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**ENGINEERING EXHIBIT EE-1:**

**FM TRANSLATOR  
MINOR CHANGE APPLICATION  
MODIFICATION OF CONSTRUCTION PERMIT  
BMPFT-20160729AFQ**

**LA PROMESA FOUNDATION**

**FM TRANSLATOR STATION K241CO  
FCC FACILITY NUMBER: 148446  
HOUSTON, TEXAS**

**APPLICATION FOR AUTHORITY TO  
CONSTRUCT OR MAKE CHANGES IN AN  
FM TRANSLATOR OR FM BOOSTER STATION**

**MARCH 2017**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
MINOR MODIFICATION OF CONSTRUCTION PERMIT  
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**MARCH 2017**

**NARRATIVE STATEMENT**

**I. GENERAL:**

The engineering exhibit, of which this narrative is part, was prepared in support of a MINOR CHANGE application concerning FM Translator Station, K241CO FCC Facility ID: 148446.

The applicant proposes to make changes to the antenna height and maximum effective radiated power (ERP). No other changes are proposed.

**EXPEDITED ACTION IS REQUESTED - NESTING BIRDS:**

The underlying construction permit expires on April 18, 2017, and expedited action on this application is requested. The applicant is ready to construct and operate the facility. However, to do so it must relocate its antenna at a lower elevation and operate at a lower power (ERP) at the request of the tower owner, due to a newly discovered bird nest on the tower structure that cannot be disturbed until the birds have left the nest.

**MINOR CHANGE 250-MILE RADIUS COMPLIANCE:**

No change in channel output or the location of the facility is proposed. The underlying construction permit demonstrated full compliance with the 250-mile radius requirements at the time of filing. No changes are proposed in the facility location. Therefore, the previously demonstrated compliance remains valid.

**NO CHANGE IN PRIMARY STATION:**

The station will provide FM "fill-in translator" service for noncommercial AM Station KSHJ, Houston, Texas, FCC Facility ID: 33737.

**CHANGE IN ANTENNA ELEVATION AND RADIATED POWER ONLY:**

The proposed FM Translator station will operate on channel 241D (96.1 MHZ) with an effective radiated power (ERP) of 0.005 kilowatts (5-watts) and an antenna height of 5-meters above ground level (AGL) and 37 meters above mean sea level (AMSL); the elevation values have been rounded to the nearest meter in accordance with FCC Form 349 requirements. The applicant proposes to use a simple yagi directional, FM antenna (SCA CA-5 FMC) utilizing circular polarization (no change in antenna type).

**TRANSMITTER LOCATION - FIGURE 1:**

The transmitting facility will consist of an FM yagi antenna side-mounted on a pole attached/adjacent to the existing structure (part of the waveguide bridge attached to the tower). FCC ASR registration number for the structure is 1053015 and is included in Figure 1. A site map (topographic map) is not provided as this is an FCC ASR registered tower site.

**VERTICAL SKETCH OF SUPPORTING STRUCTURE - FIGURE 2:**

A vertical tower sketch showing the proposed antenna and the existing supporting structure is included as Figure 2. No change in the overall height of the existing structure is proposed. The FAA has not been notified of this proposal. No new construction will occur that would require notification to the FAA.

**PROPOSED DIRECTIONAL ANTENNA PATTERN - FIGURE 3:**

A tabulation of the proposed FM translator directional antenna as well as a polar plot of the relative field pattern is provided in Figure 3. The antenna is an

“SCA CA-5 FMC” Yagi directional antenna. The pattern provided in the graphical plot and the relative field tabulation values in Figure 3 have been rotated to the correct azimuth.

**COVERAGE CONTOURS - FIGURE 4:**

The predicted coverage contours were calculated in accordance with the provisions of 47 CFR 73.313 (FM Contours) and 47 CFR 73.183 (AM Groundwave Signals).

Figure 4 contains a map in which the predicted coverage contour of the translator and the primary station to be rebroadcast have been drawn, the proposed 60 dBu contour is within the 2mV/m groundwave daytime contour of the primary station as well as the 25-mile radius limit from the AM transmitting site.

**CHANNEL 241D ALLOCATION STUDY - FIGURE 4:**

The proposed site fully protects all other stations of concern as detailed in the contour study provided in Figure 4. No prohibitive overlap with any other facility of concern is predicted to occur when the vertical radiation pattern (vertical relative field) of the proposed antenna is taken into consideration.

**MEXICO/UNITED STATES BORDER AREA:**

The proposed site is not within the 320-kilometer coordination zone with Mexico. No international coordination of this proposal is required.

**WAIVER REQUEST 2<sup>ND</sup> ADJACENT CHANNEL STATIONS - FIGURE 4:**

Second Adjacent Channel Stations KKHH (Ch.239C) and KHMx (Ch.243C) collocated a distance of 33.82 kilometers are each predicted to have a signal level of 85.0 dBu at the proposed site. The D/U (desired-to-undesired) signal ratio is 40 dBu. Thus, the interfering signal level from this proposal is the 85.0 + 40 = 125.0 dBu contour to each facility.

As detailed in Figure 4 the interference signal from this proposal does not reach the ground or any populated or traveled areas and cannot cause interference to any populated areas. There are no tall building, roof tops, or other occupied spaces within the predicted horizontal interference contour distance of 8.81 meters from this proposal. Thus no interference is predicted to occur to a populated or traveled area, and a grant of the wavier request is in the public interest as no harm is caused by grant of this proposal.

**OTHER CONSIDERATIONS:**

The applicant recognizes its responsibility to remedy complaints of blanketing interference as required by 47 CFR 73.318, and to protect existing or proposed facilities in accordance with the Commission's applicable rules. An intermodulation study has been conducted and no adverse impact on existing facilities or pending applications is anticipated. The applicant clearly recognizes its responsibility to remedy interference complaints to existing stations resulting from its proposed operation. There are no known translator input frequencies within the area in which this proposal's output frequency would cause interference.

**ENVIRONMENTAL CONSIDERATIONS:**

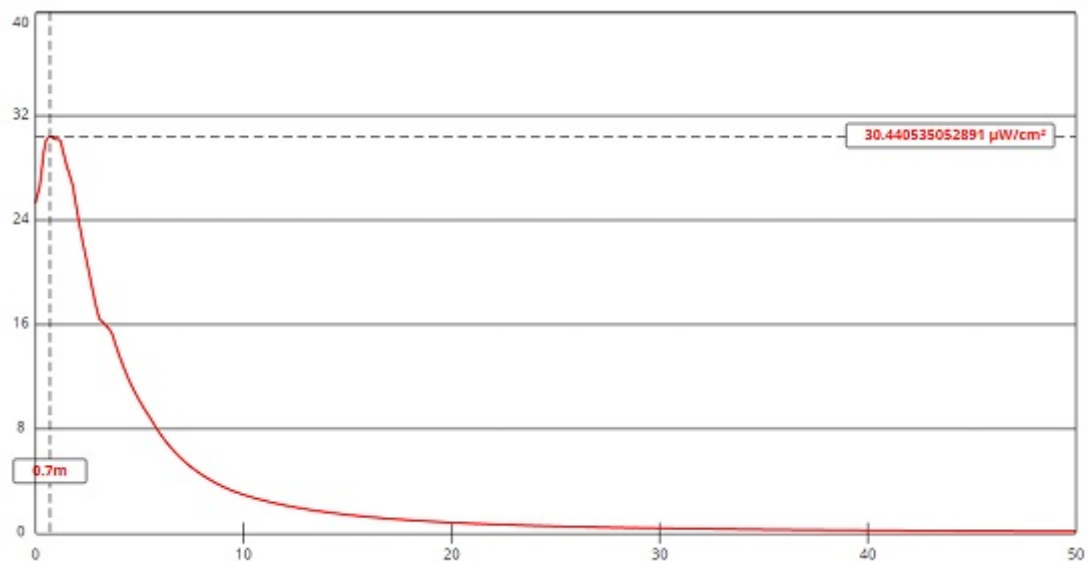
The applicant believes its proposal will not significantly affect the environment for the following reasons:

- The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights.
- The site and this proposal are exempt from NHPA Section 106 review as no construction will occur that would trigger a review under NHPA Section 106.
- Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency

electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

- Based upon a worst case downward field value of an EPA Type 1 antenna and a power of 0.005-kilowatts, and an antenna height of 5 meters above ground. The power density is predicted to be 30.44  $\mu\text{W}/\text{cm}^2$  or less. The computed power density is 3.04% of the Commission's guideline for a controlled area and 15.22% for an uncontrolled area. This level is well below the Commission's guidelines for maximum exposure levels to electromagnetic fields as shown below.

Results using FCC FM Model Program EPA Type 1 Antenna (Other)



The applicant will fully-cooperate and coordinate with all site users as required by the Commission's rules.

**II. SUMMARY:**

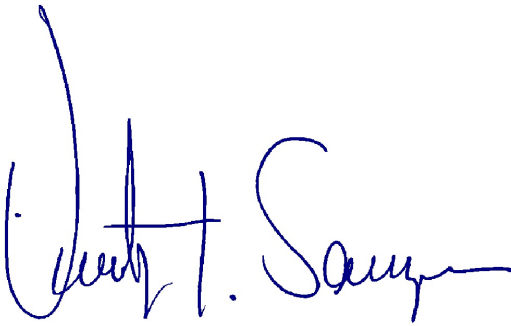
The proposed FM translator (modification of K241CO) will operate as a FM “fill-in” translator for AM Broadcast Station KSHJ with a maximum ERP 0.005-kilowatts, utilizing a DIRECTIONAL circularly polarized antenna system.

Operation as proposed herein would not cause/increase any normally prohibited contour overlap, and would not have any significant impact on the environment.

Second adjacent channel stations KKHH and KHMV are fully protected as the interference contour from this proposal does not reach the ground or lie within and populated or traveled areas - therefore, no population within the interference contour exists.

The proposed operation is fully in compliance with all other areas of the Commission’s rules and applicable international agreements.

March 31, 2017

A handwritten signature in blue ink, reading "Timothy Z. Sawyer". The signature is stylized with a large initial "T" and "S".

---

Timothy Z. Sawyer, Consulting Engineer  
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TELEPHONE (703) 848-2130



## FCC TOWER REGISTRATION 1053015

FAA NOTIFICATION NOT REQUIRED - NO CHANGES IN OVERALL HEIGHT ARE PROPOSED

### Registration Detail

Reg Number	1053015	Status	Constructed
File Number	A1014290	Constructed	11/16/1988
EMI	No	Dismantled	
NEPA	No		

### Antenna Structure

Structure Type	TOWER - Free standing or Guyed Structure used for Commu		
Location (in NAD83 Coordinates - <a href="#">Convert to NAD27</a> )			
Lat/Long	29-52-43.6 N 095-33-37.3 W	Address	7263 Hillcrest
City, State	HOUSTON , TX		
Zip	77040	County	HARRIS
Center of AM Array		Position of Tower in Array	

### Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
32.0	50.3
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
82.3	45.7

### Painting and Lighting Specifications

None
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### FAA Notification

FAA Study	2008-ASW-5728-OE	FAA Issue Date	08/26/2008
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## T Z SAWYER TECHNICAL CONSULTANTS

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## FCC TOWER REGISTRATION 1053015

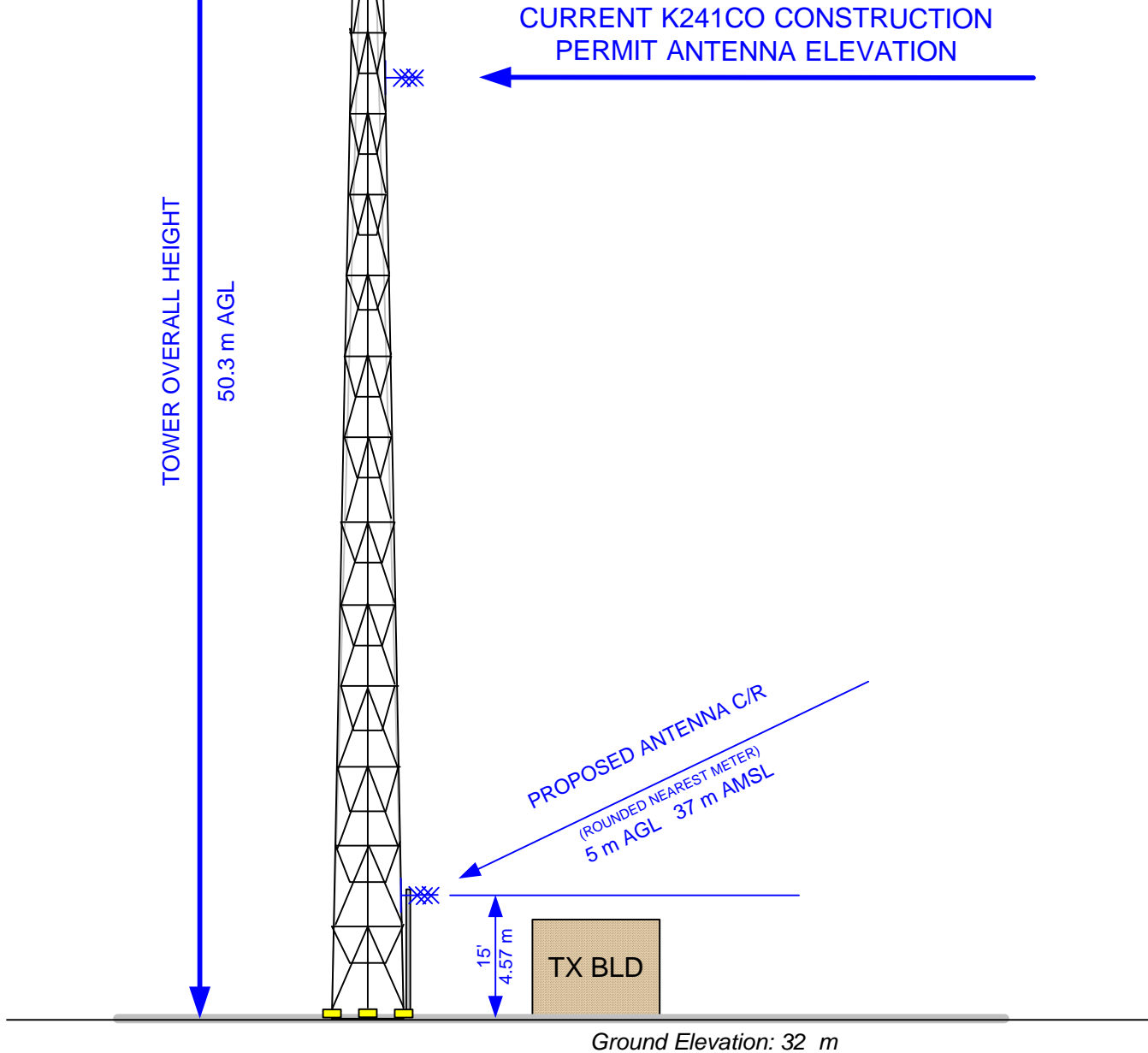
FM TRANSLATOR APPLICATION MOD OF K241CO  
PRIMARY STATION KSHJ (AM)  
HOUSTON, TEXAS

**FIGURE  
1**

FALLS CHURCH, VA 22043

SIZE A	FSCM NO N/A	DWG NO 20160728KSHJ-FMX1	REV 03/31/17
SCALE N/A	MARCH 2017	SHEET	

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## T.Z. SAWYER TECHNICAL CONSULTANTS

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## EXISTING STRUCTURE VERTICAL SKETCH OF ANTENNA

K241CO FMX CP MODIFICATION  
KSHJ (AM) HOUSTON TEXAS

**FIGURE  
2**

SIZE  
A

FSCM NO  
N/A

DWG NO  
20170331K241CO.F2

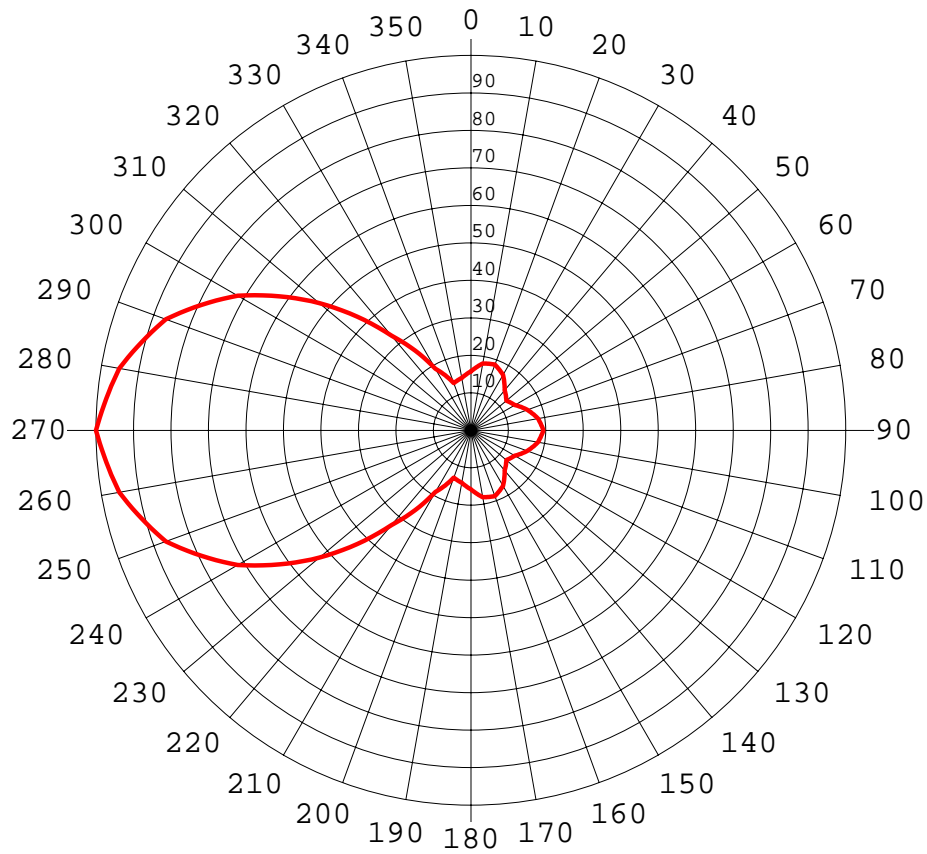
REV  
NONE

SCALE  
Vertical Only  
1" = 20'

MARCH 2017

SHEET

PROPOSED DIRECTIONAL PATTERN FIGURE 3



Azi	Rel	dBk	kW	dB	Azi	Rel	dBk	kW	dB
0	0.157	-22.09	0.006	-16.07	180	0.157	-22.09	0.006	-16.07
10	0.181	-20.87	0.008	-14.85	190	0.142	-22.99	0.005	-16.97
20	0.187	-20.60	0.009	-14.58	200	0.134	-23.48	0.004	-17.46
30	0.171	-21.36	0.007	-15.34	210	0.190	-20.45	0.009	-14.42
40	0.140	-23.10	0.005	-17.08	220	0.329	-15.67	0.027	-9.65
50	0.123	-24.20	0.004	-18.18	230	0.528	-11.56	0.070	-5.54
60	0.135	-23.41	0.005	-17.39	240	0.718	-8.89	0.129	-2.87
70	0.160	-21.94	0.006	-15.92	250	0.866	-7.27	0.187	-1.25
80	0.182	-20.83	0.008	-14.81	260	0.952	-6.45	0.227	-0.42
90	0.193	-20.30	0.009	-14.28	270	1.000	-6.02	0.250	0.00
100	0.182	-20.83	0.008	-14.81	280	0.952	-6.45	0.227	-0.42
110	0.160	-21.94	0.006	-15.92	290	0.866	-7.27	0.187	-1.25
120	0.135	-23.41	0.005	-17.39	300	0.718	-8.89	0.129	-2.87
130	0.123	-24.20	0.004	-18.18	310	0.528	-11.56	0.070	-5.54
140	0.140	-23.10	0.005	-17.08	320	0.329	-15.67	0.027	-9.65
150	0.171	-21.36	0.007	-15.34	330	0.190	-20.45	0.009	-14.42
160	0.187	-20.60	0.009	-14.58	340	0.134	-23.48	0.004	-17.46
170	0.181	-20.87	0.008	-14.85	350	0.142	-22.99	0.005	-16.97

MOD OF BMPFT20160729AFQ  
FCC Facility ID: 148446  
Latitude: 29-52-42.80 N  
Longitude: 095-33-36.50 W  
ERP: 0.005 kW  
Channel: 241 Frequency: 96.1 MHz  
Antenna HAAT Height: 0.0 m  
Antenna AMSL Height: 37.0 m  
Antenna AGL Height: 5.0 m  
Ground Elevation: 32.0 m  
Horiz. Pattern: Directional

PROPOSED 60 DBU FM TRANSLATOR CONTOUR  
AM KSHJ 25 MILE RADIUS LIMIT  
AM KSHJ 2.0 MV/M DAYTIME GW CONTOUR

**25 MILE RADIUS LIMIT**  
**KSHJ AM SITE**

FCC 60 DBU F(50,50)  
FMX CONTOUR

K241CO CP MOD  
Jersey Village

**KSHJ AM**

Scale 1:375,000

km

## K240CO - MOD OF CP - NO CHANGE IN SITE

FIGURE 4-2

La Promesa Foundation

REFERENCE CH# 241D - 96.1 MHz, Pwr= 0.005 kW DA, HAAT= 7.5 M, COR= 37 M

29 52 42.8 N.

Average Protected F(50-50)= 2.7 km

95 33 36.5 W.

Standard Directional

CH CITY	CALL	TYPE STATE	ANT TX	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
239C Houston	KKHH	LIC	C TX	171.8 351.8	33.87 BMLH20060127AFY	29 34 34.0 95 30 36.0	100.000 585	13.5 605	91.3 Cbs Radio Texas Inc.	18.7	-57.5 *1
243C Houston	KHMX	LIC	CY TX	171.8 351.8	33.87 BMLH20090814AAR	29 34 34.0 95 30 36.0	100.000 585	13.5 605	91.3 Cbs Radio Stations Inc.	18.7	-57.5 *2
241C2 Madisonville	KAGG	LIC	CX TX	332.6 152.3	115.36 BMLH20040617AFP	30 48 02.0 96 07 00.0	40.000 164	133.7 252	51.0 Cc Licenses, Llc	-20.2*	60.6
241L1 Houston	KBLT-LP	LIC		140.9 321.0	23.24 BLL20151008ABT	29 42 58.1 95 24 29.2	0.041 47			3.9	14.6
241L1 @1641181 Houston		APP		74.9 255.0	27.98 BNPL20131112AUM	29 56 38.0 95 16 49.0	0.028 55			8.2	19.0
241C3 Edna	KIOX-FM	LIC	CN TX	225.3 44.9	122.29 BLH19980923KB	29 06 05.0 96 27 19.0	13.000 139	105.3 159	38.6 Globecom Media, Llc	14.7	78.1
241C1 Lake Charles	KYKZ	CP	NCX LA	76.0 257.0	196.62 BPH20141107ABI	30 17 26.0 93 34 35.0	60.000 369	168.4 375	72.3 Cumulus Licensing Llc	26.6	120.8
241D Houston	K241CM	LIC	DC TX	144.6 324.7	56.21 BLFT20161222ABO	29 27 56.0 95 13 23.0	0.200	25.6 176	7.6 South Texas Broadcasting,	29.0	38.9
241D Conroe	K268CJ	CP	DV TX	14.9 194.9	47.69 BPFT20160729AHW	30 17 39.2 95 25 56.2	0.040	4.2 132	1.3 Aleluya Broadcasting Netwo	41.9	42.2
241C1 Lake Charles	KYKZ	LIC	CX LA	78.6 259.8	217.55 BMLH20050407KUV	30 14 41.0 93 20 37.0	100.000 146	154.9 150	58.5 Cumulus Licensing Llc	61.1	155.4

Terrain database is NGDC 30 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM  
 In & Out distances between contours are shown at closest points. Reference Zone= West Zone, Co to 3rd adjacent.  
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
 "\*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

Facility is okay with respect to AM station towers.

Facility is okay with respect to FCC monitoring stations.

Facility is okay toward West Virginia Quiet Zone. Distance to center = 1755.9 km

Facility is okay toward Table Mountain. Distance to Center = 1440.6 km, Azimuth = 325.0 Degrees True

Facility is not in a border zone (Mexico/Candada).

## CHANNEL STUDY NOTES:

\* 1 KKHH 2ND ADJACENT CHANNEL - NO CONTOUR OVERLAP INTERFERENCE CONTOUR DOES NOT REACH GROUND SEE ENGINEERING STATEMENT AND WAVIER REQUEST BASED ON NO POPULATION WITHIN INTERFERENCE CONTOUR.

\* 2 KHMX 2ND ADJACENT CHANNEL - NO CONTOUR OVERLAP INTERFERENCE CONTOUR DOES NOT REACH GROUND SEE ENGINEERING STATEMENT AND WAVIER REQUEST BASED ON NO POPULATION WITHIN INTERFERENCE CONTOUR.

**FIGURE 4-3**

**ADJACENT CHANNEL WAIVER REQUEST**

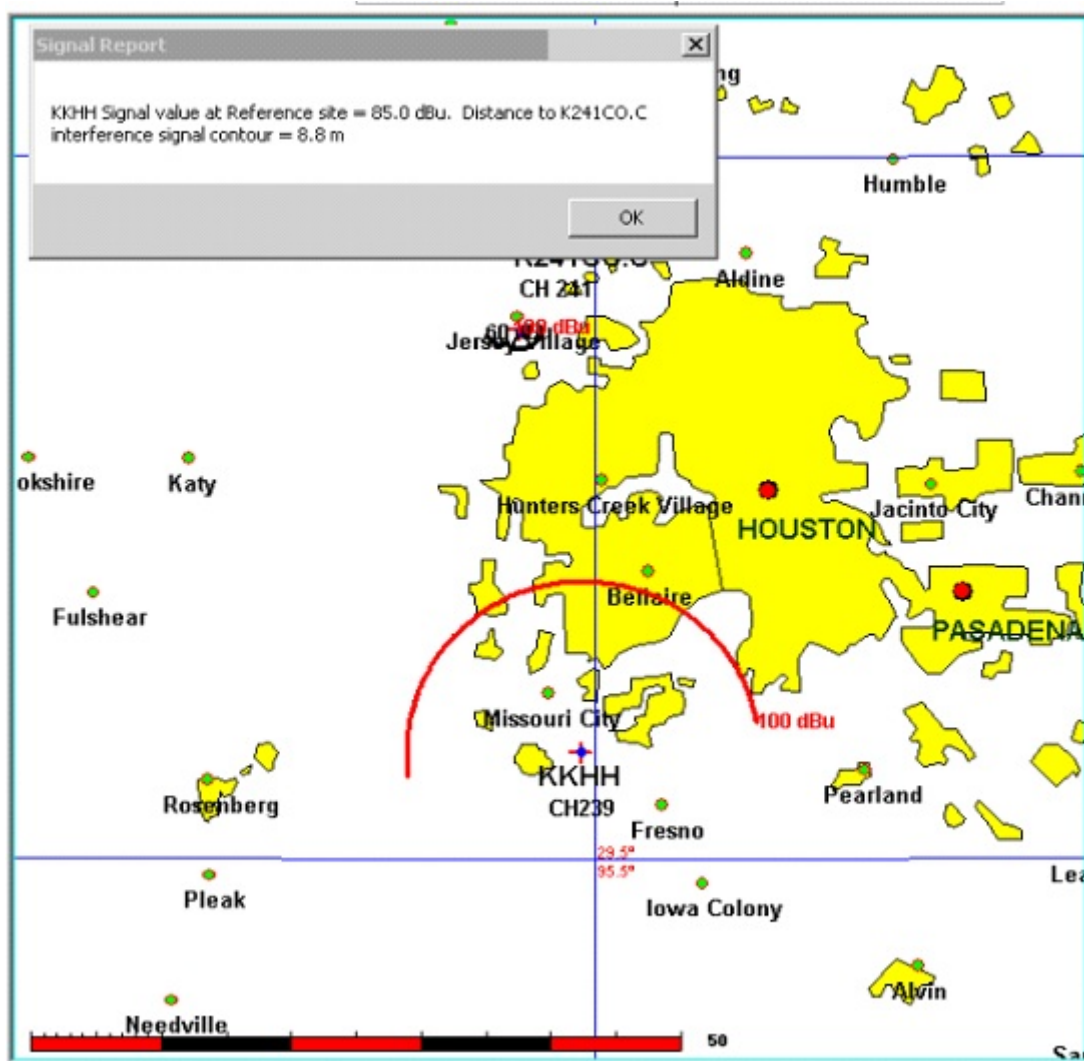
**SECOND-ADJACENT CHANNEL STATION KKHH (CH. 239C)**

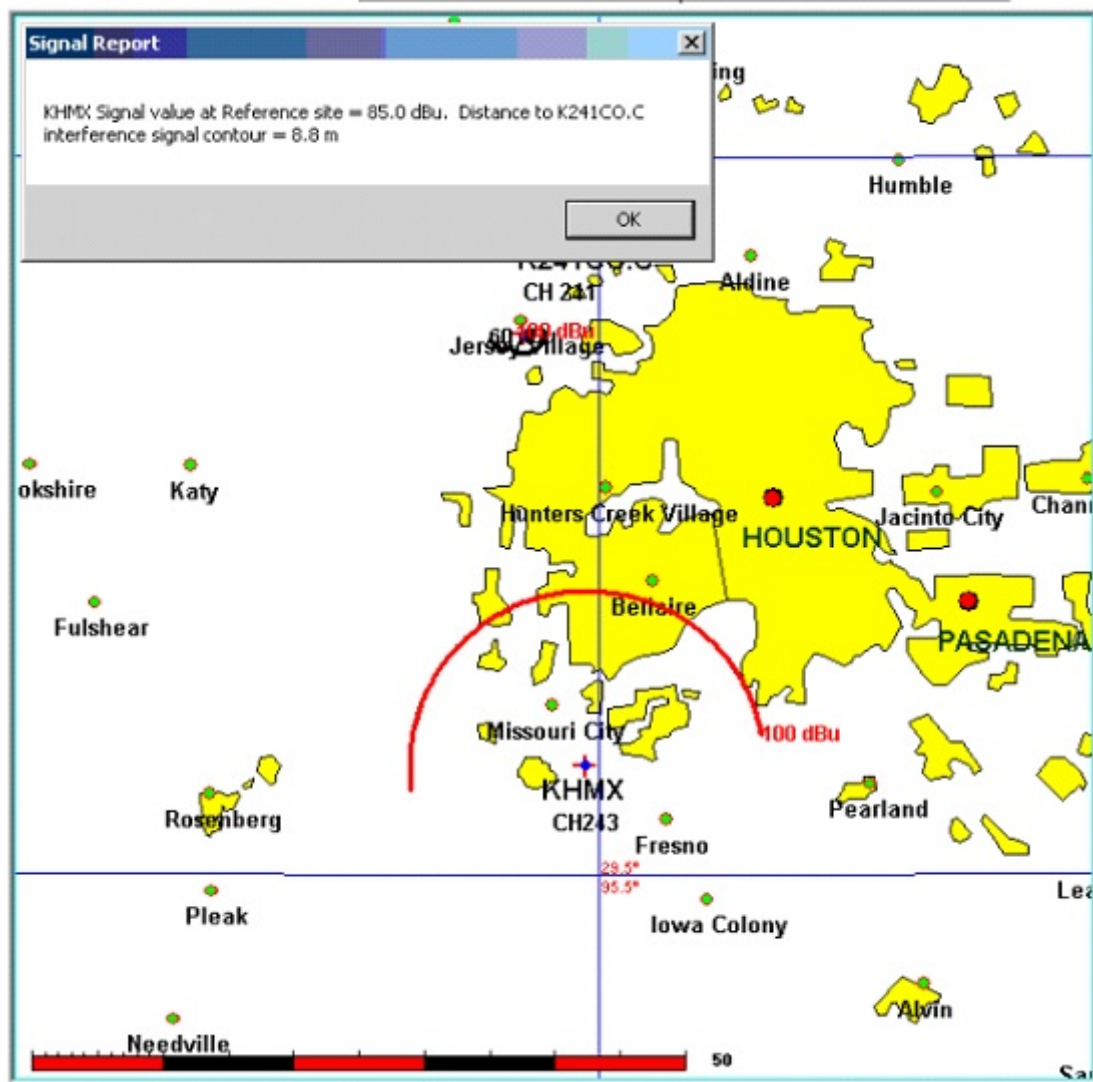
**SECOND-ADJACENT CHANNEL STATION KHHX (CH. 243C)**

**NO POPULATION WITHIN INTERFERENCE CONTOUR**

Second-Adjacent Channel Stations KKHH and KHHX each are predicted to have a signal level of 85.0 dBu at the proposed site (the reference site). The D/U (desired to undesired) signal ratio is 40 dBu. Thus, the interfering signal level from this proposal is  $85.0 + 40 = 125.0$  dBu to each facility.

The map below shows the calculated predicted signal level from KKHH/KHHX at the proposed translator site, and the predicted interfering contour distance (maximum horizontal distance). KKHH/KHHX are collocated facilities with identical radiated powers and antenna heights.





As detailed on the following pages, the interference signal from this proposal does not reach the ground, or any populated or traveled areas and cannot cause interference to any populated areas when the downward radiation characteristics of the specified antenna system are used.

There are no tall building, roof tops, or other occupied spaces within the interference contour from this proposal. Thus no interference is predicted to occur to a populated area, and a grant of this wavier request is in the public interest as no harm is caused by a grant of the proposal.

Applicant believes that it has demonstrate that due to lack of population within the interference contour that it is in compliance with the Commission's rules - however, should a waiver of the rules with regards to the second and/or third-adjacent station contour overlaps be necessary it respectfully requests that said waiver be granted.

A grant is in the public interest in that it has been demonstrated that no harm will occur from a grant and that no population is at risk.

	<b>Antenna</b>
Manufacturer	SCA
Model	CA-5FMC
Number of Bays	1
Inter-Bay Spacing	FULL WAVE

Center of Radiation:	4.57	m AGL
Effective Radiated Power (ERP):	5	Watts
Interference Contour FS:	125	dBu
E Field Strength:	1.38995	V/m
Free Space Impedance:	377	Ohms
Power Density:	0.00512458	W/m^2
Maximum Free Space Distance:	8.81	meters

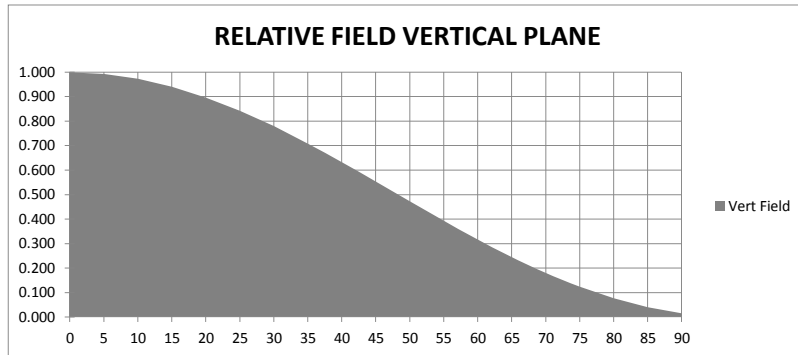
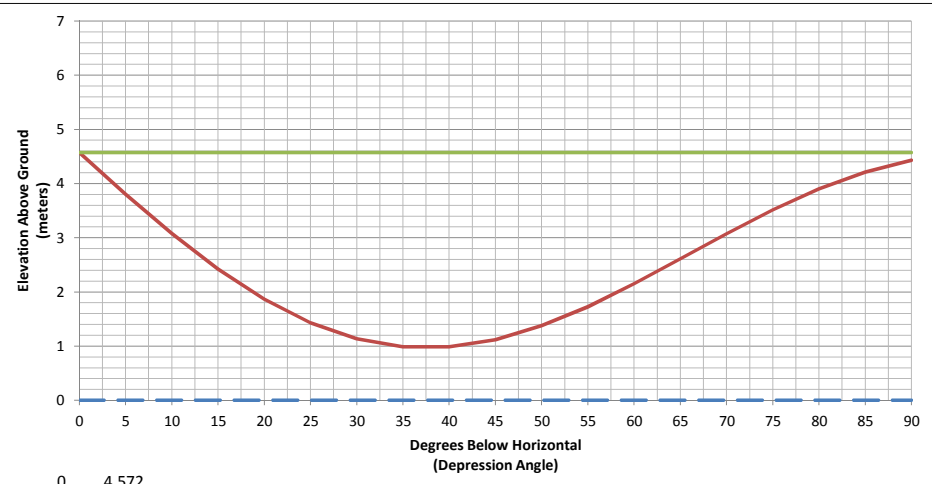
FIGURE 4-3 WAVER TO SECOND ADJCHANNEL STATION

**INTERFERENCE CONTOUR DOES NOT REACH GROUND LEVEL  
NO POPULATION WITHIN CONTOUR**

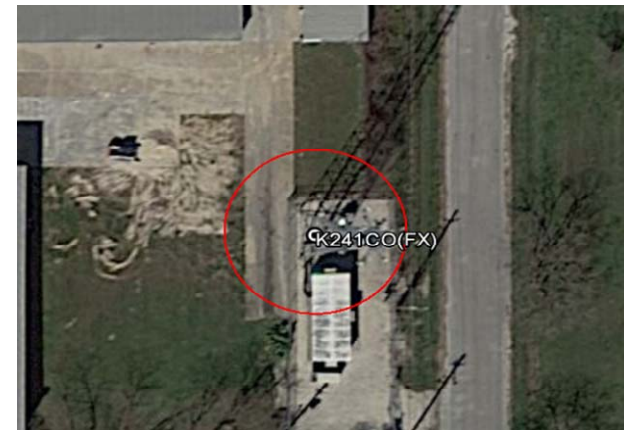
**125.0 DBU**

**INTERFERENCE CONTOUR PLOTTED ABOVE GROUND LEVEL**

DEPRESSION ANGLE	RELATIVE		ERP WATTS	IN METERS			
	FIELD	POWER		VECTOR LENGTH	HORIZONTAL	VERTICAL	AGL
0	1.0000	1.0000	5.00	8.81	8.81	0.00	4.57
5	0.9930	0.9860	4.93	8.75	8.72	0.76	3.81
10	0.9740	0.9487	4.74	8.58	8.45	1.49	3.08
15	0.9410	0.8855	4.43	8.29	8.01	2.15	2.42
20	0.8970	0.8046	4.02	7.90	7.43	2.70	1.87
25	0.8430	0.7106	3.55	7.43	6.73	3.14	1.43
30	0.7800	0.6084	3.04	6.87	5.95	3.44	1.13
35	0.7090	0.5027	2.51	6.25	5.12	3.58	0.99
40	0.6330	0.4007	2.00	5.58	4.27	3.59	0.98
45	0.5540	0.3069	1.53	4.88	3.45	3.45	1.12
50	0.4730	0.2237	1.12	4.17	2.68	3.19	1.38
55	0.3940	0.1552	0.78	3.47	1.99	2.84	1.73
60	0.3170	0.1005	0.50	2.79	1.40	2.42	2.15
65	0.2450	0.0600	0.30	2.16	0.91	1.96	2.61
70	0.1810	0.0328	0.16	1.59	0.55	1.50	3.07
75	0.1240	0.0154	0.08	1.09	0.28	1.06	3.51
80	0.0770	0.0059	0.03	0.68	0.12	0.67	3.90
85	0.0410	0.0017	0.01	0.36	0.03	0.36	4.21
90	0.0160	0.0003	0.00	0.14	0.00	0.14	4.43



125.0 DBU FREE-SPACE INTERFERENCE CONTOUR 8.81 METER GROUND RADIUS



NO OCCUPIED ROOFS OR OTHER OCCUPIED AREAS WITHIN THE INTERFERENCE CONTOUR RADIUS  
MINIMUM ELEVATION OF INTERFERENCE CONTOUR ABOVE GROUND IS > 1 METERS ( +3.28 FEET AGL).  
NO ROADWAYS OR OTHER TRAVELED ROUTES - INTERFERENCE CONTOUR IS WITHIN PRIVATE PROPERTY AREA