

ATTACHMENT: FM Translator Facilities and Allocation Considerations

I. FM Translator Facilities

Modification of K268DD Facilities

This application is for modification of the facilities of FM Translator K268DD, Los Angeles, California, to make changes in the directional antenna system and increase effective radiated power to 65 watts. No changes are proposed in the location of the FM translator, and the translator will continue to operate on Channel 268D and rebroadcast AM station KTYM, Inglewood, California.

The geographical coordinates (NAD83) of the proposed FM translator site are as follows (with a small correction based on the actual location of the antenna supporting pole):

North latitude 34° 00' 25.4"
West longitude 118° 21' 58.3".

At this location the ground elevation is 136 meters above mean sea level.

Description of Directional Antenna System

The composite directional antenna system for the proposed operation of K268DD is comprised of two vertically polarized Kathrein Scala Model CL-FM/V FM Antennas spaced apart horizontally by 0.67 wavelength, with each of the log periodic antennas oriented to 190 degrees True. The antennas are driven in phase, with equal power division.

Maximum horizontal plane radiation of the antenna array is in the direction 190 degrees True.

The antenna system will be side-mounted on a wooden pole with the radiation center located 12 meters above ground.

The values of relative radiation for the horizontal plane radiation pattern for the composite antenna array are tabulated in FCC Form 2100 for this application. The data was provided by the antenna manufacturer, Kathrein Broadcast USA, Inc.

The wooden supporting pole and the proposed antenna array will be located a short distance from the antenna towers of the directional antenna system for KTYM(AM), Inglewood, California, operating on 1460 kHz.

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With respect to operation of the KTYM(AM) directional antenna system, the proposed K268DD antenna array, associated coaxial cable transmission line, and lightning protection device mounted on the wooden supporting pole are electrically equivalent to a grounded, vertical conductor 13 meters in overall height above ground. At 1460 kHz, this structure would have an electrical height of 22.8 degrees (0.063 wavelength). This is well below the threshold height of 36 electrical degrees specified in Section 1.30002(b) of the Commission's Rules, above which further review and analysis would be required with respect to KTYM(AM) (and any other nearby AM radio stations).

A moment-method study was carried out for this application to evaluate the changes in the KTYM(AM) theoretical daytime and nighttime directional antenna radiation patterns resulting from addition of the translator antenna array, transmission line, and lightning protection device as a parasitic radiating element spaced 23.8 meters (41.7 electrical degrees or 0.116 wavelength) from the nearest KTYM(AM) antenna tower. The study confirmed there would be no significant effects on the operation of KTYM(AM) from the proposed FM translator facilities.

Fill-in Service from Proposed FM Translator

This application conforms with the requirements of Section 74.1201(g) of the Commission's Rules. As the antenna array for the translator will be mounted on a pole located at the KTYM(AM) transmitter site, and the maximum distance to the proposed K268DD predicted 60 dBu F(50,50) contour is 10.0 kilometers, it is clear that the 60 dBu contour for the proposed operation of the translator will fall within a 25-mile (40-kilometer) radius centered at the KTYM(AM) transmitter site.

The proposed operation of K268DD complies with the provisions of Section 74.1233(a)(2) of the Rules for a minor modification of facilities, as the proposed site is the same as the site for the licensed operation of the translator.

Compliance with Environmental Rules

The proposed operation of K268DD will continue to utilize an existing wooden pole located at the transmitter site of AM Station KTYM, Inglewood, California, as the supporting structure for the translator antenna. No new tower construction is proposed in this application.

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KTYM(AM) operates on 1460 kHz with 5.0 kW power during daytime hours and 0.50 kW power at night, employing a two-tower directional antenna system. The KTYM(AM) antenna towers are utilized by FM stations KLAX-FM and KRCD(FM) as antenna supporting structures. The entire KTYM(AM) transmitter site is surrounded by a locked fence, and as explained below, outside this perimeter fence total radiofrequency power density levels do not exceed the allowable limit for uncontrolled exposure of the public.

For the proposed K268DD antenna array, a study made using Equation 9 of Section 2, Prediction Methods, of the Commission's OET Bulletin 65, Edition 97-01 (August 1997), and assuming uniform radiation in all directions from the proposed FM translator antenna, shows that for operation at 65 watts effective radiated power, the calculated radiofrequency power density level would not exceed 0.0302 mW/cm^2 , or 15.1% of the Maximum Permissible Exposure value of 0.20 mW/cm^2 for uncontrolled exposure situations at 101.5 MHz at any point at a height of 2 meters or less above ground in the vicinity of the base of the antenna supporting structure.

With respect to the KTYM(AM) directional antenna system, each of the antenna towers is surrounded by a fence spaced at least 1.9 meters from the tower. Both towers are 96.0 electrical degrees in height. Assuming full daytime power of 5.0 kW applied to a single one of the towers, computations based on Figures 2 and 3 of Section 1, AM Radio Broadcast Stations, of Supplement A (Edition 97-01) to the Commission's OET Bulletin 65 (Edition 97-01), show that at distances of 3.0 meters or greater from the tower the calculated radiofrequency electric and magnetic field strength values would not exceed 36.7% of the Maximum Permissible Exposure values for uncontrolled exposure situations at 1460 kHz at a height of 2 meters or less above ground. Both of the KTYM(AM) antenna towers are located at least 7.5 meters inside the fence around the site perimeter.

In the case of KLAX-FM, the station's auxiliary antenna, comprised of a Jampro Antennas four-bay directional antenna system with one wavelength vertical spacing between radiating elements, is side-mounted on the North Tower of the KTYM(AM) antenna array at a height of 52 meters above ground. A study made using the Commission's "FM Model" computer program shows that for operation at 14 kW effective radiated power, the calculated radiofrequency power density level would not exceed 0.050 mW/cm^2 , or 25.0% of the Maximum Permissible Exposure value of 0.20 mW/cm^2 for uncontrolled exposure situations at 97.9 MHz, at any point at a height of 2 meters or less above ground in the vicinity of the base of the antenna supporting structure.

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For KRCD(FM), the station's main antenna, comprised of an Electronics Research three-bay nondirectional antenna with 0.5 wavelength vertical spacing between radiating elements, is side-mounted on the South Tower of the KTYM(AM) antenna array at a height of 53 meters above ground. A study made using the "FM Model" program shows that for operation at 4.1 kW effective radiated power, the calculated radiofrequency power density level would not exceed 0.0045 mW/cm^2 , or 2.2% of the Maximum Permissible Exposure value of 0.20 mW/cm^2 for uncontrolled exposure situations at 103.9 MHz, at any point at a height of 2 meters or less above ground in the vicinity of the base of the antenna supporting structure.

Accordingly, on the basis of the individual contributions to total radiofrequency power density levels at the KTYM(AM) site, the total power density level at distances of 3.0 meters or greater from either tower would not exceed 79.0% of the allowable limit for uncontrolled exposure of the public.

One or more RF hazard information signs will be posted at appropriate locations at the KTYM(AM) transmitter site.

The applicant will operate the proposed transmitting facilities at reduced power, or temporarily cease operation, as may be required to protect all workers from exposure to hazardous levels of radiofrequency radiation.

II. Allocation Considerations

Allocation Study

The proposed operation of K268DD conforms with the requirements of Section 74.1204 of the Commission's Rules for a Class D station on Channel 268 with respect to overlap of predicted contours with the licensed operation of any FM station, LPFM station, or FM translator, and the operation of any such facilities specified in a construction permit or pending application, on the same channel, the first adjacent channels, and the third adjacent channels, as shown in this Attachment. On each of the second adjacent channels the proposed translator site is located within the predicted protected contour of an existing FM station. This Attachment demonstrates that, under Section 74.1204(d) of the Rules, no objectionable interference will be caused to either of these FM stations. The proposed operation of the translator therefore would not result in objectionable interference to any station.

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The FM stations and LPFM stations taken into account in the allocation study for this application are listed in Table A of this Attachment. FM translators are at sufficient distances from the proposed K268DD site so as not to require further study with respect to contour overlap with the proposed operation.

Figure 1A of this Attachment shows the pertinent predicted contours for the proposed operation of K268DD and co-channel LPFM stations KFQM-LP, Los Angeles; KZKA-LP, Los Angeles; and KQSG-LP, El Monte, all in California.

Figure 1B of this Attachment shows the pertinent predicted contours for the proposed operation of K268DD and co-channel LPFM stations KROJ-LP, Panorama City; and KQBH-LP, Los Angeles, both in California.

The nearest FM stations, LPFM stations, and FM translators on the first adjacent channels are all at sufficient distances from the proposed K268DD site so as not to require further studies with respect to overlap of contours with the proposed operation of K268DD.

Figure 2 of this Attachment depicts the location of the proposed K268DD site with respect to the predicted protected contours for the nearby FM stations on the second adjacent channels. As shown in Figure 2, the proposed K268DD site is located within the 54 dBu F(50,50) contours for KRTH(FM), Los Angeles, California, on Channel 266B; and KSCA(FM), Glendale, California, on Channel 270B.

The potential for interference from the proposed operation of K268DD to KRTH(FM) and KSCA(FM) was evaluated by determining the area in which the ratio of undesired to desired signal between the proposed operation of the translator and each of these stations equals or exceeds 40 dB, using free space propagation calculations for the translator signal.

With respect to KRTH(FM), the predicted F(50,50) signal of KRTH(FM) at the proposed K268DD site is 88.8 dBu, and interference would occur where the translator signal is 128.8 dBu (2754 mV/m) or greater. In the case of KSCA(FM), the predicted F(50,50) signal of KSCA(FM) at the proposed K268DD site is 78.2 dBu, and interference would occur where the translator signal is 118.2 dBu (813 mV/m) or greater.

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Computations show that, for operation of K268DD at 65 watts effective radiated power and assuming uniform maximum radiation from the proposed translator in all directions in the horizontal plane, interference to KSCA(FM) would not extend beyond a distance of 69 meters from the translator antenna array.

The map of Figure 3 of this Attachment is a portion of the USGS 7-1/2-minute topographic map showing the vicinity of the proposed K268DD site. Figure 3 depicts the proposed translator site and a circle drawn at a radius of 0.069 kilometer from the proposed translator antenna array. The part of the map showing the contour overlap has been compared for accuracy with up-to-date aerial photography from the Google Earth website.

The supporting pole for the FM translator antenna array for the proposed operation of K268DD will be located at the KTYM(AM) transmitter site. There are no residences or occupied buildings, and no public roads, within the 0.069-kilometer-radius circle. This application conforms with the requirements of Section 74.1204(d) of the Commission's Rules, as the area within the circle is unpopulated; and the proposed operation of K268DD therefore would not result in objectionable interference to either KRTH(FM) or KSCA(FM).

The nearest FM stations, LPFM stations, and FM translators on the third adjacent channels are all at sufficient distances from the proposed K268DD site so as not to require further studies with respect to overlap of contours with the proposed operation of the translator.

Under Section 74.1204(g) of the Commission's Rules, the proposed translator is not subject to intermediate frequency separation requirements, because the maximum effective radiated power is less than 100 watts.

The site for the proposed FM translator is located within 320 kilometers of the U.S.-Mexico border. With respect to the requirements of Section 74.1235(d) of the Commission's Rules, the proposed translator site is 178 kilometers, or more than 125 kilometers, from the international border. The maximum distance to the 60 dBu F(50,50) contour for the proposed translator is 10.0 kilometers, and the contour therefore does not fall within 116.3 kilometers of the border.

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Methods Employed in Determining Contours

The predicted contours shown in this Attachment were determined in accordance with the requirements of Section 73.313 of the Commission's Rules, from computerized calculations based on the NGDC 30-second terrain database, and Figures 1 and 1a of Section 73.333 of the Rules. Distances to the contours were calculated at azimuthal increments of one degree.

Fred W. Volken
Engineering Consultant

August 2023

Sierra Madre, California

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III. Statement of Engineer

FRED W. VOLKEN, whose place of business is located in Sierra Madre, California, hereby states that he is a graduate physicist holding the degree Bachelor of Arts from Occidental College, Los Angeles, California; that his qualifications as an engineering consultant are a matter of record with the Federal Communications Commission; that he has prepared, or supervised the preparation of, the accompanying document as engineering consultant for El Sembrador Ministries, licensee of FM Translator K268DD, Los Angeles, California; and that all of the information contained in this document is accurate and correct to the best of his knowledge and ability.

I state under penalty of perjury that the foregoing is true and correct. Executed on August 29, 2023.


Fred W. Volken

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TABLE A

Station Facilities

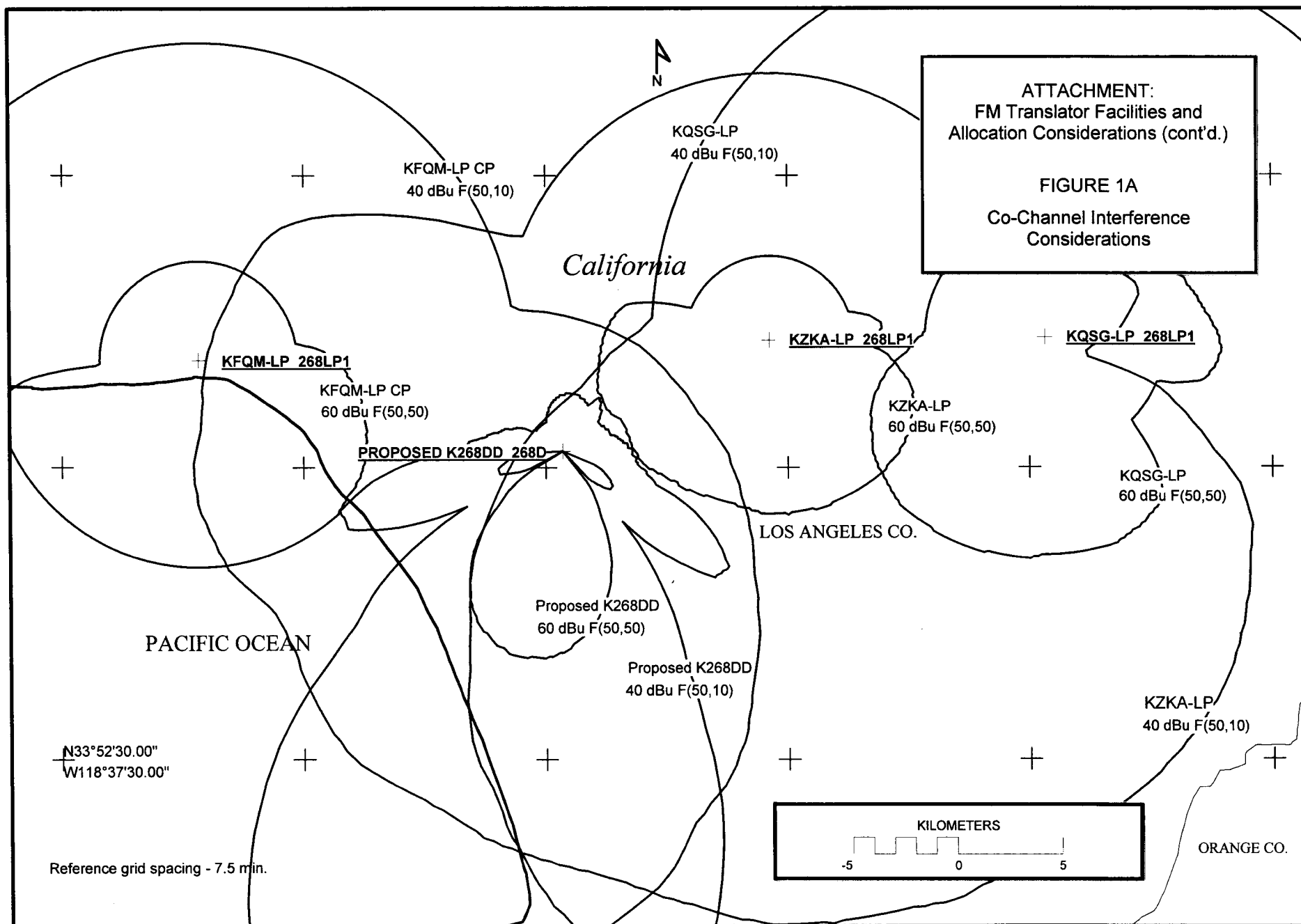
	Channel and Class	Station and Location, Status, File Number	Geographical Coordinates (NAD83)	Facilities	
				Effective Radiated Power and Antenna	Antenna Height Above Average Terrain (meters)
Co-Channel Stations	268D	Proposed K268DD Los Angeles, CA	N 34° 00' 25.4" W 118° 21' 58.3"	0.065 kW Directional	-----
	268D	K268DD, Los Angeles, CA License BLFT-201700830ABJ	N 34° 00' 25.0" W 118° 21' 58.3"	0.024 kW Directional	-----
	268LP1	KFQM-LP, Los Angeles, CA License BLL-20190425AAA	N 34° 02' 46.2" W 118° 33' 16.0"	0.05 kW Nondirectional	9.2
	268LP1	KZKA-LP, Los Angeles, CA License BLL-20161213ACH	N 34° 03' 17.0" W 118° 15' 34.3"	0.025 kW Nondirectional	56
	268LP1	KQSG-LP, El Monte, CA License BLL-20171026ABV	N 34° 03' 21.0" W 118° 07' 01.2"	0.1 kW Nondirectional	26
	268LP1	KROJ-LP, Panorama City, CA License LMS 0000132443	N 34° 15' 47.0" W 118° 25' 06.9"	0.1 kW Nondirectional	-89
	268LP1	KQBH-LP, Los Angeles, CA License BLL-20190501AAQ	N 34° 02' 41.0" W 118° 12' 14.3"	0.05 kW Nondirectional	8.4
	268LP1	KQBH-LP, Los Angeles, CA Construction Permit LMS 0000192863	N 34° 02' 41.0" W 118° 12' 14.3"	0.05 kW Nondirectional	8.4

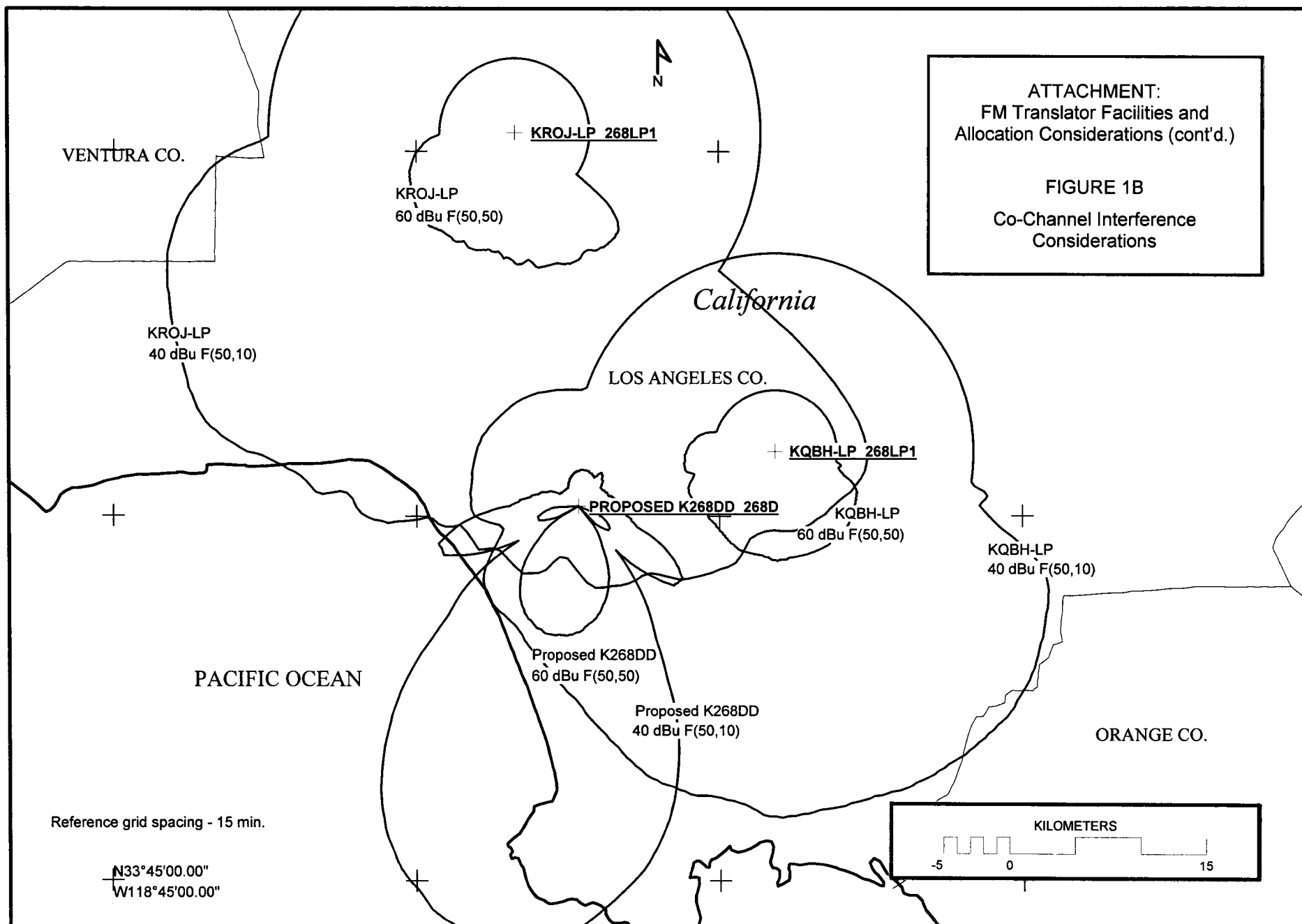
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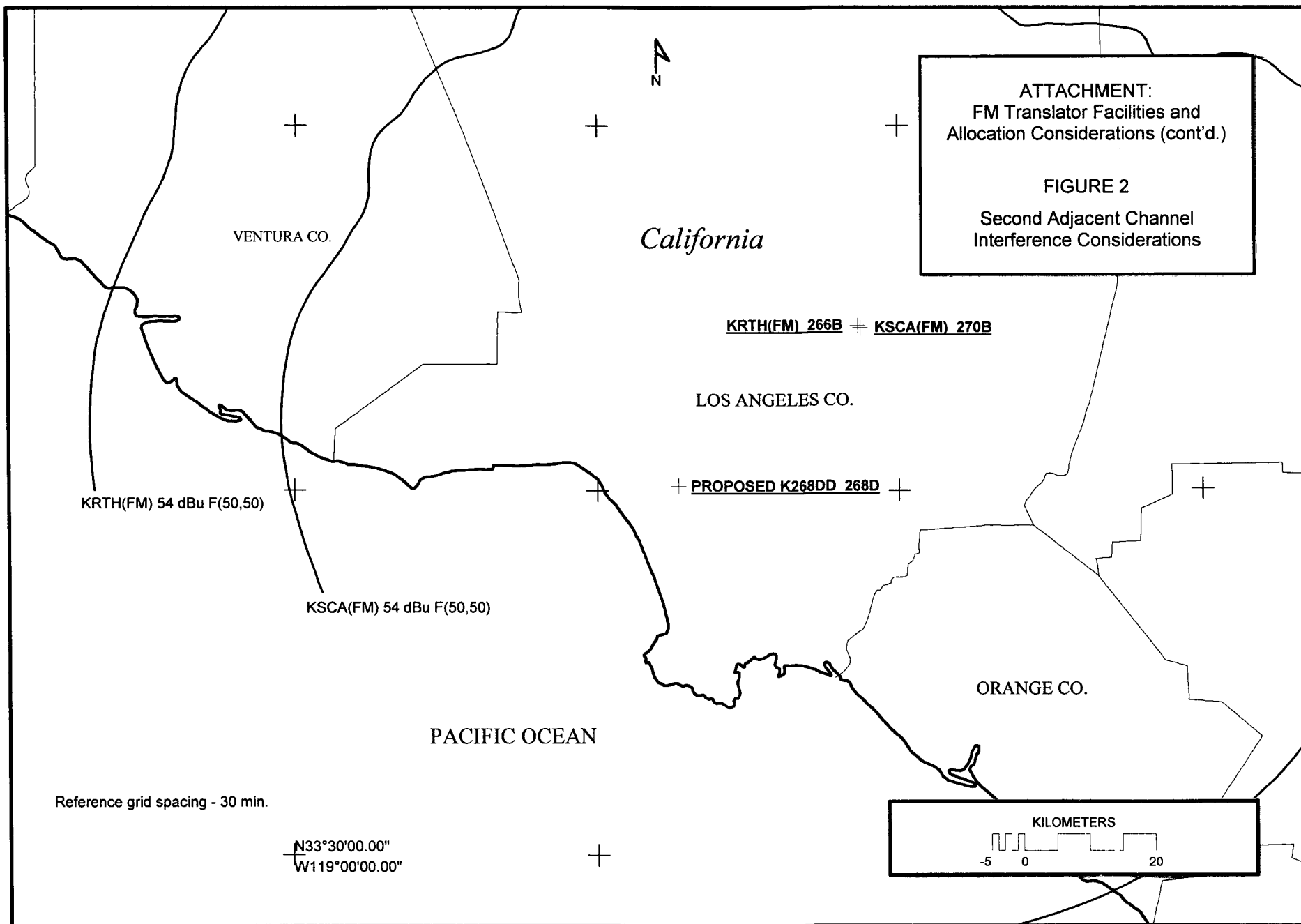
TABLE A (continued)

Station Facilities

	Channel and Class	Station and Location, Status, File Number	Geographical Coordinates (NAD83)	Facilities	
				Effective Radiated Power and Antenna	Antenna Height Above Average Terrain (meters)
Second Adjacent Channel Stations	266B	KRTH(FM), Los Angeles, CA License BMLH-20071015AJG	N 34° 13' 38.0" W 118° 04' 03.2"	51 kW Nondirectional	955
	270B	KSCA(FM), Glendale, CA License BMLH-20111031ADQ	N 34° 13' 26.0" W 118° 03' 48.2"	4.8 kW Nondirectional	863







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FIGURE 3
Second Adjacent Channel
Interference Considerations

