

## **ENGINEERING EXHIBIT**

### **Application for Digital Television Station Construction Permit** prepared for

**Gray Television Licensee, LLC**  
KKCO(DT) Grand Junction, CO  
Facility ID 24766  
Ch. 12 66.7 kW 452 m

*Gray Television Licensee, LLC* (“Gray”) is the licensee of television station KKCO(DT) digital Channel 12, Facility ID 24766, Grand Junction, CO. KKCO is licensed to operate at 5.3 kW effective radiated power (“ERP”) with a directional antenna at a height above average terrain (“HAAT”) of 452 meters. *Gray* herein seeks a Construction Permit to increase the ERP to 66.7 kW with the licensed antenna system.

The transmitting antenna (SWR model SWED4EC/12) is located on an antenna supporting structure having FCC Antenna Structure Registration number 1235966. No change to the overall structure height and no tower work are required to carry out this proposal. The directional antenna’s azimuthal pattern is depicted in Figure 1. Figures 2, 2A, and 2B provide the theoretical elevation pattern.

A map is supplied as Figure 3 which depicts the standard predicted coverage contours. This map includes the location of Grand Junction, KKCO’s principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1), as the entire principal community will be encompassed by the 43 dB $\mu$  contour.

The proposed KKCO facility’s predicted service population provides a 134.9 percent match of the MB Docket 87-268 Seventh Report and Order Appendix B facility, as detailed in the following table.

**Digital Television Population Summary**

Population Summary (2000 Census) OET Bulletin 69 method	Appendix B	Proposed
Within Noise Limited Contour	167,285	218,662
Not affected by terrain losses	138,919	188,283
Lost to all interference	440	1,483
Net DTV Service	<b>138,479</b>	<b>186,800</b>
Match of Appendix B	---	<b>134.89%</b>

The proposed facility expands the KKCO service contour beyond that established by Appendix B values. A detailed interference study per OET Bulletin 69<sup>1</sup> shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby digital television and Class A television stations. The interference study output report is provided as Table 1.

The nearest FCC monitoring station is 843 km distant at Douglas, AZ. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with “quiet” zones specified in §73.1030(a) and (b). There are no AM stations within 3.2 kilometers of the site, based on information contained within the Commission’s database. The site location is beyond the border areas requiring international coordination.

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

The transmitting location is on Black Ridge, a remote communications site overlooking Grand Junction, CO. There are various other transmitting facilities at this site area. The site is owned by the federal government and managed by the Bureau of Land Management. The applicant considers access to the site area to be controlled by the existence of warning signs and a locked gate which serve to restrict access to authorized persons that are aware of the potential for exposure. Further, there are no known hiking trails in the vicinity, and steep terrain serves to discourage and

---

<sup>1</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 (“OET-69”). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A standard cell size of 2 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission’s implementation of OET-69 show excellent correlation.

restrict casual access. Only authorized and trained personnel are permitted to approach the site area. *Gray* participates in a radiofrequency (“RF”) electromagnetic field exposure safety program, along with other broadcasters and FCC licensees that utilize the Black Ridge communications site.

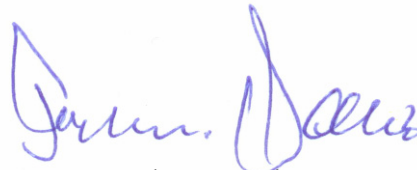
The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission’s OET Bulletin Number 65. Based on OET-65 equation (10), and considering the antenna’s relative field in downward elevations (Figure 2), the calculated power density attributable to the proposed KKCO facility at locations near the transmitter site at a height of two meters above ground level is depicted in the attached Figure 4. Analysis shows that the highest calculated RF electromagnetic field level attributable to the proposed KKCO facility is  $30 \mu\text{W}/\text{cm}^2$ , which is 3.0 percent of the controlled / occupational maximum permissible exposure limit at any location two meters above ground level within the “controlled access” area. 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 for occupational exposure in the areas where the proposal’s contribution is less than five percent. At ground level locations beyond the area restricted to the general public, calculated RF density levels attributable to the proposed KOCO facility will be less than five percent of the general public / uncontrolled MPE.

Thus, the general public and workers will not be exposed to RF levels attributable to the proposal in excess of the Commission’s guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, authorized personnel will be trained and/or supervised as necessary for access to any “controlled” areas. *Gray* 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.

This exhibit is limited to the evaluation of exposure to RF electromagnetic field. The proposal will involve use of an existing transmitting antenna. No tower construction or change in structure height is proposed.

### **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



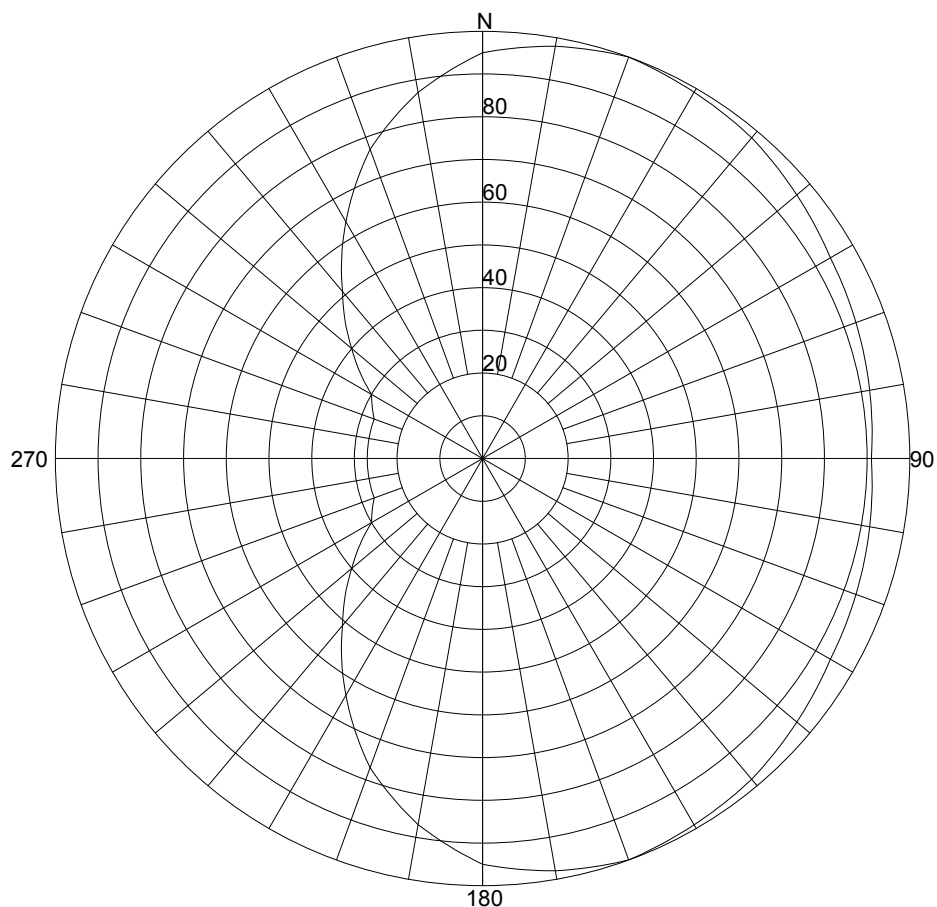
Joseph M. Davis, P.E.  
August 12, 2011

**Chesapeake RF Consultants, LLC**  
207 Old Dominion Road  
Yorktown, VA 23692  
703-650-9600

### List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2, 2A, 2B	Antenna Elevation Pattern
Figure 3	Proposed Coverage Contours
Figure 4	Calculated RF Electromagnetic Field
Table 1	OET Bulletin 69 Interference Study
Form 301	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered August 12, 2011 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number 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.*



## Azimuth Pattern

Scale: Linear

Unit: Relative Field

### Systems With Reliability

CLIENT: *KKCO*

Date: 8/11/2011

ANTENNA TYPE: SWED4EC/12

FREQUENCY: 207 MHz

PATTERN POL.: Horizontal

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.6110 / 2.071dB

PATTERN RMS: 0.788

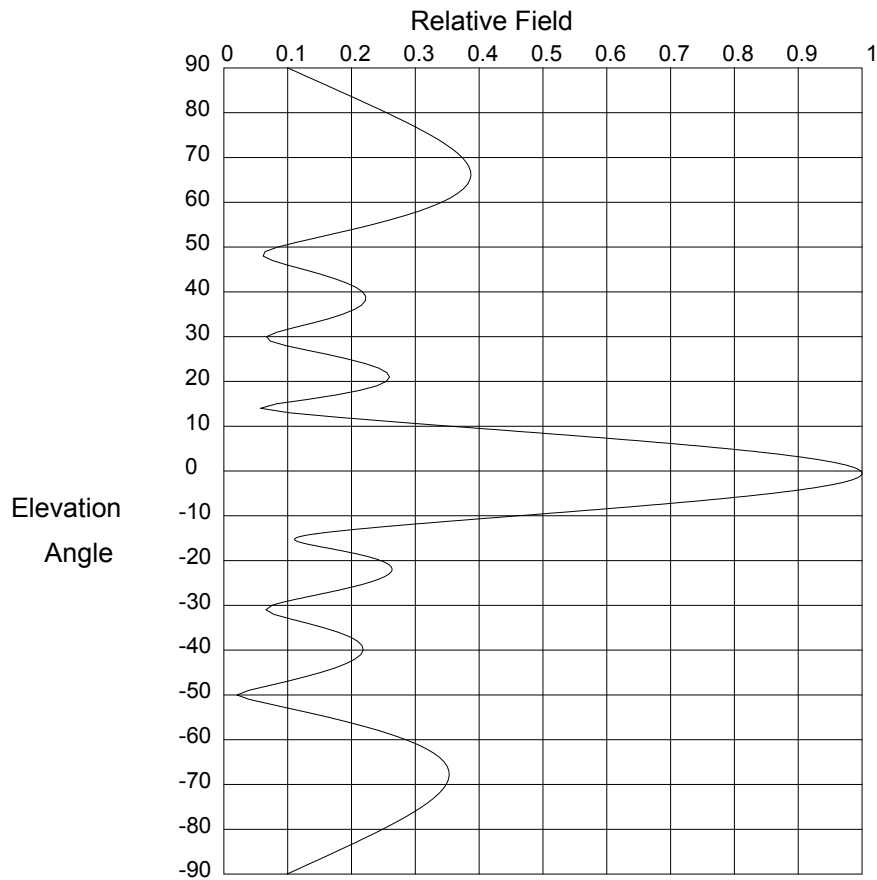
Micro-Tek Eng. ver 2.5



**Figure 1**  
**Antenna Azimuthal Pattern**  
**KKCO(DT) Grand Junction, CO**  
**Facility ID 24766**  
**Ch. 12 66.7 kW 452 m**

prepared for  
**Gray Television Licensee, LLC**

August, 2011



## Elevation Pattern

Scale: Linear

Units: Field, Relative

## Systems With Reliability

Date: 8/11/2011

CLIENT: *KKCO*

ANTENNA TYPE: SWED4EC/12

FREQUENCY: 201 Mhz

PATTERN POL.: Horizontal

DIRECTIVITY(Peak): 4.016/6.038 dBd

Beam Tilt (Deg.) : -0.5

DIRECTIVITY(Horiz): 4.00/6.02 dBd

Null Fill(s)(%) : 10, 7, 5

Micro-Tek Eng. ver 2.5



**Figure 2**  
**Antenna Elevation Pattern (Plot)**  
**KKCO(DT) Grand Junction, CO**  
**Facility ID 24766**  
**Ch. 12 66.7 kW 452 m**

prepared for  
**Gray Television Licensee, LLC**

August, 2011

# Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.90 (-0.916)	-4.4	.893 (-0.987)	-12.0	.286 (-10.862)
3.0	.91 (-0.818)	-4.6	.882 (-1.094)	-12.2	.27 (-11.375)
2.8	.92 (-0.726)	-4.8	.87 (-1.207)	-12.4	.254 (-11.908)
2.6	.929 (-0.64)	-5.0	.858 (-1.326)	-12.6	.238 (-12.462)
2.4	.938 (-0.56)	-5.2	.846 (-1.451)	-12.8	.223 (-13.037)
2.2	.946 (-0.485)	-5.4	.833 (-1.583)	-13.0	.208 (-13.631)
2.0	.953 (-0.416)	-5.6	.82 (-1.72)	-13.2	.194 (-14.244)
1.8	.96 (-0.352)	-5.8	.807 (-1.865)	-13.4	.18 (-14.871)
1.6	.967 (-0.293)	-6.0	.793 (-2.015)	-13.6	.168 (-15.507)
1.4	.973 (-0.24)	-6.2	.779 (-2.173)	-13.8	.156 (-16.144)
1.2	.978 (-0.193)	-6.4	.764 (-2.338)	-14.0	.145 (-16.769)
1.0	.983 (-0.15)	-6.6	.749 (-2.509)	-14.2	.135 (-17.366)
.8	.987 (-0.113)	-6.8	.734 (-2.688)	-14.4	.127 (-17.912)
.6	.991 (-0.082)	-7.0	.718 (-2.874)	-14.6	.12 (-18.383)
.4	.994 (-0.055)	-7.2	.702 (-3.068)	-14.8	.115 (-18.751)
.2	.996 (-0.034)	-7.4	.686 (-3.269)	-15.0	.112 (-18.995)
.0	.998 (-0.017)	-7.6	.67 (-3.479)	-15.2	.111 (-19.1)
-.2	.999 (-0.006)	-7.8	.653 (-3.697)	-15.4	.111 (-19.066)
-.4	1.00 (-0.001)	-8.0	.637 (-3.923)	-15.6	.113 (-18.906)
-.6	1.00 (0)	-8.2	.62 (-4.159)	-15.8	.117 (-18.643)
-.8	.999 (-0.004)	-8.4	.602 (-4.403)	-16.0	.122 (-18.303)
-1.0	.998 (-0.014)	-8.6	.585 (-4.657)	-16.2	.127 (-17.912)
-1.2	.997 (-0.029)	-8.8	.568 (-4.92)	-16.4	.133 (-17.491)
-1.4	.994 (-0.049)	-9.0	.55 (-5.194)	-16.6	.14 (-17.058)
-1.6	.992 (-0.074)	-9.2	.532 (-5.478)	-16.8	.147 (-16.626)
-1.8	.988 (-0.104)	-9.4	.514 (-5.773)	-17.0	.155 (-16.202)
-2.0	.984 (-0.14)	-9.6	.497 (-6.079)	-17.2	.162 (-15.794)
-2.2	.979 (-0.181)	-9.8	.479 (-6.398)	-17.4	.17 (-15.404)
-2.4	.974 (-0.227)	-10.0	.461 (-6.729)	-17.6	.177 (-15.034)
-2.6	.968 (-0.278)	-10.2	.443 (-7.072)	-17.8	.184 (-14.686)
-2.8	.962 (-0.335)	-10.4	.425 (-7.43)	-18.0	.191 (-14.36)
-3.0	.955 (-0.397)	-10.6	.407 (-7.801)	-18.2	.198 (-14.055)
-3.2	.948 (-0.465)	-10.8	.39 (-8.188)	-18.4	.205 (-13.772)
-3.4	.94 (-0.538)	-11.0	.372 (-8.59)	-18.6	.211 (-13.509)
-3.6	.932 (-0.616)	-11.2	.354 (-9.008)	-18.8	.217 (-13.266)
-3.8	.923 (-0.7)	-11.4	.337 (-9.444)	-19.0	.223 (-13.043)
-4.0	.913 (-0.79)	-11.6	.32 (-9.898)	-19.2	.228 (-12.837)
-4.2	.903 (-0.885)	-11.8	.303 (-10.37)	-19.4	.233 (-12.65)

## Systems With Reliability

Page 2 of 3

CLIENT: KKCO  
 ANTENNA TYPE: SWED4EC/12  
 FREQUENCY: 201 Mhz  
 PATTERN POL.: Horizontal  
 DIRECTIVITY(Peak): 4.016/6.038 dBd  
 DIRECTIVITY(Horiz): 4.00/6.02 dBd

Date: 8/11/2011

Beam Tilt (Deg.): -0.5  
 Null Fill(s)(%) : 10, 7, 5

Micro-Tek Eng. ver 2.5



**Figure 2A**  
**Antenna Elevation Pattern (Data)**  
**KKCO(DT) Grand Junction, CO**  
**Facility ID 24766**  
**Ch. 12 66.7 kW 452 m**

prepared for  
**Gray Television Licensee, LLC**

August, 2011

## Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.238 (-12.48)	-27.2	.161 (-15.868)	-54.0	.134 (-17.455)
-19.8	.242 (-12.326)	-27.4	.154 (-16.233)	-55.0	.164 (-15.691)
-20.0	.246 (-12.188)	-27.6	.148 (-16.617)	-56.0	.193 (-14.298)
-20.2	.249 (-12.065)	-27.8	.141 (-17.02)	-57.0	.219 (-13.175)
-20.4	.252 (-11.957)	-28.0	.134 (-17.444)	-58.0	.244 (-12.258)
-20.6	.255 (-11.863)	-28.2	.128 (-17.889)	-59.0	.266 (-11.505)
-20.8	.258 (-11.783)	-28.4	.121 (-18.354)	-60.0	.286 (-10.887)
-21.0	.26 (-11.717)	-28.6	.114 (-18.838)	-61.0	.303 (-10.383)
-21.2	.261 (-11.664)	-28.8	.108 (-19.34)	-62.0	.317 (-9.976)
-21.4	.262 (-11.624)	-29.0	.102 (-19.858)	-63.0	.329 (-9.654)
-21.6	.263 (-11.597)	-29.2	.096 (-20.388)	-64.0	.339 (-9.408)
-21.8	.264 (-11.582)	-29.4	.09 (-20.923)	-65.0	.346 (-9.23)
-22.0	.264 (-11.579)	-29.6	.085 (-21.453)	-66.0	.35 (-9.112)
-22.2	.263 (-11.588)	-29.8	.08 (-21.967)	-67.0	.353 (-9.05)
-22.4	.263 (-11.609)	-30.0	.075 (-22.448)	-68.0	.353 (-9.04)
-22.6	.262 (-11.642)	-31.0	.066 (-23.604)	-69.0	.352 (-9.077)
-22.8	.26 (-11.686)	-32.0	.079 (-22.075)	-70.0	.348 (-9.158)
-23.0	.259 (-11.743)	-33.0	.104 (-19.698)	-71.0	.343 (-9.282)
-23.2	.257 (-11.811)	-34.0	.131 (-17.655)	-72.0	.337 (-9.445)
-23.4	.254 (-11.891)	-35.0	.157 (-16.089)	-73.0	.329 (-9.647)
-23.6	.252 (-11.982)	-36.0	.179 (-14.932)	-74.0	.32 (-9.886)
-23.8	.249 (-12.085)	-37.0	.197 (-14.11)	-75.0	.31 (-10.162)
-24.0	.245 (-12.2)	-38.0	.21 (-13.571)	-76.0	.299 (-10.473)
-24.2	.242 (-12.328)	-39.0	.217 (-13.278)	-77.0	.288 (-10.82)
-24.4	.238 (-12.467)	-40.0	.218 (-13.212)	-78.0	.275 (-11.204)
-24.6	.234 (-12.619)	-41.0	.215 (-13.365)	-79.0	.262 (-11.625)
-24.8	.23 (-12.783)	-42.0	.206 (-13.737)	-80.0	.249 (-12.086)
-25.0	.225 (-12.96)	-43.0	.192 (-14.343)	-81.0	.235 (-12.588)
-25.2	.22 (-13.151)	-44.0	.174 (-15.212)	-82.0	.22 (-13.135)
-25.4	.215 (-13.355)	-45.0	.151 (-16.397)	-83.0	.206 (-13.732)
-25.6	.21 (-13.572)	-46.0	.126 (-17.994)	-84.0	.191 (-14.383)
-25.8	.204 (-13.804)	-47.0	.098 (-20.177)	-85.0	.176 (-15.096)
-26.0	.198 (-14.051)	-48.0	.068 (-23.31)	-86.0	.161 (-15.881)
-26.2	.192 (-14.313)	-49.0	.039 (-28.217)	-87.0	.145 (-16.752)
-26.4	.186 (-14.59)	-50.0	.021 (-33.673)	-88.0	.13 (-17.725)
-26.6	.18 (-14.884)	-51.0	.04 (-27.991)	-89.0	.114 (-18.827)
-26.8	.174 (-15.194)	-52.0	.071 (-23.013)	-90.0	.099 (-20.093)
-27.0	.167 (-15.522)	-53.0	.103 (-19.774)	90.0	.00 (-50)

## Systems With Reliability

Page 3 of 3

CLIENT: KKCO  
 ANTENNA TYPE: SWED4EC/12  
 FREQUENCY: 201 Mhz  
 PATTERN POL.: Horizontal  
 DIRECTIVITY(Peak): 4.016/6.038 dBd  
 DIRECTIVITY(Horiz): 4.00/6.02 dBd

Date: 8/11/2011

Beam Tilt (Deg.): -0.5  
 Null Fill(s)(%) : 10, 7, 5

Micro-Tek Eng. ver 2.5



**Figure 2B**  
**Antenna Elevation Pattern (Data)**  
**KKCO(DT) Grand Junction, CO**  
**Facility ID 24766**  
**Ch. 12 66.7 kW 452 m**

prepared for  
**Gray Television Licensee, LLC**

August, 2011



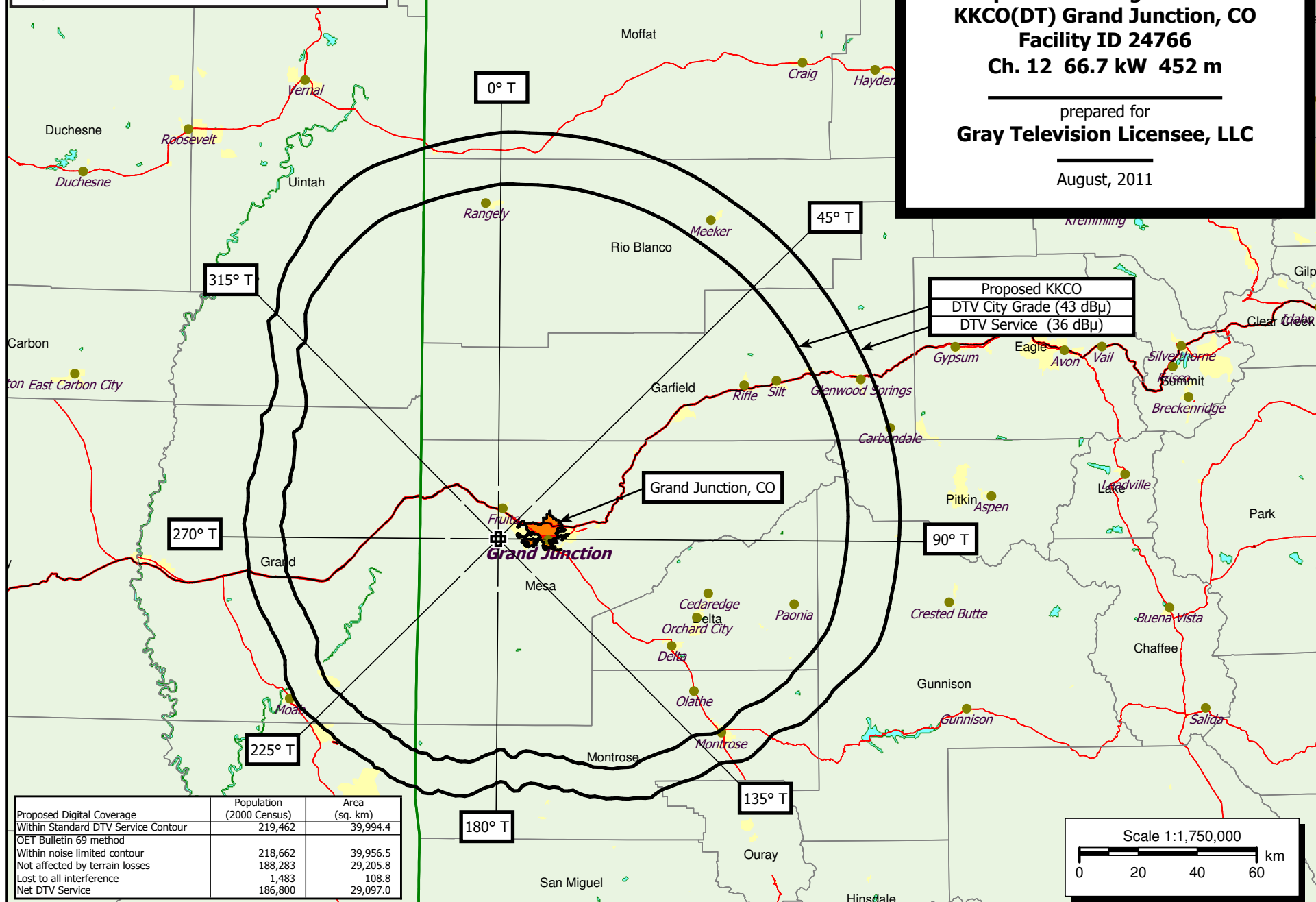


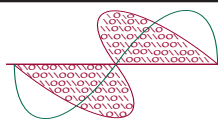
**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

**Figure 3**  
**Proposed Coverage Contours**  
**KKCO(DT) Grand Junction, CO**  
**Facility ID 24766**  
**Ch. 12 66.7 kW 452 m**

prepared for  
**Gray Television Licensee, LLC**

August, 2011

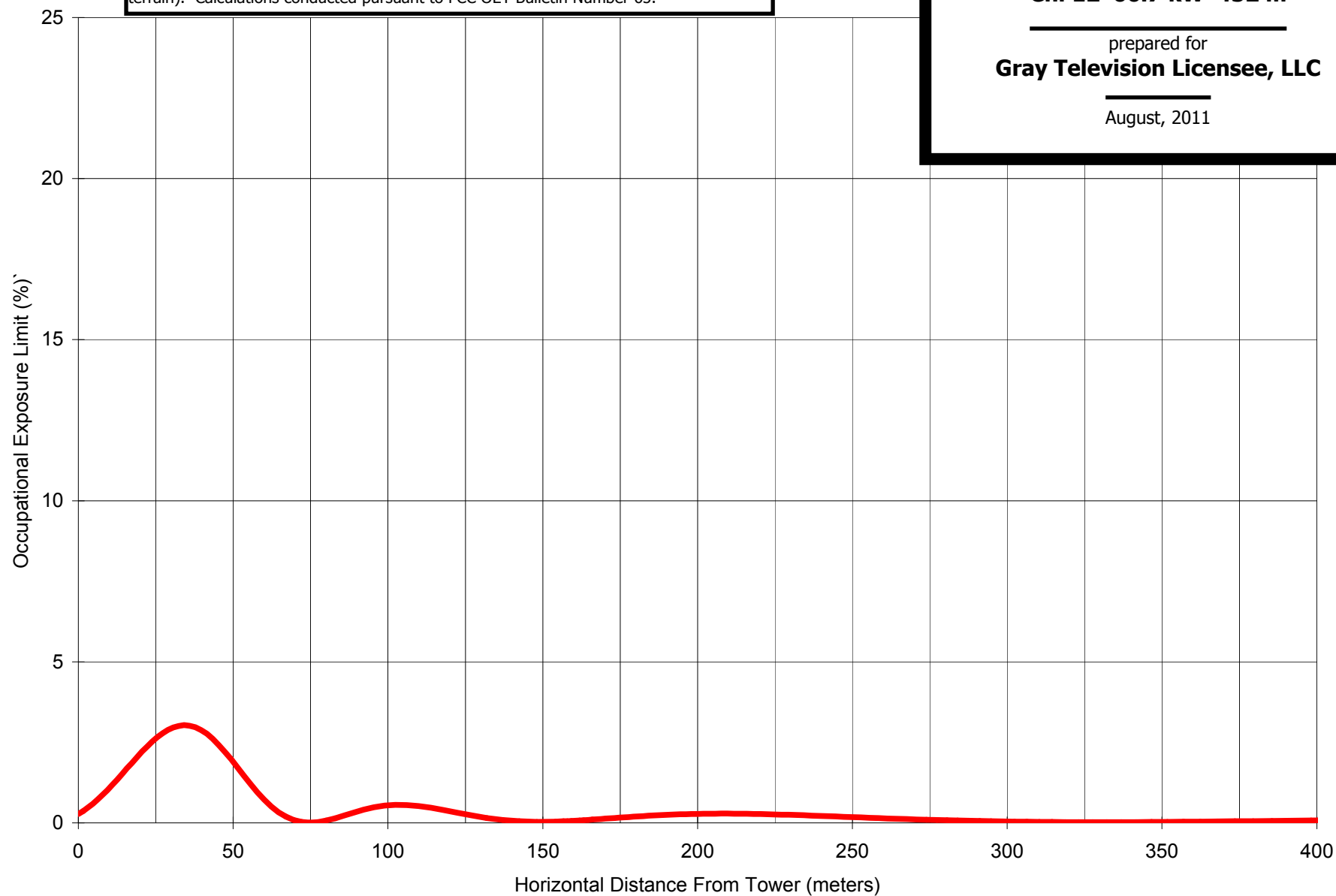




**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

Graph depicts calculated percentage of Occupational/Controlled Maximum Exposure Limit attributable to proposed KKCO facility for locations 2 meters above ground (assuming level terrain). Calculations conducted pursuant to FCC OET Bulletin Number 65.



**Figure 4**  
**Calculated RF Electromagnetic Field**  
**KKCO(DT) Grand Junction, CO**  
**Facility ID 24766**  
**Ch. 12 66.7 kW 452 m**

prepared for  
**Gray Television Licensee, LLC**

August, 2011

**Table 1 KKCO(DT) OET Bulletin 69 Interference Study**

(worst-case scenarios shown page 1 of 4)

TW Census data selected 2000

Data Base Selected

/space/software/cdbb/pt\_tvdb.sff

## TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 08-05-2011 Time: 11:39:58

Record Selected for Analysis

KKCO USERRECORD-01 GRAND JUNCTION CO US  
Channel 12 ERP 66.7 kW HAAT 451. m RCAMSL 02244 m  
Latitude 039-04-00 Longitude 0108-44-45  
Status APP Zone 2 Border Site number: 01  
Dir Antenna Make CDB Model 00000000044527 Beam tilt N Ref Azimuth 0.  
Last update Cutoff date Docket

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility (site # 01) meets maximum height/power limits

Site number	1		
Azimuth	ERP	HAAT	36.0 dBu F(50,90)
(Deg)	(kW)	(m)	(km)
0.0	60.037	777.8	137.3
45.0	62.500	818.3	138.8
90.0	55.174	736.5	135.2
135.0	62.758	289.4	106.6
180.0	60.197	84.5	81.8
225.0	13.809	174.9	86.8
270.0	4.862	263.8	85.2
315.0	13.809	459.0	106.7

Evaluation toward Class A Stations from site # 01

No Spacing violations or contour overlap  
to Class A stations from site # 01

Class A Evaluation Complete

Checks to Site Number 01

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

**Table 1 KKCO(DT) OET Bulletin 69 Interference Study**

(worst-case scenarios shown page 2 of 4)

\*\*\*\*\*

## Start of Interference Analysis

Channel	Call	Proposed Station City/State	ARN
12	KKCO	GRAND JUNCTION CO	USERRECORD01

## Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
12	KOBF	FARMINGTON NM	267.6	LIC	BLCDDT	20090224AAZ
12	KUTF	LOGAN UT	422.1	CP	BPCDDT	20080328ADR
13	KREY-TV	MONTROSE CO	98.5	LIC	BLCDDT	20060629ACV

\*\*\*\*\*

## Analysis of Interference to Affected Station 1

Analysis of current record

Channel	Call	City/State	Application	Ref. No.
12	KOBF	FARMINGTON NM	BLCDDT	-20090224AAZ

## Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
12	KKCO	GRAND JUNCTION CO	267.6	PLN	DTVPLN	-DTVPO351
12	KOBG-TV	SILVER CITY NM	425.9	APP	BPCDDT	-20080502ABH
13	KREY-TV	MONTROSE CO	205.1	LIC	BLCDDT	-20060629ACV
12	KKCO	GRAND JUNCTION CO	267.6	APP	USERRECORD-01	

Total scenarios = 1

Result key: 1

Scenario 1 Affected station 1  
Before Analysis

Results for: 12A NM FARMINGTON BLCDDT 20090224AAZ LIC  
HAAT 125.0 m, ATV ERP 30.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	176513	22464.2
not affected by terrain losses	144961	19932.9
lost to NTSC IX	0	0.0
lost to additional IX by ATV	0	0.0
lost to ATV IX only	0	0.0
lost to all IX	0	0.0

Potential Interfering Stations Included in above Scenario 1

After Analysis

Results for: 12A NM FARMINGTON BLCDDT 20090224AAZ LIC  
HAAT 125.0 m, ATV ERP 30.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	176513	22464.2
not affected by terrain losses	144961	19932.9
lost to NTSC IX	0	0.0
lost to additional IX by ATV	2	24.1
lost to ATV IX only	2	24.1

**Table 1 KKCO(DT) OET Bulletin 69 Interference Study**

(worst-case scenarios shown page 3 of 4)

lost to all IX 2 24.1

Potential Interfering Stations Included in above Scenario 1

12A CO GRAND JUNCTION USERRECORD01 APP

Percent new IX = 0.0014%

Worst case new IX 0.0014% Scenario 1

#####

Analysis of Interference to Affected Station 2

Analysis of current record

Channel	Call	City/State	Application Ref. No.
12	KUTF	LOGAN UT	BPCDT -20080328ADR

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
11	KMVT	TWIN FALLS ID	208.0	CP MOD	BMPCDT -20110510ACN
11	KMVT	TWIN FALLS ID	208.0	LIC	BLCDT -20090403ABW
12	KKCO	GRAND JUNCTION CO	422.1	PLN	DTVPLN -DTVPO351
12	KKCO	GRAND JUNCTION CO	422.1	APP	USERRECORD-01

Proposal causes no interference

#####

Analysis of Interference to Affected Station 3

Analysis of current record

Channel	Call	City/State	Application Ref. No.
13	KREY-TV	MONTROSE CO	BLCDT -20060629ACV

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
12	KKCO	GRAND JUNCTION CO	98.5	PLN	DTVPLN -DTVPO351
12	KOBF	FARMINGTON NM	205.1	LIC	BLCDT -20090224AAZ
13	KBDI-TV	BROOMFIELD CO	241.0	LIC	BLEDT -20090618ACH
13	KRQE	ALBUQUERQUE NM	388.1	LIC	BLCDT -20090622ABJ
13	KGWR-TV	ROCK SPRINGS WY	342.0	LIC	BLCDT -20090225AAK
12	KKCO	GRAND JUNCTION CO	98.5	APP	USERRECORD-01

Total scenarios = 1

Result key: 2

Scenario 1 Affected station 3

Before Analysis

Results for: 13A CO MONTROSE BLCDT 20060629ACV LIC

HAAT	35.0 m, ATV ERP	2.6 kW	POPULATION	AREA (sq km)
within Noise Limited Contour	62104	10168.2		
not affected by terrain losses	54508	7609.1		
lost to NTSC IX	0	0.0		
lost to additional IX by ATV	546	40.2		
lost to ATV IX only	546	40.2		
lost to all IX	546	40.2		

**Table 1 KKCO(DT) OET Bulletin 69 Interference Study**

(worst-case scenarios shown page 4 of 4)

Potential Interfering Stations Included in above Scenario 1

12A CO GRAND JUNCTION DTVPLN DTVPO351 PLN

After Analysis

Results for: 13A CO MONTROSE BLCDT 20060629ACV LIC

HAAT	35.0 m, ATV ERP	2.6 kW	POPULATION	AREA (sq km)
within Noise Limited Contour	62104	10168.2		
not affected by terrain losses	54508	7609.1		
lost to NTSC IX	0	0.0		
lost to additional IX by ATV	546	88.5		
lost to ATV IX only	546	88.5		
lost to all IX	546	88.5		

Potential Interfering Stations Included in above Scenario 1

12A CO GRAND JUNCTION USERRECORD01 APP

Percent new IX = 0.0000%

Worst case new IX 0.0000% Scenario 1

#####

Analysis of Interference to Affected Station 4

Analysis of current record

Channel	Call	City/State	Application Ref. No.
12	KKCO	GRAND JUNCTION CO	USERRECORD-01

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
12	KOBF	FARMINGTON NM	267.6	LIC	BLCDT -20090224AAZ
12	KUTF	LOGAN UT	422.1	CP	BPCDT -20080328ADR
13	KREY-TV	MONTROSE CO	98.5	LIC	BLCDT -20060629ACV

Total scenarios = 1

Result key: 3

Scenario 1 Affected station 4

Before Analysis

Results for: 12A CO GRAND JUNCTION USERRECORD01 APP

HAAT	451.0 m, ATV ERP	66.7 kW	POPULATION	AREA (sq km)
within Noise Limited Contour	218662	39956.5		
not affected by terrain losses	188283	29205.8		
lost to NTSC IX	0	0.0		
lost to additional IX by ATV	1483	108.8		
lost to ATV IX only	1483	108.8		
lost to all IX	1483	108.8		

Potential Interfering Stations Included in above Scenario 1

13A CO MONTROSE BLCDT 20060629ACV LIC

#####

FINISHED FINISHED FINISHED FINISHED FINISHED FINISHED

SECTION III-D - DTV Engineering	
<b>Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.</b>	
<p><b>Pre-Transition Certification Checklist:</b> 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.</p> <p><b>Post-Transition Expedited Processing.</b> 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.</p>	
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 type="radio"/> Yes <input checked="" 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	
<b>TECHNICAL SPECIFICATIONS</b>	
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.	
<b>TECH BOX</b>	
1.	Channel Number: DTV 12 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 39 Minutes 04 Seconds 00 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 108 Minutes 44 Seconds 45 <input checked="" type="radio"/> West <input type="radio"/> East
4.	Antenna Structure Registration Number: 1235966 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
5.	Antenna Location Site Elevation Above Mean Sea Level: 2155 meters
6.	Overall Tower Height Above Ground Level: 92 meters
7.	Height of Radiation Center Above Ground Level: 89 meters
8.	Height of Radiation Center Above Average Terrain : 452 meters
9.	Maximum Effective Radiated Power (average power): 66.7 kW

10.	<p>Antenna Specifications:</p> <p>a. Manufacturer SWR    Model SWED4EC/12</p> <p>b. Electrical Beam Tilt: 0.5 degrees    <input type="checkbox"/> Not Applicable</p> <p>c. Mechanical Beam Tilt: degrees toward azimuth degrees True    <input checked="" type="checkbox"/> Not Applicable</p> <p>Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). [Exhibit 45]</p> <p>d. Polarization: <input checked="" type="radio"/> Horizontal    <input type="radio"/> Circular    <input type="radio"/> Elliptical</p> <p>e. Directional Antenna Relative Field Values:    <input type="checkbox"/> Not applicable (Nondirectional)</p> <p>[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.] [Relative Field Values]</p> <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>0.95</td><td>10</td><td>0.98</td><td>20</td><td>1</td><td>30</td><td>0.99</td><td>40</td><td>0.98</td><td>50</td><td>0.96</td></tr><tr><td>60</td><td>0.94</td><td>70</td><td>0.93</td><td>80</td><td>0.92</td><td>90</td><td>0.91</td><td>100</td><td>0.92</td><td>110</td><td>0.93</td></tr><tr><td>120</td><td>0.94</td><td>130</td><td>0.96</td><td>140</td><td>0.98</td><td>150</td><td>0.99</td><td>160</td><td>1</td><td>170</td><td>0.98</td></tr><tr><td>180</td><td>0.95</td><td>190</td><td>0.87</td><td>200</td><td>0.77</td><td>210</td><td>0.64</td><td>220</td><td>0.51</td><td>230</td><td>0.4</td></tr><tr><td>240</td><td>0.3</td><td>250</td><td>0.27</td><td>260</td><td>0.27</td><td>270</td><td>0.27</td><td>280</td><td>0.27</td><td>290</td><td>0.27</td></tr><tr><td>300</td><td>0.3</td><td>310</td><td>0.4</td><td>320</td><td>0.51</td><td>330</td><td>0.64</td><td>340</td><td>0.77</td><td>350</td><td>0.87</td></tr><tr><td colspan="2">Additional Azimuths</td><td>45</td><td>0.97</td><td>135</td><td>0.97</td><td>225</td><td>0.455</td><td>315</td><td>0.455</td><td></td><td></td></tr></table> <p style="text-align: center;"><a href="#">Relative Field Polar Plot</a></p>	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	0.95	10	0.98	20	1	30	0.99	40	0.98	50	0.96	60	0.94	70	0.93	80	0.92	90	0.91	100	0.92	110	0.93	120	0.94	130	0.96	140	0.98	150	0.99	160	1	170	0.98	180	0.95	190	0.87	200	0.77	210	0.64	220	0.51	230	0.4	240	0.3	250	0.27	260	0.27	270	0.27	280	0.27	290	0.27	300	0.3	310	0.4	320	0.51	330	0.64	340	0.77	350	0.87	Additional Azimuths		45	0.97	135	0.97	225	0.455	315	0.455		
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	0.95	10	0.98	20	1	30	0.99	40	0.98	50	0.96																																																																																																														
60	0.94	70	0.93	80	0.92	90	0.91	100	0.92	110	0.93																																																																																																														
120	0.94	130	0.96	140	0.98	150	0.99	160	1	170	0.98																																																																																																														
180	0.95	190	0.87	200	0.77	210	0.64	220	0.51	230	0.4																																																																																																														
240	0.3	250	0.27	260	0.27	270	0.27	280	0.27	290	0.27																																																																																																														
300	0.3	310	0.4	320	0.51	330	0.64	340	0.77	350	0.87																																																																																																														
Additional Azimuths		45	0.97	135	0.97	225	0.455	315	0.455																																																																																																																
	<p>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 46]</p>																																																																																																																								
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? <input checked="" type="radio"/> Yes    <input type="radio"/> No [Exhibit 47]</p> <p>If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.</p>																																																																																																																								
12.	<p>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 48]</p>																																																																																																																								
13.	<p><b>Environmental Protection Act. Submit in an Exhibit</b> the following: [Exhibit 49]</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>																																																																																																																								
<p><b>PREPARERS CERTIFICATION ON SECTION III MUST BE COMPLETED AND SIGNED.</b></p>																																																																																																																									

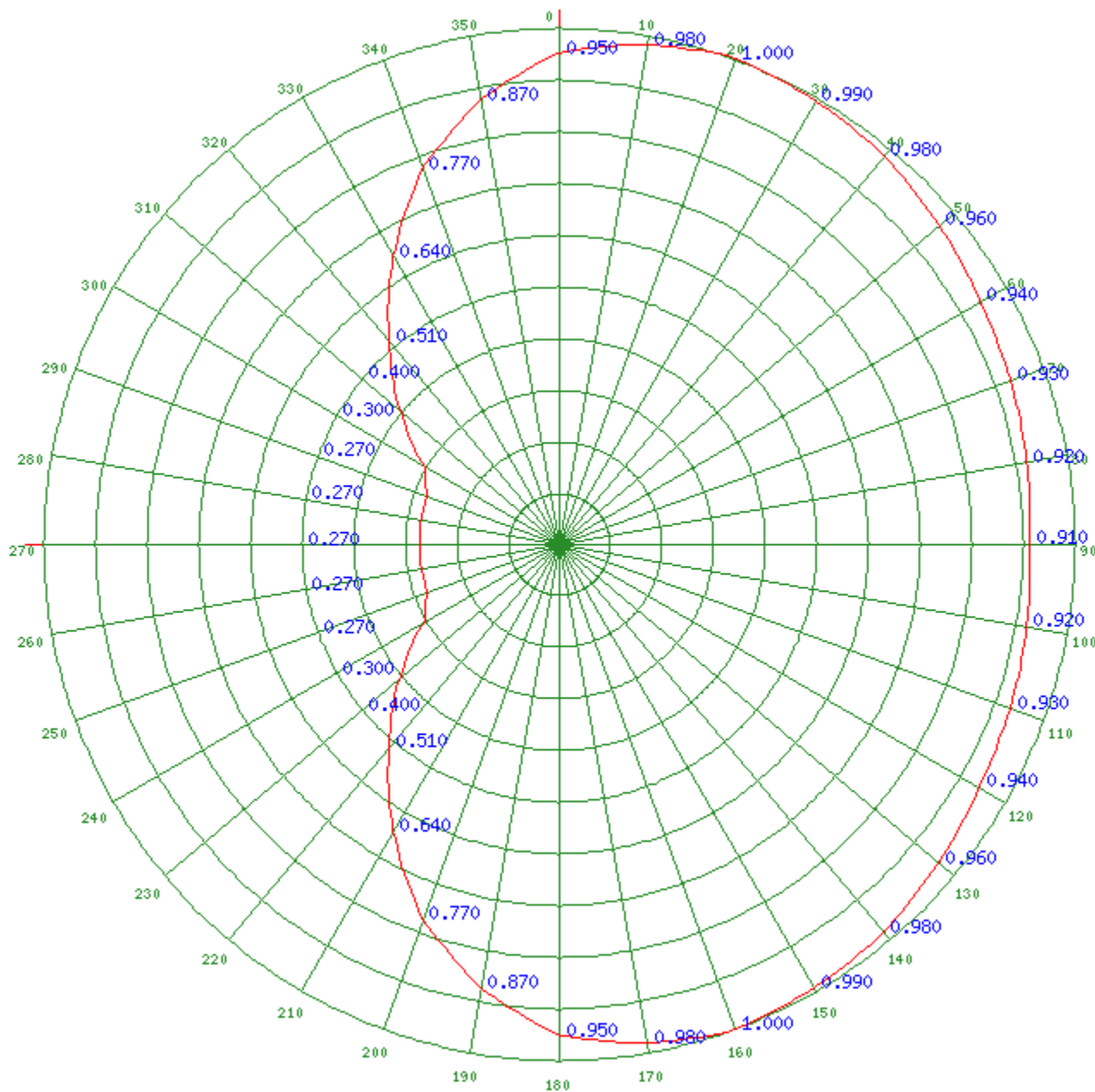
**SECTION III - PREPARER'S CERTIFICATION**

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 JOSEPH M. DAVIS, P.E.	Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature	Date 8/12/2011	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 207 OLD DOMINION ROAD		
City YORKTOWN	State or Country (if foreign address) VA	Zip Code 23692 -
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	

Any specified rotation has already been applied to the plotted pattern.  
Field strength values shown on a rotated pattern may differ from the listed values  
because intermediate azimuths are interpolated between entered azimuths.

Close Window



[FM Query](#)   [FCC](#)   [TV Query](#)