

ENGINEERING EXHIBIT

Application for Low Power Television Digital Companion Construction Permit

prepared for

Ramar Communications, Inc.

K46GY (DCC) Santa Fe, NM

Facility ID 198113

Ch. 16 (digital) 15 kW

Ramar Communications, Inc. (“Ramar”) is the licensee of station K46GY, Facility ID 64988, Santa Fe, NM (BLTT-20030403AAN). K46GY is licensed to operate as analog on Channel 46, and a Construction Permit (“CP” BDISDTL-20100308AAZ) authorizes K46GY to flashcut to digital operation and change to Channel 47. In lieu of constructing the flashcut facility, *Ramar* herein seeks a new CP for a digital companion channel facility on Channel 16 to be associated with K46GY. *Ramar* will seek cancellation of the flashcut CP BDISDTL-20100308AAZ contemporaneously with the filing of this application for a digital companion facility.

The proposed digital companion facility will operate on Channel 16 at the licensed K46GY analog Channel 46 site. The antenna will be side-mounted on the existing tower structure utilized by K46GY. The tower’s overall height is 24 meters above ground level and no change in overall tower height is proposed. The structure does not require an FCC Antenna Structure Registration number since its overall height is less than 61 meters above ground, there are no known landing areas within 8 km, and the structure passes the FCC’s “TOWAIR” slope test program.

The proposed facility will operate with a directional antenna at 15 kW effective radiated power using a “stringent” out of channel emission mask. The antenna is a Dielectric model TUA-P2-4/8H-1-K. Figure 1 depicts the coverage contour of the proposed digital Channel 16 facility as well as that of the K46GY licensed analog Channel 46 facility. The use of the licensed analog site

and the corresponding service area overlap complies with the requirements for a digital companion facility.

Detailed interference study per OET Bulletin 69¹ shows that the proposal complies with the Commission's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in Table 1, show that any new interference does not exceed the Commission's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility. Accordingly, the proposal complies with §74.793 regarding interference protection to digital television, low power television, television translator, and Class A television facilities.

The nearest FCC monitoring station is 508 km distant at Douglas, AZ. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with quiet zones specified in §73.1030(a) and (b). There are no authorized AM stations within 3.2 kilometers of the site. The site is not within a border area requiring international coordination.

Human Exposure to Radiofrequency Electromagnetic Field

The transmitting location is on Sandia Crest overlooking Santa Fe and Albuquerque. There are numerous other transmitting facilities at this site area situated on various antenna supporting structures. *Ramar* participates in a radiofrequency ("RF") electromagnetic field exposure safety program, along with other broadcasters and FCC licensees that utilize the Sandia Crest site area. Following construction of the proposed facility, *Ramar* will conduct RF exposure measurements to evaluate the level of RF exposure resulting from the proposed digital companion facility. As necessary, based on these results and considering all emitters, appropriate exposure abatement procedures will be established and followed, in order to comply with the Commission's exposure

¹FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

limits. Such abatement procedures may involve the restriction of access to certain areas and/or facility modifications to reduce RF levels.

Considering the post-construction measurement and an appropriate abatement program, the general public and workers will not be exposed to RF levels attributable to the proposal in excess of the Commission's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, authorized personnel will be trained and/or supervised as necessary for access to any "controlled" areas. *Ramar* will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

This exhibit is limited to the evaluation of exposure to RF electromagnetic field. The proposed transmitting antenna will be side-mounted on an existing antenna support structure which was constructed prior to March 16, 2001. No change in structure height is proposed.

Certification

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



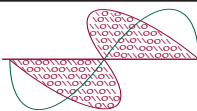
Joseph M. Davis, P.E.
May 27, 2014

Chesapeake RF Consultants, LLC
207 Old Dominion Road
Yorktown, VA 23692
703-650-9600

List of Attachments

Figure 1	Coverage Contour Comparison
Table 1	Interference Analysis Results Summary
Form 346	Saved Version of Engineering Sections from FCC Form at Time of Upload

This material was entered May 27, 2014 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.



Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Coverage Contour Comparison
K46GY (DCC) Santa Fe, NM
Facility ID 198113
Ch. 16 (digital) 15 kW

prepared for
Ramar Communications, Inc.

May, 2014

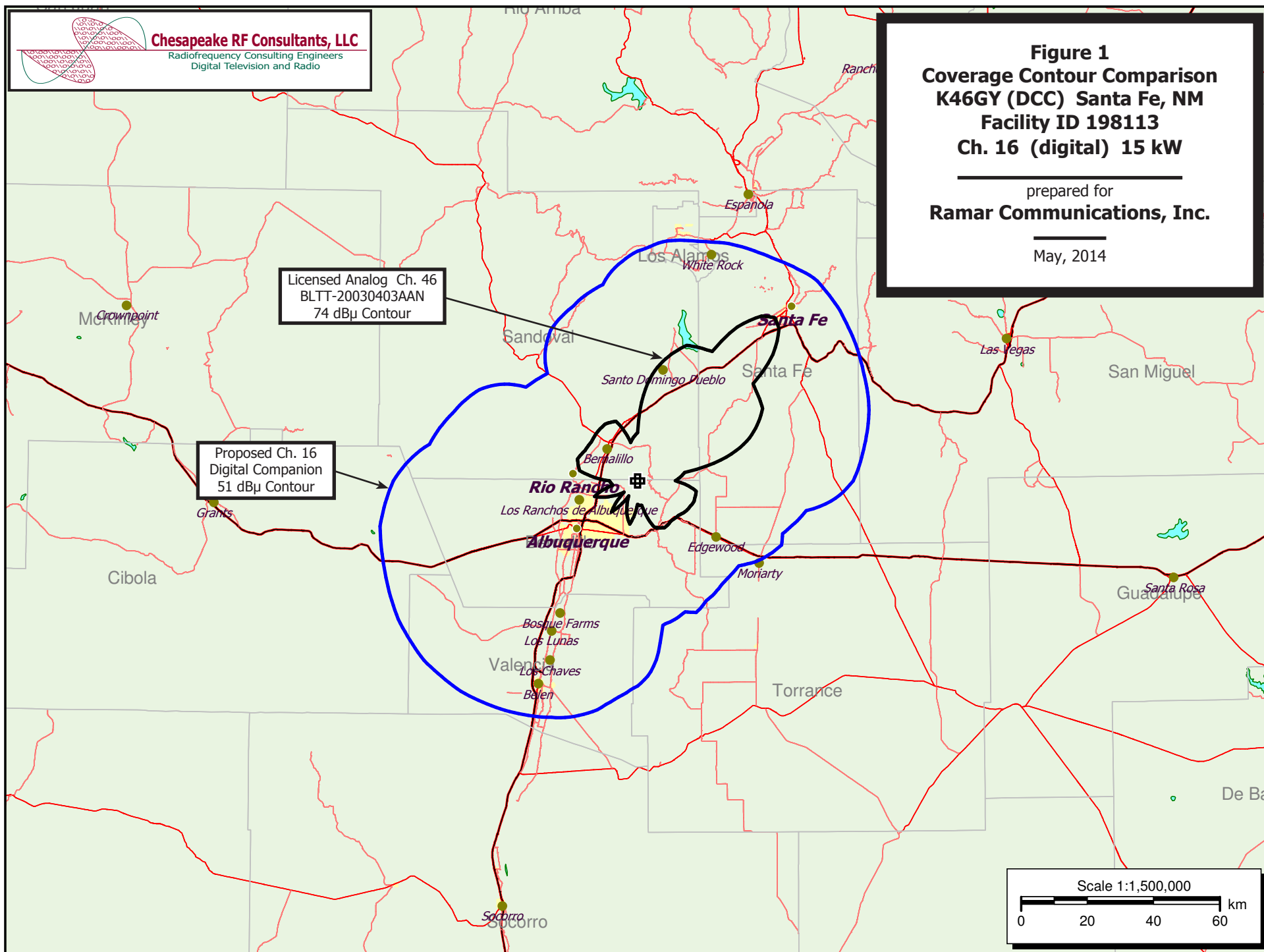
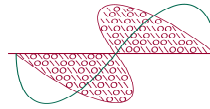


Table 1

Interference Analysis Results Summary

prepared for

Ramar Communications, Inc.**K46GY (DCC) Santa Fe, NM****Chesapeake RF Consultants, LLC**Radiofrequency Consulting Engineers
Digital Television and Radio

K46GY-D USERRECORD-01 SANTA FE NM US
 Channel 16 ERP 15. kW HAAT 1230. m RCAMSL 03241 m STRINGENT MASK
 Latitude 035-12-51 Longitude 0106-27-02
 Dir Antenna Make usr Model DIE_RAMAR_TUA Beam tilt N Ref Azimuth 0.

Ch.	Call	City/State	Dist	Status	Application Ref. No.	---Population (2000 Census)---	
			(km)			Baseline	New Interference
15	K15JO-D	CHAMA NM	187.8	LIC	BLDTT-20121005AAH	---	none
15	K15JJ-D	LAS VEGAS NM	119.4	CP	BNPDTT-20100730ADU	---	none
15	K15HC-D	QUEMADO/PIE TOWN NM	168.9	LIC	BLDTT-20090910ABO	---	none
15	K15FV-D	RED RIVER NM	189.9	LIC	BLDTT-20101008AAK	---	none
15	K15HD-D	TAOS NM	154.9	LIC	BLDTT-20061026ADG	---	none
16	K16CT-D	CORTEZ, ETC CO	283.3	LIC	BLDTT-20090522ACK	---	none
16	K16GZ-D	DURANGO CO	262.0	LIC	BLDTL-20110607ABD	---	none
16	K16DR-D	JACK'S CABIN CO	390.2	LIC	BLDTT-20100301AAL	---	none
16	K16KA-D	PUEBLO CO	330.0	CP	BPDTL-20130524AFD	---	none
16	K16KA-D	PUEBLO CO	286.3	LIC	BLDTL-20130214ADB	3,739	1 (0.00%)
16	K16EX-D	CLOVIS NM	307.7	LIC	BLDTT-20121217ACM	---	none
16	DK16DN	CONCHAS DAM NM	202.4	APP	BSTA-20131104ARR	---	none
16	K40HJ	LORDSBURG NM	383.6	CP	BDISDTT-20090824AEA	---	none
16	K16CH-D	RATON NM	245.3	LIC	BLDTL-20110725ADQ	---	none
16	K16BZ-D	RUIDOSO NM	210.4	LIC	BLDTT-20091211AEN	29,636	67 (0.23%)
16	K16DL	ZUNI PUEBLO NM	208.0	LIC	BLTT-19950801JA	---	none
16	K16DL	ZUNI PUEBLO NM	208.0	CP	BDFCDTT-20090824AHA	---	none
16	KTSM-TV	EL PASO TX	378.9	CP	BPCDT-20110509ACB	---	none
16	KTSM-DR	EL PASO TX	378.9	APP	BPRM-20101129APK	---	none
16	K16HK-D	MEXICAN HAT UT	373.9	LIC	BLDTT-20091222AKD	---	none
16	K16HJ-D	OLJETO UT	403.1	LIC	BLDTT-20091222AKC	---	none
17	KAZQ	ALBUQUERQUE NM	0.0	LIC	BLEDT-20051012ACK	---	none

Section III - Engineering (Digital)**TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

TECH BOX

1.	Channel: 16																																																																																																
2.	Translator Input Channel No. :																																																																																																
3.	Primary station proposed to be rebroadcast: <table border="1"><tr><td>Facility Identifier</td><td>Call Sign</td><td>City</td><td>State</td><td>Channel</td></tr></table>	Facility Identifier	Call Sign	City	State	Channel																																																																																											
Facility Identifier	Call Sign	City	State	Channel																																																																																													
4.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 35 Minutes 21 Seconds 51 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 106 Minutes 27 Seconds 2 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																
5.	Antenna Structure Registration Number: <input checked="" type="checkbox"/> Not Applicable [Exhibit 11] <input type="checkbox"/> Notification filed with FAA																																																																																																
6.	Antenna Location Site Elevation Above Mean Sea Level: 3220 meters																																																																																																
7.	Overall Tower Height Above Ground Level: 24 meters																																																																																																
8.	Height of Radiation Center Above Ground Level: 21 meters																																																																																																
9.	Maximum Effective Radiated Power (ERP): 15 kW																																																																																																
10.	Transmitter Output Power: 0.746 kW																																																																																																
11.	a. Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under CDBS Public Access (http://licensing.fcc.gov/prod/cdb/menu/forms/prod/cdbsmenu...). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input type="radio"/> Nondirectional <input type="radio"/> Directional Off-the Shelf <input checked="" type="radio"/> Directional composite Manufacturer DIE Model TUA-P2-4/8H-1-K b. Electrical Beam Tilt: 2.5 degrees <input type="checkbox"/> Not Applicable c. Mechanical Beam Tilt: 1.5 degrees toward azimuth 230 degrees True <input type="checkbox"/> Not Applicable d. Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Off-the-Shelf) Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation <table border="1"><thead><tr><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th></tr></thead><tbody><tr><td>0</td><td>0.52</td><td>10</td><td>0.718</td><td>20</td><td>0.826</td><td>30</td><td>0.93</td><td>40</td><td>0.995</td><td>50</td><td>0.963</td></tr><tr><td>60</td><td>0.85</td><td>70</td><td>0.704</td><td>80</td><td>0.578</td><td>90</td><td>0.427</td><td>100</td><td>0.162</td><td>110</td><td>0.117</td></tr><tr><td>120</td><td>0.106</td><td>130</td><td>0.074</td><td>140</td><td>0.081</td><td>150</td><td>0.094</td><td>160</td><td>0.1</td><td>170</td><td>0.126</td></tr><tr><td>180</td><td>0.386</td><td>190</td><td>0.553</td><td>200</td><td>0.668</td><td>210</td><td>0.814</td><td>220</td><td>0.939</td><td>230</td><td>0.989</td></tr><tr><td>240</td><td>0.941</td><td>250</td><td>0.832</td><td>260</td><td>0.741</td><td>270</td><td>0.546</td><td>280</td><td>0.269</td><td>290</td><td>0.194</td></tr><tr><td>300</td><td>0.142</td><td>310</td><td>0.066</td><td>320</td><td>0.06</td><td>330</td><td>0.126</td><td>340</td><td>0.169</td><td>350</td><td>0.241</td></tr><tr><td>Additional Azimuths</td><td>42</td><td>1</td><td>114</td><td>0.128</td><td>156</td><td>0.111</td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> e. Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt? <input type="radio"/> Yes <input checked="" type="radio"/> No <div style="text-align: right;">[Exhibit 12]</div> If Yes, attach an Exhibit (see instructions for details).	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	0	0.52	10	0.718	20	0.826	30	0.93	40	0.995	50	0.963	60	0.85	70	0.704	80	0.578	90	0.427	100	0.162	110	0.117	120	0.106	130	0.074	140	0.081	150	0.094	160	0.1	170	0.126	180	0.386	190	0.553	200	0.668	210	0.814	220	0.939	230	0.989	240	0.941	250	0.832	260	0.741	270	0.546	280	0.269	290	0.194	300	0.142	310	0.066	320	0.06	330	0.126	340	0.169	350	0.241	Additional Azimuths	42	1	114	0.128	156	0.111					
Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value																																																																																						
0	0.52	10	0.718	20	0.826	30	0.93	40	0.995	50	0.963																																																																																						
60	0.85	70	0.704	80	0.578	90	0.427	100	0.162	110	0.117																																																																																						
120	0.106	130	0.074	140	0.081	150	0.094	160	0.1	170	0.126																																																																																						
180	0.386	190	0.553	200	0.668	210	0.814	220	0.939	230	0.989																																																																																						
240	0.941	250	0.832	260	0.741	270	0.546	280	0.269	290	0.194																																																																																						
300	0.142	310	0.066	320	0.06	330	0.126	340	0.169	350	0.241																																																																																						
Additional Azimuths	42	1	114	0.128	156	0.111																																																																																											

Relative Field Polar Plot

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be

submitted for each question for which a "No" response is provided.	
12.	Out-of-channel Emission Mask: <input type="radio"/> Simple <input checked="" type="radio"/> Stringent <input type="radio"/> Full Service
CERTIFICATION	
13.	Interference : The proposed facility complies with all of the following applicable rule sections. 47.C.F.R Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030. <input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 13]
14.	Environmental Protection Act. The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an Exhibit is required. <input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 14] By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.
15.	Channels 52-59. If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable: <input type="checkbox"/> The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available. <input type="checkbox"/> Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.
16.	Channels 60-69. If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable: <input type="checkbox"/> Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application , all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees. <input type="checkbox"/> Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreements(s) with 700 MHz public safety regional planning committee(s) and state administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location. <input type="checkbox"/> Pursuant to Section 74.786(e), the applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.
PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.	

SECTION III PREPARER'S CERTIFICATION

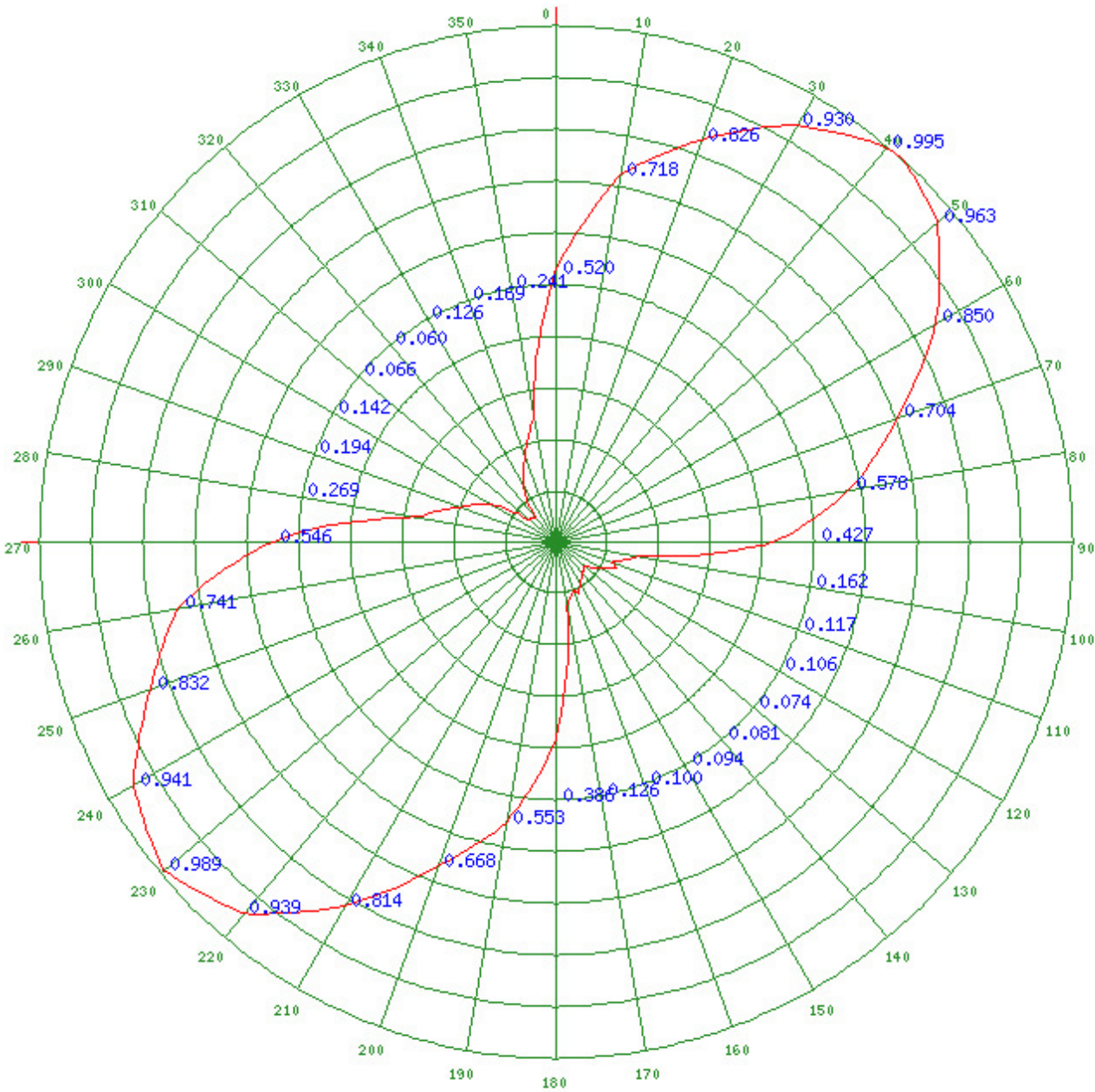
I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name	Relationship to Applicant (e.g., Consulting Engineer)
------	---

JOSEPH M. DAVIS, P.E.		CONSULTING ENGINEER
Signature	Date 5/27/2014	
Mailing Address CHESAPEAKE RF CONSULTANTS LLC 207 OLD DOMINION ROAD		
City YORKTOWN	State or Country (if foreign address) VA	Zip Code 23692 -
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	

Any specified rotation has already been applied to the plotted pattern.
Field strength values shown on a rotated pattern may differ from the listed values
because intermediate azimuths are interpolated between entered azimuths.

Close Window



[FM Query](#) [FCC](#) [TV Query](#)