

Educational Media Foundation
5700 West Oaks Boulevard
Rocklin, CA 95765

W204CT
Pittsburgh, PA

Purpose of Application

The purpose of this minor modification is to specify a change of the W204CT transmit antenna from a directional pattern to a non-directional pattern. No change in location, center of radiation level, or effective radiated power are proposed.

The W204CT proposed 60dbu contour remains inside the WPKV Main service contour as a fill in translator.

Channel Study

REFERENCE		CH# 204D - 88.7 MHz, Pwr= 0.13 kW DA, HAAT= 0.0 M, COR= 510 M								DISPLAY DATES	
40 28 19.2 N.		Average Protected F(50-50)= 6.0 km								DATA 01-12-22	
79 59 39.2 W.		Standard Directional								SEARCH 01-14-22	
CH CITY	CALL	TYPE STATE	ANT	AZI. <--	DIST FILE #	LAT. LNG.	Pwr (kW) HAAT (M)	INT (km) COR (M)	PRO (km) LICENSEE	*IN* (Overlap in km)	*OUT*
204D Pittsburgh	W204CT!	LIC PA	DVN	0.0 0.0	0.00 BLFT20180809AAJ	40 28 19.20 79 59 39.20	0.130	510	---Reference---		
207B Pittsburgh	WQED-FM	LIC PA	CN	138.3 318.3	3.84 BLED20010209AAG	40 26 46.20 79 57 50.20	28.000 199	5.6 505	50.6 Wqed Multimedia	-18.0*	-47.5*
202A Pittsburgh	WRCT	LIC PA	DCN	125.7 305.7	5.29 BLED19931202KB	40 26 39.20 79 56 36.10	1.750 22	1.6 324	11.6 Wrct Radio, Inc.	-13.2*	-7.1*
204D Butler	W204CR	LIC PA	CN	9.7 189.8	45.40 BLFT20160405ABN	40 52 28.00 79 54 10.00	0.013	22.8 480	6.7 Family Life Ministries, In	7.2	-12.1*
205B Johnstown	WCOA-FM	LIC PA	DVN	97.1 277.8	86.40 BMLED20130530AMH	40 22 17.30 78 58 55.10	5.500 370	83.7 897	53.8 Family Life Ministries, In	-11.6	7.7
204B1 Moundsville	WULV	LIC WV	DCN	223.2 42.8	94.92 BMLED20150427AAR	39 50 51.30 80 45 22.30	3.000 181	86.4 498	30.3 Educational Media Foundati	-8.1	10.4
204A Clintonville	WCGT	LIC PA	CN	20.8 201.1	92.52 0000143608	41 14 56.50 79 36 01.10	4.000 66	83.4 485	27.7 Family Life Ministries, In	-6.3	15.5
204A Connellsville	768606	APP PA	DCN	141.4 321.7	65.00 0000167527	40 00 51.60 79 31 03.00	0.080 713	31.3 713	8.8 Broadcast Educational Comm	17.4	0.5
203B Johnstown	WCOA-FM	CP PA	DCN	79.4 260.0	81.99 0000145264	40 36 15.50 79 02 22.40	10.000 257	64.2 702	42.9 Family Life Ministries, In	0.6	13.0
204A Clintonville	WCGT	CP PA	DCN	2.3 182.3	94.22 0000168468	41 19 07.80 79 56 57.80	3.000 141	77.7 558	25.1 Family Life Ministries, In	1.5	18.9
203B1 Masontown	WYFU	LIC PA	DCN	179.7 359.7	76.15 BLED20130509AAC	39 47 13.20 79 59 22.20	16.000 106	50.4 439	32.1 Bible Broadcasting Network	10.7	20.3
201A Murrysville	WKGO	LIC PA	DEN	79.3 259.5	28.94 BLED20050413AAM	40 31 12.20 79 39 28.10	1.000 92	0.5 432	9.4 Broadcast Educational Comm	11.3	18.3
203B Youngstown	WYSU	LIC OH	DCN	320.1 139.6	85.02 BLED20101105AIJ	41 03 23.40 80 38 43.00	50.000 115	54.6 437	31.1 Youngstown State Universit	14.6	26.1
205A Steubenville	WBJV	LIC OH	CN	259.4 79.0	63.09 BLED20020221AAE	40 21 56.20 80 43 35.30	0.125 78	16.7 403	11.2 American Family Associatio	29.8	26.9
204B Beach City	WOFN	LIC OH	DCN	276.4 95.4	125.39 BLED20181018AAM	40 35 17.80 81 28 12.70	18.500 127	78.3 436	26.7 David Ingles Ministries, I	29.0	46.3
202D Butler	W204CR	LIC PA	CN	9.7 189.8	45.40 0000177526	40 52 28.00 79 54 10.00	0.013	0.3 480	6.8 Family Life Ministries, In	29.7	37.6
205A New Wilmington	WNNW	LIC PA	DEN	337.9 157.7	76.78 BLED20080915AEH	41 06 41.20 80 20 20.20	4.000 33	31.3 382	20.6 Westminster College Board	31.7	34.5
201A Bethany	WZUM-FM	LIC WV	CN	239.4 59.1	55.62 BLED19850206LM	40 12 58.20 80 33 30.20	1.100 125	1.7 457	19.9 Pittsburgh Public Media	37.5	34.6
204A Meyersdale	763299	APP PA	CN	135.0 315.6	107.76 0000166075	39 47 00.40 79 06 07.30	1.300 24	42.6 761	11.5 American Militia Associati	48.3	40.2
06 1E Cambridge	WOUC-TV«	LI OH	DEN	249.4 68.5	117.60 0000068363	41 12 45.20 76 57 07.79	7.110 338	14.3 655	56.0 70.3R		47.3M
201A Slippery Rock	WSRU	LIC PA	CN	356.4 176.4	65.72 BLED19910415KA	41 03 43.20 80 02 34.20	0.100 24	0.7 413	5.6 Slippery Rock Student Gove	49.9	59.3

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Exhibit 1
Pittsburgh, PA

06 1C WKBS-TV«	LI	CY	84.9	131.75		41 12 45.20	3.100	14.5	62.5	77.0R	54.7M
Altoona		PA	265.9	0000084211		76 57 07.79	305	828			
6 -- WOUC-TV-A«	CHA	D Y	249.4	117.60		41 12 45.20	1.720	14.3	47.9	62.1R	55.5M
Cambridge		OH	68.5	DTVBL50141		76 57 07.79	385	699			
6 -- WKBS-TV-A«	CHA	Y	84.9	131.75		41 12 45.20	0.579	14.5	47.0	61.5R	70.3M
Altoona		PA	265.9	DTVBL13929		76 57 07.79	305	828			

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.

All separation margins (if shown) include rounding. Call signs with exclamation marks need not be protected.

Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt (Y,N,X)

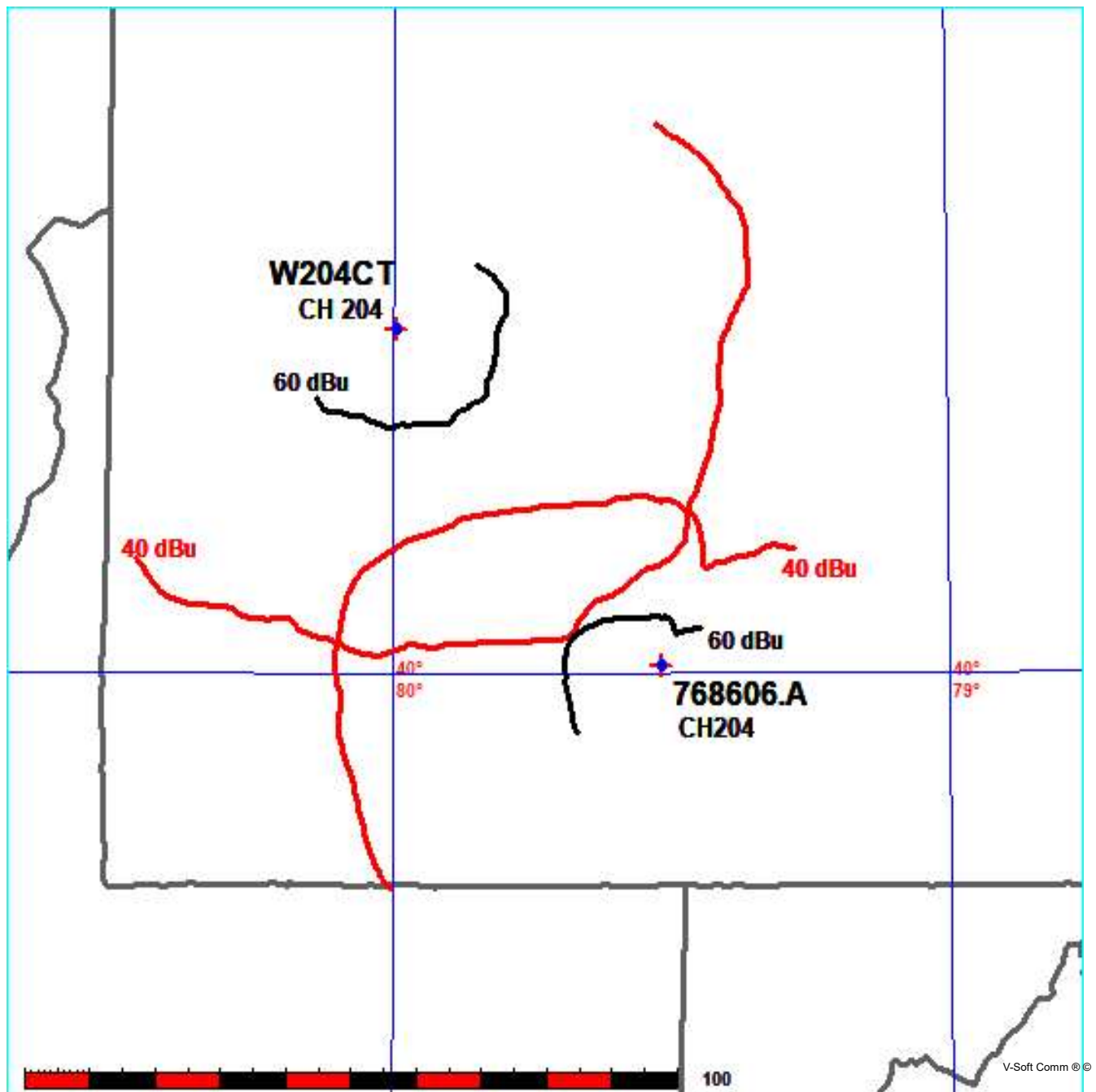
""affixed to 'IN' or 'OUT' values = site inside restricted contour.

Reference station has protected zone issue: AM tower

FMCommander Single Allocation Study - 01-14-2022 - FCC NGDC 30 Sec
W204CT's Overlaps (In= 17.39 km, Out= 0.55 km)

W204CT CH 204 D DA
Lat= 40 28 19.20, Lng= 79 59 39.20
0.13 kW 0 m HAAT, 510 m COR
Prot.= 60 dBu, Intef.= 40 dBu

768606 CH 204 A DA 0000167527
Lat= 40 00 51.60, Lng= 79 31 03.00
0.08 kW 713 m HAAT, 713 m COR
Prot.= 60 dBu, Intef.= 40 dBu



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*Exhibit 1-A
Pittsburgh, PA*

Compliance with C.F.R. 74.1204

The proposed FM Translator to operate on channel 204D is located within the protected 60dBu contour of third adjacent channel station WQED-FM, channel 207B, Pittsburgh, PA. 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 W204CT:	130 watts
The proposed COR AGL for W204CT:	149 meters
WQED-FM F(50/50) contour at proposed site:	105.5dBu
The F(50/10) contour of proposed W204CT:	145.5dBu

The predicted distance to the 145.5dbu interfering contour is 4.25 meters. When taking into account the vertical elevation pattern of the 1 bay Nicom BKG77 single bay circularly polarized antenna and the height above ground of 149m, it has been determined that the interfering contour of 145.5dbu does not reach the ground. As seen in Exhibit 1-A1, the lowest elevation for this interfering contour is 147.1m above ground at a distance of 2.9m from the antenna.

There are no surrounding structures which are tall enough to enter the interfering contour within the 4.25m 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 1 - A1
74.1204(d) Showing
W204CT
Pittsburgh, PA

ERP (kw): 0.13
Height of Antenna Above Ground (m): 149
Translator's IX Contour: 145.5
Antenna Type: Nic BKG77-1

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1.000	0.1300	4.2459	149.000
5	0.999	0.1297	4.2417	148.630
10	0.982	0.1254	4.1695	148.276
15	0.954	0.1183	4.0506	147.952
20	0.918	0.1096	3.8978	147.667
25	0.872	0.0988	3.7024	147.435
30	0.818	0.0869	3.4710	147.264
35	0.758	0.0747	3.2184	147.154
40	0.691	0.0621	2.9339	147.114
45	0.616	0.0493	2.6155	147.151
50	0.538	0.0376	2.2843	147.250
55	0.465	0.0281	1.9744	147.383
60	0.391	0.0199	1.6602	147.562
65	0.313	0.0127	1.3290	147.796
70	0.239	0.0074	1.0148	148.046
75	0.176	0.0040	0.7473	148.278
80	0.129	0.0022	0.5477	148.461
85	0.103	0.0014	0.4373	148.564
90	0.104	0.0014	0.4416	148.558

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*Exhibit 1-A
Pittsburgh, PA*

Compliance with C.F.R. 74.1204

The proposed FM Translator to operate on channel 204D is located within the protected 60dBu contour of second adjacent channel station WRCT, channel 202A, Pittsburgh, PA. 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 W204CT:	130 watts
The proposed COR AGL for W204CT:	149 meters
WRCT F(50/50) contour at proposed site:	73.5dBu
The F(50/10) contour of proposed W204CT:	113.5dBu

The predicted distance to the 113.5dbu interfering contour is 169 meters. When taking into account the vertical elevation pattern of the 1 bay Nicom BKG77 single bay circularly polarized antenna and the height above ground of 149m, it has been determined that the interfering contour of 113.5dbu does not reach the ground. As seen in Exhibit 1-A1, the lowest elevation for this interfering contour is 73.9m above ground at a distance of 116m from the antenna.

There are no surrounding structures which are tall enough to enter the interfering contour within the 169m distance from the antenna.

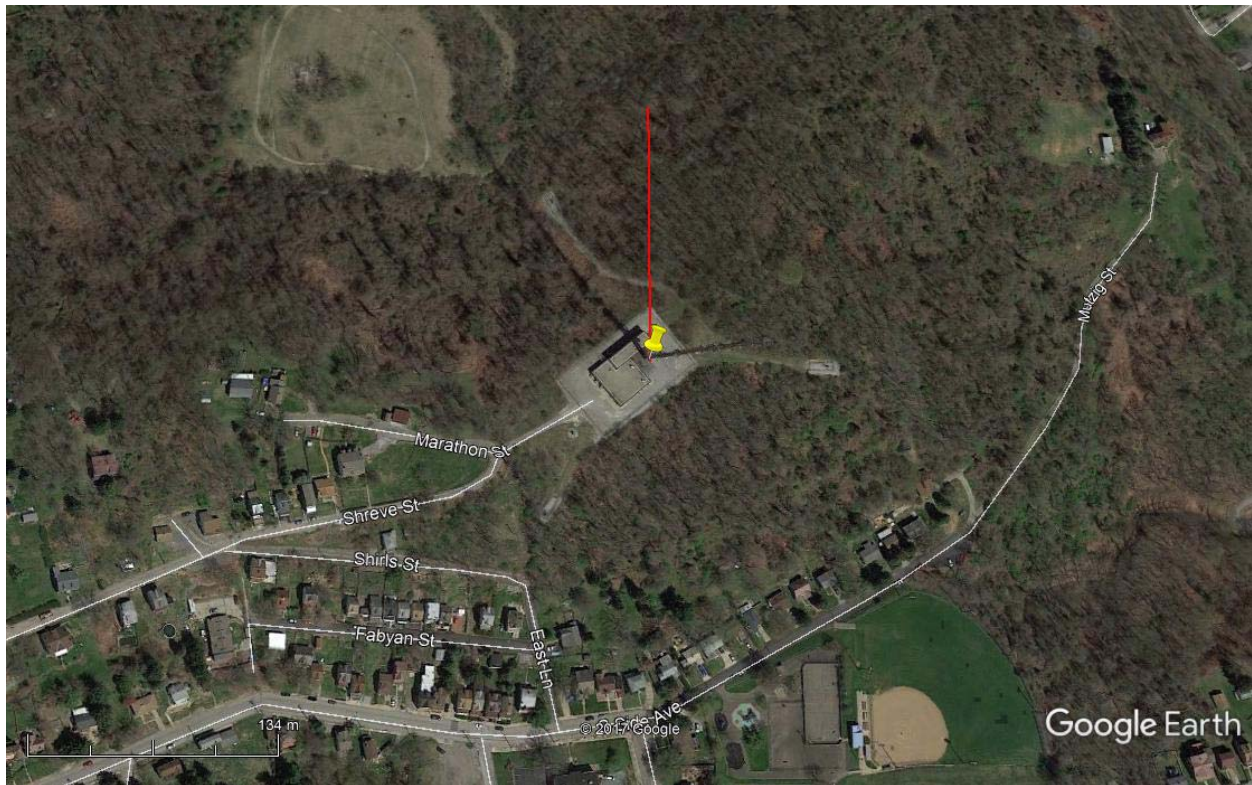
Therefore, EMF respectfully requests a waiver of C.F.R. 74.1204 based on no population within the area of predicted interference.

EXHIBIT 1 - A1
74.1204(d) Showing
W204CT
Pittsburgh, PA

ERP (kw): 0.13
Height of Antenna Above Ground (m): 149
Translator's IX Contour: 113.5
Antenna Type: Nic BKG77-1

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1.000	0.1300	169.0331	149.000
5	0.999	0.1297	168.8640	134.283
10	0.982	0.1254	165.9905	120.176
15	0.954	0.1183	161.2575	107.263
20	0.918	0.1096	155.1724	95.928
25	0.872	0.0988	147.3968	86.707
30	0.818	0.0869	138.1845	79.908
35	0.758	0.0747	128.1271	75.509
40	0.691	0.0621	116.8019	73.921
45	0.616	0.0493	104.1244	75.373
50	0.538	0.0376	90.9398	79.336
55	0.465	0.0281	78.6004	84.614
60	0.391	0.0199	66.0919	91.763
65	0.313	0.0127	52.9074	101.050
70	0.239	0.0074	40.3989	111.037
75	0.176	0.0040	29.7498	120.264
80	0.129	0.0022	21.8053	127.526
85	0.103	0.0014	17.4104	131.656
90	0.104	0.0014	17.5794	131.421

Exhibit 1-A2



Yellow Pin Marker

NAD83

40-28-19.2 N 79-59-39.2 W

Red Line Marker

169m at 0 degrees true north

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Exhibit 2
Pittsburgh, PA

Compliance with International Requirements

The proposed FM translator is located approximately 220km from the Canadian border. Exhibit 2-A shows that the 34dBu interfering contour of the proposed translator at no point extends beyond the US-Canadian border.

Therefore, the proposed translator fully complies with the requirement of 47 C.F.R. 74.1235(d) of the Commission's rules.

W204CT International Compliance with Canada

Exhibit 2-A

W204CT

BLFT20180809AAJ

Latitude: 40-28-19.20 N

Longitude: 079-59-39.20 W

ERP: 0.13 kW

Channel: 204

Frequency: 88.7 MHz

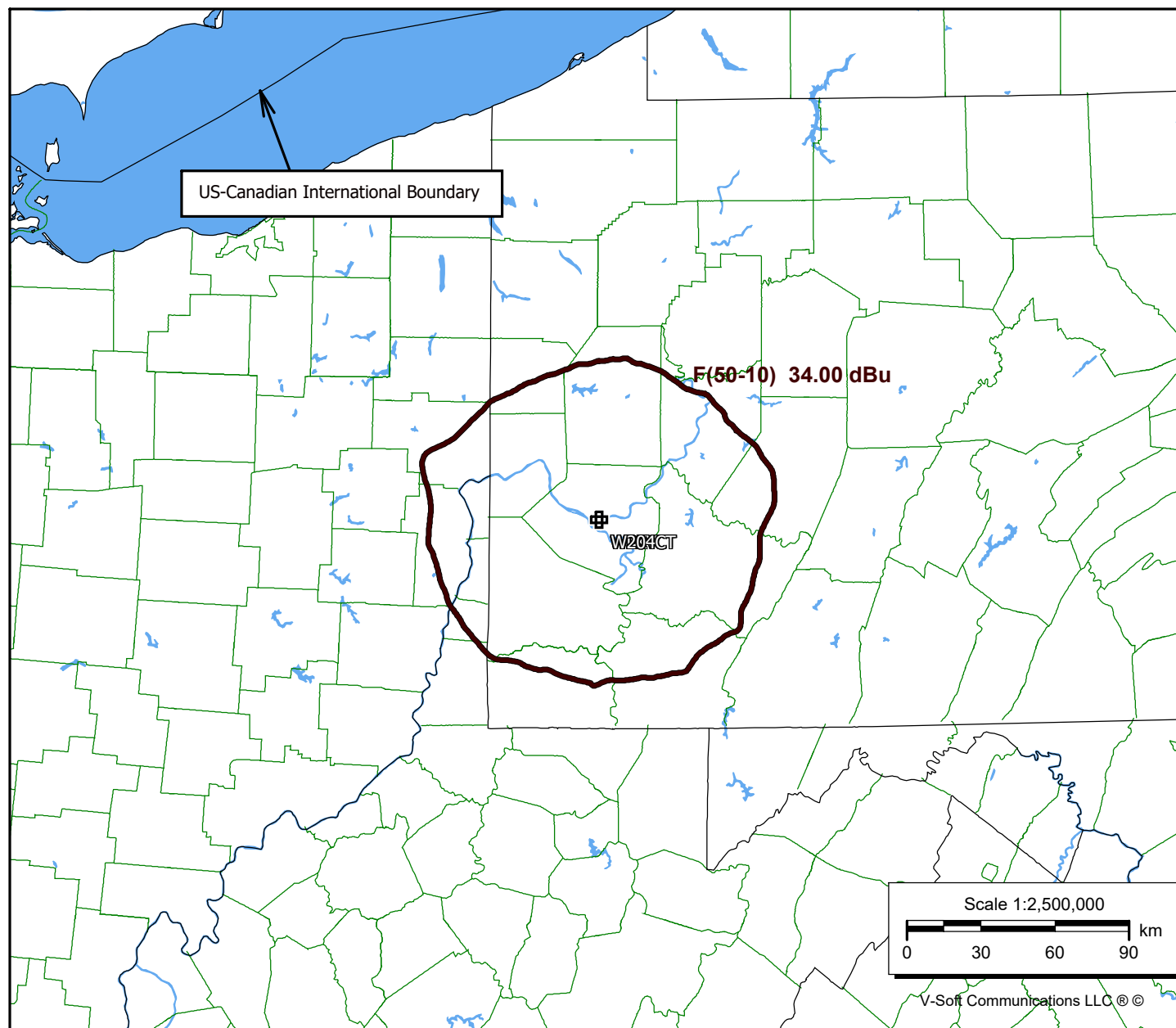
AMSL Height: 510.0 m

Elevation: 361.0 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None



Human exposure to excess levels of radiofrequency radiation

The proposed facility is to be built using a 1-bay circularly polarized full-wave spaced antenna.

According to OET 65, "Applicants and licensees should be able to calculate, based on considerations of frequency, power and antenna characteristics the distance from their transmitter where their signal produces an RF field equal to, or greater than, the 5% threshold limit. The applicant or licensee then shares responsibility for compliance in any accessible area or areas within this 5% "contour" where the appropriate limits are found to be exceeded."

As can be seen in Exhibit 3-A, the proposed facility's maximum contribution to RF on the site is $0.042\mu\text{W}/\text{cm}^2$ at a distance of 90 meters from the tower, which is less than 0.02% of the uncontrolled (public) exposure limit.

Therefore, because the proposed facility will not cause an RF field that is equal to or greater than 5% of the $200\mu\text{W}/\text{cm}^2$ limit for uncontrolled exposure at any point, the proposed facility complies with the requirements of OET 65.

EMF will fully cooperate with other site users to temporarily reduce power or cease broadcasting, as necessary, to protect workers and others having access to the site from excessive levels of RF Radiation.

Specific Antenna RF Power Density Calculator

Based on Equation 10 of OET-65

Exhibit 3-A / Detailed Report

ERP	0.13 kW	% of OET-65
Height above ground	149.0 meters	0.04% Uncontrolled
Height above head	147.0 meters	0.02% Controlled
Antenna Brand	Nicom	
Antenna Model	BKG77-1	

Horizontal distance from tower (meters)	Angle (°)	Distance (m)	Field	Power (W)	Power Density (uW/cm2)
0	90	147.0	0.104	13.52	0.002
10	86	147.3	0.129	16.77	0.003
20	82	148.4	0.129	16.77	0.003
30	78	150.0	0.239	31.07	0.011
40	75	152.3	0.239	31.07	0.011
50	71	155.3	0.239	31.07	0.010
60	68	158.8	0.391	50.83	0.026
70	65	162.8	0.391	50.83	0.025
80	61	167.4	0.391	50.83	0.024
90	59	172.4	0.538	69.94	0.042
100	56	177.8	0.538	69.94	0.040

