

Engineering Statement
Special Temporary Authority
prepared for
Gray Television Licensee, LLC
W22EE-D Rockford, IL
Facility ID 183744
STA Ch. 41 (digital) 15 kW

Gray Television Licensee, LLC (“Gray”) is the licensee of Low Power Television (“LPTV”) station W22EE-D, Channel 22, Facility ID 183744, Rockford, IL. W22EE-D is presently silent (file# 0000021801). This statement supports *Gray*’s request for Special Temporary Authority (“STA”) to operate W22EE-D on Channel 41 on an interim basis.

W22EE-D is authorized to utilize a pole-mounted transmitting antenna atop the building associated with the studio/transmitter facility of *Gray*’s WIFR(DT) (Ch. 41, Facility ID 4689, Freeport, IL). WIFR’s transmitting antenna is located on the tower structure associated with Antenna Structure Registration number 1209945, immediately adjacent to the W22EE-D rooftop facility.

Gray has relinquished WIFR’s Channel 41 spectrum in the recently concluded incentive auction.¹ The STA sought herein by *Gray* seeks to operate W22EE-D on Channel 41 with the existing WIFR transmitting and antenna system upon the surrender of WIFR’s license. The STA facility will allow *Gray* to continue to provide CBS network and other programming in the Rockford market.²

A different channel is requested due to equipment logistics and to provide increased service. With minimal changes in configuration and transmitter power, *Gray* can utilize the

¹*Incentive Auction Closing and Channel Reassignment Public Notice*, DA 17-317, released April 13, 2017.

²*Gray* acknowledges that the W22EE-D STA operation on Channel 41 must cease pursuant to §73.3700(g)(4)(iii) when the relevant 600 MHz forward auction wireless licensee commences operation that would be affected by the Channel 41 spectrum. Should W22EE-D’s authorized Channel 22 be displaced as a result of channel reassignments and expansion of full-service facilities, an alternate channel will be sought for W22EE-D at the appropriate filing window.

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existing WIFR transmitting equipment, which operates on Channel 41, upon surrender of WIFR license.

The proposed STA facility will operate with 15 kW effective radiated power (“ERP”), the maximum power permitted for a UHF digital LPTV station. The STA facility will utilize the existing WIFR nondirectional transmitting antenna having a radiation center 213 meters above ground level (“AGL”). The proposed STA facility will provide a much larger service area than the licensed W22EE-D facility, which is authorized to operate at 4.8 kW ERP with a directional antenna centered 9.1 meters AGL. Use of W22EE-D’s existing Channel 22 with the WIFR nondirectional antenna would be limited to 1.38 kW ERP to avoid causing impermissible interference to WVCY-TV (Ch. 22, Milwaukee WI, 136 km distant). Thus, the proposed use of Channel 41 will allow W22EE-D to provide a much larger service area than what is achievable on Channel 22, which in turn will serve to mitigate disruption to CBS network, local news, and other programming brought about by the relinquishment of WIFR’s spectrum.

The proposed STA facility on Channel 41 will operate from an existing tower and antenna located immediately adjacent to the licensed W22EE-D site (geographic coordinates differ by one second latitude and one second longitude). The proposed STA facility’s technical specifications are supplied in the LMS STA schedule to which this exhibit is attached.

As shown in Figure 1, the STA facility’s 51 dB μ contour extends beyond that of the licensed W22EE-D facility. This extension is commensurate with the improved service over what can be achieved on Channel 22 as described above. The proposed 15 kW ERP operation is well within the WIFR licensed 100 kW coverage contour.

Interference study per OET Bulletin 69³ shows that the proposal complies with the FCC’s interference protection requirements toward all digital television, television translator, LPTV,

³FCC 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. The default 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.

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and Class A stations. The results, summarized in Table 1, show that any new interference does not exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility except for WIFR.

WIFR would receive 95.1 percent interference to its licensed facility (BLCDDT-20081223ACE). *Gray*, as licensee of WIFR, agrees to accept this level of interference from W22EE-D caused to WIFR. As a practical matter, the interference is theoretical because the WIFR license will be surrendered, and because WIFR and the proposed W22EE-D STA Channel 41 facility will not (and cannot) operate simultaneously.

The nearest FCC monitoring station is 267 km distant at Allegan, MI. This exceeds by a large margin 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 kilometers of the site. The site location is beyond the border areas requiring international coordination.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed facility was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10) and the worst-case of 100 percent antenna relative field in downward elevations, the calculated power density attributable to the proposed facility at locations near the transmitter site at a height of two meters above ground level is $11.3 \mu\text{W}/\text{cm}^2$, which is 2.7 percent of the general population / uncontrolled maximum permissible exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent. When the antenna's elevation pattern is considered, the calculated RF exposure level will be even lower

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The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant 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. An existing antenna will be utilized and no tower work is required to carry out this proposal.

List of Attachments

Figure 1 Coverage Contour Comparison
Table 1 Interference Analysis Results Summary

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E. April 20, 2017
207 Old Dominion Road Yorktown, VA 23692 703-650-9600



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

Figure 1
Coverage Contour Comparison
W22EE-D Rockford, IL
Facility ID 183744
STA Ch. 41 (digital) 15 kW

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April, 2017

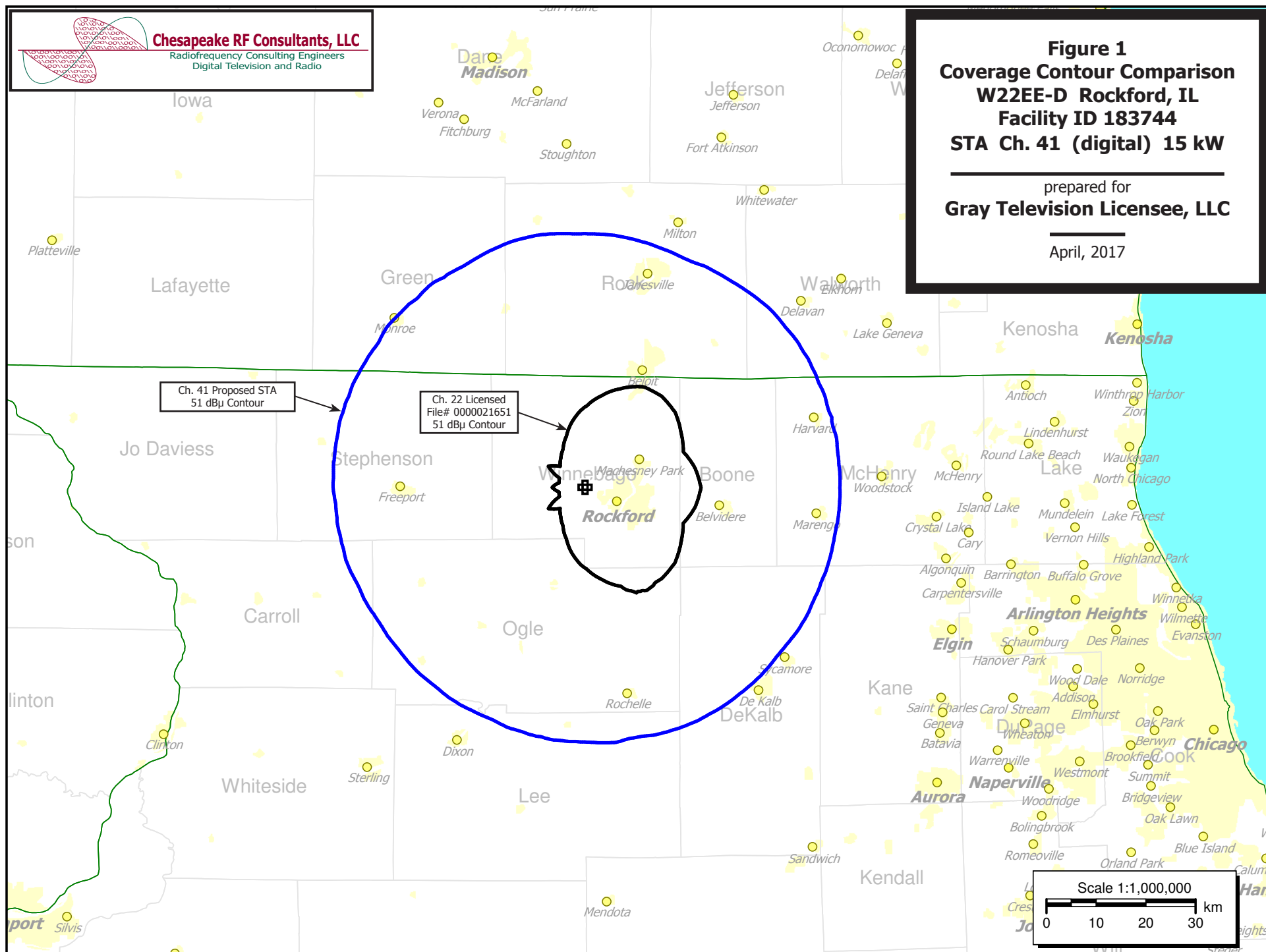
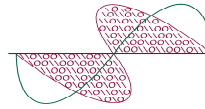


Table 1

Interference Analysis Results Summary

prepared for

Gray Television Licensee, LLC**W22EE-D Rockford, IL****Chesapeake RF Consultants, LLC**Radiofrequency Consulting Engineers
Digital Television and Radio

W22EE-D USERRECORD-01 ROCKFORD IL US
 Channel 41 ERP 15. kW HAAT 220. m RCAMSL 00463 m FULL SERVICE MASK
 Latitude 042-17-47 Longitude 0089-10-14
 Nondirectional antenna

The LMS application requires NAD-83 coordinates. FCC internal systems then convert to NAD-27 and port over to CDBS for processing. This interference analysis utilizes truncated NAD-27 coordinates to replicate FCC processing.

Ch.	Call	City/State	Dist	Status	Application Ref. No.	---Population (2000 Census)---	
			(km)			Baseline	New Interference
38	WTSJ-LP	MILWAUKEE WI	136.4	LIC	BLTTL-20070223AGI	---	none
40	WESV-LD	CHICAGO IL	134.9	LIC	BLDTL-20101213AGJ	---	none
40	WESV-LD	CHICAGO IL	134.9	CP	BPDTL-20141205AAI	---	none
40	WODF-LD	ROCKFORD IL	148.3	CP	BLANK-8457	---	none
40	WODF-LD	ROCKFORD IL	37.4	CP	BNPDTL-20091019ABX	37,876	30 (0.08%)
40	WODF-LD	ROCKFORD IL	106.3	LIC	BLANK-8440	---	none
40	W40CN-D	SUGAR GROVE IL	80.9	LIC	BLDTA-20110103ACG	---	none
40	WPXE-TV	KENOSHA WI	136.3	LIC	BLCDT-20040206AAT	---	none
41	KGCW	BURLINGTON IA	187.4	LIC	BLCDT-20081120ABD	869,270	75 (0.01%)
41	K41DD-D	DES MOINES IA	385.3	LIC	BLDTL-20101209AJO	---	none
41	WICD	CHAMPAIGN IL	268.9	LIC	BLCDT-20050620AAO	---	none
41	WIFR	FREEPORT IL	0.0	LIC	BLCDT-20081223ACE	1,002,013	953,325 (95.1%) *
41	(EXP)	Joliet IL	129.7	CP	BLANK-13925	---	none
41	W41DP-D	SPRINGFIELD IL	282.0	LIC	BLDTL-20140228AFB	---	none
41	W41DP-D	SPRINGFIELD IL	293.1	CP	BLANK-1376	---	none
41	W41DS-D	FORT WAYNE IN	378.7	CP MOD	BMPDTL-20140528AIJ	---	none
41	W41DS-D	FORT WAYNE IN	369.1	CP	BLANK-8098	---	none
41	W41DS-D	FORT WAYNE IN	378.7	LIC	BLANK-8065	---	none
41	WOLP-CD	GRAND RAPIDS MI	303.2	LIC	BLDTL-20101006AAU	---	none
41	K41MP-D	ROCHESTER MN	318.3	CP	BNPDTL-20100604ACV	---	none
41	NEW	ROCHESTER MN	318.3	APP	BNPDTL-20100604ACW	---	none
41	WGBA-TV	GREEN BAY WI	248.6	LIC	BLCDT-20080813ADO	---	none
42	WQRF-TV	ROCKFORD IL	1.0	LIC	BLCDT-20070404ABY	---	none
44	WCRD-LP	CARTHAGE IL	33.5	LIC	BLTTL-20050228ACY	---	none

* WIFR is accepting 95.1 percent interference from W22EE-D.
 See engineering statement.