ENGINEERING EXHIBIT

Incentive Auction Channel Reassignment

Application for Modification of Digital Class A Television Station Construction Permit

prepared for

Ramar Communications, Inc.
KXTQ-CD Lubbock, TX
Facility ID 55055
Ch. 24 15 kW

Ramar Communications, Inc. ("Ramar") is the licensee of Class A television station KXTQ-CD, Channel 46, Facility ID 55055, Lubbock, TX. Reassignment of KXTQ-CD from Channel 46 to Channel 24 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice* (*"CCRPN"*, DA 17-317, released April 13, 2017). *Ramar* herein proposes modification of the KXTQ-CD Channel 24 Construction Permit ("CP", file# 0000027626). This application is intended to be filed during the second filing window.[1] The CP authorizes operation at 5.3 kW effective radiated power ("ERP"). *Ramar* proposes herein to increase the ERP to 15 kW and utilize a "full service" emission mask.

As with the current authorization, the proposed Channel 24 operation will employ a new antenna system to be side-mounted on the KXTQ-CD tower. The tower structure corresponds to FCC Antenna Structure Registration number 1248244. Figure 1 depicts the 51 dBµ coverage contour of the authorized and proposed facilities, demonstrating compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69[2] shows that the proposal complies with the FCC's interference protection requirements toward all post-auction digital television and Class A

[1]Public Notice *"Incentive Auction Task Force and Media Bureau Announce the Opening of the Second Filing Window for Eligible Full Power and Class A Television Station—October 3 Through November 2, 2017"* DA 17-911, released September 20, 2017.

[2]FCC 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

television stations, as well as existing and previously proposed television translator and low power television 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.

The nearest FCC monitoring station is 764 km distant at Douglas, AZ. 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). The site location is beyond the border areas requiring international coordination. There are no authorized AM stations within 3 kilometers of the site.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed operation 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 15 percent antenna relative field in downward elevations (pattern data shows less than 15 percent relative field at angles 10 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 0.16 $\mu W/cm^2$, which is 0.04 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,

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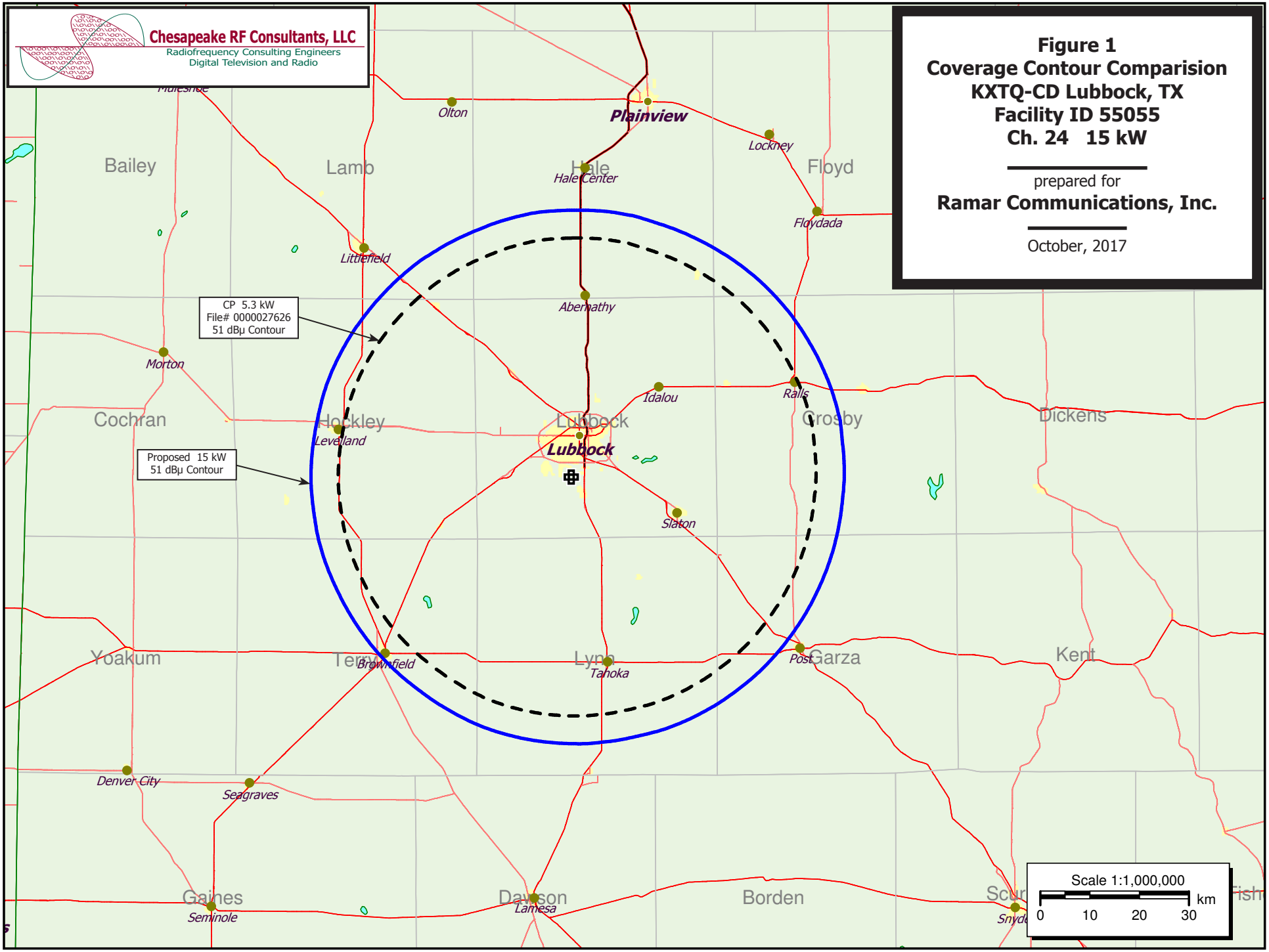
terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCCs implementation of TVStudy show excellent correlation.

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.

List of Attachments

Figure 1	Coverage Contour Comparison
Table 1	OET Bulletin 69 Interference Study
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

Chesapeake RF Consultants, LLC
Joseph M. Davis, P.E. October 9, 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 Comparision
KXTQ-CD Lubbock, TX
Facility ID 55055
Ch. 24 15 kW
prepared for
Ramar Communications, Inc.
October, 2017
CP 5.3 kW
File# 0000027626
51 dBµ Contour
Proposed 15 kW
51 dBµ Contour
Olton
Plainview
Lockney
Hale Center
Floydada
Littlefield
Abernathy
Morton
Idalou
Ralls
Levelland
Lubbock
Slaton
Brownfield
Tahoka
Post
Denver City
Seagraves
Seminole
Lamesa
Bailey
Lamb
Hale
Floyd
Cochran
Hockley
Crosby
Dickens
Yoakum
Terry
Lynn
Garza
Kent
Gaines
Dawson
Borden
Scurry
Fisher
Scale 1:1,000,000
km
0
10
20
30

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tvstudy v2.2.3 (6K70F1)
Database: localhost,  Study: KXTQ-CD  15kW max FS (3431),  Model: Longley-Rice
Start: 2017.10.09 20:04:11

Study created: 2017.10.09 20:03:32

Study build station data: LMS TV 2017-10-07 LMSTV

    Proposal: KXTQ-CD D24 DC APP LUBBOCK, TX
 File number: KXTQ-CD  15kW max FS
 Facility ID: 55055
Station data: User record
   Record ID: 1300
     Country: U.S.

Build options:
Protect LPTV records from Class A

Stations potentially affected by proposal:

IX   Call      Chan  Svc Status  City, State              File Number             Distance
No   K23MG-D   D23   LD  CP      CLOVIS, NM               BNPDTL20101012AEV       161.1 km
Yes  K23LV-D   D23   LD  CP      LUBBOCK, TX              BNPDTL20100728ACK         9.9
No   KPEJ-TV   D23   DT  LIC     ODESSA, TX               BLCDT20060629AGO        160.9
No   K23MI-D   D23   LD  CP      PLAINVIEW, TX            BNPDTL20100324ADL        76.9
Yes  K23LG-D   D23   LD  CP      TAHOKA, TX               BNPDTL20100323AIS        48.7
No   KLCW-TV   D23   DT  CP      WOLFFORTH, TX            BLANK0000026475           0.0
No   KNAT-TV   D24   DT  LIC     ALBUQUERQUE, NM          BLCDT20130710AAN        461.0
No   K42FX-D   D24   LD  APP     HOBBS, NM                BLANK0000029527         147.9
No   KOKH-TV   D24   DT  LIC     OKLAHOMA CITY, OK        BLCDT20041207ACV        461.4
No   K42IB-D   D24   LD  APP     SAYRE, OK                BLANK0000029947         269.9
Yes  K24JX-D   D24   LD  CP      ACKERLY, TX              BNPDTL20100323AIK       102.5
No   DK49JL-D  D24   LD  APP     AMARILLO, TX             BDISDTL20101110AAF      195.5
No   NEW       D24   LD  APP     BALMORHEA, TX            BNPDTL20100416ABH       329.9
Yes  K24GP     N24+  TX  LIC     LUBBOCK, TX              BLTTL20050926ADH          2.7
Yes  K24GP     D24   LD  CP      LUBBOCK, TX              BDFCDTL20100726AKC        2.7
No   DKZMO-LP  D24   LD  APP     MIDLAND, TX              BDISDTL20090824AEP      171.3
No   NEW       D24   LD  APP     ODESSA, TX               BNPDTL20090825BPL       166.4
Yes  K24IX-D   D24   LD  LIC     TURKEY, TX               BLDTT20101115FOC        121.6
No   K24HH-D   D24   DC  LIC     WICHITA FALLS, TX        BLDTL20101026ABY        309.5
No   KTEL-TV   D25   DT  LIC     CARLSBAD, NM             BLCDT20081125ADK        246.3
No   K25MT-D   D25   LD  CP      BIG SPRING, TX           BNPDTL20100312ACX       145.9
Yes  KTTZ-TV   D25   DT  CP      LUBBOCK, TX              BLANK0000026301           9.0
Yes  KRDJ-LD   D25   LD  CP      LUBBOCK, TX              BMPDTL20140805ADN         2.7
No   K25ML-D   D25   LD  CP      PLAINVIEW, TX            BNPDTL20100324ADM        76.9
No   K25LZ-D   D25   LD  CP      ROSCOE, TX               BNPDTL20100310ACD       167.2
No   K25CP-D   D25   LD  LIC     TULIA, TX                BLDTT20110425ACD        115.6

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

    Channel: D24
       Mask: Full Service
   Latitude:  33 30  8.30 N (NAD83)
  Longitude: 101 52 21.30 W
Height AMSL: 1248.8 m
       HAAT: 0.0 m
   Peak ERP: 15.0 kW
    Antenna: Omnidirectional
Elev Pattrn: Generic
  Elec Tilt: 0.50

49.8 dBu contour:
Azimuth      ERP       HAAT   Distance
  0.0 deg   15.0 kW   267.4 m   55.1 km
 45.0       15.0      280.2     55.8
 90.0       15.0      285.9     56.1
135.0       15.0      283.5     56.0
180.0       15.0      268.9     55.2
225.0       15.0      253.7     54.3
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270.0       15.0      247.0     53.9
315.0       15.0      250.9     54.1

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m   Computed HAAT: 267 m

**Proposal service area extends beyond baseline plus 1.0%
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 1722.5 km

Distance to Mexican border: 404.8 km

Conditions at FCC monitoring station: Douglas AZ
Bearing: 255.2 degrees   Distance: 762.4 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 338.9 degrees   Distance: 793.4 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%
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Interference to BNPDTL20100728ACK CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K23LV-D	D23	LD	CP	LUBBOCK, TX	BNPDTL20100728ACK	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	9.9 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	9.9
	KMYL-LD	D22	LD	LIC	LUBBOCK, TX	BLDTL20100519ADK	9.9
	KLCW-TV	D23	DT	CP	WOLFFORTH, TX	BLANK0000026475	9.9
	K24GP	N24+	TX	LIC	LUBBOCK, TX	BLTTL20050926ADH	8.7

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
306.2	202,833	306.2	202,833	6.0	4,847	6.0	4,847	0.00	0.00

Undesired	Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	115.9	36,011	0.0	0	
KXTQ-CD D24 DC APP	0.0	0		0.0	0
KMYL-LD D22 LD LIC	151.6	51,731	0.0	0	0.0	0
KLCW-TV D23 DT CP	300.3	197,986	148.7	146,255	148.7	146,255

Interference to BNPDTL20100728ACK CP, scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K23LV-D	D23	LD	CP	LUBBOCK, TX	BNPDTL20100728ACK	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	9.9 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	9.9
	KMYL-LD	D22	LD	LIC	LUBBOCK, TX	BLDTL20100519ADK	9.9
	KLCW-TV	D23	DT	CP	WOLFFORTH, TX	BLANK0000026475	9.9
	K24GP	D24	LD	CP	LUBBOCK, TX	BDFCDTL20100726AKC	8.7

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
306.2	202,833	306.2	202,833	5.0	3,797	5.0	3,797	0.00	0.00

Undesired	Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	115.9	36,011	0.0	0	
KXTQ-CD D24 DC APP	0.0	0		0.0	0
KMYL-LD D22 LD LIC	151.6	51,731	0.0	0	0.0	0
KLCW-TV D23 DT CP	300.3	197,986	148.7	146,255	148.7	146,255
K24GP D24 LD CP	6.9	7,069	1.0	1,050	1.0	1,050

Table 1 KXTQ-CD OET Bulletin 69 Interference Study
(page 3 of 5)

Interference to BNPDTL20100323AIS CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K23LG-D	D23	LD	CP	TAHOKA, TX	BNPDTL20100323AIS	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	48.7 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	48.7
	KMYL-LD	D22	LD	LIC	LUBBOCK, TX	BLDTL20100519ADK	48.7
	KMDF-LD	D22	LD	LIC	MIDLAND, TX	BLANK0000004506	119.6
	KPEJ-TV	D23	DT	LIC	ODESSA, TX	BLCDT20060629AGO	114.2
	KLCW-TV	D23	DT	CP	WOLFFORTH, TX	BLANK0000026475	48.7
	K24GP	N24+	TX	LIC	LUBBOCK, TX	BLTTL20050926ADH	50.3

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
1371.1	4,185	1371.1	4,185	97.7	24	97.7	24	0.00	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	3.0	0	0.0	0		
KXTQ-CD D24 DC APP	0.0	0			0.0	0
KMYL-LD D22 LD LIC	5.0	0	0.0	0	0.0	0
KPEJ-TV D23 DT LIC	3.0	4	0.0	0	0.0	0
KLCW-TV D23 DT CP	1273.4	4,161	1265.4	4,157	1265.4	4,157

Interference to BNPDTL20100323AIK CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K24JX-D	D24	LD	CP	ACKERLY, TX	BNPDTL20100323AIK	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	102.5 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	102.5
	K24GP	N24+	TX	LIC	LUBBOCK, TX	BLTTL20050926ADH	103.9

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
1504.2	1,370	1495.2	1,368	1492.2	1,368	1487.2	1,368	0.34	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	3.0	0	3.0	0		
KXTQ-CD D24 DC APP	8.0	0			8.0	0

Interference to BLTTL20050926ADH LIC, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K24GP	N24+	TX	LIC	LUBBOCK, TX	BLTTL20050926ADH	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	2.7 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	2.7
	KLCW-TV	D23	DT	CP	WOLFFORTH, TX	BLANK0000026475	2.7
	KTTZ-TV	D25	DT	CP	LUBBOCK, TX	BLANK0000026301	8.3

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
483.8	239,715	478.8	239,479	10.9	8,553	10.9	8,553	0.00	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	467.9	230,926	429.3	227,945		
KXTQ-CD D24 DC APP	467.9	230,926			429.3	227,945
KLCW-TV D23 DT CP	6.9	1,156	0.0	0	0.0	0
KTTZ-TV D25 DT CP	31.7	1,825	0.0	0	0.0	0

Interference to BDFCDTL20100726AKC CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K24GP	D24	LD	CP	LUBBOCK, TX	BDFCDTL20100726AKC	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	2.7 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	2.7
	KLCW-TV	D23	DT	CP	WOLFFORTH, TX	BLANK0000026475	2.7
	KTTZ-TV	D25	DT	CP	LUBBOCK, TX	BLANK0000026301	8.3

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
1836.2	268,182	1836.2	268,182	19.8	9,497	19.8	9,497	0.00	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	1816.3	258,685	911.9	236,951		
KXTQ-CD D24 DC APP	1816.3	258,685			911.9	236,951
KLCW-TV D23 DT CP	253.8	2,975	0.0	0	0.0	0
KTTZ-TV D25 DT CP	888.6	21,290	0.0	0	0.0	0

Interference to BLDTT20101115FOC LIC, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K24IX-D	D24	LD	LIC	TURKEY, TX	BLDTT20101115FOC	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	121.6 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	121.6
	K24GP	N24+	TX	LIC	LUBBOCK, TX	BLTTL20050926ADH	119.1

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
2299.3	1,293	2101.4	1,293	2098.3	1,293	2095.3	1,293	0.14	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	3.0	0	3.0	0		
KXTQ-CD D24 DC APP	6.0	0			6.0	0

Interference to BLANK0000026301 CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KTTZ-TV	D25	DT	CP	LUBBOCK, TX	BLANK0000026301	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	9.0 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	9.0

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
16640.2	380,670	16587.6	380,262	16025.0	379,285	16587.6	380,262	-3.51	-0.26

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	562.6	977	562.6	977		
KXTQ-CD D24 DC APP	0.0	0			0.0	0

Interference to BMPDTL20140805ADN CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KRDJ-LD	D25	LD	CP	LUBBOCK, TX	BMPDTL20140805ADN	
Undesireds:	KXTQ-CD	D24	DC	BL	LUBBOCK, TX	DTVBL55055	2.7 km
	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	2.7
	K24GP	N24+	TX	LIC	LUBBOCK, TX	BLTTL20050926ADH	0.0
	K25HJ-D	D25	LD	LIC	HORNSBY RANCH, ETC., NM	BLANK0000024579	266.0
	KTTZ-TV	D25	DT	CP	LUBBOCK, TX	BLANK0000026301	8.3
	DKTGB-LP	D26	LD	APP	LUBBOCK, TX	BDISDTL20100728AGO	7.6

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
2943.5	275,216	2943.5	275,216	35.7	20,219	36.7	20,219	-2.78	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KXTQ-CD D24 DC BL	1152.2	11,103	2.0	0		
KXTQ-CD D24 DC APP	41.7	523			1.0	0
KTTZ-TV D25 DT CP	2902.8	254,993	1591.3	237,872	2387.1	242,404
DKTGB-LP D26 LD APP	518.7	12,593	3.0	4	3.0	4

Interference to proposal, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KXTQ-CD	D24	DC	APP	LUBBOCK, TX	KXTQ-CD 15kW max FS	
Undesireds:	KTTZ-TV	D25	DT	CP	LUBBOCK, TX	BLANK0000026301	9.0 km

Service area		Terrain-limited		IX-free		Percent IX	
9532.8	325,141	9513.9	325,079	9511.0	325,079	0.03	0.00

Table 1 KXTQ-CD OET Bulletin 69 Interference Study
(page 5 of 5)

Undesired		Total IX		Unique IX		Prcnt Unique IX	
KTTZ-TV D25 DT CP	3.0	0	3.0	0	0.03	0.00	

Channel and Facility Information

Section	Question	Response
Proposed Community of License	Facility ID	55055
	State	Texas
	City	LUBBOCK
	DCA Channel	24

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1248244
Coordinates (NAD83)	Latitude	33° 30' 08.3" N+
	Longitude	101° 52' 21.3" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	289.6 meters
	Support Structure Height	288.0 meters
	Ground Elevation (AMSL)	977.5 meters
Antenna Data	Height of Radiation Center Above Ground Level	271.3 meters
	Height of Radiation Center Above Mean Sea Level	1248.8 meters
	Effective Radiated Power	15 kW

Antenna Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	RFS
	Model	STA16-HP
	Rotation	
	Electrical Beam Tilt	0.5
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Horizontal
Elevation Radiation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	
	Out-of-Channel Emission Mask:	Full Service