

Engineering Statement
REQUEST FOR SPECIAL TEMPORARY AUTHORIZATION
prepared for
Guenter Marksteiner
WHDT(TV) Stuart, Florida
Facility ID 83929
Ch. 44 (Digital) 2.79 kW 12 m

Guenter Marksteiner (“*Marksteiner*”) is the permittee of digital television station WHDT(TV), Channel 42, Stuart, Florida (see BMPCDT-20090115AFU). There is no NTSC companion channel for Channel 42 at Stuart, Florida. *Marksteiner* is currently authorized to construct the final post-transition WHDT facility on Channel 42 with 700 kW effective radiated power (“ERP”) utilizing a directional antenna. WHDT has been operating pursuant to a Special Temporary Authorization on its original out-of-core Channel 59 at 0.13 kW ERP (see file number BDSTA-20020419ACA). Due to the unavoidable logistics involved with the construction of the authorized Channel 42 facility (as described in detail below), *Marksteiner* proposes now to avail himself of the “phased transition” provisions contained in the Third Periodic Review¹ by operating on the station’s previously authorized Channel 44 pre-transition DTV channel at a reduced ERP for a short period beyond the official analog television shutdown date. Accordingly, the instant engineering statement has been prepared to support the request for a Special Temporary Authorization to provide interim digital operation on Channel 44 with an ERP of 2.79 kW beyond the February 17, 2009 transition date.

Background

The current WHDT STA operation is on out-of-core Channel 59. It is understood that out-of-core facilities are expected to vacate the spectrum as of February 17, 2009. Therefore, it is assumed that an in-core channel must be utilized for a phased transition proposal. The current WHDT post transition authorization specifies a transmitter and antenna system, which is currently in use by analog station WXEL-TV (Channel 42, West Palm Beach, Florida, Facility ID 61084). Once WXEL-TV transitions and terminates its analog operation, WHDT will be able to commence changes to the facility in compliance with its Channel 42 post-transition authorization. Until then, it will be necessary to utilize an alternate channel and transmitter site location to provide continuous service to the community of Stuart, Florida. Therefore,

¹ See paragraphs 92 through 97, *Report and Order, Third Periodic Review of the Commission’s Rules and Policies Affecting the Conversion To Digital Television*, MB Docket No. 07-91, FCC 07-228, Released December 31, 2007.

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Marksteiner proposes herein to temporarily utilize its previously authorized Channel 44 for its phased transition facility.

Nature of the Proposal

The technical parameters for the proposed STA are summarized in the attached **Table I**. The antenna for the proposed STA facility is a Scala model 3xCL-1469V/HV antenna, which is horizontally polarized. **Figure 1** provides the antenna's horizontal plane radiation pattern. A tabulation of the antenna's horizontal plane pattern is provided in the attached **Table II**. The proposed antenna's vertical (elevation) pattern is depicted in **Figure 2**. As demonstrated in **Figure 3**, the principal community of Stuart, Florida is predicted to receive the enhanced signal level of 48 dBμ as required in §73.625(a) of the Commission's Rules. As demonstrated in **Figure 4**, the proposed STA facility's contour lies entirely within the authorized contour.

Because the Stuart, Florida allotment was changed from Channel 44 to Channel 42, a detailed interference study was conducted to determine if recent filings may be affected by the instant proposal. Accordingly, **Table III** provides the results of the interference study. As demonstrated therein, the proposed facility complies with the Commission's stated "Filing Freeze Waiver" policy in that it does not create any new interference. Thus, it is believed that the proposal complies with all Commission Rules and Policy regarding interference to other authorized facilities.

Human Exposure to Radiofrequency Radiation

The licensed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the licensed transmitting system will comply with the cited adopted guidelines.

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The WHDT transmitting antenna system's center of radiation is 13.6 meters above ground level. An effective radiated power ("ERP") of 2.79 kilowatts, horizontally polarized, will be employed, utilizing a Kathrein-Scala model 3xCL-1469B/HV directional antenna. According to manufacturer's data, the Channel 44 antenna has a relative field of less than 30 percent from 20 to 90 degrees below the horizontal plane (i.e., below the antenna). Thus, a value of 30 percent relative field is used for this calculation. See **Figure 2** for a graphical representation of the manufacturer's vertical plane (elevation) pattern. The "uncontrolled/general population" limit specified in §1.1310 for the television Channel 44 (center frequency 653 MHz) is 435.3 $\mu\text{W}/\text{cm}^2$.

OET 65's formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the average power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

S	=	power density in microwatts/cm ²
ERP	=	total (average) ERP in Watts
F	=	relative field factor
D	=	distance in meters

Using this formula and the above inputs, the proposed facility would contribute a maximum power density of 62.3 $\mu\text{W}/\text{cm}^2$ at two meters above ground, or 14.3 percent of the general population/uncontrolled limit. At ground level locations away from the base of the tower, the calculated RF power density is lower, due to the increasing distance from the transmitting antenna. There are no other authorized AM, FM or television broadcast facilities within 4 kilometers of the proposed transmitter location, according to information extracted from the FCC's CDBS database. Thus, the proposed facility complies with §1.1307(b) of the Commission's Rules regarding exposure to radiofrequency radiation. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

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Safety of Tower Workers

As demonstrated herein, excessive levels of RF energy attributable to the instant proposal will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, access to the antenna supporting structure will be restricted to trained maintenance personnel under strict access procedures. Additionally, appropriate RF exposure warning signs will be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure will not occur in areas at ground level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the support structure or in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas.

Certification

Under the penalty of perjury, the undersigned hereby certifies that the foregoing statement was prepared by him or under his direction and that it is true and correct to the best of his knowledge and belief. Mr. Clinton is a senior engineer in the firm of Cavell, Mertz & Associates, Inc. He has submitted numerous engineering exhibits to the Federal Communications Commission and his qualifications are a matter of record with that agency.



Robert J. Clinton
February 3, 2009

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Attachments

Table I	Engineering Data
Figure 1	Antenna Horizontal Plane Envelope Pattern
Table II	Horizontal Plane Pattern Data
Figure 2	Vertical (Elevation) Pattern
Figure 3	Proposed Coverage Contours
Figure 4	Coverage Contour Comparison
Table III	Interference Analysis Results Summary

Table I
ENGINEERING DATA
Request for Special Temporary Authorization
prepared for
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Site Coordinates: 27° 08' 17.5" N Latitude
(NAD-27) 80° 16' 21.2" W Longitude

Channel: UHF – Channel 44

Effective Radiated Power: 2.79 kW (4.45 dBk)

Antenna Radiation Center Height:

Above ground: 13.6 m
Above Mean Sea Level: 16.6 m
Above Average Terrain: 12.2 m

Antenna Supporting Structure: (Existing Structure)

Site Elevation Above Sea Level: 3.0 m
Overall Height Above Ground: 14.2 m

Antenna Structure Registration number: N/A

Antenna Information:

Make/Model: Kathrein Model 3xCL-1469B/HV
(three-layer array using CL-1469B antennas)

Beam tilt: 0°
Polarization: Horizontal
Power Gain: 15.5 (11.9 dBd) maximum

Transmission Line Information:

Make/Model: Andrew HST4-50
Type: ½" Helix Coaxial Cable
Loss: 0.447 dB at 653 MHz
Efficiency: 90.22%

DTV Transmitter Parameter: (Type Accepted Transmitter)

Power Output: 0.200 kW (200 W) average

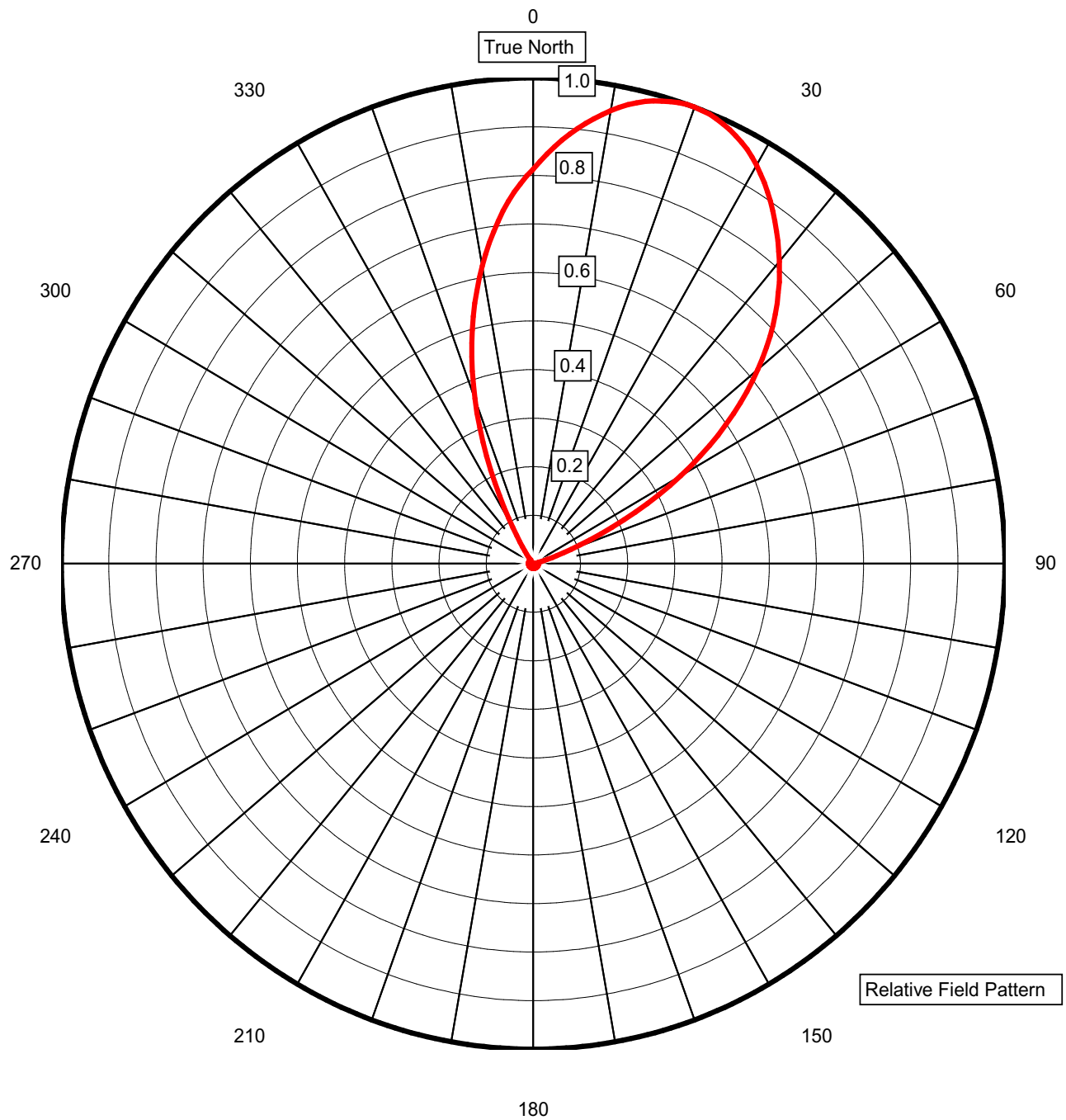


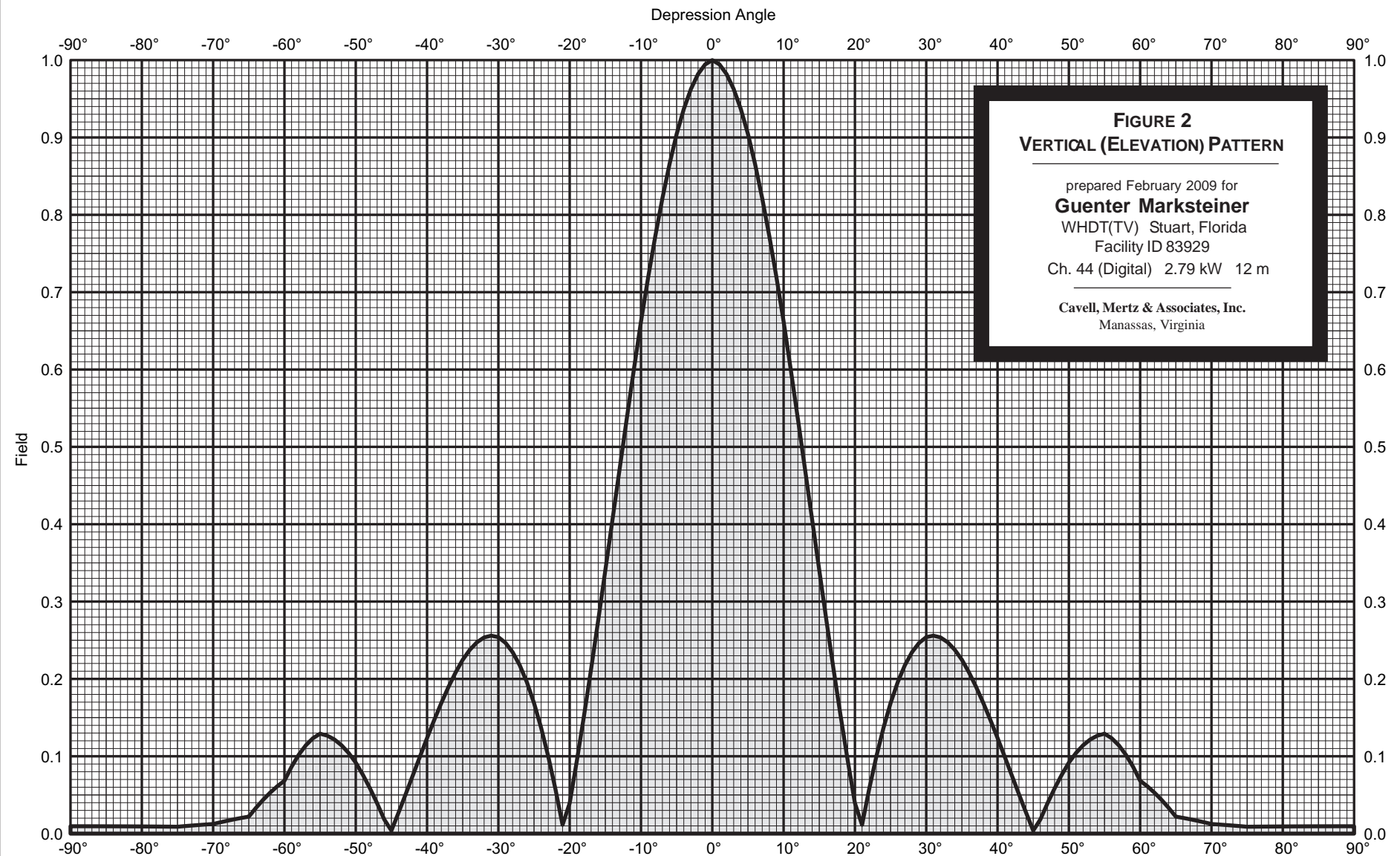
FIGURE 1
ANTENNA HORIZONTAL PLANE
ENVELOPE PATTERN

prepared February 2009 for
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Cavell, Mertz & Associates, Inc.
Manassas, Virginia

Table II
HORIZONTAL PLANE PATTERN DATA
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 prepared for
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<u>Azimuth</u> <u>(Degrees True)</u>	<u>Relative</u> <u>Field</u>	<u>Power</u> <u>(dBk)</u>	<u>Power</u> <u>(kW)</u>	<u>Relative</u> <u>dB</u>	<u>dBd</u>
0	0.812	2.65	1.84	-1.81	10.09
10	0.947	3.98	2.50	-0.48	11.42
20	1.000	4.46	2.79	0.00	11.90
30	0.947	3.98	2.50	-0.48	11.42
40	0.812	2.65	1.84	-1.81	10.09
50	0.622	0.33	1.08	-4.13	7.77
60	0.361	-4.39	0.36	-8.85	3.05
70	0.086	-16.85	0.02	-21.31	-9.41
80	0.010	-35.54	0.00	-40.00	-28.10
90	0.010	-35.54	0.00	-40.00	-28.10
100	0.010	-35.54	0.00	-40.00	-28.10
110	0.010	-35.54	0.00	-40.00	-28.10
120	0.010	-35.54	0.00	-40.00	-28.10
130	0.010	-35.54	0.00	-40.00	-28.10
140	0.010	-35.54	0.00	-40.00	-28.10
150	0.010	-35.54	0.00	-40.00	-28.10
160	0.010	-35.54	0.00	-40.00	-28.10
170	0.010	-35.54	0.00	-40.00	-28.10
180	0.010	-35.54	0.00	-40.00	-28.10
190	0.010	-35.54	0.00	-40.00	-28.10
200	0.010	-35.54	0.00	-40.00	-28.10
210	0.010	-35.54	0.00	-40.00	-28.10
220	0.010	-35.54	0.00	-40.00	-28.10
230	0.010	-35.54	0.00	-40.00	-28.10
240	0.010	-35.54	0.00	-40.00	-28.10
250	0.010	-35.54	0.00	-40.00	-28.10
260	0.010	-35.54	0.00	-40.00	-28.10
270	0.010	-35.54	0.00	-40.00	-28.10
280	0.010	-35.54	0.00	-40.00	-28.10
290	0.010	-35.54	0.00	-40.00	-28.10
300	0.010	-35.54	0.00	-40.00	-28.10
310	0.010	-35.54	0.00	-40.00	-28.10
320	0.010	-35.54	0.00	-40.00	-28.10
330	0.086	-16.85	0.02	-21.31	-9.41
340	0.361	-4.39	0.36	-8.85	3.05
350	0.622	0.33	1.08	-4.13	7.77



3xCL-1469B/HV LP array @ ch 44

3 antennas vert stack @ 15"CTC .94wl

All skewed @ 20 degrees w/ EQL PWR

Max Gain: 11.9 dBd

Power-x: 15.49

Horizontal Polarization

Vertical Plane Pattern

FIGURE 3
PROPOSED COVERAGE CONTOURS
WHDT(TV) STA FACILITY

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Cavell, Mertz & Associates, Inc.
Manassas, Virginia

Proposed STA
FCC Contours
41 dB μ F(50,90)
48 dB μ F(50,90)
dipole Corrected

Martin

Stuart

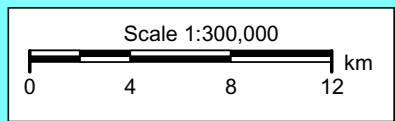


FIGURE 4
COVERAGE CONTOUR COMPARISON
WHDT(TV) STA FACILITY

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Manassas, Virginia

WHDT(TV) CP
BMPCDT-20090115AFU
41 dBμ F(50,90)
Service Contour
dipole Corrected

Proposed STA
Service Contour
41 dBμ F(50,90)
dipole Corrected

Stuart

St. Lucie

Martin

Scale 1:500,000

0 7 14 21 km

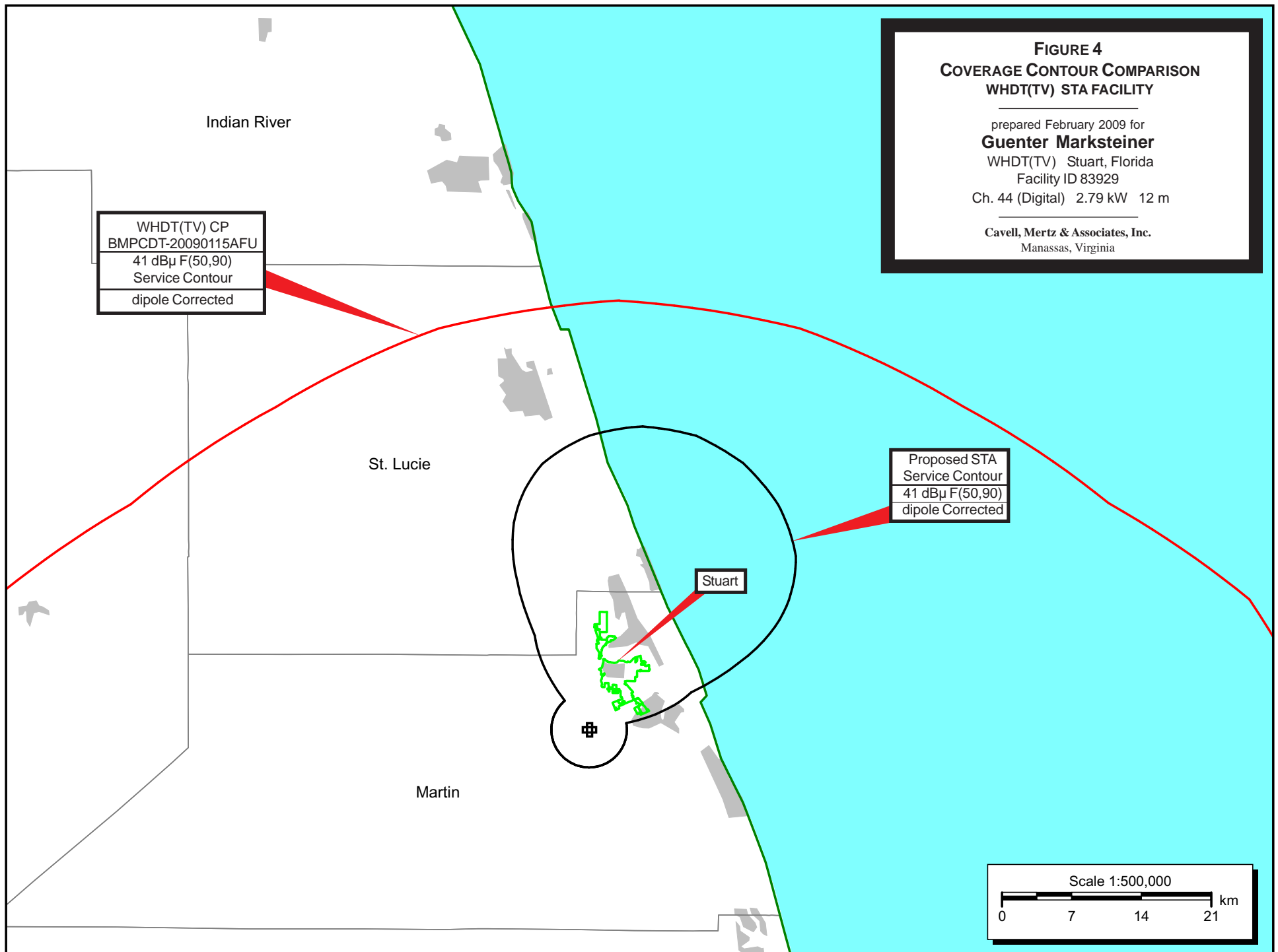


Table III
INTERFERENCE ANALYSIS RESULTS SUMMARY
Request for Special Temporary Authorization

prepared for

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Ch. 44 (Digital) 2.79 kW 12m

						---Population (2000 Census)---	
<u>Ch.</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>File Number</u>	<u>Baseline</u>	<u>New Interference</u>
29	WMVJ-CA	Melbourne, FL	118.9	LIC	BLTTL-20010711ACI	---	none
29	WFLX	West Palm Beach, FL	62.5	LIC	BLCT-19860514KH	---	none
42	WXEL-TV	West Palm Beach, FL	62.5	LIC	BLET-20041005ACB	---	none
43	WOTF-TV	Melbourne, FL	179.6	LIC	BLCT-20060817AEK	---	none
43	WOTF-TV	Melbourne, FL	179.6	CP	BPCDT-20080613ACG	---	none
43	WTCN-CA	Palm Beach, FL	15.6	LIC	BLTTA-20080109AGG	---	none
43	WTCN-CA	Palm Beach, FL	15.6	STA	BSTA-20070706AAU	---	none
44	WPPB-DT	Boca Raton, FL	127.7	PLN	DTVPLN-DTVP1257	---	none
44	WJEB-TV	Jacksonville, FL	370.8	LIC	BLEDT-20060313AEB	---	none
44	WJEB-DT	Jacksonville, FL	370.8	PLN	DTVPLN-DTVP1258	---	none
44	WJEB-TV	Jacksonville, FL	370.8	APP	BPET-20020523AAR	---	none
44	WJEB-TV	Jacksonville, FL	370.8	CP	BPEDT-20080618ADQ	---	none
44	WTOG	St. Petersburg, FL	211.1	CP MOD	BMPCDT-20080606AAO	---	none
44	WTOG	St. Petersburg, FL	211.1	APP	BSTA-20080908ABM	---	none
44	WTOG	St. Petersburg, FL	211.1	LIC	BLCT-19990415KI	---	none
45	WTGL	Leesburg, FL	179.6	APP	BSTA-20080307ABC	---	none
45	WTGL	Leesburg, FL	179.6	LIC	BLET-20050915ADP	---	none
45	WHFT-TV	Miami, FL	127.7	LIC	BMLCT-20051007ACP	---	none
45	WXCW	Naples, FL	155.8	LIC	BLCDT-20021030ACB	---	none
45	WTVK-DT	Naples, FL	156.5	PLN	DTVPLN-DTVP1292	---	none
48	WWHB-CA	Stuart, FL	15.6	LIC	BLTTA-20080109AGC	---	none
48	WWHB-CA	Stuart, FL	15.6	APP	BSTA-20070706AAW	---	none
48	WWHB-CA	Stuart, FL	11.7	APP	BPTTA-20080804AEA	---	none
51	WSCV	Fort Lauderdale, FL	128.3	LIC	BLCT-20020805AAC	---	none