KLVB-FM Experimental Test Report

Performance of IBOC sidebands at -14 dBc symmetrical versus -14/-10 dBc asymmetrical

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Summary

Station KLVB-FM (FIN 70676) is licensed to Citrus Heights, California and operates with an authorized ERP of 3300 watts from a HAAT of 137 meters. The transmitter is a Nautel GV7.5. HD Radio® signal coverage in the Sacramento market and the northern suburb of Lincoln, California was less than ideal even when operating at a digital injection level of -14 dBc. Due to adjacent channel issues, it was not feasible to increase power levels beyond -14 dBc on the lower digital sideband. There were no adjacent channel interference concerns with the upper digital sideband, which allowed it to be increased to -10 dBc. The goal was to assess whether this asymmetrical increase in digital sideband power would improve digital signal performance in areas with marginal digital service.

Methodology

Areas previously identified as experiencing marginal digital service were mapped, and a driving route through these areas was established. This route was driven once with KLVB operating both sets of digital sidebands at -14 dBc injection (See Attachment 2), then a second time with the lower digital sideband operating at -14 dBc, and the upper digital sideband operating at -10 dBc (Attachment 3). The test vehicle was a 2014 RAM 1500 truck, factory equipped with the Dodge 8.4" uConnect navigation system and HD Radio. The KLVB-HD2 signal was used to identify dropouts since there is no blend to analog. An iPad GPS route tracking application was used to manually capture waypoints indicating where dropouts occurred (shown as sequentially numbered circles on the Attachments).

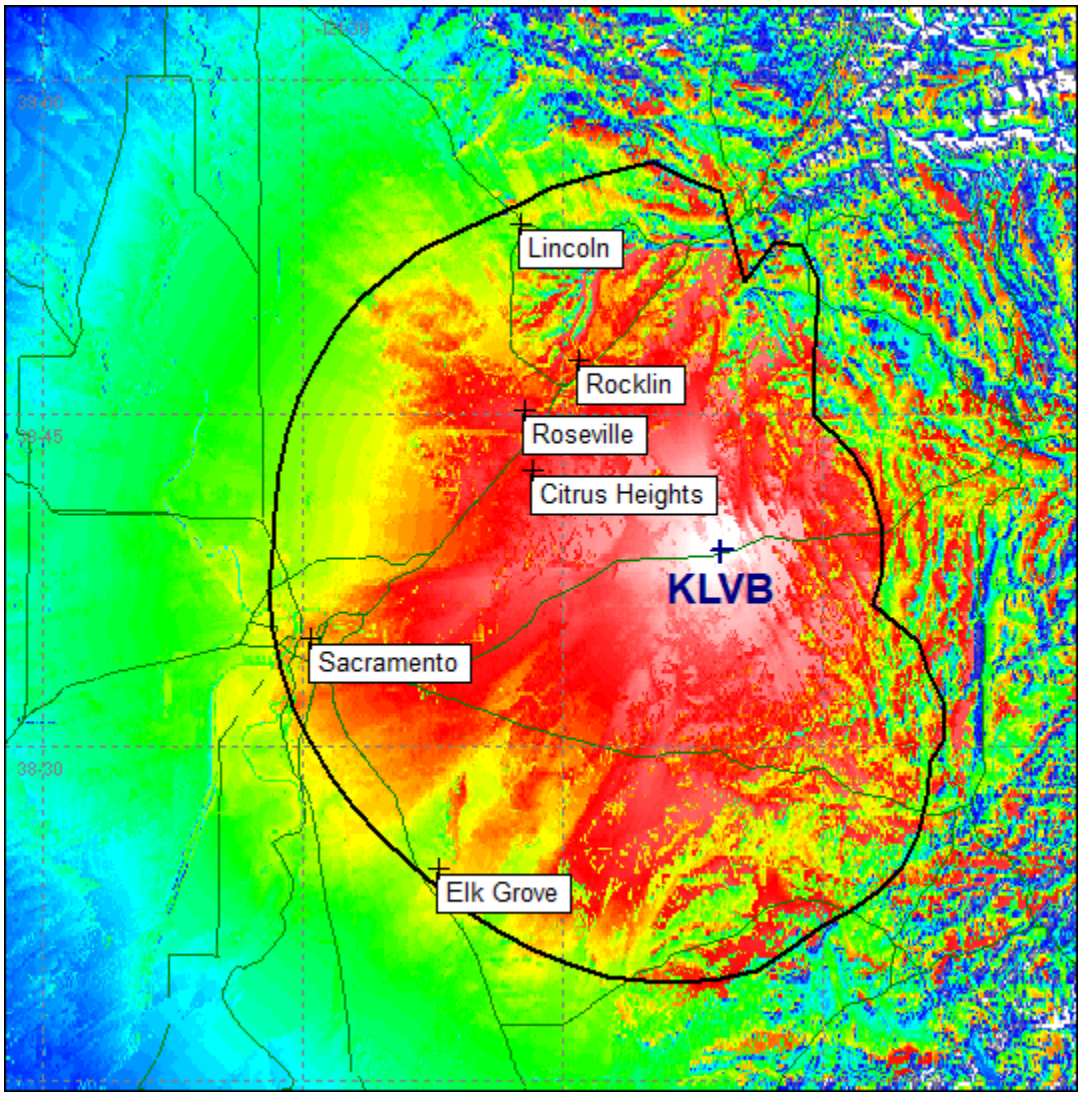
Data

During the test with both digital sidebands operating at -14 dBc, a total of 82 dropouts were observed, ranging in length from less than a second to several minutes or more in length. After increasing the upper digital sideband injection to -10 dBc, the total number of dropouts observed was reduced to 38. These dropouts were substantially shorter in duration and less severe.

Conclusion

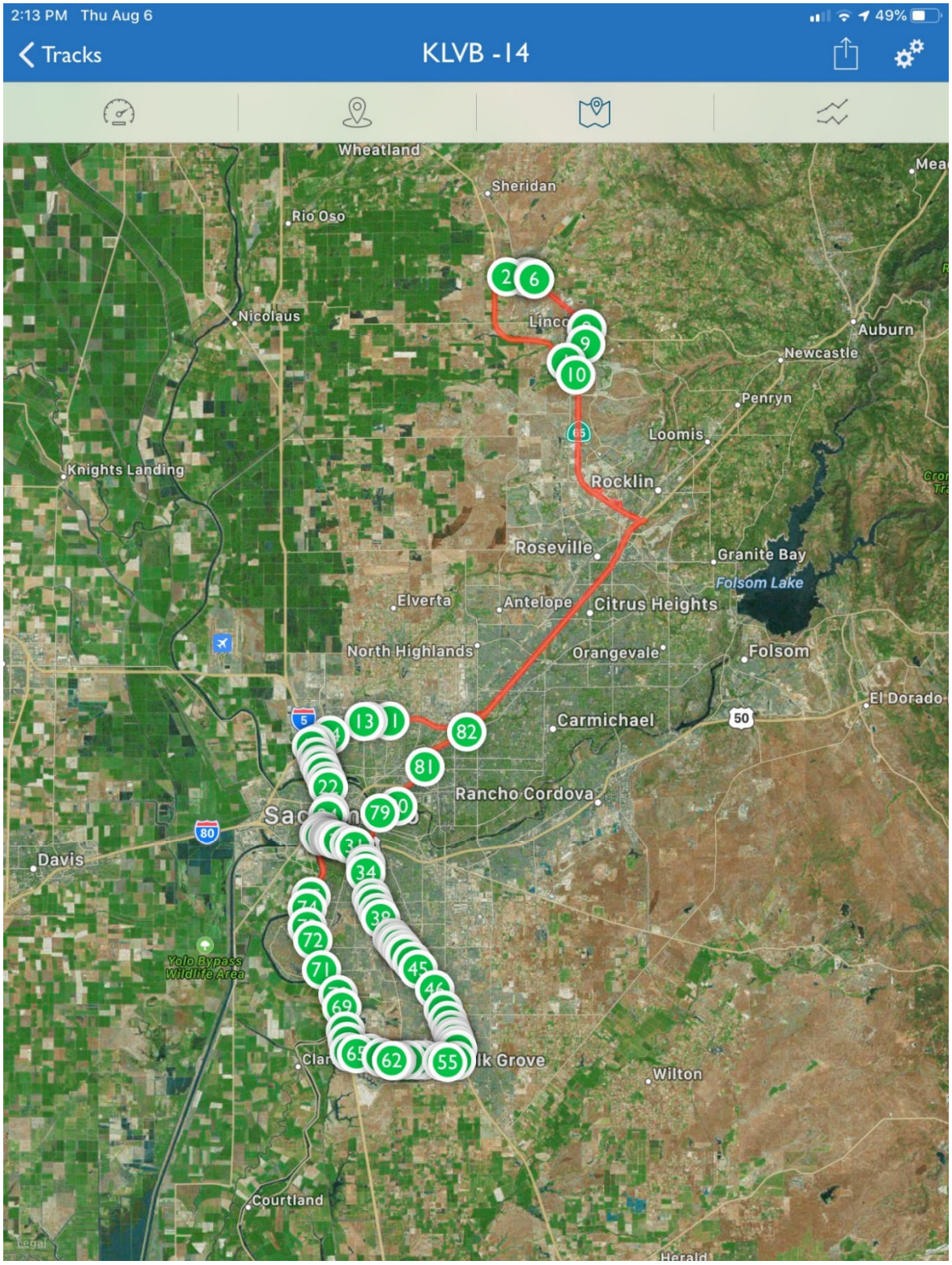
Increasing the upper digital sideband to -10 dBc on KLVB provided a substantial increase in performance. It is worth pursuing operation in this mode permanently.

Attachment 1: KLVB 60 dBu F(50,50) Contour
with theoretical Longley-Rice coverage



Attachment 2: KLVB drive results, -14 dBc symmetrical digital sidebands

(Numbered circles indicate where signal dropout was observed)



Attachment 3: KLVB drive results, -14 dBc and -10 dBc asymmetrical digital sidebands

(Numbered circles indicate where signal dropout was observed)