TECHNICAL EXHIBIT
APPLICATION FOR
MINOR CHANGE IN LICENSED FACILITY
AURIO A. MATOS BARRETO.
FM TRANSLATOR STATION W279BU
SAN JUAN, PUERTO RICO
FACILITY ID 143465

AUGUST 8, 2014

CH 279 0.250 KW 552 M AMSL

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Technical Narrative

The technical exhibit, of which this narrative is part, has been prepared on behalf of Aurio A. Matos Barreto, licensee of FM translator station W279BU, Gurabo, Puerto Rico. W279BU is a currently licensed as a "fill-in" translator of FM station WNVM. By means of this application, the licensee seeks construction permit for a minor change in the license facility of W279BU requesting a Mattoon waiver to associate W279BU as a fill-in translator of AM station WCMA, 1600 kHz, Bayamon, PR, Facility ID 39145, also licensed to Aurio A. Matos. Mr. Matos is also the licensee of FM translator W279BV, currently operating as a fill-in of AM station WCMA. Simultaneously with the filing of this application, an application is being filed to relocate W279BV as a fill-in of AM station WDNO. This application to relocate W279BU seeks to substitute the service improvement currently provided by W279BV to WCMA. This application is filed contingent to a grant of the application to modify W279BV.

FM translator station W279BU presently operates on channel 279 (103.7 MHz) with an effective radiated power (ERP) of 0.250 kW (250 watts), using a directional antenna system with vertical polarization. It is proposed to move W279BU to a new site and operate with an ERP of 0.250 kW (250 Watts) using a directional antenna with horizontal polarization, at a height of 52.4 meters AGL (552.5 meters AMSL) oriented at an azimuth of 0° True.

Proposed Transmitter Location

The proposed transmitting facility would use a Scala, Model CL-FM/HRM 50N, vertical stacked, 0.5 wavelength array consisting of three horizontally polarized directional antennas (FCC Antenna ID 16150), side-mounted on an existing self-support tower. The proposed translator location is described by the following NAD27 geographic coordinates:

18° 16' 49.3" North
66° 06' 35.3" West

Tower Registration

The FAA is not being notified of the proposed construction, as it is proposed to side-mount an FM antenna on an existing 55.5 meter (182 foot) self-support tower belonging to FM station WNVM that according to the TOWAIR program does not require registration.

Quiet Zone Notification

As required by FCC rules pertaining to radio Quiet Zones, Section 73.1030(a), the National Astronomy and Ionosphere Center (NAIC) in Arecibo, Puerto Rico is being notified of this application. A copy of the notification letter to the Arecibo Observatory of the proposed facility is included herein as Appendix 1.

FCC Monitoring Stations

FCC rules pertaining to FCC monitoring stations, Section 73.1030(c), requires that the proposed facility does not produce a field strength greater than 10 mV/m at the FCC stations. The closest FCC monitoring station to the proposed operation is located at Santa Isabel, PR, at a distance of 41 kilometers on a bearing of 223° True. The proposed operation will produce field strengths much lower than 10 mV/m at the FCC Santa Isabel, PR station.

Environmental Considerations

The proposal is excluded from environmental processing, as an existing tower is to be employed and the proposal complies with the FCC Rules concerning human exposure to radio frequency (RF) energy. The proposal would not exceed 1% of the RF exposure limit for general population/uncontrolled environments for the frequency proposed. The calculation of RF energy at 2-m above ground was made under the procedures of OET Bulletin No. 65.* The formula employed is as follows:

$$S = \frac{(33.4)F^2P}{R^2}$$

* Federal Communications Commission OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01, August 1997).

where, S = power density in uW/cm^2, F = relative field factor at the angle to the calculation point, P = the total effective radiated power relative to a dipole in watts, and R = distance from the antenna radiation center to the calculation point in meters.

Based on the vertical radiation pattern of the proposed antenna, (Appendix 2), a relative field factor of 0.3 or less for any depression angle equal or greater than 30 degrees below horizon, a total effective radiated power of 250 watts and an antenna radiation center height above ground of 52 m, the calculated power density will not exceed 0.3 uW/cm^2. Therefore, the calculated RF exposure at 2 m above ground will not exceed 0.15% of the limit of 200 uW/cm^2 for the general population and uncontrolled environments.

The antenna system shall be restricted from access and appropriate warning signs posted. In the event that personnel are required to climb the structure, the proposed FM translator transmissions shall be reduced or terminated as necessary to prevent RF exposure above the FCC recommended limits.

Allocation Considerations and Predicted Coverage Contour

Figure 2 summarizes the allocation study for the proposed facility. As indicated in Figure 2, the spacing requirements with respect to IF related facilities are met. The tabulation in Figure 2 also lists the results of a numerical analysis of the potential for contour overlap for all nearby co-channel and first-, second-, and third-adjacent-channel facilities. For the purposes of the numerical study, the maximum HAAT and maximum ERP values were used in determining the maximum distance in any direction to the predicted coverage and interfering contours.[†]

The predicted 60 dBu coverage contour was calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the USGS 3-second terrain database. The distances to the predicted 60 dBu coverage contour for the proposed facilities were determined using the average elevations of radials spaced every 5-degrees of azimuth. The antenna radiation center height above average terrain and the ERP in each radial direction were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to the contour.

[†] Where the maximum HAAT figure was not available the radiation center height above mean sea level was employed as a worst-case estimate.

Waiver of Section 74.1233: as shown in Figure 3, there will not be 60 dBu contour overlap between the licensed and proposed W279BU operations. Therefore, a waiver of section 74.1233(a) is requested based on the waiver criteria (Mattoon waiver) established by the FCC in the letter dated September 2, 2011 (DA 11-1495) from Peter Doyle, Chief, Audio Division, Media Bureau to John Garziglia, Esq. concerning the application of W263AQ at Mattoon, Illinois (The Cromwell Group, Inc. of Illinois, BPFT-20101025ABR, Facility ID No. 85639). Specifically, in accordance with Mattoon waiver criteria, (1) W279BU has no history of filing serial modification applications to change markets, (2) will not preclude future licensing opportunities in the LPFM service and (3) its licensed and proposed operations will be mutually exclusive with one another. Figure 3 shows that the licensed and proposed W279BV operations are mutually exclusive.

Figure 3 shows the predicted 60 dBu coverage contour of the proposed translator facility and the licensed 2 mV/m coverage contour of station WCMA. As shown in Figure 3, the predicted 60 dBu coverage contour of the proposed translator facility is well within the 2 mV/m daytime contour of WCMA, the primary station to be retransmitted, and within a 25-mile radius of the WCMA transmitter site.

Figure 4, Sheets A to C is a depiction of the allocation situation with respect to the predicted protected contours of those stations close enough to warrant further study. This is based on the analysis in Figure 2, where there is an indication of the potential for prohibited overlapping contours. As shown in Figure 4A, the proposed facility does not involve prohibited contour overlap with the proposed facilities of W279BV

Figure 4B shows that there is no prohibitive overlap with respect to station WXLX. As shown in Figure 4C, while the predicted 54 dBu contour of stations WERR and WVJP-FM encompass the proposed transmitter site of W279BU, booster stations WERR-FM1, WVJP-FM1 and WVJP-FM2 will be properly protected.

With respect to WVJP-FM, processing pursuant to Section 73.1204(d) of the FCC Rules is requested. Specifically, it is demonstrated herein that the proposed translator facility will cause no harmful interference to WVJP-FM.

W279BU operates on Channel 279, second adjacent channel to WVJP-FM. The protection requirements of the undesired signal from W279BU is 40 dB higher that the desired signal of WVJP-FM. The proposed translator site is located 27.2 kilometers, at a bearing of 271 degrees true from station WVJP-FM, which operates on channel 277B with an omni directional antenna having an ERP of 26 kW and an HAAT of 596 meters along radial 271°. The predicted WVJP-FM F(50,50) field strength at the proposed site is 83.1dBu. Using the U/D ratio of 40 db contained in Section 74.1204, the proposed F(50,10) interfering signal is

123.1 dBu.[‡] The 123.1 dBu contour thus defines the maximum extent of predicted interference to WVJP-FM from the proposed translator facility.

Since an ERP of 250-watts is proposed, the 123.1 dBu signal contour is calculated by means of a free-space calculation. Based on free-space calculations, at no point anywhere near the proposed site would the 123.1 dBu contour reach a height less than 118 feet above ground level. This is graphically depicted in Figure 5B. Therefore, no predicted harmful interference to WVJP-FM will result as a result of the proposed translator facility.

Figure 5A is a table and Figure 5B a graphic representation showing the computed distances to the predicted 123.1 dBu contour under these assumptions. For these calculations, a non-directional horizontal antenna pattern and the antenna radiation center height above ground was used, though it should be noted that the proposed antenna is highly directional and given the complex topography of the terrain surrounding the site, the antenna height to the potentially affected inhabited structures is always significantly higher than the value used in these calculations. Appendix 2 shows the vertical antenna pattern data used for these calculations.

With respect to WERR, processing pursuant to Section 73.1204(d) of the FCC Rules is also requested. Specifically, it is demonstrated herein that the proposed translator facility will cause no harmful interference to WERR.

W279Bu operates on Channel 279, second adjacent channel to WERR. The protection requirements of the undesired signal from W279Bu is 40 dB higher that the desired signal of WERR. The proposed translator site is located 58.2 kilometers, at a bearing of 91 degrees true from station WERR, which operates on channel 281B with an omni directional antenna having an ERP of 50 kW and an HAAT of 303.3 meters along radial 91°. The predicted WERR F(50,50) field strength at the proposed site is 63.3 dBu. Using the U/D ratio of 40 db contained in Section 74.1204, the proposed F(50,10) interfering signal is 103.3 dBu. The 103.3 dBu contour thus defines the maximum extent of predicted interference to WERR from the proposed translator facility.

Since an ERP of 250-watts is proposed, the 103.3 dBu signal contour is calculated by means of a free-space calculation. Given the complex topography of the terrain surrounding the site, for the WERR interference calculations the directional horizontal antenna pattern and the antenna radiation center height relative to the potentially affected inhabited structures have been used. Figure 6 shows the area of the proposed site, WNVM at Cerro

[‡] *See* In re Application of Living Way Ministries, Inc. for a Construction Permit for a New NCE FM Translator Station at Sun Valley, CA, File No. BPFT-19981001TA, FCC 02-244, Released: September 9, 2002

Marquesa, a well-known communication site housing several TV, FM and communication towers.

Seven distinct areas or locations are identified in Figure 6. Zone "A" in Figure 6 correspond to the area where the various communications facilities are housed. There are no residences or office structures within this area, but only structures which house TV, FM, and other communication equipment and towers belonging to broadcast stations and telecommunication companies which are occasionally visited by maintenance personnel. The Cerro Marquesa site is a secluded radio transmission area.

Zone "B" in Figure 6 consist of an arc of land where any residences located within this area will be located between a bearing of 50° and 310° true from the proposed W279BU horizontal antenna pattern. Along this arc, the maximum horizontal field value of the antenna is 0.25 at +/- 50° from main lobe (0°), and significantly lower at greater azimuth deviations. The highest terrain elevation within this arc is 472 meters AMSL at a distance of 615 feet (the closest inhabited house) from the site, gradually decreasing with increasing distance from the site. Given that the proposed antenna radiation center will be at a height of 552.5 meters AMSL, the delta height for the calculations of field intensity from the proposed facility is 80.5 meters or 264 feet. Figure 7A is a table and Figure 7B a graphic representation showing the computed distances to the predicted 103.3 dBu contour under these assumptions. Appendix 2 shows the antenna pattern data used in the calculations. Based on these free-space calculations, at no point near the proposed site within the Zone B arc where inhabited structures could be present would the 103.3 dBu contour reach a height less than 132 feet above ground level. This is graphically depicted in Figure 7B.

Point "C" to Point "G" in Figure 6 represent the closest potentially inhabited locations closer to the main horizontal radiation lobe of the proposed antenna; to these locations correspond different terrain elevations and horizontal field values of the proposed antenna system, thus each location will be separately treated.

Point "C" in Figure 6 is located at a bearing of no less than 10° true from the proposed W279BU horizontal antenna pattern, corresponding to a horizontal field value of 0.95, at a distance of approximately 1,800 feet. The highest terrain elevation near this point is 382 meters AMSL, gradually decreasing with increasing distance from the site along this radial. Given that the proposed antenna radiation center will be at a height of 552.5 meters AMSL, the delta height for the calculations of field intensity from the proposed facility is 170.5 meters or 559 feet. Figure 8A is a table and Figure 8B a graphic representation showing the computed distances to the predicted 103.3 dBu contour under these assumptions based on

the antenna pattern data shown in Appendix 2. Based on these free-space calculations, at no point near Point "C" or along this radial where inhabited structures could be present would the 103.3 dBu contour reach a height less than 59 feet above ground level. This is graphically depicted in Figure 8B.

Point "D" in Figure 6 is located at a bearing of no less than 17° true from the proposed W279BU horizontal antenna pattern, corresponding to a horizontal field value of 0.865, at a distance of approximately 1,710 feet. The highest terrain elevation near this point is 408 meters AMSL, gradually decreasing with increasing distance from the site along this radial. Given that the proposed antenna radiation center will be at a height of 552.5 meters AMSL, the delta height for the calculations of field intensity from the proposed facility is 144.5 meters or 474 feet. Figure 9A is a table and Figure 9B a graphic representation showing the computed distances to the predicted 103.3 dBu contour under these assumptions based on the antenna pattern data shown in Appendix 2. Based on these free-space calculations, at no point near Point "D" or along this radial where inhabited structures could be present would the 103.3 dBu contour reach a height less than 53 feet above ground level. This is shown in Figure 9A and graphically depicted in Figure 9B.

Point "E" in Figure 6 is located at a bearing of no less than 20° true from the proposed W279BU horizontal antenna pattern, corresponding to a horizontal field value of 0.82, at a distance of approximately 1,750 feet. The highest terrain elevation near this point is 411 meters AMSL, gradually decreasing with increasing distance from the site along this radial. Given that the proposed antenna radiation center will be at a height of 552.5 meters AMSL, the delta height for the calculations of field intensity from the proposed facility is 141.5 meters or 464 feet. Figure 10A is a table and Figure 10B a graphic representation showing the computed distances to the predicted 103.3 dBu contour under these assumptions based on the antenna pattern data shown in Appendix 2. Based on these free-space calculations, at no point near Point "E" or along this radial where inhabited structures could be present would the 103.3 dBu contour reach a height less than 98 feet above ground level. This is shown in Figure 10A and graphically depicted in Figure 10B.

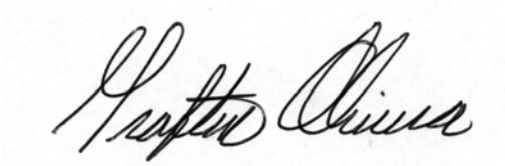
Point "F" in Figure 6 is located at a bearing of no less than 25° true from the proposed W279BU horizontal antenna pattern, corresponding to a horizontal field value of 0.735, at a distance of approximately 1,700 feet. The highest terrain elevation near this point is 400 meters AMSL, gradually decreasing with increasing distance from the site along this radial. Given that the proposed antenna radiation center will be at a height of 552.5 meters AMSL, the delta height for the calculations of field intensity from the proposed facility is 172.5 meters or 500 feet. Figure 11A is a table and Figure 11B a graphic representation showing the computed distances to the predicted 103.3 dBu contour under these assumptions based on the antenna pattern data shown in Appendix 2. Based on these free-space

calculations, at no point near Point "F" or along this radial where inhabited structures could be present would the 103.3 dBu contour reach a height less than 113 feet above ground level. This is shown in Figure 11A and graphically depicted in Figure 11B.

Point "G" in Figure 6 is located at a bearing of no less than 41° true from the proposed W279BU horizontal antenna pattern, corresponding to a horizontal field value of 0.470, at a distance of approximately 1,600 feet. The highest terrain elevation near this point is 410 meters AMSL, gradually decreasing with increasing distance from the site along this radial. Given that the proposed antenna radiation center will be at a height of 552.5 meters AMSL, the delta height for the calculations of field intensity from the proposed facility is 142.5 meters or 467 feet. Figure 12A is a table and Figure 12B a graphic representation showing the computed distances to the predicted 103.3 dBu contour under these assumptions based on the antenna pattern data shown in Appendix 2. Based on these free-space calculations, at no point near Point "G" or along this radial where inhabited structures could be present would the 103.3 dBu contour reach a height less than 220 feet above ground level. This is shown in Figure 12A and graphically depicted in Figure 12B.

Based on the preceding analysis, no harmful interference to WERR will result as a result of the proposed translator facility.

For all the reasons stated above, it is believed that the proposed facility is in compliance with applicable FCC Rules and Regulations.



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Engineering Specifications

Channel / Frequency	279A / 103.7 MHz
Site Coordinates (NAD27)	18° 16' 49.3" North Latitude 66° 06' 35.3" West Longitude
Antenna structure Registration	N/A
Height of antenna radiation center	52.4 m AGL / 552.5 AMSL
Antenna radiation center HAAT	333 m
Transmitter	RVR, PJ-50 M
Transmitter power output	0.024 kW
Transmission line	Andrew, LDF5-50A
Transmission line length	60 m
Transmission line efficiency	84.3 %
Antenna	Scala CL-FM/HRM Custom Array
Polarization	Horizontal
Power gain	12.3
Antenna input power	0.02 kW
Effective radiated power	0.25 kW (Vert. MAX-DA)

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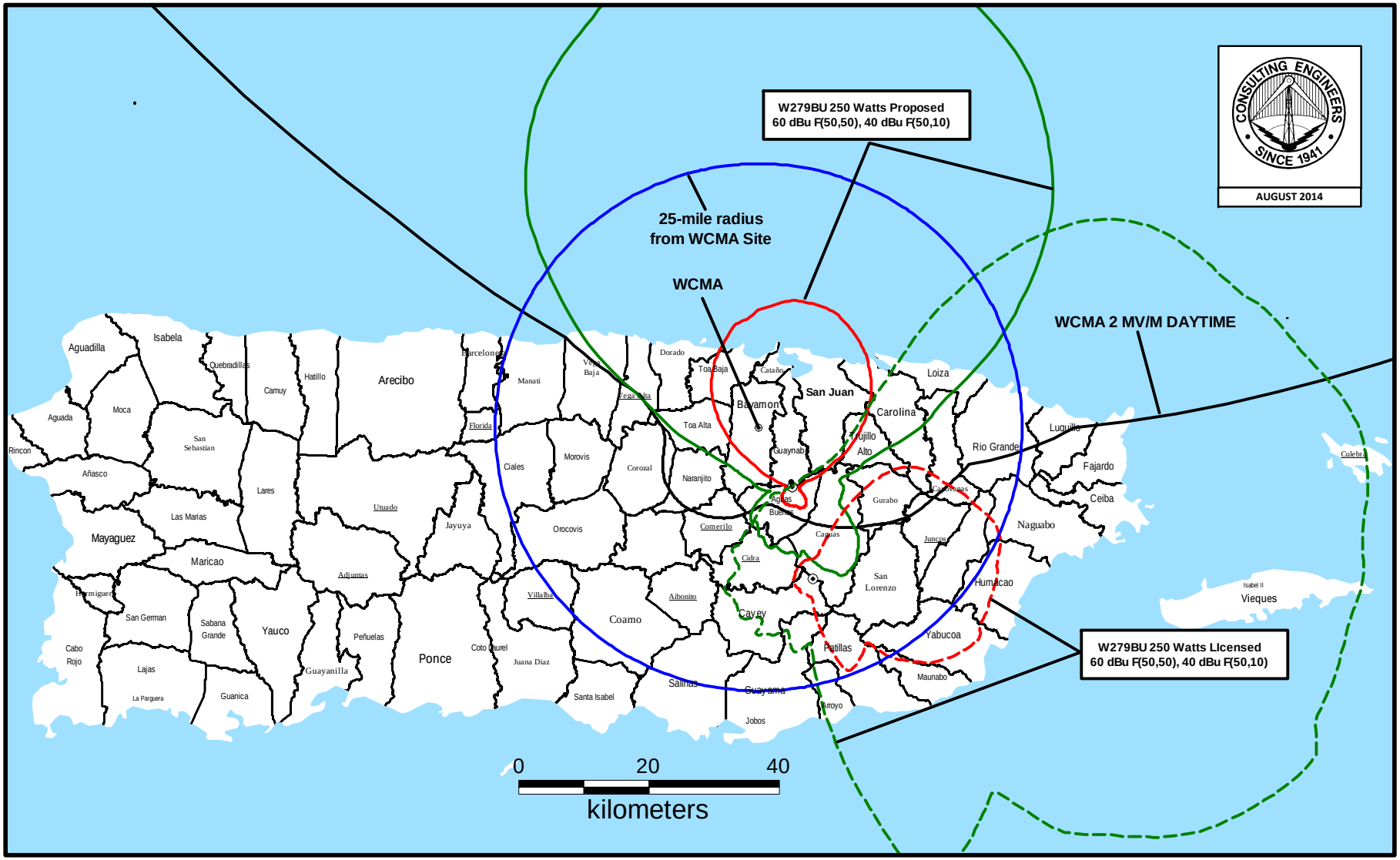
Summary of Allocation Analysis

Channel: 279 Coordinates: 018-16-49.3 066-06-35.3 (NAD 27) *Page: 1 of 1*
Class: A Buffer Distance: 50 km

Callsign / Fac. ID	Status / ARN	Chan. / Class	Serv. / DA	Freq. / Ant. ID	City	ERP(kW)	State / HAAT(m)	Latitude / Longitude	Dist.(km) / Bear.(deg)	Sep.(km) / 73.215	Spacing(km) / Comment
W225AY	LIC	225	FX	92.9	ARROYO		PR	018-00-36	31.25		
157296	BLFT 20071228ABO	D	C	67340		0.05		066-01-28.4	163.31		INFO
WYQE	LIC	225	FM	92.9	NAGUABO		PR	018-16-50	46.47	10	36.47
19056	BLH 19950106KB	A	N			3.9	229	065-40-13	89.9		CLEAR
W276AI	LIC	276	FX	103.1	PONCE		PR	018-00-00	62.32		
53553	BLFT 19860609TH	D	D	13702		0.004		066-37-14	240.07		INFO
WVJP-FM	CP	277	FM	103.3	CAGUAS		PR	018-16-41	27.12	69	-41.88
6441	BPH 20140521AGV	B	N			26	592	065-51-12	90.5	63 N	SHORT
WVJP-FM	LIC	277	FM	103.3	CAGUAS		PR	018-16-41	27.21	69	-41.79
6441	BLH 19890331KI	B				28	581	065-51-09	90.5	63 N	SHORT
W279BV	LIC	279	FX	103.7	SAN JUAN		PR	018-17-42	6.11		
26656	BLFT 20140507ACX	D	D	16150		0.225		066-09-56	285.47		INFO
W279BU	LIC	279	FX	103.7	GURABO		PR	018-09-17	14.25		
143465	BLFT 20140303AEF	D	D	16151		0.25		066-04-50	167.53		INFO
WXLX	LIC	279	FM	103.7	LAJAS		PR	017-59-37	118.21	178	-59.79
55065	BLH 19940113KE	B	N			50	139	067-11-09	254.5	143 N	SHORT
WERR	LIC	281	FM	104.1	VEGA ALTA		PR	018-17-29	58.28	69	-10.72
54750	BLH 20080708AJO	B	N			50	301	066-39-39	271.29	63 N	SHORT

Figure 3



PREDICTED COVERAGE CONTOURS

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Figure 4A

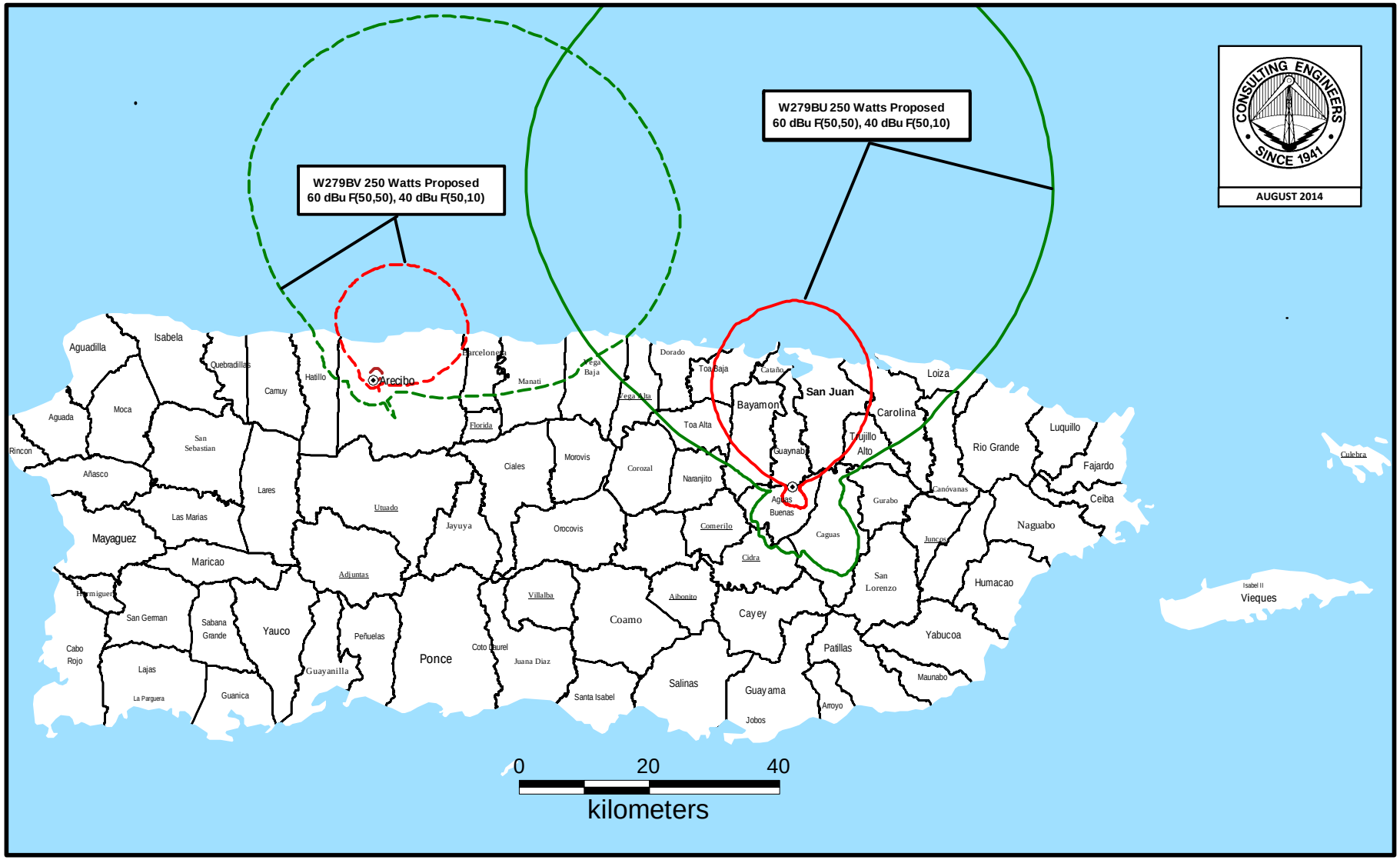

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Figure 4B

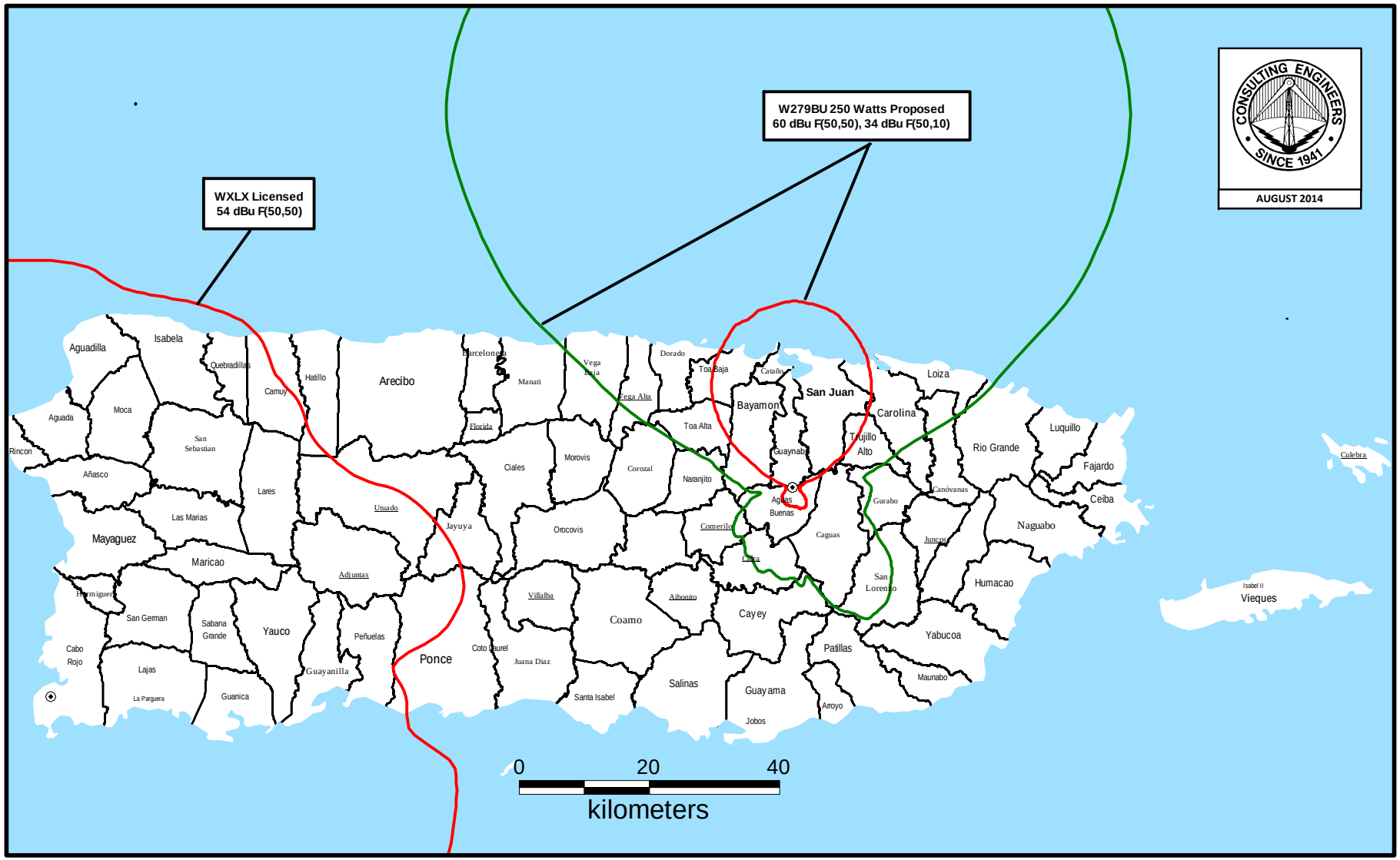

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Figure 4C

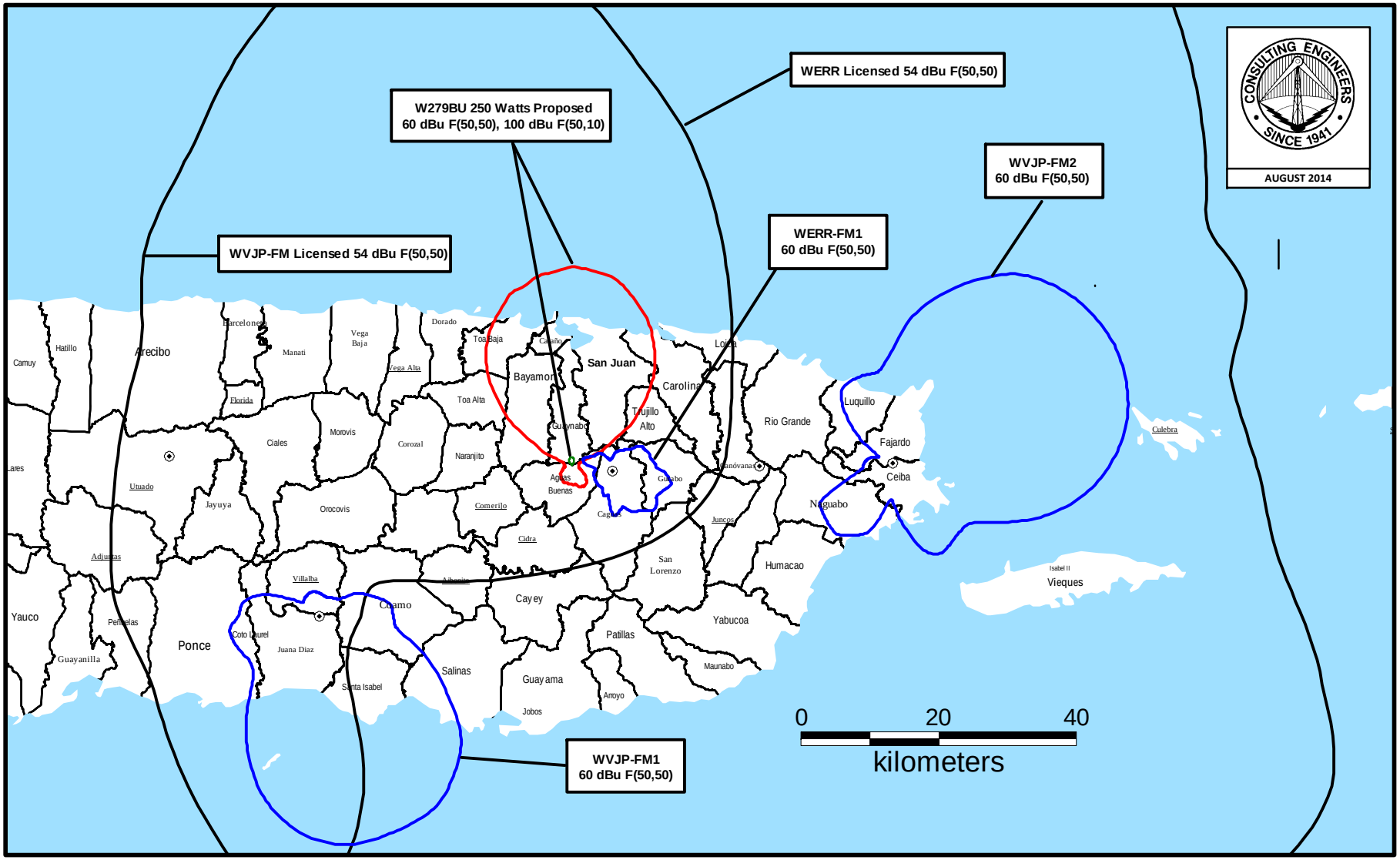

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Figure 5A

Interfering Field Strength Vs. Distance Graph - W279BU to WVJP-FM

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***172*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***123.1*** **dBu**		**-6.02059991 dBk**

172'+0'=172' **500 MTS AMSL TERRAIN ELEV.**

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.01	1.00	-46.0	0.8	3	0	169
89	0.01	1.00	-46.0	0.8	3	0	169
88	0.01	1.00	-46.0	0.8	3	0	169
87	0.01	1.00	-46.0	0.8	3	0	169
86	0.01	1.00	-46.0	0.8	3	0	169
85	0.01	1.00	-46.0	0.8	3	0	169
84	0.011	1.00	-45.2	0.9	3	0	169
83	0.013	1.00	-43.7	1.0	3	0	169
82	0.014	1.00	-43.1	1.1	4	1	168
81	0.015	1.00	-42.5	1.2	4	1	168
80	0.017	1.00	-41.4	1.4	4	1	168
79	0.021	1.00	-39.6	1.7	6	1	167
78	0.025	1.00	-38.1	2.0	7	1	166
77	0.028	1.00	-37.1	2.2	7	2	165
76	0.032	1.00	-35.9	2.6	8	2	164
75	0.036	1.00	-34.9	2.9	9	2	163
74	0.041	1.00	-33.8	3.3	11	3	162
73	0.046	1.00	-32.8	3.7	12	4	160
72	0.051	1.00	-31.9	4.1	13	4	159
71	0.056	1.00	-31.1	4.5	15	5	158
70	0.061	1.00	-30.3	4.9	16	5	157
69	0.068	1.00	-29.4	5.5	18	6	155
68	0.074	1.00	-28.6	5.9	19	7	154
67	0.08	1.00	-28.0	6.4	21	8	153
66	0.086	1.00	-27.3	6.9	23	9	151
65	0.091	1.00	-26.8	7.3	24	10	150
64	0.095	1.00	-26.5	7.6	25	11	150
63	0.099	1.00	-26.1	7.9	26	12	149
62	0.102	1.00	-25.8	8.2	27	13	148
61	0.105	1.00	-25.6	8.4	28	13	148
60	0.107	1.00	-25.4	8.6	28	14	148
59	0.108	1.00	-25.4	8.7	28	15	148
58	0.109	1.00	-25.3	8.7	29	15	148
57	0.109	1.00	-25.3	8.7	29	16	148
56	0.108	1.00	-25.4	8.7	28	16	148
55	0.107	1.00	-25.4	8.6	28	16	149
54	0.105	1.00	-25.6	8.4	28	16	150
53	0.102	1.00	-25.8	8.2	27	16	151
52	0.098	1.00	-26.2	7.9	26	16	152
51	0.093	1.00	-26.7	7.5	24	15	153
50	0.088	1.00	-27.1	7.1	23	15	154
49	0.081	1.00	-27.9	6.5	21	14	156
48	0.073	1.00	-28.8	5.9	19	13	158
47	0.064	1.00	-29.9	5.1	17	11	160

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	1.00	-31.2	4.4	14	10	162
45	0.043	1.00	-33.4	3.4	11	8	164
44	0.031	1.00	-36.2	2.5	8	6	166
43	0.018	1.00	-40.9	1.4	5	3	169
42	0.01	1.00	-46.0	0.8	3	2	170
41	0.013	1.00	-43.7	1.0	3	3	170
40	0.031	1.00	-36.2	2.5	8	6	167
39	0.049	1.00	-32.2	3.9	13	10	164
38	0.069	1.00	-29.2	5.5	18	14	161
37	0.09	1.00	-26.9	7.2	24	19	158
36	0.113	1.00	-25.0	9.1	30	24	155
35	0.136	1.00	-23.3	10.9	36	29	151
34	0.161	1.00	-21.9	12.9	42	35	148
33	0.187	1.00	-20.6	15.0	49	41	145
32	0.215	1.00	-19.4	17.2	57	48	142
31	0.243	1.00	-18.3	19.5	64	55	139
30	0.273	1.00	-17.3	21.9	72	62	136
29	0.303	1.00	-16.4	24.3	80	70	133
28	0.333	1.00	-15.6	26.7	88	77	131
27	0.365	1.00	-14.8	29.3	96	86	128
26	0.398	1.00	-14.0	31.9	105	94	126
25	0.431	1.00	-13.3	34.5	113	103	124
24	0.464	1.00	-12.7	37.2	122	111	122
23	0.496	1.00	-12.1	39.8	130	120	121
22	0.53	1.00	-11.5	42.5	139	129	120
21	0.563	1.00	-11.0	45.1	148	138	119
20	0.596	1.00	-10.5	47.8	157	147	118
19	0.629	1.00	-10.0	50.4	165	156	118
18	0.661	1.00	-9.6	53.0	174	165	118
17	0.692	1.00	-9.2	55.5	182	174	119
16	0.724	1.00	-8.8	58.0	190	183	120
15	0.754	1.00	-8.5	60.4	198	192	121
14	0.782	1.00	-8.2	62.7	206	200	122
13	0.81	1.00	-7.9	64.9	213	208	124
12	0.836	1.00	-7.6	67.0	220	215	126
11	0.861	1.00	-7.3	69.0	226	222	129
10	0.885	1.00	-7.1	70.9	233	229	132
9	0.905	1.00	-6.9	72.5	238	235	135
8	0.924	1.00	-6.7	74.1	243	241	138
7	0.94	1.00	-6.6	75.4	247	245	142
6	0.956	1.00	-6.4	76.6	251	250	146
5	0.969	1.00	-6.3	77.7	255	254	150
4	0.979	1.00	-6.2	78.5	257	257	154
3	0.987	1.00	-6.1	79.1	260	259	158
2	0.994	1.00	-6.1	79.7	261	261	163
1	0.997	1.00	-6.0	79.9	262	262	167
0	1	1.00	-6.0	80.2	263	263	172

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 118

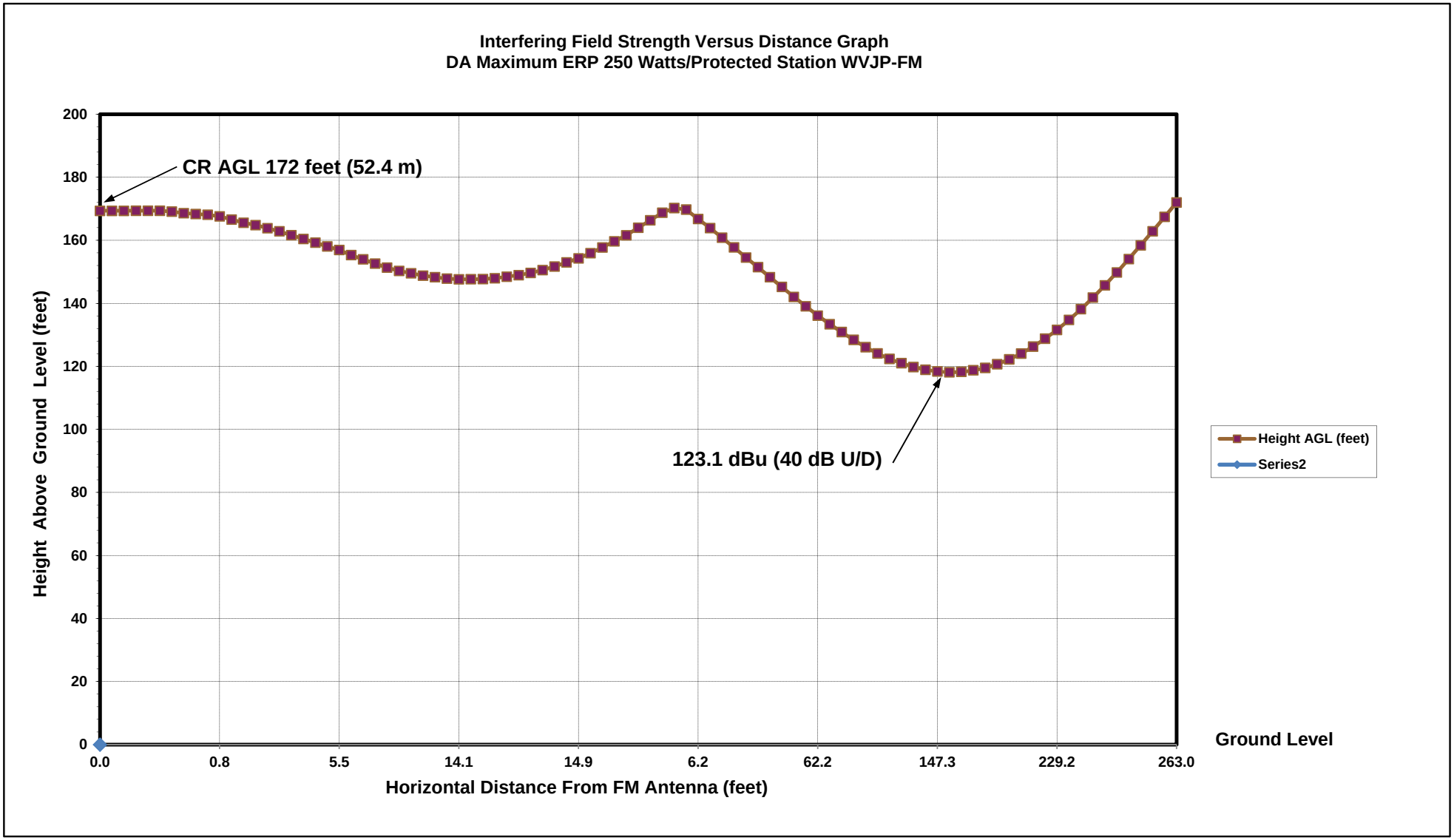
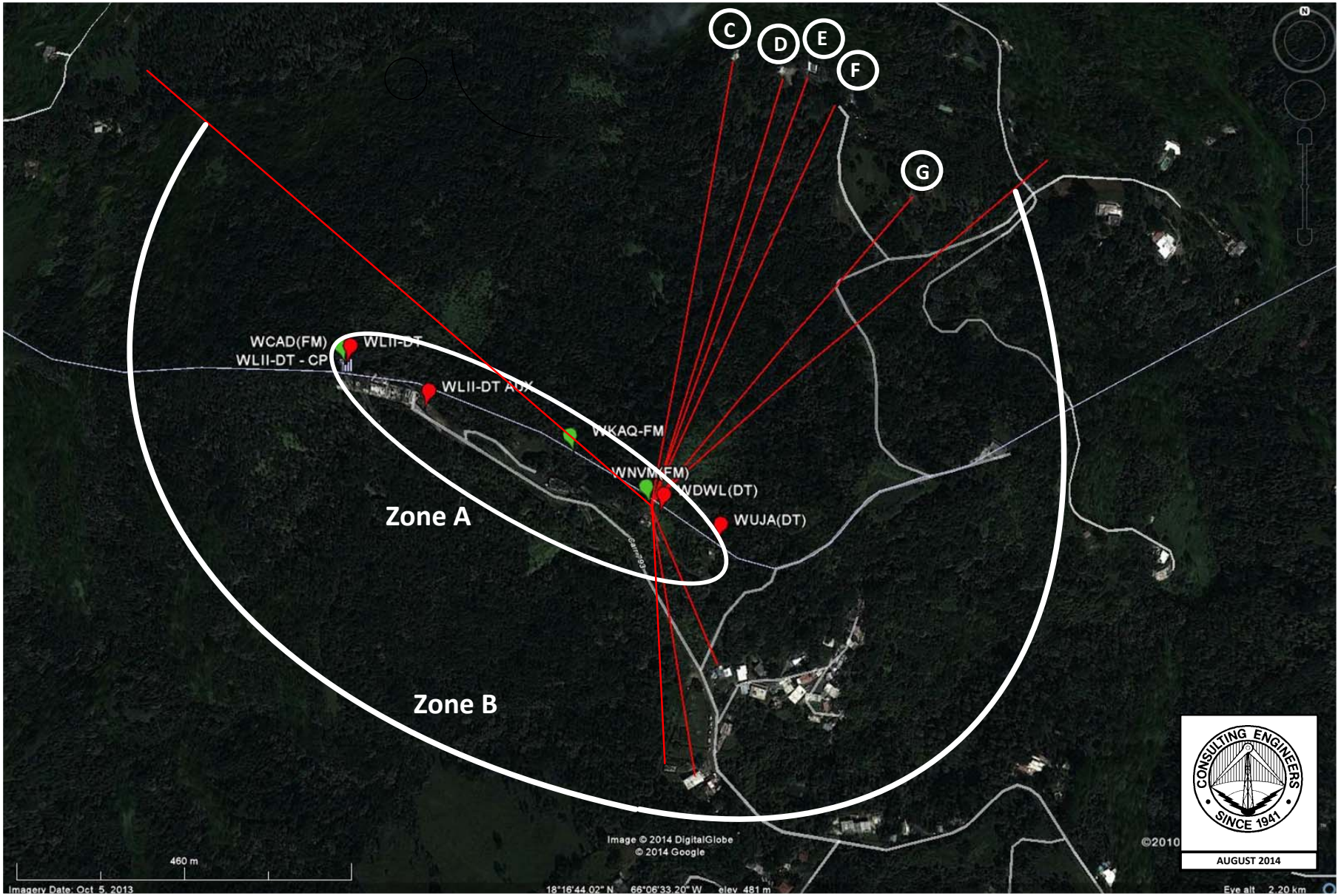

Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WVJP-FM
CR AGL 172 feet (52.4 m)
123.1 dBu (40 dB U/D)
Height Above Ground Level (feet)
200
180
160
140
120
100
80
60
40
20
0
0.0
0.8
5.5
14.1
14.9
6.2
62.2
147.3
229.2
263.0
Horizontal Distance From FM Antenna (feet)
Height AGL (feet)
Series2
Ground Level

Figure 6



PROPOSED SITE – CERRO MARQUESA

LICENSE MOD. APPLICATION

FM TRANSLATOR W279BU - SAN JUAN, PUERTO RICO

CH 279 0.25 KW 552.5 M AMSL

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 7A

Interfering Field Strength Vs. Distance Graph - W279BU to WERR (FM) - Zone B of Figure 6

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***264*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***103.3*** **dBu**		**-6.02059991 dBk**

172'+92'=264'

472 MTS AMSL TERRAIN ELEV.

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.010	0.25	-58.1	2.0	6	0	258
89	0.010	0.25	-58.1	2.0	6	0	258
88	0.010	0.25	-58.1	2.0	6	0	258
87	0.010	0.25	-58.1	2.0	6	0	258
86	0.010	0.25	-58.1	2.0	6	0	258
85	0.010	0.25	-58.1	2.0	6	1	258
84	0.011	0.25	-57.2	2.2	7	1	257
83	0.013	0.25	-55.8	2.5	8	1	256
82	0.014	0.25	-55.1	2.7	9	1	255
81	0.015	0.25	-54.5	2.9	10	2	254
80	0.017	0.25	-53.5	3.3	11	2	253
79	0.021	0.25	-51.6	4.1	13	3	251
78	0.025	0.25	-50.1	4.9	16	3	248
77	0.028	0.25	-49.1	5.5	18	4	246
76	0.032	0.25	-48.0	6.3	21	5	244
75	0.036	0.25	-46.9	7.1	23	6	242
74	0.041	0.25	-45.8	8.0	26	7	239
73	0.046	0.25	-44.8	9.0	30	9	236
72	0.051	0.25	-43.9	10.0	33	10	233
71	0.056	0.25	-43.1	11.0	36	12	230
70	0.061	0.25	-42.4	11.9	39	13	227
69	0.068	0.25	-41.4	13.3	44	16	223
68	0.074	0.25	-40.7	14.5	48	18	220
67	0.080	0.25	-40.0	15.7	51	20	217
66	0.086	0.25	-39.4	16.8	55	22	214
65	0.091	0.25	-38.9	17.8	58	25	211
64	0.095	0.25	-38.5	18.6	61	27	209
63	0.099	0.25	-38.1	19.4	64	29	207
62	0.102	0.25	-37.9	20.0	66	31	206
61	0.105	0.25	-37.6	20.6	67	33	205
60	0.107	0.25	-37.5	21.0	69	34	204
59	0.108	0.25	-37.4	21.2	69	36	205
58	0.109	0.25	-37.3	21.3	70	37	205
57	0.109	0.25	-37.3	21.3	70	38	205
56	0.108	0.25	-37.4	21.2	69	39	206
55	0.107	0.25	-37.5	21.0	69	39	208
54	0.105	0.25	-37.6	20.6	67	40	209
53	0.102	0.25	-37.9	20.0	66	39	212
52	0.098	0.25	-38.2	19.2	63	39	214
51	0.093	0.25	-38.7	18.2	60	38	218
50	0.088	0.25	-39.2	17.2	57	36	221
49	0.081	0.25	-39.9	15.9	52	34	225
48	0.073	0.25	-40.8	14.3	47	31	229
47	0.064	0.25	-41.9	12.5	41	28	234

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	0.25	-43.3	10.8	35	25	239
45	0.043	0.25	-45.4	8.4	28	20	244
44	0.031	0.25	-48.2	6.1	20	14	250
43	0.018	0.25	-53.0	3.5	12	8	256
42	0.010	0.25	-58.1	2.0	6	5	260
41	0.013	0.25	-55.8	2.5	8	6	259
40	0.031	0.25	-48.2	6.1	20	15	251
39	0.049	0.25	-44.3	9.6	31	24	244
38	0.069	0.25	-41.3	13.5	44	35	237
37	0.090	0.25	-39.0	17.6	58	46	229
36	0.113	0.25	-37.0	22.1	73	59	221
35	0.136	0.25	-35.4	26.6	87	72	214
34	0.161	0.25	-33.9	31.5	103	86	206
33	0.187	0.25	-32.6	36.6	120	101	199
32	0.215	0.25	-31.4	42.1	138	117	191
31	0.243	0.25	-30.3	47.6	156	134	184
30	0.273	0.25	-29.3	53.5	175	152	176
29	0.303	0.25	-28.4	59.3	195	170	170
28	0.333	0.25	-27.6	65.2	214	189	164
27	0.365	0.25	-26.8	71.5	235	209	158
26	0.398	0.25	-26.1	77.9	256	230	152
25	0.431	0.25	-25.4	84.4	277	251	147
24	0.464	0.25	-24.7	90.9	298	272	143
23	0.496	0.25	-24.2	97.1	319	293	139
22	0.530	0.25	-23.6	103.8	341	316	136
21	0.563	0.25	-23.1	110.3	362	338	134
20	0.596	0.25	-22.6	116.7	383	360	133
19	0.629	0.25	-22.1	123.2	404	382	132
18	0.661	0.25	-21.7	129.5	425	404	133
17	0.692	0.25	-21.3	135.5	445	425	134
16	0.724	0.25	-20.9	141.8	465	447	136
15	0.754	0.25	-20.5	147.7	484	468	139
14	0.782	0.25	-20.2	153.1	502	488	142
13	0.810	0.25	-19.9	158.6	520	507	147
12	0.836	0.25	-19.6	163.7	537	525	152
11	0.861	0.25	-19.4	168.6	553	543	158
10	0.885	0.25	-19.1	173.3	569	560	165
9	0.905	0.25	-18.9	177.2	581	574	173
8	0.924	0.25	-18.7	181.0	594	588	181
7	0.940	0.25	-18.6	184.1	604	599	190
6	0.956	0.25	-18.5	187.2	614	611	200
5	0.969	0.25	-18.3	189.8	623	620	210
4	0.979	0.25	-18.2	191.7	629	628	220
3	0.987	0.25	-18.2	193.3	634	633	231
2	0.994	0.25	-18.1	194.7	639	638	242
1	0.997	0.25	-18.1	195.3	641	641	253
0	1.000	0.25	-18.1	195.8	643	643	264

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 132

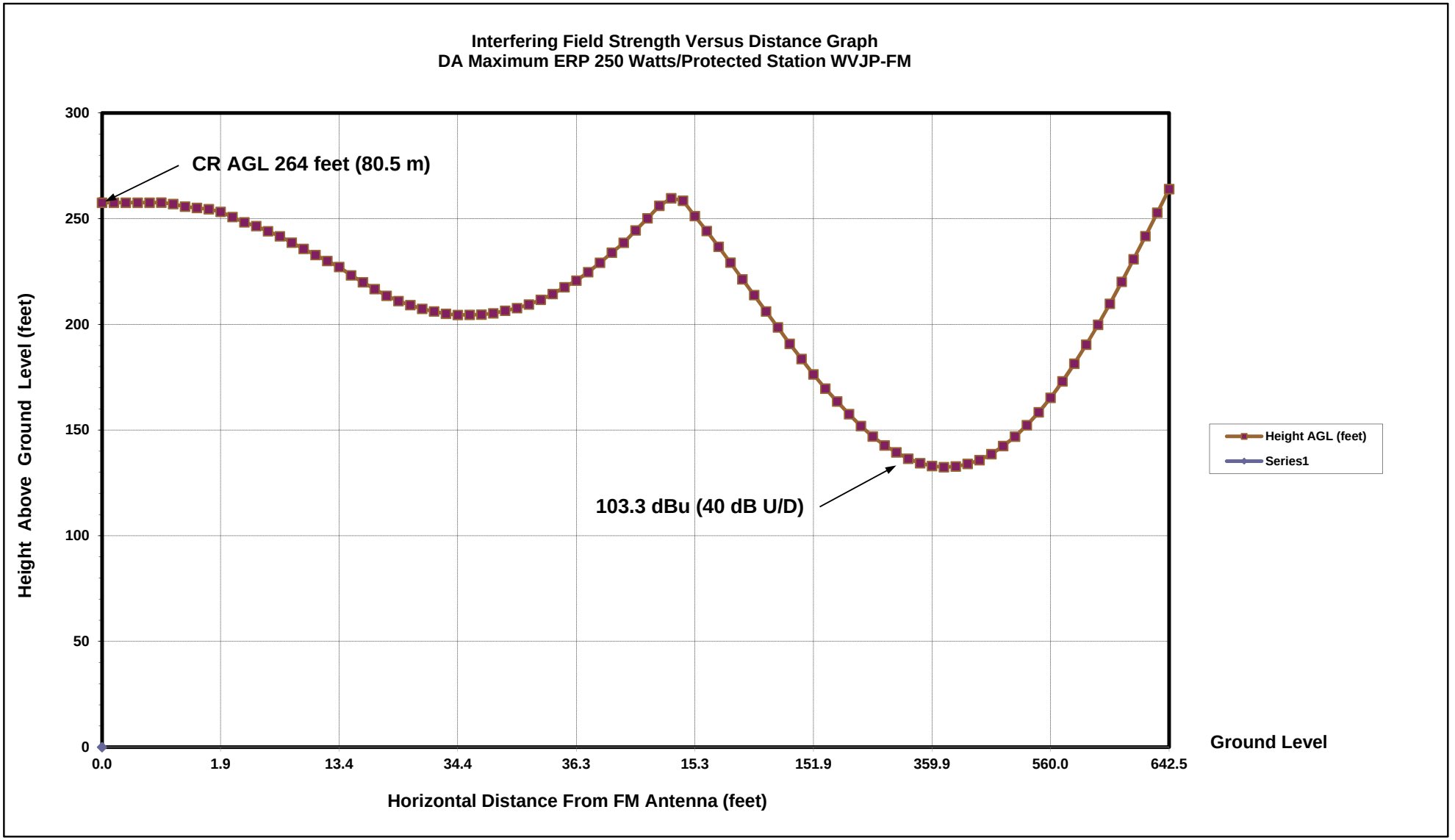

Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WVJP-FM
CR AGL 264 feet (80.5 m)
103.3 dBu (40 dB U/D)
Height Above Ground Level (feet)
300
250
200
150
100
50
0
0.0
1.9
13.4
34.4
36.3
15.3
151.9
359.9
560.0
642.5
Horizontal Distance From FM Antenna (feet)
Height AGL (feet)
Series1
Ground Level

Figure 8A

Interfering Field Strength Vs. Distance Graph - W279BU to WERR (FM) - Point "C", Figure 6

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***559*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***103.3*** **dBu**		**-6.02059991 dBk**

172'+387'=559' **382 MTS ELEV. TERR** **10° AZIM**

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.010	0.95	-46.5	7.4	24	0	535
89	0.010	0.95	-46.5	7.4	24	0	535
88	0.010	0.95	-46.5	7.4	24	1	535
87	0.010	0.95	-46.5	7.4	24	1	535
86	0.010	0.95	-46.5	7.4	24	2	535
85	0.010	0.95	-46.5	7.4	24	2	535
84	0.011	0.95	-45.6	8.2	27	3	532
83	0.013	0.95	-44.2	9.7	32	4	527
82	0.014	0.95	-43.5	10.4	34	5	525
81	0.015	0.95	-42.9	11.2	37	6	523
80	0.017	0.95	-41.9	12.7	42	7	518
79	0.021	0.95	-40.0	15.6	51	10	509
78	0.025	0.95	-38.5	18.6	61	13	499
77	0.028	0.95	-37.5	20.8	68	15	492
76	0.032	0.95	-36.4	23.8	78	19	483
75	0.036	0.95	-35.3	26.8	88	23	474
74	0.041	0.95	-34.2	30.5	100	28	463
73	0.046	0.95	-33.2	34.2	112	33	452
72	0.051	0.95	-32.3	38.0	125	38	441
71	0.056	0.95	-31.5	41.7	137	45	430
70	0.061	0.95	-30.8	45.4	149	51	419
69	0.068	0.95	-29.8	50.6	166	59	404
68	0.074	0.95	-29.1	55.1	181	68	391
67	0.080	0.95	-28.4	59.5	195	76	379
66	0.086	0.95	-27.8	64.0	210	85	367
65	0.091	0.95	-27.3	67.7	222	94	358
64	0.095	0.95	-26.9	70.7	232	102	351
63	0.099	0.95	-26.6	73.7	242	110	344
62	0.102	0.95	-26.3	75.9	249	117	339
61	0.105	0.95	-26.0	78.1	256	124	335
60	0.107	0.95	-25.9	79.6	261	131	333
59	0.108	0.95	-25.8	80.4	264	136	333
58	0.109	0.95	-25.7	81.1	266	141	333
57	0.109	0.95	-25.7	81.1	266	145	336
56	0.108	0.95	-25.8	80.4	264	147	340
55	0.107	0.95	-25.9	79.6	261	150	345
54	0.105	0.95	-26.0	78.1	256	151	352
53	0.102	0.95	-26.3	75.9	249	150	360
52	0.098	0.95	-26.6	72.9	239	147	370
51	0.093	0.95	-27.1	69.2	227	143	383
50	0.088	0.95	-27.6	65.5	215	138	394
49	0.081	0.95	-28.3	60.3	198	130	410
48	0.073	0.95	-29.2	54.3	178	119	427
47	0.064	0.95	-30.3	47.6	156	107	445

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	0.95	-31.7	40.9	134	93	462
45	0.043	0.95	-33.8	32.0	105	74	485
44	0.031	0.95	-36.6	23.1	76	54	506
43	0.018	0.95	-41.4	13.4	44	32	529
42	0.010	0.95	-46.5	7.4	24	18	543
41	0.013	0.95	-44.2	9.7	32	24	538
40	0.031	0.95	-36.6	23.1	76	58	510
39	0.049	0.95	-32.7	36.5	120	93	484
38	0.069	0.95	-29.7	51.4	168	133	455
37	0.090	0.95	-27.4	67.0	220	175	427
36	0.113	0.95	-25.4	84.1	276	223	397
35	0.136	0.95	-23.8	101.2	332	272	369
34	0.161	0.95	-22.3	119.8	393	326	339
33	0.187	0.95	-21.0	139.2	457	383	310
32	0.215	0.95	-19.8	160.0	525	445	281
31	0.243	0.95	-18.8	180.8	593	509	253
30	0.273	0.95	-17.7	203.2	667	577	226
29	0.303	0.95	-16.8	225.5	740	647	200
28	0.333	0.95	-16.0	247.8	813	718	177
27	0.365	0.95	-15.2	271.6	891	794	154
26	0.398	0.95	-14.5	296.2	972	873	133
25	0.431	0.95	-13.8	320.8	1052	954	114
24	0.464	0.95	-13.1	345.3	1133	1035	98
23	0.496	0.95	-12.6	369.1	1211	1115	86
22	0.530	0.95	-12.0	394.4	1294	1200	74
21	0.563	0.95	-11.5	419.0	1375	1283	66
20	0.596	0.95	-11.0	443.5	1455	1367	61
19	0.629	0.95	-10.5	468.1	1536	1452	59
18	0.661	0.95	-10.1	491.9	1614	1535	60
17	0.692	0.95	-9.7	515.0	1690	1616	65
16	0.724	0.95	-9.3	538.8	1768	1699	72
15	0.754	0.95	-8.9	561.1	1841	1778	83
14	0.782	0.95	-8.6	582.0	1909	1853	97
13	0.810	0.95	-8.3	602.8	1978	1927	114
12	0.836	0.95	-8.0	622.2	2041	1997	135
11	0.861	0.95	-7.8	640.8	2102	2064	158
10	0.885	0.95	-7.5	658.6	2161	2128	184
9	0.905	0.95	-7.3	673.5	2210	2182	213
8	0.924	0.95	-7.2	687.6	2256	2234	245
7	0.940	0.95	-7.0	699.6	2295	2278	279
6	0.956	0.95	-6.9	711.5	2334	2321	315
5	0.969	0.95	-6.7	721.1	2366	2357	353
4	0.979	0.95	-6.7	728.6	2390	2385	392
3	0.987	0.95	-6.6	734.5	2410	2407	433
2	0.994	0.95	-6.5	739.7	2427	2425	474
1	0.997	0.95	-6.5	742.0	2434	2434	517
0	1.000	0.95	-6.5	744.2	2442	2442	559

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 59

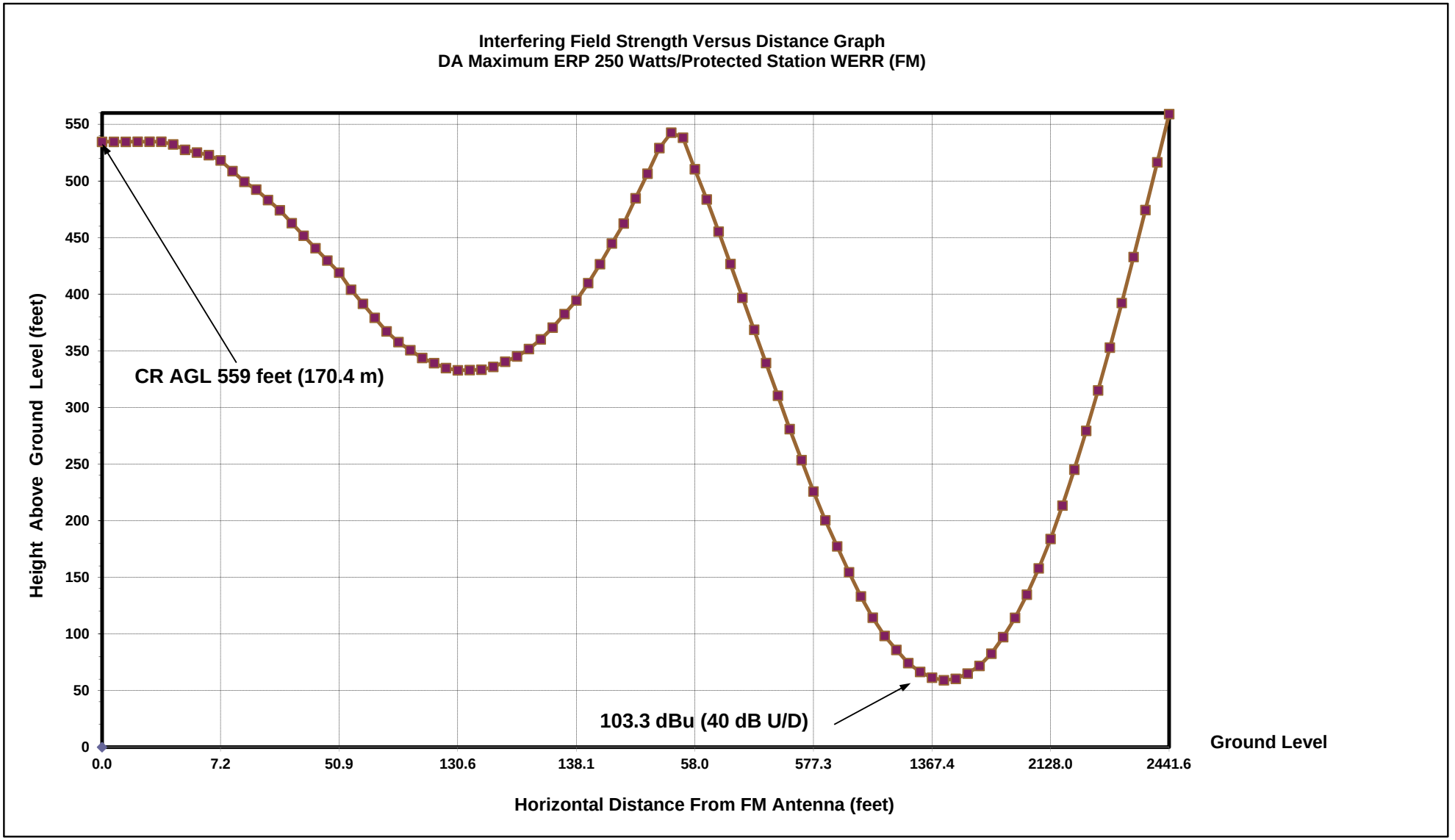

Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WERR (FM)
Height Above Ground Level (feet)
550
500
450
400
350
300
250
200
150
100
50
0
CR AGL 559 feet (170.4 m)
103.3 dBu (40 dB U/D)
Ground Level
0.0
7.2
50.9
130.6
138.1
58.0
577.3
1367.4
2128.0
2441.6
Horizontal Distance From FM Antenna (feet)

Figure 9A

Interfering Field Strength Vs. Distance Graph - W279BU to WERR (FM) - Point "D", Figure 6

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***474*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***103.3*** **dBu**		**-6.02059991 dBk**

172'+302'=474' **408 MTS ELEV. TERR** **17° AZIM**

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.010	0.865	-47.3	6.8	22	0	452
89	0.010	0.865	-47.3	6.8	22	0	452
88	0.010	0.865	-47.3	6.8	22	1	452
87	0.010	0.865	-47.3	6.8	22	1	452
86	0.010	0.865	-47.3	6.8	22	2	452
85	0.010	0.865	-47.3	6.8	22	2	452
84	0.011	0.865	-46.5	7.5	24	3	450
83	0.013	0.865	-45.0	8.8	29	4	445
82	0.014	0.865	-44.4	9.5	31	4	443
81	0.015	0.865	-43.8	10.2	33	5	441
80	0.017	0.865	-42.7	11.5	38	7	437
79	0.021	0.865	-40.8	14.2	47	9	428
78	0.025	0.865	-39.3	16.9	56	12	420
77	0.028	0.865	-38.3	19.0	62	14	413
76	0.032	0.865	-37.2	21.7	71	17	405
75	0.036	0.865	-36.2	24.4	80	21	397
74	0.041	0.865	-35.0	27.8	91	25	386
73	0.046	0.865	-34.0	31.2	102	30	376
72	0.051	0.865	-33.1	34.6	113	35	366
71	0.056	0.865	-32.3	37.9	124	41	356
70	0.061	0.865	-31.6	41.3	136	46	347
69	0.068	0.865	-30.6	46.1	151	54	333
68	0.074	0.865	-29.9	50.1	165	62	321
67	0.080	0.865	-29.2	54.2	178	69	310
66	0.086	0.865	-28.6	58.3	191	78	299
65	0.091	0.865	-28.1	61.7	202	85	291
64	0.095	0.865	-27.7	64.4	211	93	284
63	0.099	0.865	-27.4	67.1	220	100	278
62	0.102	0.865	-27.1	69.1	227	106	274
61	0.105	0.865	-26.9	71.2	233	113	270
60	0.107	0.865	-26.7	72.5	238	119	268
59	0.108	0.865	-26.6	73.2	240	124	268
58	0.109	0.865	-26.5	73.9	242	128	268
57	0.109	0.865	-26.5	73.9	242	132	271
56	0.108	0.865	-26.6	73.2	240	134	275
55	0.107	0.865	-26.7	72.5	238	136	279
54	0.105	0.865	-26.9	71.2	233	137	285
53	0.102	0.865	-27.1	69.1	227	136	293
52	0.098	0.865	-27.5	66.4	218	134	302
51	0.093	0.865	-27.9	63.0	207	130	313
50	0.088	0.865	-28.4	59.6	196	126	324
49	0.081	0.865	-29.1	54.9	180	118	338
48	0.073	0.865	-30.0	49.5	162	109	353
47	0.064	0.865	-31.2	43.4	142	97	370

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	0.865	-32.5	37.3	122	85	386
45	0.043	0.865	-34.6	29.1	96	68	406
44	0.031	0.865	-37.5	21.0	69	50	426
43	0.018	0.865	-42.2	12.2	40	29	447
42	0.010	0.865	-47.3	6.8	22	17	459
41	0.013	0.865	-45.0	8.8	29	22	455
40	0.031	0.865	-37.5	21.0	69	53	430
39	0.049	0.865	-33.5	33.2	109	85	405
38	0.069	0.865	-30.5	46.8	153	121	380
37	0.090	0.865	-28.2	61.0	200	160	354
36	0.113	0.865	-26.2	76.6	251	203	326
35	0.136	0.865	-24.6	92.2	302	248	301
34	0.161	0.865	-23.1	109.1	358	297	274
33	0.187	0.865	-21.8	126.7	416	349	248
32	0.215	0.865	-20.6	145.7	478	405	221
31	0.243	0.865	-19.6	164.7	540	463	196
30	0.273	0.865	-18.6	185.0	607	526	171
29	0.303	0.865	-17.7	205.3	674	589	147
28	0.333	0.865	-16.8	225.6	740	654	126
27	0.365	0.865	-16.0	247.3	811	723	106
26	0.398	0.865	-15.3	269.7	885	795	86
25	0.431	0.865	-14.6	292.1	958	868	69
24	0.464	0.865	-13.9	314.4	1032	942	54
23	0.496	0.865	-13.4	336.1	1103	1015	43
22	0.530	0.865	-12.8	359.1	1178	1092	33
21	0.563	0.865	-12.3	381.5	1252	1169	25
20	0.596	0.865	-11.8	403.9	1325	1245	21
19	0.629	0.865	-11.3	426.2	1398	1322	19
18	0.661	0.865	-10.9	447.9	1470	1398	20
17	0.692	0.865	-10.5	468.9	1538	1471	24
16	0.724	0.865	-10.1	490.6	1610	1547	30
15	0.754	0.865	-9.7	510.9	1676	1619	40
14	0.782	0.865	-9.4	529.9	1739	1687	53
13	0.810	0.865	-9.1	548.9	1801	1755	69
12	0.836	0.865	-8.8	566.5	1859	1818	88
11	0.861	0.865	-8.6	583.4	1914	1879	109
10	0.885	0.865	-8.3	599.7	1967	1938	132
9	0.905	0.865	-8.1	613.2	2012	1987	159
8	0.924	0.865	-8.0	626.1	2054	2034	188
7	0.940	0.865	-7.8	637.0	2090	2074	219
6	0.956	0.865	-7.7	647.8	2125	2114	252
5	0.969	0.865	-7.6	656.6	2154	2146	286
4	0.979	0.865	-7.5	663.4	2176	2171	322
3	0.987	0.865	-7.4	668.8	2194	2191	359
2	0.994	0.865	-7.3	673.6	2210	2208	397
1	0.997	0.865	-7.3	675.6	2216	2216	435
0	1.000	0.865	-7.3	677.6	2223	2223	474

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 19

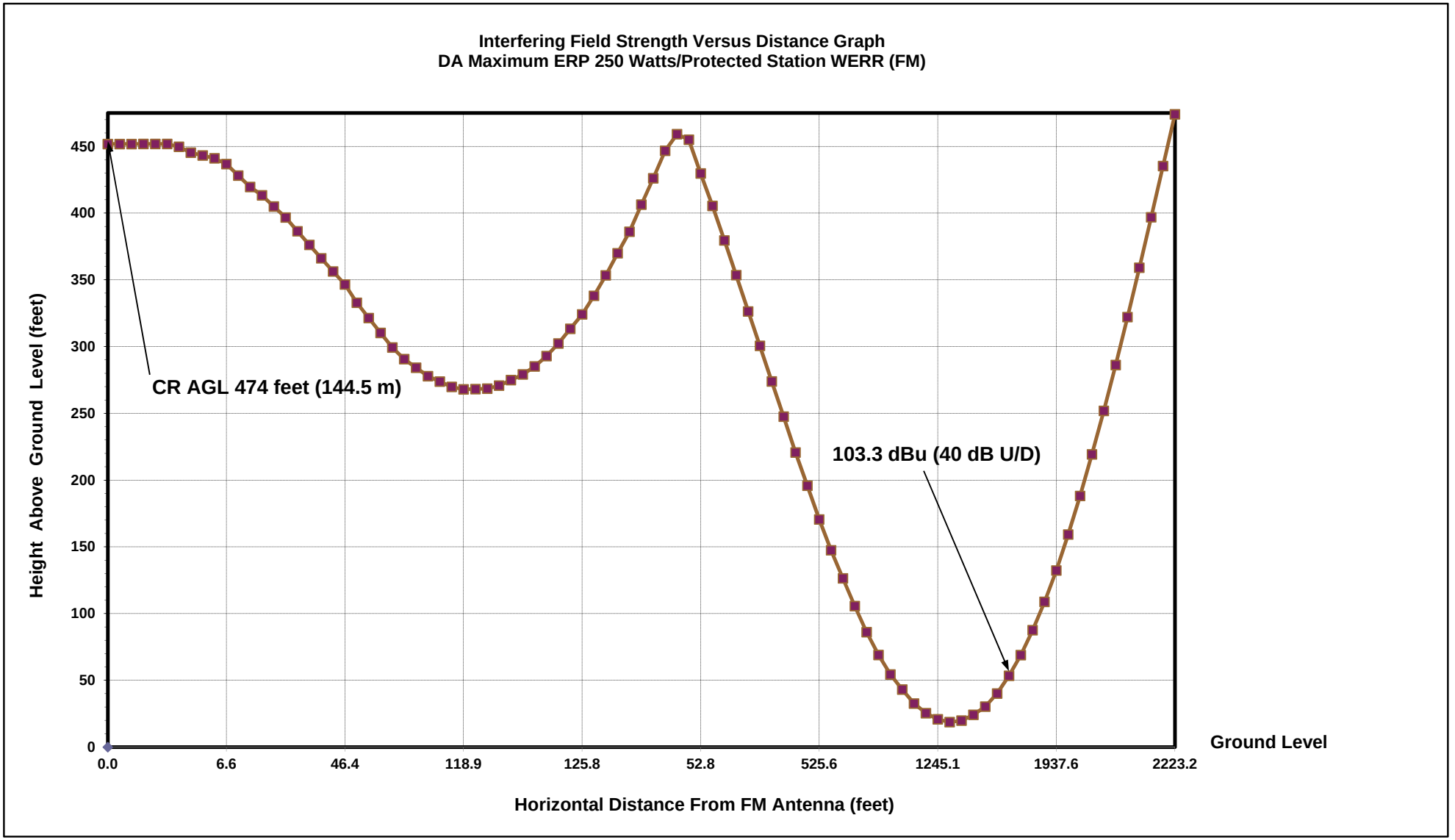

Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WERR (FM)
Height Above Ground Level (feet)
450
400
350
300
250
200
150
100
50
0
CR AGL 474 feet (144.5 m)
103.3 dBu (40 dB U/D)
Ground Level
0.0
6.6
46.4
118.9
125.8
52.8
525.6
1245.1
1937.6
2223.2
Horizontal Distance From FM Antenna (feet)

Figure 10A

Interfering Field Strength Vs. Distance Graph - W279BU to WERR (FM) - Point "E", Figure 6

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***464*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***103.3*** **dBu**		**-6.02059991 dBk**

172'+292'=464' **411 MTS ELEV. TERR** **20° AZIM**

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.010	0.820	-47.7	6.4	21	0	443
89	0.010	0.820	-47.7	6.4	21	0	443
88	0.010	0.820	-47.7	6.4	21	1	443
87	0.010	0.820	-47.7	6.4	21	1	443
86	0.010	0.820	-47.7	6.4	21	1	443
85	0.010	0.820	-47.7	6.4	21	2	443
84	0.011	0.820	-46.9	7.1	23	2	441
83	0.013	0.820	-45.5	8.4	27	3	437
82	0.014	0.820	-44.8	9.0	30	4	435
81	0.015	0.820	-44.2	9.6	32	5	433
80	0.017	0.820	-43.1	10.9	36	6	429
79	0.021	0.820	-41.3	13.5	44	8	421
78	0.025	0.820	-39.8	16.1	53	11	412
77	0.028	0.820	-38.8	18.0	59	13	407
76	0.032	0.820	-37.6	20.6	67	16	399
75	0.036	0.820	-36.6	23.1	76	20	391
74	0.041	0.820	-35.5	26.3	86	24	381
73	0.046	0.820	-34.5	29.5	97	28	371
72	0.051	0.820	-33.6	32.8	107	33	362
71	0.056	0.820	-32.8	36.0	118	38	352
70	0.061	0.820	-32.0	39.2	129	44	343
69	0.068	0.820	-31.1	43.7	143	51	330
68	0.074	0.820	-30.4	47.5	156	58	319
67	0.080	0.820	-29.7	51.4	169	66	309
66	0.086	0.820	-29.1	55.2	181	74	298
65	0.091	0.820	-28.6	58.5	192	81	290
64	0.095	0.820	-28.2	61.0	200	88	284
63	0.099	0.820	-27.8	63.6	209	95	278
62	0.102	0.820	-27.6	65.5	215	101	274
61	0.105	0.820	-27.3	67.4	221	107	270
60	0.107	0.820	-27.2	68.7	226	113	269
59	0.108	0.820	-27.1	69.4	228	117	269
58	0.109	0.820	-27.0	70.0	230	122	269
57	0.109	0.820	-27.0	70.0	230	125	271
56	0.108	0.820	-27.1	69.4	228	127	275
55	0.107	0.820	-27.2	68.7	226	129	279
54	0.105	0.820	-27.3	67.4	221	130	285
53	0.102	0.820	-27.6	65.5	215	129	292
52	0.098	0.820	-27.9	63.0	207	127	301
51	0.093	0.820	-28.4	59.7	196	123	312
50	0.088	0.820	-28.9	56.5	185	119	322
49	0.081	0.820	-29.6	52.0	171	112	335
48	0.073	0.820	-30.5	46.9	154	103	350
47	0.064	0.820	-31.6	41.1	135	92	365

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	0.820	-32.9	35.3	116	81	381
45	0.043	0.820	-35.1	27.6	91	64	400
44	0.031	0.820	-37.9	19.9	65	47	419
43	0.018	0.820	-42.6	11.6	38	28	438
42	0.010	0.820	-47.7	6.4	21	16	450
41	0.013	0.820	-45.5	8.4	27	21	446
40	0.031	0.820	-37.9	19.9	65	50	422
39	0.049	0.820	-33.9	31.5	103	80	399
38	0.069	0.820	-31.0	44.3	145	115	374
37	0.090	0.820	-28.7	57.8	190	151	350
36	0.113	0.820	-26.7	72.6	238	193	324
35	0.136	0.820	-25.1	87.4	287	235	300
34	0.161	0.820	-23.6	103.4	339	281	274
33	0.187	0.820	-22.3	120.1	394	331	249
32	0.215	0.820	-21.1	138.1	453	384	224
31	0.243	0.820	-20.0	156.1	512	439	200
30	0.273	0.820	-19.0	175.4	575	498	176
29	0.303	0.820	-18.1	194.6	639	559	154
28	0.333	0.820	-17.3	213.9	702	620	135
27	0.365	0.820	-16.5	234.5	769	685	115
26	0.398	0.820	-15.7	255.7	839	754	96
25	0.431	0.820	-15.1	276.9	908	823	80
24	0.464	0.820	-14.4	298.1	978	893	66
23	0.496	0.820	-13.8	318.6	1045	962	56
22	0.530	0.820	-13.3	340.5	1117	1036	46
21	0.563	0.820	-12.7	361.7	1187	1108	39
20	0.596	0.820	-12.2	382.9	1256	1180	34
19	0.629	0.820	-11.8	404.0	1326	1253	32
18	0.661	0.820	-11.3	424.6	1393	1325	34
17	0.692	0.820	-10.9	444.5	1458	1395	38
16	0.724	0.820	-10.5	465.1	1526	1467	43
15	0.754	0.820	-10.2	484.3	1589	1535	53
14	0.782	0.820	-9.9	502.3	1648	1599	65
13	0.810	0.820	-9.6	520.3	1707	1663	80
12	0.836	0.820	-9.3	537.0	1762	1723	98
11	0.861	0.820	-9.0	553.1	1815	1781	118
10	0.885	0.820	-8.8	568.5	1865	1837	140
9	0.905	0.820	-8.6	581.3	1907	1884	166
8	0.924	0.820	-8.4	593.5	1947	1928	193
7	0.940	0.820	-8.3	603.8	1981	1966	223
6	0.956	0.820	-8.1	614.1	2015	2004	253
5	0.969	0.820	-8.0	622.5	2042	2034	286
4	0.979	0.820	-7.9	628.9	2063	2058	320
3	0.987	0.820	-7.9	634.0	2080	2077	355
2	0.994	0.820	-7.8	638.5	2095	2094	391
1	0.997	0.820	-7.8	640.4	2101	2101	427
0	1.000	0.820	-7.7	642.4	2108	2108	464

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 32

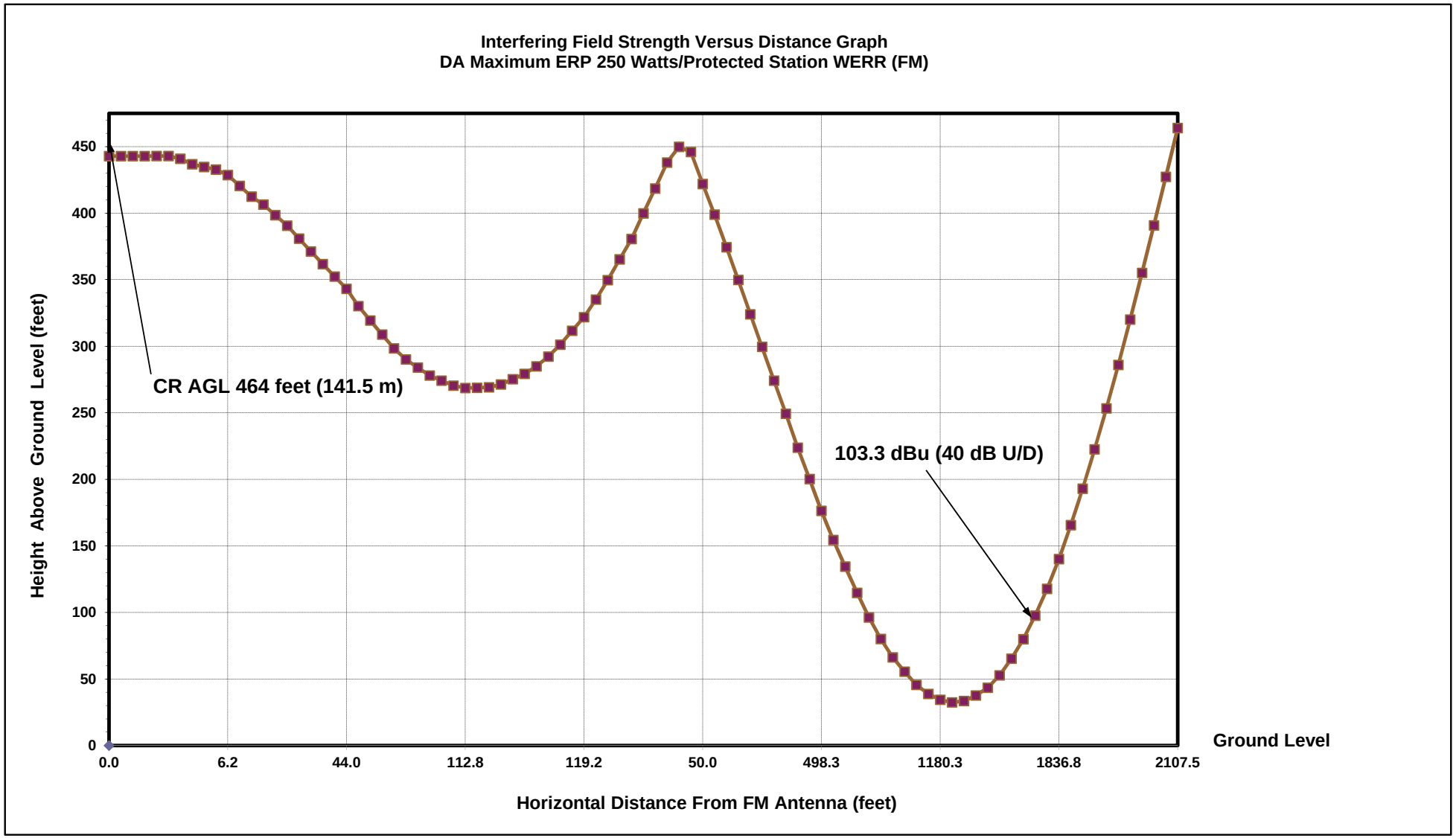

Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WERR (FM)
Height Above Ground Level (feet)
450
400
350
300
250
200
150
100
50
0
CR AGL 464 feet (141.5 m)
103.3 dBu (40 dB U/D)
Ground Level
0.0
6.2
44.0
112.8
119.2
50.0
498.3
1180.3
1836.8
2107.5
Horizontal Distance From FM Antenna (feet)

Figure 11A

Interfering Field Strength Vs. Distance Graph - W279BU to WERR (FM) - Point "F", Figure 6

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***500*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***103.3*** **dBu**		**-6.02059991 dBk**

172'+328'=500' **400 MTS ELEV. TERR** **25° AZIM**

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.010	0.735	-48.7	5.8	19	0	481
89	0.010	0.735	-48.7	5.8	19	0	481
88	0.010	0.735	-48.7	5.8	19	1	481
87	0.010	0.735	-48.7	5.8	19	1	481
86	0.010	0.735	-48.7	5.8	19	1	481
85	0.010	0.735	-48.7	5.8	19	2	481
84	0.011	0.735	-47.9	6.3	21	2	479
83	0.013	0.735	-46.4	7.5	25	3	476
82	0.014	0.735	-45.8	8.1	26	4	474
81	0.015	0.735	-45.2	8.6	28	4	472
80	0.017	0.735	-44.1	9.8	32	6	468
79	0.021	0.735	-42.3	12.1	40	8	461
78	0.025	0.735	-40.7	14.4	47	10	454
77	0.028	0.735	-39.8	16.1	53	12	448
76	0.032	0.735	-38.6	18.4	60	15	441
75	0.036	0.735	-37.6	20.7	68	18	434
74	0.041	0.735	-36.4	23.6	77	21	426
73	0.046	0.735	-35.4	26.5	87	25	417
72	0.051	0.735	-34.5	29.4	96	30	408
71	0.056	0.735	-33.7	32.2	106	34	400
70	0.061	0.735	-33.0	35.1	115	39	392
69	0.068	0.735	-32.0	39.2	128	46	380
68	0.074	0.735	-31.3	42.6	140	52	370
67	0.080	0.735	-30.6	46.1	151	59	361
66	0.086	0.735	-30.0	49.5	162	66	352
65	0.091	0.735	-29.5	52.4	172	73	344
64	0.095	0.735	-29.1	54.7	179	79	339
63	0.099	0.735	-28.8	57.0	187	85	333
62	0.102	0.735	-28.5	58.7	193	90	330
61	0.105	0.735	-28.3	60.5	198	96	327
60	0.107	0.735	-28.1	61.6	202	101	325
59	0.108	0.735	-28.0	62.2	204	105	325
58	0.109	0.735	-27.9	62.8	206	109	325
57	0.109	0.735	-27.9	62.8	206	112	327
56	0.108	0.735	-28.0	62.2	204	114	331
55	0.107	0.735	-28.1	61.6	202	116	334
54	0.105	0.735	-28.3	60.5	198	117	340
53	0.102	0.735	-28.5	58.7	193	116	346
52	0.098	0.735	-28.9	56.4	185	114	354
51	0.093	0.735	-29.3	53.5	176	111	363
50	0.088	0.735	-29.8	50.7	166	107	373
49	0.081	0.735	-30.5	46.6	153	100	385
48	0.073	0.735	-31.4	42.0	138	92	398
47	0.064	0.735	-32.6	36.8	121	82	412

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	0.735	-33.9	31.7	104	72	425
45	0.043	0.735	-36.0	24.8	81	57	443
44	0.031	0.735	-38.9	17.8	59	42	459
43	0.018	0.735	-43.6	10.4	34	25	477
42	0.010	0.735	-48.7	5.8	19	14	487
41	0.013	0.735	-46.4	7.5	25	19	484
40	0.031	0.735	-38.9	17.8	59	45	462
39	0.049	0.735	-34.9	28.2	93	72	442
38	0.069	0.735	-31.9	39.7	130	103	420
37	0.090	0.735	-29.6	51.8	170	136	398
36	0.113	0.735	-27.6	65.1	213	173	375
35	0.136	0.735	-26.0	78.3	257	210	353
34	0.161	0.735	-24.6	92.7	304	252	330
33	0.187	0.735	-23.3	107.7	353	296	308
32	0.215	0.735	-22.0	123.8	406	344	285
31	0.243	0.735	-21.0	139.9	459	393	264
30	0.273	0.735	-20.0	157.2	516	447	242
29	0.303	0.735	-19.1	174.5	572	501	223
28	0.333	0.735	-18.2	191.7	629	555	205
27	0.365	0.735	-17.4	210.2	690	614	187
26	0.398	0.735	-16.7	229.2	752	676	170
25	0.431	0.735	-16.0	248.2	814	738	156
24	0.464	0.735	-15.4	267.2	877	801	143
23	0.496	0.735	-14.8	285.6	937	862	134
22	0.530	0.735	-14.2	305.2	1001	928	125
21	0.563	0.735	-13.7	324.2	1064	993	119
20	0.596	0.735	-13.2	343.2	1126	1058	115
19	0.629	0.735	-12.7	362.2	1188	1123	113
18	0.661	0.735	-12.3	380.6	1249	1188	114
17	0.692	0.735	-11.9	398.4	1307	1250	118
16	0.724	0.735	-11.5	416.9	1368	1315	123
15	0.754	0.735	-11.1	434.1	1424	1376	131
14	0.782	0.735	-10.8	450.3	1477	1433	143
13	0.810	0.735	-10.5	466.4	1530	1491	156
12	0.836	0.735	-10.3	481.4	1579	1545	172
11	0.861	0.735	-10.0	495.7	1626	1597	190
10	0.885	0.735	-9.8	509.6	1672	1646	210
9	0.905	0.735	-9.6	521.1	1710	1689	233
8	0.924	0.735	-9.4	532.0	1745	1728	257
7	0.940	0.735	-9.2	541.2	1776	1762	284
6	0.956	0.735	-9.1	550.4	1806	1796	311
5	0.969	0.735	-9.0	557.9	1830	1824	340
4	0.979	0.735	-8.9	563.7	1849	1845	371
3	0.987	0.735	-8.8	568.3	1864	1862	402
2	0.994	0.735	-8.7	572.3	1878	1877	434
1	0.997	0.735	-8.7	574.1	1883	1883	467
0	1.000	0.735	-8.7	575.8	1889	1889	500

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 113

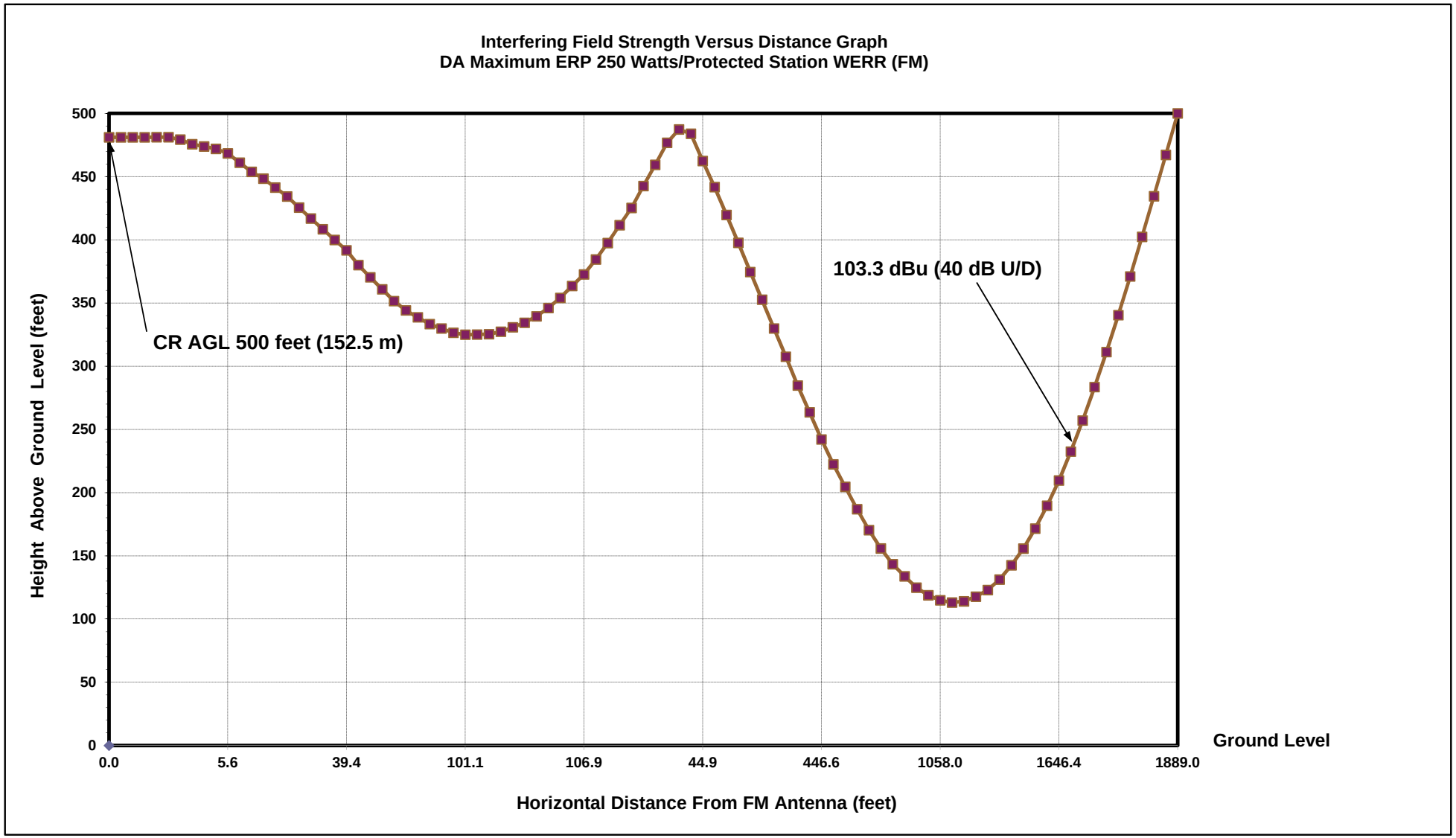

Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WERR (FM)
Height Above Ground Level (feet)
500
450
400
350
300
250
200
150
100
50
0
CR AGL 500 feet (152.5 m)
103.3 dBu (40 dB U/D)
Ground Level
0.0
5.6
39.4
101.1
106.9
44.9
446.6
1058.0
1646.4
1889.0
Horizontal Distance From FM Antenna (feet)

Figure 12A

Interfering Field Strength Vs. Distance Graph - W279BU to WERR (FM) - Point "G", Figure 6

Antenna	**SCA: 3 X CL-FM/HRM/50N Lod-periodic Array, vertical stacked 0.5 wavelenth**		
RCAGL	***467*** **feet**	**ERP**	***0.25*** **kW**
Interfering Contour	***103.3*** **dBu**		**-6.02059991 dBk**

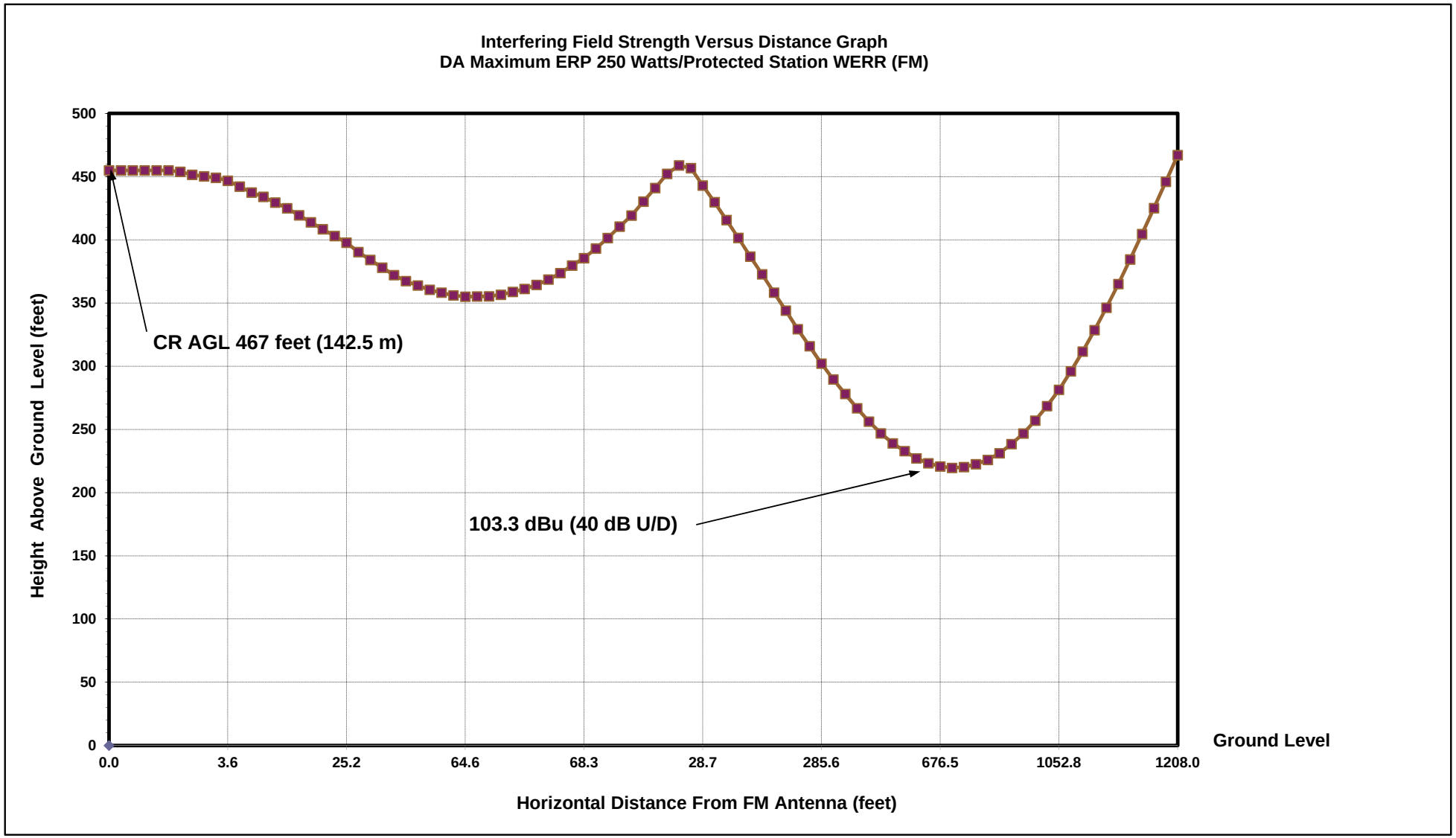
172'+295'=467' **410 MTS ELEV. TERR** **41° AZIM**

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
90	0.010	0.470	-52.6	3.7	12	0	455
89	0.010	0.470	-52.6	3.7	12	0	455
88	0.010	0.470	-52.6	3.7	12	0	455
87	0.010	0.470	-52.6	3.7	12	1	455
86	0.010	0.470	-52.6	3.7	12	1	455
85	0.010	0.470	-52.6	3.7	12	1	455
84	0.011	0.470	-51.8	4.1	13	1	454
83	0.013	0.470	-50.3	4.8	16	2	451
82	0.014	0.470	-49.7	5.2	17	2	450
81	0.015	0.470	-49.1	5.5	18	3	449
80	0.017	0.470	-48.0	6.3	21	4	447
79	0.021	0.470	-46.1	7.7	25	5	442
78	0.025	0.470	-44.6	9.2	30	6	437
77	0.028	0.470	-43.6	10.3	34	8	434
76	0.032	0.470	-42.5	11.8	39	9	429
75	0.036	0.470	-41.5	13.3	43	11	425
74	0.041	0.470	-40.3	15.1	50	14	419
73	0.046	0.470	-39.3	16.9	56	16	414
72	0.051	0.470	-38.4	18.8	62	19	408
71	0.056	0.470	-37.6	20.6	68	22	403
70	0.061	0.470	-36.9	22.5	74	25	398
69	0.068	0.470	-35.9	25.0	82	29	390
68	0.074	0.470	-35.2	27.2	89	33	384
67	0.080	0.470	-34.5	29.5	97	38	378
66	0.086	0.470	-33.9	31.7	104	42	372
65	0.091	0.470	-33.4	33.5	110	46	367
64	0.095	0.470	-33.0	35.0	115	50	364
63	0.099	0.470	-32.7	36.5	120	54	360
62	0.102	0.470	-32.4	37.6	123	58	358
61	0.105	0.470	-32.2	38.7	127	61	356
60	0.107	0.470	-32.0	39.4	129	65	355
59	0.108	0.470	-31.9	39.8	130	67	355
58	0.109	0.470	-31.8	40.1	132	70	355
57	0.109	0.470	-31.8	40.1	132	72	357
56	0.108	0.470	-31.9	39.8	130	73	359
55	0.107	0.470	-32.0	39.4	129	74	361
54	0.105	0.470	-32.2	38.7	127	75	364
53	0.102	0.470	-32.4	37.6	123	74	369
52	0.098	0.470	-32.8	36.1	118	73	374
51	0.093	0.470	-33.2	34.2	112	71	380
50	0.088	0.470	-33.7	32.4	106	68	386
49	0.081	0.470	-34.4	29.8	98	64	393
48	0.073	0.470	-35.3	26.9	88	59	401
47	0.064	0.470	-36.5	23.6	77	53	410

Depression Angle	VRF	HRF	ERP (dBk)	Distance to Contour (m)**	Distance to Contour (feet)**	Horiz. Dist. (feet)	Height AGL (feet)
46	0.055	0.470	-37.8	20.3	66	46	419
45	0.043	0.470	-39.9	15.8	52	37	430
44	0.031	0.470	-42.8	11.4	37	27	441
43	0.018	0.470	-47.5	6.6	22	16	452
42	0.010	0.470	-52.6	3.7	12	9	459
41	0.013	0.470	-50.3	4.8	16	12	457
40	0.031	0.470	-42.8	11.4	37	29	443
39	0.049	0.470	-38.8	18.0	59	46	430
38	0.069	0.470	-35.8	25.4	83	66	416
37	0.090	0.470	-33.5	33.1	109	87	402
36	0.113	0.470	-31.5	41.6	136	110	387
35	0.136	0.470	-29.9	50.1	164	135	373
34	0.161	0.470	-28.4	59.3	194	161	358
33	0.187	0.470	-27.1	68.9	226	189	344
32	0.215	0.470	-25.9	79.2	260	220	329
31	0.243	0.470	-24.9	89.5	294	252	316
30	0.273	0.470	-23.9	100.5	330	286	302
29	0.303	0.470	-22.9	111.6	366	320	290
28	0.333	0.470	-22.1	122.6	402	355	278
27	0.365	0.470	-21.3	134.4	441	393	267
26	0.398	0.470	-20.6	146.5	481	432	256
25	0.431	0.470	-19.9	158.7	521	472	247
24	0.464	0.470	-19.2	170.8	560	512	239
23	0.496	0.470	-18.7	182.6	599	552	233
22	0.530	0.470	-18.1	195.1	640	594	227
21	0.563	0.470	-17.6	207.3	680	635	223
20	0.596	0.470	-17.1	219.4	720	677	221
19	0.629	0.470	-16.6	231.6	760	718	220
18	0.661	0.470	-16.2	243.4	798	759	220
17	0.692	0.470	-15.8	254.8	836	799	223
16	0.724	0.470	-15.4	266.6	875	841	226
15	0.754	0.470	-15.0	277.6	911	880	231
14	0.782	0.470	-14.7	287.9	945	917	238
13	0.810	0.470	-14.4	298.2	978	953	247
12	0.836	0.470	-14.1	307.8	1010	988	257
11	0.861	0.470	-13.9	317.0	1040	1021	269
10	0.885	0.470	-13.6	325.8	1069	1053	281
9	0.905	0.470	-13.4	333.2	1093	1080	296
8	0.924	0.470	-13.3	340.2	1116	1105	312
7	0.940	0.470	-13.1	346.1	1135	1127	329
6	0.956	0.470	-13.0	352.0	1155	1148	346
5	0.969	0.470	-12.9	356.8	1171	1166	365
4	0.979	0.470	-12.8	360.5	1183	1180	385
3	0.987	0.470	-12.7	363.4	1192	1191	405
2	0.994	0.470	-12.6	366.0	1201	1200	425
1	0.997	0.470	-12.6	367.1	1204	1204	446
0	1.000	0.470	-12.6	368.2	1208	1208	467

****Free Space Field Equation: Di Dist. (km)=LOG-1((107.2+P(DBK)-FS)/20)**

Min. Hgth.: 220


Interfering Field Strength Versus Distance Graph
DA Maximum ERP 250 Watts/Protected Station WERR (FM)
Height Above Ground Level (feet)
500
450
400
350
300
250
200
150
100
50
0
CR AGL 467 feet (142.5 m)
103.3 dBu (40 dB U/D)
Ground Level
0.0
3.6
25.2
64.6
68.3
28.7
285.6
676.5
1052.8
1208.0
Horizontal Distance From FM Antenna (feet)

TECHNICAL EXHIBIT
APPLICATION FOR
MINOR CHANGE IN LICENSED FACILITY
AURIO A. MATOS BARRETO.
FM TRANSLATOR STATION W279BU
SAN JUAN, PUERTO RICO
FACILITY ID 143465

CH 279 0.25 KW 552 M AMSL

Notification Letter to Arecibo Observatory

{one sheet follows}

du Treil, Lundin & Rackley, Inc.
Consulting Engineers

201 Fletcher Ave.
Sarasota, FL 34237-6019
941-329-6000
941-329-6031 FAX

Grafton Olivera
Direct Dial 941-329-6001
e-mail: grafton@dlr.com

August 8, 2014

Via email (prcz@naic.edu)

Angel M. Vázquez, Spectrum Manager
National Astronomy and Ionosphere Center
Arecibo Observatory
HC3 Box 53995
Arecibo, PR 00612

Gentleman:

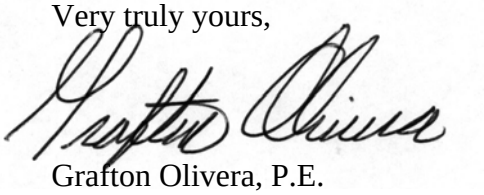
On behalf of our client, Aurio A. Matos Barreto, licensee of FM Translator Station W279BU, Gurabo, Puerto Rico, in accordance with Section 73.1030 of the FCC Rules, we are hereby notifying you of proposed changes in the facility of W279BU. The particulars of the proposal are as follows:

Proposed Facility:

Geographical coordinates of antenna location (NAD27): 18-16-49.3 / 66-06-35.3
Antenna height (Scala CL-FM/VRM, Log Periodic Array): 52.4 m AGL; 552.5 m AMSL
Antenna Gain: 10.9 dB
Antenna Orientation: 0° True
Operating channel: 279 (103.7 MHz)
Type of emission: F3E
Effective isotropic radiated power: 0.41 kW – Vertical Polarization

Please review this proposal and let us know your findings. Please feel free to communicate via email (mailto:Grafton@dlr.com), telefax (941-329-6030) or regular mail.

Very truly yours,



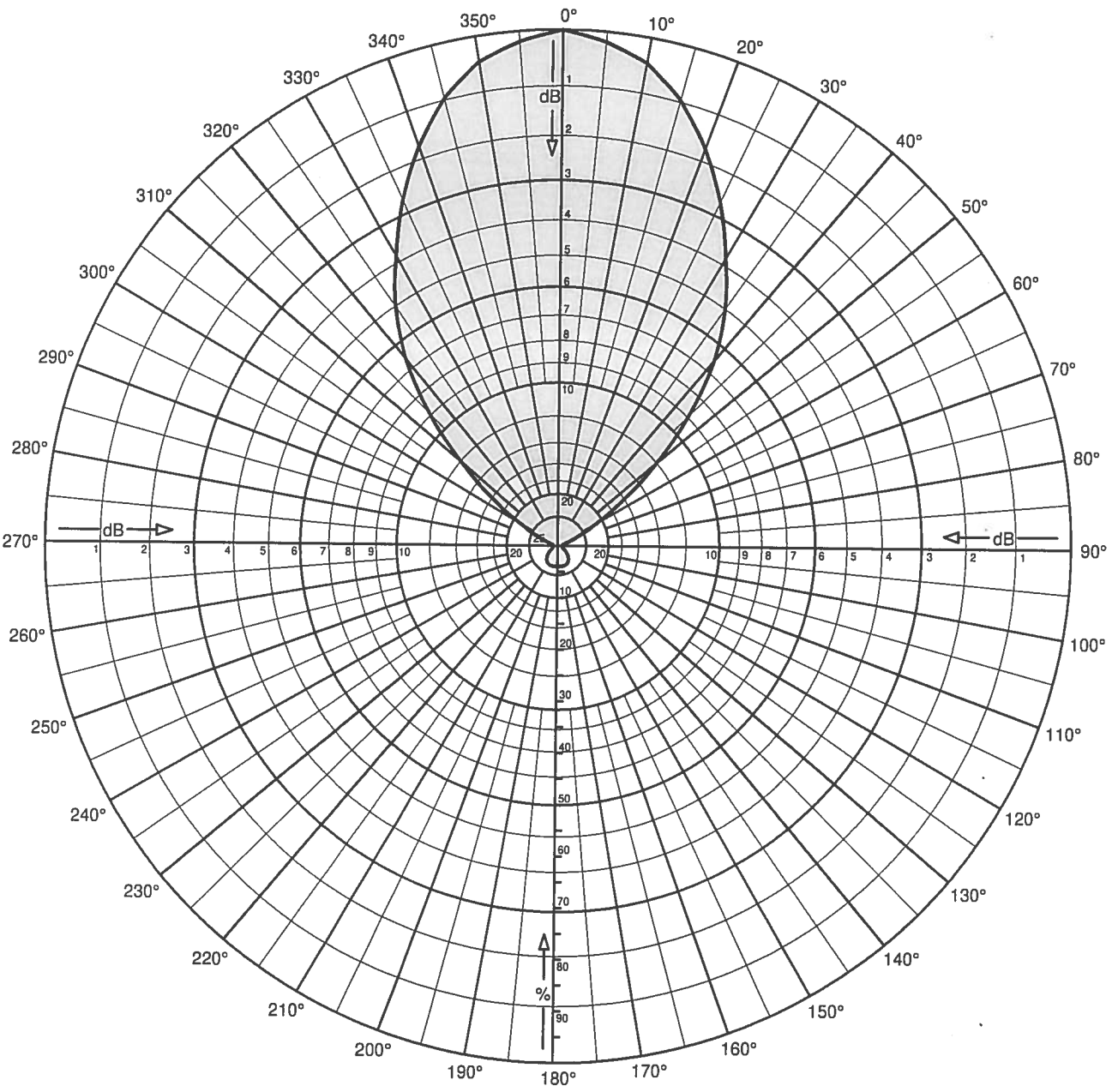
Grafton Olivera, P.E.

TECHNICAL EXHIBIT
APPLICATION FOR
MINOR CHANGE IN LICENSED FACILITY
AURIO A. MATOS BARRETO.
FM TRANSLATOR STATION W279BU
SAN JUAN, PUERTO RICO
FACILITY ID 143465

CH 279 0.25 KW 552 M AMSL

Antenna Pattern Data

{five sheets follow}



3 x CL-FM/HRM/50N Log-periodic Array

Frequency: MHz

Oriented at 0 degrees

Gain: 10.9 dBd (x 12.3)

Horizontal Polarization

Vertical stacked 0.5 wavelength

Horizontal plane Pattern

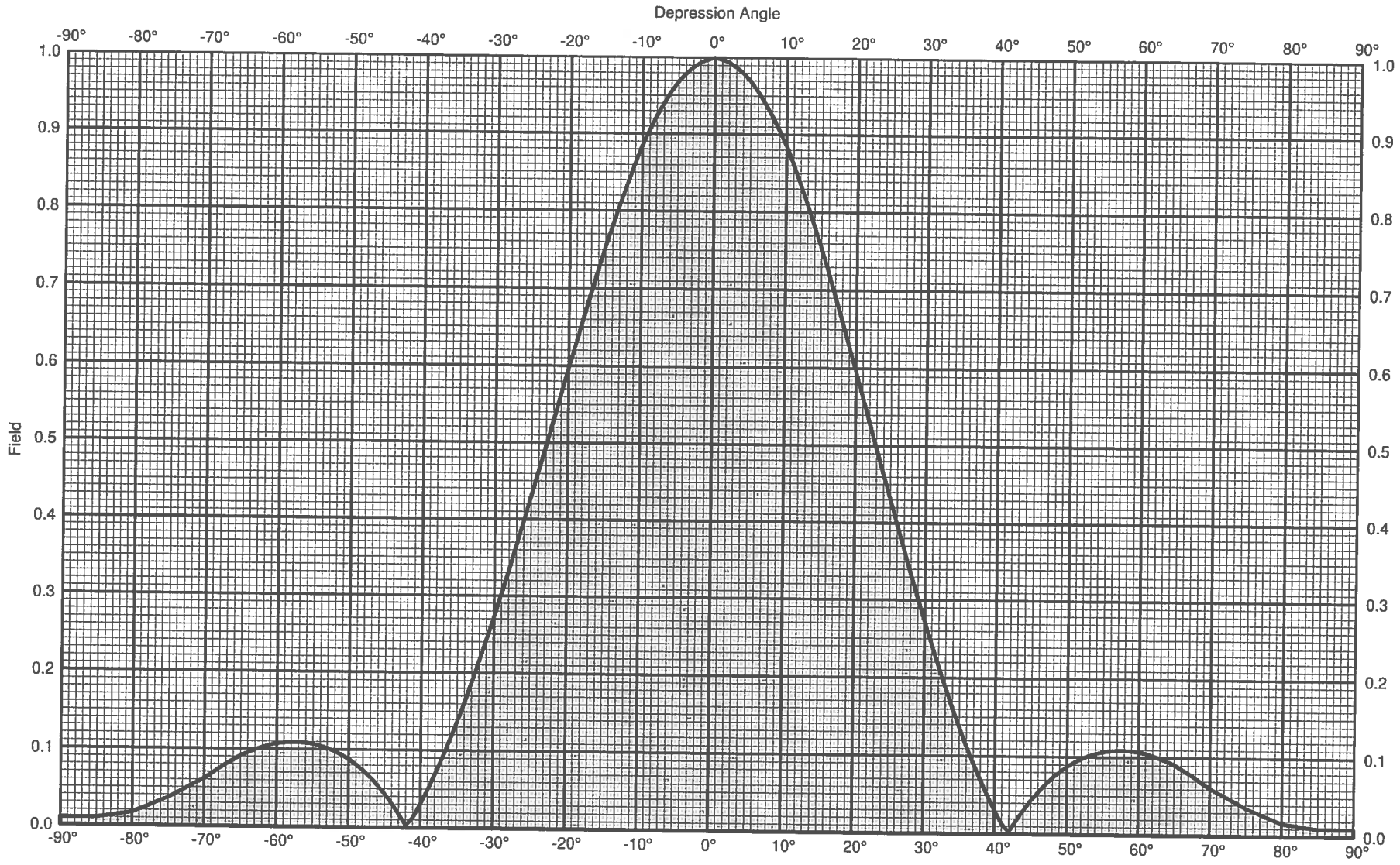
KATHREIN
SCALA DIVISION
Post Office Box 4580
Medford, OR 97501 (USA)
Phone:(541)779-6500
Fax:(541)779-3991
http://www.kathrein-scala.com

KATHREIN
SCALA DIVISION

3 x CL-FM/HRM/50N Log-periodic Array
Frequency: MHz
Oriented at 0 degrees
Gain: 10.9 dBd (x 12.3)

Horizontal Polarization
Vertical stacked 0.5 wavelength
Horizontal plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	10.90	12.30
5	0.980	-0.18	10.72	11.82
10	0.950	-0.45	10.45	11.10
15	0.895	-0.96	9.94	9.85
20	0.820	-1.72	9.18	8.27
25	0.735	-2.67	8.23	6.65
30	0.645	-3.81	7.09	5.12
35	0.562	-5.00	5.90	3.89
40	0.470	-6.56	4.34	2.72
45	0.360	-8.87	2.03	1.59
50	0.250	-12.04	-1.14	0.77
55	0.155	-16.19	-5.29	0.30
60	0.085	-21.41	-10.51	0.09
65	0.045	-26.94	-16.04	0.02
70	0.020	-33.98	-23.08	0.00
75	0.010	-40.00	-29.10	0.00
80	0.010	-40.00	-29.10	0.00
85	0.010	-40.00	-29.10	0.00
90	0.010	-40.00	-29.10	0.00
95	0.010	-40.00	-29.10	0.00
100	0.010	-40.00	-29.10	0.00
105	0.010	-40.00	-29.10	0.00
110	0.010	-40.00	-29.10	0.00
115	0.012	-38.06	-27.16	0.00
120	0.015	-36.48	-25.58	0.00
125	0.020	-33.98	-23.08	0.00
130	0.025	-32.04	-21.14	0.01
135	0.029	-30.75	-19.85	0.01
140	0.034	-29.50	-18.60	0.01
145	0.036	-28.87	-17.97	0.02
150	0.038	-28.29	-17.39	0.02
155	0.039	-28.07	-17.17	0.02
160	0.040	-27.96	-17.06	0.02
165	0.040	-27.96	-17.06	0.02
170	0.040	-27.96	-17.06	0.02
175	0.040	-27.96	-17.06	0.02
180	0.040	-27.96	-17.06	0.02
185	0.040	-27.96	-17.06	0.02
190	0.040	-27.96	-17.06	0.02
195	0.040	-27.96	-17.06	0.02
200	0.040	-27.96	-17.06	0.02
205	0.039	-28.07	-17.17	0.02
210	0.038	-28.29	-17.39	0.02
215	0.036	-28.87	-17.97	0.02
220	0.034	-29.50	-18.60	0.01
225	0.029	-30.75	-19.85	0.01
230	0.025	-32.04	-21.14	0.01
235	0.020	-33.98	-23.08	0.00
240	0.015	-36.48	-25.58	0.00
245	0.012	-38.06	-27.16	0.00
250	0.010	-40.00	-29.10	0.00
255	0.010	-40.00	-29.10	0.00
260	0.010	-40.00	-29.10	0.00
265	0.010	-40.00	-29.10	0.00
270	0.010	-40.00	-29.10	0.00
275	0.010	-40.00	-29.10	0.00
280	0.010	-40.00	-29.10	0.00
285	0.010	-40.00	-29.10	0.00
290	0.020	-33.98	-23.08	0.00
295	0.045	-26.94	-16.04	0.02
300	0.085	-21.41	-10.51	0.09
305	0.155	-16.19	-5.29	0.30
310	0.250	-12.04	-1.14	0.77
315	0.360	-8.87	2.03	1.59
320	0.470	-6.56	4.34	2.72
325	0.562	-5.00	5.90	3.89
330	0.645	-3.81	7.09	5.12
335	0.735	-2.67	8.23	6.65
340	0.820	-1.72	9.18	8.27
345	0.895	-0.96	9.94	9.85
350	0.950	-0.45	10.45	11.10
355	0.980	-0.18	10.72	11.82



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3 x CL-FM/HRM/50N Log-periodic Array

Frequency: MHz

Oriented at 0 degrees

Gain: 10.9 dBd (x 12.3)

Horizontal Polarization

Vertical stacked 0.5 wavelength

Vertical plane Pattern

KATHREIN
SCALA DIVISION

3 x CL-FM/HRM/50N Log-periodic Array
Frequency: MHz
Oriented at 0 degrees
Gain: 10.9 dBd (x 12.3)

Horizontal Polarization
Vertical stacked 0.5 wavelength
Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	10.90	12.30
1	0.997	-0.02	10.88	12.24
2	0.994	-0.06	10.84	12.14
3	0.987	-0.11	10.79	11.99
4	0.979	-0.18	10.72	11.79
5	0.969	-0.28	10.62	11.55
6	0.956	-0.39	10.51	11.24
7	0.940	-0.53	10.37	10.88
8	0.924	-0.69	10.21	10.50
9	0.905	-0.87	10.03	10.08
10	0.885	-1.06	9.84	9.64
11	0.861	-1.30	9.60	9.13
12	0.836	-1.56	9.34	8.60
13	0.810	-1.83	9.07	8.07
14	0.782	-2.13	8.77	7.53
15	0.754	-2.45	8.45	6.99
16	0.724	-2.81	8.09	6.44
17	0.692	-3.19	7.71	5.90
18	0.661	-3.60	7.30	5.37
19	0.629	-4.03	6.87	4.86
20	0.596	-4.49	6.41	4.38
21	0.563	-4.99	5.91	3.90
22	0.530	-5.52	5.38	3.45
23	0.496	-6.08	4.82	3.03
24	0.464	-6.68	4.22	2.64
25	0.431	-7.31	3.59	2.28
26	0.398	-8.01	2.89	1.95
27	0.365	-8.75	2.15	1.64
28	0.333	-9.54	1.36	1.37
29	0.303	-10.38	0.52	1.13
30	0.273	-11.29	-0.39	0.91
31	0.243	-12.28	-1.38	0.73
32	0.215	-13.37	-2.47	0.57
33	0.187	-14.54	-3.64	0.43
34	0.161	-15.85	-4.95	0.32
35	0.136	-17.30	-6.40	0.23
36	0.113	-18.96	-8.06	0.16
37	0.090	-20.89	-9.99	0.10
38	0.069	-23.22	-12.32	0.06
39	0.049	-26.16	-15.26	0.03
40	0.031	-30.31	-19.41	0.01
41	0.013	-37.62	-26.72	0.00
42	0.010	-40.00	-29.10	0.00
43	0.018	-35.04	-24.14	0.00
44	0.031	-30.11	-19.21	0.01
45	0.043	-27.23	-16.33	0.02
46	0.055	-25.27	-14.37	0.04
47	0.064	-23.81	-12.91	0.05
48	0.073	-22.71	-11.81	0.07
49	0.081	-21.83	-10.93	0.08
50	0.088	-21.15	-10.25	0.09
51	0.093	-20.61	-9.71	0.11
52	0.098	-20.18	-9.28	0.12
53	0.102	-19.85	-8.95	0.13
54	0.105	-19.61	-8.71	0.13
55	0.107	-19.42	-8.52	0.14
56	0.108	-19.31	-8.41	0.14
57	0.109	-19.26	-8.36	0.15
58	0.109	-19.26	-8.36	0.15
59	0.108	-19.30	-8.40	0.14
60	0.107	-19.39	-8.49	0.14
61	0.105	-19.58	-8.68	0.14
62	0.102	-19.81	-8.91	0.13
63	0.099	-20.09	-9.19	0.12
64	0.095	-20.41	-9.51	0.11
65	0.091	-20.78	-9.88	0.10
66	0.086	-21.32	-10.42	0.09
67	0.080	-21.93	-11.03	0.08
68	0.074	-22.62	-11.72	0.07
69	0.068	-23.40	-12.50	0.06
70	0.061	-24.28	-13.38	0.05
71	0.056	-24.99	-14.09	0.04
72	0.051	-25.78	-14.88	0.03
73	0.046	-26.66	-15.76	0.03
74	0.041	-27.66	-16.76	0.02
75	0.036	-28.81	-17.91	0.02
76	0.032	-29.79	-18.89	0.01
77	0.028	-30.91	-20.01	0.01
78	0.025	-32.20	-21.30	0.01
79	0.021	-33.72	-22.82	0.01
80	0.017	-35.58	-24.68	0.00
81	0.015	-36.30	-25.40	0.00
82	0.014	-37.09	-26.19	0.00
83	0.013	-37.95	-27.05	0.00
84	0.011	-38.92	-28.02	0.00
85	0.010	-40.00	-29.10	0.00
86	0.010	-40.00	-29.10	0.00
87	0.010	-40.00	-29.10	0.00
88	0.010	-40.00	-29.10	0.00
89	0.010	-40.00	-29.10	0.00
90	0.010	-40.00	-29.10	0.00

KATHREIN
SCALA DIVISION

3 x CL-FM/HRM/50N Log-periodic Array
Frequency: MHz
Oriented at 0 degrees
Gain: 10.9 dBd (x 12.3)

Horizontal Polarization
Vertical stacked 0.5 wavelength
Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-29.10	0.00	-45	0.043	-27.23	-16.33	0.02
-89	0.010	-40.00	-29.10	0.00	-44	0.031	-30.11	-19.21	0.01
-88	0.010	-40.00	-29.10	0.00	-43	0.018	-35.04	-24.14	0.00
-87	0.010	-40.00	-29.10	0.00	-42	0.010	-40.00	-29.10	0.00
-86	0.010	-40.00	-29.10	0.00	-41	0.013	-37.63	-26.73	0.00
-85	0.010	-40.00	-29.10	0.00	-40	0.031	-30.31	-19.41	0.01
-84	0.011	-38.92	-28.02	0.00	-39	0.049	-26.16	-15.26	0.03
-83	0.013	-37.95	-27.05	0.00	-38	0.069	-23.22	-12.32	0.06
-82	0.014	-37.09	-26.19	0.00	-37	0.090	-20.89	-9.99	0.10
-81	0.015	-36.30	-25.40	0.00	-36	0.113	-18.96	-8.06	0.16
-80	0.017	-35.58	-24.68	0.00	-35	0.136	-17.30	-6.40	0.23
-79	0.021	-33.72	-22.82	0.01	-34	0.161	-15.85	-4.95	0.32
-78	0.025	-32.20	-21.30	0.01	-33	0.187	-14.54	-3.64	0.43
-77	0.028	-30.91	-20.01	0.01	-32	0.215	-13.37	-2.47	0.57
-76	0.032	-29.79	-18.89	0.01	-31	0.243	-12.28	-1.38	0.73
-75	0.036	-28.81	-17.91	0.02	-30	0.273	-11.29	-0.39	0.91
-74	0.041	-27.66	-16.76	0.02	-29	0.303	-10.38	0.52	1.13
-73	0.046	-26.66	-15.76	0.03	-28	0.333	-9.54	1.36	1.37
-72	0.051	-25.78	-14.88	0.03	-27	0.365	-8.75	2.15	1.64
-71	0.056	-24.99	-14.09	0.04	-26	0.398	-8.01	2.89	1.95
-70	0.061	-24.28	-13.38	0.05	-25	0.431	-7.31	3.59	2.28
-69	0.068	-23.40	-12.50	0.06	-24	0.464	-6.68	4.22	2.64
-68	0.074	-22.62	-11.72	0.07	-23	0.496	-6.08	4.82	3.03
-67	0.080	-21.93	-11.03	0.08	-22	0.530	-5.52	5.38	3.45
-66	0.086	-21.32	-10.42	0.09	-21	0.563	-4.99	5.91	3.90
-65	0.091	-20.78	-9.88	0.10	-20	0.596	-4.49	6.41	4.38
-64	0.095	-20.41	-9.51	0.11	-19	0.629	-4.03	6.87	4.86
-63	0.099	-20.09	-9.19	0.12	-18	0.661	-3.60	7.30	5.37
-62	0.102	-19.81	-8.91	0.13	-17	0.692	-3.19	7.71	5.90
-61	0.105	-19.58	-8.68	0.14	-16	0.724	-2.81	8.09	6.44
-60	0.107	-19.39	-8.49	0.14	-15	0.754	-2.45	8.45	6.99
-59	0.108	-19.30	-8.40	0.14	-14	0.782	-2.13	8.77	7.53
-58	0.109	-19.26	-8.36	0.15	-13	0.810	-1.83	9.07	8.07
-57	0.109	-19.26	-8.36	0.15	-12	0.836	-1.56	9.34	8.60
-56	0.108	-19.31	-8.41	0.14	-11	0.861	-1.30	9.60	9.13
-55	0.107	-19.42	-8.52	0.14	-10	0.885	-1.06	9.84	9.64
-54	0.105	-19.61	-8.71	0.13	-9	0.905	-0.87	10.03	10.08
-53	0.102	-19.85	-8.95	0.13	-8	0.924	-0.69	10.21	10.50
-52	0.098	-20.18	-9.28	0.12	-7	0.940	-0.53	10.37	10.88
-51	0.093	-20.61	-9.71	0.11	-6	0.956	-0.39	10.51	11.24
-50	0.088	-21.15	-10.25	0.09	-5	0.969	-0.28	10.62	11.55
-49	0.081	-21.83	-10.93	0.08	-4	0.979	-0.18	10.72	11.79
-48	0.073	-22.71	-11.81	0.07	-3	0.987	-0.11	10.79	11.99
-47	0.064	-23.81	-12.91	0.05	-2	0.994	-0.06	10.84	12.14
-46	0.055	-25.27	-14.37	0.04	-1	0.997	-0.02	10.88	12.24
					0	1.000	0.00	10.90	12.30