

MULLANEY ENGINEERING, INC.
9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

APPENDIX A:
CONTOUR PROTECTION DISCUSSION
AND
SUPPORT FOR WAIVER REQUEST
AUGUST 22, 2005

ENGINEERING STATEMENT IN SUPPORT OF
AN APPLICATION FOR A
AN UPGRADE TO C2 FACILITIES
PER DOCKET 04-367
REQUESTS WAIVER OF 73.215

RADIO STATION KSKX(FM)
OPTIMA COMMUNICATIONS, INC.
Facility ID: 50402

ATTACHED TO EXHIBIT 25 OF FCC FORM 301



APPENDIX A:

**CONTOUR PROTECTION DISCUSSION
AND
SUPPORT FOR WAIVER REQUEST**

**RADIO STATION KSKX(FM)
OPTIMA COMMUNICATIONS, INC.**

NARRATIVE STATEMENT:

I. General:

This engineering statement has been prepared on behalf of Optima Communications, Inc., licensee of Radio Station KSKX(FM) at Security, Colorado. The purpose of this statement is to request a Construction Permit to build an upgraded FM broadcast facility on Channel 288C2 at Security, Colorado (per Docket 04-367). The upgraded facility will operate with an ERP of 1.65 kW-DA and an HAAT of 676 Meters. This application proposes C2 facilities which **request a waiver** of the contour protection requirements of Section 73.215 (received interference) so as to maintain its existing C3 service to over 20,000 persons. The requested waiver would permit KSKX to **continue to receive minor overlap** so as to maintain its long established 60 dBu service to the area.

II. Engineering Discussion:

A. Proposed Coverage:

Figure 2 is a map which illustrates the existing and proposed 70 & 60 dBu coverage contours. The existing contours are shown with a dashed purple line while the proposed C2 contours are shown with a solid red line. The green cross-hatched area to the north represents the existing overlap that KSKX's

licensed C3 facility receives. The C2 application presented herein proposes to maintain this existing overlap area using the directional antenna pattern in **Figure 6-A (maintains equivalent overlap)**. In order to comply with the no overlap policy of Section 73.215 the directional antenna pattern would have to be modified as presented in **Figure 6-B (no overlap received)**. The additional suppression would result in a total loss or reduction in the quality of service in both the 70 & 60 dBu contours as shown. The city of license will continue to be well served.

B. Channel Allocation:

Figure 4 is a channel allocation study from the proposed site. The proposed site is short spaced under the rules to two stations. The first short spacing of -12.2 kilometers is to KJAC on 288C1 (73.215) at Timnath, CO. The second short spacing of 5.4 kilometers is to KXKL-FM on 286C at Denver, CO. In all other respects this application is in compliance with Section 73.207(a).

1. Contour Protection - Section 73.215:

Figure 5 is a map of the protected 60 dBu and the co-channel interfering 40 dBu and the 2nd adjacent interfering 100 dBu contour proposed by this application. In addition, the map shows the same protected & interfering contours for the two short spaced stations. The contours of KXKL-FM are based upon **maximum** permissible ERP and HAAT for its Class. However, the contours of KJAC are based upon the **actual** ERP and HAAT as specified in its license since its license was granted per Section 73.215.

KSKX & 2nd adjacent KXKL-FM are in full compliance with the rules. The 100 dBu interference contours do not overlap the protected contour of the other station.

KSKX fully protects co-channel station KJAC in that its 40 dBu interference contour does not overlap the 60 dBu contour of KJAC. However, the 40 dBu contour of KJAC will overlap the protected contour of KSKX. The overlap area is shaded “grey” on **Figure 5** and again on the expanded view in **Figure 5-A**. It should be noted that the 60 dBu contour of the C2 has been designed to duplicate the contour of the licensed C3 facility (**Figure 6-A** is requested DA pattern which maintains equivalent overlap). Although, the licensed C3 facility is properly spaced to KJAC’s C1 license, the intervening terrain has caused this “permissible” overlap to occur.

JUSTIFICATION FOR A PARTIAL WAIVER OF 73.215

KSKX requests the waiver so that its improved C2 facility will be able to continue to provide quality service to the same area it has been serving as a C3 facility for many years.

The **existing overlap** received by KSKX’s C3 operation encompasses 20,426 persons (3.9% of 60 dBu) and 426 sq.km (6.0% of 60 dBu). However, **only the outer most portion** of that overlap region (light blue shading) will actually exceed the D/U ratio and result in **interference to** 475 persons (0.1% of 60 dBu, 2.3% of existing overlap) and to 97 sq.km (1.4% of 60 dBu, 22.8% of existing overlap). Thus, in order to avoid these 475 persons from receiving interference (that they already receive) it is necessary to suppress the radiated signal in the northern direction

(**Figure 6-B**) such that the 19,951 persons (97.7%) and 329 sq.km (77.2%) in the **interference-free** portion of the overlap area **will no longer be within** the protected 60 dBu contour of the C2 proposal of KSKX. Again, it should be understood that all of this overlap area is presently within the 60 dBu contour of the licensed C3 operation of KSKX.

It should also be understood that pulling in the 60 dBu contour will in the “real world” result in **the entire shaded area receiving interference**. The fact that the area is no longer located within the 60 dBu only makes that interference “legally acceptable”. But to those people that have listened to the station for many years they will still perceive it as new “interference” legal or not.

If KSKX is required to fully comply with 73.215 then the resulting suppression (**Figure 6-B**) will cause 78,375 persons which currently receive a 70 dBu signal to no longer receive that quality of signal making them **more susceptible** to receiving interference from the more powerful KJAC. It will also make it more difficult for KSKX to provide **building penetration** in those areas.

A search was made of **all existing tower sites** in the properly spaced area to the south (sites used by broadcast and by other services). There were no existing broadcast sites in the area and the two non-broadcast sites that do exist **would not provide** city grade coverage and an unobstructed view of the city. KSKX’s existing site is located at the Cheyenne Mountain Electronic site.

KSKX is aware that at one time a local FM broadcaster tried to establish a broadcast site to the south of the Colorado Springs market. However, that station soon **abandoned that site because of the severe multipath** which resulted in the Colorado Springs area from the steep canyon like mountains. The station soon returned to the Cheyenne Mountain site. Based upon my experience, it is my professional opinion, that any site to the south (in the properly spaced area) **will result in severe multipath within the city of license.**

The Commission has **a long standing policy** which permits a broadcaster to maintain its **existing service area notwithstanding contour overlap**. Here the existing protected service area of its licensed C3 facility is already receiving permissible contour overlap that results from the intervening terrain. If KSKX were located in the flat terrain of the State of Florida rather than the mountains of Colorado no overlap would exist and KSKX's upgraded C2 facility would be permitted to fully maintain already established service. To penalize KSKX and the residents of the Colorado Springs market because they are not located in the State of Florida **would not appear to serve the public interest.**

The current prediction curves were based upon a **terrain roughness** factor or **"Delta H" of 50 meters**. The terrain in Colorado diverges significantly from this assumption. In the direction of overlap the "Delta H" from the **KJAC site** (150-170 degrees) varies from 166 meters to 553 meters. In the direction of overlap the "Delta H" from the **KSKX site** (340-30 degrees) varies from 241 meters to 740 meters. The contour protection rules for **Puerto Rico & the Virgin Islands** recognize the fact that the terrain is significantly different by not only permitting greater maximum HAATs but also increasing the value of

the protected contour by 2 dB to 7 dB for co-channel situations.

Specifically, in Section 73.213(a)(4), the **co-channel protected contours** were increased by 3 to 6 dB for Class A, 2 to 4 dB for Class B1, 4 to 7 dB for Class B.

Figure 5-B is a contour protection map which increases the protected contour of KSKX by **2 dB** which is the minimum used in Puerto Rico & the Virgin Islands. As can be seen, a **protected 62 dBu contour** does not receive any overlap from the KJAC **42 dBu interference contour** (20 dB ratio is still used). Thus, if certain locations in Colorado were also permitted the same exception regarding the protected contour, **no prohibited overlap would exist**.

III. SUMMARY:

Optima Communications, Inc., licensee of KSKX(FM) proposes to construct an upgraded C2 FM facility on Channel 288C2 at Security, Colorado (per Docket 04-367). This application proposes C2 facilities which **request a waiver** of the contour protection requirements of Section 73.215 (received interference) so as to maintain its existing C3 service to over 20,000 persons. The requested waiver would permit KSKX to **continue to receive minor overlap** so as to maintain its long established 60 dBu service to the area. KSKX believes the waiver it seeks will serve the public interest. In other respects this engineering proposal is in full compliance with the Commission's Rules.



John J. Mullaney, Consulting Engineer

August 22, 2005.