

## **Technical Report W223BE.CP Minor Modification**

This technical report is submitted for a minor modification to the W223BE.CP at Bluhmtown, TN, FCC file number BPFT-20130516AGX. A move to the first adjacent channel 222 with corresponding changes in antenna and increase in ERP are requested.

### **W223BE.CP Modification Analysis:**

An overlap study (exhibit E-1) shows the W223BE.CP modification will not produce any interference overlap to current facilities at its existing site coordinates:

**35 51 56N 85 58 30W NAD 27.**

Two Scala CA2-FM vertically-polarized directional antennas, skewed at 10 and 265 degree azimuths with a 50/50 percent power split (exhibit E-2), will be mounted on the existing tower at a COR AGL of 15 meters, 641 meters AMSL at a HAAT of 340 meters, calculated using the CONTOUR program and the FCC 30 second terrain data with 12 radials (exhibit E-3), and operate at 0.250 kW ERP. The 60 dBu F(50-50) contour overlaps the licensed 60 dBu contour and is completely contained within the primary WMOT(FM) 60 dBu contour (exhibit E-4).

### **RF Exposure Calculation:**

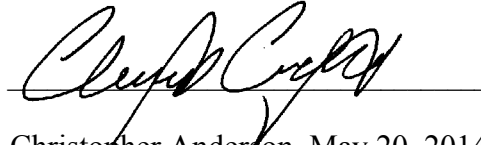
The RF contribution was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (distance to radiation center in meters -2m)}}$$

Using a worst case vertical (F) factor of 1.0, the RF is calculated to be 49.4  $\mu\text{W/cm}^2$  to the ground, which is well below the 200  $\mu\text{W/cm}^2$  maximum permissible exposure for controlled general public exposure.

**Conclusion:**

It is concluded the W223BE.CP modification complies with all Commission rules and policies.

A handwritten signature in black ink, appearing to read "Christopher Anderson", is written over a horizontal line.

Christopher Anderson May 20, 2014  
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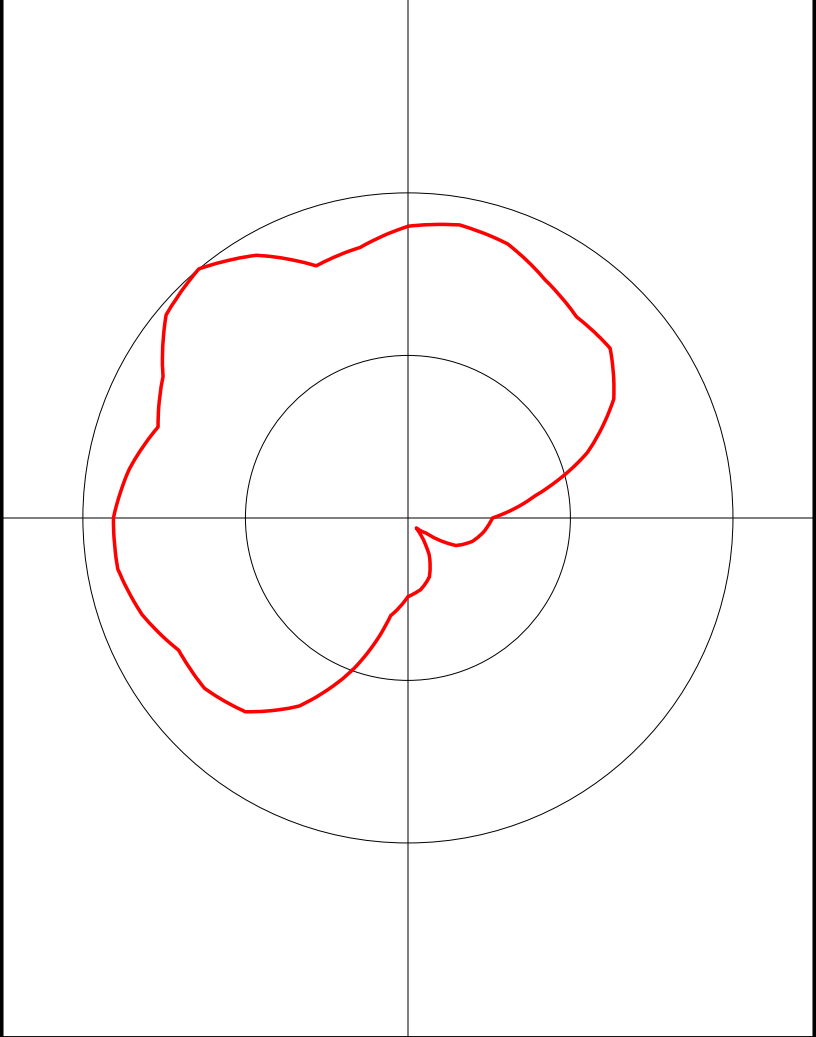
# E-1 W223BE.CP Mod. Overlap Study

REFERENCE 35 51 56.0 N. 85 58 30.0 W.		CH# 222D - 92.3 MHz, Pwr= 0.25 kW DA, HAAT= 339.7 M, COR= 641 M Average Protected F(50-50)= 23.95 km Standard Directional							DISPLAY DATES DATA 05-16-14 SEARCH 05-16-14		
CH CITY	CALL	TYPE ANT STATE	AZI ---	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*	
222CO Chattanooga	WDEF-FM	LIC _C_ TN	143.8 324.2	100.36 BMLH20050831ADG	35 08 06.0 85 19 25.0	100.000 360	163.9 743	62.6 Jackson	-71.9*	4.2 Telecasters, Inc.	
223D Bluhmtown	W223BE	CP DC_ TN	0.0 0.0	0.00 BPFT20130516AGX	35 51 56.0 85 58 30.0	0.050 340	25.0 641	16.7 Middle Tennessee	-48.8*	-52.8* State Uni	
223D Bluhmtown	W223BE	LIC _C_ TN	0.0 0.0	0.00 BLFT20070726AAQ	35 51 56.0 85 58 30.0	0.010 340	16.1 641	11.3 Middle Tennessee	-39.9*	-47.4* State Uni	
221A Goodlettsville	AL6637	RSV-A _ TN	304.7 124.2	84.79 RM11324	36 17 50.0 86 45 11.0	6.000 100	49.6 281	32.7	10.5	14.7	
221A Goodlettsville	WQOK	LIC _CX TN	304.7 124.2	84.79 BLH20130125ACM	36 17 50.0 86 45 11.0	3.500 133	48.6 319	32.4 Cumulus Licensing	11.5	15.0 LIC	
225C Nashville	WJXA	LIC _CY TN	287.9 107.3	93.76 BLH19861204KB	36 07 14.0 86 58 07.0	100.000 321	10.4 507	73.1 South Central	60.4	19.6 Communicatio	
219C3 Murfreesboro	WFCM-FM	LIC DEX TN	263.1 82.7	58.71 BLED20050411AAI	35 48 01.0 86 37 17.0	2.500 231	2.6 468	33.0 The Moody Bible	32.2	24.5 Institute	
223D Brentwood	W223BV	CP _C_ TN	301.3 120.8	85.90 BMPFT20131126BLS	36 15 49.6 86 47 38.9	0.140	32.9 526	21.8 Educational Media	28.5	27.5 Foundati	
219A Cookeville	WHRS	LIC _CN TN	55.8 236.1	55.09 BLED19961113KE	36 08 34.0 85 28 02.0	0.500 117	1.6 466	20.0 Nashville Public	32.9	34.1 Radio	
275C1 La Vergne	WBUZ	LIC _CX TN	263.1 82.7	58.71 BMLH20021209ABP	35 48 01.0 86 37 17.0	100.000 291	0.0 530	0.0 Wycq, Inc	22.0R	36.7M	
221A Tompkinsville	WTKY-FM	LIC NCX KY	14.9 195.1	109.67 BLH20030318ADL	36 49 07.0 85 39 32.0	5.300 107	40.7 372	26.4 Carol Burrow,	45.8	48.4 Administratr	
220A Lynchburg	WGBQ	LIC DCX TN	208.1 27.9	74.27 BLED20101025AAP	35 16 32.0 86 21 37.0	0.900 107	1.6 395	14.3 American Family	51.6	55.3 Associatio	
222CO Milan	WYNU	LIC _C_ TN	271.7 90.1	252.87 BMLH19970129KA	35 54 06.0 88 46 55.0	100.000 302	170.9 430	71.5 Forever South	58.4	110.6 Licenses, L	
221A Minor Hill	WEUZ	LIC NCN TN	233.4 52.7	137.46 BLH19980625KD	35 07 18.0 87 11 17.0	2.600 146	42.8 399	28.3 Broadcast One,	71.4	74.0 Inc.	

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM  
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
\*\*\*affixed to 'IN' or 'OUT' values = site inside protected contour.

E-2 W223BE.CP Mod. Antenna Pattern

Azimuth (deg)	Relative Field
0.0	0.897
10.0	0.915
20.0	0.897
30.0	0.845
40.0	0.807
50.0	0.812
60.0	0.731
70.0	0.587
80.0	0.399
90.0	0.26
100.0	0.238
110.0	0.211
120.0	0.17
130.0	0.072
140.0	0.04
150.0	0.13
160.0	0.193
170.0	0.224
180.0	0.242
190.0	0.305
200.0	0.498
210.0	0.668
220.0	0.778
230.0	0.816
240.0	0.814
250.0	0.87
260.0	0.906
270.0	0.906
280.0	0.87
290.0	0.818
300.0	0.87
310.0	0.971
320.0	1.0
330.0	0.933
340.0	0.825
350.0	0.845



Two Scala CA2 vertical dipoles oriented at 10 and 265 degrees True.

### E-3 W223BE.CP Mod. HAAT Calculation

N. Lat. = 355156.0 W. Lng. = 855830.0

HAAT and Distance to Contour,

FCC, FM 2-10 Mi, 51 pts Method - FCC 30 SEC

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	266.7	374.3	0.2012	-6.96	0.897	23.78
030	306.4	334.6	0.1785	-7.48	0.845	21.93
060	333.3	307.7	0.1336	-8.74	0.731	19.63
090	338.2	302.8	0.0169	-17.72	0.260	11.60
120	337.5	303.5	0.0072	-21.41	0.170	9.34
150	341.3	299.7	0.0042	-23.74	0.130	7.96
180	338.7	302.3	0.0146	-18.34	0.242	11.19
210	307.4	333.6	0.1116	-9.53	0.668	19.52
240	241.8	399.2	0.1656	-7.81	0.814	23.37
270	283.0	358.0	0.2052	-6.88	0.906	23.41
300	259.1	381.9	0.1892	-7.23	0.870	23.65
330	261.6	379.4	0.2176	-6.62	0.933	24.39

Ave El= 301.26 M HAAT= 339.74 M AMSL= 641

E-4 W223BE.CP Mod. 60 dBu Contour Plot

