Minor Change Application
W248BQ; Facility ID No. 155291

This exhibit is for a Minor Change for translator W248BQ Facility ID No. 155291. This request is for a change of power, location, and antenna height and type.

Antenna Location

The proposed antenna is to be mounted on an existing roof mounted communications antenna pole identified by registration number 1044629 at 170 meters above ground level, 15 meters above roof level. An off-the-shelf directional antenna, Scala FMVMP, is proposed. In **Figure 0** the directional pattern is shown rotated, as proposed to, 310°T. **Figure 1** is an overlap and spacing study, that takes into account the antenna pattern, from which it can be determined that this proposal is within the protected contour of **second-**adjacent channel stations WSIX-FM and WLVU. Please note _**NED 30 meter**_ terrain data has been used to more accurately determine the location of station contours.

73.1204 Compliance

We will demonstrate that a lack of population and/or other factors allow this proposal to be compliant with 74.1204. The process commonly called "Living Way", allows for the use of D/U Analysis, also known as "signal strength ratio methodology" to be utilized to demonstrate compliance. In this instant case the facility to be protected is on a second or third adjacent channel and is to be afforded protection from signals 40 dB stronger than the protected facility presents in the location of the proposed translator antenna location.

Concerning WLVU; In **Figure 2** a map showing the predicted 84.5 dBu signal contour of the protected facility exceeds 0.5 km beyond the proposed translator antenna location is given. This proposal can only cause predicted interference to the protected facility by having a signal exceeding 124.5 dBu in a habitable/populated area. Utilizing the line of sight equation shown in **Figure 3** it has been determined that a 124.5 dBu signal developed by 250 watts, as proposed will reach a maximum distance from the antenna of 66 meters. With examination of the image in **Figure 4** it can be determined that habitable space identified as "Third Fifth Center" and "Swimming Pool" are the highest/closest areas of concern.

Concerning building of **Figure 4** labeled as "Third Fifth Center; Using tools provided as part of the Google Earth, it has been determined that Third Fifth Center is located 45 meters below the proposed antenna and 75 meters from the vertical axis of the rooftop support pole. Using the vertical elevation pattern of the proposed antenna of **Figure 5** in line of sight calculations it was determined in **Figure 6** that the interference signal does not reach Third Fifth Center.

Concerning building of **Figure 4** labeled as "Swimming Pool; Using tools provided as part of the Google Earth, it has been determined that Swimming Pool is located 52 meters below the proposed antenna and 36 meters from the vertical axis of the rooftop support pole. Using the vertical elevation pattern of the proposed antenna of **Figure 5** in line of sight calculations it was determined in **Figure 7** that the interference signal does not reach Swimming Pool.

Thus the provisions of the rules section concerning prohibited overlap will not apply as it has been demonstrated that no actual interference will occur due to a lack of population and other factors as applied in this instant proposal.

Concerning WSIX-FM; In **Figure 2** a map showing the predicted 96.0 dBu signal contour of the protected facility exceeds 0.5 km beyond the proposed translator antenna location is given. As the WSIX-FM signal is 11.5 dB greater than WLVU, the protection of WLVU assures protection of WSIX-FM.

Thus the provisions of the rules section concerning prohibited overlap will not apply as it has been demonstrated that no actual interference will occur due to a lack of population and other factors as applied in this instant proposal.

Minor Change and Fill-In Status

It can be determined in **Figure 2** that the 60 dBu contour of this proposal overlaps that of the current permit. Thus the "minor change" provisions of §74.1233(a)(1) are met by this request for a change of location with no change of channel. Also on that map it can be seen that the 83 dBu contour of primary station WNRQ completely encompasses the 60 dBu of the proposed translator facility. The 83 dBu contour was used in place of the normal primary 60 dBu fill-in contour to better scale the map.

RF Fields Statement

The proposed facilities were evaluated in terms of potential radio frequency radiation exposure at ground level in accordance with OET Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio frequency Radiation."

The proposed antenna system is a Scala FMVMP, 1- element, vertical polarity dipole antenna, mounted 15 meters above roof level. For purposes of this analysis the V-Soft Communications microcomputer program RFHAZ was set to calculate, in "OET Model" mode, values for a worst case "Ring Stub" type of antenna element, operated with an effective radiated power of 0.25 Kilowatts in vertical. At 2 meters above the surface, at 03.4 meters from the base of the pole, this proposal will contribute worst case, 35.4 microwatts per square centimeter, or 3.5 percent of the allowable ANSI limit for controlled exposure, and 17.7 percent of the allowable limit for uncontrolled exposure. It is therefore believed that this proposal is in compliance with OET Bulletin Number 65 as required by the Federal Communications Commission.

Further, the applicant will see that signs are posted in the vicinity of the pole, warning of potential radio frequency hazards at the site. The roof top itself is restricted from public access. The

applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

Figure 0. Directional Pattern


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Azi    Rel    dBk     kW     dB      Azi    Rel    dBk     kW     dB
  0   0.956  -6.41   0.228  -0.39    180   0.592 -10.57   0.088  -4.55
 10   0.929  -6.66   0.216  -0.64    190   0.630 -10.03   0.099  -4.01
 20   0.892  -7.01   0.199  -0.99    200   0.679  -9.38   0.115  -3.36
 30   0.845  -7.48   0.179  -1.46    210   0.734  -8.71   0.135  -2.69
 40   0.792  -8.05   0.157  -2.03    220   0.792  -8.05   0.157  -2.03
 50   0.734  -8.71   0.135  -2.69    230   0.845  -7.48   0.179  -1.46
 60   0.679  -9.38   0.115  -3.36    240   0.892  -7.01   0.199  -0.99
 70   0.630 -10.03   0.099  -4.01    250   0.929  -6.66   0.216  -0.64
 80   0.592 -10.57   0.088  -4.55    260   0.956  -6.41   0.228  -0.39
 90   0.566 -10.96   0.080  -4.94    270   0.975  -6.24   0.238  -0.22
100   0.549 -11.23   0.075  -5.21    280   0.987  -6.13   0.244  -0.11
110   0.539 -11.39   0.073  -5.37    290   0.995  -6.06   0.248  -0.04
120   0.535 -11.45   0.072  -5.43    300   0.999  -6.03   0.250  -0.01
130   0.534 -11.47   0.071  -5.45    310   1.000  -6.02   0.250   0.00
140   0.535 -11.45   0.072  -5.43    320   0.999  -6.03   0.250  -0.01
150   0.539 -11.39   0.073  -5.37    330   0.995  -6.06   0.248  -0.04
160   0.549 -11.23   0.075  -5.21    340   0.987  -6.13   0.244  -0.11
170   0.566 -10.96   0.080  -4.94    350   0.975  -6.24   0.238  -0.22

 Rotation Angle = 0
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Figure 1. Overlap and Spacing Study using 30 Meter Terrain

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                          W248BQ at L and C Building  14 April 2016
                                Educational Media Foundation
REFERENCE          CH#  248D  - 97.5 MHz, Pwr= 0.25 kW DA,  HAAT= 0.0 M,  COR= 319 M      DISPLAY DATES
36 09 48.4 N.                     Average Protected F(50-50)= 7.09 km                     DATA    04-14-16
86 46 45.4 W.                            Standard Directional                            SEARCH 04-14-16
-----------------------------------------------------------------------------------------------------------
CH    CALL        TYPE  ANT   AZI    DIST            LAT        PWR(kW) INT(km)  PRO(km)   *IN*      *OUT*
CITY              STATE       <--    FILE #          LNG        HAAT(M) COR(M)   LICENSEE  (Overlap in km)

248D  W248BQ      CP  DC_     0.0    0.00            36 09 48.4 0.250   50.5     15.4      -65.8*    -65.8*
Nashville         TN          0.0    BMPFT20151210ACO 86 46 45.4                 319      Educational Media Foundati

250CO WSIX-FM     LIC _CX     199.4  13.68           36 02 50.0 100.000 11.2     77.5      -8.0      -64.6*
Nashville         TN          19.4   BMLH20050826ABB 86 49 48.0         349      550      Capstar Tx, Llc

248D  W248BQ      LIC _C_     353.2  11.21           36 15 49.8 0.043   51.0     15.4      -55.0*    -54.3*
Nashville         TN          173.2  BMPFT20160413ADT 86 47 38.9                 480      Educational Media Foundati

248C2 WLLX        LIC NC_     196.8  102.11          35 16 56.0 42.000  134.1    50.9      -42.8*    14.4
Lawrenceburg      TN          16.6   BLH20060206ABL  87 06 18.0         161      421      Roger Wright Dba Prospect

246C2 WLVU        LIC _C_     9.0    15.03           36 17 50.0 45.000  6.4      55.0      -6.1      -41.0*
Belle Meade       TN          189.0  BMLED20121002ABV 86 45 11.0        158      338      Educational Media Foundati

248A  WZZP        LIC _C_     318.2  89.65           36 45 47.0 6.000   87.0     28.6      -13.3     9.3
Hopkinsville      KY          137.8  BLH20001127AAB  87 26 59.0         100      270      Saga Communications Of Tuc

248D  W248BM      LIC DC_     132.2  51.91           35 50 56.0 0.250   37.8     11.1      1.9       0.1
Murfreesboro      TN          312.5  BLFT20141107AEC 86 21 11.0                 275      Montgomery Broadcasting Co

248D  W248CF      LIC _C_     13.1   90.83           36 57 37.0 0.250   46.4     13.6      29.7      28.5
Bowling Green     KY          193.2  BLFT20160302ADS 86 32 49.0                 297      Charles M. Anderson

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Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.
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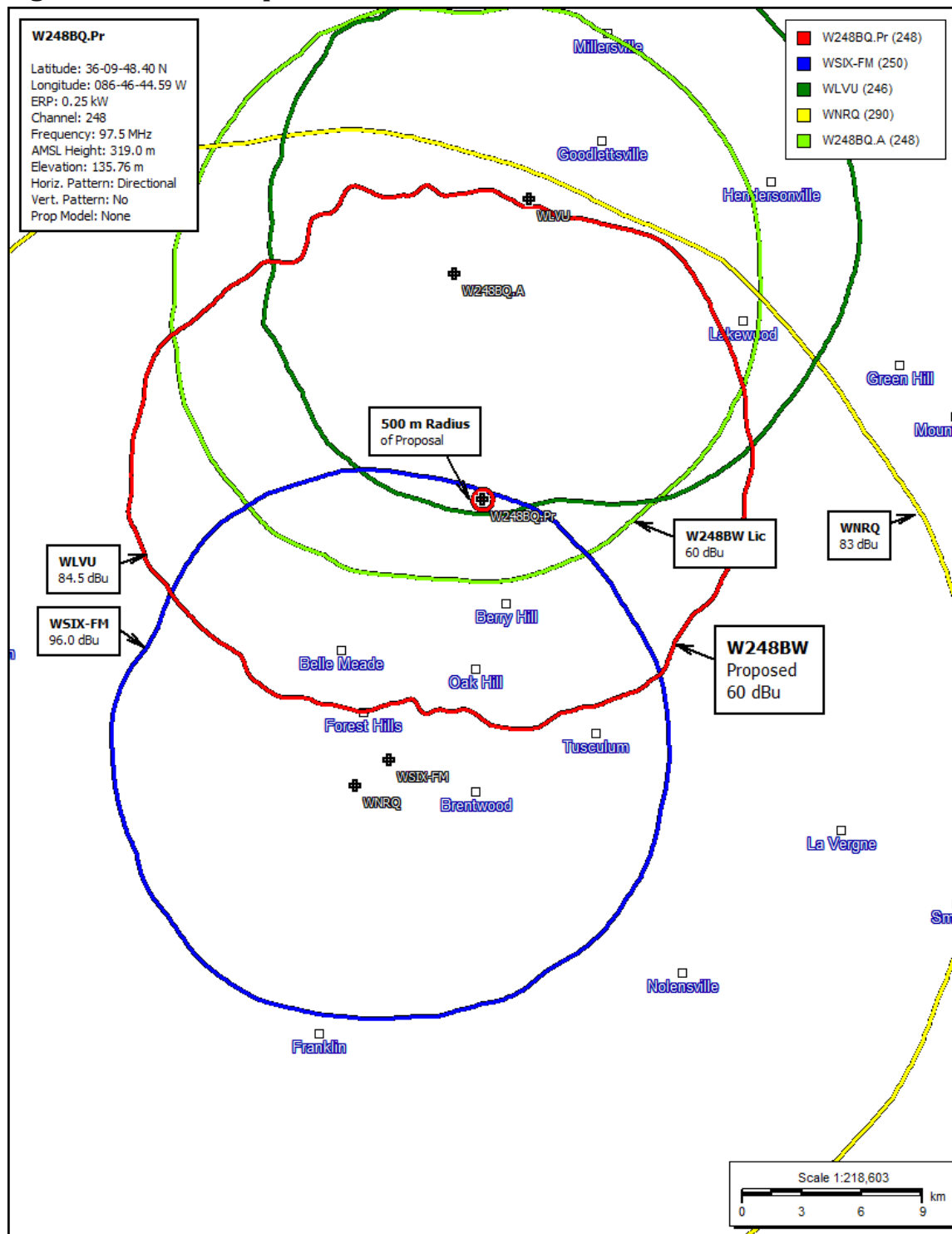
Figure 2. Contour Map

W248BQ.Pr

Latitude: 36-09-48.40 N
Longitude: 086-46-44.59 W
ERP: 0.25 kW
Channel: 248
Frequency: 97.5 MHz
AMSL Height: 319.0 m
Elevation: 135.76 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Legend:
- W248BQ.Pr (248)
- WSIX-FM (250)
- WLVU (246)
- WNRQ (290)
- W248BQ.A (248)

Millersville
Goodlettsville
Hendersonville
WLVU
W248BQ.A
Lakewood
Green Hill
Mount

500 m Radius of Proposal

W248BQ.Pr

WLVU 84.5 dBu

WSIX-FM 96.0 dBu

W248BW Lic 60 dBu

WNRQ 83 dBu

Berry Hill

Belle Meade
Oak Hill

W248BW Proposed 60 dBu

Forest Hills

Tusculum

WSIX-FM
WNRQ
Brentwood

La Vergne

Smy

Nolensville

Franklin

Scale 1:218,603

0   3   6   9   km

Figure 3. Signal Level Distance

|			Distance to interfering contour	Height of IX contour above surface	
ERP	0.25	kw			
Calculated IX contour	124.5	dbu			
			Distance to interfering contour	Height of IX contour above surface	
Relative Field	Downward ERP		meters (hypot)	meters	this value is required.
1	0.2500		66.0648	11.968	
Translator's IX Contour					

Figure 4. Image of Proposed Location
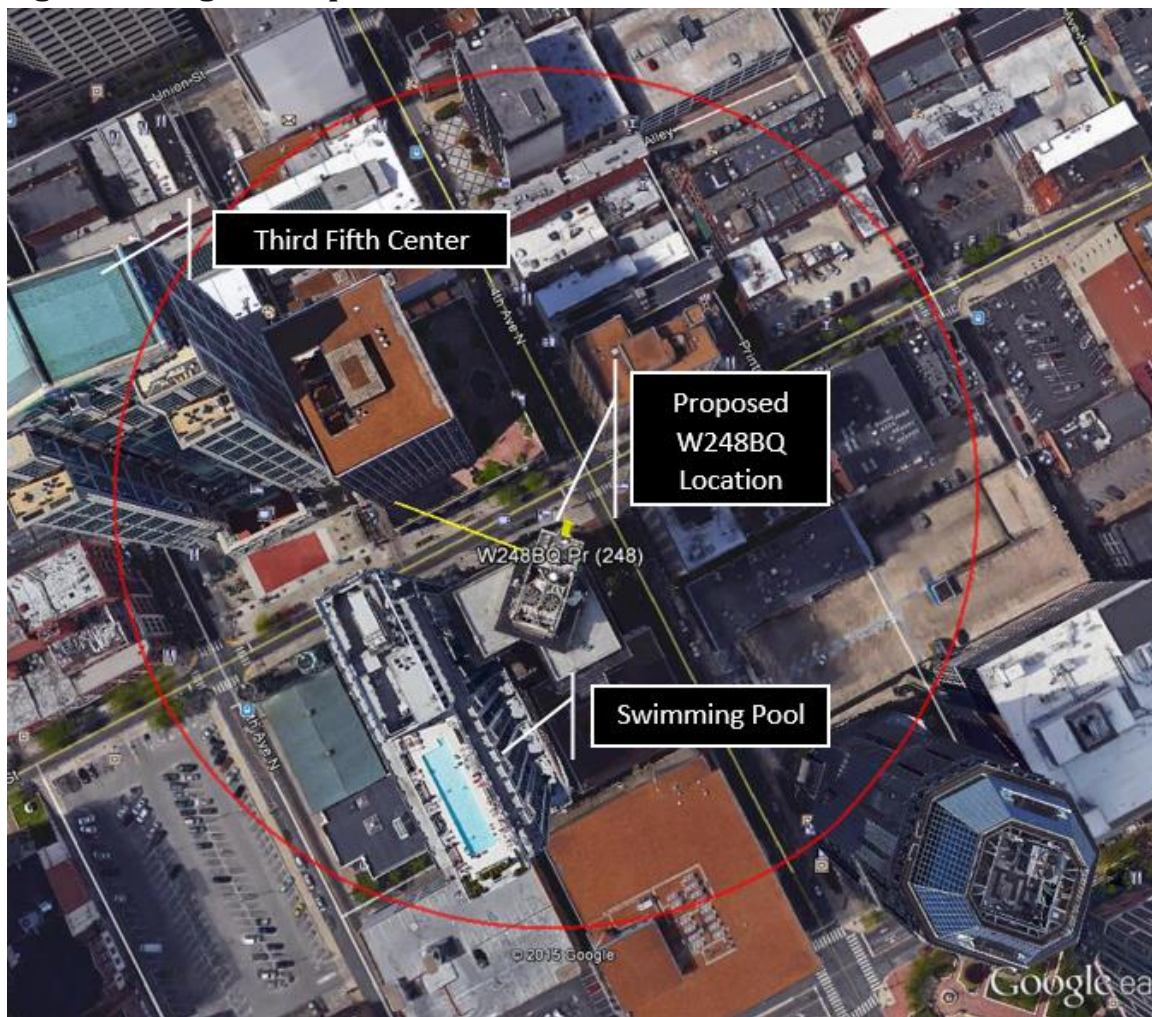
The "Third Fifth Center" roof is 45 meters below the antenna, 52 meters from the support pole.

The "Swimming Pool" is 52 meters below the antenna, 36 meters from the support pole.

Figure 5. Antenna Vertical Elevation Pattern

Vertical Elevation Pattern

Angle (deg)	Relative Field
0.0	1.0
5.0	0.995
10.0	0.982
15.0	0.956
20.0	0.918
25.0	0.867
30.0	0.803
31.0	0.788
32.0	0.774
33.0	0.758
34.0	0.743
35.0	0.727
36.0	0.711
37.0	0.695
38.0	0.678
39.0	0.662
40.0	0.645
41.0	0.628
42.0	0.61
43.0	0.593
44.0	0.575
45.0	0.558
46.0	0.541
47.0	0.523
48.0	0.506
49.0	0.489
50.0	0.472
51.0	0.455
52.0	0.438
53.0	0.421
54.0	0.404
55.0	0.388
56.0	0.372
57.0	0.356
58.0	0.341
59.0	0.326
60.0	0.311
61.0	0.296
62.0	0.281
63.0	0.268
64.0	0.254
65.0	0.24
66.0	0.227
67.0	0.214
68.0	0.201
69.0	0.188
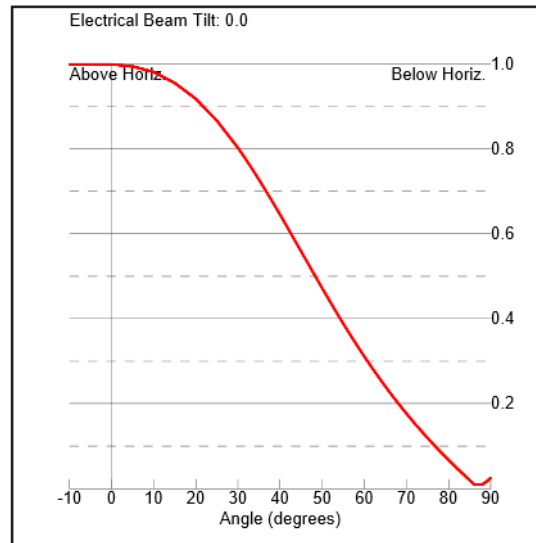
Angle (deg)	Relative Field
70.0	0.176
71.0	0.164
72.0	0.152
73.0	0.141
74.0	0.13
75.0	0.119
76.0	0.108
77.0	0.098
78.0	0.087
79.0	0.077
80.0	0.067
81.0	0.057
82.0	0.047
83.0	0.038
84.0	0.029
85.0	0.019
86.0	0.01
87.0	0.01
88.0	0.01
89.0	0.017
90.0	0.025

Electrical Beam Tilt: 0.0
Above Horiz.   Below Horiz.
Angle (degrees)

8/27/2015

V-Soft Communications LLC®

Figure 6. Signal at "Third Fifth Center" Building Rooftop
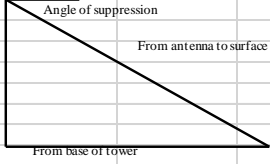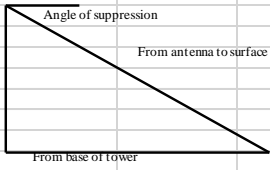
Triangle Geometry					
Known Values				**Values**	
Angle of Suppression	30	degrees	Distance from the base of tower	77.942	meters
Height of the antenna	45	meters	Distance from antenna to surface	90.000	meters
Distance from the base of tower	75	meters			
Distance from antenna to surface	87	meters	Height of the antenna	43.301	meters
			Distance from antenna to surface	86.603	meters
	Angle of suppression		Height of the antenna	43.500	meters
			Distance from the base of tower	75.344	meters
Height of the antenna	From antenna to surface				
			Angle of Suppression	30.964	degrees
			Distance from antenna to surface	87.464	meters
			Angle of Suppression	31.147	degrees
	From base of tower		Distance from the base of tower	74.458	meters
			Angle of Suppression	30.450	degrees
			Height of the antenna	44.091	meters
ERP	0.25	kw			
Calculated IX contour	124.5	dbu			

			Distance to interfering contour	Height of IX contour above surface	
Relative Field	Downward ERP		meters (hypot)	meters	this value is required.
1	0.2500		66.0648	11.968	

Translator's IX Contour

Depression Angle from Horizon	Relative Field		ERP on Depres. Angle (kw)		Dist. To IX Contour (m)	Surface (m)
0	1.000		0.2500		66.0648	45.000
5	0.995		0.2475		65.7345	39.271
10	0.982		0.2411		64.8756	33.734
15	0.950		0.2256		62.7615	28.756
20	0.918		0.2107		60.6475	24.257
25	0.867		0.1879		57.2782	20.793
30	0.803		0.1612		53.0500	18.475
35	0.727		0.1321		48.0291	17.452
40	0.645		0.1040		42.6118	17.610
45	0.558		0.0778		36.8641	18.933
50	0.472		0.0557		31.1826	21.113
55	0.388		0.0376		25.6331	24.003
60	0.310		0.0240		20.4801	27.264
65	0.240		0.0144		15.8555	30.630
70	0.176		0.0077		11.6274	34.074
75	0.119		0.0035		7.8617	37.406
80	0.067		0.0011		4.4263	40.641
85	0.019		0.0001		1.2552	43.750
90	0.025		0.0002		1.6516	43.348

Figure 7. Signal at "Swimming Pool"

Triangle Geometry						
	Known Values				**Values**	
Angle of Suppression	55	degrees	Distance from the base of tower	36.411	meters	
Height of the antenna	52	meters	Distance from antenna to surface	63.480	meters	
Distance from the base of tower	36	meters				
Distance from antenna to surface	63.2	meters	Height of the antenna	51.413	meters	
			Distance from antenna to surface	62.764	meters	
	Angle of suppression		Height of the antenna	51.770	meters	
			Distance from the base of tower	36.250	meters	
Height of the antenna		From antenna to surface				
			Angle of Suppression	55.305	degrees	
			Distance from antenna to surface	63.246	meters	
			Angle of Suppression	55.365	degrees	
	From base of tower		Distance from the base of tower	35.920	meters	
			Angle of Suppression	55.276	degrees	
			Height of the antenna	51.945	meters	
ERP	0.25	kw				
Calculated IX contour	124.5	dbu				
			Distance to interfering contour		Height of IX contour above surface	
Relative Field	Downward ERP		meters (hypot)	meters	this value is required.	
1	0.2500		66.0648	-2.117		

Translator's IX Contour

Depression Angle from Horizon	Relative Field	ERP on Depres. Angle (kw)		Dist. To IX Contour (m)	Surface (m)
0	1.000	0.2500		66.0648	52.000
5	0.995	0.2475		65.7345	46.271
10	0.982	0.2411		64.8756	40.734
15	0.950	0.2256		62.7615	35.756
20	0.918	0.2107		60.6475	31.257
25	0.867	0.1879		57.2782	27.793
30	0.803	0.1612		53.0500	25.475
35	0.727	0.1321		48.0291	24.452
40	0.645	0.1040		42.6118	24.610
45	0.558	0.0778		36.8641	25.933
50	0.472	0.0557		31.1826	28.113
55	0.388	0.0376		25.6331	31.003
60	0.310	0.0240		20.4801	34.264
65	0.240	0.0144		15.8555	37.630
70	0.176	0.0077		11.6274	41.074
75	0.119	0.0035		7.8617	44.406
80	0.067	0.0011		4.4263	47.641
85	0.019	0.0001		1.2552	50.750
90	0.025	0.0002		1.6516	50.348