

ENGINEERING STATEMENT RE  
APPLICATION FOR LICENSE TO  
AUTHORIZE REPLACEMENT ANTENNA PURSUANT TO  
SECTION 73.1690(C)(1) OF THE FCC RULES  
KWGS(FM), TULSA, OKLAHOMA  
CHANNEL 208C1 50 KW (H&V) ERP 325 METERS HAAT

OCTOBER 2010

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         )

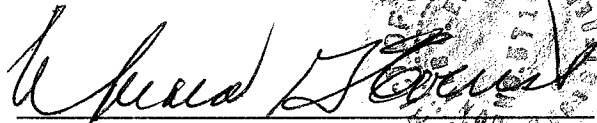
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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

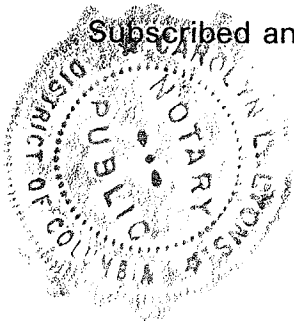
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

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

Subscribed and sworn to before me this 25<sup>th</sup> day of October, 2010.

  
\_\_\_\_\_  
Notary Public

My Commission Expires: 2/28/2013



Introduction

This engineering report has been prepared on behalf of The University of Tulsa, licensee of FM broadcast station KWGS(FM), licensed to Tulsa, Oklahoma. This engineering statement is in support of its application for license to operate with a replacement eight-bay antenna in accordance with FCC Rule, Section 73.1690( c)(1).

Transmitter Site  
(Unchanged)

The geographic coordinates (NAD-27) of the existing multi-use site are as follows:

North Latitude: 36° 01' 14.6"

West Longitude: 95° 40' 32.1"

Tower Registration No. 1011355

The tower location address is described as 101<sup>st</sup> and 273<sup>rd</sup> East Avenue, Oneta, Oklahoma.

Exhibit E-1 is the tower sketch showing the replacement antenna location.

Antenna and Transmission Line Data

Antenna Make & Model	Dielectric, Type DCRM8CRPT1 eight interleaved bays, one wavelength spaced antenna. See Exhibit E-2 for the antenna manufacturer elevation data
Transmission Line:	2 runs of transmission line -- Myat Horizontal run – 3-1/8" 13.31 meters (43.7 feet) Microwave Techniques Vertical run – 3-1/8" rigid 338.6 meters (1111 feet)

Power Data

Transmitter output power	16.25 kW	12.11 dB
Combiner Efficiency/Loss	95.5%	0.1990 dB
Transmission Line Efficiency/Loss		
Horizontal 3-1/8" rigid copper line	99.1%	0.0384 dB
Vertical 3-1/8" rigid copper line	79.3%	1.01 dB
Input to Broadband Dielectric Antenna	12.19	10.86 dB
Power Gain (H&V)	4.10	6.13 dB
Max. Effective Radiated Power (H&V)	50 kW	16.99 dB

Multi-Use  
Tower Elevation Data

Elevation of the site above mean sea level	216.4 meters (710 feet)
Elevation of the top of supporting structure above ground including appurtenances	560.5 meters (1839 feet)
Elevation of the top of supporting structure above mean sea level	776.9 meters (2549 feet)
Height of antenna radiation center meters above ground	302.6 meters <sup>1</sup> (992 feet)
Height of antenna radiation center above mean sea level	519 meters (1702.7 feet)

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<sup>1</sup>Actual location 298.6 meters (979.7 feet) and is within 4 meters provision of FCC Rule, Section 73.1690(c)(1)

Height of antenna radiation center                      325 meters  
above average terrain

NOTE: Rounding difference result from data conversion

Radiofrequency Assessment

The radiofrequency field level (“RFF”) contribution of the KWGS(FM) stations will be calculated.

**Station KWGS(FM)**

Channel 208C1              Freq: = 89.5 MHz Range

$S = \frac{33.4 (F^2) ERP}{R^2}$	ERP = 100,000 Watts (H & V)
	R = 296.2 meters (antenna height above ground -2 meters)
	F = 0.2 (per manufacturer 60 to 90 degrees)

$S \leq 1.52 \mu\text{W}/\text{cm}^2$

Therefore KWGS(FM) contributes less than  $1.52 \mu\text{W}/\text{cm}^2$  at 2 meters above ground.

The limit for an uncontrolled environment (general population) for this frequency is  $200 \mu\text{W}/\text{cm}^2$ .

**KWGS(FM) contributes less than one percent RFF level for an uncontrolled environment (general population) two meters above the ground.**

KWGS(FM) certifies that it shall reduce power or cease operation as necessary to protect persons from radiofrequency fields in excess of the FCC guidelines.

ABOVE MEAN SEA LEVEL

ABOVE GROUND

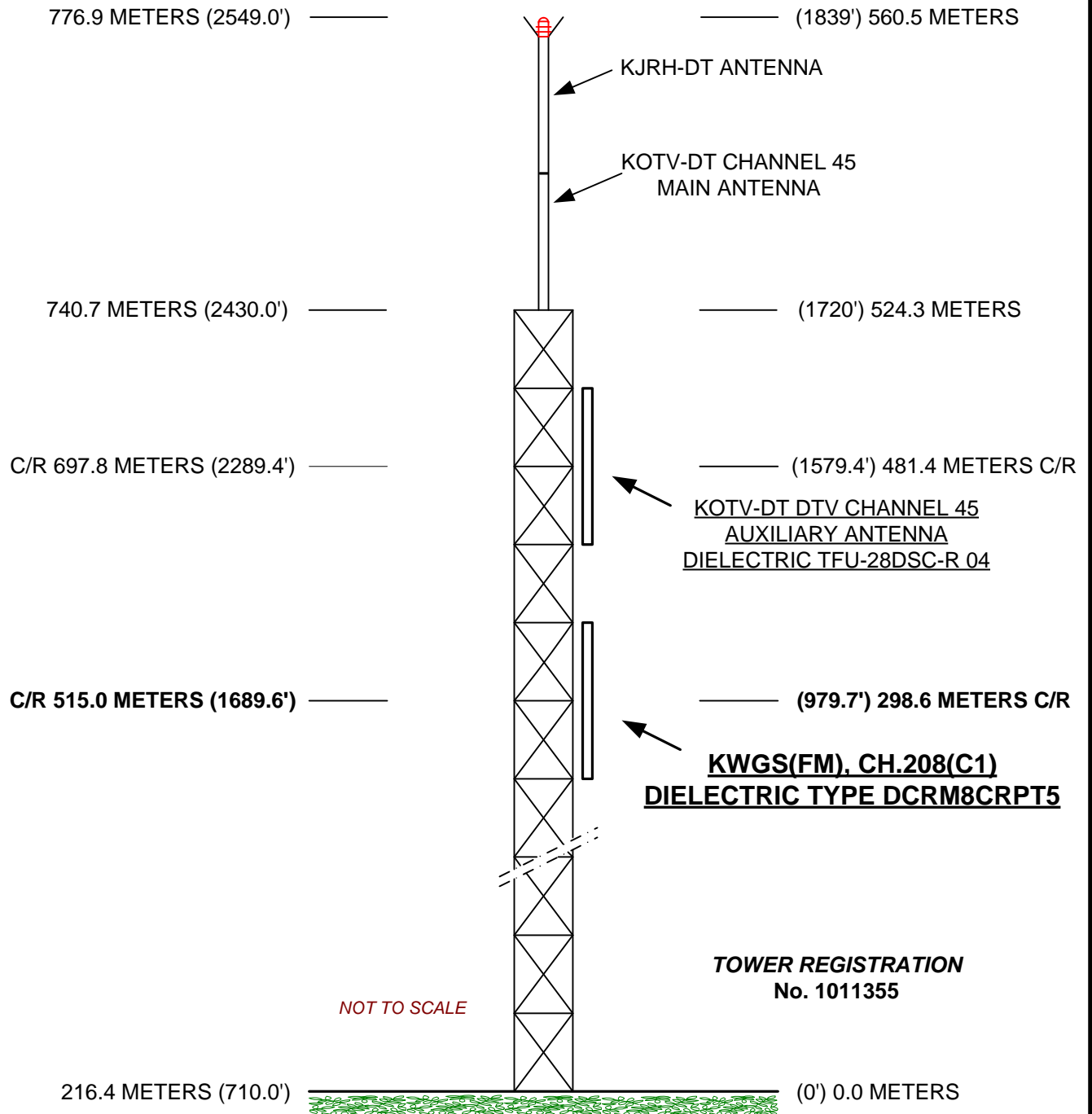


EXHIBIT E-1  
TOWER SKETCH  
FOR THE PROPOSED OPERATION OF  
**KWGS(FM), TULSA, OKLAHOMA**  
OCTOBER 2010

Cohen, Dippell and Everist, P.C.

**EXHIBIT E-2**

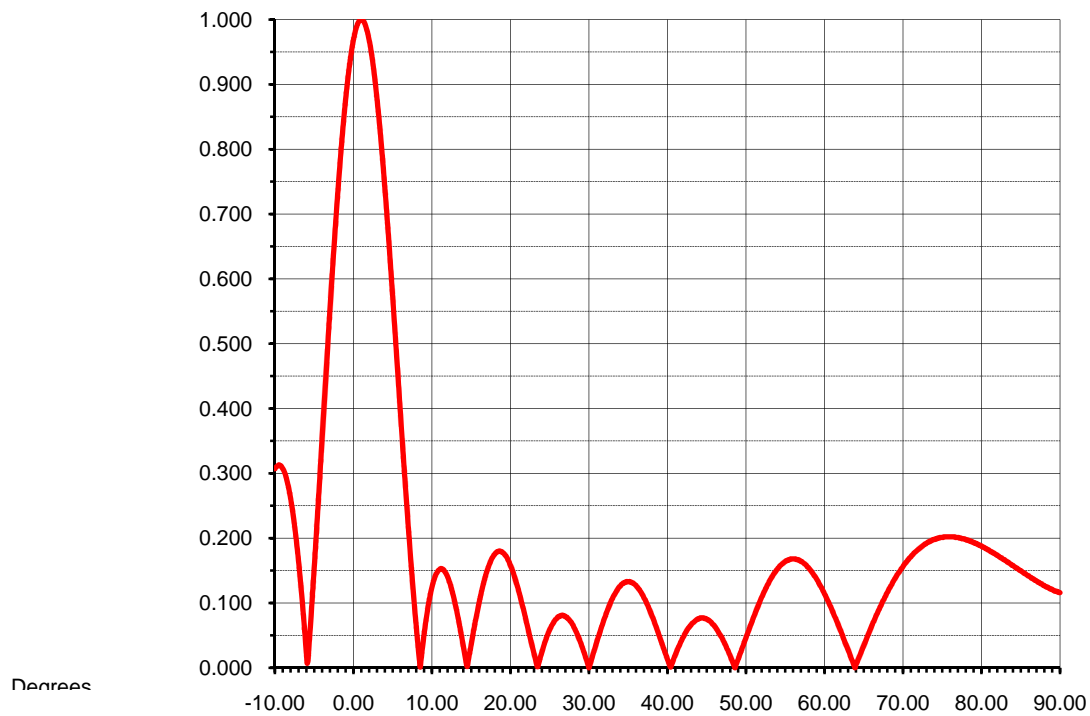
**ANTENNA  
MANUFACTURER DATA**



Proposal Number	<b>3044669</b>
Date	<b>1-Sep-10</b>
Call Letters	<b>KWGS</b>
Location	<b>Tulsa, OK</b>
Customer	<b>SCMS</b>
Antenna Type	<b>DCRM8CRPT1</b>
Drawing #	

## ELEVATION PATTERN

RMS Gain at Main Lobe	<b>4.10</b>	<b>( 6.13 dB )</b>	Beam Tilt	<b>1.00 deg</b>
Per Polarization			Frequency	<b>89.50 MHz</b>
Calculated / Measured	<b>Calculated</b>			







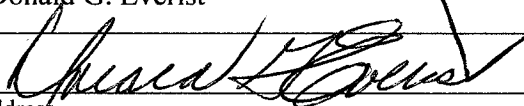
Proposal Number **3044669**  
 Date **1-Sep-10**  
 Call Letters **KWGS**  
 Location **Tulsa, OK**  
 Customer **SCMS**  
 Antenna Type **DCRM8CRPT1**  
 Frequency **89.50 MHz**

## TABULATION OF ELEVATION PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.307	10.5	0.144	31.0	0.040	51.5	0.094	72.0	0.183
-9.5	0.313	11.0	0.152	31.5	0.059	52.0	0.109	72.5	0.188
-9.0	0.307	11.5	0.151	32.0	0.077	52.5	0.122	73.0	0.192
-8.5	0.290	12.0	0.140	32.5	0.093	53.0	0.134	73.5	0.195
-8.0	0.261	12.5	0.121	33.0	0.107	53.5	0.144	74.0	0.198
-7.5	0.219	13.0	0.096	33.5	0.118	54.0	0.152	74.5	0.200
-7.0	0.165	13.5	0.066	34.0	0.126	54.5	0.159	75.0	0.201
-6.5	0.099	14.0	0.033	34.5	0.131	55.0	0.164	75.5	0.202
-6.0	0.023	14.5	0.002	35.0	0.133	55.5	0.167	76.0	0.202
-5.5	0.062	15.0	0.036	35.5	0.131	56.0	0.168	76.5	0.202
-5.0	0.154	15.5	0.070	36.0	0.127	56.5	0.167	77.0	0.201
-4.5	0.252	16.0	0.100	36.5	0.119	57.0	0.164	77.5	0.199
-4.0	0.352	16.5	0.127	37.0	0.108	57.5	0.160	78.0	0.198
-3.5	0.452	17.0	0.149	37.5	0.096	58.0	0.154	78.5	0.196
-3.0	0.551	17.5	0.165	38.0	0.081	58.5	0.146	79.0	0.193
-2.5	0.645	18.0	0.175	38.5	0.065	59.0	0.137	79.5	0.191
-2.0	0.732	18.5	0.180	39.0	0.048	59.5	0.126	80.0	0.188
-1.5	0.810	19.0	0.178	39.5	0.030	60.0	0.114	80.5	0.184
-1.0	0.876	19.5	0.171	40.0	0.013	60.5	0.102	81.0	0.181
-0.5	0.930	20.0	0.158	40.5	0.004	61.0	0.088	81.5	0.177
0.0	0.969	20.5	0.141	41.0	0.020	61.5	0.074	82.0	0.174
0.5	0.992	21.0	0.121	41.5	0.034	62.0	0.059	82.5	0.170
1.0	1.000	21.5	0.097	42.0	0.047	62.5	0.043	83.0	0.166
1.5	0.992	22.0	0.072	42.5	0.058	63.0	0.028	83.5	0.162
2.0	0.968	22.5	0.047	43.0	0.066	63.5	0.012	84.0	0.158
2.5	0.930	23.0	0.022	43.5	0.072	64.0	0.004	84.5	0.154
3.0	0.878	23.5	0.002	44.0	0.076	64.5	0.019	85.0	0.150
3.5	0.814	24.0	0.024	44.5	0.077	65.0	0.034	85.5	0.146
4.0	0.740	24.5	0.043	45.0	0.075	65.5	0.049	86.0	0.142
4.5	0.659	25.0	0.059	45.5	0.071	66.0	0.064	86.5	0.138
5.0	0.572	25.5	0.070	46.0	0.064	66.5	0.078	87.0	0.134
5.5	0.481	26.0	0.078	46.5	0.055	67.0	0.091	87.5	0.130
6.0	0.390	26.5	0.081	47.0	0.045	67.5	0.104	88.0	0.127
6.5	0.301	27.0	0.079	47.5	0.032	68.0	0.116	88.5	0.124
7.0	0.215	27.5	0.074	48.0	0.018	68.5	0.127	89.0	0.121
7.5	0.136	28.0	0.065	48.5	0.003	69.0	0.138	89.5	0.118
8.0	0.064	28.5	0.052	49.0	0.013	69.5	0.147	90.0	0.116
8.5	0.001	29.0	0.037	49.5	0.030	70.0	0.156		
9.0	0.052	29.5	0.019	50.0	0.046	70.5	0.164		
9.5	0.094	30.0	0.000	50.5	0.063	71.0	0.171		
10.0	0.124	30.5	0.020	51.0	0.079	71.5	0.178		

**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 Donald G. Everist		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date October 25, 2010	
Mailing Address Cohen, Dippell and Everist, P.C., 1420 N Street, NW, Suite One			
City Washington	State or Country (if foreign address) DC		ZIP Code 20005
Telephone Number (include area code) (202) 898-0111		E-Mail Address (if available) cde@attglobal.net	

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).

### Section III - 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: \_\_\_\_\_
2. a. Effective Radiated Power: \_\_\_\_\_ kW (H) \_\_\_\_\_ kW (V)  
b. Maximum Effective Radiated Power: ☐ Not applicable \_\_\_\_\_ kW (H) \_\_\_\_\_ kW (V)  
(Beam-Tilt Antenna ONLY)
3. Transmitter Power Output: \_\_\_\_\_ kW
4. Antenna Data

Manufacturer	Model	Number of Sections	Spacing Between Sections (wavelength)
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**NOTE:** In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

#### CERTIFICATION

All applicants must complete this section.

5. **Main Studio Location.** The main studio location complies with 47 C.F.R. Section 73.1125. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
6. **Transmitter Power Output.** The operating transmitter power output produces the authorized effective radiated power. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.

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#### APPLICATIONS FILED TO COVER A CONSTRUCTION PERMIT.

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**NOTE:** In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

7. **Constructed Facility.** The facility was constructed as authorized in the underlying construction permit or complies with 47 C.F.R. Section 73.1690. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
8. **Special Operating Conditions.** The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.

Exhibit No.

An exhibit may be required. Review the underlying construction permit.

**PREPARER'S CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**

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**APPLICATION FILED PURSUANT TO 47 C.F.R. SECTIONS 73.1675(c) or 73.1690(c).**

Only applicants filing this application pursuant to 47 C.F.R. Sections 73.1675(c) or 73.1690(c) must complete the following

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9. **Changing transmitter power output.** Is this application being filed to authorize a change in transmitter power output caused by the replacement of omnidirectional antenna with another omnidirectional antenna or an alteration of the transmission line system? See 47 C.F.R. Sections 73.1690(c)(1) and (c)(10). ☐ Yes ☐ No
10. **Increasing effective radiated power.** Is this application being filed to authorize an increase in ERP for a station operating in the nonreserved band (Channels 221-300)? See 47 C.F.R. Sections 73.1690(c)(4), (c)(5) and (c)(7). ☐ Yes ☐ No

If "Yes" to the above, the Applicant certifies the following:

- a. **Spacing Requirements.** The increase in ERP was authorized pursuant to MM Docket 88-375 (Class A stations) OR the facility complies with the spacing requirements of 47 C.F.R. Section 73.207. ☐ Yes ☐ No 

See Explanation in Exhibit No.
- b. **International Coordination.** The transmitter site is greater than 320 km from the Canadian or Mexican borders OR coordination for the station's international class is complete. ☐ Yes ☐ No 

See Explanation in Exhibit No.
- c. **Interference.** 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. ☐ Yes ☐ No 

See Explanation in Exhibit No.

**Exhibit required.** If the proposed facility must be notified to the entities set forth in 47 C.F.R. Section 73.1030, the applicant must provide a copy of the written approval for the ERP increase from the affected entity.

Exhibit No.

- d. **Multiple Ownership Showing.** The increase in ERP will not require the consideration of a multiple ownership showing pursuant to 47 C.F.R. Section 73.3555. ☐ Yes ☐ No 

See Explanation in Exhibit No.
- e. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an **Exhibit is required.** ☐ Yes ☐ No 

See Explanation in Exhibit No.

By checking "Yes" above, 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.

11. **Increasing vertically polarized effective radiated power.** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(4) to authorize an increase in the vertically polarized ERP for a station operating in the reserved band (Channels 200-220)? ☐ Yes ☐ No

If "Yes" to the above, the Applicant certifies the following:

- a. **TV Channel 6 Protection Requirements.** The facility complies with the spacing requirements of 47 C.F.R. Section 73.525(a)(1). ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
- b. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an **Exhibit is required**. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.

By checking "Yes" above, 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.

12. **Decreasing effective radiated power (non-reserved channel).** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(8) to authorize a decrease in the ERP for a station operating in the nonreserved band (Channels 221-300)? ☐ Yes ☐ No

If "Yes" to the above, the Applicant certifies the following:

- a. **Community Coverage.** The proposed facility complies with the community coverage requirements of 47 C.F.R. Section 73.315 where the distance to the 3.16 mV/m contour is predicted using the standard prediction method in 47 C.F.R. Section 73.313. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
- b. **Auxiliary Facilities.** The authorized or pending auxiliary facilities for this station comply with 47 C.F.R. Section 73.1675(a). ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
- c. **Multiple Ownership Showing.** The decrease in ERP is not requested or required to establish compliance with 47 C.F.R. Section 73.3555. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.

13. **Decreasing effective radiated power (reserved channel).** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(8) to authorize a decrease in the ERP for a station operating in the reserved band (Channels 200-220)? ☐ Yes ☐ No

If "Yes" to the above, the Applicant certifies the following:

- a. **Community Coverage.** The proposed facility complies with the community coverage requirements of 47 C.F.R. Section 73.1690(c)(8)(i) where the distance to the 1 mV/m contour is predicted using the standard prediction method in 47 C.F.R. Section 73.313. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
- b. **Auxiliary Facilities.** The authorized or pending auxiliary facilities for this station comply with 47 C.F.R. Section 73.1675(a). ☐ Yes ☐ No 

See Explanation  
in Exhibit No.

14. **Replacing a directional antenna.** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(2) to replace a directional antenna with another directional antenna? ☐ Yes ☐ No

If "Yes" to the above, the applicant certifies the following:

- a. **Measurement of Directional Antenna.** The composite measured pattern and measurement procedures comply with 47 C.F.R. Section 73.1690(c)(2). **Exhibit required.** ☐ Yes ☐ No 

See Explanation in Exhibit No.

Exhibit No.

- b. **Installation of Directional Antenna.** The installation of the directional antenna complies with 47 C.F.R. Section 73.1690(c)(2). **Exhibit required.** ☐ Yes ☐ No 

See Explanation in Exhibit No.

Exhibit No.

15. **Deleting contour protection status.** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(6) to delete contour protection status (47 C.F.R. Section 73.215) for a station operating in the nonreserved band (Channels 221-300)? ☐ Yes ☐ No

- a. If "Yes" to the above, the applicant certifies that the facility complies with the spacing requirements of 47 C.F.R. Section 73.207. ☐ Yes ☐ No 

See Explanation in Exhibit No.

16. **Use a formerly licensed main facility as an auxiliary facility.** Is this application being filed pursuant to 47 C.F.R. Section 73.1675(c)(1) to request authorization to use a formerly licensed main facility as an auxiliary facility and/or change the ERP of the proposed auxiliary facility? ☐ Yes ☐ No

If "Yes" to the above, the applicant certifies the following:

- a. **Auxiliary antenna service area.** The proposed auxiliary facility complies with 47 C.F.R. Section 73.1675(a). ☐ Yes ☐ No 

See Explanation in Exhibit No.

- b. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an **Exhibit is required.** ☐ Yes ☐ No 

See Explanation in Exhibit No.

By checking "Yes" above, 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.

17. **Change the license status.** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(9) to change the license status from commercial to noncommercial or from noncommercial to commercial? ☐ Yes ☐ No

Exhibit No.

If "Yes" to the above, submit an exhibit providing full particulars. For applications changing license status from commercial to noncommercial, include Section II of FCC Form 340 as an exhibit to this application.

**PREPARER'S CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**