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MARANATHA BROADCASTING COMPANY, INCORPORATED

PERMITTEE OF

WFMZ-DT CHANNEL 46

ALLENTOWN, PENNSYLVANIA

FCC FACILITY ID # 39883

**FCC FILE Nos. BPCDT-19980330KG
As modified by BMPCDT-19990401KH**

APPLICATION FOR A

MINOR MODIFICATION OF CP

TO SPECIFY A DIFFERENT TRANSMITTING ANTENNA AND ERP

ENGINEERING EXHIBIT EE-1

22 April 2003

MARANATHA BROADCASTING COMPANY, INCORPORATED

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MARANATHA BROADCASTING COMPANY, INCORPORATED

DECLARATION OF LARRY H. WILL

Larry H. Will declares and says:

That he prepared the attached engineering exhibit on behalf of MARANATHA BROADCASTING COMPANY, INCORPORATED, applicant for a minor modification of Construction Permit BPCDT-19980330KG and modified by BMPCDT-19990401KH for WFMZ-DT, a Commercial DTV station at Allentown, Pennsylvania.

That he has been involved in radio and television broadcast engineering for over 35 years, and that his qualifications are a matter of record with the Federal Communications Commission.

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

That he is a member in good standing of the Institute of Electrical and Electronic Engineers, the Association of Federal Communications Consulting Engineers, the Society of Motion Picture and Television Engineers, and the Society of Broadcast Engineers.

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.

Larry H. Will
1055 Powderhorn Drive
Glen Mills, PA 19342
(610) 399-1826

Date: 22 April 2003

MARANATHA BROADCASTING COMPANY, INCORPORATED

PERMITTEE OF

WFMZ-DT CHANNEL 46

ALLENTOWN, PENNSYLVANIA

FCC FILE Nos. BPCDT-19980330KG

BMPCDT-19990401KH

ENGINEERING EXHIBIT EE-1

1. BACKGROUND

Maranatha Broadcasting has an outstanding Construction Permit (as modified) for WFMZ-DT on Channel 46 (File No. BPCDT-19980330KG as modified by BMPCDT-19990401KH).

2. FACILITIES REQUESTED

The instant application requests a minor change in facilities authorized under BMPCT-19990401KH to increase the ERP to 500 kilowatts and to substitute a Dielectric Communications Model TFU-16DSC-R S380SP3JN directional design with the major lobe oriented to 157 degrees True. All other parameters are unchanged. A DTV study utilizing the V-Soft Sun DTV workstation showed that there is no prohibited interference to any station or allocation above de-minimis levels caused by the facilities proposed herein.

Figure 1 and Table 1 show the azimuth plot and tabulation. Figures 2, 2A and Table 2 show the elevation plot and tabulation. Figure 4 shows the presently authorized CP (blue) and the proposed (black) WFMZ-DT 48 dBu and 41 dBu coverage contours.

3. 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 Equation 10, I have evaluated the RFR energy radiation from the antenna system of proposed WFMZ-DT as follows:

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

WFMZ-TV (NTSC) is operating with an ERP of 5000 kilowatts visual and 500 kilowatts aural with horizontal polarization (3460 kW total average power). The WFMZ-TV transmitting antenna is a high gain unit with a power gain of 33X side mounted approximately 182 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 15 dB. For occupational/controlled environment (2.68 mW/cm^2 at 803 MHz) and utilizing Equation 10 of OET Bulletin 65 and allowing for 15 dB at steep angles, the required physical separation is 40.6 meters. For general population/uncontrolled environment (0.536 mW/cm^2), the required physical spacing is 90.7 meters. Since the bottom of the antenna is approximately 172 meters above the ground, the height of the structure limits the possible excessive radiation values to at least 81.3 meters above the ground. Again using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the *actual RF level at 2 meters above the ground from WFMZ-TV is calculated to be 125.9 uW/cm^2 or 23.5 % of the total allowable at 803 Mhz..*

WFMZ-DT is proposing to utilize an average ERP of 500 kilowatts (maximum DA) with horizontal polarization. The WFMZ-DT transmitting antenna is a high gain unit with a power gain of 16X side mounted approximately 161 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 15 dB. For occupational/controlled environment (2.21 mW/cm^2 at 663 MHz) and utilizing Equation 10 of OET Bulletin 65 and allowing for 15 dB at steep angles, the required physical separation is 15.5 meters. For general population/uncontrolled environment (0.442 mW/cm^2), the required physical spacing is 34.5 meters. Since the bottom of the antenna is approximately 154 meters above the ground, the height of the structure limits the possible excessive radiation values to at least 119.5 meters above the ground. Again using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the *actual RF level at 2 meters above the ground from WFMZ-DT is calculated to be 22.8 uW/cm^2 or 5.28 % of the total allowable at 663 Mhz..*

WLEV(FM) utilizes an ERP of 10.9 kilowatts horizontal and vertical. The WLEV(FM) 3 bay FM transmitting antenna is top mounted on the same uniform guyed tower at 204 meters in elevation. For occupational/controlled environment and utilizing Table 5, with interpolation, the required physical separation is from between 9.0 and 16.9 meters. Since the radiation center is 195.5 meters above ground, the height of the structure limits the possible excessive radiation values to at least 178.6 meters above the ground. For general population/uncontrolled environment, and utilizing Table 6, the required physical separation is 17.5 to 35.1 meters. Since the radiation center is 195.5 meters above ground, the height of the structure limits the possible excessive radiation values to at least 160.4 meters above the ground. Using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the *actual RF level at 2 meters above the ground from WLEV(FM) is calculated to be 20.6 uW/cm^2 or 10.3 % of the total allowable at 101 Mhz..*

WJCS(FM), CH 207A operates with an ERP of 0.12 kilowatts vertical only. The WJCS(FM) transmitting antenna is side mounted approximately 113.5 meters up the tower. For occupational/controlled environment and utilizing Table 5, with interpolation, the required physical separation is from between 2.3 and 2.6 meters. Since the radiation center is 113.5 meters above ground, the height of the structure limits the possible excessive radiation values to at least 110.9 meters above the ground. For general population/uncontrolled environment, and utilizing Table 6, the required physical separation is 2.6 to 4.5 meters. Since the radiation center is 113.5 meters above ground, the height of the structure limits the possible excessive radiation values to at least 109 meters above the ground. Using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the *actual RF level at 2 meters above the ground from WJCS(FM) is calculated to be 0.4 uW/cm^2 or 0.3 % of the total allowable at 89 Mhz..*

WDIY(FM), CH 201A operates with an ERP of 0.12 kilowatts DA vertical only. The transmitting antenna is side mounted approximately 114.0 meters up the tower. For occupational/controlled environment and utilizing Table 5, with interpolation, the required physical separation is from between 2.3 and 2.6 meters. Since the radiation center is 114 meters above ground, the height of the structure limits the possible excessive radiation values to at least

111.4 meters above the ground. For general population/uncontrolled environment, and utilizing Table 6, the required physical separation is 2.6 to 4.5 meters. Since the radiation center is 114 meters above ground, the height of the structure limits the possible excessive radiation values to at least 109.5 meters above the ground. Using Equation 10 of OET Bulletin 65, and using the total average RF power corrected for steep angles, the *actual RF level at 2 meters above the ground from WJCS(FM) is calculated to be $0.34 \mu\text{W}/\text{cm}^2$ or 0.2 % of the total allowable at 88 Mhz..*

Therefore the total levels of all RFR energy sources at all points on the ground are below that required for protection of both the employees and the general public as required by ANSI 95.1-1992 or FCC OET 65, Edition 97-01. The combined radiofrequency levels from all sources are calculated to not exceed 40% of the allowable anywhere on the ground in the area of the tower. Neither workers nor the public will be exposed to electromagnetic fields exceeding the maximum permissible exposure (MPE) levels set forth in Section 1.1310 of the Rules. The antenna supporting structure will be 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 non-ionizing radiofrequency radiation so that appropriate action can be taken when access on the tower above 81 meters above ground is required.

Also even though the applicant owns the tower, not all broadcast transmitters co-located on the site are owned by the applicant. The applicant further states that he has prepared 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 non-ionizing radiation, 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 non-ionizing radiation.

With these procedures in place, we believe the proposed WFMZ-DT operation is in

compliance with the RFR energy radiation requirements of 47 CFR 1.1307(b).

5. FAA NOTIFICATION

The FAA has not been notified of the proposed changes since the physical height of the previously approved structure is not changing. The FCC tower registration number is 1031215.



Proposal Number		Revision	
Date	03 Apr 2003		
Call Letters	WFMZ-DT	Channel	46
Location	Allentown, PA		
Customer			
Antenna Type	TFU-16DSC-R S380SP		

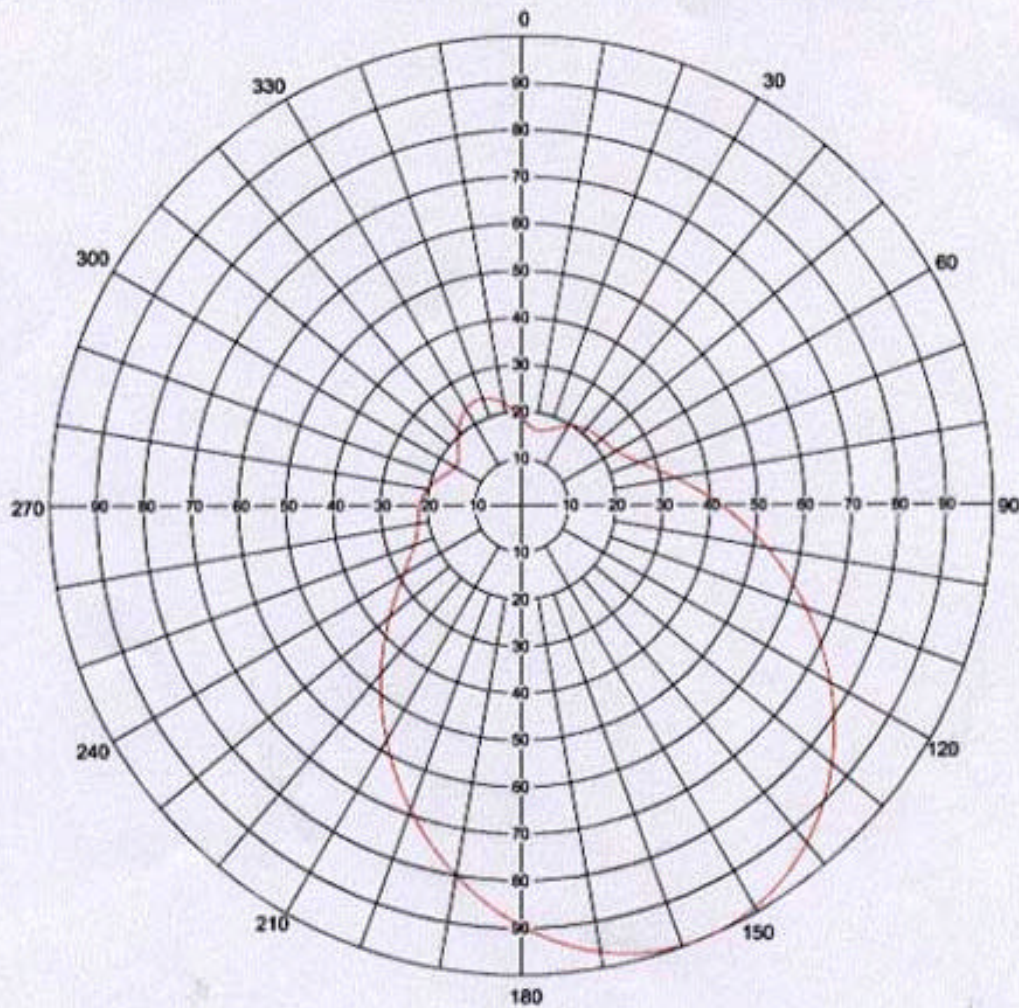
AZIMUTH PATTERN

Gain
Calculated / Measured

3.80 (5.80 dB)
Calculated

Frequency
Drawing #

665 MHz
TFU-S380SP-6650



Remarks:

MARANATHA BROADCASTING CORP

WFMZ-DT ALLENTOWN PA

EXHIBIT EE-1 - TABLE 1

DIE TFU16DSC-R S380SP
AZIMUTH PATTERN

10 Degree

Angle	Field	ERP (kW)	ERP (dBk)
0	0.24	28.56	14.558
10	0.232	28.91	14.299
20	0.223	24.86	13.956
30	0.217	23.54	13.719
40	0.216	23.33	13.679
50	0.226	25.54	14.072
60	0.260	33.80	15.289
70	0.298	44.40	16.474
80	0.404	81.61	19.117
90	0.551	151.80	21.813
100	0.711	252.76	24.027
110	0.841	353.64	25.486
120	0.895	400.51	26.026
130	0.940	441.80	26.452
140	0.973	473.36	26.752
150	0.993	493.02	26.929
160	1.000	500.00	26.990
170	0.992	492.03	26.920
180	0.971	471.42	26.734
190	0.937	438.98	26.424
200	0.837	350.28	25.444
210	0.738	270.85	24.327
220	0.635	201.61	23.045
230	0.534	142.58	21.541
240	0.404	81.61	19.117
250	0.251	31.50	14.983
260	0.233	27.14	14.337
270	0.222	24.64	13.917
280	0.218	23.76	13.759
290	0.221	24.42	13.878
300	0.237	28.08	14.485
310	0.235	27.61	14.411
320	0.241	29.04	14.630
330	0.246	30.26	14.808
340	0.247	30.50	14.844
350	0.227	25.76	14.110

Cardinal

Angle	Field	ERP (kW)	ERP (dBk)
0	0.24	28.80	14.594
45	0.221	24.42	13.878
90	0.551	151.80	21.813
135	0.952	453.15	26.562
180	0.971	471.42	26.734
225	0.585	171.11	22.333
270	0.222	24.64	13.917
315	0.238	28.32	14.521

Maxima

Angle	Field	ERP (kW)	ERP (dBk)
157	1.000	500.00	26.990
160	1.000	#VALUE!	#VALUE!

Minima

Angle	Field	ERP (kW)	ERP (dBk)
40	0.216	23.33	13.679
280	0.218	23.76	13.759

NO ROTATION

prepared by
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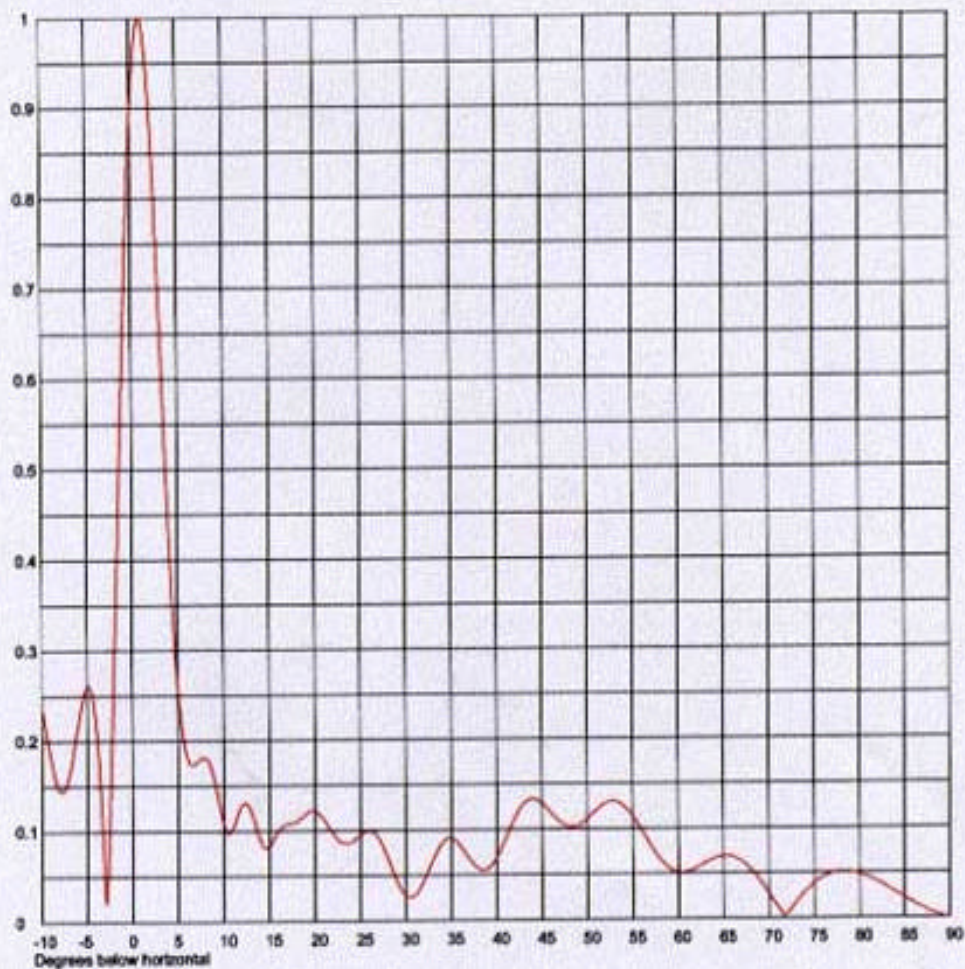
ERP= 500 kW
CALL WFMZ-DT



Proposal Number		Revision	
Date	03 Apr 2003		
Call Letters	WFMZ-DT	Channel	46
Location	Allentown, PA		
Customer			
Antenna Type	TFU-16DSC-R S380SP		

ELEVATION PATTERN

RMS Gain at Main Lobe	12.5 (10.97 dB)	Beam Tilt	1.00 Degrees
RMS Gain at Horizontal	10.1 (10.04 dB)	Frequency	665.00 MHz
Calculated / Measured	Calculated	Drawing #	16Q125100-90



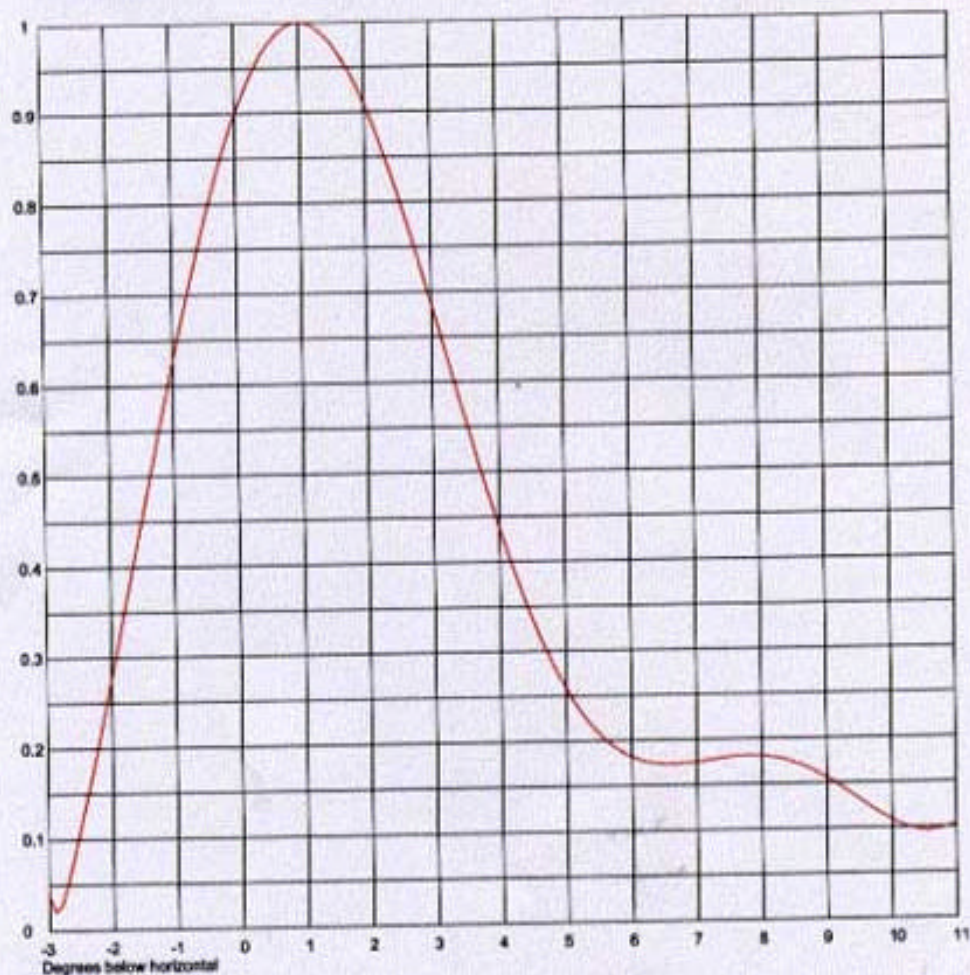
Remarks:



Proposal Number		Revision
Date	03 Apr 2003	
Call Letters	WFMZ-DT	Channel 46
Location	Allentown, PA	
Customer		
Antenna Type	TFU-16DSC-R S380SP	

ELEVATION PATTERN

RMS Gain at Main Lobe	12.5 (10.97 dB)	Beam Tilt	1.00 Degrees
RMS Gain at Horizontal	10.1 (10.04 dB)	Frequency	665.00 MHz
Calculated / Measured	Calculated	Drawing #	16Q125100



Remarks:

MARANATHA BROADCASTING CORP

WFMZ-DT ALLENTOWN, PA

TABLE 2

DIELECTRIC TFU16DJSC-R S320SP
ELEVATION PATTERN

Elevation			
Angle	Field	ERP (kW)	ERP (dBk)
3.00	0.039	0.76	-1.189
2.40	0.142	10.08	10.035
2.00	0.276	38.09	15.808
1.40	0.489	119.56	20.776
1.00	0.627	196.56	22.935
0.40	0.807	325.62	25.127
0.00	0.900	405.00	26.075
-0.20	0.935	437.11	26.406
-0.60	0.840	352.80	25.475
-0.80	0.998	496.01	26.955
-1.00	1.000	500.00	26.990
-1.20	0.998	496.01	26.955
-1.40	0.984	484.13	26.850
-1.80	0.940	441.80	26.452
-2.00	0.908	412.23	26.151
-2.40	0.829	343.62	25.361
-3.00	0.685	234.61	23.704
-3.40	0.583	169.94	22.303
-4.00	0.438	95.92	19.819
-4.40	0.354	62.66	17.970
-5.00	0.259	33.54	15.256
-5.40	0.216	23.33	13.679
-6.00	0.182	16.56	12.191
-6.40	0.174	15.14	11.801
-7.00	0.175	15.31	11.850
-7.40	0.179	16.02	12.047
-8.00	0.181	16.38	12.143
-8.40	0.176	15.49	11.900
-9.00	0.156	12.17	10.852
-9.40	0.137	9.38	9.724
-10.00	0.109	5.94	7.738
-11.00	0.103	5.30	7.246
-12.00	0.128	8.19	9.134

ERP= 500.0 kW
CALL WFMZ-DT

