MEASUREMENTS MADE TO COMPLY WITH

SPECIAL OPERATING CONDITIONS

BXPH-20141204AAK

WWBB FM

FID54568

APRIL 21, 2015

Special Operating Condition 2 requires Clear Channel Broadcasting Licenses, Inc. (CCBL) to notify the owner of WPMZ (AM) of their intention to replace an existing FM antenna on tower #1 which bears tower registration #1022392. The licensee of WPMZ was notified of the construction so that they might apply for Special Temporary Authority to operate with parameters at variance.

Prior to making pre-construction measurements CCBL determined that the WPMZ antenna monitor was not functional and that the transmitter was not operating at licensed power. We understand that these conditions have existing for some time. The common point current was indicated as 5.0 amps.

Measurements were made on two monitored radials and two adjacent radials as required in Rule Section 73.154 prior to construction.

An abandoned ERI SHP-1AE antenna was removed from the 112 meter elevation of the WMPZ tower and an ERI SHP-1AE-DA antenna was installed. The only physical difference between the two antennae is the addition of parasitic elements which make the installed antenna directional.

The field measurements were repeated after the antenna change had been accomplished. Again, WMPZ indicated 5.0 amps of common point current and the antenna monitor remained out of service. Analysis of the before and after measurements indicates that the preconstruction analyzed field strength values have not increased. Differences in field strength values is attributed to varying amounts of snow cover and frozen ground conditions along the radials. Measurements were made by the undersigned using a Potomac Instruments FIM41 which was most recently calibrated by the manufacturer on 1/26/2015. The meter was compared with Potomac FIM 4100 Serial #133 which was calibrated by the manufacturer on 6/6/2013 and was found to be in agreement.

FIELD INTENSITY MEASURMENTS

STATION:	WPMZ	AZIM:	006T			ENG:	JF Warner
FIM:	41	KHZ:	1110				
SERIAL:	2113					TRIAL:	Before /After

POINT #	DIST km	DATE DA	TIME DA	mv/m DA	DATE DA	TIME DA	mv/m DA	POINT DESCRIPTION
16	3.22	1/14/15	1035	35.00	3/24/15	1238	36.00	
17	3.96	"	1040	10.00	"	1234	10.00	
18	4.70	"	1048	22.00	"	1228	19.00	
20	6.21	"	11	10.00	"	1213	11.00	
21	6.98	"	1104	7.00	"	1201	6.60	
22MP	7.67	"	1114	7.20	"	1152	4.30	
23	8.64	"	1127	3.70	"	1145	3.50	
24	9.24	"	1136	5.00	"	1140	5.20	
		ARITHMETIC AVG DA/REF READINGS…					0.94	
		LOG-RATIO AVERAGE DA/REF READINGS…					0.92	
				REFERENCE FIELD…			1.00	
		LOG-RATIO TIMES REFERENCE FIELD…					0.92	
		ARITHMETIC TIMES REFERENCE FIELD					0.94	
		CP/STANDARD PATTERN MAX PERMISSIBLE…					1.00	

FIELD INTENSITY MEASURMENTS

STATION:	WPMZ	AZIM:	055T			ENG:	JF Warner
FIM:	41	KHZ:	1110				
SERIAL:	2114					TRIAL:	Before/After

POINT #	DIST km	DATE DA	TIME DA	mv/m DA	DATE DA	TIME DA	mv/m DA	POINT DESCRIPTION
15	3.31	1/14/15	1230	52.00	3/24/15	1014	29.00	
16	3.93	"	1236	45.00	"	1020	22.00	
18	5.44	"	1247	22.50	"	1027	12.40	
19	6.44	"	1253	15.50	"	1035	10.50	
20	7.24	"	1258	6.40	"	1045	4.70	
21	7.76	"	1311	9.00	"	1049	5.60	
22	8.42	"	1320	5.20	"	1059	4.90	
23	9.61	"	1330	4.00	"	1113	3.80	
		ARITHMETIC AVG DA/REF READINGS…					0.69	
		LOG-RATIO AVERAGE DA/REF READINGS…					0.67	
				REFERENCE FIELD…			1.00	
		LOG-RATIO TIMES REFERENCE FIELD…					0.67	
		ARITHMETIC TIMES REFERENCE FIELD					0.69	
		CP/STANDARD PATTERN MAX PERMISSIBLE…					1.00	

FIELD INTENSITY MEASURMENTS

STATION:	WPMZ	AZIM:	284			ENG:	JF Warner
FIM:	41	KHZ:	1110				
SERIAL:	2114					TRIAL:	Before/After

POINT #	DIST	DATE	TIME	mv/m	DATE	TIME	mv/m	POINT DESCRIPTION
	km	DA	DA	DA	DA	DA	DA	
16	3.12	1/14/15	1422	15.00	3/24/15	1300	13.80	
17MP	3.91	"	1436	13.00	"	1310	12.20	
18	4.71	"	1453	5.60	"	1327	5.10	
19	5.49	"	1458	7.40	"	1332	6.00	
20	6.23	"	1503	5.40	"	1336	5.00	
21	7.19	"	1513	7.40	"	1344	6.80	
22	8.06	"	1521	3.60	"	1350	3.80	
23	8.88	"	1530	3.00		1354	4.00	
		ARITHMETIC AVG DA/REF READINGS...					0.98	
		LOG-RATIO AVERAGE DA/REF READINGS...					0.97	
				REFERENCE FIELD...			1.00	
		LOG-RATIO TIMES REFERENCE FIELD...					0.97	
		ARITHMETIC TIMES REFERENCE FIELD					0.98	
		CP/STANDARD PATTERN MAX PERMISSIBLE...					1.00	

FIELD INTENSITY MEASURMENTS

STATION:	WPMZ	AZIM:	325T			ENG:	JF Warner
FIM:	41	KHZ:	1110				
SERIAL:	2114					TRIAL:	Before/After

POINT #	DIST km	DATE DA	TIME DA	mv/m DA	DATE DA	TIME DA	mv/m DA	POINT DESCRIPTION
12	3.25	1/15/15	0900	18.00	3/24/15	1415	20.00	
13	4.02	"	0909	10.00	"	1425	12.00	
14	4.86	"	0919	11.00	"	1435	8.00	
15	5.71	"	0933	13.00	"	1450	10.00	
16	6.42	"	0940	8.00	"	1456	7.00	
17	7.10	"	0951	4.50	"	1506	3.60	
18	8.16	"	0957	3.00	"	1510	2.80	
20	9.43	"	1020	2.50	"	1532	2.30	
		ARITHMETIC AVG DA/REF READINGS...					0.92	
		LOG-RATIO AVERAGE DA/REF READINGS...					0.90	
				REFERENCE FIELD...			1.00	
		LOG-RATIO TIMES REFERENCE FIELD...					0.90	
		ARITHMETIC TIMES REFERENCE FIELD					0.92	
		CP/STANDARD PATTERN MAX PERMISSIBLE...					1.00	

Special Operating Condition #3 requires a model of the WPRV array including tower ASR#1022392 before and after the FM antenna installation. The models were constructed using Mininec Broadcast Professional version 14.6. A summary of the models is included. The effective area of the radius at the elevation of the FM antenna has been increased to simulate the physical impact of the antenna installation.

A comparison of the before and after field strengths is provided for every 5° of azimuth. From this comparison it is shown that the installation of the FM antenna on the tower has had no impact on the WPRV directional pattern.

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WPRV WITH EXISTING FM ANTENNA

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.291	12
		0	0	92.5		
2	none	46.3	270.	0	.291	12
		46.3	270.	92.5		
3	none	819.89	201.68	0	.291	18
		819.89	201.68	157.87		

Number of wires = 3
current nodes = 42

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	7.70833	3	8.77056
radius	1	.291	1	.291

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.79	0	1	.021412	.0243627

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,225.39	283.1	voltage
2	13	1	270.288	74.5	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.79	17.792	53.026	55.932	71.5	6.1645	-2.8432	-3.1841
source = 2; node 13, sector 1							
.79	3.899	13.413	13.969	73.8	13.752	-1.2655	-5.9727

CURRENT rms
Frequency = .79 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	15.4918	211.6	-13.1924	-8.12148
2	0	0	7.70833	15.9389	210.9	-13.6721	-8.19282
3	0	0	15.4167	15.9201	210.5	-13.7153	-8.08343
4	0	0	23.125	15.5588	210.2	-13.4483	-7.82442
5	0	0	30.8333	14.8796	209.9	-12.8951	-7.42427
6	0	0	38.5417	13.9011	209.7	-12.0731	-6.89076
7	0	0	46.25	12.6429	209.5	-10.9999	-6.23266
8	0	0	53.9583	11.1262	209.4	-9.69458	-5.45964
9	0	0	61.6667	9.37345	209.3	-8.17734	-4.58178
10	0	0	69.375	7.40629	209.2	-6.46773	-3.60854
11	0	0	77.0833	5.23914	209.1	-4.57903	-2.54578
12	0	0	84.7917	2.86114	209.	-2.50242	-1.3871
END	0	0	92.5	0	0	0	0
GND	0	46.3	0	13.6824	.7	13.6813	.173838
14	0	46.3	7.70833	13.6994	.6	13.6987	.135685
15	0	46.3	15.4167	13.448	.5	13.4476	.105809
16	0	46.3	23.125	12.9597	.3	12.9594	.0771729
17	0	46.3	30.8333	12.2459	.2	12.2458	.0493961
18	0	46.3	38.5417	11.3195	.1	11.3194	.022962
19	0	46.3	46.25	10.1956	360.	10.1956	-1.17E-03
20	0	46.3	53.9583	8.89197	359.9	8.89194	-.021675
21	0	46.3	61.6667	7.42747	359.7	7.42738	-.0369275
22	0	46.3	69.375	5.8205	359.6	5.82032	-.0450324
23	0	46.3	77.0833	4.08432	359.4	4.08409	-.0438604
24	0	46.3	84.7917	2.21267	359.2	2.21245	-.0309431
END	0	46.3	92.5	0	0	0	0
GND	-761.892	302.886	0	.11923	344.6	.114952	-.0316517
26	-761.892	302.886	8.77056	.11854	344.6	.114309	-.0313874
27	-761.892	302.886	17.5411	.116482	344.8	.11239	-.0306023
28	-761.892	302.886	26.3117	.113106	345.	.10924	-.0293195
29	-761.892	302.886	35.0822	.108487	345.3	.104923	-.027577
30	-761.892	302.886	43.8528	.10273	345.7	.0995338	-.0254267
31	-761.892	302.886	52.6233	.0959659	346.2	.0931854	-.0229334
32	-761.892	302.886	61.3939	.0883485	346.8	.0860146	-.0201731
33	-761.892	302.886	70.1644	.0800494	347.6	.0781728	-.0172313
34	-761.892	302.886	78.935	.0712546	348.5	.069825	-.0142013
35	-761.892	302.886	87.7056	.062161	349.6	.0611469	-.0111823
36	-761.892	302.886	96.4761	.0529697	351.	.0523191	-8.28E-03
37	-761.892	302.886	105.247	.0438808	352.7	.0435235	-5.59E-03
38	-761.892	302.886	114.017	.0350867	354.7	.0349385	-3.22E-03
39	-761.892	302.886	122.788	.0267649	357.3	.0267344	-1.28E-03
40	-761.892	302.886	131.558	.0190671	.4	.0190666	1.4E-04
41	-761.892	302.886	140.329	.0121019	4.4	.012066	9.32E-04
42	-761.892	302.886	149.099	5.89E-03	9.6	5.81E-03	9.81E-04
END	-761.892	302.886	157.87	0	0	0	0

WPRV WITH NEW DIRECTIONAL ANTENNA INSTALLED

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.291	12
		0	0	92.5		
2	none	46.3	270.	0	.291	12
		46.3	270.	92.5		
3	none	819.89	201.68	0	.291	12
		819.89	201.68	106.1		
4	none	819.89	201.68	106.1	.582	2
		819.89	201.68	110.1		
5	none	819.89	201.68	110.1	.291	9
		819.89	201.68	157.87		

Number of wires = 5
current nodes = 47

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	2.	3	8.84167
radius	1	.291	4	.582

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.79	0	1	5.56E-03	.0245602

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,225.39	283.1	voltage
2	13	1	270.31	74.5	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.79	17.791	53.027	55.932	71.5	6.1649	-2.843	-3.1843
source = 2; node 13, sector 1							
.79	3.9003	13.414	13.969	73.8	13.747	-1.2659	-5.9715

CURRENT rms
Frequency = .79 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	15.4916	211.6	-13.1922	-8.12133
2	0	0	7.70833	15.9388	210.9	-13.672	-8.19275
3	0	0	15.4167	15.92	210.5	-13.7151	-8.08336
4	0	0	23.125	15.5588	210.2	-13.4482	-7.82442
5	0	0	30.8333	14.8795	209.9	-12.8949	-7.4242
6	0	0	38.5417	13.9011	209.7	-12.073	-6.89071
7	0	0	46.25	12.6428	209.5	-10.9998	-6.23262
8	0	0	53.9583	11.1261	209.4	-9.69443	-5.4596
9	0	0	61.6667	9.37338	209.3	-8.17726	-4.58176
10	0	0	69.375	7.40623	209.2	-6.46767	-3.60853
11	0	0	77.0833	5.2391	209.1	-4.57899	-2.54578
12	0	0	84.7917	2.86112	209.	-2.50239	-1.3871
END	0	0	92.5	0	0	0	0
GND	0	46.3	0	13.6826	.7	13.6815	.173792
14	0	46.3	7.70833	13.6997	.6	13.699	.135627
15	0	46.3	15.4167	13.4483	.5	13.4479	.105743
16	0	46.3	23.125	12.96	.3	12.9598	.0771036
17	0	46.3	30.8333	12.2462	.2	12.2461	.0493255
18	0	46.3	38.5417	11.3197	.1	11.3197	.0228927
19	0	46.3	46.25	10.1959	360.	10.1959	-1.23E-03
20	0	46.3	53.9583	8.89218	359.9	8.89215	-.0217351
21	0	46.3	61.6667	7.42761	359.7	7.42752	-.0369799
22	0	46.3	69.375	5.82065	359.6	5.82047	-.0450749
23	0	46.3	77.0833	4.08442	359.4	4.08419	-.0438914
24	0	46.3	84.7917	2.21273	359.2	2.21251	-.0309605
END	0	46.3	92.5	0	0	0	0
GND	-761.892	302.886	0	.119049	344.6	.114766	-.0316483
26	-761.892	302.886	8.84167	.11835	344.6	.114114	-.0313802
27	-761.892	302.886	17.6833	.116266	344.7	.112171	-.030584
28	-761.892	302.886	26.525	.112848	345.	.108982	-.0292835
29	-761.892	302.886	35.3667	.108173	345.3	.104614	-.0275179
30	-761.892	302.886	44.2083	.102351	345.7	.0991639	-.0253408
31	-761.892	302.886	53.05	.0955149	346.2	.0927491	-.022819
32	-761.892	302.886	61.8917	.0878238	346.8	.085509	-.0200307
33	-761.892	302.886	70.7333	.0794548	347.6	.0776007	-.0170645
34	-761.892	302.886	79.575	.0706001	348.5	.0691947	-.0140165
35	-761.892	302.886	88.4167	.0614653	349.7	.0604748	-.0109898
36	-761.892	302.886	97.2583	.0522677	351.1	.0516373	-8.09E-03
END	-761.892	302.886	106.1	.0433676	352.7	.0430197	-5.48E-03
2J3	-761.892	302.886	106.1	.0433676	352.7	.0430197	-5.48E-03
38	-761.892	302.886	108.1	.0406567	353.3	.0403807	-4.73E-03
END	-761.892	302.886	110.1	.0379722	354.	.0377616	-3.99E-03
2J4	-761.892	302.886	110.1	.0379722	354.	.0377616	-3.99E-03
40	-761.892	302.886	115.408	.033048	355.3	.032936	-2.72E-03
41	-761.892	302.886	120.716	.0281235	356.8	.0280806	-1.55E-03
42	-761.892	302.886	126.023	.0233936	358.6	.0233867	-5.68E-04
43	-761.892	302.886	131.331	.0189017	.7	.0189005	2.15E-04
44	-761.892	302.886	136.639	.0146751	3.	.0146549	7.71E-04
45	-761.892	302.886	141.947	.0107277	5.7	.0106738	1.07E-03

46	-761.892	302.886	147.254	7.05E-03	8.9	6.97E-03	1.1E-03
47	-761.892	302.886	152.562	3.61E-03	12.7	3.52E-03	7.96E-04
END	-761.892	302.886	157.87	0	0	0	0

COMPARISON OF MODELED FIELD STRENGTHS BEFORE AND AFTER AT 1KM

Azimuth	Without FM Antenna mV/m	With FM Antenna mV/m	Diff mV		dB
0	542.796	542.774	-0.022	0.999959	0.000
5	606.864	606.839	-0.025	0.999959	0.000
10	668.831	668.805	-0.026	0.999961	0.000
15	728.966	728.941	-0.025	0.999966	0.000
20	787.323	787.299	-0.024	0.99997	0.000
25	843.628	843.606	-0.022	0.999974	0.000
30	897.285	897.263	-0.022	0.999975	0.000
35	947.368	947.348	-0.02	0.999979	0.000
40	992.676	992.659	-0.017	0.999983	0.000
45	1,031.99	1,031.98	-0.01	0.99999	0.000
50	1,064.77	1,064.77	0	1	0.000
55	1,092.16	1,092.19	0.03	1.000027	0.000
60	1,117.46	1,117.50	0.04	1.000036	0.000
65	1,144.53	1,144.56	0.03	1.000026	0.000
70	1,173.83	1,173.84	0.01	1.000009	0.000
75	1,199.50	1,199.49	-0.01	0.999992	0.000
80	1,212.62	1,212.60	-0.02	0.999984	0.000
85	1,210.40	1,210.40	0	1	0.000
90	1,202.01	1,202.05	0.04	1.000033	0.000
95	1,200.44	1,200.47	0.03	1.000025	0.000
100	1,205.48	1,205.47	-0.01	0.999992	0.000
105	1,201.78	1,201.77	-0.01	0.999992	0.000
110	1,178.77	1,178.77	0	1	0.000
115	1,145.37	1,145.40	0.03	1.000026	0.000
120	1,118.58	1,118.62	0.04	1.000036	0.000
125	1,100.10	1,100.10	0	1	0.000
130	1,074.92	1,074.90	-0.02	0.999981	0.000
135	1,032.38	1,032.37	-0.01	0.99999	0.000
140	978.124	978.144	0.02	1.00002	0.000
145	925.301	925.335	0.034	1.000037	0.000
150	879.671	879.691	0.02	1.000023	0.000
155	836.111	836.106	-0.005	0.999994	0.000
160	786.785	786.762	-0.023	0.999971	0.000
165	728.521	728.499	-0.022	0.99997	0.000
170	663.365	663.354	-0.011	0.999983	0.000
175	595.421	595.425	0.004	1.000007	0.000
180	528.134	528.149	0.015	1.000028	0.000
185	463.399	463.42	0.021	1.000045	0.000
190	402.027	402.049	0.022	1.000055	0.000
195	344.587	344.605	0.018	1.000052	0.000
200	292.072	292.086	0.014	1.000048	0.000
205	246.311	246.319	0.008	1.000032	0.000
210	210.099	210.101	0.002	1.00001	0.000
215	186.744	186.741	-0.003	0.999984	0.000
220	178.41	178.405	-0.005	0.999972	0.000

225	184.257	184.254	-0.003	0.999984	0.000
230	201.096	201.092	-0.004	0.99998	0.000
235	225.71	225.701	-0.009	0.99996	0.000
240	255.186	255.163	-0.023	0.99991	-0.001
245	285.214	285.172	-0.042	0.999853	-0.001
250	309.441	309.39	-0.051	0.999835	-0.001
255	322.175	322.132	-0.043	0.999867	-0.001
260	323.655	323.638	-0.017	0.999947	0.000
265	322.774	322.779	0.005	1.000015	0.000
270	329.239	329.235	-0.004	0.999988	0.000
275	339.163	339.127	-0.036	0.999894	-0.001
280	337.274	337.224	-0.05	0.999852	-0.001
285	316.366	316.338	-0.028	0.999911	-0.001
290	288.455	288.456	0.001	1.000003	0.000
295	271.549	271.541	-0.008	0.999971	0.000
300	262.859	262.817	-0.042	0.99984	-0.001
305	243.87	243.815	-0.055	0.999774	-0.002
310	210.797	210.767	-0.03	0.999858	-0.001
315	184.301	184.297	-0.004	0.999978	0.000
320	185.928	185.906	-0.022	0.999882	-0.001
325	206.574	206.523	-0.051	0.999753	-0.002
330	229.2	229.154	-0.046	0.999799	-0.002
335	254.61	254.596	-0.014	0.999945	0.000
340	292.53	292.543	0.013	1.000044	0.000
345	346.054	346.07	0.016	1.000046	0.000
350	409.7	409.704	0.004	1.00001	0.000
355	476.629	476.617	-0.012	0.999975	0.000
360	542.796	542.774	-0.022	0.999959	0.000