

Engineering Statement
Special Temporary Authority
prepared for
Gray Television Licensee, LLC
KYCW-LD Branson, MO
Facility ID 11135
Ch. 25 (digital) 3.9 kW

Gray Television Licensee, LLC (“Gray”) is the licensee of Low Power Television (“LPTV”) station KYCW-LD, Channel 25, Facility ID 11135, Branson, MO (file# 0000022105). A Construction Permit (“CP”, file# 0000036581) authorizes relocation of KYCW-LD to an existing tower structure located at Fordland, MO. This statement supports *Gray’s* request for Special Temporary Authority (“STA”) to operate KYCW-LD at an alternate location on an interim basis.

KYCW-LD is present operating on Channel 19 pursuant to STA (file# 0000024399 as extended by 0000035436), located at the same site as the KYCW-LD CP. The Channel 19 operation is to provide service with the antenna system associated with the former operation of KGHZ(DT) (Ch. 19, Facility ID 35630, Springfield, MO). The licensee of KGHZ relinquished KGHZ’s Channel 19 spectrum as described in the *Incentive Auction Closing and Channel Reassignment Public Notice* (“CCRPN”, DA 17-317, released April 13, 2017).

The KYCW-LD Channel 25 CP and Channel 19 STA facilities specify the tower structure associated with Antenna Structure Registration number 1218324. The Fordland tower structure is owned by *Gray* and is utilized by *Gray’s* KYTV(DT) (Ch. 44, Facility ID 36003, Springfield, MO). KYTV has been reassigned to Channel 19 in the *CCRPN* with a transition at phase one (completion date November 30, 2018). To meet this deadline, KYCW-LD must soon vacate the current use of the Channel 19 equipment in order to facilitate KYTV’s operation on Channel 19. Since KYTV has no dependencies, *Gray* intends to transition KYTV to Channel 19 well in advance of the completion date.

Engineering Statement Gray Television Licensee, LLC

KYCW-LD Branson, MO
(page 2 of 3)



The STA proposed herein will return KYCW-LD to its licensed Channel 25, and specifies use of a different site in order to allow for the necessary tower and antenna work at the CP site associated with KYTV's transition to Channel 19.

The proposed STA facility will employ the tower structure at the KYCW-LD and KYTV studio location associated with FCC Antenna Structure Registration number 1007779, 32.2 km distant from the KYCW-LD CP site and 17.4 km from the licensed KYCW-LD site. The proposed STA facility will employ a directional antenna system to be side-mounted on the tower and no change to the overall structure height is proposed.

The proposed STA facility will operate at 3.9 kW ERP with a directional antenna and a "stringent" out of channel emission mask. A plot of the directional antenna's azimuthal pattern is supplied in Figure 1. As shown in Figure 2, the proposed STA facility's 51 dB μ contour is encompassed by that of the CP facility.

Interference study per OET Bulletin 69¹ shows that the proposal complies with the FCC's interference protection requirements toward pertinent nearby pre-auction and post-auction digital television, television translator, LPTV, and Class A stations. The results, summarized in Tables 1 and 2, 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.

The nearest FCC monitoring station is 608 km distant at Grand Island, NE. 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

¹FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 1 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

Engineering Statement
Gray Television Licensee, LLC

KYCW-LD Branson, MO
(page 3 of 3)



nondirectional AM stations within 0.8 km and no directional 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 considering 20 percent antenna relative field in downward elevations (pattern data shows less than 20 percent relative field at angles 30 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $1.5 \mu\text{W}/\text{cm}^2$, which is 0.4 percent of the general population/uncontrolled maximum permitted 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.

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. No increase in structure height is proposed.

List of Attachments

- Figure 1 Antenna Azimuthal Pattern
- Figure 2 Coverage Contour Comparison
- Table 1 Interference Analysis Results Summary (Stations on Pre-Auction Channels)
- Table 2 Interference Analysis Results Summary (Stations on Post-Auction Channels)

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E. March 7, 2018
207 Old Dominion Road Yorktown, VA 23692 703-650-9600

**Azimuth Pattern - Relative Field
(True North)**

0

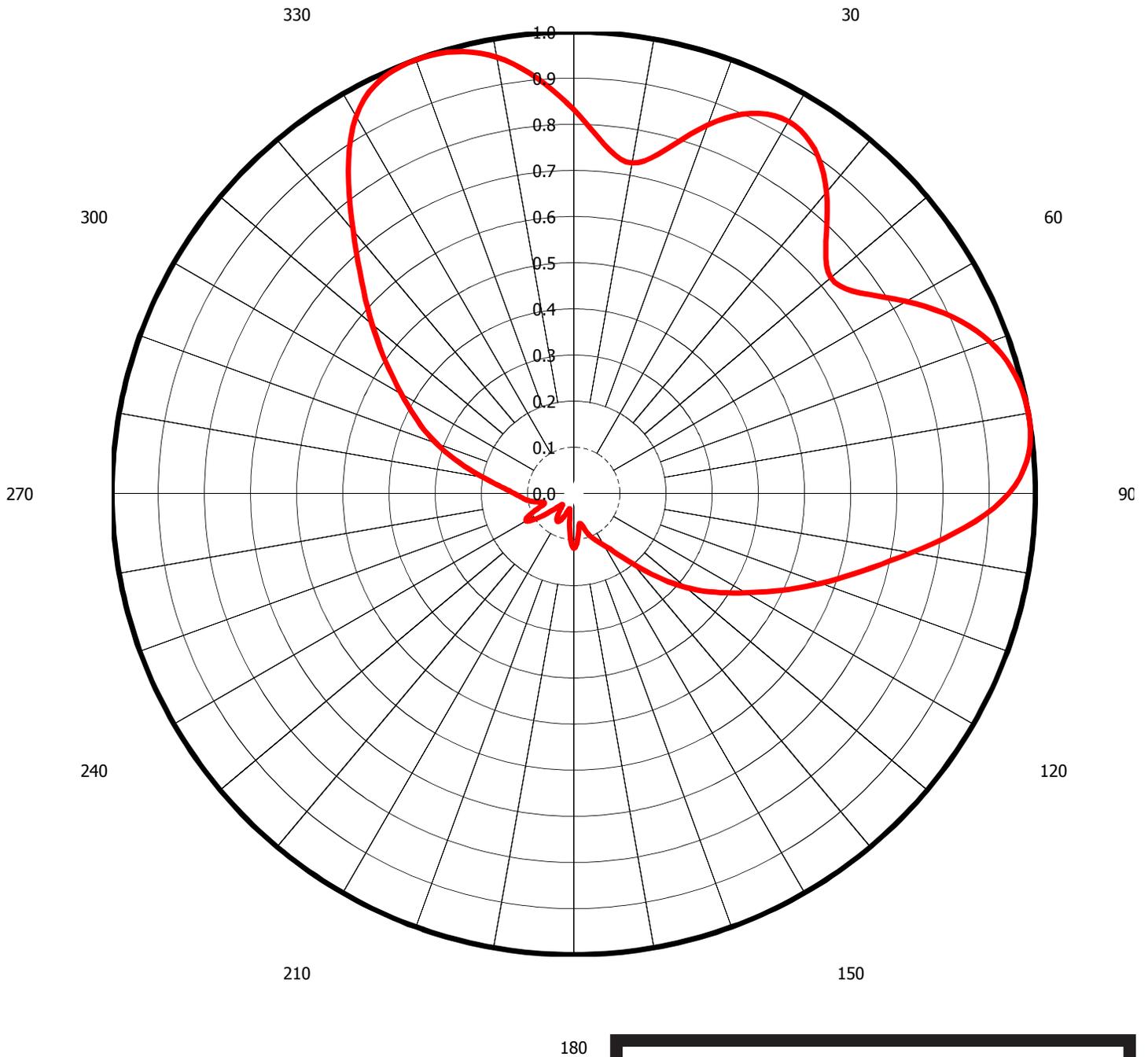
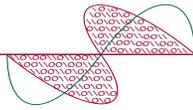


Figure 1
Antenna Azimuthal Pattern
KYCW-LD Branson, MO
Facility ID 11135
STA Ch. 25 (digital) 3.9 kW

prepared for
Gray Television Licensee, LLC

March, 2018



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

Figure 2
Coverage Contour Comparison
KYCW-LD Branson, MO
Facility ID 11135
STA Ch. 25 (digital) 3.9 kW

prepared for
Gray Television Licensee, LLC

March, 2018

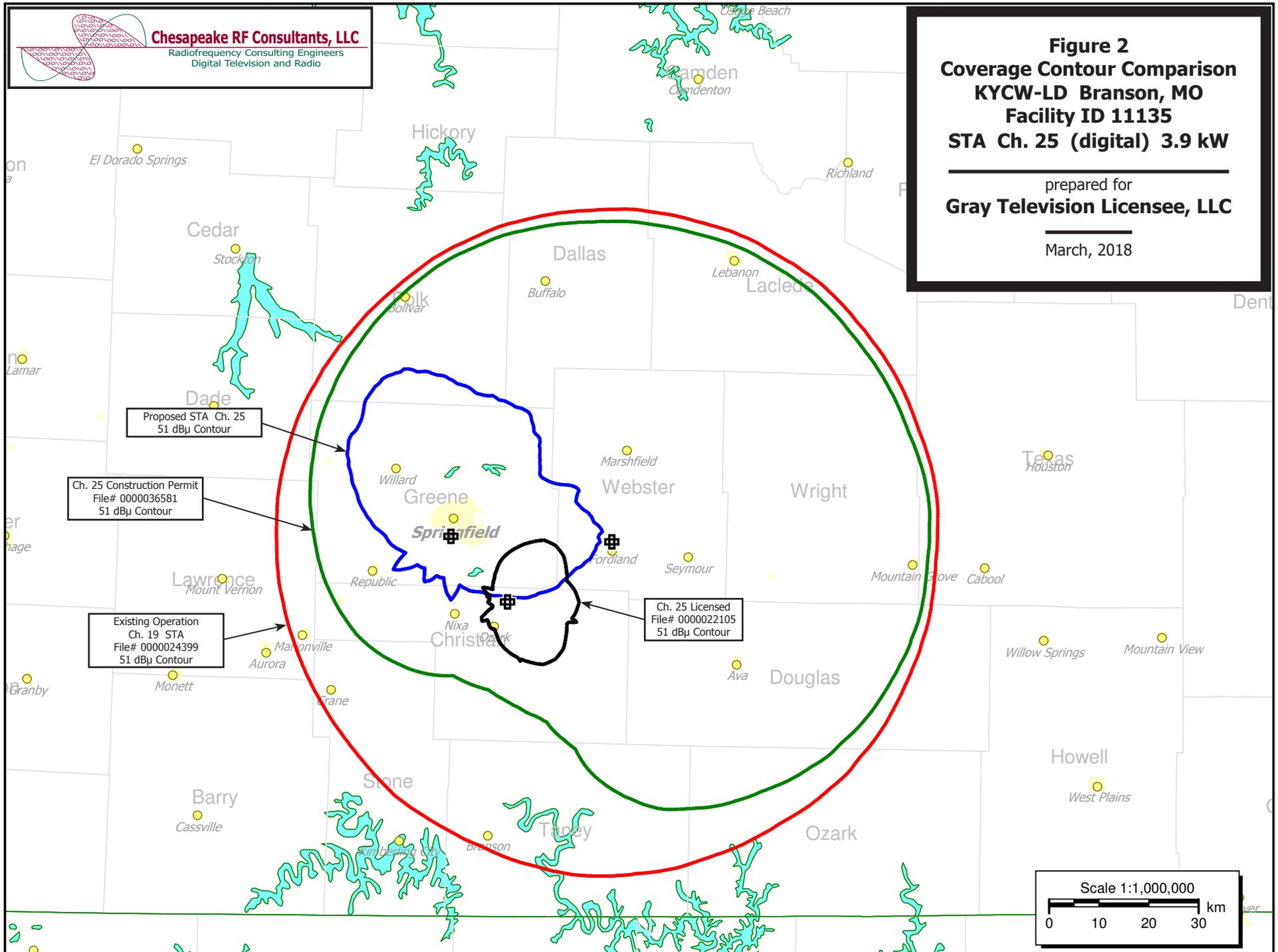
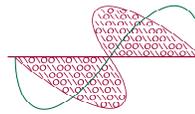


Table 1 KYCW-LD OET Bulletin 69 Interference Study
Stations on Pre-Auction Channels
 (page 1 of 2)



tvstudy v2.2.4 (Z2Qqz3)
 Database: localhost, Study: KYCW-LD prop STA pre-auct, Model: Longley-Rice
 Start: 2018.02.25 11:39:24

Study created: 2018.02.25 11:39:24

Study build station data: LMS TV 2018-02-24 LMSTV

Proposal: KYCW-LD D25 LD APP BRANSON, MO
 File number: KYCW-LD prop STA
 Facility ID: 11135
 Station data: User record
 Record ID: 1781
 Country: U.S.

Build options:
 Protect pre-transition records not on baseline channel

Search options:
 All post-transition APP, CP, and baseline records excluded

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K21JS	N21	TX	LIC	HARRISON, AR	BLTTL20111121DXG	104.7 km
No	KCTV	D24	DT	LIC	KANSAS CITY, MO	BLCDT20110405ABD	237.7
No	KJNM-LD	D25	LD	CP	FAYETTEVILLE, AR	BLANK0000010834	139.5
No	KCKS-LD	D25	LD	LIC	KANSAS CITY, KS	BLANK0000004587	256.2
No	K25NS-D	D25	LD	CP	CAPE GIRARDEAU, MO	BNPDTL20100907ABZ	297.3
No	K25NR-D	D25	LD	CP	COLUMBIA, MO	BLANK0000001278	199.4
Yes	KOZJ	D25	DT	LIC	JOPLIN, MO	BLEDT20060620ABP	110.0
No	K25NG-D	D25	DC	LIC	ST. LOUIS, MO	BLDTL20130805ABR	313.7
No	K46FG-D	D25	LD	APP	FALLS CITY, NE	BLANK0000029188	394.8
No	K25GJ	N25+	TX	LIC	MUSKOGEE, OK	BLTT20051206ADA	243.7
No	KGCT-CD	D25	DC	LIC	NOWATA, OK	BLDTA20091222AAA	214.3
No	K25MA-D	D25	LD	CP	PONCA CITY, OK	BNPDTL20100216AAZ	385.5
No	KUTU-CD	D25	DC	LIC	TULSA, OK	BLDTA20110506AAV	265.6
No	K25MB-D	D25	LD	CP	VIAN, OK	BNPDTL20100504ALY	239.9
No	WATN-TV	D25	DT	LIC	MEMPHIS, TN	BLCDT20050628AAP	380.6
No	K26GS-D	D26	LD	LIC	HARRISON, AR	BLDTL20100517AFK	121.5
No	K26KT-D	D26	LD	CP	ELDON, MO	BNPDTL20090825BVM	145.5
No	K26KU-D	D26	LD	CP	MARSHALL, MO	BNPDTL20090825BXR	216.9
No	K26KV-D	D26	LD	CP	SEDALIA, MO	BNPDTL20090825BWL	158.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

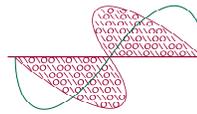
Channel: D25
 Mask: Stringent
 Latitude: 37 10 59.00 N (NAD83)
 Longitude: 93 18 13.00 W
 Height AMSL: 454.0 m
 HAAT: 0.0 m
 Peak ERP: 3.90 kW
 Antenna: KAT-K723147 1x2 (ID 1001033) 30.0 deg
 Elev Pattn: Generic

49.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	2.70 kW	77.6 m	32.6 km
45.0	2.43	42.0	25.4
90.0	3.47	56.2	30.5
135.0	0.260	58.5	18.1
180.0	0.055	75.1	13.6
225.0	0.008	83.5	9.1
270.0	0.065	71.4	13.8
315.0	1.68	73.9	29.7

Database HAAT does not agree with computed HAAT

Table 1 KYCW-LD OET Bulletin 69 Interference Study
Stations on Pre-Auction Channels
 (page 2 of 2)



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

Database HAAT: 0 m Computed HAAT: 67 m

Distance to Canadian border: 1019.1 km

Distance to Mexican border: 1113.6 km

Conditions at FCC monitoring station: Grand Island NE
 Bearing: 314.8 degrees Distance: 606.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 291.2 degrees Distance: 1084.0 km

Study cell size: 1.00 km
 Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
 Maximum new IX to LPTV: 2.00%

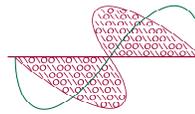
 Interference to BLEDT20060620ABP LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KOZJ	D25	DT	LIC	JOPLIN, MO	BLEDT20060620ABP	
Undesireds:	KYCW-LD	D25	LD	APP	BRANSON, MO	KYCW-LD prop STA	110.0 km
	KGCT-CD	D25	DC	LIC	NOWATA, OK	BLDTA20091222AAA	106.5
	KUTU-CD	D25	DC	LIC	TULSA, OK	BLDTA20110506AAV	165.6
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	17569.8 431,775		17510.5 430,567		17456.5 430,394	17393.6 428,923	0.36 0.34
Undesired			Total IX		Unique IX, before	Unique IX, after	
KYCW-LD D25 LD APP			63.9		1,478	62.9	1,471
KGCT-CD D25 DC LIC			38.0		12	29.0	6
KUTU-CD D25 DC LIC			25.0		167	15.0	154

 Interference to proposal scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KYCW-LD	D25	LD	APP	BRANSON, MO	KYCW-LD prop STA	
	Service area		Terrain-limited		IX-free	Percent IX	
	1697.9 264,578		1671.5 263,779		1671.5 263,779	0.00 0.00	

Table 2 KYCW-LD OET Bulletin 69 Interference Study
Stations on Post-Auction Channels
 (page 1 of 3)



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

tvstudy v2.2.4 (Z2Qqz3)
 Database: localhost, Study: KYCW-LD prop STA_post-auct, Model: Longley-Rice
 Start: 2018.02.25 12:05:04

Study created: 2018.02.25 12:05:04

Study build station data: LMS TV 2018-02-24 LMSTV

Proposal: KYCW-LD D25 LD APP BRANSON, MO
 File number: KYCW-LD prop STA
 Facility ID: 11135
 Station data: User record
 Record ID: 1781
 Country: U.S.

Search options:
 Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K21JS	N21	TX	LIC	HARRISON, AR	BLTTL20111121DXG	104.7 km
No	KKAF-CD	D24	DC	CP	SILOAM SPRINGS, AR	BLANK0000034437	139.7
No	KCTV	D24	DT	LIC	KANSAS CITY, MO	BLCDT20110405ABD	237.7
Yes	KXNW	D25	DT	CP	EUREKA SPRINGS, AR	BLANK0000034210	103.5
No	KJNM-LD	D25	LD	CP	FAYETTEVILLE, AR	BLANK0000010834	139.5
No	KFDF-CD	D25	DC	CP	FORT SMITH, AR	BLANK0000034445	215.1
No	KCKS-LD	D25	LD	LIC	KANSAS CITY, KS	BLANK0000004587	256.2
Yes	KMCI-TV	D25	DT	CP	LAWRENCE, KS	BLANK0000034675	226.7
No	WDKA	D25	DT	CP	PADUCAH, KY	BLANK0000034371	386.6
No	K25NS-D	D25	LD	CP	CAPE GIRARDEAU, MO	BNPDTL20100907ABZ	297.3
No	K25NR-D	D25	LD	CP	COLUMBIA, MO	BLANK0000001278	199.4
No	K25NG-D	D25	DC	LIC	ST. LOUIS, MO	BLDTL20130805ABR	313.7
No	K46FG-D	D25	LD	APP	FALLS CITY, NE	BLANK0000029188	394.8
No	K25GJ	N25+	TX	LIC	MUSKOGEE, OK	BLTT20051206ADA	243.7
No	KGCT-CD	D25	DC	LIC	NOWATA, OK	BLDTA20091222AAA	214.3
No	KWTV-DT	D25	DT	CP	OKLAHOMA CITY, OK	BLANK0000028029	413.9
No	K25MA-D	D25	LD	CP	PONCA CITY, OK	BNPDTL20100216AAZ	385.5
No	K25MB-D	D25	LD	CP	VIAN, OK	BNPDTL20100504ALY	239.9
No	WATN-TV	D25	DT	LIC	MEMPHIS, TN	BLCDT20050628AAP	380.6
No	K26GS-D	D26	LD	LIC	HARRISON, AR	BLDTL20100517AFK	121.5
No	K26KT-D	D26	LD	CP	ELDON, MO	BNPDTL20090825BVM	145.5
No	K26KU-D	D26	LD	CP	MARSHALL, MO	BNPDTL20090825BXR	216.9
No	K26KV-D	D26	LD	CP	SEDALIA, MO	BNPDTL20090825BWL	158.7
No	KOTV-DT	D26	DT	CP	TULSA, OK	BLANK0000028019	248.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D25
 Mask: Stringent
 Latitude: 37 10 59.00 N (NAD83)
 Longitude: 93 18 13.00 W
 Height AMSL: 454.0 m
 HAAT: 0.0 m
 Peak ERP: 3.90 kW
 Antenna: KAT-K723147 1x2 (ID 1001033) 30.0 deg
 Elev Pattnr: Generic

49.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	2.70 kW	77.6 m	32.6 km
45.0	2.43	42.0	25.4
90.0	3.47	56.2	30.5
135.0	0.260	58.5	18.1
180.0	0.055	75.1	13.6
225.0	0.008	83.5	9.1
270.0	0.065	71.4	13.8
315.0	1.68	73.9	29.7

Table 2 KYCW-LD OET Bulletin 69 Interference Study
Stations on Post-Auction Channels
 (page 2 of 3)



Database HAAT does not agree with computed HAAT
 Database HAAT: 0 m Computed HAAT: 67 m

Distance to Canadian border: 1019.1 km

Distance to Mexican border: 1113.6 km

Conditions at FCC monitoring station: Grand Island NE
 Bearing: 314.8 degrees Distance: 606.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 291.2 degrees Distance: 1084.0 km

Study cell size: 1.00 km
 Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
 Maximum new IX to LPTV: 2.00%

 Interference to BLANK0000034210 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KXNW	D25	DT	CP	EUREKA SPRINGS, AR	BLANK0000034210	
Undesireds:	KYCW-LD	D25	LD	APP	BRANSON, MO	KYCW-LD prop STA	103.5 km
	KKAF-CD	D24	DC	CP	SILOAM SPRINGS, AR	BLANK0000034437	36.3
	KFDF-CD	D25	DC	CP	FORT SMITH, AR	BLANK0000034445	113.3
	KMCI-TV	D25	DT	CP	LAWRENCE, KS	BLANK0000034675	289.8
	KWTV-DT	D25	DT	CP	OKLAHOMA CITY, OK	BLANK0000028029	330.5
	KOTV-DT	D26	DT	CP	TULSA, OK	BLANK0000028019	160.4

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
15422.5	600,679	14857.6	589,407	0.00
		595,810	589,407	0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
KYCW-LD D25 LD APP	1.0	0	0
KKAF-CD D24 DC CP	30.4	1,596	27.3
KFDF-CD D25 DC CP	78.3	474	60.1
KMCI-TV D25 DT CP	55.1	4,145	47.1
KWTV-DT D25 DT CP	33.3	369	20.2
KOTV-DT D26 DT CP	1.0	0	1.0

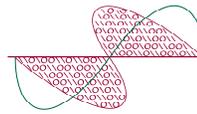
 Interference to BLANK0000034675 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KMCI-TV	D25	DT	CP	LAWRENCE, KS	BLANK0000034675	
Undesireds:	KYCW-LD	D25	LD	APP	BRANSON, MO	KYCW-LD prop STA	226.7 km
	KCTV	D24	DT	LIC	KANSAS CITY, MO	BLCDT20110405ABD	11.1
	KXNW	D25	DT	CP	EUREKA SPRINGS, AR	BLANK0000034210	289.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
31291.7	2,423,221	31100.5	2,417,782	0.00
		2,420,836	2,417,782	0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
KYCW-LD D25 LD APP	4.0	16	0.0
KCTV D24 DT LIC	175.0	3,036	175.0
KXNW D25 DT CP	8.1	18	8.1

Table 2 KYCW-LD OET Bulletin 69 Interference Study
 Stations on Post-Auction Channels
 (page 3 of 3)



Interference to proposal scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KYCW-LD	D25	LD	APP	BRANSON, MO	KYCW-LD prop STA	
Undesireds:	KXNW	D25	DT	CP	EUREKA SPRINGS, AR	BLANK0000034210	103.5 km
	KMCI-TV	D25	DT	CP	LAWRENCE, KS	BLANK0000034675	226.7
	Service area		Terrain-limited		IX-free	Percent IX	
	1697.9	264,578	1671.5	263,779	1653.2	263,527	1.09 0.10
Undesired			Total IX		Unique IX	Prct Unique IX	
KXNW D25 DT CP			1.0	0	0.0	0.00	0.00
KMCI-TV D25 DT CP			18.3	252	17.3	1.03	0.10