE OF THE PROPOSAL AND ALLOCATION CONSIDERATIONS

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### Attachment 45

Description
<a href="#">EXHIBIT 45 - STATEMENT A</a>

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### Exhibit 47

**Description:** EXHIBIT 47 - STATEMENT B

EXHIBIT 47 - STATEMENT B - ENVIRONMENTAL CONSIDERATIONS

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### Attachment 47

Description
<a href="#">EXHIBIT 47 - STATEMENT B</a>

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Exhibit 47 - Statement B  
**ENVIRONMENTAL CONSIDERATIONS**  
prepared for  
**Multimedia Holdings Corporation**  
KNAZ-TV Flagstaff, Arizona  
Facility ID 24749  
Ch. 22 283 kW 465 m

The instant proposal is not believed to have a significant environmental impact as defined under Section 1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required.

### **Nature of The Proposal**

*Multimedia Holdings Corporation* ("Multimedia") is the permittee of KNAZ-TV, Channel 2, Flagstaff, Arizona. Under the instant application, *Multimedia* seeks to modify the KNAZ-TV CP to specify operation on Channel 22 and an ERP of 283 kW with a directional antenna in accordance with the Report and Order<sup>1</sup>.

The antenna specified is the same antenna previously authorized in the pre-transition KNAZ-TV license (file number BLCDT-20070119AAN) and the current STA<sup>2</sup>. The site area is atop Mormon Mountain, the site of numerous other licensed and authorized television and FM broadcast facilities. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the Commission's Rules. No increase in overall structure height is proposed, thus no change in structure lighting or marking is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's Rules.

### **Human Exposure to Radiofrequency Electromagnetic Field**

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with

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<sup>1</sup> See Report and Order, "Amendment of Section 73.622(i), Final DTV Table of Allotments, Television Broadcast Stations. (Flagstaff, Arizona)", MB Docket no. 08-110, RM-11453, DA 09-2058, released September 16, 2009.

<sup>2</sup> KNAZ-TV is currently operating on its allotted pre-transition DTV Channel 22 pursuant to Special Temporary Authority ("STA") (file number BDSTA-20080818ACS).

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the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

According to the applicant, access the summit of Mormon Mountain is restricted by a locked gate approximately one mile from the site. Additionally, the KNAZ-TV tower is located within a fenced compound, and warning signs are posted. Only authorized and trained personnel are permitted past the locked gate (one mile distant). Further, the remote location and steep terrain serves to discourage and restrict casual access to the mountaintop site area. However, the applicant advises that there are hiking trails nearby and hikers are known to pass near the site vicinity. The “controlled /occupational” limit specified in §1.1310 for Channel 22 (center frequency 521 MHz) is 1,737  $\mu\text{W}/\text{cm}^2$ ; the corresponding “uncontrolled / general population” limit is 347.3  $\mu\text{W}/\text{cm}^2$ .

*Multimedia* already participates in an RF exposure safety program, along with other broadcasters and FCC licensees that utilize the Mormon Mountain site antenna farm. Since the proposed operation is exactly the same as the pre-transition digital operation for KNAZ-TV and the currently operating STA facility, and considering that RF exposure measurements have been performed which include the Channel 22 operation, the measurement report<sup>3</sup> was reviewed for the instant proposal. *Multimedia* commissioned RF exposure measurements to evaluate the level of RF exposure resulting from the proposed facility and others in the immediate vicinity. As necessary, based on these results and considering all emitters, appropriate exposure abatement procedures were established and followed.

Fencing and signs were installed around the transmitter compound, limiting access of the general population to areas that exceed the general population MPE limit. The areas inside the transmitter compound are considered “controlled / occupational” area, and are therefore subject to the higher limits established in §1.1310 of the Rules. Using the permitted averaging technique, all areas within the fenced compound were determined to be below the controlled / occupational MPE

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<sup>3</sup> The measurement report is quite extensive, and therefore was not included with this statement. A copy of the report will be made available upon request.

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**ENVIRONMENTAL CONSIDERATIONS**  
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limit. However, because some areas indicated momentary peak values which exceeded the controlled / occupational limit, those “hot spots” were identified with warning signs so that workers inside the compound will be able to limit their exposure accordingly.

Considering the post-construction measurement and an appropriate abatement program, members of the general public will not be exposed to RF levels in excess of the Commission’s guidelines. Site access will continue to be restricted and controlled through the use of locked gates, and RF exposure warning signs will continue to be posted.

With respect to worker safety, authorized personnel will continue to be trained and/or supervised as necessary for access to any “controlled” areas. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower or in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. On-tower RF exposure measurements may also be undertaken to establish the bounds of safe working areas. *Multimedia* will coordinate exposure procedures with all pertinent stations.

## **Conclusion**

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules; hence preparation of an Environmental Assessment is not required.