Request for Waiver of 73.870(a)

Aframsouth initially submitted a fully-spaced construction permit BNPL-20131114BJD specifying an antenna atop a tall building ASRN 1062237. Of the three mutually-exclusive applicants in MX group 5, one became fully spaced through a technical amendment, and the other was dismissed, resulting in a grant of Aframsouth's initial construction permit in March 2015. The call sign WUMO-LP was obtained by Aframsouth in September 2015, and a construction-permit extension was obtained in August 2016.

Subsequent to the initial construction permit grant, the host building changed ownership and the new owner was not interested in hosting the transmission facility as it was incompatible with their plans.

Additionally, translator W231DF, formerly W229BT, changed ownership, changed channel, and moved, such that WUMO-LP is now severely short spaced on a second-adjacent channel, significantly limiting the ability of WUMO-LP to change location. A second-adjacent waiver is sought relative to the translator.

Due to the complexities of zoning, real-estate prices, a large interference zone, and difficulty finding sympathetic owners in this dense metropolitan area, Aframsouth has been unable to find a suitable site within 5.6km of their currently-permitted location despite an active search.

The proposed site is 7.5km from the permitted site, is more cost effective, has suitable zoning for viable antenna construction, and is occupied by community service allies including MOCA Family Services, dovetailing nicely with Aframsouth's mission to “foster and encourage the strengthening of African American families by addressing social and health inequalities in providing education and services through media and social marketing in partnerships and collaborations”. Public interest is served by this change which allows Aframsouth's public-service mission to be achieved through radio, and the public interest would be harmed by strict compliance with 73.870(a) which would likely doom Aframsouth's radio endeavor.

As the proposed site is located more centrally in the midtown sector of Montgomery, especially considering the eastward shift of the population in the city, it will allow Aframsouth to serve more people than the permitted location; which also furthers the public interest, and since WUMO-LP is not on the air at this time, the change will not withdraw service from existing listeners.

Based on the considerations above, WUMO-LP believes it has met the requirements to support the grant of a waiver and respectfully respects same from the Commission.

Second-Adjacent Waiver Exhibit

Application requests a waiver for a location which is short-spaced on a second-adjacent channel with BMPFT-20161013AAG, callsign W231DF, class D, status CP MOD, Montgomery, AL, channel 231, facility ID 139817[3]

Undesired-to-Desired Ratio Method	
BMPFT-20161013AAG f(50,50) signal	84.4 dBu [1][2]
Second-adjacent protection	+ 40 dB
Interference-zone boundary	124.4 dBu
Distance to 124.4 dBu	42.4 m (ERP <= 0.1 kW) [1]

The interference zone produces a worst-case circle of radius 42.4 meters on the ground which is shown on the following map.

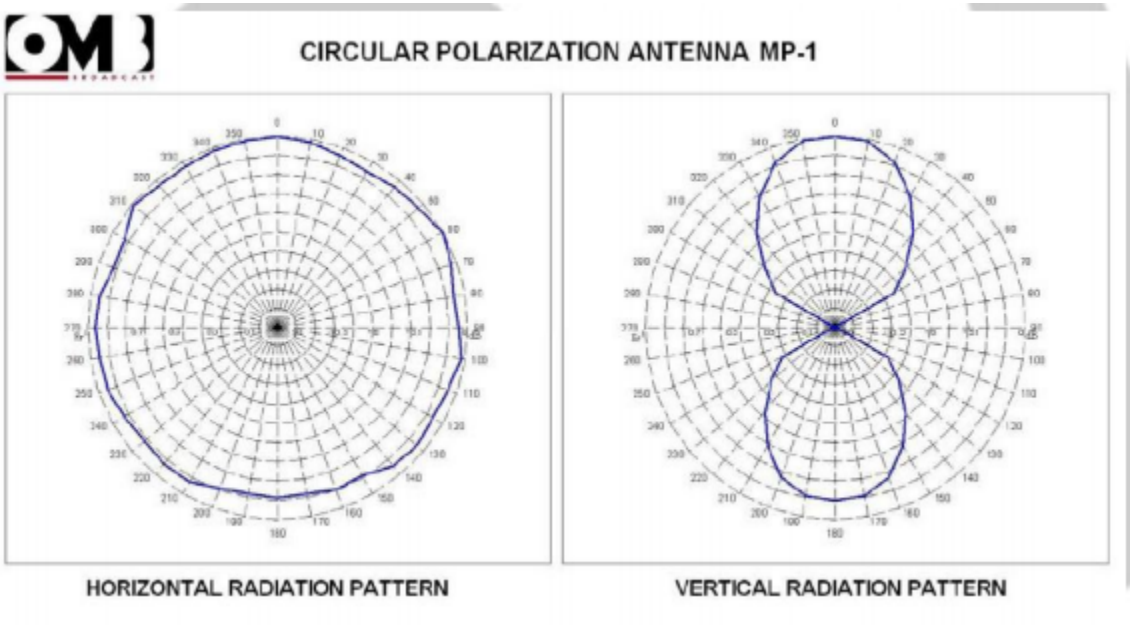
The tallest occupied floor within the potential interference footprint is the two-story commercial host building with head height on the second floor of approximately 5 meters AGL. Considering the vertical field pattern of the two-bay OMB MP-2 with 0.75-wavelength spacing,

interference will proceed vertically no further than 42.4 * 0.2233 = 9.4 meters below the radiation center. With radiation center at 14.5 meters AGL, interference will remain at least 14.5 – 9.4 = 5.1 meters above the ground, thus no population will be subject to interference from the proposed station according to the undesired-to-desired ratio method.

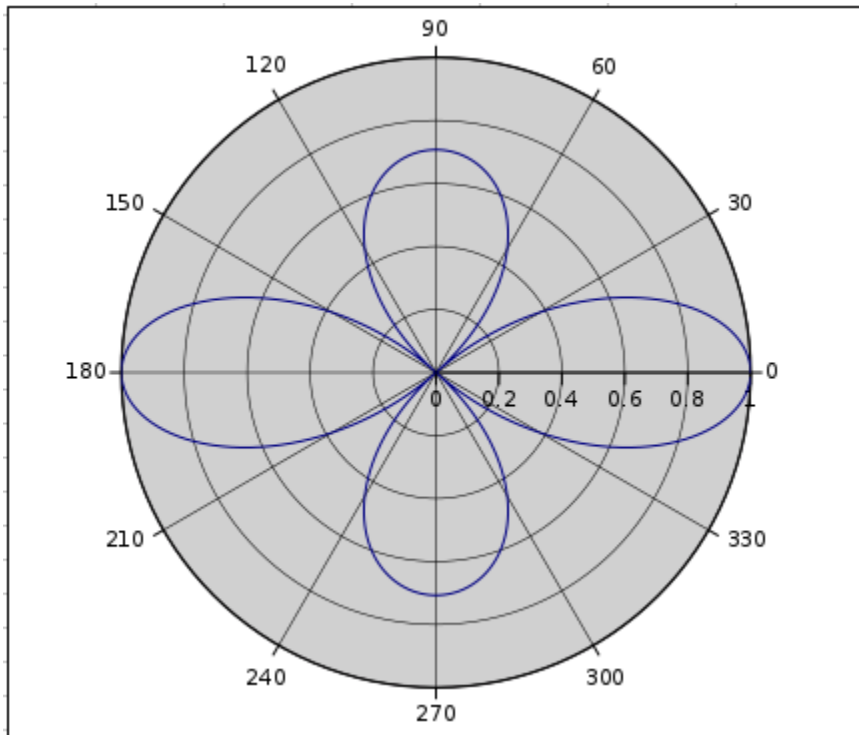
[1] tvfmfs() Fortran subroutine as distributed by the FCC. At distances less than or equal to 1.5 km, tvfmfs() uses the free-space method.
[2] FCC HAAT Calculator web page, http://transition.fcc.gov/mb/audio/bickel/haat_calculator.html
[3] CDBS database downloaded 2016-12-05 03:46:00

OMB MP-2 Elevation Pattern at 0.75-wavelength Spacing

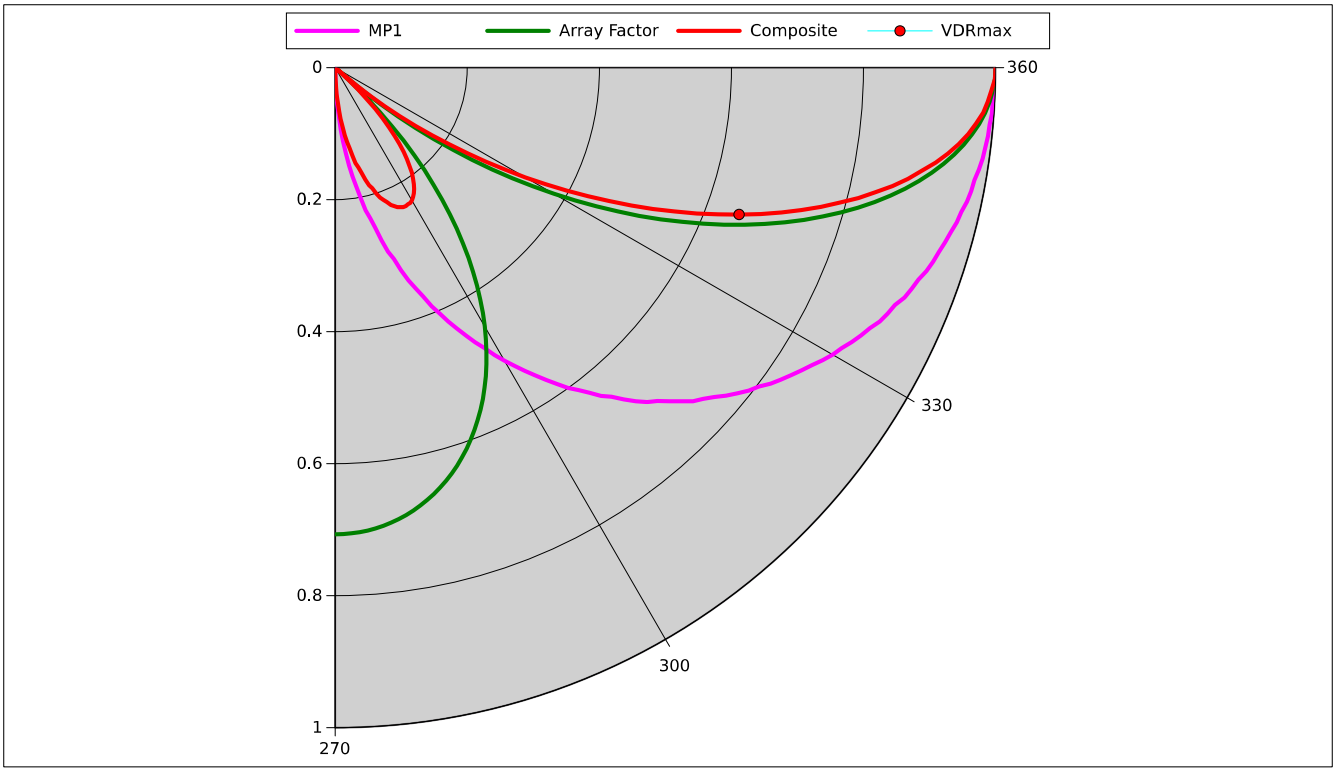
The MP-2 consists of two bays of the MP-1 ring-stub element. The single element has the following elevation pattern (from manufacturer's data sheet):



Shown below is the 2-bay 0.75-wavelength-space array factor:



Multiplying the MP-1 pattern with the array factor produces the composite antenna pattern:



VDRmax is marked with a diamond on the graph above, at 0.2233 below the radiation center.

The table below shows the graphed data numerically:

Elevation Angle (a)	OMB MP-1 Field from Manufacturer	Array Factor, 2 bays spacig 0.75λ	Composite field (f)	VDR= f * sin(a)	VDRmax
0	1.000	1	1.000000	0.000000	
−1	1.000	0.99915	0.999155	−0.017438	
−2	0.998	0.99662	0.994628	−0.034712	
−3	0.997	0.99241	0.989429	−0.051783	
−4	0.997	0.98652	0.983564	−0.068610	
−5	0.995	0.97899	0.974094	−0.084898	
−6	0.994	0.96982	0.964005	−0.100766	
−7	0.992	0.95906	0.951383	−0.115944	
−8	0.990	0.94671	0.937248	−0.130440	
−9	0.987	0.93284	0.920709	−0.144031	
−10	0.983	0.91746	0.901863	−0.156607	
−11	0.981	0.90063	0.883516	−0.168583	
−12	0.978	0.88239	0.862977	−0.179423	
−13	0.973	0.86279	0.839497	−0.188846	
−14	0.970	0.84189	0.816636	−0.197562	
−15	0.965	0.81975	0.791055	−0.204740	
−16	0.961	0.79641	0.765353	−0.210960	
−17	0.956	0.77196	0.737989	−0.215767	
−18	0.952	0.74644	0.710608	−0.219590	
−19	0.947	0.71993	0.681769	−0.221962	
−20	0.940	0.69249	0.650938	−0.222634	−0.222634
−21	0.935	0.66419	0.621019	−0.222553	
−22	0.930	0.63511	0.590652	−0.221262	
−23	0.921	0.60531	0.557492	−0.217830	
−24	0.916	0.57487	0.526581	−0.214180	
−25	0.910	0.54386	0.494909	−0.209158	
−26	0.901	0.51234	0.461619	−0.202361	
−27	0.894	0.4804	0.429474	−0.194977	
−28	0.886	0.44809	0.397010	−0.186385	
−29	0.877	0.4155	0.364392	−0.176661	

−30	0.870	0.38268	0.332935	−0.166467
−31	0.861	0.34971	0.301104	−0.155080
−32	0.851	0.31666	0.269475	−0.142800
−33	0.842	0.28358	0.238771	−0.130044
−34	0.833	0.25053	0.208693	−0.116699
−35	0.824	0.21758	0.179289	−0.102836
−36	0.815	0.18479	0.150605	−0.088524
−37	0.803	0.15221	0.122224	−0.073556
−38	0.795	0.11989	0.095312	−0.058680
−39	0.784	0.08788	0.068899	−0.043360
−40	0.773	0.05623	0.043469	−0.027941
−41	0.761	0.02499	0.019018	−0.012477
−42	0.750	0.00581	0.004354	−0.002913
−43	0.741	0.03612	0.026762	−0.018252
−44	0.728	0.06591	0.047980	−0.033329
−45	0.715	0.09514	0.068026	−0.048101
−46	0.702	0.12379	0.086900	−0.062511
−47	0.693	0.15183	0.105215	−0.076950
−48	0.680	0.17922	0.121872	−0.090569
−49	0.666	0.20596	0.137170	−0.103524
−50	0.651	0.23202	0.151045	−0.115707
−51	0.640	0.25738	0.164724	−0.128014
−52	0.625	0.28203	0.176269	−0.138902
−53	0.612	0.30596	0.187246	−0.149541
−54	0.600	0.32915	0.197491	−0.159774
−55	0.585	0.35161	0.205689	−0.168491
−56	0.571	0.37331	0.213162	−0.176719
−57	0.556	0.39427	0.219215	−0.183849
−58	0.542	0.41448	0.224647	−0.190512
−59	0.527	0.43394	0.228684	−0.196021
−60	0.513	0.45264	0.232206	−0.201096
−61	0.498	0.47061	0.234362	−0.204978
−62	0.481	0.48783	0.234645	−0.207179
−63	0.467	0.50431	0.235515	−0.209845

−64	0.452	0.52007	0.235073	−0.211282
−65	0.436	0.53511	0.233309	−0.211450
−66	0.421	0.54944	0.231314	−0.211316
−67	0.405	0.56307	0.228042	−0.209914
−68	0.390	0.576	0.224641	−0.208283
−69	0.371	0.58826	0.218243	−0.203747
−70	0.356	0.59984	0.213543	−0.200665
−71	0.341	0.61077	0.208272	−0.196925
−72	0.323	0.62105	0.200598	−0.190780
−73	0.303	0.63069	0.191099	−0.182749
−74	0.290	0.63971	0.185516	−0.178330
−75	0.271	0.64812	0.175640	−0.169656
−76	0.250	0.65593	0.163982	−0.159111
−77	0.234	0.66314	0.155175	−0.151198
−78	0.221	0.66978	0.148021	−0.144786
−79	0.202	0.67584	0.136520	−0.134012
−80	0.182	0.68135	0.124005	−0.122121
−81	0.167	0.6863	0.114612	−0.113201
−82	0.150	0.69071	0.103606	−0.102598
−83	0.131	0.69458	0.090990	−0.090312
−84	0.112	0.69792	0.078167	−0.077739
−85	0.095	0.70074	0.066570	−0.066317
−86	0.072	0.70304	0.050619	−0.050495
−87	0.057	0.70482	0.040175	−0.040120
−88	0.040	0.70609	0.028244	−0.028226
−89	0.021	0.70685	0.014844	−0.014842
−90	0.000	0.70711	0.000000	0.000000