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WQED PITTSBURGH

PERMITTEE OF WQED-DT CHANNEL 38

PITTSBURGH, PENNSYLVANIA

FCC FILE No. BPEDT-19991012ABV

MINOR CHANGE

APPLICATION FOR AUTHORITY

TO MODIFY AN OUTSTANDING CONSTRUCTION PERMIT

ENGINEERING EXHIBIT EE-1

**Larry H. Will, P.E.
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WQED PITTSBURGH

DECLARATION OF LARRY H. WILL

Larry H. Will declares and says:

That he prepared the attached engineering exhibit on behalf of WQED PITTSBURGH, a Non-commercial Educational TV station on Channel 13 at Pittsburgh, Pennsylvania, and applicant for a modification of Construction Permit for a digital television facility for WQED(TV) on DTV Channel 38.

That he has been involved in radio and television broadcast engineering for over 30 years, and that his qualifications are a matter of record with the Federal Communications Commission.

That he is a Registered Professional Engineer in the States of Pennsylvania and of New Jersey.

That all statements contained within this exhibit are true and accurate to the best of his knowledge and belief, and as to such statements made of belief, they are believed to be true, except for information for which the Federal Communications Commission takes official notice.

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Date: March 18, 2002

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1. BACKGROUND AND PROPOSED CHANGES

WQED PITTSBURGH is the permitte of WQED-DT, Channel 38, in Pittsburgh, PA (File No. BPEDT-19991012ABV). The instant minor application is to modify the existing Construction Permit to change the transmitting antenna type to a TCI Model 888 non directional antenna, to change the HAAT from 220 to 213 meters, to change the antenna C/R from 528 to 521 meters AMSL, and to increase the ERP from 712 kW to 760 kW non-directional. There is no change in the distance to the 48 and 41 dBu F(50,90) contours and no change in overall tower height or location. The proposed changes still provide a 48 dBu F(50,90) signal over the city of license. The modifications proposed herein continue to comply with the requirements of Sections 73.622 and 73.623 of the FCC Rules, and all items on the certification checklist are answered in the affirmative. The revised DTV Channel 38 antenna elevation parameters are included as Figures 2A, 2B and Table 1A.

2. REVISED ENVIRONMENTAL CONSIDERATIONS

The instant application is excluded under 1.1306. Using the procedures outlined in Supplement A, OET Bulletin 65, Edition 97-01 and specifically Tables 9 and 10, I have evaluated the RFR energy from the antenna system of proposed WQED-DT as follows:

The proposed WQED -DT is one of several TV and FM broadcast antennas at the station location required to be considered by 47 CFR 1.1307(b).

2A: DETAILED RFR MEASUREMENTS

The tower supporting the proposed WQED-DT antenna is owned by WQED PITTSBURGH, Licensee of WQED(TV) and supports other broadcast and communications systems. In light of the number of transmitters and the complexity of the site, WQED PITTSBURGH, on March 26, 1998, elected to conduct actual RFR measurement to show compliance rather than relying on computer approximations and formulas contained in OET Bulletin 65.

WQED PITTSBURGH engineering staff conducted a detailed RFR survey of the site on March 26, 1998 which shows compliance with 47 CFR 1.1307 and with the guidelines in FCC OET Bulletin 65. At the time of these measurements stations WQED(TV), WQEX(TV), WQED-FM, W29AV, W35AZ, WBGN-LP, W61CC, and W69CC were operating from the site. The highest level of RFR energy measured at that time was equal to 31.25% of the allowable for the general public/uncontrolled environment.

A copy of the referenced radiation study was included in the original application for BPET-19991012ABV and is not repeated herein. The applicant can supply a duplicate copy if needed by staff.

2B: REVISED RFR CHANGES SINCE THE ON SITE MEASUREMENTS

Since those measurements were taken, the only change proposed is the addition of WQED-DT and WQEX-DT. As shown below, after taking these changes into account

the WQED PITTSBURGH site is still in compliance with 47 CFR 1.1307 and FCC OET Bulletin 65.

2C: ADDITION OF WQED-DT

WQED -DT, Channel 38, is proposing to utilize an average ERP of 760 kilowatts with horizontal polarization. The WQED-DT transmitting antenna is a high gain unit with an elevation power gain of 31x top mounted with a base approximately 160 meters up the tower. Because of the high gain, the ERP at angles departing +/- 10 degrees from the horizon is attenuated by a minimum of 20 dB. For occupational/controlled environment (2.06 mW/cm^2 at 617 Mhz) and utilizing Equation 10 of OET Bulletin 65 and allowing for 20 dB pattern attenuation at steep angles, the required physical separation is 11.1 meters. For the general population/uncontrolled environment (0.41 mW/cm^2), the required physical spacing is 24.9 meters. Since the bottom of the proposed antenna is 160 meters above ground, the height of the structure limits the possible excessive RFR energy to a least 135 meters above the ground. Again using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the calculated RF level at 2 meters above the ground from the proposed WQED-DT is 0.0099 mW/cm^2 or 2.4 % of the total allowable to the general public/uncontrolled environment at 617 Mhz.

Therefore the total calculated RFR levels at the base of the WQED(TV) tower, after taking the installation of WQEX-DT proposed operation into account, will increase by no more than 2.4 %. **The addition of WQED-DT contributes less than 5 % of the total RFR energy at ground level at this multiple use site.**

2D: ADDITION OF WQEX-DT

WQEX -DT, Channel 26, is proposing to utilize an average ERP of 64 kilowatts (DA) with horizontal polarization. The WQEX -DT transmitting antenna is a high gain unit with an elevation power gain of 31x top mounted with a base approximately 160 meters up the tower. Because of the high gain, the ERP at angles departing +/- 10 degrees from the horizon is attenuated by a minimum of 20 dB. For occupational/controlled environment (1.81 mW/cm^2 at 545 Mhz) and utilizing Equation 10 of OET Bulletin 65 and allowing for 20 dB pattern attenuation at steep angles, the required physical separation is 3.4 meters. For the general population/uncontrolled environment (0.36 mW/cm^2), the required physical spacing is 7.7 meters. Since the bottom of the proposed antenna is 160 meters above ground, the height of the structure limits the possible excessive RFR energy to a least 152 meters above the ground. Again using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the calculated RF level at 2 meters above the ground from the proposed WQEX-DT is 0.00083 mW/cm^2 or 0.2 % of the total allowable to the general public/uncontrolled environment at 545 Mhz.

Therefore the total calculated RFR levels at the base of the WQED(TV) tower, after taking the installation of WQEX-DT into account, will increase by no more than 0.2%. **The addition of WQEX-DT contributes less than 5 % of the total RFR energy at ground level at this multiple use site.**

2E: CONCLUSIONS ON RFR ANALYSIS

Based on the on WQED(TV) site measurements and the calculations included herein, I believe that the WQED PITTSBURGH transmission system and tower, as now proposed, is and will continue to be in compliance with 47 CFR 1.1307 and FCC OET Bulletin 65 with the addition of the proposed WQED-DT. The total measured and

calculated RFR levels near the tower will be less than 34% of the allowable to the general public/uncontrolled environment.

The antenna supporting structure is enclosed by a chain-link fence to prevent unauthorized access. As a precaution to employees, a suitable sign is posted at the base of the tower alerting maintenance personnel to the presence of RFR energy so that appropriate action can be taken when access on the tower above 135 meters above ground is required.

Also not all broadcast transmitters co-located on the site are owned by the applicant. The applicant further states that he is a party to an electromagnetic radiation abatement plan to educate employees and workers as to the potential hazards when working on the tower. During periods of maintenance where workers on the tower could be exposed to excessive levels of RFR energy, any transmitting system that could pose a hazard will be either turned off or reduced in power to insure that workers are not subject to excessive values of RFR energy.

With these procedures in place, we believe the proposed WQED-DT operation is in compliance with the RFR energy exposure requirements of 47 CFR 1.1307(b).

3. BLANKETING INTERFERENCE

The area surrounding the proposed site is residential, however due to the narrow vertical beamwidth of the proposed WQED-DT DTV antenna, no blanketing interference is anticipated. However, the applicant will investigate and cure any complaints reported within the blanketing area.

There are one FM broadcast facility, one DTV, one NTSC, and 5 LPTV's co-located with the proposed WQED -DT. The facilities are WQED-FM, CH 207B, WQED-DT, Channel 38, WQED(TV), Channel 13, W29AV, Channel 29, W35AZ,

Channel 35, WBGN-LP, Channel 59, W61CC, Channel 61, and W69CC, Channel 69.

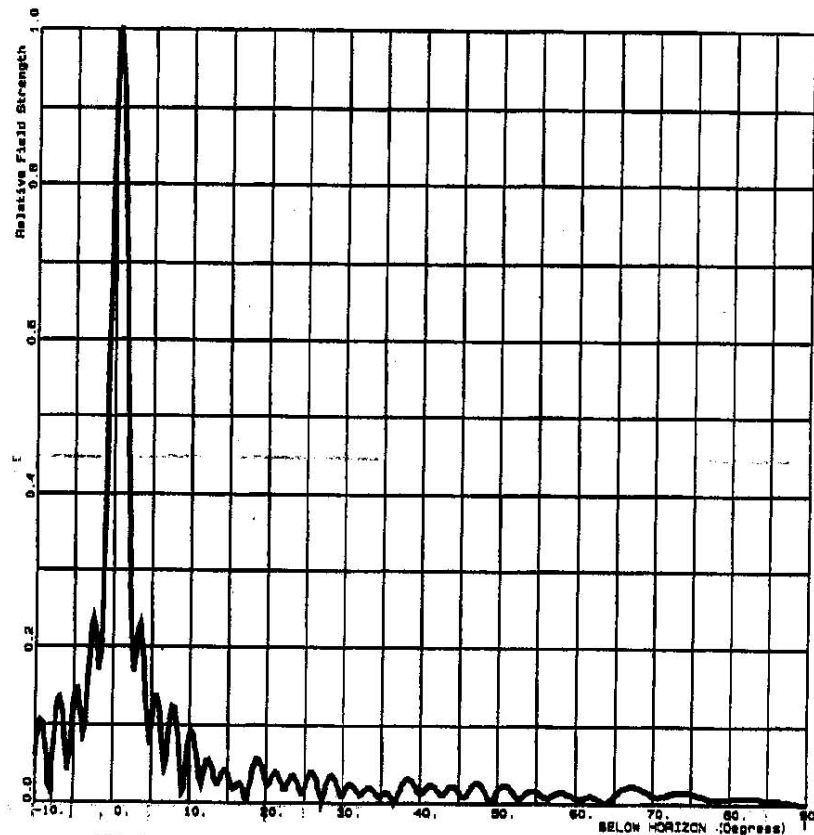
No intermodulation interference is expected.

4. FAA NOTIFICATION

The FAA has not been notified of the proposed changes since the overall physical height of the previously approved structure is not changing. The existing tower has been registered with the FCC and been assigned Registration Number 1022324.

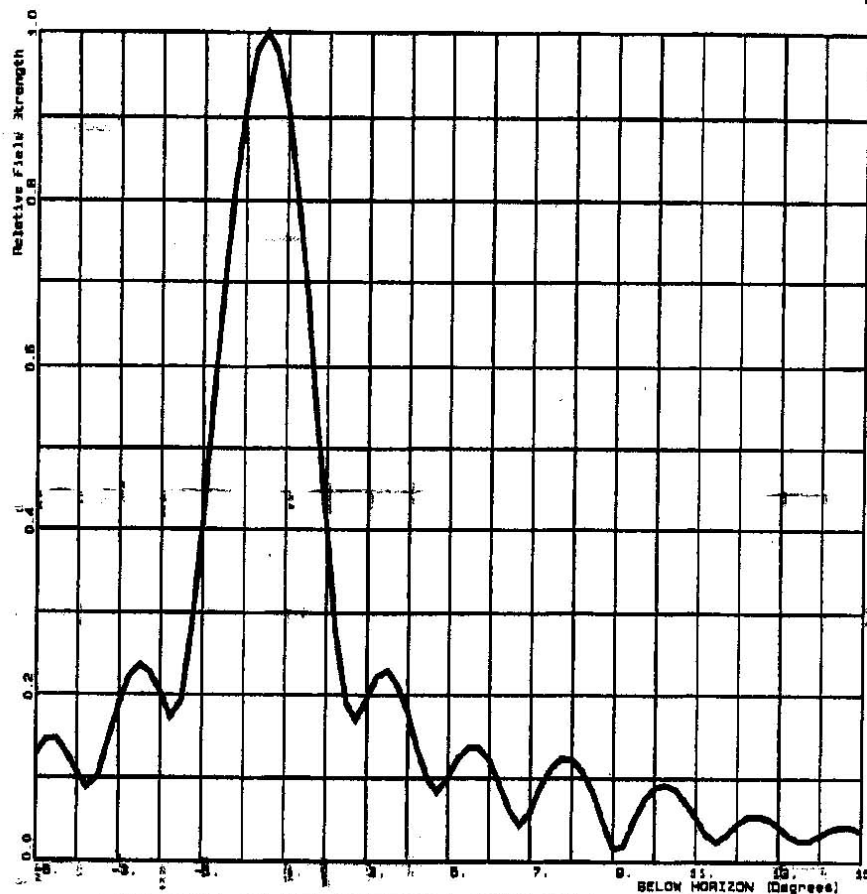
TCI TECHNOLOGY FOR COMMUNICATIONS INTERNATIONAL

FIGURE 2A
WQED-DT
ELEVATION PATTERN



TCI 888 SLOT ANTENNA VERTICAL PATTERN
15% NULL FILL, OMNI DIRECTIONAL
32-BAY CONFIGURATION
ELECTRICAL BEAM TILT 0.50 DEGREES DOWNWARD
CHANNEL 38 (617.00 MHz)
ANTENNA GAIN 31.0 (14.9 dBd)
GAIN AT HORIZON 26.2 (14.2 dBd)

FIGURE 2B
WQED-DT
ELEVATION PATTERN
EXPANDED



TCI 888 SLOT ANTENNA VERTICAL PATTERN
15% NULL FILL, OMNI DIRECTIONAL
32-BAY CONFIGURATION
ELECTRICAL BEAM TILT 0.50 DEGREES DOWNWARD
CHANNEL 38 (617.00 MHz)
ANTENNA GAIN 31.0 (14.9 dBd)
GAIN AT HORIZON 26.2 (14.2 dBd)

**WQED PITTSBURGH
WQED-DT**

TABLE 1A

**TCI MODEL 888
ELEVATION PATTERN**

ELEVATION PATTERN TABULATION

Angle	Field	ERP (kW)	ERP (dBk)
-3	0.180	24.62	13.914
-2.5	0.230	40.20	16.043
-2	0.200	30.40	14.829
-1.5	0.190	27.44	14.383
-1	0.400	121.60	20.849
-0.5	0.700	372.40	25.710
0	0.920	643.26	28.084
0.5	1.000	760.00	28.808
0.75	0.960	700.42	28.454
1	0.920	643.26	28.084
1.5	0.700	372.40	25.710
2	0.400	121.60	20.849
2.5	0.200	30.40	14.829
3	0.200	30.40	14.829
3.5	0.230	40.20	16.043
4	0.190	27.44	14.383
4.5	0.100	7.60	8.808
5	0.100	7.60	8.808
6	0.120	10.94	10.392
7	0.070	3.72	5.710
8	0.120	10.94	10.392
9	0.020	0.30	-5.171
10	0.090	6.16	7.893
15	0.070	3.72	5.710
20	0.040	1.22	0.849
30	0.010	0.08	-11.192
40	0.010	0.08	-11.192
50	0.010	0.08	-11.192
60	0.010	0.08	-11.192
70	0.010	0.08	-11.192
80	0.010	0.08	-11.192
90	0.010	0.08	-11.192

ERP= 760 kW
CALL WQED-DT