



Broadcast Sciences LLC
1465 Horseshoe Trail
Malvern, Pennsylvania 19355
610.917.3000
www.broadsci.com

ENGINEERING STATEMENT

Application for Construction Permit

for

Minor Modification

to

WRTQ, Channel 217, Ocean City, New Jersey

FCC Form 340

OVERVIEW

The instant application proposes to modify existing non-commercial FM stations WRTQ, channel 217B1, only to the extent below:

1. Increase effective radiated power (ERP) from 10.5 kW in the vertical plane to 13.5 kW, and from 1.06 to 1.36 kW in the horizontal plane. The ratio of the ERP in the vertical to horizontal will remain unchanged; the ERP in both planes is being increased by a factor of 1.285.
2. Modify the directional antenna pattern. The modified pattern provides the requisite protection to co-channel and adjacent-channel stations as required to avoid prohibited contour overlap, or to avoid increasing the area of overlap with respect to stations where overlap already exists.

The proposed modifications qualify as minor changes. There will be no change to the antenna location, antenna height, or any other parameter aside from the directional antenna pattern and effective radiated power.

DATA SOURCES AND CALCULATIONS

Computer-generated analyses contained in the instant application were produced using the software package ComStudy Pro version 2.2 by Radiosoft. The ComStudy package uses 3-second and 30-second linearly-interpolated terrain data in accordance with 47 CFR §73.312(d). Contour plots contained in exhibits in the instant application were likewise generated by ComStudy which utilizes algorithms that faithfully reproduce the F(50,50) and F(50,10) curves of 47 CFR §73.333 figures 1 and 1a. Data for existing facilities, construction permits, and pending applications was obtained from the Commission's current databases as acquired and distributed by Radiosoft. The software determines population counts using the accepted centroid method, using the most-current (2000) census data obtained from the US Census Bureau.

Comparative exhibits, including contour plots, involving the existing WRTQ facility are based on the station's licensed parameters, file number BMLED-20051116ADK

DIRECTIONAL ANTENNA PATTERN

The following is a tabulation of the relative field values for the proposed directional antenna. Also included in the tabulation is a value, expressed in decibels, of the ratio of each relative field value to the succeeding azimuth's relative field value in order to demonstrate that the pattern does not exceed the 2 dB per 10 degree variation limit imposed by 47 CFR §73.316(b)(2) as referenced by §73.510(a). No additional rotation needs to be applied to the pattern as tabulated below.

Azimuth (True)	Relative Field	Variation (dB)	Vert ERP (dBkW)	Vert ERP (watts)	Horiz ERP (dBkW)	Horiz ERP (watts)
0	0.730	-1.0	8.57	7194	-1.40	725
10	0.820	-1.7	9.58	9077	-0.39	914
20	1.000	0.0	11.30	13500	1.34	1360
30	1.000	0.2	11.30	13500	1.34	1360
40	0.975	-0.2	11.08	12833	1.12	1293
50	0.997	0.0	11.28	13419	1.31	1352
60	1.000	0.0	11.30	13500	1.34	1360
70	1.000	0.0	11.30	13500	1.34	1360
80	1.000	0.0	11.30	13500	1.34	1360
90	1.000	0.0	11.30	13500	1.34	1360
100	1.000	0.0	11.30	13500	1.34	1360
110	1.000	0.7	11.30	13500	1.34	1360
120	0.920	0.5	10.58	11426	0.61	1151
130	0.870	0.7	10.09	10218	0.13	1029
140	0.800	0.7	9.37	8640	-0.60	870
150	0.740	1.4	8.69	7393	-1.28	745
160	0.630	1.9	7.29	5358	-2.68	540
170	0.504	2.0	5.35	3429	-4.62	345
180	0.400	2.0	3.34	2160	-6.62	218
190	0.318	1.3	1.35	1365	-8.62	138
200	0.275	0.5	0.09	1021	-9.88	103
210	0.260	-0.2	-0.40	913	-10.37	92
220	0.266	-0.8	-0.20	955	-10.17	96
230	0.291	-1.8	0.58	1143	-9.39	115
240	0.358	-2.0	2.38	1730	-7.59	174
250	0.451	-0.9	4.39	2746	-5.58	277
260	0.500	0.0	5.28	3375	-4.69	340
270	0.500	0.0	5.28	3375	-4.69	340
280	0.500	1.1	5.28	3375	-4.69	340
290	0.439	-0.3	4.15	2602	-5.82	262
300	0.455	-1.8	4.46	2795	-5.50	282
310	0.562	-1.8	6.30	4264	-3.67	430
320	0.691	-1.3	8.09	6446	-1.88	649
330	0.803	-0.2	9.40	8705	-0.57	877
340	0.822	0.1	9.60	9122	-0.37	919
350	0.812	0.9	9.49	8901	-0.47	897
0	0.730					

Maxima: 1.000 relative field, 20 to 30 degrees and 60 to 110 degrees

Minima: 0.260 relative field at 210 degrees

The maximum-to-minimum ratio of the directional antenna pattern is 11.7 dB, thereby complying with the 15 dB maximum allowed by 47 CFR §73.510(b).

INTERMEDIATE FREQUENCY (IF) INTERFERENCE

The proposed facility meets the minimum distance separation requirements for intermediate frequency (IF) interference protection set forth 47 CFR §73.207(b)(1) as required by §73.507(c) with respect to stations separated by 10.6 or 10.8 MHz. The closest IF-separated station is WIOQ, channel 271B (102.1 MHz), Philadelphia, Pennsylvania at a distance of 89.9 km from the proposed facility. The minimum separation required is 17 km for class B-to-class B1 analysis, therefore the proposed facility complies with this rule section.

There are a number of translator stations at closer distances than the aforementioned IF-spaced station, however, all operate at, or propose operation at, less than 100 watts ERP and are therefore excluded per 47 CFR §74.1204(g).

PROTECTION OF NEARBY AM BROADCAST FACILITIES

There are no AM broadcast facilities within the 3.2 km radius specified in 47 CFR §73.316(e).

IMPACT TO NEARBY FM AND TV BROADCAST FACILITIES

The proposed facility, like the existing WRTQ facility, is co-located with FM broadcast station WXKW, channel 247B, 97.3 MHz. As the proposed WRTQ facility differs only slightly from the licensed facility, with an increase of only 1.1 dB in effective radiated power, the likelihood of new interference with respect to WXKW is very low. The center of radiation of the WRTQ antenna will be located 22 meters below the center of the WXKW antenna. Due to the vertical radiation characteristics of broadcast FM antennae, other antennae mounted beyond the near field elsewhere on the common tower structure will have no measurable effect on the antenna's performance or radiation characteristics. Although no adverse impact to WXKW is expected, the licensee acknowledges its responsibilities, including ensuring that spectral purity is not degraded by intermodulation products between the proposed facility and WXKW.

CERTIFICATION

I, Jeff DePolo, certify that the engineering portion of the instant application, including all associated exhibits, was prepared by Broadcast Sciences LLC on behalf of the applicant, Temple University of the Commonwealth System of Higher Education. The data and exhibits contained therein were generated by me or under my direct supervision. The information, calculations, and analyses provided are true and accurate to the best of my knowledge and belief. I have been employed in the broadcast and wireless communications field for over fifteen years, during which time I have prepared numerous applications deemed acceptable to the Federal Communications Commission. I, and Broadcast Sciences, have served as the applicant's engineering consultants for the past twelve years. My other qualifications are a matter of record with the Commission.



Jeff DePolo
President, Broadcast Sciences LLC