

**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2A**

**AM Broadcast Allocation Study**

LATITUDE 39: 8: 2 LONGITUDE 77:18:14  
FACTORS AFFECTING 630 kHz

			***** 600 KHZ *****						***** 610 KHZ *****		
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY SH CL	KW	ANTENNA	CALL	CO ST CITY	KW	ANTENNA	CALL CO ST CITY
57.04	( 35.44)	54.7	39:25:47/ 76:45:42	LI U B	5.00	DA1-	661.4	WCAO US MD BALTIMORE	0.38	DAN-	175.2 WXVA US VA WINCHESTER
			MAXIMUM SEARCH DISTANCE	295				KILOMETERS			
			***** 620 KHZ *****						***** 630 KHZ *****		
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY SH CL	KW	ANTENNA	CALL	CO ST CITY	KW	ANTENNA	CALL CO ST CITY
78.30	( 48.66)	269.5	39: 7:26/ 78:12:44	LI D	5.00	DA1-	772.5	WTEL US PA PHILADELPHIA	10.00	DA1-	890.0 CKTB CA ON ST. CATHARINES
204.94	( 127.34)	66.0	39:51:55/ 75: 6:34	LI U	5.00	DA2-	675.9	WVBE US VA ROANOKE	1.00	DA2-	297.4 WSNG US CT TORRINGTON
313.92	( 195.06)	230.5	37:18:11/ 80: 2:33	LI D B	5.00	DAN-	762.9	WTVN US OH COLUMBUS	5.00	DA2-	621.2 WFNZ US NC CHARLOTTE
313.92	( 195.06)	230.5	37:18:11/ 80: 2:33	AP D							
460.82	( 286.34)	340.8	43: 2:12/ 79:10: 0	-- D 3							
462.81	( 287.58)	49.6	41:45:28/ 73: 3: 6	LI D B							
493.51	( 306.66)	281.4	39:52:34/ 82:58:49	LI D							
530.97	( 329.93)	217.8	35:18: 3/ 80:53:18	LI D							
			MAXIMUM SEARCH DISTANCE	568				KILOMETERS			
			***** 620 KHZ *****						***** 630 KHZ *****		
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY SH CL	KW	ANTENNA	CALL	CO ST CITY	KW	ANTENNA	CALL CO ST CITY
241.76	( 150.22)	302.8	40:17:20/ 79:42: 4	LI D	5.50	ND2-	672.8	WKHB US PA IRWIN	10.00	DA2-	1022.0 WMAL US DC WASHINGTON
329.09	( 204.49)	54.8	40:47:53/ 74: 6:24	LI D	3.00	DA2-	497.7	WSNR US NJ JERSEY CITY	2.00	ND1-	398.2 WEJL US PA SCRANTON
374.15	( 232.49)	203.5	36: 2: 3/ 78:57:47	LI D	5.00	DA2-	684.0	WDNC US NC DURHAM	1.00	ND1-	282.3 WJAW US WV ST. MARYS
374.97	( 232.99)	247.1	37:45:18/ 81:14:12	LI D	5.00	ND2-	634.4	WVNR US WV BECKLEY	1.00	ND1-	282.4 WAIZ US NC HICKORY
449.59	( 279.36)	11.6	43: 5:32/ 76:11:22	LI D B	5.00	DAN-	636.9	WHEN US NY SYRACUSE	0.80	DA2-	271.5 WMFD US NC WILMINGTON
664.62	( 412.98)	211.3	33:57:34/ 81: 2:28	LI D	2.50	ND2-	445.9	WGCN US SC CAYCE	0.20	ND2-	130.6 WMFD US NC WILMINGTON
672.98	( 418.17)	240.8	35:59:24/ 83:50:15	LI D B	5.00	DAN-	651.3	WRJZ US TN KNOXVILLE	10.00	DA2-	940.0 CFCO CA ON CHATHAM
688.51	( 427.82)	28.1	44:32: 4/ 73:13:15	LI D B	5.00	DA2-	655.0	WVMT US VT BURLINGTON	5.00	DAN-	683.7 WPRO US RI PROVIDENCE
733.43	( 455.73)	265.5	38:18:59/ 85:42: 8	LI D B	0.50	DA2-	212.4	WAKY US KY LOUISVILLE	5.00	DA2-	648.6 WLAP US KY LEXINGTON
945.36	( 587.42)	45.2	44:49:44/ 68:47: 8	LI D B	5.00	DAN-	687.3	WZON US ME BANGOR	10.00	DA2-	845.0 CJET CA ON SMITHS FALLS
967.06	( 600.90)	228.1	33: 3:33/ 85: 1:40	LI D	2.50	ND2-	445.9	WTRP US GA LA GRANGE	1.00	DAN-	292.9 CFBK CA ON HUNTSVILLE
986.05	( 612.70)	297.2	42:42:28/ 88: 3:57	LI D B	50.00	DA2-	2035.2	WTMJ US WI MILWAUKEE	5.00	ND2-	651.3 WNEG US GA TOCCOA
1084.99	( 674.18)	343.8	48:26:50/ 81:23: 8	-- D 3	10.00	DA2-	890.0	CKOY CA ON TIMMINS	10.00	DA2-	854.6 CHLT CA QC SHERBROOKE
			MAXIMUM SEARCH DISTANCE	1164				KILOMETERS			
			***** 630 KHZ *****						***** 630 KHZ *****		
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY SH CL	KW	ANTENNA	CALL	CO ST CITY	KW	ANTENNA	CALL CO ST CITY
19.24	( 11.96)	133.3	39: 0:55/ 77: 8:30	LI D	10.00	DA2-	1022.0	WMAL US DC WASHINGTON	10.00	DA2-	854.6 CHLT CA QC SHERBROOKE
288.40	( 179.20)	28.2	41:24:34/ 75:40: 1	LI D	2.00	ND1-	398.2	WEJL US PA SCRANTON	10.00	DA2-	867.0 CHLT CA QC SHERBROOKE
339.01	( 210.65)	276.1	39:23:42/ 81:13:49	LI D D	1.00	ND1-	282.3	WJAW US WV ST. MARYS	10.00	DA -	867.2 CHLT CA QC SHERBROOKE
516.29	( 320.81)	224.0	35:43:22/ 81:16:41	LI D D	1.00	ND1-	282.4	WAIZ US NC HICKORY	4.80	ND2-	621.1 WBMQ US GA SAVANNAH
543.57	( 337.76)	186.5	34:16:19/ 77:58:28	LI D	0.80	DA2-	271.5	WMFD US NC WILMINGTON	1.00	ND2-	294.5 WAVU US AL ALBERTVILLE
543.57	( 337.76)	186.5	34:16:19/ 77:58:28	AP D							
549.45	( 341.41)	311.9	42:20: 3/ 82:16:53	-- D							
584.43	( 363.15)	58.0	41:46:28/ 71:19:23	LI D B	5.00	DAN-	683.7	WPRO US RI PROVIDENCE	5.00	DA2-	630.9 KYFI US MO ST LOUIS
629.88	( 391.39)	262.0	38: 7:25/ 84:26:45	LI D B	5.00	DA2-	648.6	WLAP US KY LEXINGTON	1.00	ND2-	286.5 WJDB US AL THOMASVILLE
643.58	( 399.90)	9.4	44:50:31/ 75:58:44	-- D B	10.00	DA2-	845.0	CJET CA ON SMITHS FALLS	10.00	DA -	1012.3 CFCY CA PE CHARLOTTETOWN
702.07	( 436.24)	347.8	45:17:38/ 79:12:21	-- D 3	1.00	DAN-	292.9	CFBK CA ON HUNTSVILLE	10.00	DA -	1012.3 CFCY CA PE CHARLOTTETOWN
737.22	( 458.09)	228.4	34:34: 4/ 83:19:26	LI D	5.00	ND2-	651.3	WNEG US GA TOCCOA	1.00	DA2-	305.1 WREY US MN ST. PAUL
818.28	( 508.45)	31.3	45:18:16/ 71:51:59	-- D B	10.00	DA2-	854.6	CHLT CA QC SHERBROOKE	5.00	DA2-	695.0 WREY US MN ST. PAUL
818.28	( 508.45)	31.3	45:18:16/ 71:51:59	-- D B	10.00	DA2-	867.0	CHLT CA QC SHERBROOKE	5.00	DA2-	695.0 WREY US MN ST. PAUL
818.30	( 508.47)	31.3	45:18:16/ 71:51:57	-- D							
854.81	( 531.16)	204.6	32: 4:31/ 81: 4:17	LI D							
958.19	( 595.39)	238.2	34:14:19/ 86: 9:59	LI D							
1108.05	( 688.51)	271.4	38:40:18/ 90: 6:52	LI D							
1239.91	( 770.44)	232.7	31:52:58/ 87:44:42	LI D D							
1394.14	( 866.28)	50.9	46:14:51/ 63:11:40	-- D 3							
1394.19	( 866.31)	50.9	46:14:51/ 63:11:37	-- D							
1433.59	( 890.79)	301.4	44:52: 1/ 92:54: 2	LI D							
1435.93	( 892.25)	300.8	44:44:58/ 92:59:40	AP D							
1435.93	( 892.25)	300.8	44:44:58/ 92:59:40	AP D							
			MAXIMUM SEARCH DISTANCE	1562				KILOMETERS			

*****			640 KHZ			*****							
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY	SH	CL	KW	ANTENNA	CALL	CO	ST	CITY	
2175.92	(1352.05)	56.7	47:30:10/ 52:48: 7	--	U	1B	10.00	ND1- 951.7	CBN	CA	NF	ST. JOHN'S	CLASS 1B
2177.23	(1352.87)	56.5	47:34: 8/ 52:48:45	--	D	1B	10.00	ND1- 925.4	CBN	CA	NF	ST. JOHN'S	CLASS 1B
6009.76	(3734.29)	323.1	60:46:57/161:53: 0	LI	U	A	10.00	ND1- 891.8	KYUK	US	AK	BETHEL	CLASS A
241.22	( 149.89)	65.8	39:59:49/ 74:43:11	LI	D		50.00	DA2-2068.7	WWJZ	US	NJ	MOUNT HOLLY	
427.60	( 265.70)	301.7	41: 4:47/ 81:38:45	LI	D	B	5.00	DA2- 683.0	WHLO	US	OH	AKRON	
473.09	( 293.96)	198.3	35: 4:46/ 78:55:58	LI	D	B	10.00	ND1- 936.4	WFNC	US	NC	FAYETTEVILLE	
483.45	( 300.40)	339.1	43:10:45/ 79:26: 0	--	U	B	50.00	DA1-2247.0	CFMJ	CA	ON	RICHMOND HILL	
511.50	( 317.83)	47.1	42:10:46/ 72:45: 5	LI	D		50.00	DA2-2275.0	WNNZ	US	MA	WESTFIELD	
534.81	( 332.31)	238.7	36:31:19/ 82:25:25	LI	D	B	10.00	DAN- 999.8	WXSM	US	TN	BLOUNTVILLE	
832.67	( 517.40)	302.2	42:48:59/ 85:57:24	LI	D	B	1.20	ND1- 337.6	WMFN	US	MI	ZEEIAND	
874.24	( 543.23)	229.1	33:45:43/ 84:27:29	LI	D	B	50.00	DA2-2184.0	WGST	US	GA	ATLANTA	
924.80	( 574.64)	288.4	41:18: 4/ 87:50: 7	CP	D		4.40	DA2- 592.6	WMFN	US	IL	PEOTONE	
			MAXIMUM SEARCH DISTANCE			1139	KILOMETERS						
*****			650 KHZ			*****							
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY	SH	CL	KW	ANTENNA	CALL	CO	ST	CITY	
904.91	( 562.28)	250.3	35:59:50/ 86:47:32	LI	U	A	50.00	ND1-2799.4	WSM	US	TN	NASHVILLE	CLASS A
5367.01	(3334.90)	322.0	61: 9:58/149:49:34	LI	U	A	50.00	ND1-2179.2	KENI	US	AK	ANCHORAGE	CLASS A
			MAXIMUM SEARCH DISTANCE			543	KILOMETERS						
*****			660 KHZ			*****							
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY	SH	CL	KW	ANTENNA	CALL	CO	ST	CITY	
355.55	( 220.93)	56.2	40:51:35/ 73:47: 9	LI	U	A	50.00	ND1-2685.7	WFAN	US	NY	NEW YORK	CLASS A
5213.85	(3239.74)	326.8	64:48:29/147:29:34	LI	U	A	10.00	ND1- 967.7	KEAR	US	AK	FAIRBANKS	CLASS A
260.03	( 161.57)	303.9	40:24:47/ 79:51:14	LI	D		1.40	NDD- 340.9	WAMO	US	PA	WILKINSBURG	
			MAXIMUM SEARCH DISTANCE			276	KILOMETERS						
*****			1260 KHZ			*****							
KM	(MI)	DEGREES	LATITUDE/LONGITUDE	TY	SH	CL	KW	ANTENNA	CALL	CO	ST	CITY	
23.97	( 14.89)	136.9	38:58:35/ 77: 6:52	CP	D		2.90	NDD- 571.2	WWRC	US	DC	WASHINGTON	
25.98	( 16.14)	125.0	38:59:59/ 77: 3:27	LI	D		35.00	DA2-1933.9	WWRC	US	DC	WASHINGTON	
			MAXIMUM SEARCH DISTANCE			50	KILOMETERS						

**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B

Latitude: 39-00-55 N / Longitude: 077-08-30 W

Power: 10 kW - RMS: 1022 mV/m @1km

# Towers: 4 - # Augs: 2 - Present Dashed Lines

**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B

Latitude: 39-08-02 N / Longitude: 077-18-14 W

Power: 10 kW - RMS: 958.196 mV/m @1km

# Towers: 4 / Proposed Solid Lines

**WEJL - SCRANTON, PA**

Freq: 630 kHz - Class: D

Latitude: 41-24-34 N / Longitude: 075-40-01 W

Power: 2 kW - RMS: 281.6 mV/m @1km

# Towers: 1 - # Augs: 0

**WMFD - WILMINGTON, NC**

Freq: 630 kHz - Class: B

Latitude: 34-16-19 N / Longitude: 077-58-28 W

Power: 0.8 kW - RMS: 271.55 mV/m @1km

# Towers: 2 - # Augs: 0

**WPRO - PROVIDENCE, RI**

Freq: 630 kHz - Class: B

Latitude: 41-46-28 N / Longitude: 071-19-23 W

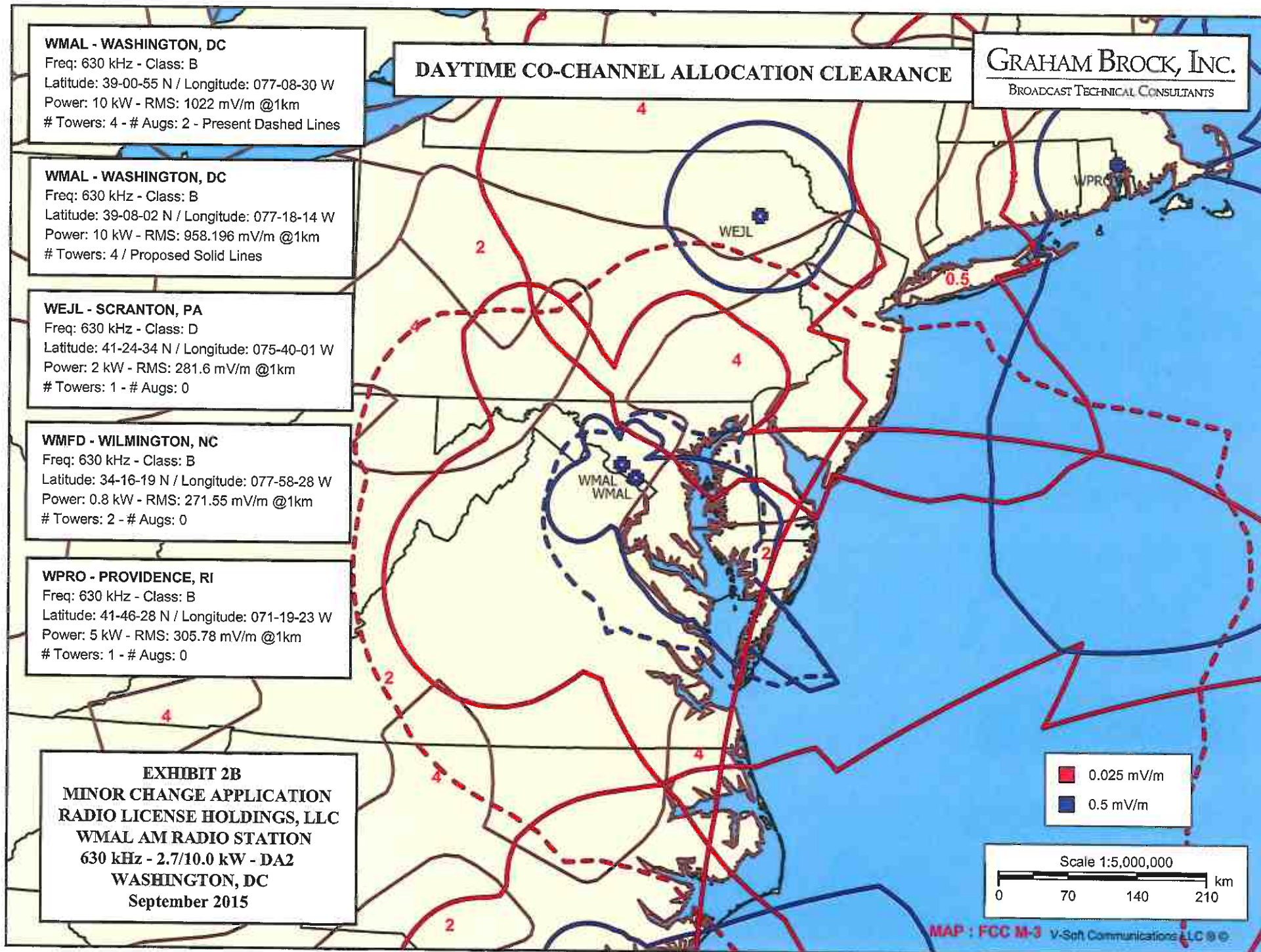
Power: 5 kW - RMS: 305.78 mV/m @1km

# Towers: 1 - # Augs: 0

**EXHIBIT 2B**  
**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**DAYTIME CO-CHANNEL ALLOCATION CLEARANCE****GRAHAM BROCK, INC.**

BROADCAST TECHNICAL CONSULTANTS



Scale 1:5,000,000  
0 70 140 210 km

MAP: FCC M-3 V-Soft Communications, LLC ©



**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-00-55 N / Longitude: 077-08-30 W  
Power: 10 kW - RMS: 1022 mV/m @1km  
# Towers: 4 - # Augs: 2 - Present Dashed Lines

**WMAL - WASHINGTON, DC**

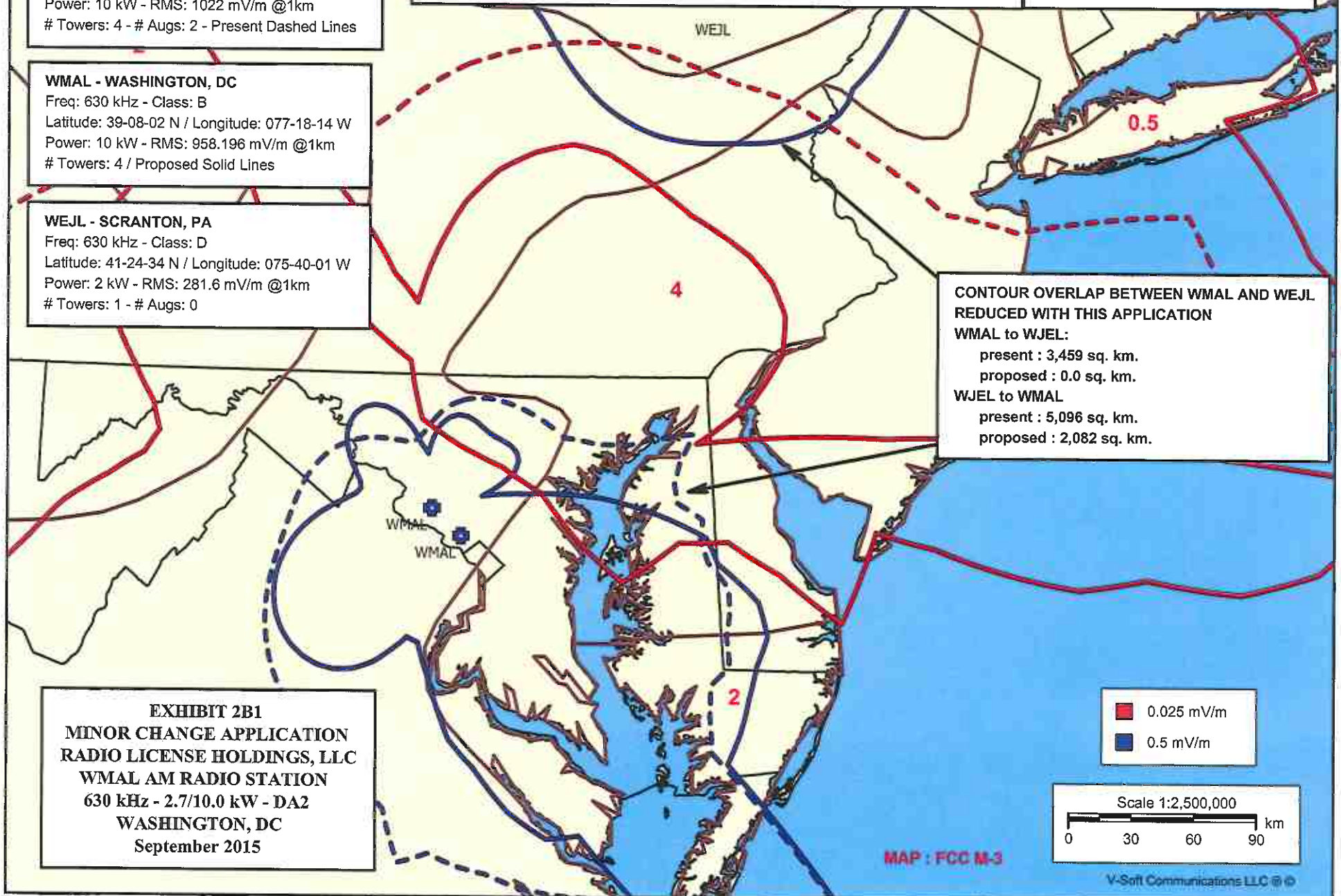
Freq: 630 kHz - Class: B  
Latitude: 39-08-02 N / Longitude: 077-18-14 W  
Power: 10 kW - RMS: 958.196 mV/m @1km  
# Towers: 4 / Proposed Solid Lines

**WEJL - SCRANTON, PA**

Freq: 630 kHz - Class: D  
Latitude: 41-24-34 N / Longitude: 075-40-01 W  
Power: 2 kW - RMS: 281.6 mV/m @1km  
# Towers: 1 - # Augs: 0

**DAYTIME CO-CHANNEL ALLOCATION CLEARANCE  
WMAL vs WEJL DETAIL****GRAHAM BROCK, INC.**

BROADCAST TECHNICAL CONSULTANTS



**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-00-55 N / Longitude: 077-08-30 W  
Power: 10 kW - RMS: 1022 mV/m @1km  
# Towers: 4 - # Augs: 2 - Present Dashed Lines

**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-08-02 N / Longitude: 077-18-14 W  
Power: 10 kW - RMS: 958.196 mV/m @1km  
# Towers: 4 / Proposed Solid Lines

**WMFD - WILMINGTON, NC**

Freq: 630 kHz - Class: B  
Latitude: 34-16-19 N / Longitude: 077-58-28 W  
Power: 0.8 kW - RMS: 271.55 mV/m @1km  
# Towers: 2 - # Augs: 0

**DAYTIME CO-CHANNEL ALLOCATION CLEARANCE  
WMAL vs WMFD DETAIL**

**GRAHAM BROCK, INC.**

BROADCAST TECHNICAL CONSULTANTS

CONTOUR OVERLAP BETWEEN WMAL to WMFD  
COMPLETELY OVER WATER

0.025 mV/m

0.5 mV/m

Scale 1:2,500,000

0 30 60 90 km

**EXHIBIT 2B2**  
**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

MAP : FCC M-3

V-Soft Communications LLC ©



**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-00-55 N / Longitude: 077-08-30 W  
Power: 10 kW - RMS: 1022 mV/m @1km  
# Towers: 4 - # Augs: 2 - Present Dashed Lines

**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-08-02 N / Longitude: 077-18-14 W  
Power: 10 kW - RMS: 958,196 mV/m @1km  
# Towers: 4 / Proposed Solid Lines

**WPRO - PROVIDENCE, RI**

Freq: 630 kHz - Class: B  
Latitude: 41-46-28 N / Longitude: 071-19-23 W  
Power: 5 kW - RMS: 305.78 mV/m @1km  
# Towers: 1 - # Augs: 0

**DAYTIME CO-CHANNEL ALLOCATION CLEARANCE  
WMAL vs WPRO DETAIL**

**GRAHAM BROCK, INC.**

BROADCAST TECHNICAL CONSULTANTS

**CONTOUR OVERLAP BETWEEN WMAL and WPRO**  
WMAL to WPRO:  
OVER WATER  
WPRO to WMAL:  
SEE EXHIBIT #2B4

**EXHIBIT 2B3**  
**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

0.025 mV/m  
0.5 mV/m

Scale 1:2,500,000  
0 30 60 90 km

MAP : FCC M-3

V-Soft Communications LLC ©

**DAYTIME CO-CHANNEL ALLOCATION CLEARANCE  
WMAL vs WPRO DETAIL**

**GRAHAM BROCK, INC.**  
BROADCAST TECHNICAL CONSULTANTS

**WMAL - WASHINGTON, DC**  
Freq: 630 kHz - Class: B  
Latitude: 39-00-55 N / Longitude: 077-08-30 W  
Power: 10 kW - RMS: 1022 mV/m @1km  
# Towers: 4 - # Augs: 2 - Present Dashed Lines

**WMAL - WASHINGTON, DC**  
Freq: 630 kHz - Class: B  
Latitude: 39-08-02 N / Longitude: 077-18-14 W  
Power: 10 kW - RMS: 958.196 mV/m @1km  
# Towers: 4 / Proposed Solid Lines

**WPRO - PROVIDENCE, RI**  
Freq: 630 kHz - Class: B  
Latitude: 41-46-28 N / Longitude: 071-19-23 W  
Power: 5 kW - RMS: 305.78 mV/m @1km  
# Towers: 1 - # Augs: 0

**CONTOUR OVERLAP BETWEEN WMAL and WPRO  
WPRO to WMAL (over land area):**

**Present : 1,004.0 sq. km.**

**Proposed : 909.6 sq. km.**

**EXHIBIT 2B4  
MINOR CHANGE APPLICATION  
RADIO LICENSE HOLDINGS, LLC  
WMAL AM RADIO STATION  
630 kHz - 2.7/10.0 kW - DA2  
WASHINGTON, DC  
September 2015**

0.025 mV/m  
0.5 mV/m

Scale 1:2,500,000  
0 30 60 90 km

MAP : FCC M-3

V-Soft Communications LLC ©



**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-00-55 N / Longitude: 077-08-30 W  
Power: 10 kW - RMS: 1022 mV/m @1km  
# Towers: 4 - # Augs: 2 - Present Dashed Lines

**WMAL - WASHINGTON, DC**

Freq: 630 kHz - Class: B  
Latitude: 39-08-02 N / Longitude: 077-18-14 W  
Power: 10 kW - RMS: 958.196 mV/m @1km  
# Towers: 4 / Proposed Solid Lines

**WWJZ - MOUNT HOLLY, NJ**

Freq: 640 kHz - Class: B  
Latitude: 39-59-49 N / Longitude: 074-43-11 W  
Power: 50 kW - RMS: 2068.7 mV/m @1km  
# Towers: 4 - # Augs: 7

**DAYTIME 1st ADJACENT-CHANNEL  
ALLOCATION CLEARANCE  
WMAL vs WWJZ DETAIL**

**GRAHAM BROCK, INC.**

BROADCAST TECHNICAL CONSULTANTS

**CONTOUR OVERLAP BETWEEN WMAL and WWJZ**

WMAL to WWJZ (over land area) :

Present : 9,925.3 sq. km.

Proposed: 8,182.6 sq. km.

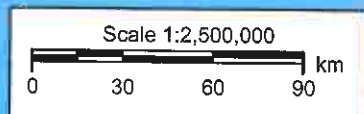
WWJZ to WMAL (over land area):

Present : 12,008.3 sq. km.

Proposed: 11,074.5 sq. km.

**EXHIBIT 2C**  
**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

■ 0.5 mV/m  
■ 0.25 mV/m



MAP: FCC M-3

V-Soft Communications LLC ©



**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2D**

**Proposed Allocation Contour Tabulation**

North Latitude: 39° 08' 02"

West Longitude: 77° 18' 14"

Azimuth	Radiation (mV/m at one km)	Distances to Contours in Kilometers :				
		Contour levels in mV/m.				
		25.000	5.000	.500	.250	.025
0.0	92.43	2.83	9.53	33.95	46.43	124.02
5.0	136.30	3.89	12.23	40.54	55.00	148.07
10.0	169.06	4.61	13.94	44.63	60.40	165.88
15.0	187.66	5.00	14.84	46.73	65.01	178.26
20.0	193.01	5.11	15.08	47.31	65.68	187.67
25.0	188.68	5.02	14.88	46.85	64.07	190.12
30.0	180.54	4.85	14.50	45.95	62.09	188.69
35.0	175.50	4.75	14.26	45.38	61.34	187.66
40.0	178.44	4.81	14.40	45.71	61.78	187.42
45.0	188.60	5.02	14.88	46.84	63.27	190.60
50.0	199.66	5.24	15.38	48.02	64.83	194.07
55.0	203.03	5.31	15.53	48.38	65.30	195.11
60.0	190.31	5.05	14.96	47.02	63.51	192.11
65.0	154.42	4.29	13.20	42.87	58.05	182.24
70.0	91.38	2.80	9.46	33.77	46.19	161.82
75.0	46.77	1.57	5.90	24.40	34.14	129.70
80.0	167.54	4.58	13.87	44.45	72.17	218.83
85.0	344.99	7.81	20.84	78.97	116.21	369.84
90.0	561.50	10.82	26.74	105.01	139.15	549.90
95.0	810.80	13.60	31.93	131.39	170.03	660.29
100.0	1084.39	16.13	36.55	138.84	181.27	690.12
105.0	1370.88	18.41	43.25	161.78	213.72	739.01
110.0	1656.44	20.40	49.12	171.36	211.37	738.57
115.0	1925.60	22.09	53.96	172.28	215.96	744.39
120.0	2162.46	23.45	57.75	176.53	244.25	774.67
125.0	2352.01	24.47	60.51	182.25	265.78	797.63
130.0	2481.52	25.14	62.19	187.03	274.84	806.71
135.0	2541.74	25.45	62.77	308.87	463.77	995.63
140.0	2527.79	25.38	62.22	296.84	451.67	983.54
145.0	2439.59	24.93	63.92	224.59	354.92	886.79
150.0	2281.87	24.10	60.92	235.37	360.14	891.57
155.0	2063.71	22.89	55.30	172.35	242.76	755.91
160.0	1797.74	21.30	48.13	168.21	207.74	489.45
165.0	1499.22	19.33	42.31	150.77	187.98	423.41
170.0	1185.40	16.97	38.06	126.48	160.75	345.30
175.0	875.94	14.24	33.11	111.27	141.90	304.85

GROUND CONDUCTIVITY : FCC M-3

**MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2D (Continued)**

North Latitude: 39° 08' 02"  
West Longitude: 77° 18' 14"

Azimuth	Radiation (mV/m at one km)	Distances to Contours in Kilometers :				
		Contour levels in mV/m.				
		25.000	5.000	.500	.250	.025
180.0	597.32	11.26	27.57	82.83	112.50	260.21
185.0	400.99	8.66	22.55	64.95	87.33	218.88
190.0	374.49	8.26	21.76	63.07	84.83	213.59
195.0	491.95	9.93	25.03	70.90	95.24	235.12
200.0	640.42	11.76	28.52	79.35	106.45	257.04
205.0	771.05	13.19	31.18	85.88	115.04	273.00
210.0	869.66	14.18	33.00	90.39	120.93	283.60
215.0	932.71	14.78	34.10	93.11	124.48	290.08
220.0	960.72	15.04	34.57	94.29	126.01	292.57
225.0	956.09	15.00	34.49	94.09	125.76	292.13
230.0	922.31	14.69	33.92	92.67	123.91	288.86
235.0	863.55	14.12	32.89	90.12	120.57	282.98
240.0	784.51	13.33	31.44	86.52	115.87	274.54
245.0	690.42	12.33	29.58	81.94	109.85	263.39
250.0	586.95	11.13	27.33	76.45	102.61	249.60
255.0	480.16	9.77	24.73	70.17	94.27	233.14
260.0	376.39	8.29	21.82	63.21	85.01	213.97
265.0	281.98	6.77	18.69	55.81	75.16	192.59
270.0	202.97	5.31	15.53	48.37	65.29	176.26
275.0	144.68	4.08	12.69	41.64	56.44	155.35
280.0	110.65	3.28	10.72	36.89	50.23	140.03
285.0	100.51	3.03	10.07	35.29	48.17	135.46
290.0	110.16	3.27	10.69	36.82	50.14	142.62
295.0	135.76	3.88	12.20	40.47	54.91	158.05
300.0	173.48	4.70	14.16	45.14	61.04	176.84
305.0	217.39	5.59	16.16	49.85	67.24	194.93
310.0	260.09	6.38	17.88	53.89	72.61	209.70
315.0	294.17	6.98	19.13	56.84	76.53	210.82
320.0	313.45	7.30	19.80	58.42	78.63	214.87
325.0	313.85	7.30	19.81	58.45	78.68	214.84
330.0	293.87	6.97	19.12	56.82	76.50	210.27
335.0	254.75	6.28	17.67	53.41	71.97	200.18
340.0	200.33	5.25	15.41	48.09	64.93	180.05
345.0	137.02	3.91	12.27	40.64	55.13	147.45
350.0	76.22	2.40	8.36	31.01	42.63	114.48
355.0	54.43	1.79	6.60	26.33	36.62	99.41

GROUND CONDUCTIVITY : FCC M-3



**MINOR MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2E**

**Licensed Allocation Contour Tabulation**

North Latitude: 39° 00" 55"

West Longitude: 77° 08' 30"

Azimuth	Radiation (mV/m at one km)	Distances to Contours in Kilometers :				
		Contour levels in mV/m.				
		25.000	5.000	.500	.250	.025
0.0	409.30	8.78	22.79	65.53	94.25	227.51
5.0	429.01	9.07	23.35	66.86	97.01	234.90
10.0	439.49	9.21	23.65	67.55	98.09	241.95
15.0	443.56	9.27	23.76	67.82	98.21	247.25
20.0	444.35	9.28	23.78	67.87	97.73	251.42
25.0	444.36	9.28	23.78	67.87	96.93	251.99
30.0	444.91	9.29	23.79	67.91	96.50	254.38
35.0	446.13	9.31	23.83	67.99	96.31	260.72
40.0	447.52	9.33	23.86	68.08	96.64	263.79
45.0	448.59	9.34	23.89	68.30	99.91	267.15
50.0	449.11	9.35	23.91	73.24	104.86	272.14
55.0	449.12	9.35	23.91	78.88	110.50	277.78
60.0	448.64	9.34	23.89	89.82	130.81	302.65
65.0	447.59	9.33	23.87	120.97	156.95	379.53
70.0	445.99	9.31	23.82	110.20	143.71	381.75
75.0	444.70	9.29	24.53	104.77	136.28	403.52
80.0	446.18	9.31	25.71	104.13	135.68	458.23
85.0	455.06	9.43	26.94	115.42	147.19	598.48
90.0	477.70	9.74	28.53	113.98	146.28	584.03
95.0	520.22	10.30	30.72	118.26	151.52	620.09
100.0	586.09	11.12	33.54	129.83	164.48	628.66
105.0	674.98	12.16	36.85	133.17	167.46	612.46
110.0	783.60	13.33	40.41	135.53	164.87	605.14
115.0	907.24	14.55	44.00	142.38	173.41	633.98
120.0	1040.81	16.36	47.47	138.86	171.54	643.24
125.0	1179.33	18.18	50.70	146.59	180.79	678.63
130.0	1318.08	19.82	53.62	158.33	196.55	721.27
135.0	1452.51	21.25	56.21	281.12	432.22	958.30
140.0	1578.30	22.45	58.40	261.03	412.81	939.51
145.0	1691.25	23.39	60.20	256.80	408.81	936.20
150.0	1787.46	24.87	62.36	231.11	383.27	911.14
155.0	1863.48	28.46	66.47	234.63	387.28	915.48
160.0	1916.64	24.32	67.35	184.09	271.36	708.82
165.0	1949.12	23.94	64.42	177.80	221.78	528.86
170.0	1989.90	23.41	63.65	170.99	215.84	460.79
175.0	2038.67	22.75	72.42	162.97	206.57	409.62

GROUND CONDUCTIVITY : FCC M-3

**MINOR MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2E (continued)**

**Licensed Allocation Contour Tabulation**

North Latitude: 39° 00' 55"  
West Longitude: 77° 08' 30"

Azimuth	Radiation (mV/m at one km)	Distances to Contours in Kilometers :				
		Contour levels in mV/m.				
		25.000	5.000	.500	.250	.025
180.0	2084.26	23.01	65.15	158.76	200.19	395.93
185.0	2114.84	23.18	61.23	153.37	194.99	389.57
190.0	2120.53	23.21	78.01	159.91	201.56	396.24
195.0	2095.00	23.07	51.76	136.28	177.78	372.04
200.0	2036.25	22.73	48.44	129.04	170.18	363.48
205.0	1947.03	22.21	47.50	126.69	167.27	361.00
210.0	1839.60	21.56	46.33	123.77	163.59	358.70
215.0	1729.28	20.87	45.08	120.64	159.67	353.34
220.0	1626.04	20.19	43.86	117.60	155.86	347.52
225.0	1539.00	19.61	42.81	114.94	152.49	336.35
230.0	1467.57	19.11	41.91	112.68	149.62	331.78
235.0	1377.75	18.46	40.74	109.75	145.90	325.81
240.0	1273.81	17.67	39.33	106.20	141.36	318.53
245.0	1169.10	16.84	37.83	102.44	136.53	310.52
250.0	1067.75	15.99	36.29	98.59	131.59	302.16
255.0	969.15	15.12	34.71	94.63	126.46	293.37
260.0	879.54	14.28	33.17	90.82	121.49	284.61
265.0	804.10	13.53	31.81	87.43	117.06	276.74
270.0	745.72	12.93	30.69	84.67	113.44	270.06
275.0	703.97	12.48	29.85	82.62	110.75	284.25
280.0	675.14	12.16	29.26	81.16	108.83	283.10
285.0	653.34	11.91	28.80	80.03	107.35	281.27
290.0	632.25	11.67	28.34	78.92	105.87	282.78
295.0	606.47	11.37	27.78	77.53	104.04	279.60
300.0	572.28	10.95	26.99	75.63	101.53	274.64
305.0	527.85	10.40	25.93	73.06	98.12	267.31
310.0	473.29	9.68	24.55	69.73	93.70	257.09
315.0	410.71	8.80	22.83	65.62	88.22	234.76
320.0	344.70	7.80	20.83	60.86	81.88	220.73
325.0	283.41	6.79	18.74	55.94	75.32	206.24
330.0	239.88	6.01	17.09	52.03	70.14	193.42
335.0	228.51	5.80	16.63	50.94	68.70	187.08
340.0	251.03	6.22	17.53	53.07	71.52	191.77
345.0	292.95	6.95	19.09	56.74	76.39	197.89
350.0	338.71	7.71	20.64	60.41	81.28	206.01
355.0	378.92	8.33	21.90	63.39	88.30	217.54

GROUND CONDUCTIVITY : FCC M-3



**MINOR MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2F**

**WEJL - Scranton, Pennsylvania - 630 kHz - 2.0 kW - ND**

North Latitude: 41° 24' 34"  
West Longitude: 75° 40' 01"

Azimuth	Radiation (mV/m at one km)	Dist to Contour - km:	
		Contour levels in mV/m. .500	.025
90.0	398.24	90.37	242.34
95.0	398.24	86.76	270.55
100.0	398.24	84.10	283.80
105.0	398.24	82.07	245.04
110.0	398.24	80.51	275.93
115.0	398.24	79.27	306.43
120.0	398.24	78.30	376.44
125.0	398.24	77.40	417.67
130.0	398.24	76.64	401.52
135.0	398.24	79.61	399.11
140.0	398.24	80.79	381.55
145.0	398.24	80.57	348.38
150.0	398.24	80.03	335.22
155.0	398.24	79.40	311.56
160.0	398.24	78.68	288.08
165.0	398.24	77.85	272.04
170.0	398.24	76.89	311.40
175.0	398.24	76.01	284.60
180.0	398.24	75.78	267.72
185.0	398.24	76.28	269.06
190.0	398.24	76.93	291.67
195.0	398.24	77.77	277.05
200.0	398.24	78.70	260.16
205.0	398.24	79.77	255.58
210.0	398.24	80.51	255.79
215.0	398.24	81.25	254.59
220.0	398.24	81.92	235.50
225.0	398.24	82.65	236.23
230.0	398.24	83.21	236.79
235.0	398.24	83.73	241.21
240.0	398.24	84.45	245.57
245.0	398.24	85.33	248.07
250.0	398.24	86.40	245.95
255.0	398.24	87.96	241.53
260.0	398.24	90.58	244.16
265.0	398.24	94.94	253.95
270.0	398.24	94.94	265.29

GROUND CONDUCTIVITY : FCC M-3

**MINOR MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2G**

**WMFD - Wilmington, North Carolina - 630 kHz - 0.8 kW - DA**

North Latitude: 34° 16' 19"  
West Longitude: 77° 58' 28"

Azimuth	Radiation (mV/m at one km)	Dist to Contour - km:	
		Contour levels in mV/m.	
		.500	.025
0.0	155.54	63.54	192.48
5.0	182.04	68.15	200.96
10.0	208.56	72.33	208.78
15.0	234.60	76.10	216.78
20.0	259.74	79.47	226.44
25.0	283.60	82.48	238.86
30.0	305.86	85.13	267.16
35.0	326.29	87.46	288.00
40.0	344.71	89.47	308.65
45.0	361.03	93.41	363.20
50.0	375.21	94.29	363.90
55.0	387.31	100.19	639.26
60.0	397.41	104.11	560.89
65.0	405.66	160.54	793.75
70.0	412.25	343.56	987.76
75.0	417.38	365.63	1010.31
80.0	421.26	377.73	1022.76
85.0	424.12	385.04	1030.33
90.0	426.14	388.59	1034.05

GROUND CONDUCTIVITY : FCC M-3



**MINOR MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2H**

**WPRO - Providence, Rhode Island - 630 kHz - 5.0 kW - ND**

North Latitude: 41° 46' 28"  
West Longitude: 71° 19' 23"

Azimuth	Radiation (mV/m at one km)	Dist to Contour - km:	
		Contour levels in mV/m. .500	.025
180.0	683.74	495.37	1155.55
185.0	683.74	495.65	1155.83
190.0	683.74	495.85	1156.04
195.0	683.74	462.64	1122.82
200.0	683.74	432.19	1092.37
205.0	683.74	341.74	1001.92
210.0	683.74	289.11	949.29
215.0	683.74	147.47	768.82
220.0	683.74	113.33	631.36
225.0	683.74	123.09	508.75
230.0	683.74	105.94	348.99
235.0	683.74	83.50	350.05
240.0	683.74	82.51	326.01
245.0	683.74	82.43	352.96
250.0	683.74	82.37	255.44
255.0	683.74	82.32	255.10
260.0	683.74	82.29	257.14
265.0	683.74	82.26	262.99
270.0	683.74	82.23	268.29

GROUND CONDUCTIVITY : FCC M-3

**MINOR MINOR CHANGE APPLICATION**  
**RADIO LICENSE HOLDINGS, LLC**  
**WMAL AM RADIO STATION**  
**630 kHz - 2.7/10.0 kW - DA2**  
**WASHINGTON, DC**  
**September 2015**

**EXHIBIT #2I**

**WWJZ - Mount Holly, New Jersey - 640 kHz - 50.0 kW - DA**

North Latitude: 39° 59' 49"  
West Longitude: 74° 43' 11"

Azimuth	Radiation (mV/m at one km)	Dist to Contour - km:	
		Contour levels in mV/m. .500	.250
180.0	3867.21	548.14	704.10
185.0	3675.75	484.79	640.98
190.0	3416.94	489.91	646.34
195.0	3105.58	225.07	354.50
200.0	2772.78	215.55	273.32
205.0	2464.85	205.05	284.71
210.0	2234.94	200.51	283.26
215.0	2216.59	193.48	254.59
220.0	1903.00	180.71	251.46
225.0	1769.26	182.00	249.02
230.0	1659.97	194.49	247.69
235.0	1576.30	174.19	228.34
240.0	1518.06	198.39	241.66
245.0	1483.38	176.58	216.23
250.0	1468.60	166.14	203.82
255.0	1468.54	158.73	198.18
260.0	1477.18	159.08	205.67
265.0	1513.87	160.57	207.51
270.0	1604.81	164.16	209.61

GROUND CONDUCTIVITY : FCC M-3