

**ENGINEERING STATEMENT COVERING  
APPLICATION FOR MODIFICATION OF  
CONSTRUCTION PERMIT  
FOR FORDHAM UNIVERSITY  
CHANNEL 214B 90.7 MHz  
46.5 kW MAX DA @ 155 METERS HAAT  
NEW YORK, NEW YORK**

**MARCH 2005**

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FCC Form 340, Section VII (electronic filing)

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**SUMMARY**

This statement covers an Application for Modification of Construction Permit for FM broadcast station WFUV New York, New York for continued operation on Channel 214B at a new site 2.26 kilometers from the WFUV licensed site location. On December 7, 1992 the FCC granted Fordham a Construction Permit for modified facilities as described in, FCC File Number BPED-19831118AL. This application serves to modify that Construction Permit by specifying a new site location.

The firm of *Communications Technologies, Inc.* has been retained by **Fordham University** ("Fordham") to prepare the engineering portion of the instant Application for Modification of Construction Permit. Details of the FM operation, as proposed, are included within this report.

**TRANSMITTER SITE**

The proposed **Fordham** transmitter site is located at 3450 Wayne Avenue, Bronx, New York. The coordinates and elevation of the site were determined to be:

NORTH LATITUDE:	40° 52' 48"
WEST LONGITUDE:	73° 52' 40"
(NAD 27)	
ELEVATION:	54.9 meters AMSL (See <u>Figure 1</u> )

In accordance with *FCC Rules and Regulations, Section 73.509*, and *Question 13 of FCC Form 340, Section VII*, an allocation study has been conducted for the proposed site location and is submitted herein as Exhibit 14. The proposed facility will not involve any new prohibited overlap to any proposed or existing full service facilities in the current allocation picture. Grand fathered received overlap is discussed fully in Exhibit 14.

This statement is in response to *Question 13 of FCC Form 340, Section VII*. There are no known full service FM or TV transmitters within 60 meters of the proposed site. Additionally, there are no full service AM broadcast facilities within 3.2 kilometers of the proposed site and there are no existing or proposed full service FM or TV transmitters within 10 km of the proposed site which may produce receiver induced intermodulation interference.

If any adverse effect should be caused by the applicant's proposed operation to any station of the type referenced in the preceding paragraph, remedial steps of accepted standards of good engineering practice shall be taken to alleviate any undesirable interference.

Applicant hereby certifies that it shall accept full and complete responsibility for the elimination of any objectionable interference to existing stations, or to receivers located within the interference zone, caused by the facility specified in this application.

#### **ANTENNA STRUCTURE REGISTRATION**

This statement is in accordance with *Question 4 of FCC Form 340, Section VII*, regarding FCC Form 854 and Antenna Structure Registration requirements. The structure has been assigned Registration File No. 1247379. The data submitted in the instant application has been derived from the data contained in the above noted registration.

#### **ANTENNA AND SUPPORTING STRUCTURE**

The antenna proposed is a Dielectric DCRM 10B5PT65. This antenna has a measured peak power gain of 5.37 for horizontal polarization. The antenna will be mounted on an integrated Lambda section setting on a self supporting tower mounted on the roof of an existing building. The center of radiation is 123.7 meters above grade level and 155 meters above average terrain. Null fill and beam tilt are employed. *Figure 2* is a vertical plan sketch of the proposed tower and antenna system. *Figure 3* is a plotted horizontal plane radiation pattern and tabulation. *Figure 4* is a plotted elevation pattern as provided by the manufacturer.

## **TOPOGRAPHY**

The average elevation of the terrain between 3 and 16 kilometers from the antenna site has been determined utilizing the latest version of the FCC 30 second database as provided by RadioSoft. A Linear interpolation method is used to obtain intermediate points along each radial. The method used conforms to the linear interpolation method specified by the *FCC in Public Notice # 3736, FCC 84-341*, dated July 13, 1984.

The average elevation of 8 radials from 0 degrees to 315 degrees True, at increments of 45 degrees, has been computed for the purpose of determining HAAT.

## **ALLOCATION CONSIDERATIONS**

*Exhibit 14* depicts the proposed allocation situation to all pertinent co and adjacent facilities in accordance with *Questions 13(a) of FCC Form 340, Section VII*. As can be seen, there is no prohibited overlap created as a result of this proposal to any full service facility in the current allocation picture other than acceptable over water overlap to WJBK Lincroft, New Jersey. All facilities have been depicted utilizing their authorized data as on file with the Commission at 1° radial intervals. AAT data for the proposed facility was derived from the FCC 30 second database, ComStudy. It is noted that WFUV is associated with grand fathered received overlap from licensed facilities WHPC, WDFH and WRPR as discussed in *Exhibit 14*.

## **COVERAGE AREAS**

*Exhibit 20* depicts the proposed 60 dBu contour in accordance with the Second Report and Order in MM Docket 98-93 regarding minimum community of license coverage requirements for NCE-FM stations. The Boroughs of Bronx, Queens, Manhattan and Brooklyn are fully encompassed by the proposed 60 dBu contour and 50% of the Borough of Richmond (Staten Island) in accordance with current FCC Rules.

A computer algorithm of known accuracy and repeatability was used to measure the total land area within the proposed 60 dBu contour. The population within this area was calculated utilizing a computer program of known accuracy and repeatability, using the centroid retrieval method as accepted by the Commission, with population counted at the block level. Population data is based on 2000 United States Census figures for the states of New York, New Jersey and Connecticut. This contour has been delineated on the basis of directional radiation, topography data as listed herein, and *Figure 1* of FCC *Section 73.333*.

### **RADIO FREQUENCY ENVIRONMENTAL ANALYSIS**

This statement is made in response to *Question 16 of FCC Form 340, Section VII*. **Fordham** proposes to install a self supporting radio tower on the roof of an existing building. The tower will be FAA marked and lighted in accordance with the No Hazard Determination.

The tower site is located in Bronx, New York.

RF radiation from the proposed facility has been reviewed in accordance with the "**Radio Frequency Protection Guides**", adopted by the Commission in OET Bulletin No. 65, Edition 97-01. RF radiation from the proposed facility will not have a significant environmental impact. Utilizing the equation on Page 23 of the OET Bulletin, the power density 2 meters above ground level has been calculated, using manufacturer's elevation pattern data and found not to exceed  $2.077 \text{ uw/cm}^2$  (1.03% of the allowable FCC standard of  $200 \text{ uw/cm}^2$  for FM stations for an uncontrolled environment, as adopted on August 1, 1996 in Report and Order, ET Docket 96-62, FCC 963-326) within a 2 kilometer radius of the tower site. The FM antenna center is 46.3 meters above the main building roof. Two meters above the roof the power density is  $0.641 \text{ uw/cm}^2$  which is 0.3% of the public exposure guideline for an uncontrolled environment. Access to the buildings roof is through locked doors with RF warning signs. Therefore, it is believed the proposed facility should be categorically excluded from environmental processing with respect to *Section 1.1307(b)*.

Additionally, as further specified in *OET Bulletin No. 65* with respect to potential occupational hazards, **Fordham** will implement a policies and procedures plan concerning worker exposure. Access to the roof area will be limited to persons authorized by the designated Radiation Safety Officer. Workers will not be allowed on the tower unless the transmitter is off the air or power is reduced.

### **TV 6 CONSIDERATIONS**

This statement is in response to *Question 13(e) FCC Form 340, Section VII*. *Section 73.525* of the Commission's Rules and Regulations has been studied and it is believed that the proposed facility will provide full protection to Channel 6 television as outlined in the Rule Section.

There is one Channel 6 full service facility considered, WPVI, Philadelphia, Pennsylvania , as it is the only full service TV 6 facility located within 187 km of the proposed Channel 214 operation {73.525(a)(1)}.

The proposed **Fordham** transmitter site is located outside the WPVI 47 dBu, Grade B coverage contour based on the notified radiation center and ERP with terrain data derived from the NGDC 30 second database. Calculation of the WPVI Grade B signal at the proposed **Fordham** transmitter site has been determined to be less than 47 dBu. The required dB offset is 24.7 dB as determined from FCC *Section 73.599, Figure 2*. Based on these computations, the initially determined proposed NCE-FM interfering contour is:

$$(47 \text{ dBu}) + (24.7 \text{ dB}) = 71.7 \text{ dBu}$$

*Exhibit 18* is a depiction of the proposed 71.7 dBu interfering contour and the WPVI 47 dBu, Grade B coverage contour. Since there is no overlap between the NCE-FM interfering contour and the Grade B TV 6 contour, it is believed that the proposed facility complies fully with *Section 73.525* of the Rules with respect to TV 6 interference.

#### **DIRECTIONAL ANTENNA CERTIFICATION**

**Fordham** proposes to install a Dielectric DCRM 10B5PT65, 10 bay directional FM antenna on a lambda section. In accordance with Section 73.316 of the Rules, the applicant certifies as follows.

1. The ratio of minimum to maximum radiation does not exceed 15 dB.
2. The proposed radiation pattern will not vary by more than 2 dB per 10 degrees of azimuth change.
3. The proposed Dielectric directional antenna pattern is based on a measured pattern from the Dielectric test range.
4. The antenna will be top mounted on the proposed tower in accordance with the manufacturer's installation instructions.
5. No platform is located on the tower.

6. No other antenna will be mounted at the same tower level as the proposed directional antenna. No antenna of any type will be mounted horizontally or vertically within a distance less than that specified by the manufacturer for proper directional operation.
7. During antenna installation, a qualified broadcast engineer will supervise the installation and certify that the antenna has been installed pursuant to the manufacturer's instructions.
8. Since Dielectric is supplying the antenna and lambda mounting structure full knowledge of all objects in the antenna aperture which must be taken into account to obtain an accurate measured antenna pattern will be known.

#### **FCC FORM 340**

Technical questions pertaining to this statement and to *FCC Form 340, Section VII*, have been answered in detail and are attached.

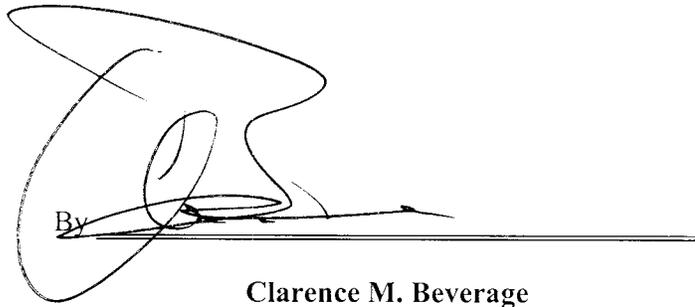
#### **BLANKETING INTERFERENCE**

*Section 73.318* of the Commission's Rules and Regulations concerning FM blanketing interference has been reviewed. In the event verified complaints of "**blanketing**" are received, applicant will comply with the provisions of *Section 73.318* of the Rules to resolve such complaints.

**CONCLUSION**

It is believed that the FM operation, proposed herein, conforms with the intent and requirements of the Commission's Rules and Technical Standards.

The foregoing was prepared on behalf of **Fordham University** by Clarence M. Beverage of *Communications Technologies, Inc.*, Marlton, New Jersey, whose qualifications are a matter of record with the Federal Communications Commission. The statements herein are true and correct of her/his own knowledge, except such statements made on information and belief, and as to these statements she/he believes them to be true and correct.

By 

**Clarence M. Beverage**  
*for* Communications Technologies, Inc.  
Marlton, New Jersey

**SUBSCRIBED AND SWORN TO** before me,

this 7th day of March, 2005,

Esther G. Sperbeck, NOTARY PUBLIC

**ESTHER G. SPERBECK**  
NOTARY PUBLIC OF NEW JERSEY  
MY COMMISSION EXPIRES OCT 15, 2007

## EXHIBIT IV

### NCE FM ALLOCATION STUDY WFUV CH 214 B NEW YORK, NEW YORK

MARCH 2005

Search of channel 214 (90.7 MHz Class B) at 40-52-48.0 N, 73-52-40.0 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
WFUV LIC.	NEW YORK	NY 214 B	2.26	241.00	193.8	
WHPC	GARDEN CITY	NY 212 A	29.29	69.00	124.7	-13.59 dB 1
WDFH	OSSINING	NY 212 A	33.86	69.00	6.7	-7.02 dB 2
WDFH	OSSINING	NY 212 A	33.86	69.00	6.7	-6.58 dB 3
WRPR	MAHWAH	NJ 212 A	33.58	69.00	311.8	-5.06 dB 4
WFMU	EAST ORANGE	NJ 216 A	33.44	69.00	252.4	0.46 dB
WJSV	MORRISTOWN	NJ 213 A	51.66	113.00	264.8	0.05 dB
WMLD-LP	HARTFORD	CT 6 TV	140.62	0.00	45.2	0.0
WEDY-DT	NEW HAVEN	CT 6 TV	95.55	0.00	58.2	0.0
NEW	ELMIRA	NY 6 TV	281.14	0.00	298.9	0.0
NEW	BINGHAMTON	NY 6 TV	217.09	0.00	309.4	0.0
WPVI-TV	PHILADELPHIA	PA 6 TV	148.24	0.00	231.6	0.0
WBJB-FM	LINCROFT	NJ 213 A	65.61	113.00	199.2	-0.52 dB 5
WRGB	SCHENECTADY	NY 6 TV	195.35	0.00	357.2	0.0
NEW	SALISBURY	MD 6 TV	302.23	0.00	204.0	0.0
	ALBANY-SCHENECTADY	NY 6 TV	196.91	0.00	3.0	0.0
WLNE-TV	NEW BEDFORD	MA 6 TV	238.97	0.00	69.6	0.0
WNYZ-LP	NEW YORK	NY 6 TV	15.76	0.00	200.7	0.0
WPKT	MERIDEN	CT 213 B	115.05	169.00	48.4	0.64 dB
WWPT	WESTPORT	CT 212 A	56.43	69.00	54.6	1.21 dB
NEW	HARMONY TOWNSHIP	NJ 214 A	100.84	178.00	263.4	1.80 dB
WAMK	KINGSTON	NY 215 B1	134.25	145.00	351.9	3.73 dB
WTCC	SPRINGFIELD	MA 214 B1	174.32	211.00	37.9	3.69 dB
WYRS	MANAHAWKIN	NJ 214 A	134.59	178.00	193.1	5.47 dB
WJFF	JEFFERSONVILLE	NY 213 B1	128.86	145.00	324.2	5.60 dB
WYRS	MANAHAWKIN	NJ 214 A	142.13	178.00	194.4	5.81 dB
WUSB	STONY BROOK	NY 211 B1	70.78	71.00	93.1	6.60 dB
WSHU-FM	FAIRFIELD	CT 216 B	73.12	74.00	52.4	7.37 dB
WSHU-FM	FAIRFIELD	CT 216 B	73.14	74.00	52.3	7.38 dB
980805MB	PLAINFIELD	NJ 212 A	54.92	69.00	237.8	9.61 dB
WHYY-FM	PHILADELPHIA	PA 215 B	148.38	169.00	231.5	10.44 dB
WCVH	FLEMINGTON	NJ 213 A	93.92	113.00	247.8	11.18 dB
WPGL	PATTERSONVILLE	NY 214 A	219.36	178.00	356.0	12.67 dB
WVPH	PISCATAWAY	NJ 212 A	62.55	69.00	233.7	12.62 dB
WCLH	WILKES-BARRE	PA 214 A	171.09	178.00	282.0	13.40 dB
WVKR-FM	POUGHKEEPSIE	NY 217 B1	85.28	71.00	352.0	13.48 dB
WRXC	SHELTON	CT 211 A	83.58	69.00	49.8	14.10 dB
WCNI	NEW LONDON	CT 215 A	158.72	113.00	68.8	14.22 dB
NEW	SPARATA	NJ 212 A	61.92	69.00	284.0	14.41 dB
WJHD	PORTSMOUTH	RI 214 A	232.66	178.00	68.9	14.96 dB
WXHD	MOUNT HOPE	NY 211 A	84.72	69.00	316.1	17.52 dB
WEVN	KEENE	NH 214 B1	269.96	211.00	27.0	17.02 dB
WVBV	MEDFORD LAKES	NJ 213 A	152.02	113.00	212.9	18.12 dB
981023MQ	HONESDALE	PA 215 A	152.49	113.00	301.9	18.57 dB
WVBV	MEDFORD LAKES	NJ 213 A	133.61	113.00	207.1	18.94 dB

EXHIBIT IV

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NCE FM ALLOCATION STUDY  
WFUV CH 214 B NEW YORK, NEW YORK

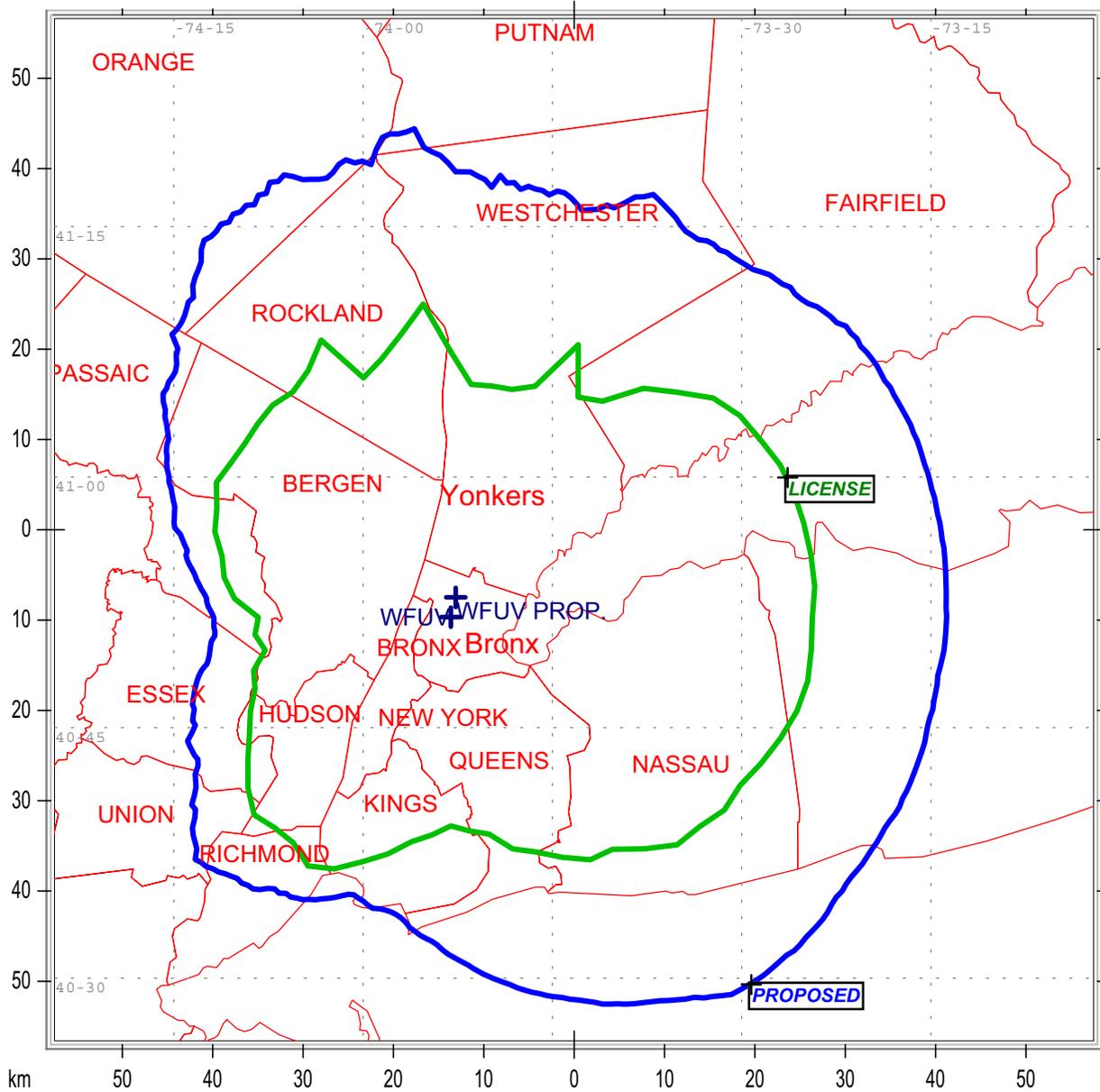
CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
WGSK	SOUTH KENT	CT 211 A	94.86	69.00	20.0	21.10 dB
WRTL	EPHRATA	PA 214 A	205.89	178.00	253.2	21.75 dB
WPNR-FM	UTICA	NY 214 A	271.83	178.00	335.4	22.83 dB
WSDL	OCEAN CITY	MD 214 B1	286.33	211.00	203.1	24.79 dB
WCDB	ALBANY	NY 215 A	200.84	113.00	1.3	24.61 dB
WONY	ONEONTA	NY 215 A	201.96	113.00	331.3	25.42 dB
WWFP	BRIGANTINE	NJ 213 A	161.30	113.00	197.2	26.40 dB
WLMW	MANCHESTER	NH 214 A	300.93	178.00	38.2	26.78 dB
WRLI-FM	SOUTHAMPTON	NY 217 B1	125.71	71.00	86.7	26.94 dB
WICN	WORCESTER	MA 213 B1	242.13	145.00	47.3	27.36 dB
WKKL	WEST BARNSTABLE	MA 214 A	309.96	178.00	71.9	27.49 dB
WWFP	BRIGANTINE	NJ 213 A	173.12	113.00	195.9	27.52 dB
WICN	WORCESTER	MA 213 B1	242.12	145.00	47.3	27.56 dB
WTSR	TRENTON	NJ 217 A	102.12	69.00	228.7	27.80 dB
WWNJ	DOVER TOWNSHIP	NJ 216 B	102.53	74.00	189.3	29.10 dB
WBUR-FM	BOSTON	MA 215 B	272.19	169.00	53.4	30.06 dB
WWUH	WEST HARTFORD	CT 217 A	133.86	69.00	41.6	30.39 dB
NEW	TOMS RIVER	NJ 212 A	108.62	69.00	189.3	31.73 dB
WCRG	WILLIAMSPORT	PA 214 A	277.80	178.00	279.2	31.84 dB
NEW	READING	PA 213 A	180.64	113.00	251.8	31.38 dB
WHRW	BINGHAMTON	NY 213 A	220.31	113.00	308.4	31.36 dB
NEW	SOUTH TOMS RIVER	NJ 212 A	106.67	69.00	195.0	31.28 dB
NEW	SOUTH TOMS RIVER	NJ 212 A	106.67	69.00	195.0	31.28 dB
NEW	TOMS RIVER	NJ 212 A	108.62	69.00	189.3	31.09 dB
NEW	LAURELDALE	PA 213 A	178.82	113.00	252.3	31.09 dB
WXGN	EGG HARBOR TOWNSHIP	NJ 213 A	187.43	113.00	198.7	31.00 dB

NOTES:

1. The WHPC transmitter site, and associated F(50,10)100 dBu contour, are located entirely within the licensed and proposed WFUV 60 dBu contours. No change in this grandfathered overlap is proposed.
2. The WDFH (BLED-19971110KF) transmitter site, and associated F(50,10)100 dBu contour, are located entirely within the authorized and proposed WFUV 60 dBu contours. No change in this grandfathered overlap is proposed.
3. The WDFH (BPED-20050207AER) proposed F(50,10)100 dBu contour is located entirely within the authorized and proposed WFUV 60 dBu contours. Fordham notes that this application does not conform to the requirements of 73.509.
4. The WRPR transmitter site, and associated F(50,10)100 dBu contour, are located entirely within the authorized and proposed WFUV 60 dBu contours. No change in this grandfathered overlap is proposed.
5. The overlap shown is over water where the proposed WFUV 54 dBu F(50,10) overlaps the licensed WBJB 60 dBu (see map Figure attached).



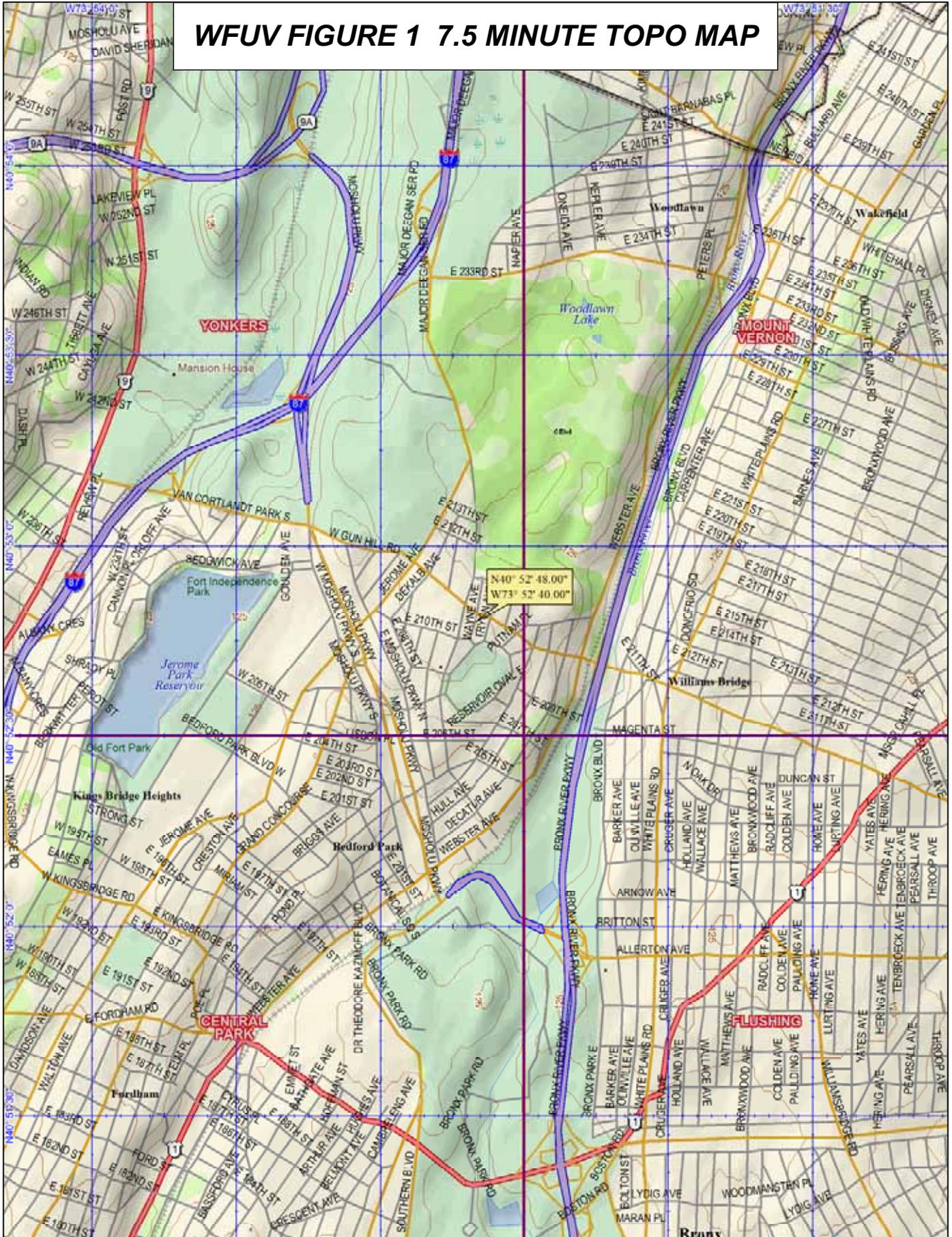
WFUV 90.7 mHz 46.5 kW @ 155 M HAAT MONTEFIORE SITE NEW YORK, NY



Communications Technologies, Inc. Marlton, New Jersey

County Borders    Lat/Lon Grid

# WFUV FIGURE 1 7.5 MINUTE TOPO MAP



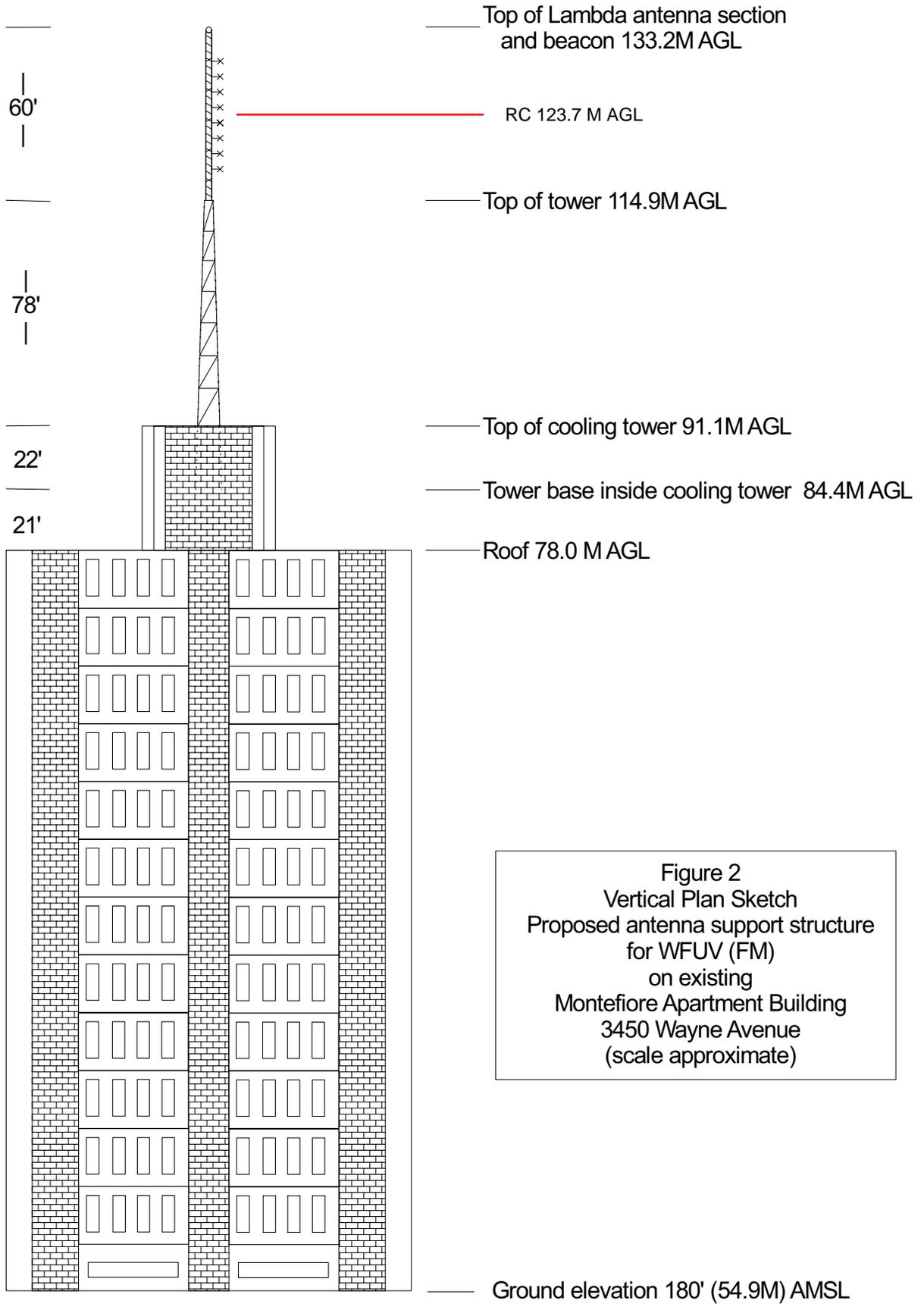
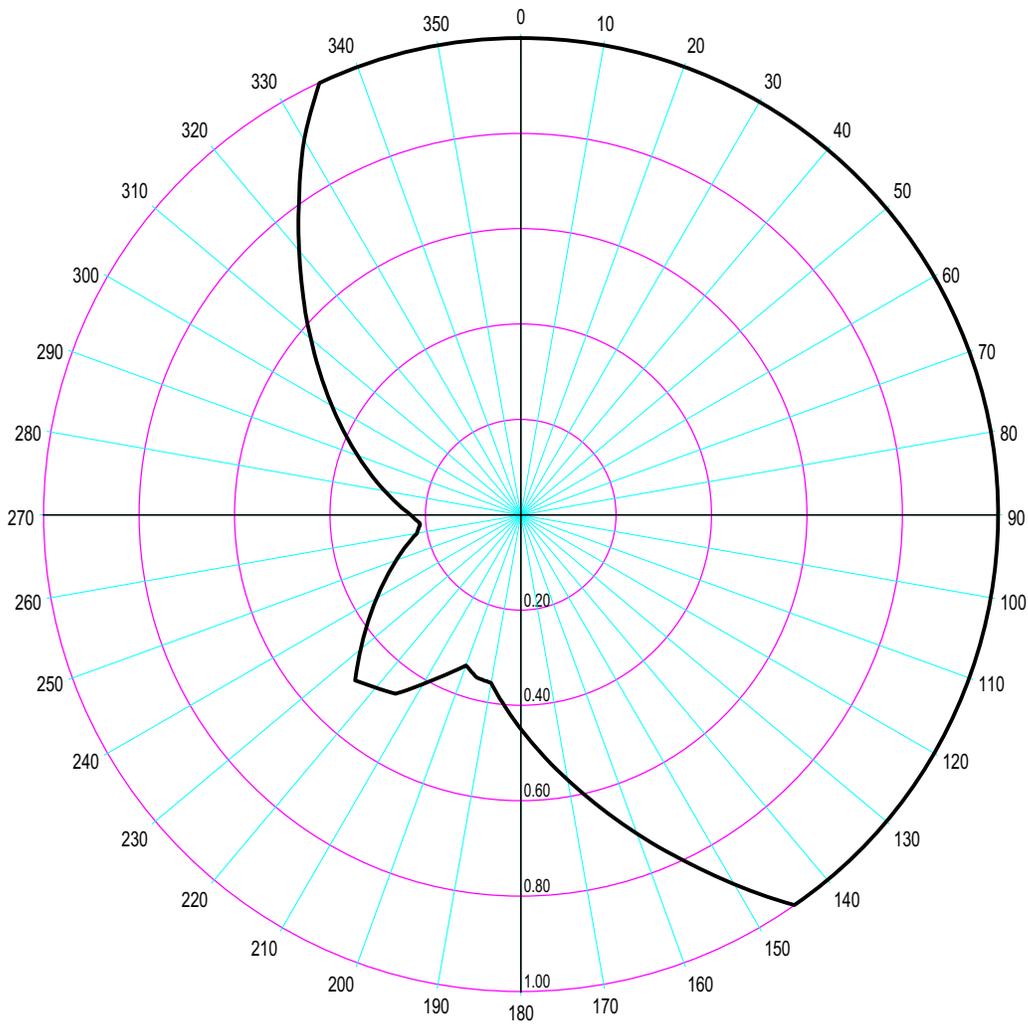


Figure 2  
 Vertical Plan Sketch  
 Proposed antenna support structure  
 for WFUV (FM)  
 on existing  
 Montefiore Apartment Building  
 3450 Wayne Avenue  
 (scale approximate)

 = 100'



Azim	Rel.FS	ERP [kW]	dBk
0.0	1.000	46.500	16.675
5.0	1.000	46.500	16.675
10.0	1.000	46.500	16.675
15.0	1.000	46.500	16.675
20.0	1.000	46.500	16.675
25.0	1.000	46.500	16.675
30.0	1.000	46.500	16.675
35.0	1.000	46.500	16.675
40.0	1.000	46.500	16.675
45.0	1.000	46.500	16.675
50.0	1.000	46.500	16.675
55.0	1.000	46.500	16.675
60.0	1.000	46.500	16.675
65.0	1.000	46.500	16.675
70.0	1.000	46.500	16.675
75.0	1.000	46.500	16.675
80.0	1.000	46.500	16.675
85.0	1.000	46.500	16.675

Azim	Rel.FS	ERP [kW]	dBk
90.0	1.000	46.500	16.675
95.0	1.000	46.500	16.675
100.0	1.000	46.500	16.675
105.0	1.000	46.500	16.675
110.0	1.000	46.500	16.675
115.0	1.000	46.500	16.675
120.0	1.000	46.500	16.675
125.0	1.000	46.500	16.675
130.0	1.000	46.500	16.675
135.0	1.000	46.500	16.675
140.0	1.000	46.500	16.675
145.0	0.999	46.407	16.666
150.0	0.894	37.164	15.701
155.0	0.797	29.537	14.704
160.0	0.711	23.507	13.712
165.0	0.633	18.632	12.703
170.0	0.564	14.791	11.700
175.0	0.503	11.765	10.706

Azim	Rel.FS	ERP [kW]	dBk
180.0	0.449	9.374	9.719
185.0	0.401	7.477	8.737
190.0	0.358	5.960	7.752
195.0	0.354	5.827	7.655
200.0	0.336	5.250	7.201
205.0	0.369	6.331	8.015
210.0	0.409	7.779	8.909
215.0	0.458	9.754	9.892
220.0	0.473	10.403	10.172
225.0	0.491	11.210	10.496
230.0	0.438	8.921	9.504
235.0	0.391	7.109	8.518
240.0	0.349	5.664	7.531
245.0	0.311	4.498	6.530
250.0	0.278	3.594	5.555
255.0	0.248	2.860	4.564
260.0	0.221	2.271	3.562
265.0	0.212	2.090	3.201

Azim	Rel.FS	ERP [kW]	dBk
270.0	0.231	2.481	3.947
275.0	0.259	3.119	4.941
280.0	0.290	3.911	5.922
285.0	0.325	4.912	6.912
290.0	0.364	6.161	7.897
295.0	0.408	7.741	8.888
300.0	0.457	9.711	9.873
305.0	0.512	12.190	10.860
310.0	0.574	15.321	11.853
315.0	0.644	19.285	12.852
320.0	0.722	24.240	13.845
325.0	0.810	30.509	14.844
330.0	0.908	38.338	15.836
335.0	0.999	46.407	16.666
340.0	1.000	46.500	16.675
345.0	1.000	46.500	16.675
350.0	1.000	46.500	16.675
355.0	1.000	46.500	16.675

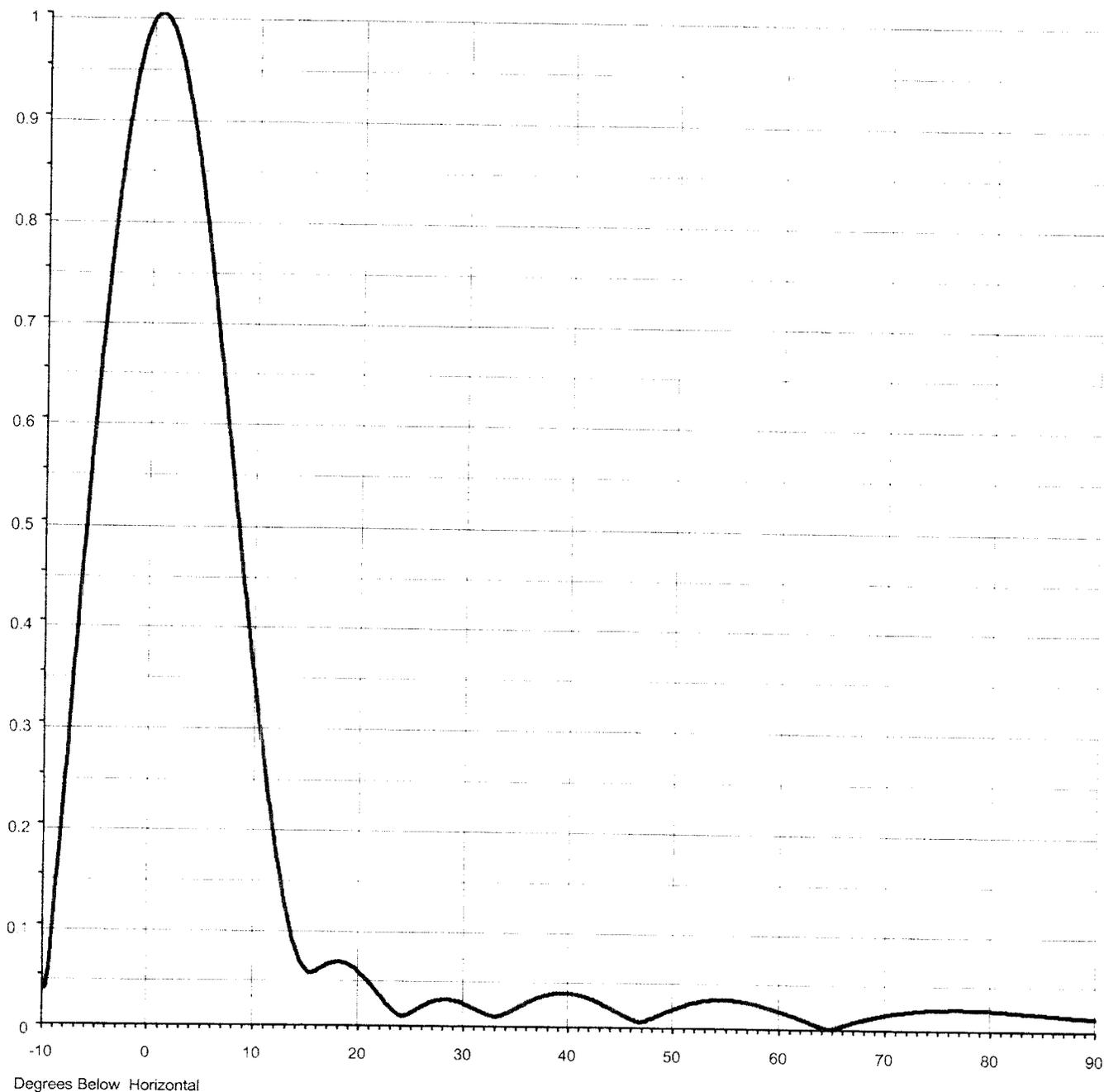


Proposal Number **DCA-0406-M**  
Date **9-Apr-04**  
Call Letters **WFUV** Channel **214**  
Location **New York, New York**  
Customer **Fordham University**  
Antenna Type **DCR-M10B5**

### ELEVATION PATTERN

RMS Gain at Main Lobe **2.70 (4.31 dB)** Beam Tilt **0.65 deg**  
Frequency **90.70 MHz**

Calculated / Measured **Calculated**



Calculated Free Space Pattern

WFUV ELEVATION PATTERN - FIGURE 4