

ENGINEERING EXHIBIT

Special Temporary Authority for Digital Low Power Television Station

prepared for

Gray Television Licensee, LLC

KNXG-LD College Station, TX

Facility ID 182059

Ch. 27 2.4 kW Directional

Gray Television Licensee, LLC (“Gray”) is the licensee of digital Low Power Television station KNXG-LD, Channel 49, College Station TX, Facility ID 182059 (file# 0000022100). KNXG-LD is presently silent. As a result of the Special Displacement Window,¹ a Construction Permit (“CP” file# 0000054049) authorizes KXND-LD to operate on Channel 27 at a different location from the licensed site. The equipment to construct the Channel 27 CP facility has not yet been obtained. The STA sought herein by *Gray* seeks to operate KNXG-LD on Channel 27 with a reduced facility in order to resume operation prior to the 12-month anniversary of the date of going silent.

The proposed STA facility will operate with 2.4 kW effective radiated power at the licensed site. The antenna supporting structure is an existing tower adjacent to the KBTX-TV studio building (Facility ID 6669, Bryan TX). *Gray* is also the licensee of KBTX-TV. The structure does not require an FCC Antenna Structure Registration number since its overall height is less than 61 meters above ground and the structure passes the FCC’s “TOWAIR” slope test program.

A directional transmitting antenna will be utilized, and Figure 1 supplies a plot of the antenna’s azimuthal pattern. As shown in Figure 2, the proposed STA facility’s contour does not exceed those of the KNXG-LD licensed Channel 49 and authorized Channel 27 facilities.

¹“*Incentive Auction Task Force and Media Bureau Announce Post-Incentive Auction Special Displacement Window April 10, 2018, through May 15, 2018, and Make Location and Channel Data Available,*” Public Notice, DA 18-124, released February 9, 2018.

Interference study per OET Bulletin 69² shows that the proposal complies with the FCC'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 FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

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 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 $63.6 \mu\text{W}/\text{cm}^2$, which is 17.3 percent of the general population/uncontrolled maximum permitted exposure limit. No other authorized TV or FM facility is located near enough to the site to be a significant contributor of electromagnetic field.

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. This exhibit is limited to the evaluation of exposure to RF electromagnetic field. No change in structure height is proposed.

²FCC 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.

Engineering Exhibit
Gray Television Licensee, LLC (KNXG-LD)
(page 3 of 3)



List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	February 19, 2021
207 Old Dominion Road	Yorktown, VA 23692

703-650-9600

Azimuth Pattern - Relative Field (True North)



Figure 1
Antenna Azimuthal Pattern
KNXG-LD College Station, TX
Facility ID 182059
Ch. 27 2.4 kW Directional

prepared for
Gray Television Licensee, LLC

February, 2021



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

Figure 2
Coverage Contour Comparison
KNXG-LD College Station, TX
Facility ID 182059

Ch. 27 2.4 kW Directional

prepared for
Gray Television Licensee, LLC

February, 2021

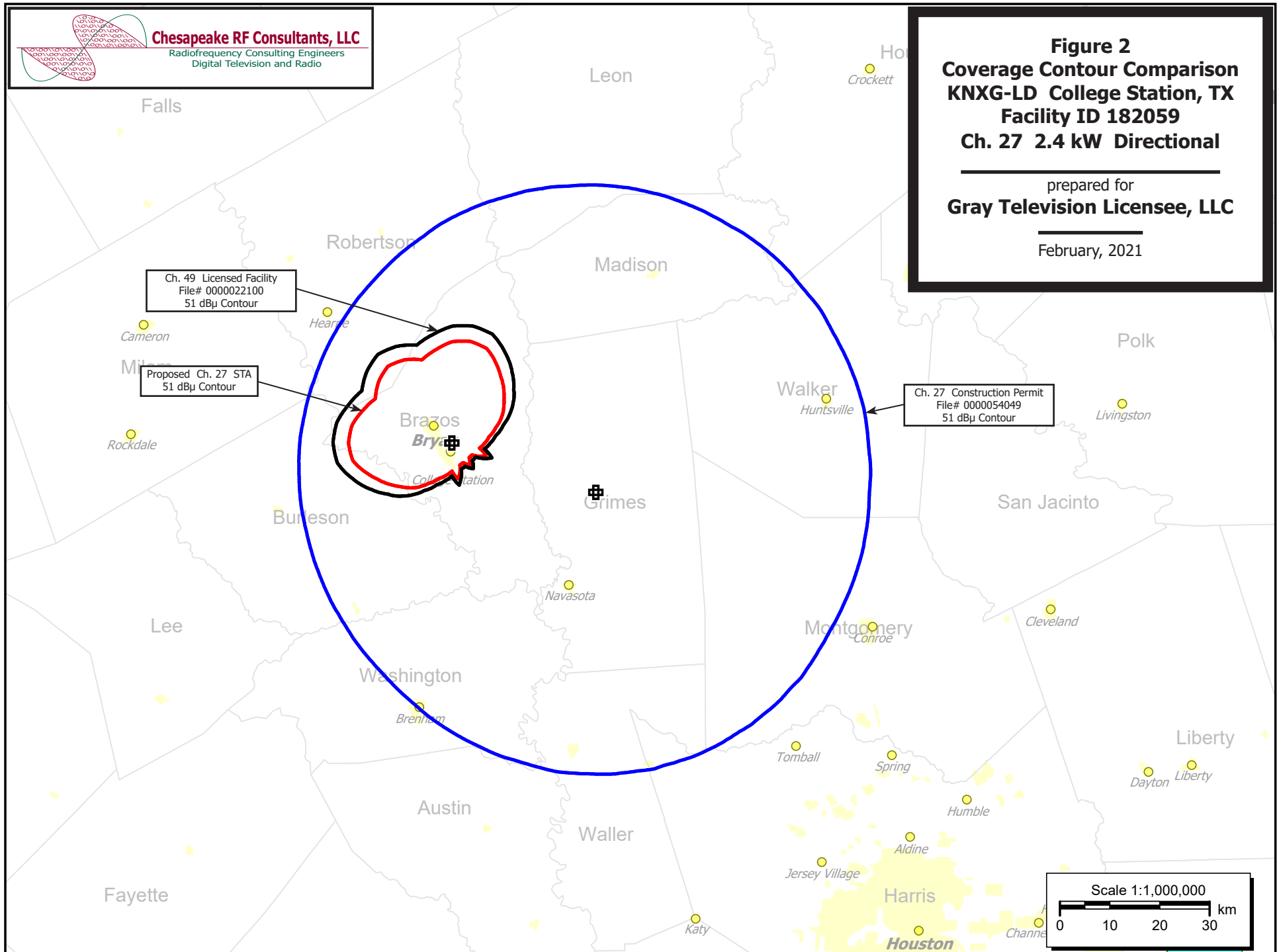


Table 1 KNXG-LD TVStudy Analysis of Proposal (page 1 of 3)



tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: KNXG-LD STA-27, Model: Longley-Rice
Start: 2021.02.19 10:18:36

Study created: 2021.02.19 10:18:36

Study build station data: LMS TV 2021-02-16

Proposal: KNXG-LD D27 LD STA COLLEGE STATION, TX
File number: KNXG-LD STA-27
Facility ID: 182059
Station data: User record
Record ID: 3485
Country: U.S.

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

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	KRIV	D26	DT	CP	HOUSTON, TX	BLANK0000035805	143.5 km
No	KRIV	D26	DT	LIC	HOUSTON, TX	BLCDT20111212AHM	143.5
No	KULC-LD	D26	LD	CP	PORT ARTHUR, TX	BLANK0000074302	228.7
No	KXTS-LD	D26	LD	LIC	VICTORIA, TX	BLANK0000114183	214.0
No	KXXV	D26	DT	LIC	WACO, TX	BLCDT20050630AFE	121.1
No	KTVE	D27	DT	LIC	EL DORADO, AR	BLCDT20070105ABH	472.7
No	DKNYS-LD	D27	LD	LIC	NATCHITOCHE, LA	BLDTL20120203AAD	327.6
No	K42FE-D	D27	LD	CP	SHREVEPORT, LA	BLANK0000049061	316.6
No	W27DJ-D	D27	LD	CP	SULPHUR, LA	BNPDTL20100407ABL	279.1
No	K46AI-D	D27	LD	LIC	DURANT, OK	BLANK0000063814	372.0
No	KAOB-LD	D27	LD	LIC	BEAUMONT, TX	BLDTL20090910AAA	228.7
No	KORO	D27	DT	LIC	CORPUS CHRISTI, TX	BLCDT20060626ACE	349.8
No	KDFI	D27	DT	LIC	DALLAS, TX	BLANK0000074883	224.4
No	DK27JJ-D	D27	LD	APP	FORBES/JASPER CTY, TX	BLDTL20110610AAD	184.2
No	KDJB-LD	D27	LD	LIC	HONDO, TX	BLDTL20110706ABA	347.1
No	KBFX-LD	D27	LD	LIC	HOUSTON, TX	BLANK0000072640	135.2
No	KQHO-LD	D27	LD	LIC	HOUSTON, TX	BLANK0000072691	135.2
Yes	KBVO	D27	DT	LIC	LLANO, TX	BLCDT20090622ABA	213.7
No	KLUF-LP	D27-	LD	CP	LUFKIN, TX	BLANK0000010680	174.8
No	KBTB-TV	D27	DT	LIC	PORT ARTHUR, TX	BLANK0000063140	231.3
No	KCOR-CD	D27	DC	LIC	SAN ANTONIO, TX	BLANK0000115083	248.5
No	KDKJ-LD	D27	LD	LIC	TYLER, TX	BLANK0000001765	201.6
No	KUNU-LD	D27	LD	LIC	VICTORIA, TX	BLANK0000114182	214.0
No	K28QN-D	D28	LD	CP	COLLEGE STATION, TX	BLANK0000116857	5.2
No	K25FW-D	D28	LD	APP	CORSICANA, TX	BLANK0000126784	216.9
No	KUGB-CD	D28	DC	CP	HOUSTON, TX	BLANK0000127537	142.9
No	KUGB-CD	D28	DC	LIC	HOUSTON, TX	BLDTA20120801ALF	142.9
No	KETX-LP	D28	LD	CP	LIVINGSTON, TX	BDISDTL20090814AAJ	134.9
No	WOAI-TV	D28	DT	LIC	SAN ANTONIO, TX	BLANK0000074998	240.8
No	WOAI-TV	D28	DT	LIC	SAN ANTONIO, TX	BLANK0000127065	240.8
No	KWKT-TV	D28	DT	LIC	WACO, TX	BLANK0000117686	120.7
No	KHTX-LP	N30-	TX	LIC	HUNTSVILLE, TX	BLTTL19980813JD	82.1

No non-directional AM stations found within 0.8 km

Directional AM stations within 3.2 km:
KZNE 1150 L DAN D COLLEGE STATION, TX BL20110713ACA
KZNE 1150 L DAN N COLLEGE STATION, TX BL20110713ACA
KWBC 1550 L DA2 D COLLEGE STATION, TX BL20150724AIP
KWBC 1550 L DA2 N COLLEGE STATION, TX BL20150724AIP

Record parameters as studied:

Channel: D27
Mask: Full Service
Latitude: 30 38 34.90 N (NAD83)
Longitude: 96 19 53.70 W
Height AMSL: 95.0 m (Adjusted based on actual ground elevation calculation)
HAAT: 0.0 m

Table 1 KNXG-LD TVStudy Analysis of Proposal
(page 2 of 3)



Peak ERP: 2.40 kW
Antenna: KAT-K723147 1x2 (ID 1001033) 320.0 deg
Elev Pattn: Generic

50.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	2.21 kW	-3.6 m	21.5 km
45.0	0.601	7.3	15.4
90.0	0.022	19.2	6.9
135.0	0.008	14.0	5.4
180.0	0.011	7.2	5.9
225.0	0.336	6.9	13.4
270.0	2.40	8.0	21.9
315.0	1.90	-9.6	20.8

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 6 m

Distance to Canadian border: 1718.9 km

Distance to Mexican border: 452.3 km

Conditions at FCC monitoring station: Kingsville TX
Bearing: 203.4 degrees Distance: 386.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 325.1 degrees Distance: 1324.6 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 BLCDT20090622ABA LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KBVO	D27	DT	LIC	LLANO, TX	BLCDT20090622ABA	
Undesireds:	KNXG-LD	D27	LD	STA	COLLEGE STATION, TX	KNXG-LD STA-27	213.7 km
	KPXL-TV	D26	DT	LIC	UVALDE, TX	BLCDT20090612AHU	126.3
	KXXV	D26	DT	LIC	WACO, TX	BLCDT20050630AFE	140.4
	KORO	D27	DT	LIC	CORPUS CHRISTI, TX	BLCDT20060626ACE	342.2
	KDFI	D27	DT	LIC	DALLAS, TX	BLANK0000074883	260.0
	KETF-CD	D27	DC	APP	LAREDO, TX	BMPDTA20120918AAW	362.9
	KCOR-CD	D27	DC	LIC	SAN ANTONIO, TX	BLANK0000115083	140.1
	WOAI-TV	D28	DT	LIC	SAN ANTONIO, TX	BLANK0000074998	159.1
	KWKT-TV	D28	DT	LIC	WACO, TX	BLANK0000117686	137.8

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	24658.1	1,491,118	23297.2	1,319,314	21935.4	1,154,331	0.00 0.00

Undesired			Total IX		Unique IX, before	Unique IX, after	
KNXG-LD D27 LD STA		1.0	157		0.0	0	
KPXL-TV D26 DT LIC		68.2	183	17.1	0	17.1	0
KXXV D26 DT LIC		696.2	93,463	143.7	11,758	143.7	11,758
KORO D27 DT LIC		227.7	55,622	66.2	36,108	66.2	36,108
KDFI D27 DT LIC		447.2	48,902	208.1	4,808	208.1	4,808
KCOR-CD D27 DC LIC		347.9	43,071	106.4	8,870	106.4	8,870
WOAI-TV D28 DT LIC		48.2	562	4.0	67	4.0	67
KWKT-TV D28 DT LIC		579.9	82,491	26.4	1,079	26.4	1,079

Interference to BLCDT20090622ABA LIC scenario 2							
Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KBVO	D27	DT	LIC	LLANO, TX	BLCDT20090622ABA	

Table 1 KNXG-LD TV Study Analysis of Proposal
(page 3 of 3)



Undesireds:	KNXG-LD	D27	LD	STA	COLLEGE STATION, TX	KNXG-LD STA-27	213.7 km
	KPXL-TV	D26	DT	LIC	UVALDE, TX	BLCDT20090612AHU	126.3
	KXXV	D26	DT	LIC	WACO, TX	BLCDT20050630AFE	140.4
	KORO	D27	DT	LIC	CORPUS CHRISTI, TX	BLCDT20060626ACE	342.2
	KDFI	D27	DT	LIC	DALLAS, TX	BLANK0000074883	260.0
	KETF-CD	D27	DC	APP	LAREDO, TX	BMPDTA20120918AAW	362.9
	KCOR-CD	D27	DC	LIC	SAN ANTONIO, TX	BLANK0000115083	140.1
	WOAI-TV	D28	DT	LIC	SAN ANTONIO, TX	BLANK0000127065	159.1
	KWKT-TV	D28	DT	LIC	WACO, TX	BLANK0000117686	137.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
24658.1 1,491,118	23297.2 1,319,314	21935.4 1,154,331	21935.4 1,154,331	0.00 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
KNXG-LD D27 LD STA	1.0 157	0.0 0	0.0 0
KPXL-TV D26 DT LIC	68.2 183	17.1 0	17.1 0
KXXV D26 DT LIC	696.2 93,463	143.7 11,758	143.7 11,758
KORO D27 DT LIC	227.7 55,622	66.2 36,108	66.2 36,108
KDFI D27 DT LIC	447.2 48,902	208.1 4,808	208.1 4,808
KCOR-CD D27 DC LIC	347.9 43,071	106.4 8,870	106.4 8,870
WOAI-TV D28 DT LIC	48.2 562	4.0 67	4.0 67
KWKT-TV D28 DT LIC	579.9 82,491	26.4 1,079	26.4 1,079

Interference to proposal scenario 1
6.68% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KNXG-LD	D27	LD	STA	COLLEGE STATION, TX	KNXG-LD STA-27	
Undesireds:	KBVO	D27	DT	LIC	LLANO, TX	BLCDT20090622ABA	213.7 km
	KBTV-TV	D27	DT	LIC	PORT ARTHUR, TX	BLANK0000063140	231.3
	K28QN-D	D28	LD	CP	COLLEGE STATION, TX	BLANK0000116857	5.2

Service area	Terrain-limited	IX-free	Percent IX
727.9 144,721	720.9 144,711	612.0 135,044	15.10 6.68

Undesired	Total IX	Unique IX	Prcnt Unique IX
KBVO D27 DT LIC	9.0 202	1.0 0	0.14 0.00
KBTV-TV D27 DT LIC	51.9 690	43.9 488	6.09 0.34
K28QN-D D28 LD CP	55.9 8,977	55.9 8,977	7.75 6.20