Educational Media Foundation
5700 West Oaks Boulevard
Rocklin, CA 95765

Exhibit 13
Toledo, OH

Channel Study

REFERENCE — CH# 221D - 92.1 MHz, Pwr= 0.25 kW DA, HAAT= 88.0 M, COR= 267 M — DISPLAY DATES
41 42 52.0 N. — Average Protected F(50-50)= 12.1 km — DATA 12-12-16
83 30 22.0 W. — Standard Directional — SEARCH 12-13-16

CH CALL / CITY	TYPE / STATE	ANT / AZI. <--	DIST / FILE #	LAT. / LNG.	Pwr(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* / (Overlap in km)	*OUT*
223B WVKS	LIC	CN	199.7	21.54	41 31 55.0	50.000	6.1	66.1	6.1	-45.9*<
Toledo	OH		19.7	BMLH19961008KA	83 35 37.0	146	340	Citicasters Licenses, Inc.		
221D W221BG!	LIC	C	227.5	11.14	41 38 48.5	0.010	22.8	6.8	-23.0	-34.3
Toledo	OH		47.5	BLFT20161128AFX	83 36 17.9		313	Educational Media Foundati		
221A WOHF	LIC	NCX	133.3	76.87	41 14 19.0	5.800	89.1	30.3	-13.9*<	40.9
Bellevue	OH		313.8	BLH20120913AAR	82 50 16.0	103	337	Bas Broadcasting, Inc.		
222B WMXD	LIC	ZCN	28.9	78.50	42 19 55.0	45.000	77.7	64.9	-3.3<	5.2
Detroit	MI		209.2	BLH19970303KA	83 02 42.0	146	331	Amfm Radio Licenses, L.l.c		
221A WCSR-FM	LIC	CN	284.6	96.83	41 55 41.0	6.000	78.3	22.0	8.3	40.5
Hillsdale	MI		103.9	BLH19910918KB	84 38 10.0	74	411	Wcsr, Inc		
219B WUOM«	LIC	CN	336.5	84.05	42 24 27.0	93.000	8.9	66.8	54.0R	30.1M
Ann Arbor	MI		156.3	BLED19990204KA	83 54 50.0	237	513	Regents Of The University		
220A WGDE«	LIC	DCN	237.9	87.28	41 17 41.0	6.000	42.3	27.4	34.0R	53.3M
Defiance	OH		57.3	BLED19990305KB	84 23 24.0	93	308	Public Broadcasting Founda		
220B1 CBEW-FM-1«	OP	DHN	57.3	82.64	42 06 46.0	10.450	40.1	30.3	60.0R	22.6M
Leamington	ON		237.8	9353	82 39 52.0	74	263	Cbew-fm-1		
221A WFGF	LIC	CN	203.6	128.21	40 39 20.0	3.000	77.5	25.2	41.0	70.5
Wapakoneta	OH		23.2	BLH19850510KC	84 06 54.0	100	378	Childers Media Group Llc		
275B WWWW-FM	LIC	DCX	334.5	65.55	42 14 46.0	50.000	39.5	26.0	15.0R	50.6M
Ann Arbor	MI		154.2	BLH20110408AAK	83 50 58.0	134	406	Cumulus Licensing Llc		
219D W219DS«	LIC	C	188.1	72.34	41 04 10.0	0.027	0.4	7.1	7.0R	65.3M
Findlay	OH		8.0	BLFT20130607AAX	83 37 38.0	84	320	Educational Media Foundati		

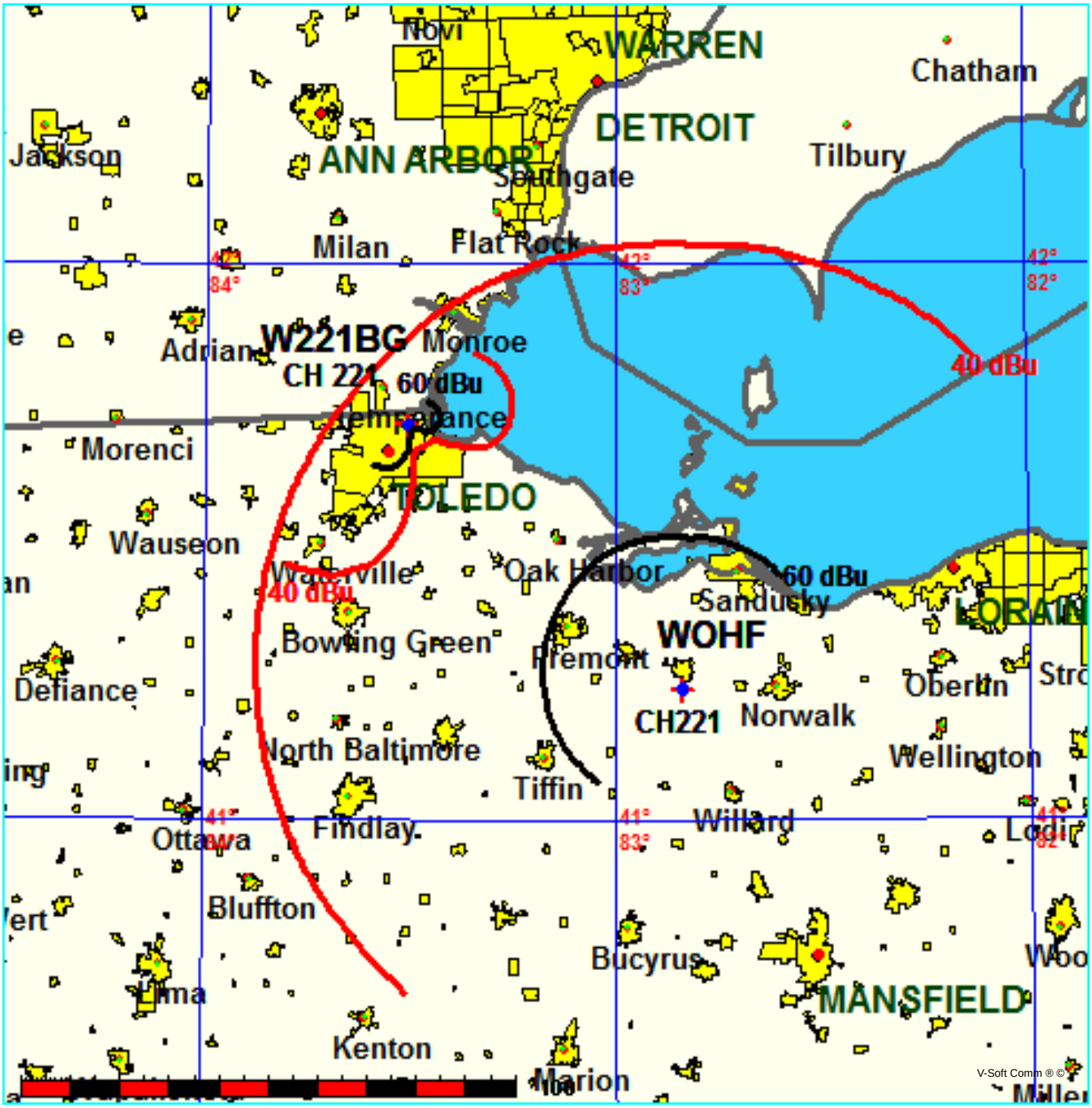
Terrain database is NGDC 30 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference Zone= East Zone, Co to 3rd adjacent.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.
« = Station meets FCC minimum distance spacing for its class.
< = Contour Overlap

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FMCommander Single Allocation Study - 12-13-2016 - NGDC 30 SEC
W221BG's Overlaps (In= -13.85 km, Out= 40.87 km)

W221BG CH 221 D DA
Lat= 41 42 52.0, Lng= 83 30 22.0
0.25 kW 88 m HAAT, 267 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WOHF CH 221 A 73.215 N BLH20120913AAR
Lat= 41 14 19.0, Lng= 82 50 16.0
5.8 kW 103 m HAAT, 337.4 m COR
Prot.= 60 dBu, Intef.= 40 dBu

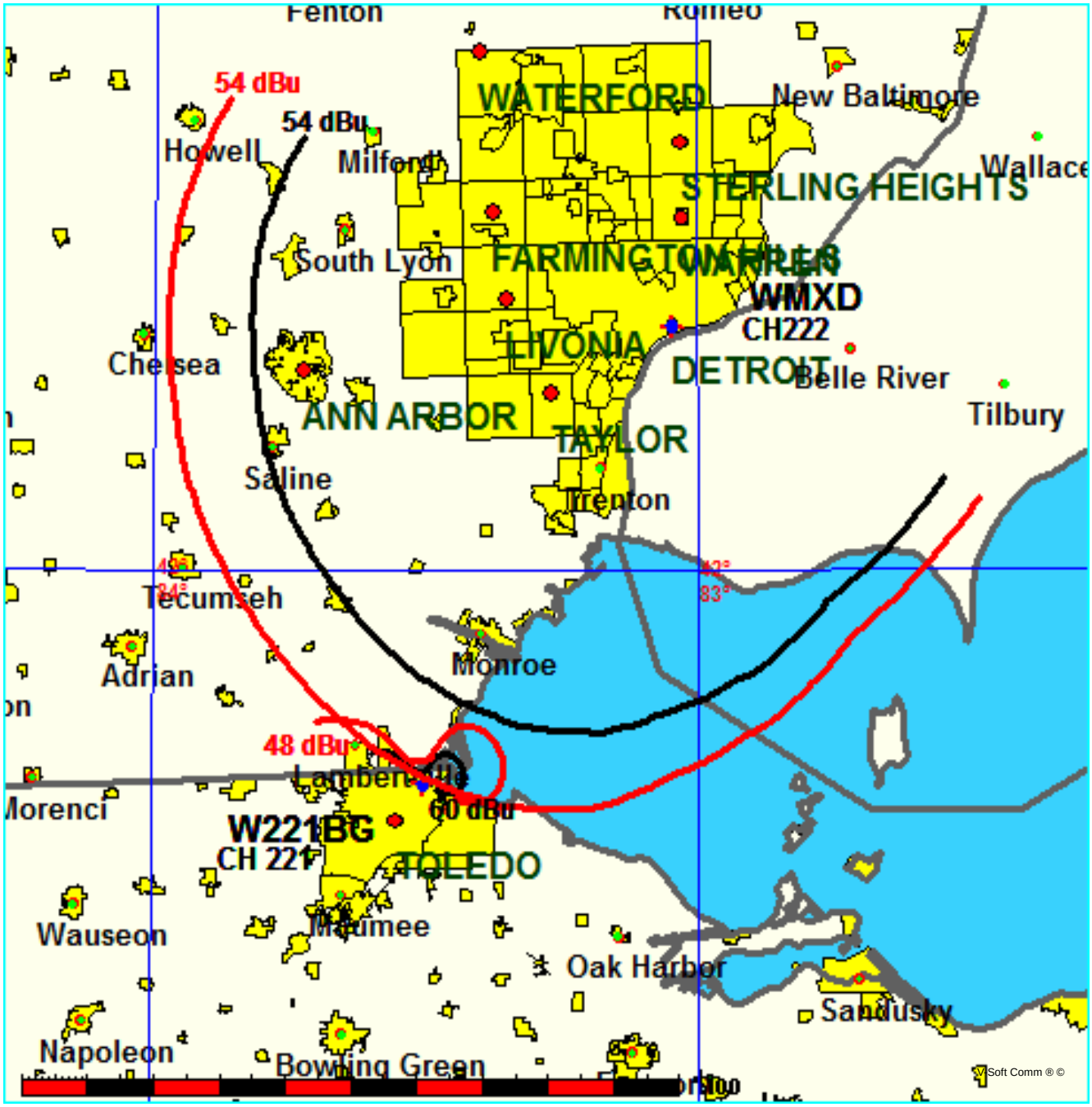


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FMCommander Single Allocation Study - 12-13-2016 - NGDC 30 SEC
W221BG's Overlaps (In= -3.35 km, Out= 5.16 km)

W221BG CH 221 D DA
Lat= 41 42 52.0, Lng= 83 30 22.0
0.25 kW 88 m HAAT, 267 m COR
Prot.= 60 dBu, Intef.= 48 dBu

WMXD CH 222 B 73.215 Z BLH19970303KA
Lat= 42 19 55.0, Lng= 83 02 42.0
45.0 kW 146 m HAAT, 331 m COR
Prot.= 54 dBu, Intef.= 54 dBu



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Exhibit 13-A
Toledo, OH

Compliance with C.F.R. 74.1204

The proposed FM Translator to operate on channel 221 is located within the protected 54dBu contour of second adjacent channel station WVKS, channel 223B, Toledo, OH. According to 74.1204(a)(3), in order to protect second and third adjacent facilities, the difference in dBu between the two facilities must not exceed 40dBu.

The proposed ERP for W221BG.P:	250 watts
The proposed COR for W221BG.P:	85 meters
WVKS F(50/50) contour at proposed site:	78.4dBu
The F(50/10) contour of proposed W221BG.P:	118.4dBu

The predicted distance to the 118.4dbu interfering contour is 134.9 meters. Taking into account the vertical elevation pattern of the Scala CL vertically polarized single bay antenna and the height above ground of 85M, it has been determined that the interfering contour of 118.4dbu does not reach the ground. As seen in Exhibit 13-A1, the lowest elevation for this interfering contour is 41.48M above ground at a distance of 75.87m from the antenna.

As can be seen in Exhibit 13–A2 there are no surrounding structures which are tall enough to enter the interfering contour within the 134.9 m distance from the antenna.

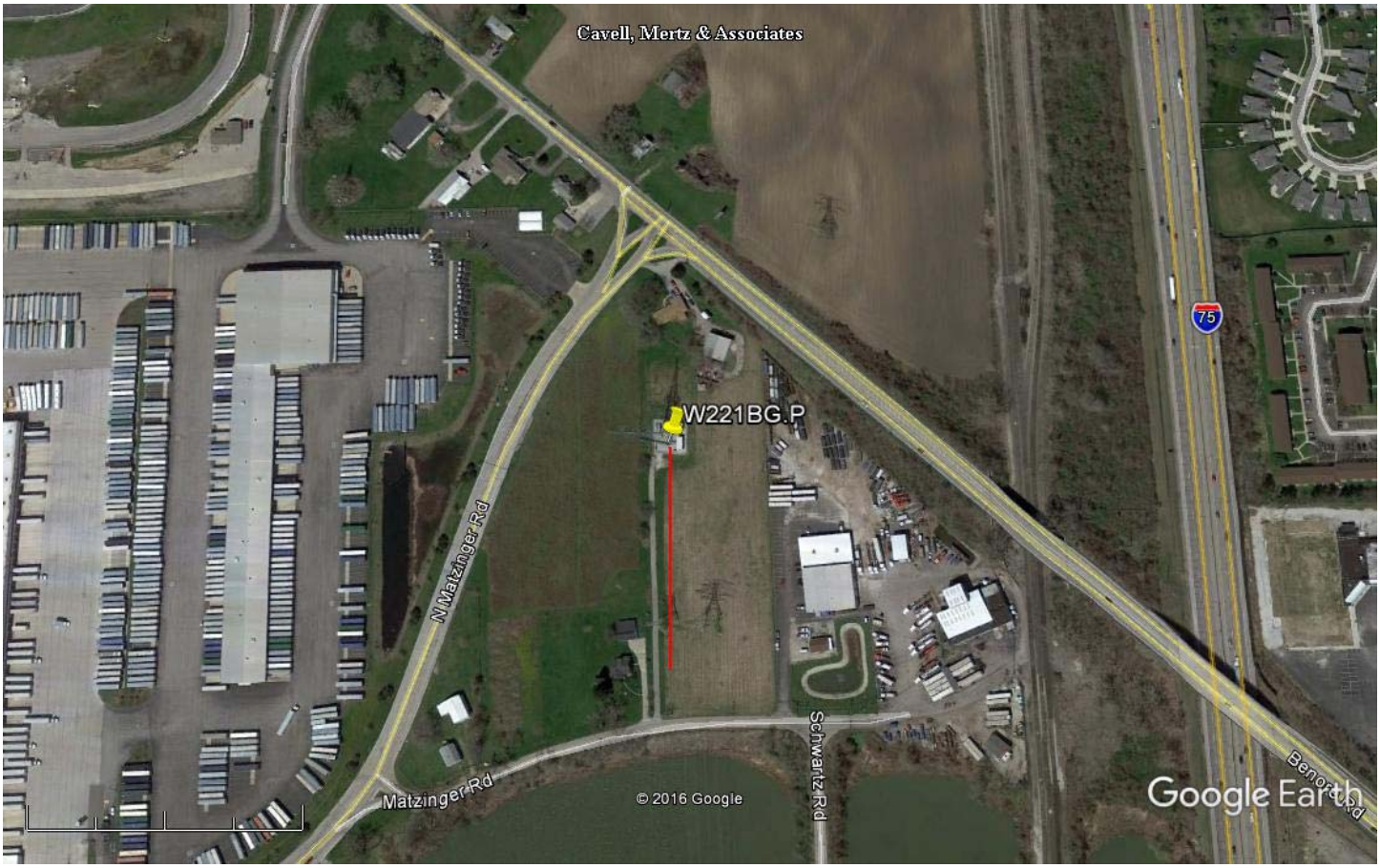
Therefore, EMF respectfully requests a waiver of C.F.R. 74.1204 based on no population within the area of predicted interference.

EXHIBIT 13 - A1
74.1204(d) Showing
W221BG
Toledo, OH

ERP (kw): 0.25
Height of Antenna above Roof (m): 85
Translator's IX Contour: 118.3
Antenna Type: Scala CL-V

Depression Angle from Horizon	Antenna Relative Field	ERP (kw) from the Antenna RF	Dist. To IX Contour (m)	Height IX Contour Above Ground (m)
0	1.000	0.2500	134.8870	85.000
5	0.980	0.2401	132.1892	73.479
10	0.950	0.2256	128.1426	62.748
15	0.895	0.2003	120.7238	53.754
20	0.820	0.1681	110.6073	47.170
25	0.735	0.1351	99.1419	43.101
30	0.645	0.1040	87.0021	41.499
35	0.563	0.0791	75.8739	41.481
40	0.470	0.0552	63.3969	44.249
45	0.360	0.0324	48.5593	50.663
50	0.250	0.0156	33.7217	59.168
55	0.155	0.0060	20.9075	67.874
60	0.085	0.0018	11.4654	75.071
65	0.045	0.0005	6.0699	79.499
70	0.020	0.0001	2.6977	82.465
75	0.010	0.0000	1.3489	83.697
80	0.010	0.0000	1.3489	83.672
85	0.010	0.0000	1.3489	83.656
90	0.010	0.0000	1.3489	83.651

Exhibit 13-A2



Google Earth

feet 1000
meters 400

Yellow Pin Marker
NAD 27
41 42' 51.6" N 83 30' 22.4" W
Red Line Marker: 135m at 180 degrees true north