

## REQUEST FOR WAIVER OF SIGNAL DELIVERY RULE

California Lutheran University (“CLU”) hereby requests a waiver of Section 74.1231(b) of the Commission’s rules in order that FM translator K272DT, Santa Barbara, California, may receive the signal of noncommercial educational FM broadcast radio station KCLU(FM), Thousand Oaks, California, using alternative signal delivery means.

CLU is the licensee of both KCLU and K272DT. KCLU serves Ventura County, and K272DT serves the City of Santa Barbara and nearby communities in adjacent Santa Barbara County. The rule allowing noncommercial FM translators assigned to reserved channels and owned and operated by their parent stations to use any means for delivery of the primary station signal, *see Satellite and Terrestrial Microwave Feeds to Noncommercial Educational FM Translators*, 3 FCC Rcd 2196, 2198 (1988), recon. granted in part, 4 FCC Rcd 6459 (1989), does not apply to K272DT because the translator is located in the non-reserved band.

CLU has operated K272DT since January 1998 in full compliance with Rule 74.1231(b), which provides that “[a]n FM translator may be used for the purpose of retransmitting the signal of a primary FM radio broadcast station . . . the signal of which is received directly through space, converted, and suitably amplified.” The signal strength of KCLU at the K272DT transmitter site is approximately 54.5 dBuV/m, which, as explained in the Engineering Statement attached as Exhibit 1, should be more than adequate for rebroadcast.

As further explained in the Engineering Statement, however, the signal of KCLU at the K272DT transmitter site has been increasingly subject to anomalous interference from several sources:

- inversion layer or ducting interference from co-channel KSDS(FM), San Diego, a result of unique atmospheric conditions along the Southern California coastline;
- spurious emissions (probably intermodulation mixes) from other stations that transmit from the same site as K272DT; and
- IBOC sideband emissions from second adjacent channel KFAC(FM), Santa Barbara, which also broadcasts from the same site as K272DT.

Over the years, CLU has found “fixes” for many of these interference problems, but CLU cannot find a solution for the inversion layer or ducting interference from co-channel KSDS that occurs with relative frequency because of the location of K272DT on the Pacific coast. Additionally, to date, CLU has not been able to find a solution to eliminate the interference that results when KFAC broadcasts in IBOC mode. KFAC has ceased IBOC transmissions because of the problem, but ultimately it will need to resume IBOC operation. Therefore, unless the Commission waives the requirements of Section 74.1231(d) to permit K272DT to receive KCLU’s signal by alternative delivery means, K272DT will be forced off the air.

The Commission may waive its rules when (1) the underlying purpose of the rule would not be served or would be frustrated by application to the instant case, and a grant of the requested waiver would be in the public interest, or (2) in view of unique or unusual circumstances of the case, application of the rule would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative. *Nextwave Personal Communications, Inc.*, FCC 04-26 at ¶ 44 (released Feb. 12, 2004).

The Commission's grant of the requested waiver for K272DT would be consistent with the purpose of the signal delivery rule. The Commission has explained the purpose of the rule as follows:

We continue to believe that, to the extent that translator service is desirable beyond a station's predicted contour, the over-the-air signal will generally be suitable for rebroadcast . . . . Moreover, we believe that the signal delivery provision [of Section 74.1231(b)] will eliminate disincentives for service by full-service radio broadcast stations in instances where sufficient community interest exists for additional services, but where the existence of "other area" translators financed by primary stations would work to limit the economic viability of such stations.

*FM Translator Stations*, 8 FCC Rcd 5093, 5098 (1993) (omitted language concerns "white-area" situations that are not relevant to this waiver request). *See also Peninsula Communications, Inc.*, 13 FCC Rcd 23992, 23998 (1998) (the purpose of the signal delivery rule is "to promote incentives for full service FM and AM broadcast station development and prevent some stations from being forced to compete economically with translators").

Grant of the requested waiver is consistent with this purpose. **First**, as indicated above, K272DT is located at a site where historically the received signal of KCLU has been suitable for rebroadcast and where based on signal strength alone it remains suitable for rebroadcast. The problem is not signal strength but anomalous interference from unique atmosphere conditions, spurious emissions and a co-located IBOC facility. Thus, operation of the K272DT is consistent with the general purpose of the signal delivery rule not to extend signals too far beyond the primary station service area. **Second**, grant of the requested waiver will not create a disincentive for service by full-service broadcast stations. The Santa Barbara Metro is home to 18 full-power radio stations. As demonstrated in the spacing studies attached at Exhibit 2, there are no remaining unused fully spaced channels that could be allotted at either of the two broadcast transmitter sites in the area. Thus, the existence of K272DT will not "work to limit the economic viability" of any new station. **Third**, K272DT rebroadcasts a noncommercial educational service and does not therefore compete economically with full power stations in Santa Barbara. The Commission has "long recognized that NCE-FM and commercial licensees participate in fundamentally different broadcast services." *FM Translator Stations*, 8 FCC Rcd at 5098.

Grant of the requested waiver will also serve the public interest. Because K272DT extends KCLU's signal into Santa Barbara, KCLU broadcast news covering issues, events and people in Santa Barbara, as well as Ventura County. In fact, KCLU/K272DT is the only broadcast outlet providing long-form coverage of local news in Santa Barbara on a daily basis. Santa Barbara will lose this unique local service if K272DT is forced off the air because of the signal delivery rule.

Accordingly, CLU respectfully requests that the Commission waive Section 74.1231(b) of the Rules to permit K272DT to receive the signal of commonly owned noncommercial educational FM broadcast station KCLU(FM), Thousand Oaks, California, using alternative delivery means.

**EXHIBIT 1**

**ENGINEERING STATEMENT**

## ENGINEERING STATEMENT

In the instant application, California Lutheran University (“CLU”), licensee of FM translator K272DT, Santa Barbara, CA and non-commercial FM station KCLU, Thousand Oaks, CA respectfully requests a waiver of 74.1231(b) to allow K272DT to be fed via an alternate signal delivery method rather than from direct off-air pickup at the translator site; no other changes in the translator’s operation are being proposed at this time. CLU requests a waiver to allow signal delivery by alternate means because the signal of the primary station, KCLU, is subject to anomalous interference at the receive site notwithstanding that KCLU's signal measures approximately 54.5 dBuV/m (0.53 mV/m) at that location and is otherwise suitable for rebroadcast.

### **Background**

FM translator station K272DT, Santa Barbara was issued its Construction Permit on October 15, 1997. The station was immediately constructed and went on the air in January of 1998, with its License granted on April 24, 1998. K272DT operates with a non-directional, circularly polarized ERP of 4 watts and retransmits the signal/programming of commonly owned non-commercial FM station KCLU, 88.3 MHz, Thousand Oaks.

K272DT operates on channel 272 (102.3 MHz), which is in the non-reserved band of FM channels, as no channel in the reserved band of channels 201-220 (88.1–91.9 MHz) could be found which would not cause predicted interference to either existing FM Broadcast or FM Broadcast Translator stations.<sup>1</sup> K272DT is not a “Fill-in Translator”, as it operates outside of the 1 mV/m contour of KCLU (see Figure 1).<sup>2</sup> Consequently, K272DT does not qualify to receive its input signal via any other method except via direct, off-air reception at the transmitter site.

Under normal receiving conditions, K272DT receives an adequate RF signal level from KCLU to produce a broadcast quality retransmission of KCLU. The received signal level from KCLU is approximately –53 dBmW (613 uV into 75 ohms), as measured at the receiver input terminals.<sup>3</sup>

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<sup>1</sup> In searching for a frequency in the reserved group of channels, at least one channel was found that would have met the traditional interference criteria specified in 74.1204. However, listening tests in the Santa Barbara area revealed that adjacent market FM stations were easily receivable on these channels. 74.1203(a)(3) prohibits a new translator station from causing interference to the regularly used signals of existing stations, so these channels were not pursued.

<sup>2</sup> At the time K272DT was first constructed, KCLU was operating as a Class A station with a directional ERP of 1.25 kW. KCLU has since upgraded its facilities and is now a Class B1 station operating with a directional ERP of 3.2 kW.

<sup>3</sup> After factoring in the frequency, receive antenna gain and transmission line loss, this equates to a free-space field strength of 54.5 dBuV/m.

### **Specifics of Received Interference**

Since its first year of operation, K272DT has received interference on its input from non-commercial FM station KSDS, San Diego, which operates co-channel to KCLU on channel 202 (88.3 MHz). This interference is not calculated to occur using traditional analysis, but rather occurs due to the unique atmospheric conditions that occur along the Southern California coastline. This inversion layer/ducting occurs most often during the summer and fall seasons, but can occur sporadically at other times of the year as well.

The interference manifests itself primarily in two different forms. First, as the Desired/Undesired ratio falls, noise/distortion in the desired/primary (KCLU) station's audio occurs. Finally, when the D/U ratio is low enough, the signal of KSDS wins out over KCLU and KSDS is then being rebroadcast on K272DT due to the FM capture effect. This battle of competing signals can go on for hours until the atmospheric conditions stabilize and return to normal.

Various attempts on the technical front have been made to combat this interference. Initially, the K272DT directional receiving antenna was horizontally polarized. Polarizing it vertically seemed to improve (reduce) the occurrence of interference. However, KSDS has since begun broadcasting using vertical-only polarization<sup>4</sup> in efforts to increase its ERP and minimize interference to TV channel 6, XETV, Tijuana. The interference to K272DT worsened when KSDS made the polarization and power change, so CLU was forced to return K272DT's receiving antenna back to horizontal polarity.

As viewed from K272DT's transmitter location, the angular difference between KCLU and KSDS is only 16° (see Figure 2). The KSDS signal travels to the K272DT transmitter site mostly over water while the KCLU signal travels mostly over mountainous terrain. K272DT uses a Scala HDCA-5FM directional receiving antenna to receive its primary station, KCLU. The directional characteristics of the Scala HDCA-5FM antenna can be seen in Figure 3. Due to the wavelengths involved, a significantly narrower beam-width receiving antenna would be impractical to design or construct. Moreover, due to the atmospheric nature of the interference, the precise angle and polarity at which the interfering signal appears to K272DT's receiving antenna is not predictable.

Multiple receiving locations on the property along with various antenna combinations have been tried, but due to the unpredictable atmospheric nature of the interference, a location that receives KCLU well in the morning may not be useable at all during the evening. In fact, during one late night experiment, the undersigned engineer was listening to KCLU in his parked car (vertically polarized) while the translator was receiving and rebroadcasting KSDS from its horizontally polarized receiving antenna that was located less than 15 meters away.

It was hoped that the 4 dB power increase of KCLU in 2002<sup>5</sup> would have eliminated the interference by simply increasing the D/U ratio, but it has not.

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<sup>4</sup> See BSTA-19991104AAS, BPED-20020219ABE and BLED-20020405ABG.

<sup>5</sup> See BPED-20010119AFD and BLED-20020307ABN.

### **Other Factors**

The Gibraltar Peak electronics site, where K272DT is located, is an excellent transmitter site with an elevation of approximately 665m AMSL and with good line-of-sight into Santa Barbara and the neighboring coastline communities. However, Gibraltar Peak is by no means an ideal (“RF Quiet”) receiving site; in fact, the RF noise floor of this site is quite high due to the fact that this is the home to 7 full power FM Broadcast stations, 4 FM Translator stations, 11 Low Power TV stations, 1 AM Broadcast station as well as numerous land-mobile two-way, paging, cellular and other wireless service providers.<sup>6</sup> Indeed, on more than one occasion, the undersigned engineer was asked to investigate listener complaints of random noise in the audio only to find spurious emissions, presumably intermodulation mixes, being received within KCLU’s passband; and as the Commission knows, low level intermodulation mixes are extremely difficult to find the source of, especially at a multi-user site such as this one.<sup>7</sup>

The K272DT receiving antenna is located approximately 100 meters from 2<sup>nd</sup> adjacent KFAC, 88.7 MHz, Santa Barbara. KFAC operates with a non-directional ERP of 12 kW. To overcome the receiver overload and audio degradation that would be caused by this strong 2<sup>nd</sup> adjacent carrier, CLU installed a dual-cavity bandpass filter along with a single cavity notch filter to attenuate the undesired frequencies, both in-band and out-of-band, to manageable levels. The effectiveness of these filters can be seen in Figures 4A and 4B. This combination of filters has yielded acceptable results since K272DT’s debut in 1998.

Recently, however, KFAC changed out its analog-only transmitter and installed a transmitter capable of simultaneous analog and IBOC digital transmissions. When KFAC turned on the IBOC digital carrier(s), the results were disastrous relative to receiving KCLU, 88.3 MHz, at the site. When notified, KFAC fully cooperated and turned off the IBOC transmissions while the matter was investigated.

With regard to FM transmission system requirements, 73.317(c) states: *“Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated at least 35 dB below the level of the unmodulated carrier.”* Modern day analog FM transmitters can easily comply with this requirement, but a station running IBOC must also fit within this emission mask. A measurement of KFAC’s emissions (while in IBOC mode) showed complete compliance with this rule (see Figure 5A and 5B), yet because of the close proximity to K272DT’s receiving system, the KFAC IBOC sidebands, which appear as co-channel and first adjacent carriers relative to KCLU, approached the level of KCLU’s incoming carrier amplitude.

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<sup>6</sup> Additionally, due to local ordinances, all of the transmitting and receiving antennas are relatively low to the ground, mounted either on the single story buildings, short poles or short towers.

<sup>7</sup> Indeed, note the spurious emission captured during a recent site visit at approximately 88.425 MHz in Figure 4.

KFAC continues to seek technical solutions to mitigate the problem. However, any additional noise under (or on top of) the already fragile incoming carrier of KCLU will further impair the audio quality for the listeners of K272DT.

**Conclusion**

For the reasons mentioned above, CLU requests a waiver of 74.1231(b) to allow K272DT to be fed via alternate signal delivery means rather than from direct off-air pickup at the translator site in order to provide a more reliable and higher quality of service that the listening public expects and demands in this day and age.

A handwritten signature in blue ink, reading "Timothy P. Schultz", is written over a horizontal line.

Timothy P. Schultz, CPBE

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Figure 1



Predicted 1 mV/m Coverage Contours  
of  
KCLU and K272DT



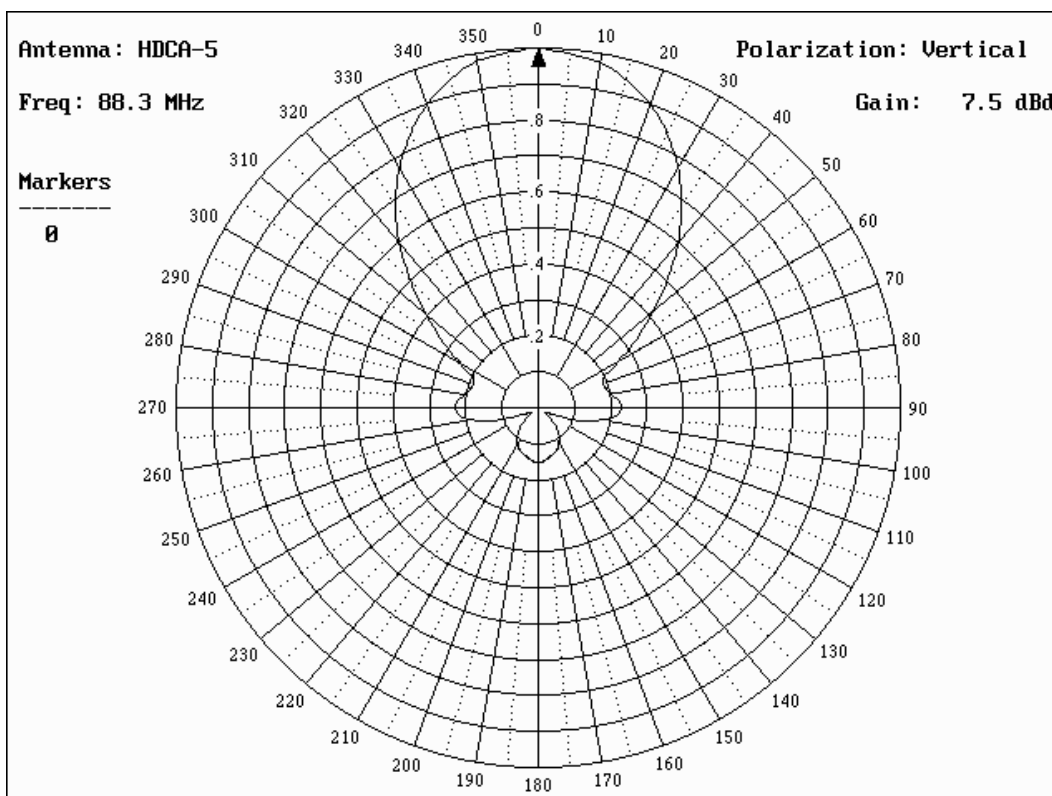
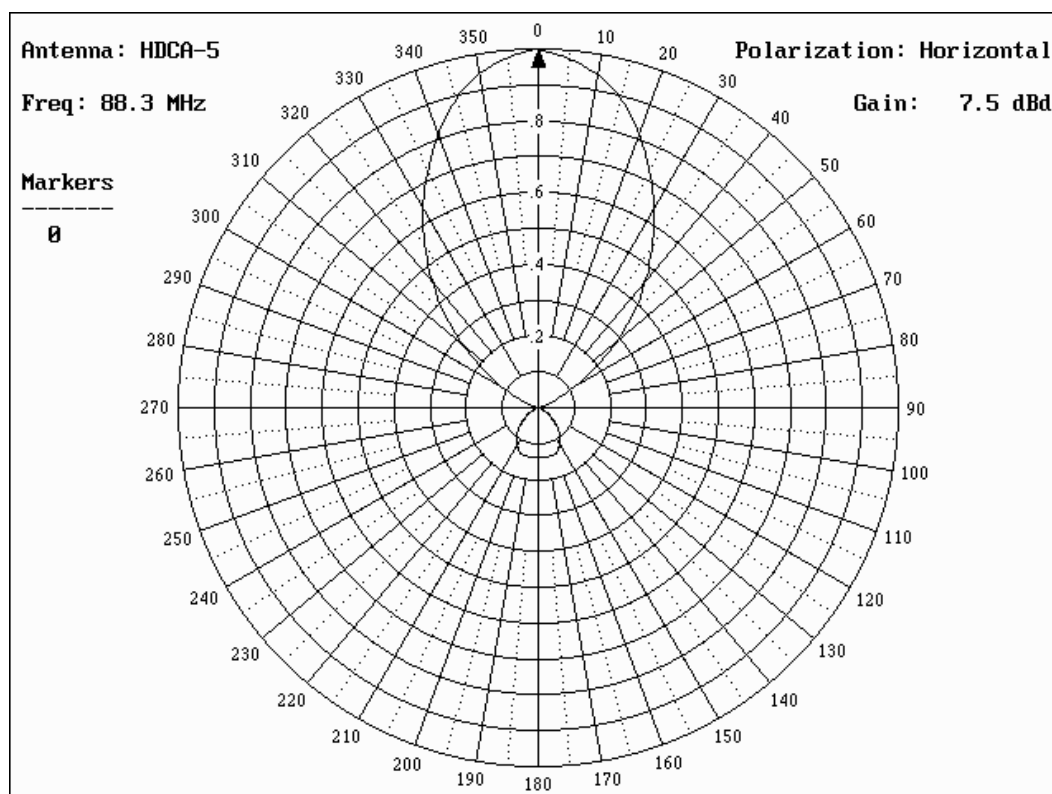
Figure 2



Relative Receiving Angle Difference of  
KCLU, Thousand Oaks  
VS  
KSDS, San Diego

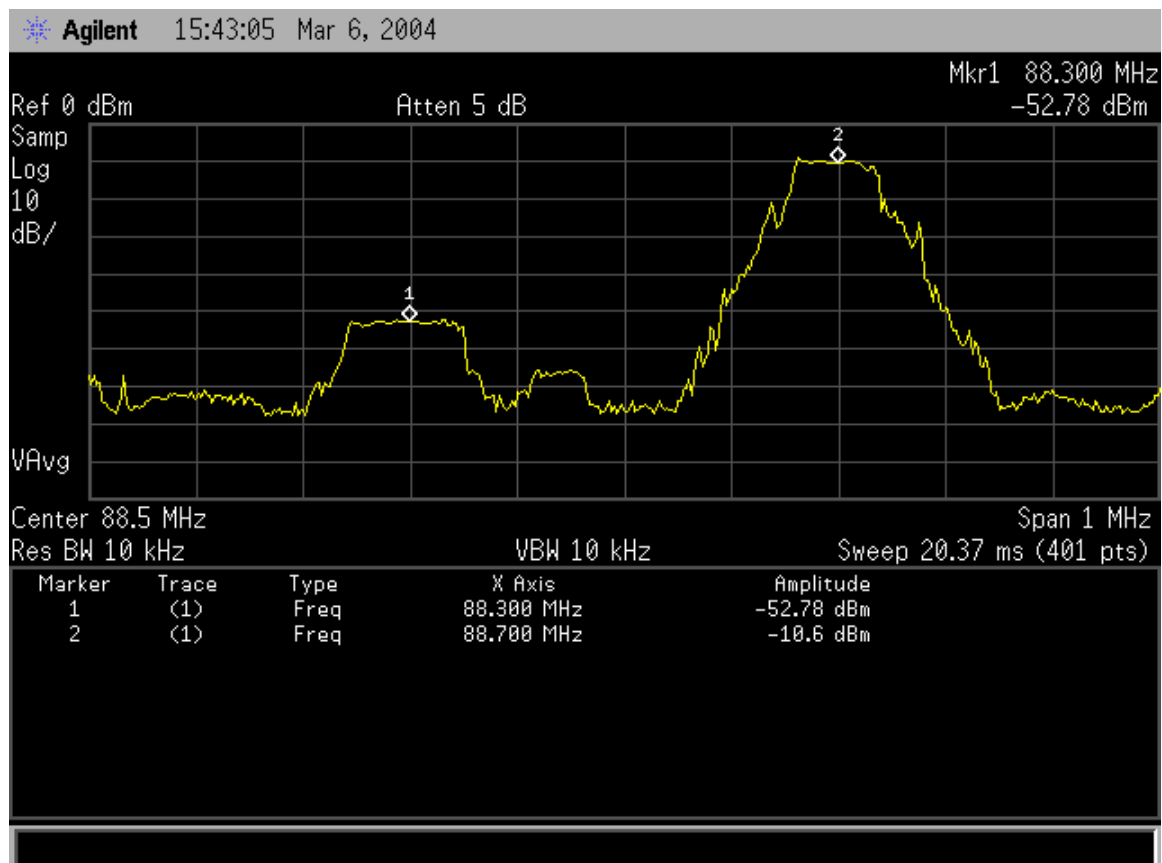


**FIGURE 3**



**K272DT Receive Antenna**  
**(SCALA, HDCA-5FM)**

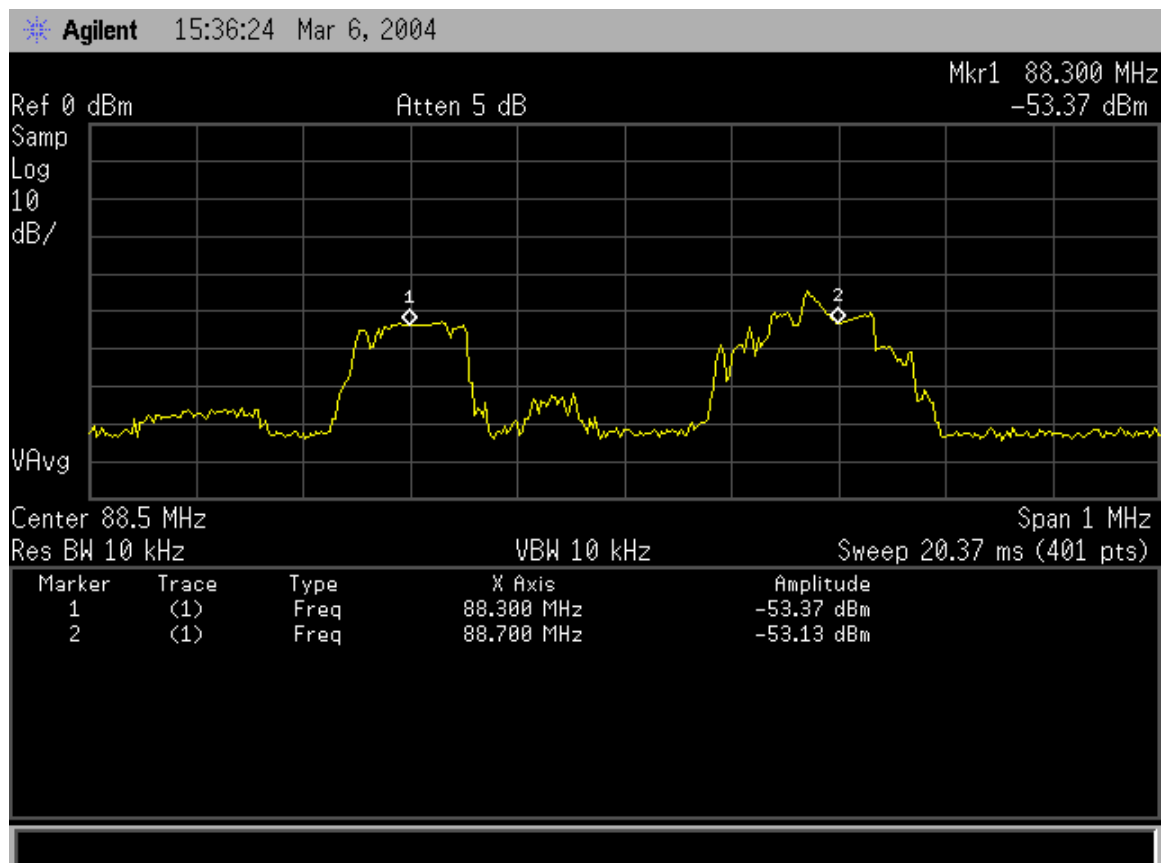
Figure 4A



## K272DT Receiver Input (No Filter)

Spectrum plot captured using maximum hold time of approximately 10 seconds.

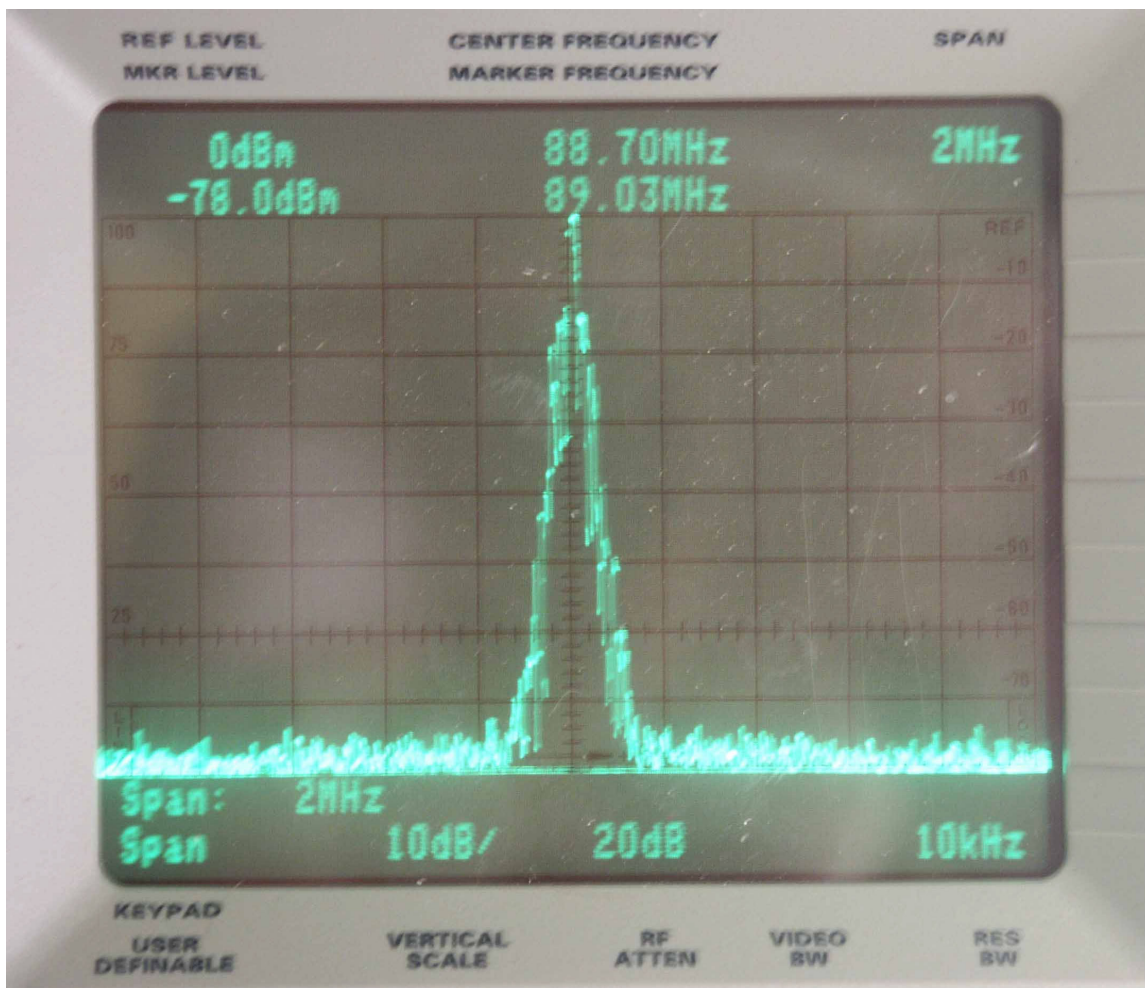
Figure 4B



## K272DT Receiver Input (With Filter)

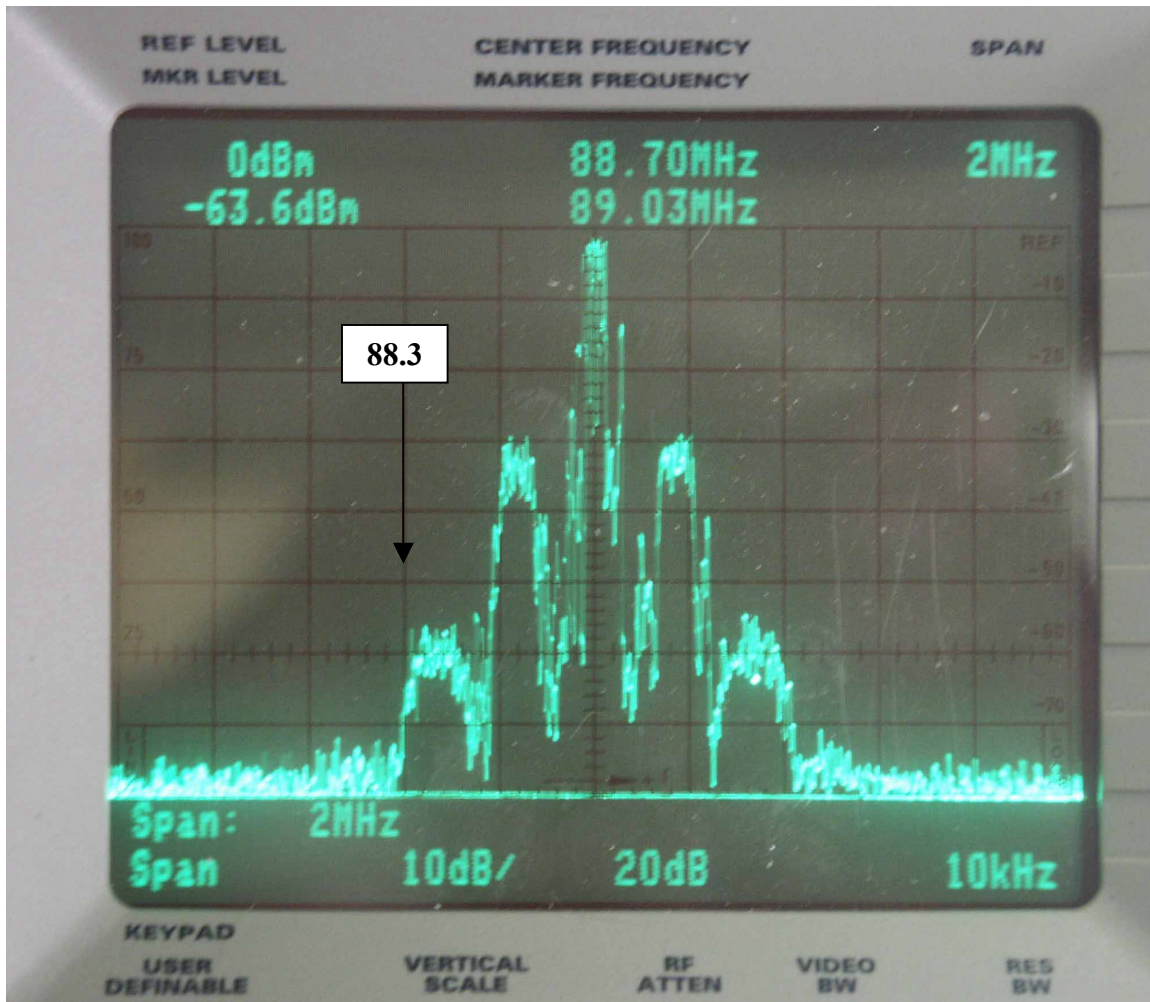
Spectrum plot captured using maximum hold time of approximately 10 seconds.

Figure 5A



KFAC without IBOC

Figure 5B



KFAC with IBOC

## **EXHIBIT 2**

### **ALLOCATION STUDIES**



**CLASS A SPACING STUDY - GIBRALTAR PEAK TRANSMITTER SITE**  
**(N34-27-55/W119-40-37)**

| CH  | FREQ | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km)       | PRECLUSION<br>(km)                 |
|-----|------|---------------|----------|---------|----------|--------|-------|------------------|---------------------------|------------------------------------|
| 201 | 88.1 | SANTA BARBARA | KFAC     | N342755 | W1194037 | LIC    | B     | 0.0              | Protect 1 mV/m<br>Contour | Inside Protected<br>1 mV/m Contour |
| 202 | 88.3 |               |          |         |          |        |       |                  |                           |                                    |
| 203 | 88.5 |               |          |         |          |        |       |                  |                           |                                    |
| 204 | 88.7 |               |          |         |          |        |       |                  |                           |                                    |
| 205 | 88.9 |               |          |         |          |        |       |                  |                           |                                    |
| 206 | 89.1 |               |          |         |          |        |       |                  |                           |                                    |
| 207 | 89.3 | SANTA BARBARA | KSBX     | N342757 | W1194037 | LIC    | A     | 0.0              | Protect 1 mV/m<br>Contour | Inside Protected<br>1 mV/m Contour |
| 208 | 89.5 |               |          |         |          |        |       |                  |                           |                                    |
| 209 | 89.7 |               |          |         |          |        |       |                  |                           |                                    |
| 210 | 89.9 |               |          |         |          |        |       |                  |                           |                                    |
| 211 | 90.1 | CAMARILLO     | KMRO     | N342447 | W1191110 | LIC    | B     | 45.5             | Protect 1 mV/m<br>Contour | Inside Protected<br>1 mV/m Contour |
| 212 | 90.3 |               |          |         |          |        |       |                  |                           |                                    |
| 213 | 90.5 |               |          |         |          |        |       |                  |                           |                                    |
| 214 | 90.7 |               |          |         |          |        |       |                  |                           |                                    |
| 215 | 90.9 | THOUSAND OAKS | KCPB     | N342447 | W1191110 | LIC    | B     | 45.5             | Protect 1 mV/m<br>Contour | Inside Protected<br>1 mV/m Contour |
| 216 | 91.1 |               |          |         |          |        |       |                  |                           |                                    |
| 217 | 91.3 |               |          |         |          |        |       |                  |                           |                                    |
| 218 | 91.5 | SANTA BARBARA | KCSB-FM  | N343131 | W1195729 | LIC    | B     | 26.7             | Protect 1 mV/m<br>Contour | Inside Protected<br>1 mV/m Contour |
| 219 | 91.7 |               |          |         |          |        |       |                  |                           |                                    |
| 220 | 91.9 |               |          |         |          |        |       |                  | 105                       | -78.3                              |
| 221 | 92.1 |               |          |         |          |        |       |                  | 69                        | -42.3                              |
| 222 | 92.3 |               |          |         |          |        |       |                  |                           |                                    |
| 223 | 92.5 | MONTECITO     | KJEE     | N342757 | W1194037 | LIC    | A     | 0.0              | 27                        | -27.0                              |
| 224 | 92.7 |               |          |         |          |        |       |                  | 64                        | -64.0                              |
| 225 | 92.9 |               |          |         |          |        |       |                  | 105                       | -105.0                             |
| 226 | 93.1 |               |          |         |          |        |       |                  | 64                        | -64.0                              |
| 227 | 93.3 |               |          |         |          |        |       |                  | 27                        | -27.0                              |

**CLASS A SPACING STUDY - GIBRALTAR PEAK TRANSMITTER SITE**  
**(N34-27-55/W119-40-37)**

| CH  | FREQ | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km) |
|-----|------|---------------|----------|---------|----------|--------|-------|------------------|---------------------|--------------------|
| 228 | 93.5 |               |          |         |          |        |       |                  | 105                 | -104.9             |
| 229 | 93.7 | SANTA BARBARA | KDB      | N342758 | W1194037 | LIC    | B     | 0.1              | 163                 | -162.9             |
| 230 | 93.9 |               |          |         |          |        |       |                  | 105                 | -104.9             |
| 231 | 94.1 |               |          |         |          |        |       |                  | 69                  | -68.9              |
| 232 | 94.3 |               |          |         |          |        |       |                  | 105                 | -78.4              |
| 233 | 94.5 | ELLWOOD       | KSPE-FM  | N343132 | W1195728 | LIC    | B     | 26.6             | 163                 | -136.4             |
| 234 | 94.7 |               |          |         |          |        |       |                  | 105                 | -78.4              |
| 235 | 94.9 |               |          |         |          |        |       |                  | 105                 | -36.0              |
| 236 | 95.1 | VENTURA       | KBBY-FM  | N340647 | W1190334 | LIC    | B     | 69.0             | 163                 | -94.0              |
| 237 | 95.3 |               |          |         |          |        |       |                  | 105                 | -36.0              |
| 238 | 95.5 |               |          |         |          |        |       |                  | 48                  | -14.2              |
| 239 | 95.7 |               |          |         |          |        |       |                  | 88                  | -54.2              |
| 240 | 95.9 | CAMARILLO     | KOCP     | N342055 | W1192013 | LIC    | B1    | 33.8             | 138                 | -104.2             |
| 241 | 96.1 |               |          |         |          |        |       |                  | 88                  | -54.2              |
| 242 | 96.3 | GOLETA        | KVRY-LP  | N342650 | W1195328 | CP     | L1    | 19.8             | 67                  | -47.2              |
| 243 | 96.5 |               |          |         |          |        |       |                  | 64                  | -18.2              |
| 244 | 96.7 | SOLVANG       | KSJV     | N343630 | W1200842 | LIC    | A     | 45.8             | 105                 | -59.2              |
| 245 | 96.9 |               |          |         |          |        |       |                  | 64                  | -18.2              |
| 246 | 97.1 |               |          |         |          |        |       |                  | 69                  | -42.3              |
| 247 | 97.3 |               |          |         |          |        |       |                  | 105                 | -78.3              |
| 248 | 97.5 | SANTA BARBARA | KMGQ     | N343131 | W1195729 | LIC    | B     | 26.7             | 163                 | -136.3             |
| 249 | 97.7 |               |          |         |          |        |       |                  | 105                 | -78.3              |
| 250 | 97.9 |               |          |         |          |        |       |                  | 69                  | -42.3              |
| 251 | 98.1 |               |          |         |          |        |       |                  | 88                  | -53.8              |
| 252 | 98.3 | OXNARD        | KDAR     | N342055 | W1191957 | LIC    | B1    | 34.2             | 138                 | -103.8             |
| 253 | 98.5 |               |          |         |          |        |       |                  | 88                  | -53.8              |
| 254 | 98.7 |               |          |         |          |        |       |                  | 48                  | -13.8              |

**CLASS A SPACING STUDY - GIBRALTAR PEAK TRANSMITTER SITE**  
**(N34-27-55/W119-40-37)**

| CH  | FREQ  | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km) |
|-----|-------|---------------|----------|---------|----------|--------|-------|------------------|---------------------|--------------------|
| 255 | 98.9  |               |          |         |          |        |       |                  | 105                 | -37.1              |
| 256 | 99.1  | SANTA MARIA   | KXFM     | N345437 | W1201108 | LIC    | B     | 67.9             | 163                 | -95.1              |
| 257 | 99.3  |               |          |         |          |        |       |                  | 105                 | -37.1              |
| 258 | 99.5  |               |          |         |          |        |       |                  | 69                  | -68.4              |
| 259 | 99.7  |               |          |         |          |        |       |                  | 105                 | -104.4             |
| 260 | 99.9  | SANTA BARBARA | KTYD     | N342815 | W1194033 | LIC    | B     | 0.6              | 163                 | -162.4             |
| 261 | 100.1 |               |          |         |          |        |       |                  | 105                 | -104.4             |
| 262 | 100.3 |               |          |         |          |        |       |                  | 69                  | -68.4              |
| 263 | 100.5 |               |          |         |          |        |       |                  | 105                 | -70.8              |
| 264 | 100.7 | VENTURA       | KHAY     | N342055 | W1191957 | LIC    | B     | 34.2             | 163                 | -128.8             |
| 265 | 100.9 |               |          |         |          |        |       |                  | 105                 | -70.8              |
| 266 | 101.1 |               |          |         |          |        |       |                  | 69                  | -34.8              |
| 267 | 101.3 |               |          |         |          |        |       |                  | 27                  | -27.0              |
| 268 | 101.5 |               |          |         |          |        |       |                  | 64                  | -64.0              |
| 269 | 101.7 | CARPINTERIA   | KSBL     | N342755 | W1194037 | LIC    | A     | 0.0              | 105                 | -105.0             |
| 270 | 101.9 |               |          |         |          |        |       |                  | 64                  | -64.0              |
| 271 | 102.1 |               |          |         |          |        |       |                  | 27                  | -27.0              |
| 272 | 102.3 |               |          |         |          |        |       |                  | 105                 | -26.9              |
| 273 | 102.5 | SANTA MARIA   | KSNI-FM  | N345008 | W1202406 | LIC    | B     | 78.1             | 163                 | -84.9              |
| 274 | 102.7 |               |          |         |          |        |       |                  | 105                 | -26.9              |
| 275 | 102.9 |               |          |         |          |        |       |                  | 69                  | -42.3              |
| 276 | 103.1 |               |          |         |          |        |       |                  | 105                 | -78.3              |
| 277 | 103.3 | SANTA BARBARA | KRUZ     | N343129 | W1195732 | CP     | B     | 26.7             | 163                 | -136.3             |
| 278 | 103.5 |               |          |         |          |        |       |                  | 105                 | -78.3              |
| 279 | 103.7 |               |          |         |          |        |       |                  | 69                  | -42.3              |
| 279 | 103.7 | EL RIO        | KMLA     | N341810 | W1191341 | LIC    | A     | 45.1             | 105                 | -59.9              |

**CLASS A SPACING STUDY - GIBRALTAR PEAK TRANSMITTER SITE**  
**(N34-27-55/W119-40-37)**

| CH  | FREQ  | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km) |
|-----|-------|---------------|----------|---------|----------|--------|-------|------------------|---------------------|--------------------|
| 280 | 103.9 |               |          |         |          |        |       |                  | 88                  | -12.6              |
| 281 | 104.1 | LOMPOC        | KBOX     | N344350 | W1202601 | LIC    | B1    | 75.4             | 138                 | -62.6              |
| 282 | 104.3 |               |          |         |          |        |       |                  | 88                  | -12.6              |
| 283 | 104.5 |               |          |         |          |        |       |                  | 105                 | -71.2              |
| 284 | 104.7 | OXNARD        | KCAQ     | N342055 | W1192013 | LIC    | B     | 33.8             | 163                 | -129.2             |
| 285 | 104.9 |               |          |         |          |        |       |                  | 105                 | -71.2              |
| 286 | 105.1 | LOMPOC        | KWSZ     | N344128 | W1201558 | LIC    | A     | 59.6             | 105                 | -45.4              |
| 287 | 105.3 |               |          |         |          |        |       |                  | 64                  | -30.2              |
| 288 | 105.5 | OJAI          | KFYV     | N342055 | W1192013 | LIC    | A     | 33.8             | 105                 | -71.2              |
| 289 | 105.7 |               |          |         |          |        |       |                  | 64                  | -30.2              |
| 290 | 105.9 | SANTA YNEZ    | KRAZ     | N343132 | W1195729 | LIC    | A     | 26.7             | 105                 | -78.3              |
| 291 | 106.1 |               |          |         |          |        |       |                  | 64                  | -64.0              |
| 292 | 106.3 | GOLETA        | KKSB     | N342757 | W1194037 | LIC    | A     | 0.0              | 105                 | -105.0             |
| 293 | 106.5 |               |          |         |          |        |       |                  | 64                  | -64.0              |
| 294 | 106.7 | LOMPOC        | KSMY     | N344431 | W1202646 | LIC    | B1    | 76.9             | 138                 | -61.1              |
| 295 | 106.9 |               |          |         |          |        |       |                  | 64                  | -29.8              |
| 296 | 107.1 | VENTURA       | KSSC     | N342055 | W1191957 | LIC    | A     | 34.2             | 105                 | -70.8              |
| 297 | 107.3 |               |          |         |          |        |       |                  | 64                  | -29.8              |
| 298 | 107.5 |               |          |         |          |        |       |                  | 88                  | -71.7              |
| 299 | 107.7 | SANTA BARBARA | KIST-FM  | N343010 | W1195056 | LIC    | B1    | 16.3             | 138                 | -121.7             |
| 300 | 107.9 |               |          |         |          |        |       |                  | 88                  | -71.7              |

**CLASS A SPACING STUDY - BROADCAST PEAK TRANSMITTER SITE**  
**(N34-31-31/W119-57-29)**

| CH  | FREQ | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km)    |
|-----|------|---------------|----------|---------|----------|--------|-------|------------------|---------------------|-----------------------|
| 201 | 88.1 | LOMPOC        | 980414MD | N343438 | W1202846 | CP     | B     | 48.2             | Protect 1 mV/m      | Inside Protected      |
| 202 | 88.3 |               |          |         |          |        |       |                  | Contour             | 1 mV/m Contour        |
| 203 | 88.5 |               |          |         |          |        |       |                  |                     |                       |
| 204 | 88.7 | SANTA BARBARA | KFAC     | N342755 | W1194037 | LIC    | B     | 26.7             | Protect 1 mV/m      | Overlapping 1 mV/m    |
| 205 | 88.9 |               |          |         |          |        |       |                  | Contour             | and Interfering       |
| 206 | 89.1 |               |          |         |          |        |       |                  |                     | Contours over City of |
|     |      |               |          |         |          |        |       |                  |                     | License               |
| 207 | 89.3 |               |          |         |          |        |       |                  |                     |                       |
|     |      |               |          |         |          |        |       |                  | Protect 1 mV/m      | Overlapping 1 mV/m    |
|     |      |               |          |         |          |        |       |                  | Contour             | Contours over City of |
| 208 | 89.5 | SANTA BARBARA | KSBX     | N342757 | W1194037 | LIC    | A     | 26.6             |                     | License               |
| 209 | 89.7 | SANTA MARIA   | KHFR     | N345437 | W1201108 | CP     | B     | 47.5             | Protect 1 mV/m      | Inside Interfering    |
| 210 | 89.9 |               |          |         |          |        |       |                  | Contour             | Contour               |
| 211 | 90.1 |               |          |         |          |        |       |                  |                     |                       |
| 212 | 90.3 | CAMARILLO     | KMRO     | N342447 | W1191110 | LIC    | B     | 72.0             | Protect 1 mV/m      | Overlapping 1 mV/m    |
| 214 | 90.7 |               |          |         |          |        |       |                  | Contour             | Contours over City of |
|     |      |               |          |         |          |        |       |                  |                     | License               |
| 215 | 90.9 |               |          |         |          |        |       |                  |                     |                       |
|     |      |               |          |         |          |        |       |                  | Protect 1 mV/m      | Overlapping 1 mV/m    |
|     |      |               |          |         |          |        |       |                  | Contour             | Contours over City of |
| 216 | 91.1 | THOUSAND OAKS | KCPB     | N342447 | W1191110 | LIC    | B     | 72.0             |                     | License               |
| 217 | 91.3 |               |          |         |          |        |       |                  |                     |                       |
| 218 | 91.5 |               |          |         |          |        |       |                  |                     |                       |
| 219 | 91.7 |               |          |         |          |        |       |                  | Protect 1 mV/m      | Inside Protected      |
| 220 | 91.9 | SANTA BARBARA | KCSB-FM  | N343131 | W1195729 | LIC    | B     | 0.0              | Contour             | 1 mV/m Contour        |
| 221 | 92.1 |               |          |         |          |        |       |                  | 105                 | -105.0                |
| 222 | 92.3 |               |          |         |          |        |       |                  | 69                  | -69.0                 |
| 223 | 92.5 |               |          |         |          |        |       |                  | 69                  | -69.0                 |
| 224 | 92.7 |               |          |         |          |        |       |                  | 64                  | -37.4                 |
| 225 | 92.9 | MONTECITO     | KJEE     | N342757 | W1194037 | LIC    | A     | 26.6             | 105                 | -78.4                 |
| 226 | 93.1 |               |          |         |          |        |       |                  | 64                  | -37.4                 |

**CLASS A SPACING STUDY - BROADCAST PEAK TRANSMITTER SITE**  
**(N34-31-31/W119-57-29)**

| CH  | FREQ | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km) |
|-----|------|---------------|----------|---------|----------|--------|-------|------------------|---------------------|--------------------|
| 227 | 93.3 | SANTA BARBARA | KDB      | N342758 | W1194037 | LIC    | B     | 26.6             | 69                  | -42.4              |
| 228 | 93.5 |               |          |         |          |        |       |                  | 105                 | -78.4              |
| 229 | 93.7 |               |          |         |          |        |       |                  | 163                 | -136.4             |
| 230 | 93.9 |               |          |         |          |        |       |                  | 105                 | -78.4              |
| 231 | 94.1 |               |          |         |          |        |       |                  | 69                  | -42.4              |
| 232 | 94.3 | ELLWOOD       | KSPE-FM  | N343132 | W1195728 | LIC    | B     | 0.0              | 105                 | -105.0             |
| 233 | 94.5 |               |          |         |          |        |       |                  | 163                 | -163.0             |
| 234 | 94.7 |               |          |         |          |        |       |                  | 105                 | -105.0             |
| 235 | 94.9 | VENTURA       | KBBY-FM  | N340647 | W1190334 | LIC    | B     | 94.5             | 105                 | -10.5              |
| 236 | 95.1 |               |          |         |          |        |       |                  | 163                 | -68.5              |
| 237 | 95.3 |               |          |         |          |        |       |                  | 105                 | -10.5              |
| 238 | 95.5 | ORCUTT        | KPAT     | N344420 | W1202641 | LIC    | B1    | 50.5             | 88                  | -37.5              |
| 239 | 95.7 |               |          |         |          |        |       |                  | 138                 | -87.5              |
| 240 | 95.9 | CAMARILLO     | KOCF     | N342055 | W1192013 | LIC    | B1    | 60.4             | 138                 | -77.6              |
| 241 | 96.1 |               |          |         |          |        |       |                  | 88                  | -27.6              |
| 242 | 96.3 | GOLETA        | KVRY-LP  | N342650 | W1195328 | CP     | L1    | 10.6             | 67                  | -56.4              |
| 243 | 96.5 | SOLVANG       | KSYV     | N343630 | W1200842 | LIC    | A     | 19.5             | 64                  | -44.5              |
| 244 | 96.7 |               |          |         |          |        |       |                  | 105                 | -85.5              |
| 245 | 96.9 |               |          |         |          |        |       |                  | 64                  | -44.5              |
| 246 | 97.1 | SANTA BARBARA | KMGQ     | N343131 | W1195729 | LIC    | B     | 0.0              | 69                  | -69.0              |
| 247 | 97.3 |               |          |         |          |        |       |                  | 105                 | -105.0             |
| 248 | 97.5 |               |          |         |          |        |       |                  | 163                 | -163.0             |
| 249 | 97.7 |               |          |         |          |        |       |                  | 105                 | -105.0             |
| 250 | 97.9 |               |          |         |          |        |       |                  | 69                  | -69.0              |
| 251 | 98.1 | OXNARD        | KDAR     | N342055 | W1191957 | LIC    | B1    | 60.7             | 88                  | -27.3              |
| 252 | 98.3 |               |          |         |          |        |       |                  | 138                 | -77.3              |
| 253 | 98.5 |               |          |         |          |        |       |                  | 88                  | -27.3              |

**CLASS A SPACING STUDY - BROADCAST PEAK TRANSMITTER SITE**  
**(N34-31-31/W119-57-29)**

| CH  | FREQ  | CITY                  | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km) |
|-----|-------|-----------------------|----------|---------|----------|--------|-------|------------------|---------------------|--------------------|
| 254 | 98.7  | SANTA MARIA           | KXFM     | N345437 | W1201108 | LIC    | B     | 47.5             | 69                  | -21.5              |
| 255 | 98.9  |                       |          |         |          |        |       |                  | 105                 | -57.5              |
| 256 | 99.1  |                       |          |         |          |        |       |                  | 163                 | -115.5             |
| 257 | 99.3  |                       |          |         |          |        |       |                  | 105                 | -57.5              |
| 258 | 99.5  | SANTA BARBARA         | KTYD     | N342815 | W1194033 | LIC    | B     | 26.6             | 69                  | -42.4              |
| 259 | 99.7  |                       |          |         |          |        |       |                  | 105                 | -78.4              |
| 260 | 99.9  |                       |          |         |          |        |       |                  | 163                 | -136.4             |
| 261 | 100.1 |                       |          |         |          |        |       |                  | 105                 | -78.4              |
| 262 | 100.3 |                       |          |         |          |        |       |                  | 69                  | -42.4              |
| 263 | 100.5 | VENTURA               | KHAY     | N342055 | W1191957 | LIC    | B     | 60.7             | 105                 | -44.3              |
| 264 | 100.7 |                       |          |         |          |        |       |                  | 163                 | -102.3             |
| 265 | 100.9 |                       |          |         |          |        |       |                  | 105                 | -44.3              |
| 266 | 101.1 |                       |          |         |          |        |       |                  | 69                  | -8.3               |
| 267 | 101.3 | LOS OSOS-BAYWOOD PARK | KSTT-FM  | N352137 | W1203918 | LIC    | B     | 112.4            | 163                 | -50.6              |
| 268 | 101.5 | CARPINTERIA           | KSBL     | N342755 | W1194037 | LIC    | A     | 26.7             | 64                  | -37.3              |
| 269 | 101.7 |                       |          |         |          |        |       |                  | 105                 | -78.3              |
| 270 | 101.9 |                       |          |         |          |        |       |                  | 64                  | -37.3              |
| 271 | 102.1 | SANTA MARIA           | KSNI-FM  | N345008 | W1202406 | LIC    | B     | 53.3             | 69                  | -15.7              |
| 272 | 102.3 |                       |          |         |          |        |       |                  | 105                 | -51.7              |
| 273 | 102.5 |                       |          |         |          |        |       |                  | 163                 | -109.7             |
| 274 | 102.7 |                       |          |         |          |        |       |                  | 105                 | -51.7              |
| 275 | 102.9 | SANTA BARBARA         | KRUZ     | N343129 | W1195732 | LIC    | B     | 0.1              | 69                  | -68.9              |
| 276 | 103.1 |                       |          |         |          |        |       |                  | 105                 | -104.9             |
| 277 | 103.3 |                       |          |         |          |        |       |                  | 163                 | -162.9             |
| 278 | 103.5 |                       |          |         |          |        |       |                  | 105                 | -104.9             |
| 279 | 103.7 |                       |          |         |          |        |       |                  | 69                  | -68.9              |
| 280 | 103.9 | LOMPOC                | KBOX     | N344350 | W1202601 | LIC    | B1    | 49.2             | 88                  | -38.8              |
| 281 | 104.1 |                       |          |         |          |        |       |                  | 138                 | -88.8              |
| 282 | 104.3 |                       |          |         |          |        |       |                  | 88                  | -38.8              |

**CLASS A SPACING STUDY - BROADCAST PEAK TRANSMITTER SITE**  
**(N34-31-31/W119-57-29)**

| CH  | FREQ  | CITY          | CALLSIGN | LAT     | LONG     | STATUS | CLASS | DISTANCE<br>(km) | REQUIREMENT<br>(km) | PRECLUSION<br>(km) |
|-----|-------|---------------|----------|---------|----------|--------|-------|------------------|---------------------|--------------------|
| 283 | 104.5 |               |          |         |          |        |       |                  | 105                 | -44.6              |
| 284 | 104.7 | OXNARD        | KCAQ     | N342055 | W1192013 | LIC    | B     | 60.4             | 163                 | -102.6             |
| 285 | 104.9 |               |          |         |          |        |       |                  | 105                 | -44.6              |
| 286 | 105.1 | LOMPOC        | KWSZ     | N344128 | W1201558 | LIC    | A     | 33.7             | 105.0               | -71.3              |
| 287 | 105.3 |               |          |         |          |        |       |                  | 64                  | -30.3              |
| 288 | 105.5 | OJAI          | KFYV     | N342055 | W1192013 | LIC    | A     | 60.4             | 105                 | -44.6              |
| 289 | 105.7 |               |          |         |          |        |       |                  | 64                  | -64.0              |
| 290 | 105.9 | SANTA YNEZ    | KRAZ     | N343132 | W1195729 | LIC    | A     | 0.0              | 105                 | -105.0             |
| 291 | 106.1 |               |          |         |          |        |       |                  | 64                  | -64.0              |
| 291 | 106.1 |               |          |         |          |        |       |                  | 64                  | -37.4              |
| 292 | 106.3 | GOLETA        | KKSB     | N342757 | W1194037 | LIC    | A     | 26.6             | 105                 | -78.4              |
| 293 | 106.5 |               |          |         |          |        |       |                  | 64                  | -37.4              |
| 294 | 106.7 | LOMPOC        | KSMY     | N344431 | W1202646 | LIC    | B1    | 50.8             | 138                 | -87.2              |
| 295 | 106.9 |               |          |         |          |        |       |                  | 88                  | -37.2              |
| 296 | 107.1 | VENTURA       | KSSC     | N342055 | W1191957 | LIC    | A     | 60.7             | 105                 | -44.3              |
| 297 | 107.3 |               |          |         |          |        |       |                  | 48                  | -37.7              |
| 298 | 107.5 |               |          |         |          |        |       |                  | 88                  | -77.7              |
| 299 | 107.7 | SANTA BARBARA | KIST-FM  | N343010 | W1195056 | LIC    | B1    | 10.3             | 138                 | -127.7             |
| 300 | 107.9 |               |          |         |          |        |       |                  | 88                  | -77.7              |