

ENGINEERING EXHIBIT

Digital Television Station
Application for Minor Modification of Construction Permit

prepared for

Gray Television Licensee, LLC
WGEM-TV Quincy, IL
Facility ID 54275
Ch. 19 1000 kW 273 m

Gray Television Licensee, LLC (“Gray”) is the licensee of digital television station WGEM-TV, Channel 10, Facility ID 54275, Quincy IL. The digital channel allotment for WGEM-TV was recently changed from Channel 10 to Channel 19 as described in the FCC Report and Order in MB Docket 21-219¹. A Construction Permit (“CP”, file# 0000157750) authorizes WGEM-TV to operate on Channel 19 at 1000 kW effective radiated power (“ERP”) with a nondirectional antenna having a height above average terrain (“HAAT”) of 238 meters. *Gray* proposes herein a minor modification of the CP to utilize an alternate transmitting location and to increase antenna HAAT by 35 meters to 273 meters.

Gray proposes to implement the Channel 19 substitution by utilizing a new antenna to be top-mounted on the tower structure associated with FCC Antenna Structure Registration (“ASR”) number 1009005. The proposed site is located 2.4 km from the currently authorized WGEM-TV Channel 19 and licensed WGEM-TV Channel 10 location. No increase to the overall structure height will result.

The proposed antenna is an elliptically polarized nondirectional Dielectric model TFU-32GTH/VP-R O8 SP (30 percent vertical polarization). The horizontally polarized ERP is 1000 kW and the vertically polarized ERP is 300 kW. The antenna will be shared with KHQA-TV (Facility ID 4690, Hannibal MO). KHQA-TV will also implement a channel substitution and is authorized to change from Channel 7 to Channel 22 (file# 0000152836).

¹*Amendment of Section 73.622(i), Post-Transition Table of DTV Allotments, Television Broadcast Stations (Quincy, IL)*, MB Docket No. 21-219, RM-11907, DA 21-844, released July 16, 2021.

Figure 1 supplies a map that demonstrates compliance with §73.625(a)(1) regarding coverage of the entire principal community. A comparison of the WGEM-TV Channel 19 authorized and proposed noise limited service contours (“NLSC”) is provided in Figure 2. Since the proposed NLSC encompasses the currently authorized NLSC, no area of Channel 19 service loss will be created.

Interference study per FCC OET Bulletin 69² shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby full service and Class A television stations as required by §73.616. The interference study output report is provided as Table 1.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC’s OET Bulletin Number 65. Based on OET-65 equation (10) and considering 10 percent antenna relative field in downward elevations (pattern data shows less than 10 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $8.0 \mu\text{W}/\text{cm}^2$, which is 2.4 percent of the general population/uncontrolled maximum permitted exposure limit. 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. This

²FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 (“OET-69”). This analysis employed the FCC’s current “TVStudy” software with the default application processing template settings, 2 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC’s implementation of TVStudy show excellent correlation.

exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

List of Attachments

Figure 1	Proposed Coverage Contours
Figure 2	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

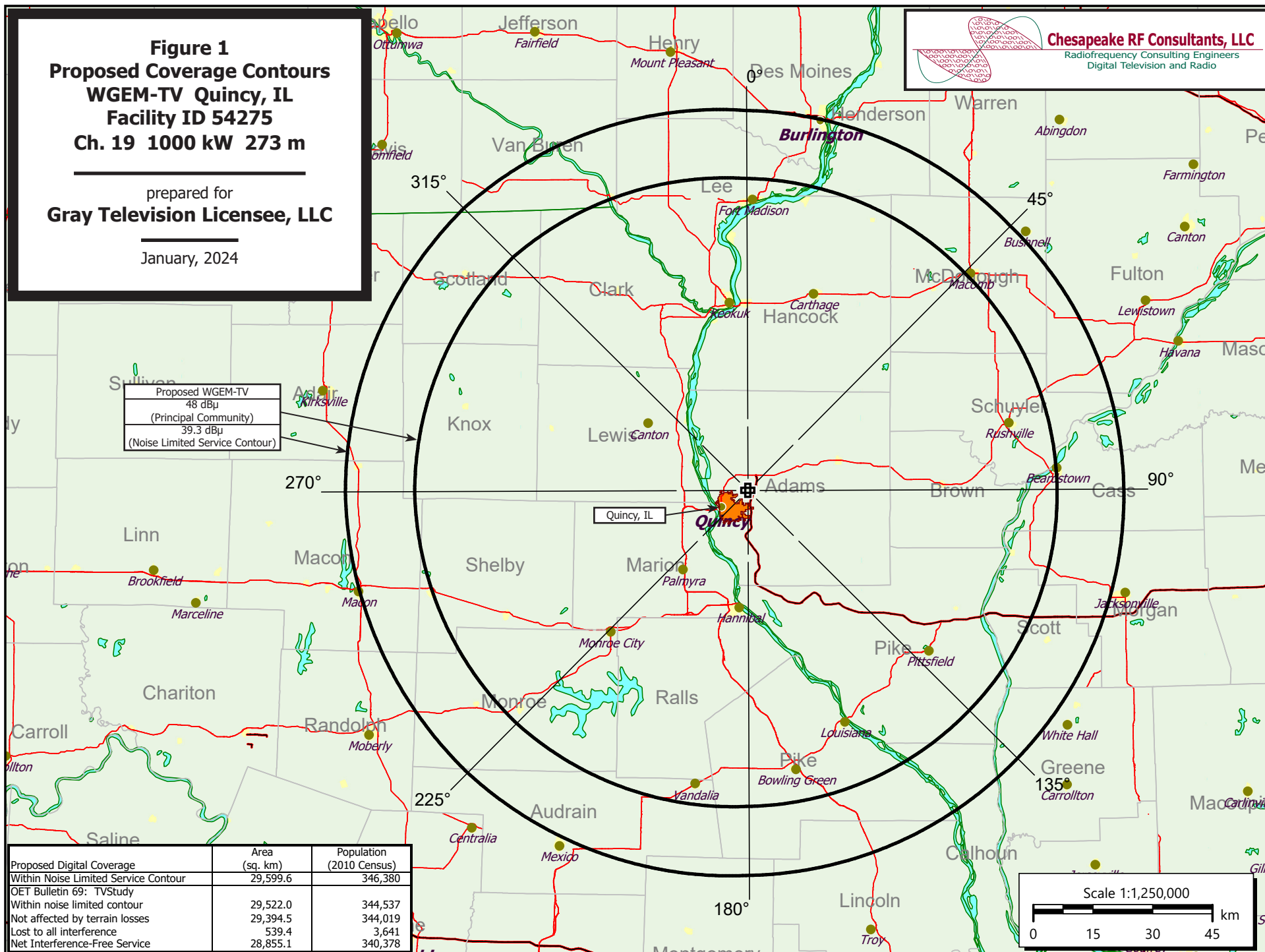
Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	January 15, 2024	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

Figure 1
Proposed Coverage Contours
WGEM-TV Quincy, IL
Facility ID 54275
Ch. 19 1000 kW 273 m

prepared for
Gray Television Licensee, LLC

January, 2024



Proposed WGEM-TV
48 dBu
(Principal Community)
39.3 dBu
(Noise Limited Service Contour)

Proposed Digital Coverage	Area (sq. km)	Population (2010 Census)
Within Noise Limited Service Contour	29,599.6	346,380
OET Bulletin 69: TVStudy		
Within noise limited contour	29,522.0	344,537
Not affected by terrain losses	29,394.5	344,019
Lost to all interference	539.4	3,641
Net Interference-Free Service	28,855.1	340,378

Figure 2
Coverage Contour Comparison
WGEM-TV Quincy, IL
Facility ID 54275
Ch. 19 1000 kW 273 m

prepared for
Gray Television Licensee, LLC

January, 2024

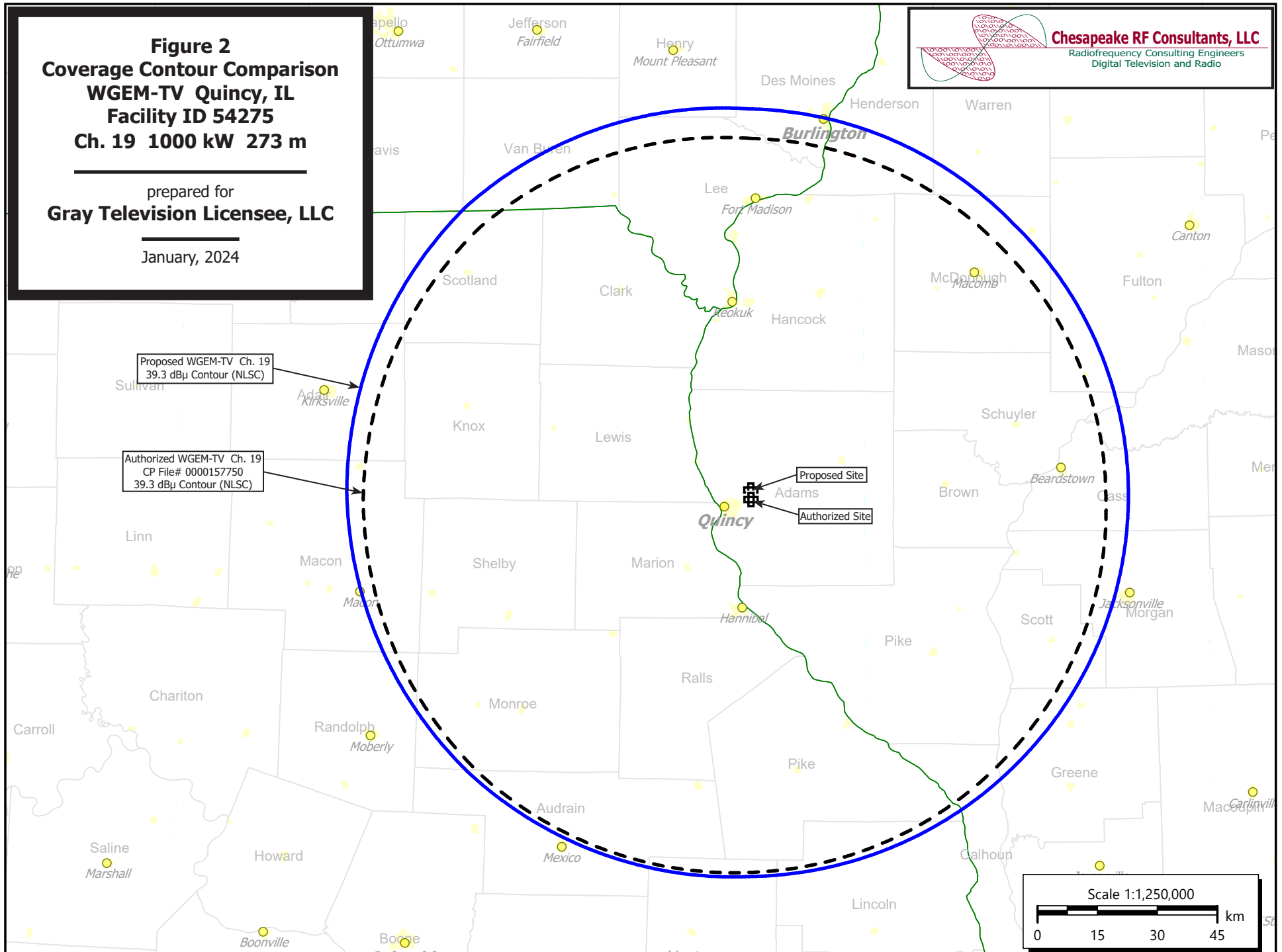


Table 1 WGEM-TV TVStudy Analysis of Proposal
(page 1 of 6)



tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: WGEM-TV 1009005 omit-BL, Model: Longley-Rice
Start: 2024.01.12 16:22:50

Study created: 2024.01.12 16:22:50

Study build station data: LMS TV 2024-01-12

Proposal: WGEM-TV D19 DT APP QUINCY, IL
File number: WGEM-TV 1009005
Facility ID: 54275
Station data: User record
Record ID: 240
Country: U.S.
Zone: I

Search options:
Baseline record excluded if station has CP

Individual records excluded:
54275 WGEM-TV D19 DT BL QUINCY, IL DTVBL54275

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WSEC	D18	DT	LIC	JACKSONVILLE, IL	BLANK0000150703	117.3 km
Yes	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	281.8
Yes	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	281.8
Yes	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000189522	375.7
Yes	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000235154	375.7
Yes	WPSD-TV	D19	DT	LIC	PADUCAH, KY	BLANK0000116960	370.4
Yes	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336	341.1
Yes	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	375.0
No	WAND	D20	DT	LIC	DECATUR, IL	BLANK0000203433	212.9
No	KFDR	D20	DT	LIC	JEFFERSON CITY, MO	BLCDT20110121ACA	155.3
No	KEFN-CD	D20z	DC	LIC	ST. LOUIS, MO	BLANK0000146089	178.6

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D19
Latitude: 39 58 22.00 N (NAD83)
Longitude: 91 19 55.00 W
Height AMSL: 461.4 m
HAAT: 272.9 m
Peak ERP: 1000 kW
Antenna: Omnidirectional
Elev Pattn: Generic
Elec Tilt: 0.70

39.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1000 kW	259.2 m	95.2 km
45.0	1000	245.7	93.1
90.0	1000	251.7	94.1
135.0	1000	259.0	95.2
180.0	1000	268.2	96.5
225.0	1000	294.2	99.8
270.0	1000	304.8	101.0
315.0	1000	300.0	100.5

Distance to Canadian border: 723.4 km

Distance to Mexican border: 1456.9 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 55.2 degrees Distance: 535.8 km

Proposal is not within the West Virginia quiet zone area

Table 1 WGEM-TV TVStudy Analysis of Proposal
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Conditions at Table Mountain receiving zone:
Bearing: 275.4 degrees Distance: 1180.8 km

No land mobile station failures found

Study cell size: 2.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to BLANK0000150703 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WSEC	D18	DT	LIC	JACKSONVILLE, IL	BLANK0000150703	
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	117.3 km
	WMEU-CD	D18	DC	LIC	CHICAGO, IL	BLANK0000086889	324.3
	WAWV-TV	D18	DT	LIC	TERRE HAUTE, IN	BLANK0000087258	231.4
	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	20028.4	538,090	19908.8	536,891	19896.9	536,811	19817.0 536,447 0.40 0.07
Undesired			Total IX		Unique IX, before		Unique IX, after
WGEM-TV D19 DT APP			79.8	364			79.8 364
WAWV-TV D18 DT LIC			12.0	80			12.0 80

Interference to BLCDT20120627AAE LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	281.8 km
	KYIN	D18	DT	LIC	MASON CITY, IA	BLCDT20090612AHJ	197.4
	KXNE-TV	D19	DT	LIC	NORFOLK, NE	BLANK0000151288	305.8
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	364.7
	KETV	D20	DT	LIC	OMAHA, NE	BLANK0000187560	208.7
	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	47883.0	1,141,990	47642.0	1,140,939	47368.4	1,136,269	46878.9 1,133,781 1.03 0.22
Undesired			Total IX		Unique IX, before		Unique IX, after
WGEM-TV D19 DT APP			497.6	2,498			489.5 2,488
KYIN D18 DT LIC			32.0	70			32.0 70
KXNE-TV D19 DT LIC			217.5	2,003			209.4 1,983
WMTV D19 DT LIC			24.1	2,597			16.1 2,587
KETV D20 DT LIC			8.1	20			0.0 0

Interference to BPCDT20130205AAM APP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	281.8 km
	KYIN	D18	DT	LIC	MASON CITY, IA	BLCDT20090612AHJ	197.4
	KXNE-TV	D19	DT	LIC	NORFOLK, NE	BLANK0000151288	305.8
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	364.7
	KETV	D20	DT	LIC	OMAHA, NE	BLANK0000187560	208.7
	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	49377.5	1,175,179	49112.4	1,174,026	48794.7	1,171,723	48305.3 1,169,488 1.00 0.19
Undesired			Total IX		Unique IX, before		Unique IX, after
WGEM-TV D19 DT APP			501.4	2,255			489.4 2,235
KYIN D18 DT LIC			44.0	127			44.0 127
KXNE-TV D19 DT LIC			249.6	1,230			241.5 1,210
WMTV D19 DT LIC			24.1	946			12.0 926

Table 1 WGEM-TV TVStudy Analysis of Proposal
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KETV D20 DT LIC	8.1	20	0.0	0	0.0	0	

Interference to BLANK0000189522 LIC scenario 1							
Desired:	Call WGN-TV	Chan D19	Svc DT	Status LIC	City, State CHICAGO, IL	File Number BLANK0000189522	Distance
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	375.7 km
	WMEU-CD	D18	DC	LIC	CHICAGO, IL	BLANK0000086889	0.0
	WIPB	D19	DT	LIC	MUNCIE, IN	BLANK0000087336	273.5
	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	194.9
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	200.0
	WWME-CD	D20	DC	LIC	CHICAGO, IL	BLANK0000086882	0.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
33803.5	9,983,395	33747.2	9,981,137	31867.3	9,874,248	31867.3 9,874,248	0.00 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
WGEM-TV D19 DT APP		4.0	45			0.0 0	
WIPB D19 DT LIC		68.7	731	4.0	23	4.0 23	
WXMI D19 DT LIC		559.0	20,309	242.0	7,847	242.0 7,847	
WMTV D19 DT LIC		1577.3	98,390	1316.9	86,557	1312.8 86,512	

Interference to BLANK0000235154 LIC scenario 1							
Desired:	Call WGN-TV	Chan D19	Svc DT	Status LIC	City, State CHICAGO, IL	File Number BLANK0000235154	Distance
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	375.7 km
	WMEU-CD	D18	DC	LIC	CHICAGO, IL	BLANK0000086889	0.0
	WIPB	D19	DT	LIC	MUNCIE, IN	BLANK0000087336	273.5
	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	194.9
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	200.0
	WWME-CD	D20	DC	LIC	CHICAGO, IL	BLANK0000086882	0.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
33803.5	9,983,395	33747.2	9,981,137	31867.3	9,874,248	31867.3 9,874,248	0.00 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
WGEM-TV D19 DT APP		4.0	45			0.0 0	
WIPB D19 DT LIC		68.7	731	4.0	23	4.0 23	
WXMI D19 DT LIC		559.0	20,309	242.0	7,847	242.0 7,847	
WMTV D19 DT LIC		1577.3	98,390	1316.9	86,557	1312.8 86,512	

Interference to BLANK0000116960 LIC scenario 1							
Desired:	Call WPSD-TV	Chan D19	Svc DT	Status LIC	City, State PADUCAH, KY	File Number BLANK0000116960	Distance
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	370.4 km
	WHNT-TV	D19	DT	CP	HUNTSVILLE, AL	BLANK0000127591	350.6
	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336	350.6
	WTSN-CD	D20	DC	LIC	EVANSVILLE, IN	BLDTL20120328AJA	174.7
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
40913.2	883,814	40439.6	879,213	40112.6	874,052	40081.0 873,722	0.08 0.04
Undesired		Total IX		Unique IX, before		Unique IX, after	
WGEM-TV D19 DT APP		63.4	617			31.6 330	
WHNT-TV D19 DT CP		151.7	3,042	151.7	3,042	151.7 3,042	
KYTV D19 DT LIC		171.2	1,878	171.2	1,878	139.5 1,591	
WTSN-CD D20 DC LIC		4.0	241	4.0	241	4.0 241	

Interference to BLANK0000116960 LIC scenario 2							
Desired:	Call WPSD-TV	Chan D19	Svc DT	Status LIC	City, State PADUCAH, KY	File Number BLANK0000116960	Distance
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	370.4 km

Table 1 WGEM-TV TVStudy Analysis of Proposal
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	WHNT-TV	D19	DT	LIC	HUNTSVILLE, AL	BLCDT20111118COZ		350.6	
	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336		350.6	
	WTSN-CD	D20	DC	LIC	EVANSVILLE, IN	BLDTL20120328AJA		174.7	
	Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
40913.2	883,814	40439.6	879,213	40144.6	874,312	40112.9	873,982	0.08	0.04
Undesired		Total IX		Unique IX, before		Unique IX, after			
WGEM-TV	D19 DT APP	63.4	617			31.6	330		
WHNT-TV	D19 DT LIC	119.8	2,782	119.8	2,782	119.8	2,782		
KYTV	D19 DT LIC	171.2	1,878	171.2	1,878	139.5	1,591		
WTSN-CD	D20 DC LIC	4.0	241	4.0	241	4.0	241		

Interference to BLANK0000172336 LIC scenario 1									
	Call	Chan	Svc	Status	City, State	File Number	Distance		
Desired:	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336			
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	341.1 km		
	KFSM-TV	D18	DT	CP	FORT SMITH, AR	BLANK0000216674	184.6		
	WPSD-TV	D19	DT	LIC	PADUCAH, KY	BLANK0000116960	350.6		
	KFDR	D20	DT	LIC	JEFFERSON CITY, MO	BLCDT20110121ACA	185.8		
	Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
50006.9	1,095,904	49035.1	1,083,524	48580.9	1,076,518	48343.8	1,072,821	0.49	0.34
Undesired		Total IX		Unique IX, before		Unique IX, after			
WGEM-TV	D19 DT APP	308.3	4,557			237.1	3,697		
KFSM-TV	D18 DT CP	51.9	413	51.9	413	51.9	413		
WPSD-TV	D19 DT LIC	303.6	5,427	303.6	5,427	279.7	5,339		
KFDR	D20 DT LIC	98.7	1,166	98.7	1,166	51.3	394		

Interference to BLANK0000172336 LIC scenario 2									
	Call	Chan	Svc	Status	City, State	File Number	Distance		
Desired:	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336			
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	341.1 km		
	KFSM-TV	D18	DT	LIC	FORT SMITH, AR	BLCDT20060530AIM	184.6		
	WPSD-TV	D19	DT	LIC	PADUCAH, KY	BLANK0000116960	350.6		
	KFDR	D20	DT	LIC	JEFFERSON CITY, MO	BLCDT20110121ACA	185.8		
	Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
50006.9	1,095,904	49035.1	1,083,524	48592.8	1,076,572	48355.8	1,072,875	0.49	0.34
Undesired		Total IX		Unique IX, before		Unique IX, after			
WGEM-TV	D19 DT APP	308.3	4,557			237.1	3,697		
KFSM-TV	D18 DT LIC	39.9	359	39.9	359	39.9	359		
WPSD-TV	D19 DT LIC	303.6	5,427	303.6	5,427	279.7	5,339		
KFDR	D20 DT LIC	98.7	1,166	98.7	1,166	51.3	394		

Interference to BLCDT20100413AAW LIC scenario 1									
	Call	Chan	Svc	Status	City, State	File Number	Distance		
Desired:	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW			
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	375.0 km		
	WMSN-TV	D18	DT	LIC	MADISON, WI	BLANK0000113879	3.9		
	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	364.7		
	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000189522	200.0		
	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	324.6		
	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	223.3		
	WHA-TV	D20	DT	LIC	MADISON, WI	BLANK0000089074	3.9		
	Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
28015.4	1,548,616	27663.8	1,545,459	25875.6	1,463,333	25867.7	1,463,331	0.03	0.00
Undesired		Total IX		Unique IX, before		Unique IX, after			
WGEM-TV	D19 DT APP	52.0	506			8.0	2		
WMSN-TV	D18 DT LIC	671.4	14,184	140.0	3,460	140.0	3,460		

Table 1 WGEM-TV TVStudy Analysis of Proposal
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KDMI D19 DT LIC	80.1	5,247	48.1	1,507	40.1	1,494
WGN-TV D19 DT LIC	1164.9	69,572	924.5	57,178	900.5	56,725
WXMI D19 DT LIC	35.8	2,748	8.0	165	8.0	165
WTPX-TV D19 DT LIC	84.4	873	4.0	0	4.0	0
WHA-TV D20 DT LIC	515.3	9,186	11.9	1,715	11.9	1,715

Interference to BLCDT20100413AAW LIC scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	375.0 km
	WMSN-TV	D18	DT	LIC	MADISON, WI	BLANK0000113879	3.9
	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	364.7
	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000235154	200.0
	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	324.6
	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	223.3
	WHA-TV	D20	DT	LIC	MADISON, WI	BLANK0000089074	3.9
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
28015.4	1,548,616	27663.8	1,545,459	25875.6	1,463,333	25867.7 1,463,331	0.03 0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
WGEM-TV D19 DT APP	52.0	506			8.0	2
WMSN-TV D18 DT LIC	671.4	14,184	140.0	3,460	140.0	3,460
KDMI D19 DT LIC	80.1	5,247	48.1	1,507	40.1	1,494
WGN-TV D19 DT LIC	1164.9	69,572	924.5	57,178	900.5	56,725
WXMI D19 DT LIC	35.8	2,748	8.0	165	8.0	165
WTPX-TV D19 DT LIC	84.4	873	4.0	0	4.0	0
WHA-TV D20 DT LIC	515.3	9,186	11.9	1,715	11.9	1,715

Interference to BLCDT20100413AAW LIC scenario 3

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	375.0 km
	WMSN-TV	D18	DT	LIC	MADISON, WI	BLANK0000113879	3.9
	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	364.7
	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000189522	200.0
	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	324.6
	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	223.3
	WHA-TV	D20	DT	LIC	MADISON, WI	BLANK0000089074	3.9
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
28015.4	1,548,616	27663.8	1,545,459	25867.6	1,463,301	25859.7 1,463,299	0.03 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
WGEM-TV D19 DT APP	52.0 506	8.0 2	
WMSN-TV D18 DT LIC	671.4 14,184	140.0 3,460	
KDMI D19 DT APP	88.1 5,279	56.1 1,539	
WGN-TV D19 DT LIC	1164.9 69,572	924.5 57,178	
WXMI D19 DT LIC	35.8 2,748	8.0 165	
WTPX-TV D19 DT LIC	84.4 873	4.0 0	
WHA-TV D20 DT LIC	515.3 9,186	11.9 1,715	

Interference to BLCDT20100413AAW LIC scenario 4

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	
Undesireds:	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	375.0 km
	WMSN-TV	D18	DT	LIC	MADISON, WI	BLANK0000113879	3.9
	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	364.7
	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000235154	200.0
	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	324.6
	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	223.3
	WHA-TV	D20	DT	LIC	MADISON, WI	BLANK0000089074	3.9
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX

Table 1 WGEM-TV TVStudy Analysis of Proposal
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28015.4	1,548,616	27663.8	1,545,459	25867.6	1,463,301	25859.7	1,463,299	0.03	0.00
Undesired		Total IX		Unique IX, before		Unique IX, after			
WGEM-TV D19 DT APP	52.0		506			8.0	2		
WMSN-TV D18 DT LIC	671.4		14,184	140.0	3,460	140.0	3,460		
KDMI D19 DT APP	88.1		5,279	56.1	1,539	48.1	1,526		
WGN-TV D19 DT LIC	1164.9		69,572	924.5	57,178	900.5	56,725		
WXMI D19 DT LIC	35.8		2,748	8.0	165	8.0	165		
WTPX-TV D19 DT LIC	84.4		873	4.0	0	4.0	0		
WHA-TV D20 DT LIC	515.3		9,186	11.9	1,715	11.9	1,715		

Interference to proposal scenario 1
1.01% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	
Undesireds:	WSEC	D18	DT	LIC	JACKSONVILLE, IL	BLANK0000150703	117.3 km
	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	281.8
	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000189522	375.7
	WPSD-TV	D19	DT	LIC	PADUCAH, KY	BLANK0000116960	370.4
	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336	341.1

Service area		Terrain-limited		IX-free		Percent IX	
29522.0	344,537	29394.5	344,019	28887.1	340,530	1.73	1.01
Undesired		Total IX		Unique IX		Prcnt Unique IX	
WSEC D18 DT LIC	219.9		1,879	219.9	1,879	0.75	0.55
KDMI D19 DT LIC	168.2		1,272	168.2	1,272	0.57	0.37
WPSD-TV D19 DT LIC	43.8		33	35.8	12	0.12	0.00
KYTV D19 DT LIC	83.6		326	75.6	305	0.26	0.09

Interference to proposal scenario 2
**MX: 1.06% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WGEM-TV	D19	DT	APP	QUINCY, IL	WGEM-TV 1009005	
Undesireds:	WSEC	D18	DT	LIC	JACKSONVILLE, IL	BLANK0000150703	117.3 km
	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	281.8
	WGN-TV	D19	DT	LIC	CHICAGO, IL	BLANK0000189522	375.7
	WPSD-TV	D19	DT	LIC	PADUCAH, KY	BLANK0000116960	370.4
	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336	341.1

Service area		Terrain-limited		IX-free		Percent IX	
29522.0	344,537	29394.5	344,019	28855.1	340,378	1.84	1.06
Undesired		Total IX		Unique IX		Prcnt Unique IX	
WSEC D18 DT LIC	219.9		1,879	219.9	1,879	0.75	0.55
KDMI D19 DT APP	200.2		1,424	200.2	1,424	0.68	0.41
WPSD-TV D19 DT LIC	43.8		33	35.8	12	0.12	0.00
KYTV D19 DT LIC	83.6		326	75.6	305	0.26	0.09

Channel and
Facility
Information

Section	Question	Response
Proposed Community of License	Facility ID	54275
	State	Illinois
	City	QUINCY
	DTV Channel	19
	Designated Market Area	Quincy-Hannibal-Keokuk
Facility Type	Facility Type	Commercial
	Station Type	Main
Zone	Zone	1

Antenna Location
Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1009005
Coordinates (NAD83)	Latitude	39° 58' 22.0" N+
	Longitude	091° 19' 55.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	245.0 meters
	Support Structure Height	222.8 meters
	Ground Elevation (AMSL)	226.4 meters
Antenna Data	Height of Radiation Center Above Ground Level	235.0 meters
	Height of Radiation Center Above Average Terrain	272.9 meters
	Height of Radiation Center Above Mean Sea Level	461.4 meters
	Effective Radiated Power	1000 kW

Antenna Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	Dielectric
	Model	TFU-32GTH/VP-R O8 SP
	Rotation	
	Electrical Beam Tilt	0.7
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
DTV and DTS: Elevation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	