

# Radio Sharon Foundation

## 25 Woodman St. Providence, RI. 02907.

### Consolidate Engineering Report

Monday, December 7, 2020

This report is prepared to support an application for minor change to FM translator W235CN antenna's patterns. When Radio Sharon Foundation filed an application to allocate W235CN to operate in Providence, Rhode Island, on May 2016, FCC granted on July 17, 2016. The Antenna's Pattern was designed Directional to different azimuths to protect 2 stations contours: North-west from 320 to 350 degree to protect first Adjacent W236CW and South-west from 220 to 230 degree to protect first Adjacent (236) WWRI-LP.

On July 12, 2017 Bouchard Broadcasting filed a modification for W236CW to move to channel 260 File Number: BPFT-20170712ABN and FCC granted it on July 25, 2017. And license to cover File Number: 0000118410 granted on August 03, 2020. Since Channel 236 located to North-west from W235CN site and is not longer with W236CW, Radio Sharon Foundation is filing re-designing its Antenna's pattern to non directional from 320 to 350 degree, complying with all overlap and interference rules.

No other change is applying to W235CN, its being at the same structure site, height, power, etc.

**Page 3**, is engineering plots generated with V-Soft pattern designer showing both the (**License pattern and proposed pattern**), all other information keep being the same for W235CN.

### **Channel Allocations**

**Page 4**, is a "**Fill In**" map showing the primary (WSTL) station and Translator contour, **Page 5**, is an overall allocations map "**Co and First Adjacent Channels**" showing that there is no overlap of protected contours of other stations' and applications' protected contours and the interference contours specified in § 74.1204 of the FCC rules.

**Page 6**, is a map showing the "**Second and Third Adjacent channel**" allocations. There is no overlap with any stations except WJMN and WLVO. The WJMN 58 dbu contour encompasses the proposed 98 dbu contour. WLVO provides much greater than 100 dBu as it is located in the immediate vicinity of the proposed translator, a figure shows that the WLVO Auxiliary F(50,50) 84 dbu encompasses the proposed 124 dbu (nuisance) contour.

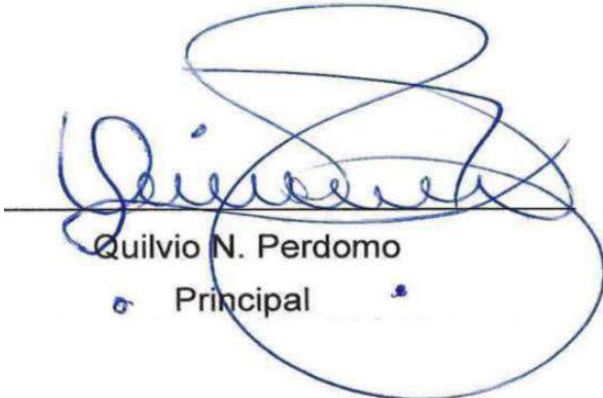
The protection to WJMN is therefore dominant. A is a showing with respect to both Second Adjacent channel stations. The figure shows that there is no potential for interference between the proposed facilities and WJMN and WLVO as the potentially interfering signal does not reach the ground, and

**Page 9**, is a satellite photo showing that there are no multi-story buildings within the area where the potentially interfering contour approaches the ground, and no highways or structures except the transmitter building within 75 meters of the tower base.

The 54 dbu F(50,50) contour of WJMN and WLVO Auxiliary (dark blue) is shown extending well beyond the proposed facility, the WJMN 58 dbu F(50,50) contour is shown in blue, extending beyond the proposed transmitter site. The second and third adjacent channel protection ratio is 40 db, so it is required that the 58 dbuV contour is protected from the proposed 98 dbu contour of the translator. Protection to WJMN is the limiting restriction for second or third adjacent channels. In conclusion, the proposed translator meets all the overlap requirements of § 74.1204 of the FCC rules and regulations. Environment Exhibit is a study showing that the proposed translator is excluded from environmental processing according to § 1.1306 of the FCC rules. The RF exposure worksheet is included to show that there is no location where the radiation from the translator exceeds exposure standards for general public.

I certify that this report has been prepared by the undersigned. It is correct and accurate to my knowledge, except where stated otherwise, and where that is so, the information is correct to the best of my knowledge and belief. I further certify that I have successfully completed several webinars of V-Soft, regarding FM allocations rules, FM Commander, Pattern design, Electronic tech, contour overlapping, Probe 5, RadioSoft: Comstudy, RF Investigator, together with advanced study of technology and digital era matters. I further have explored Digital Radio and TV transition and am currently enrolled in a Broadcast Engineering Distance Education Course at SBE University.

<https://www.sbe.org/sections/SBEUniversity.php>



Quilvio N. Perdomo  
Principal

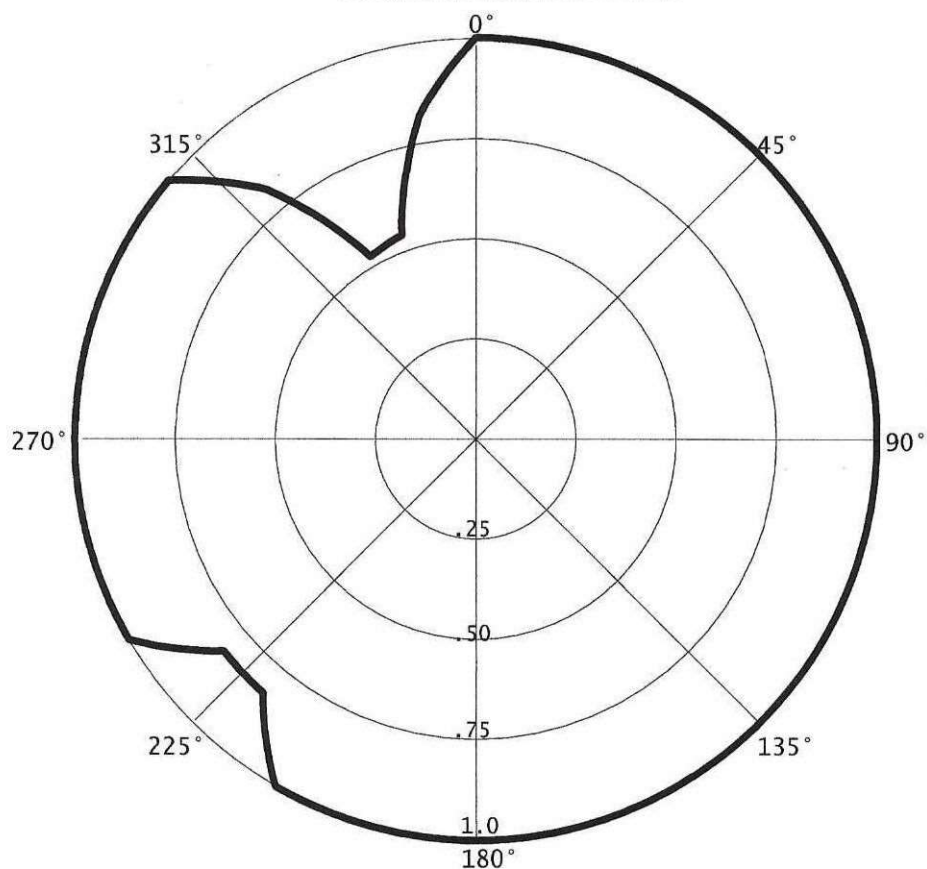
12 - 07 - 2020

RMS(V)= .96

**W235CN LICENSE**

Graph is Relative Field

Azi	Field	dBk	kw
000	1.000	-06.021	0.250
010	1.000	-06.021	0.250
020	1.000	-06.021	0.250
030	1.000	-06.021	0.250
040	1.000	-06.021	0.250
050	1.000	-06.021	0.250
060	1.000	-06.021	0.250
070	1.000	-06.021	0.250
080	1.000	-06.021	0.250
090	1.000	-06.021	0.250
100	1.000	-06.021	0.250
110	1.000	-06.021	0.250
120	1.000	-06.021	0.250
130	1.000	-06.021	0.250
140	1.000	-06.021	0.250
150	1.000	-06.021	0.250
160	1.000	-06.021	0.250
170	1.000	-06.021	0.250
180	1.000	-06.021	0.250
190	1.000	-06.021	0.250
200	1.000	-06.021	0.250
210	1.000	-06.021	0.250
220	0.826	-07.681	0.171
230	0.822	-07.723	0.169
240	1.000	-06.021	0.250
250	1.000	-06.021	0.250
260	1.000	-06.021	0.250
270	1.000	-06.021	0.250
280	1.000	-06.021	0.250
290	1.000	-06.021	0.250
300	1.000	-06.021	0.250
310	1.000	-06.021	0.250
320	0.810	-07.851	0.164
330	0.524	-11.634	0.069
340	0.540	-11.373	0.073
350	0.817	-07.776	0.167



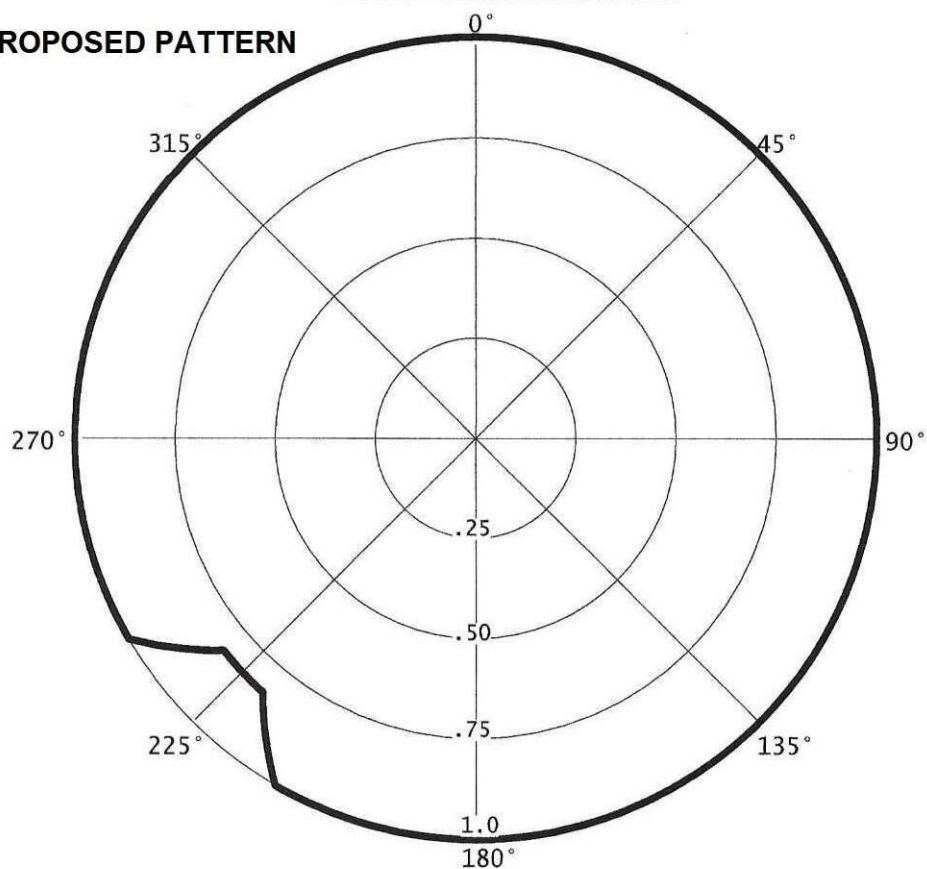
12 - 07 - 2020

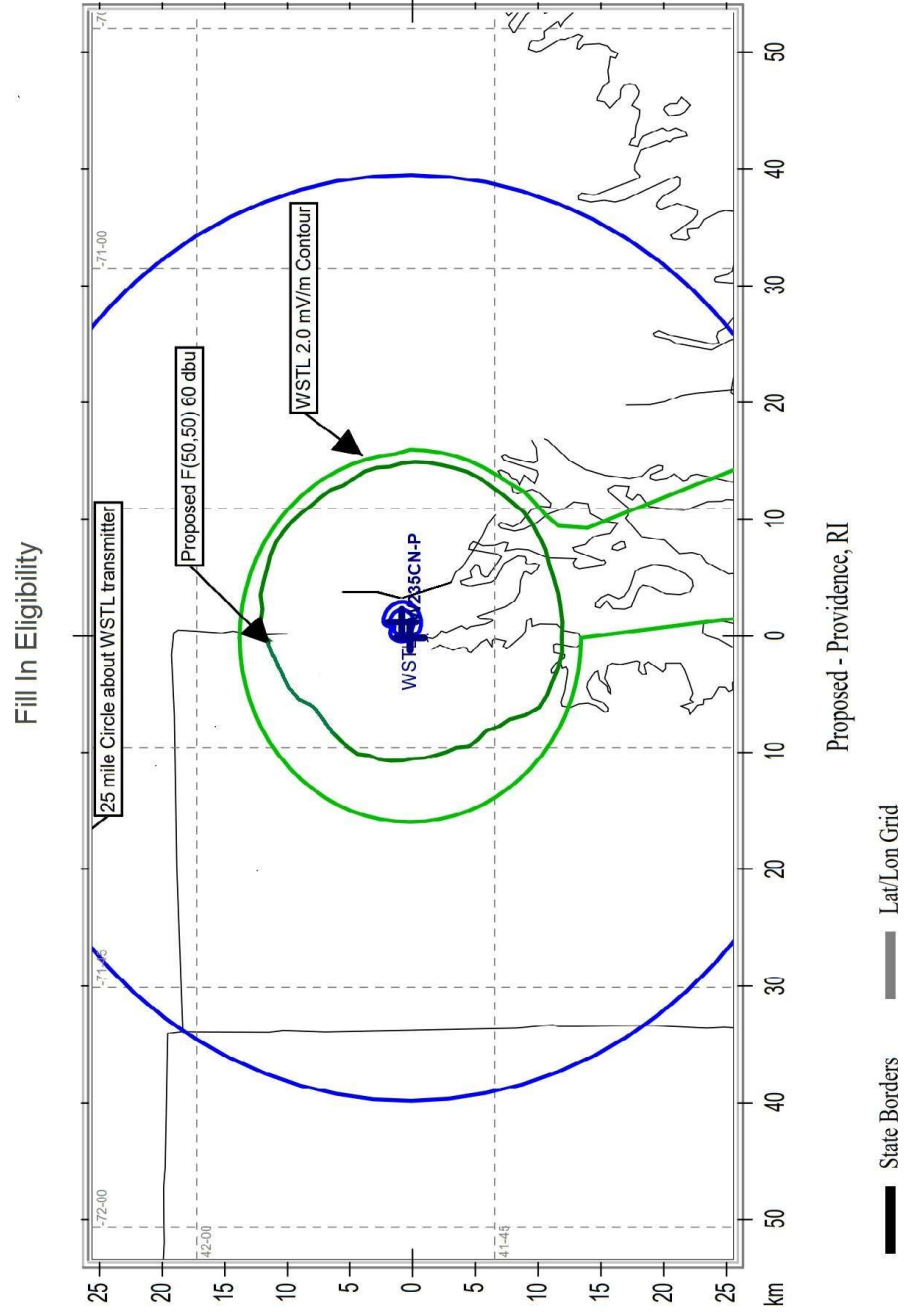
RMS(V)= .991

**W235CN PROPOSED**

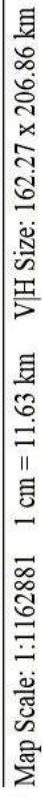
Graph is Relative Field

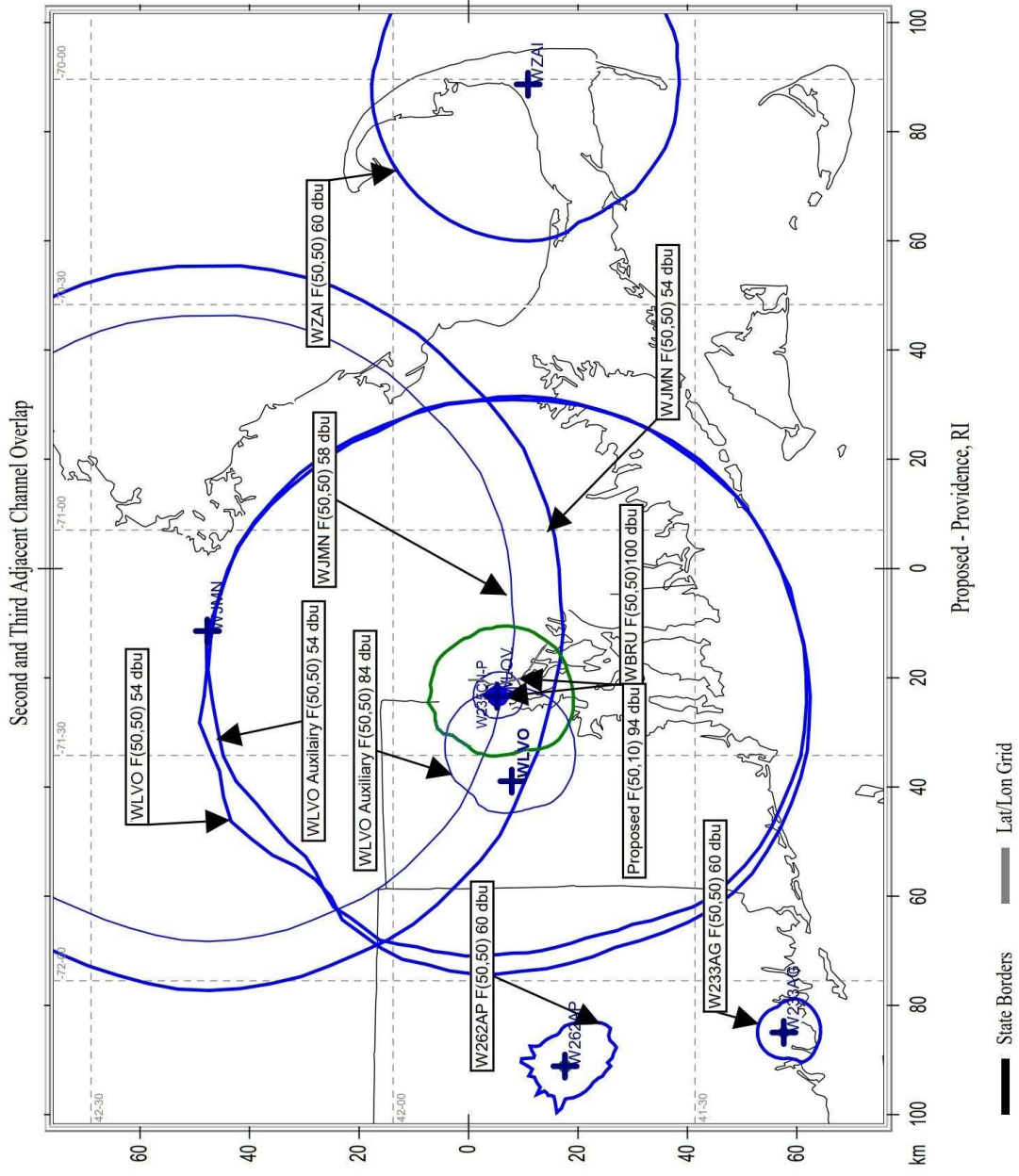
Azi	Field	dBk	kw
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300	1.000	-06.021	0.250
310	1.000	-06.021	0.250
320	1.000	-06.021	0.250
330	1.000	-06.021	0.250
340	1.000	-06.021	0.250
350	1.000	-06.021	0.250

**PROPOSED PATTERN**









# Radio Sharon Foundation

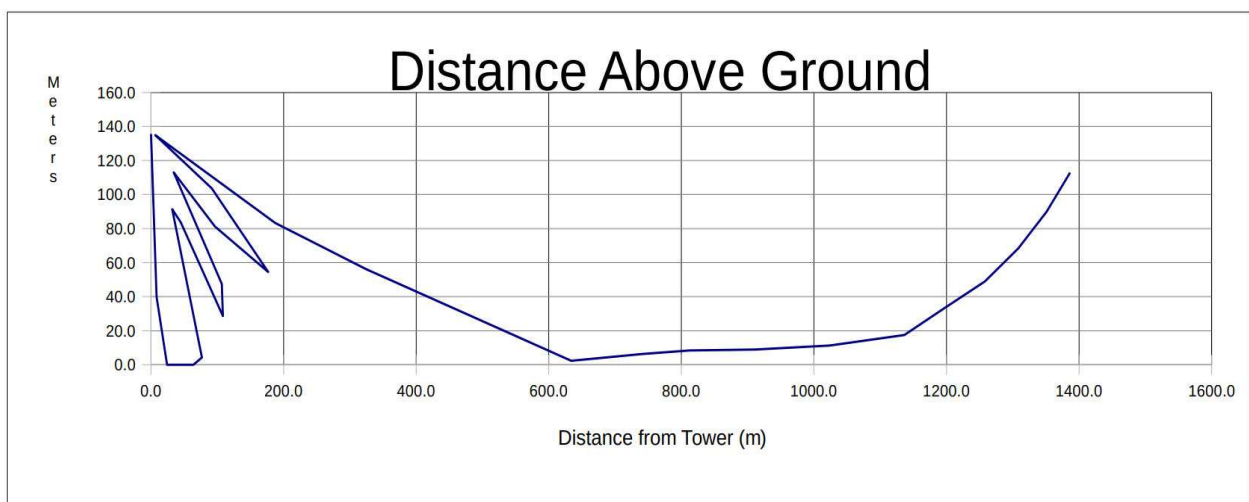
## 25 Woodman St. Providence, RI. 02907

### 2nd Adjacent Protection Calculations W235CN, Providence, RI

Monday, December 7, 2020

In a letter granting Jersey Shore Broadcasting Corporation's application BPFT-950830TD (September 26, 1996 1800B3-JDB) the FCC stated that the Ratio method is suitable for translator applicants to demonstrate lack of interference for application purposes. The 54 db $\mu$ V F(50,50) and the 67.5 db $\mu$ V F(50,50) contour of second adjacent Class B stations WJMN, Boston, MA and WLVO, Providence, MA encompasses the 58 db $\mu$ V F(50,10) proposed contour. For a protection ratio of 40 db the interfering contour would be 98 db $\mu$ V.

Since the distance to this contour is below the minimum distances for the F(50,10) and F(50,50) curves the signal level existing on the ground in the vicinity of the translator was calculated using inverse distance, with an adjustment for ground reflections, as has been accepted by the FCC in recent applications. Below is a graph and tabulation of these calculations showing the location above ground at which the proposed translator will produce an interfering contour. This table and chart shows that the potentially interfering signal is more than 17 meters from the ground at its closest approach.



Graph of elevation of 98 db $\mu$ V contour above ground with distance

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The proposed 98 dB $\mu$ V potentially interfering signal does not reach the ground except in the immediate vicinity of the tower. Aerial figure is a satellite photo showing that there are no multistory occupied buildings in the area.

Study for Center of Radiation: 137m AGL ERP 250 Watts Element Bays 4  
Spacing 0.9 Wavelength Antenna Spec PSI Model FML-4

Distance above Ground Level of Interfering Contour

Depression Angle (Degrees)	Slant Distance To 98 dB $\mu$ V (meters)	Horiz Distance To 98 dB $\mu$ V (meters)	Relative Field	ERP Watts	98 dB $\mu$ V Above Gnd (meters)
1	1386.66	1386.5	0.995	247.506	112.8
2	1351.82	1351.0	0.970	235.225	89.8
3	1310.01	1308.2	0.940	220.900	68.4
4	1261.23	1258.2	0.905	204.756	49.0
5	1198.52	1194.0	0.860	184.900	32.5
6	1142.78	1136.5	0.820	168.100	17.5
7	1031.29	1023.6	0.740	136.900	11.3
8	919.80	910.8	0.660	108.900	9.0
9	822.24	812.1	0.590	87.025	8.4
10	752.56	741.1	0.540	72.900	6.3
12	648.04	633.9	0.465	54.056	2.3
14	334.47	324.5	0.240	14.400	56.1
16	195.11	187.5	0.140	4.900	83.2
18	6.97	6.6	0.005	0.006	134.8
20	97.55	91.7	0.070	1.225	103.6
25	195.11	176.8	0.140	4.900	54.5
30	111.49	96.6	0.080	1.600	81.3
35	41.81	34.2	0.030	0.225	113.0
40	139.36	106.8	0.100	2.500	47.4
45	153.30	108.4	0.110	3.025	28.6
50	69.68	44.8	0.050	0.625	83.6
55	55.75	32.0	0.040	0.400	91.3
60	153.30	76.6	0.110	3.025	4.2
65	250.85	63.9	0.180	8.100	0.0
70	264.79	49.9	0.190	9.025	0.0
75	250.85	36.7	0.180	8.100	0.0
80	167.24	24.2	0.120	3.600	0.0
85	97.55	8.5	0.070	1.225	39.8
90	1.39	0.0	0.001	0.000	135.6

Min Height above Gnd



**AERIAL**

**Tower Site**

**75 meter radius**



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**Section 106 Review**

The proposed translator antenna will be kept on the same existing structure no change. The existing tower was built prior to March 16, 2001. The antenna collocation programmatic agreement generally permits collocation without consultation or review under Section 106 Subpart B of 36CFR Part 800. No further review is necessary as:

- The mounting of the antenna will not result in a substantial increase in the size of the antenna or tower structure.
- Prior to the collocation, the tower or structure has not been determined by the FCC to have an effect on one or more historic properties,
- The tower or structure is not the subject of a pending environmental review,
- The collocation licensee has not received a written or electronic notification that the FCC is in receipt of a complaint that the collocation has an adverse effect on one or more historic properties.

**FCC Part 1.1306**

- The site is not within an officially designated wilderness area or wildlife preserve.
- The mounting of the antenna will not effect endangered species.
- The site is not in a floodplain.
- The mounting of the antenna will not involve a significant change in surface features.
- The tower will not use high intensity white lights.
- The mounting of the antenna does not exceed human exposure limits. See below.
- Compliance with RF safety requirements in accordance with FCC part 1.1306(8)b) as demonstrated below. The operation does not exceed human exposure limits.

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RF Worksheet #1 - FM (Including translators and boosters)

Effective Radiation Center Height

Enter the proposed "Height of radiation center above ground"	137m
or as listed in Line 1 of Worksheet 1A	137m
Is the Antenna supporting structure located on the roof of a building	NO YES/NO
if Line 2 is "YES" enter the building height measured at the base of the antenna supporting structure in line 3 If line 2 is "NO" enter "0" in Line 3	0m
Subtract Line (3) from Line (1)	135m
Subtract the value 2.0 from Line (4)	137m

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**Total Effective Radiated Power**

If "beam tilt" is utilized, list maximum values)

List Effective Radiated Power in the Horizontal Plane	0.25kW
List Effective Radiated in the Vertical Plane	0.25kW
Add lines 6 and 7 OR listed value from line 2 in Worksheet 1A	0.5kW

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**PERCENTAGE OF FCC RF LIMIT(S) FOR MAXIMUM PERMISSIBLE EXPOSURE**

Multiply line 8 by 3341	1670.5
Multiply the value listed in line 5 by itself	18225.0
Divide line 9 by line 10	0.092
Multiply line 11 by .5	0.046 %

**DETERMINATION OF COMPLIANCE WITH CONTROLLED/OCCUPATIONAL LIMIT**

Does Line 12 exceed 100%	NO YES/NO
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