

TECHNICAL EXHIBIT  
APPLICATION FOR DTV MAXIMIZATION  
STATION WMC-DT (FACILITY ID 19184)  
MEMPHIS, TENNESSEE  
CH 5 34.5 KW 308 M

Technical Narrative

This Technical Exhibit supports an application for digital television (DTV) station WMC-DT to maximize its post-transition facility. This application requests a construction permit (CP) for a digital television operation on channel 5, using its licensed analog, non-directional antenna.

Proposed Facilities

Station WMC-DT proposes to operate DTV channel 5 with a non-directional effective radiated power (ERP) of 34.5 kilowatts and antenna height above average terrain (HAAT) of 308 meters. The transmitter site coordinates are:

35° 10' 09" North Latitude  
89° 53' 10" West Longitude

A sketch of antenna and pertinent elevations are included as Figure 1. Figure 2 depicts a typical antenna elevation pattern.

Figure 3 is a map showing the DTV predicted coverage contours. The predicted 35 dBu contour will encompass all of Memphis. The Memphis city limits were derived from information contained in the 2000 U.S. Census of Population and Housing.

### Population Served

The herein proposed WMC-DT “maximized” facility is predicted to serve 1,869,011 persons, post-transition, based upon the 2000 Census. WMC-DT’s associated Appendix B facility is predicted to serve 1,600,027 persons. Therefore, the herein proposed WMC-DT facility would serve more than 100% of WMC-DT’s Appendix B population.

### Allocation Considerations

The proposed WMC-DT operation meets the FCC’s post-transition interference standards to pertinent Class A and DTV facilities using the procedures outlined in the FCC’s OET-69 Bulletin and a 2 kilometer cell size and **0.5 kilometer terrain distance increment**. The results of the interference analyses are summarized in Figure 4. As indicated, the proposed facility will meet the 0.5% interference criterion outlined in the FCC’s Rules and published guidelines with respect to all considered stations, except to station WTVF-DT, on channel 5 at Nashville, Tennessee. An interference agreement with WTVF-DT has been obtained.

The proposal is co-located with AM station WMC. Since there will be no physical changes to the existing tower (i.e., the existing analog antenna will be used) no adverse impact is expected to occur with respect to AM station WMC.

### Radiofrequency Electromagnetic Field Exposure

The proposed WMC-DT facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna is located 319 meters above ground level with an ERP of 34.5 kW. A conservative relative field value of 0.25 was assumed for the

calculation (see Figure 2 for a typical RCA 6-bay Superturnstile antenna pattern). The calculated power density at a point 2 meters above ground level will not exceed 0.0008 mW/cm<sup>2</sup>. This is less than 5% of the FCC's recommended limit of 0.2 mW/cm<sup>2</sup> for channel 6 for an "uncontrolled" environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the station is at reduced power or shut down. The proposed WMC-DT operation appears to be otherwise categorically excluded from environmental processing.

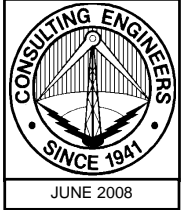
It is noted that this statement only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already have been provided to the FCC by the tower owner.



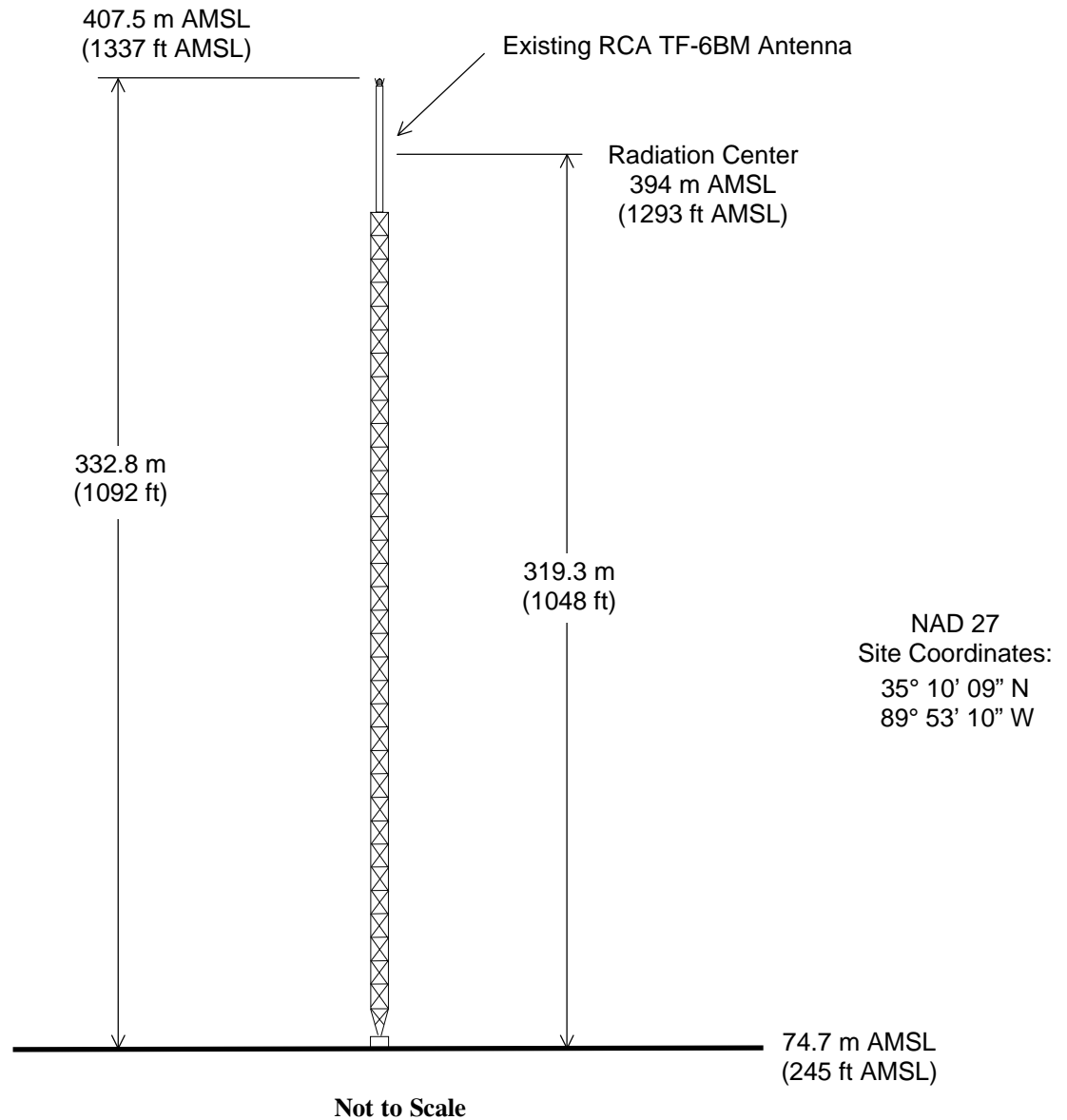
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Figure 1



Registration No. 1048813



## ANTENNA AND SUPPORTING STRUCTURE

STATION WMC-DT  
MEMPHIS, TENNESSEE  
CH 5 34.5 KW 308 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 2

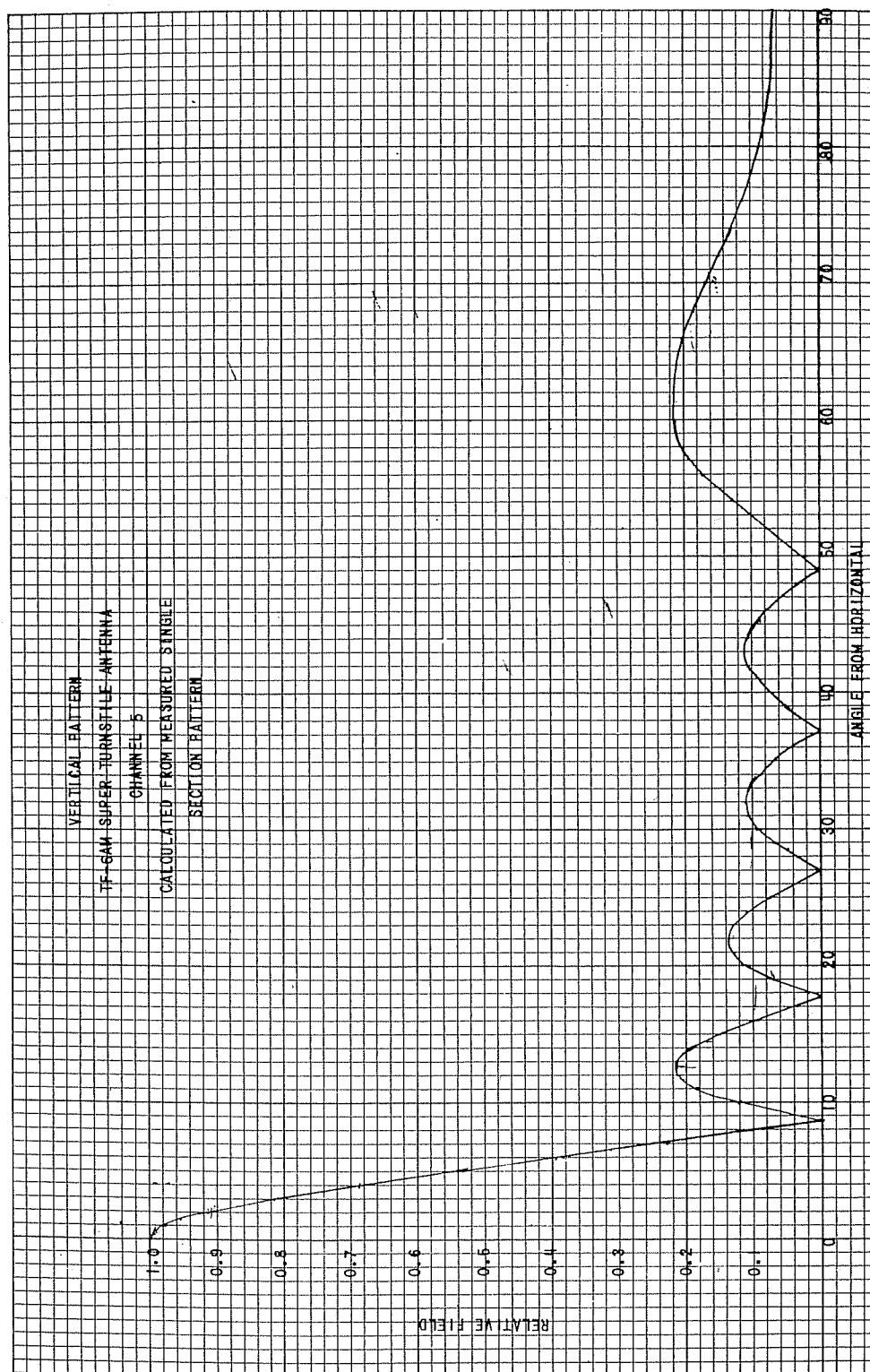
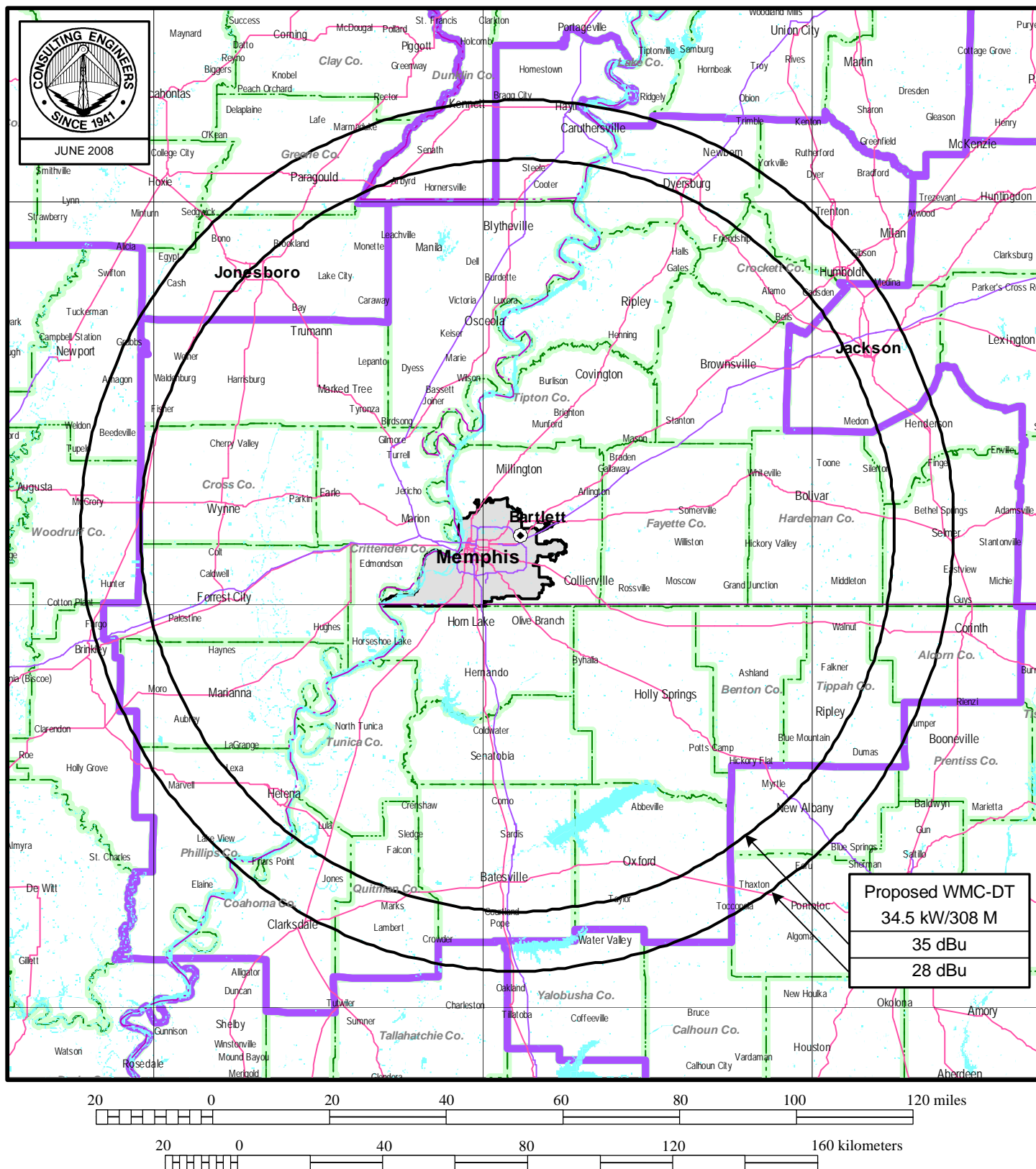


Figure 3



## PREDICTED COVERAGE CONTOURS

STATION WMC-DT

MEMPHIS, TENNESSEE

CH 5 34.5 kW 308 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida

TW Census data selected 2000  
Post Transition Data Base Selected /export/home/cdbb/pt\_tvdb.sff

## TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 06-12-2008 Time: 15:40:55  
Record Selected for Analysis

WMC USERRECORD-01 MEMPHIS TN US  
Channel 05 ERP 34.5 kW HAAT 308. m RCAMSL 00394 m  
Latitude 035-10-09 Longitude 0089-53-10  
Status APP Zone 2 Border  
Last update Cutoff date Docket

Cell Size for Service Analysis 2.0 km/side  
Distance Increments for Longley-Rice Analysis 0.50 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	28.0 dBu F(50,90) (km)
0.0	34.500	307.7	120.3
45.0	34.500	304.0	120.1
90.0	34.500	296.4	119.5
135.0	34.500	308.2	120.4
180.0	34.500	304.9	120.1
225.0	34.500	306.1	120.2
270.0	34.500	321.6	121.2
315.0	34.500	313.8	120.8

Evaluation toward Class A Stations  
No Spacing violations or contour overlap to Class A stations  
Class A Evaluation Complete

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 0.12km from AM station  
MEMPHIS TN WMC Status: Antenna: DAN

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## Start of Interference Analysis

Channel	Call	City/State	ARN
05	WMC	MEMPHIS TN	USERRECORD01

## Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
05	WTVF	NASHVILLE TN	305.1	CP	BPCDT -20080229ACK
05	WTVF	NASHVILLE TN	305.1	PLN	DTVPLN -DTVP0028
05	WTVF	NASHVILLE TN	305.1	APP	USERRECORD-02

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## Analysis of Interference to Affected Station 1

Analysis of current record

Channel	Call	City/State	Application Ref. No.
05	WTVF	NASHVILLE TN	BPCDT -20080229ACK

## Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
05	WMC-TV	MEMPHIS TN	305.1	PLN	DTVPLN	-DTVP0027
05	WCYB-TV	BRISTOL VA	419.3	PLN	DTVPLN	-DTVP0030
05	WCYB-TV	BRISTOL VA	419.3	CP	BPCDT	-20080327AFS
05	WMC	MEMPHIS TN	305.1	APP	USERRECORD-01	

Total scenarios = 1

Result key: 1  
 Scenario 1 Affected station 1  
 Before Analysis

Results for: 5A TN NASHVILLE BPCDT 20080229ACK CP  
 HAAT 425.0 m, ATV ERP 10.3 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2117836	41112.4
not affected by terrain losses	2108075	40080.9
lost to NTSC IX	0	0.0
lost to additional IX by ATV	3329	363.8
lost to ATV IX only	3329	363.8
lost to all IX	3329	363.8

Potential Interfering Stations Included in above Scenario 1

5A TN MEMPHIS DTVPLN DTVP0027 PLN

After Analysis

Results for: 5A TN NASHVILLE BPCDT 20080229ACK CP  
 HAAT 425.0 m, ATV ERP 10.3 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2117836	41112.4
not affected by terrain losses	2108075	40080.9
lost to NTSC IX	0	0.0
lost to additional IX by ATV	15707	1099.5
lost to ATV IX only	15707	1099.5
lost to all IX	15707	1099.5

Potential Interfering Stations Included in above Scenario 1

5A TN MEMPHIS USERRECORD01 APP

The following station failed the de minimis interference criteria.

5D TN MEMPHIS USERRECORD01  
 ERP 34.50 kW HAAT 308.0 m RCAMSL 394.0 m  
 Antenna none

Due to interference to the following station and scenario: 1

5D TN NASHVILLE BPCDT 20080229ACK  
 ERP 10.31 kW HAAT 425.0 m RCAMSL 613.0 m  
 Antenna CDB 9999999999999999

Percent new interference from proposal: 0.5881 to BPCDT 20080229ACK  
 Worst case new IX 0.5881% Scenario 1

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Analysis of Interference to Affected Station 2

Analysis of current record

Channel	Call	City/State	Application	Ref. No.
05	WTVF	NASHVILLE TN	DTVPLN	-DTVP0028



## Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
05	WMC-TV	MEMPHIS TN	305.1	PLN	DTVPLN	-DTVP0027
05	WCYB-TV	BRISTOL VA	419.3	PLN	DTVPLN	-DTVP0030
05	WCYB-TV	BRISTOL VA	419.3	CP	BPCDT	-20080327AFS
05	WMC	MEMPHIS TN	305.1	APP	USERRECORD-01	

Total scenarios = 1

Result key: 2  
 Scenario 1 Affected station 2  
 Before Analysis

Results for: 5A TN NASHVILLE DTVPLN DTVP0028 PLN  
 HAAT 425.0 m, ATV ERP 10.3 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2106741	40811.8
not affected by terrain losses	2095200	39740.2
lost to NTSC IX	0	0.0
lost to additional IX by ATV	5613	351.9
lost to ATV IX only	5613	351.9
lost to all IX	5613	351.9

Potential Interfering Stations Included in above Scenario 1

5A TN MEMPHIS	DTVPLN	DTVP0027	PLN
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After Analysis

Results for: 5A TN NASHVILLE DTVPLN DTVP0028 PLN  
 HAAT 425.0 m, ATV ERP 10.3 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2106741	40811.8
not affected by terrain losses	2095200	39740.2
lost to NTSC IX	0	0.0
lost to additional IX by ATV	15221	1091.6
lost to ATV IX only	15221	1091.6
lost to all IX	15221	1091.6

Potential Interfering Stations Included in above Scenario 1

5A TN MEMPHIS	USERRECORD01	APP
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Percent new IX = 0.4598%  
 Worst case new IX 0.4598% Scenario 1

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## Analysis of Interference to Affected Station 3

Analysis of current record

Channel	Call	City/State	Application	Ref. No.
05	WTVF	NASHVILLE TN	USERRECORD-02	

## Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
05	WMC-TV	MEMPHIS TN	305.1	PLN	DTVPLN	-DTVP0027
05	WCYB-TV	BRISTOL VA	419.3	PLN	DTVPLN	-DTVP0030
05	WCYB-TV	BRISTOL VA	419.3	CP	BPCDT	-20080327AFS
05	WMC	MEMPHIS TN	305.1	APP	USERRECORD-01	

Total scenarios = 2

Result key: 3  
Scenario 1 Affected station 3  
Before Analysis

Results for: 5A TN NASHVILLE USERRECORD02 APP

HAAT 429.0 m, ATV ERP 25.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2284977	48627.4
not affected by terrain losses	2255426	47160.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	15578	683.7
lost to ATV IX only	15578	683.7
lost to all IX	15578	683.7

Potential Interfering Stations Included in above Scenario 1

5A VA BRISTOL	DTVPLN	DTVP0030	PLN
5A TN MEMPHIS	DTVPLN	DTVP0027	PLN

After Analysis

Results for: 5A TN NASHVILLE USERRECORD02 APP

HAAT 429.0 m, ATV ERP 25.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2284977	48627.4
not affected by terrain losses	2255426	47160.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	36012	1759.3
lost to ATV IX only	36012	1759.3
lost to all IX	36012	1759.3

Potential Interfering Stations Included in above Scenario 1

5A VA BRISTOL	DTVPLN	DTVP0030	PLN
5A TN MEMPHIS	USERRECORD01		APP

The following station failed the de minimis interference criteria.

5D TN MEMPHIS USERRECORD01  
ERP 34.50 kW HAAT 308.0 m RCAMSL 394.0 m  
Antenna none

Due to interference to the following station and scenario: 1

5D TN NASHVILLE USERRECORD02  
ERP 25.00 kW HAAT 429.0 m RCAMSL 613.0 m  
Antenna none

Percent new interference from proposal: 0.9123 to USERRECORD02

Result key: 4  
Scenario 2 Affected station 3  
Before Analysis

Results for: 5A TN NASHVILLE USERRECORD02 APP

HAAT 429.0 m, ATV ERP 25.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2284977	48627.4
not affected by terrain losses	2255426	47160.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	15578	683.7
lost to ATV IX only	15578	683.7
lost to all IX	15578	683.7

Potential Interfering Stations Included in above Scenario 2

5A VA BRISTOL	BPCDT	20080327AFS	CP
5A TN MEMPHIS	DTVPLN	DTVP0027	PLN

#### After Analysis

Results for: 5A TN NASHVILLE      USERRECORD02      APP  
HAAT 429.0 m, ATV ERP 25.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2284977	48627.4
not affected by terrain losses	2255426	47160.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	36012	1759.3
lost to ATV IX only	36012	1759.3
lost to all IX	36012	1759.3

Potential Interfering Stations Included in above Scenario 2

5A VA BRISTOL	BPCDT	20080327AFS	CP
5A TN MEMPHIS	USERRECORD01		APP

The following station failed the de minimis interference criteria.

5D TN MEMPHIS      USERRECORD01  
ERP 34.50 kW HAAT 308.0 m RCAMSL 394.0 m  
Antenna none

Due to interference to the following station and scenario: 2

5D TN NASHVILLE      USERRECORD02  
ERP 25.00 kW HAAT 429.0 m RCAMSL 613.0 m  
Antenna none

Percent new interference from proposal: 0.9123 to USERRECORD02

Worst case new IX 0.9123% Scenario 1

Proposed station is MX

5A TN MEMPHIS	USERRECORD01	APP
5A TN NASHVILLE	USERRECORD02	APP

Proposal MX with USERRECORD02 scenario 1 of station 3

Proposed station is MX

5A TN MEMPHIS	USERRECORD01	APP
5A TN NASHVILLE	USERRECORD02	APP

Proposal MX with USERRECORD02 scenario 2 of station 3

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#### Analysis of Interference to Affected Station 4

Analysis of current record

Channel	Call	City/State	Application Ref. No.
05	WMC	MEMPHIS TN	USERRECORD-01

#### Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
05	WTVF	NASHVILLE TN	305.1	CP	BPCDT -20080229ACK
05	WTVF	NASHVILLE TN	305.1	PLN	DTVPLN -DTVP0028
05	WTVF	NASHVILLE TN	305.1	APP	USERRECORD-02

Total scenarios = 3

Result key: 5  
Scenario 1 Affected station 4  
Before Analysis

Results for: 5A TN MEMPHIS USERRECORD01 APP  
HAAT 308.0 m, ATV ERP 34.5 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	1922474	45516.1
not affected by terrain losses	1917146	45292.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	28877	872.3
lost to ATV IX only	28877	872.3
lost to all IX	28877	872.3

Potential Interfering Stations Included in above Scenario 1

5A TN NASHVILLE BPCDT 20080229ACK CP

Result key: 6  
Scenario 2 Affected station 4  
Before Analysis

Results for: 5A TN MEMPHIS USERRECORD01 APP  
HAAT 308.0 m, ATV ERP 34.5 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	1922474	45516.1
not affected by terrain losses	1917146	45292.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	28824	868.3
lost to ATV IX only	28824	868.3
lost to all IX	28824	868.3

Potential Interfering Stations Included in above Scenario 2

5A TN NASHVILLE DTVPLN DTVP0028 PLN

Result key: 7  
Scenario 3 Affected station 4  
Before Analysis

Results for: 5A TN MEMPHIS USERRECORD01 APP  
HAAT 308.0 m, ATV ERP 34.5 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	1922474	45516.1
not affected by terrain losses	1917146	45292.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	48135	1824.6
lost to ATV IX only	48135	1824.6
lost to all IX	48135	1824.6

Potential Interfering Stations Included in above Scenario 3

5A TN NASHVILLE USERRECORD02 APP

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FINISHED FINISHED FINISHED FINISHED FINISHED FINISHED