

TECHNICAL EXHIBIT  
APPLICATION FOR CONSTRUCTION PERMIT  
TELEVISION STATION WRDQ-DT  
ORLANDO, FLORIDA

March 8, 2004

CHANNEL 14 182 KW 477 M

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Technical Statement

This Technical Exhibit was prepared on behalf of digital television broadcast station WRDQ-DT, Orlando, Florida, in support of an application for construction permit. WRDQ-DT is authorized and operating on Channel 14 with a maximum directional effective radiated power (ERP) of 171.3 kW and antenna height above average terrain (HAAT) of 458 m. An application for license for the WRDQ-DT facility is pending before the Commission. (See FCC File No. BLCDT- 20020724AAA). The purpose of this application is to specify a non-directional antenna operation with nominal non-directional ERP of 182 kW. The application reflects a revised antenna HAAT value of 477 m resulting from a more accurate calculation, but there is no change in the physical location of the antenna. There are no other changes proposed in the WRDQ-DT transmitting facility or supporting structure.

As described in detail herein, the proposed operation meets the *de minimis* interference protection requirements as outlined FCC's DTV Processing Guidelines,<sup>\*</sup> the FCC's *Second Memorandum Opinion and Order*,<sup>†</sup> and the *DTV Report and Order and Further Notice of Proposed Rule Making*.<sup>‡</sup>

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<sup>\*</sup> See FCC *Public Notice*, "Additional Application Processing Guidelines for Digital Television (DTV)", Released: August 10, 1998.

<sup>†</sup> See *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders*, FCC-98-315, Released: December 18, 1998.

<sup>‡</sup> See *Report and Order and Further Notice of Proposed Rule Making* in MM Docket No. 00-39, FCC 01-24, released January 19, 2001.

Proposed Facilities

The proposed facility will employ the existing transmitting antenna now used by WRDQ-DT, a Dielectric model TFU-12GBH O8. The antenna is mounted with a center of radiation at 470 m above ground level and 489 m above mean sea level. The antenna radiation center HAAT is calculated to be 477 m based on the U.S.G.S. 3-second computer database. Technical specifications for the proposed operation are included herein as Figure 1.

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Orlando in compliance with Section 73.625(a)(1) of the FCC Rules, as adopted by the FCC in MM Docket No. 00-39. Figure 2 herein is a map depicting the predicted coverage contours of the proposed facility.

The proposed facility meets the maximum permissible ERP requirements for UHF DTV stations as outlined in Section 73.622(f)(8)(i) of the FCC Rules. According to this section of the Rules, considering a proposed antenna HAAT for the proposed WRDQ-DT facility of 477 m, the maximum permissible ERP is 579 kW.

The proposed transmitter is located well beyond the international border coordination distances with Canada and Mexico. The closest FCC Monitoring station is located at Vero Beach, Florida at a distance of 115 km at a bearing of 159°True. The facility is located more than 990 km from the National Radio Quiet Zone in West Virginia. The proposal is located more than 3.2 km from the closest AM broadcast facility.

No adverse electromagnetic impact is expected as a result of the proposed operation. However, the applicant recognizes its responsibility to correct objectionable electromagnetic interference problems that result from its proposed operation.

### Tower Registration

The proposed antenna structure has been registered with the FCC. The FCC antenna structure registration number is 1214939. There will be no change in the overall height of the antenna structure as a result of the instant proposal.

### Domestic Allocation Considerations

The proposed WRDQ-DT Channel 14 facility meets the requirements of Section 73.623 of the FCC Rules concerning predicted interference to other existing U.S. NTSC facilities and U.S. DTV allotments and assignments. Longley-Rice interference analyses were conducted pursuant to the requirements of the FCC Rules; OET Bulletin No. 69; and published FCC guidelines for preparation of such interference analyses. The Longley-Rice interference analyses were conducted using the software maintained by du Treil, Lundin & Rackley, Inc. based on the FCC published software routines.<sup>§</sup> Stations selected for analysis were determined pursuant to the distance requirements outlined in the FCC DTV Processing Guidelines Public Notice. Accordingly, co-channel DTV and NTSC stations within 429 km and 407 km, respectively, were examined for potential interference; and first-adjacent DTV and NTSC stations within 229 km and 207 km, respectively, were examined for potential interference. Analog taboo-related NTSC stations within 142 km were examined for potential interference. The results of the interference analyses for the proposed WRDQ-DT facility are summarized herein at Figure 3. As indicated therein, the proposed facility will meet the 2%/10% criterion outlined in the FCC Rules and published guidelines with respect to all considered stations.

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<sup>§</sup> The duTreil, Lundin & Rackley, Inc. DTV interference analysis program is a precise implementation of the procedures outlined by the FCC in the Sixth Report and Order; subsequent Memorandum Opinion and Order; and FCC OET Bulletin No. 69. A nominal grid size resolution of 2 km was employed.

With respect to Class A TV station protection, the proposal has been evaluated according to the requirements of Section 73.623(c)(5) of the FCC Rules. The analysis reveals no potentially affected Class A TV stations.

Land Mobile Interference Considerations

The proposed facility will result in a very small increase in ERP for WRDQ-DT and it is not expected to have any adverse effect on nearby adjacent land mobile facilities operating in the 460-470 MHz land mobile band. The current WRDQ-DT facility operates using a sharp-tuned bandpass filter that provides no less than 60 dB of additional attenuation of the WRDQ-DT emissions over the 460-470 MHz band. This installation has proven to be very effective in protection of the land mobile facilities. The slight increase in ERP for WRDQ-DT will still be well below the margins to interference to nearby adjacent land mobile facilities.

The Request for Program Test Authority for WRDQ-DT filed with the FCC in January 2004 included detailed documentation as to the protection of the adjacent land mobile facilities with the present facility. The basis for the analysis in the Request was an assumed non-directional ERP of 171.3 kW. A margin to interference to land mobile facilities was demonstrated to exceed 30 dB in all cases on this basis. The instant proposal of 182 kW ERP represents an increase of 0.26 dB relative to the ERP previously analyzed. Therefore the interference analysis presented with the WRDQ-DT Request for Program Test Authority would be negligibly affected by the proposal. Therefore, it is concluded that there will be no adverse interference effect on nearby adjacent land mobile facilities as a result of the instant proposal.

The applicant recognizes its responsibility to correct interference that may be caused to nearby adjacent land mobile facilities in the 460-470 MHz band as a result of the instant proposal.

Environmental Considerations

An evaluation was conducted for the proposed facility concerning compliance with Section 1.1307(b) of the FCC Rules regarding human exposure to radio frequency (RF) energy.<sup>\*\*</sup> Calculations prepared in accordance with FCC Bulletin OET-65 (Edition 97-01) indicate that the proposal will not result in human exposure to RF radiation at ground level in excess of FCC standards. Power density calculations were conducted at 2-m above ground<sup>††</sup> based on the following conservative assumptions, with the following results:

<b>Call Sign</b>	<b>Channel</b>	<b>Total Average ERP (kW)</b>	<b>Relative Field Factor<sup>‡‡</sup></b>	<b>FCC Limit<sup>§§</sup> (mW/cm<sup>2</sup>)</b>	<b>Percentage of Limit</b>
WRDQ-DT	14	182	0.15	0.315	0.2%

As indicated above, the total exposure to RF radiation at 2-m above ground level will not exceed 0.2% of the FCC limit for general population / uncontrolled exposure. Therefore, the proposal complies with the FCC limits for human exposure to RF energy and it is categorically excluded from environmental processing. The applicant, in coordination with other users of the transmission facility, shall reduce power or cease

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<sup>\*\*</sup> See FCC Office of Engineering and Technology Bulletin No. 56 for background information on non-ionizing RF energy of the type discussed here. Internet web reference:

[http://www.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet56/oet56e4.pdf](http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf)

<sup>††</sup> The antenna radiation center height above ground is 470 m.

<sup>‡‡</sup> This is a conservative estimate of the relative field factor in the downward direction.

<sup>§§</sup> for general population/uncontrolled environments

operation as necessary to protect persons having access to the WRDQ-DT tower or antenna from radio frequency radiation in excess of the FCC guidelines.

Louis Robert du Treil, Jr.

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201 Fletcher Ave.  
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March 8, 2004



Figure 1

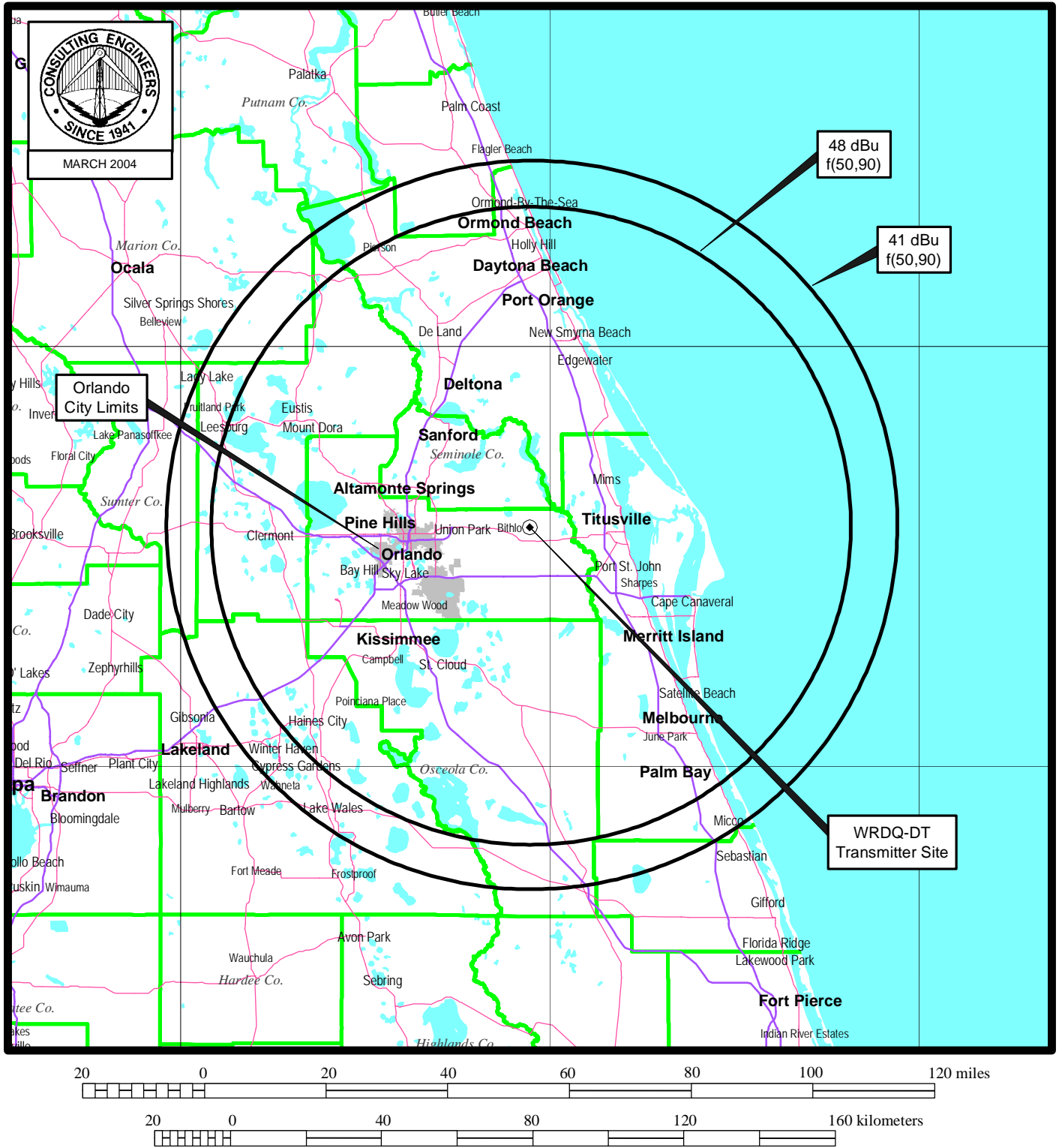
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Technical Specifications

Channel / Frequency Band	14 / 470-476 MHz
Site Coordinates (NAD 27)	28°34'07" North Latitude 81°03'16" West Longitude
Site elevation	18.8 m AMSL
Average elevation of standard eight radials, 3 to 16 km (to the nearest meter)	12 m AMSL
Overall height of existing structure	491.6 m AGL / 510.4 m AMSL
Height of antenna radiation center (to the nearest meter)	470 m AGL / 489 m AMSL
Antenna radiation center HAAT (to the nearest meter)	477 m
ASRN	1214939

Proposed Operation	
Parameter	DTV
Transmitter power output	14.0 dBk (25.1 kW)
Filter insertion loss (Harris, sharp-tuned bandpass filter)	0.28 dB
Transmission line loss (Dielectric, 6-1/8-inch EIA 75-ohm, 503-m)	1.73 dB
Antenna input power	11.99 dBk
Antenna gain (Dielectric, TFU-12GBH O8)	10.61 dB
Effective radiated power (ERP)	22.6 dBk (182 kW)

Figure 2



## PREDICTED COVERAGE CONTOURS

TELEVISION STATION WRDQ-DT  
ORLANDO, FLORIDA  
CHANNEL 14 182 KW 477 M

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

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Summary of Allocation Analysis

Stations Potentially Affected by Proposed Station							
Facility Number	Channel	Call	City State	Distance (km)	Status	Application Prefix	Application Reference Number
1	15	WBBH-DT	FORT MYERS FL	206.1	PLN	DTVPLN	DTVP0165
2	15	WBBH-TV	FORT MYERS FL	206.3	LIC	BLCDT	20030620AAA
3	15	WCEU	NEW SMYRNA BEACH FL	67.9	LIC	BLCT	19880129KF
4	18	WKCF	CLERMONT FL	3.4	LIC	BLCT	20020327ABF

Summary of Interference Analysis for Worst-Case Scenarios							
Facility Number	Interference Population Before Analysis	Interference Population After Analysis	Baseline Population	Net Change in Interference	Percent of Baseline	Permissible Percent of Baseline	Result
1	--	--	--	--	0.000*	--	pass
2	--	--	--	--	0.000*	--	pass
3	34614	46643	659489	12029	1.824	2.0	pass
4	--	--	--	--	0.000*	--	pass

\* Proposal causes no interference.

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Transmitting Antenna  
Manufacturer's Vertical Plane Pattern Data

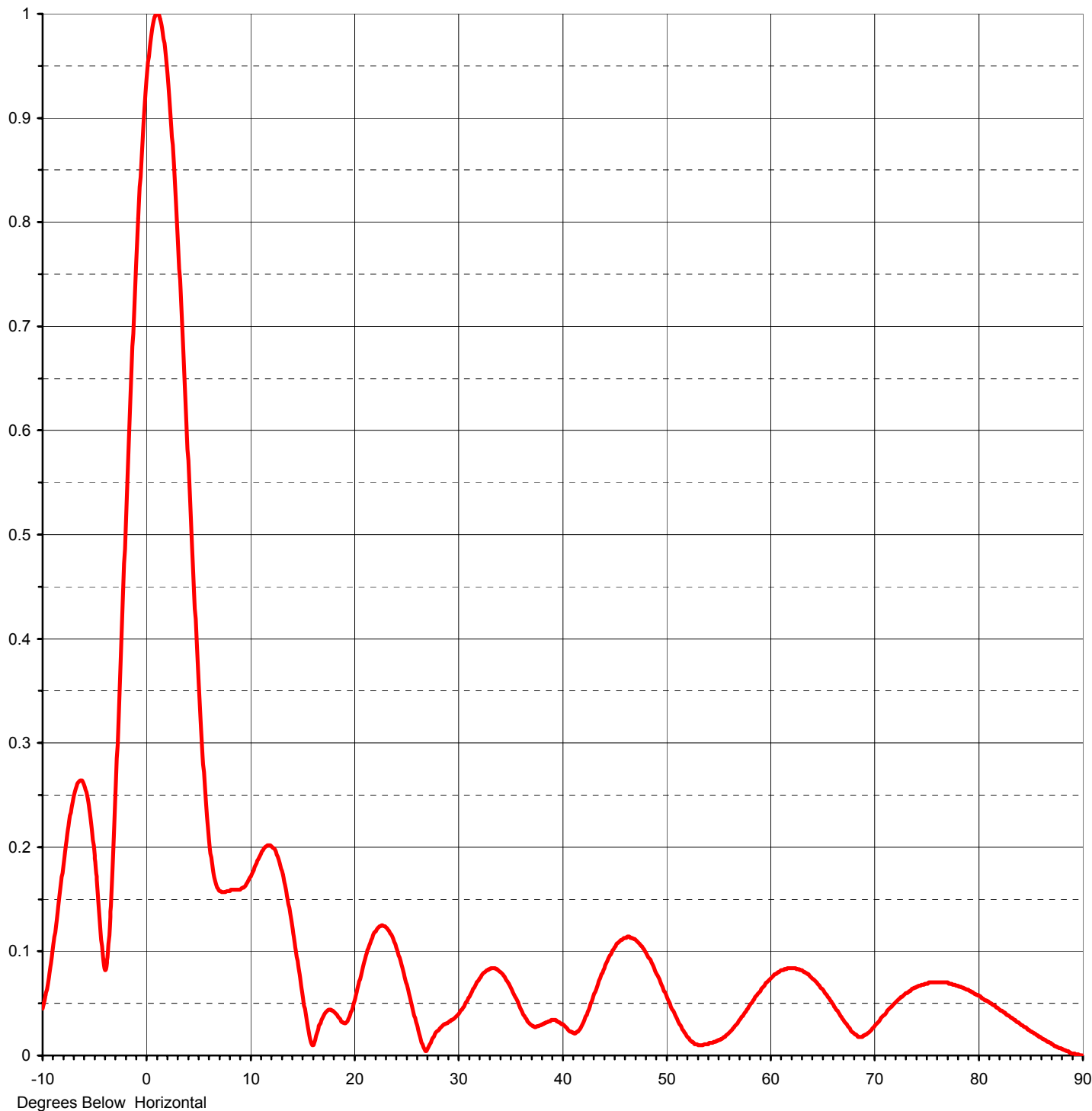
(two pages follow)



Proposal Number	<b>DCA-8201</b>	
Date	<b>13-Apr-99</b>	
Call Letters	<b>WRDQ-DT</b>	Channel <b>14</b>
Location	<b>Orlando, FL</b>	
Customer		
Antenna Type	<b>TFU-12GBH 08</b>	

## ELEVATION PATTERN

RMS Gain at Main Lobe	<b>11.50 ( 10.61 dB )</b>	Beam Tilt	<b>1.00 deg</b>
RMS Gain at Horizontal	<b>10.10 ( 10.04 dB )</b>	Frequency	<b>473.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>12G115100-90</b>





Proposal Number **DCA-8201**  
 Date **13-Apr-99**  
 Call Letters **WRDQ-DT** Channel **14**  
 Location **Orlando, FL**  
 Customer  
 Antenna Type **TFU-12GBH O8**

## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **12G115100-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.045	2.4	0.890	10.6	0.183	30.5	0.046	51.0	0.037	71.5	0.046
-9.5	0.069	2.6	0.858	10.8	0.188	31.0	0.054	51.5	0.027	72.0	0.051
-9.0	0.103	2.8	0.823	11.0	0.192	31.5	0.064	52.0	0.019	72.5	0.056
-8.5	0.143	3.0	0.785	11.5	0.200	32.0	0.072	52.5	0.013	73.0	0.060
-8.0	0.183	3.2	0.745	12.0	0.202	32.5	0.079	53.0	0.011	73.5	0.063
-7.5	0.220	3.4	0.703	12.5	0.196	33.0	0.083	53.5	0.010	74.0	0.066
-7.0	0.249	3.6	0.660	13.0	0.181	33.5	0.084	54.0	0.011	74.5	0.068
-6.5	0.263	3.8	0.616	13.5	0.159	34.0	0.081	54.5	0.012	75.0	0.069
-6.0	0.260	4.0	0.571	14.0	0.130	34.5	0.076	55.0	0.014	75.5	0.070
-5.5	0.236	4.2	0.527	14.5	0.098	35.0	0.067	55.5	0.017	76.0	0.070
-5.0	0.192	4.4	0.482	15.0	0.064	35.5	0.057	56.0	0.021	76.5	0.070
-4.5	0.130	4.6	0.439	15.5	0.033	36.0	0.046	56.5	0.026	77.0	0.070
-4.0	0.082	4.8	0.398	16.0	0.011	36.5	0.036	57.0	0.033	77.5	0.068
-3.5	0.133	5.0	0.358	16.5	0.022	37.0	0.030	57.5	0.040	78.0	0.067
-3.0	0.247	5.2	0.321	17.0	0.036	37.5	0.027	58.0	0.047	78.5	0.065
-2.8	0.298	5.4	0.287	17.5	0.043	38.0	0.029	58.5	0.054	79.0	0.063
-2.6	0.351	5.6	0.257	18.0	0.043	38.5	0.032	59.0	0.061	79.5	0.060
-2.4	0.405	5.8	0.230	18.5	0.037	39.0	0.034	59.5	0.067	80.0	0.057
-2.2	0.459	6.0	0.208	19.0	0.032	39.5	0.033	60.0	0.073	80.5	0.054
-2.0	0.513	6.2	0.190	19.5	0.035	40.0	0.030	60.5	0.078	81.0	0.051
-1.8	0.566	6.4	0.176	20.0	0.050	40.5	0.026	61.0	0.081	81.5	0.048
-1.6	0.618	6.6	0.167	20.5	0.069	41.0	0.022	61.5	0.083	82.0	0.044
-1.4	0.668	6.8	0.161	21.0	0.089	41.5	0.023	62.0	0.084	82.5	0.041
-1.2	0.716	7.0	0.158	21.5	0.106	42.0	0.030	62.5	0.084	83.0	0.037
-1.0	0.762	7.2	0.157	22.0	0.118	42.5	0.042	63.0	0.082	83.5	0.034
-0.8	0.804	7.4	0.157	22.5	0.124	43.0	0.055	63.5	0.079	84.0	0.030
-0.6	0.843	7.6	0.157	23.0	0.124	43.5	0.069	64.0	0.075	84.5	0.027
-0.4	0.878	7.8	0.158	23.5	0.118	44.0	0.082	64.5	0.069	85.0	0.023
-0.2	0.910	8.0	0.158	24.0	0.107	44.5	0.093	65.0	0.063	85.5	0.020
0.0	0.937	8.2	0.159	24.5	0.091	45.0	0.102	65.5	0.056	86.0	0.017
0.2	0.959	8.4	0.159	25.0	0.072	45.5	0.109	66.0	0.049	86.5	0.014
0.4	0.976	8.6	0.159	25.5	0.052	46.0	0.113	66.5	0.041	87.0	0.011
0.6	0.989	8.8	0.159	26.0	0.032	46.5	0.114	67.0	0.034	87.5	0.008
0.8	0.997	9.0	0.159	26.5	0.014	47.0	0.112	67.5	0.027	88.0	0.006
1.0	1.000	9.2	0.161	27.0	0.004	47.5	0.107	68.0	0.021	88.5	0.004
1.2	0.998	9.4	0.162	27.5	0.015	48.0	0.100	68.5	0.018	89.0	0.002
1.4	0.991	9.6	0.165	28.0	0.023	48.5	0.092	69.0	0.019	89.5	0.001
1.6	0.979	9.8	0.166	28.5	0.028	49.0	0.081	69.5	0.023	90.0	0.000
1.8	0.963	10.0	0.170	29.0	0.031	49.5	0.070	70.0	0.028		
2.0	0.943	10.2	0.174	29.5	0.034	50.0	0.059	70.5	0.034		
2.2	0.918	10.4	0.178	30.0	0.039	50.5	0.047	71.0	0.040		