

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
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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 dBμ 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.

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

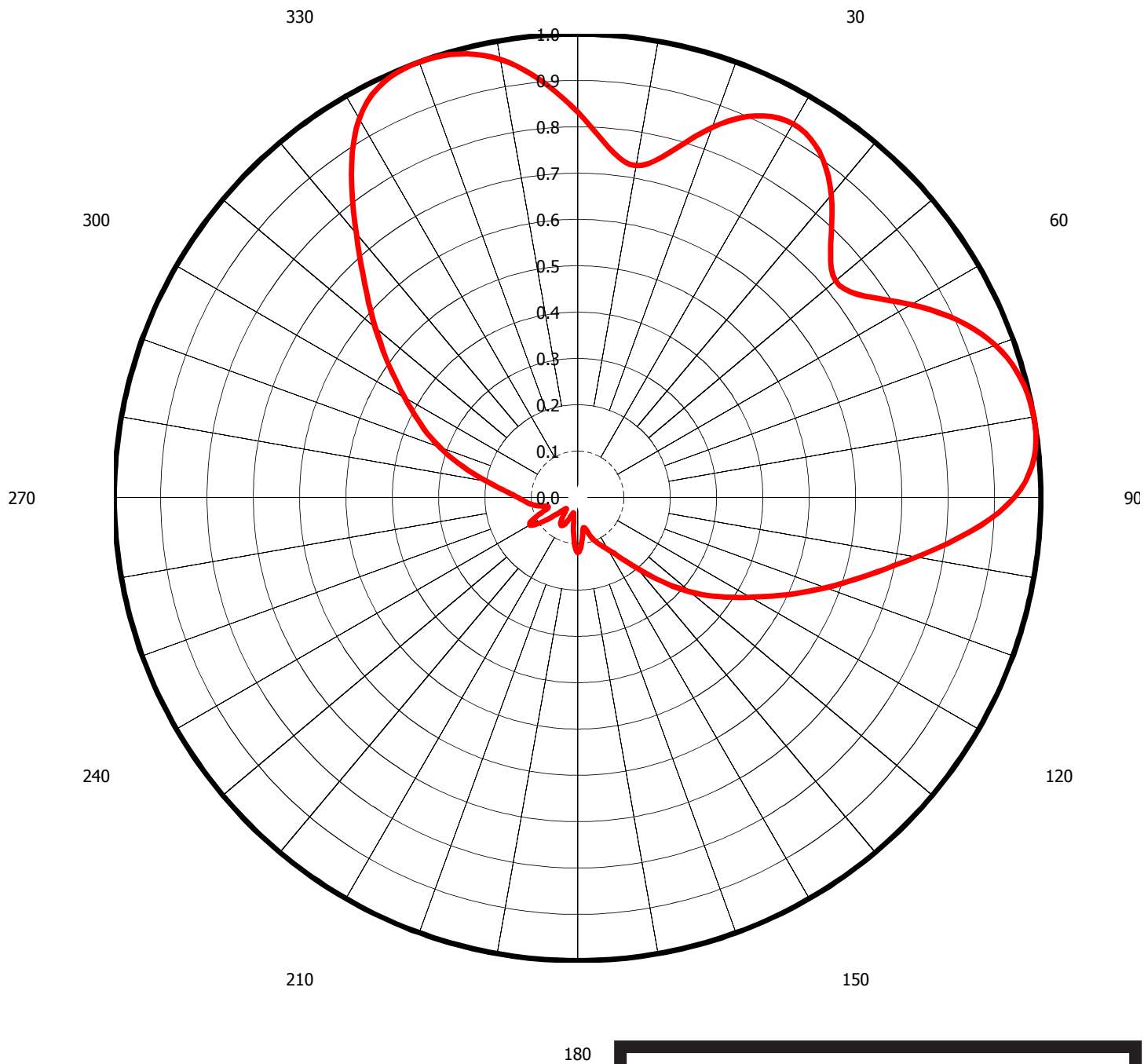


Figure 1
Antenna Azimuthal Pattern
KYCW-LD Branson, MO
Facility ID 11135
STA Ch. 25 (digital) 3.9 kW

prepared for
Gray Television Licensee, LLC

March, 2018



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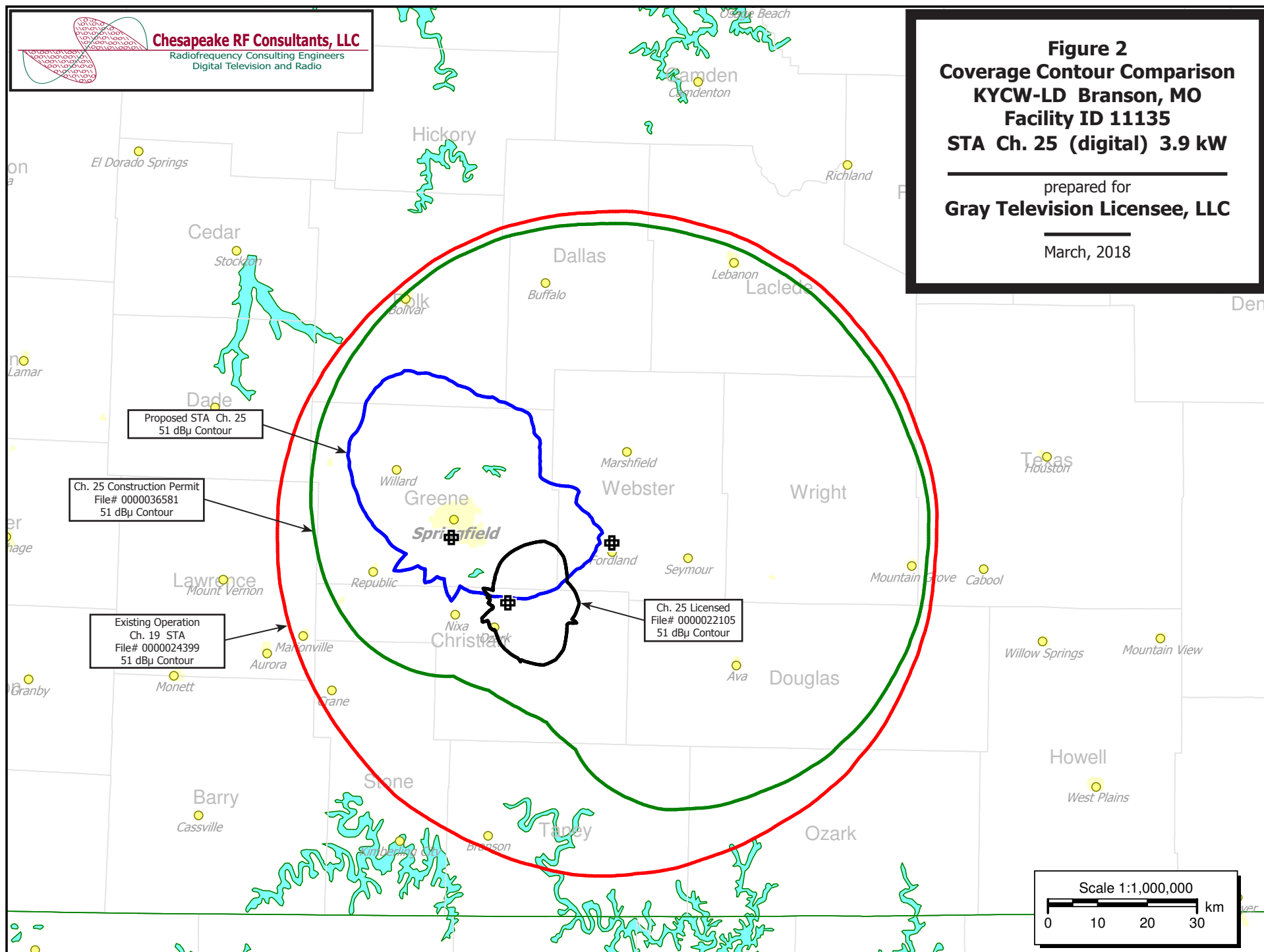
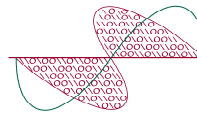


Table 1 KYCW-LD OET Bulletin 69 Interference Study

Stations on Pre-Auction Channels

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Chesapeake RF Consultants, LLC

Radiofrequency Consulting Engineers
Digital Television and Radio

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 | BLEDL20060620ABP | 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:

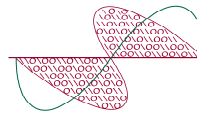
Channel: D25
Mask: Stringent
Latitude: 37 10 59.00 N (NAD83)
Longitude: 93 18 13.00 W
Height AMSL: 454.0 m
HAAT: 0.0 m
Peak ERP: 3.90 kW
Antenna: KAT-K723147 1x2 (ID 1001033) 30.0 deg
Elev Pattn: Generic

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

| | Call | Chan | Svc | Status | City, State | File Number | Distance |
|--------------------|--------------|---------|-----------------|----------|-------------------|------------------|----------------|
| Desired: | 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 | 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 | 29.0 | 6 |
| KUTU-CD D25 DC LIC | | | 25.0 | 167 | 16.0 | 15.0 | 154 |

Interference to proposal scenario 1

| | Call | Chan | Svc | Status | City, State | File Number | Distance |
|----------|--------------|---------|-----------------|---------|-------------|------------------|----------|
| Desired: | 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 | 263,779 | 0.00 | 0.00 |

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



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 | KPFD-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 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 |

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

| | Call | Chan | Svc | Status | City, State | File Number | Distance |
|--------------------|--------------|-----------------|----------|-------------------|--------------------|------------------|----------------|
| Desired: | 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 | 595,810 | 14680.8 | 589,407 | 0.00 0.00 |
| ----- | | | | | | | |
| Undesired | | | Total IX | Unique IX, before | | Unique IX, after | |
| KYCW-LD D25 LD APP | | | 1.0 | 0 | | 0.0 | 0 |
| KKAF-CD D24 DC CP | | | 30.4 | 1,596 | | 27.3 | 1,557 |
| KFDF-CD D25 DC CP | | | 78.3 | 474 | | 60.1 | 296 |
| KMCI-TV D25 DT CP | | | 55.1 | 4,145 | | 47.1 | 4,112 |
| KWTV-DT D25 DT CP | | | 33.3 | 369 | | 20.2 | 257 |
| KOTV-DT D26 DT CP | | | 1.0 | 0 | | 1.0 | 0 |

 Interference to BLANK0000034675 CP scenario 1

| | Call | Chan | Svc | Status | City, State | File Number | Distance |
|--------------------|--------------|-----------------|----------|-------------------|--------------------|------------------|----------------|
| Desired: | 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 | 2,420,836 | 30917.5 | 2,417,782 | 0.00 0.00 |
| ----- | | | | | | | |
| Undesired | | | Total IX | Unique IX, before | | Unique IX, after | |
| KYCW-LD D25 LD APP | | | 4.0 | 16 | | 0.0 | 0 |
| KCTV D24 DT LIC | | | 175.0 | 3,036 | | 175.0 | 3,036 |
| KXNW D25 DT CP | | | 8.1 | 18 | | 4.0 | 2 |

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



Interference to proposal scenario 1

| | Call | Chan | Svc | Status | City, State | File Number | Distance |
|-------------------|--------------|-----------------|---------|----------|--------------------|------------------|----------|
| Desired: | 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 | 0.00 0.00 | |
| KMCI-TV D25 DT CP | | | | 18.3 252 | 17.3 252 | 1.03 0.10 | |