

Google Inc.
Public Policy Department
1101 New York Avenue, NW
Second Floor
Washington, DC 20005



Phone 202.346.1100
Fax 202.346.1101
www.google.com

October 31, 2008

Ex Parte via Electronic Filing

Marlene H. Dortch
Office of the Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Re: Ex Parte Communication – Unlicensed Operation in the TV Broadcast Bands (ET Docket No. 04-186); Additional Spectrum for Unlicensed Devices Below 900 MHz and In the 3 GHz Band (ET Docket No. 02-380)

Dear Ms. Dortch:

On October 30, 2008, Phil Gossett, Larry Alder, and the undersigned, all from Google Inc. (“Google”), met by telephone with Julius Knapp, Chief of the Commission’s Office of Engineering and Technology (“OET”), and Alan Stillwell and Robert Weller from OET. During the course of the conversation, the Google representatives discussed elements of our “variable power control” proposal in the above-referenced proceedings. We asked that OET recommend adopting the proposal as a component of the final white spaces order.

The FCC’s Order Should Include A Variable Power Control Mechanism

The Formula

The Commission should adopt specific language in the white spaces order establishing that a variable power control (VPC) mechanism is an appropriate way to set the transmit power levels for white space devices (WSDs) using channels adjacent to licensed digital television (DTV) signals.¹ Such a mechanism would utilize a geo-location database to identify whether and how specific DTV stations would be subject to adjacent channel protection. This mechanism would provide an optimal mix of granular protection for

¹ For additional details about Google’s proposal, see Ex Parte letter from Richard Whitt, Google Inc., to Marlene Dortch, FCC, ET Docket 04-186, submitted on October 27, 2008; Ex Parte letter from Richard Whitt, Google Inc., to Marlene Dortch, FCC, ET Docket 04-186, submitted on October 14, 2008; Ex Parte letter from Richard Whitt, Google Inc., to Marlene Dortch, FCC, ET Docket 04-186, submitted on October 9, 2008; Ex Parte letter from Richard Whitt, Google Inc., to Marlene Dortch, FCC, ET Docket 04-186, submitted on July 18, 2008 (describing elements of Google’s proposed unified approach to calculating adjacent channel power limits using a variable power control mechanism and geo-location database).

DTV signals and usable power limits for WSDs. By contrast, a fixed power limit could render inadequate protection for weak DTV signals, and inherently lacks the flexibility to permit useful power levels in many typical urban environments.

The Commission's rules should expressly lay out the protection offset formula, which constitutes the WSD adjacent channel power limit relative to the DTV received level. That resulting offset figure would be added to the predicted DTV signal strength, drawn from the geo-location database, to come up with the permissible VPC limit. The formula for the proposed protection offset number would be comprised of two factors: the -D/U ratio (which is the signal power above the DTV signal level that a DTV can tolerate), and the propagation path loss (a combination of the propagation loss expected between the DTV and the WSD, and any margin due to uncertainties about the propagation model using a geo-location database). The formula thus would be:

$$\textit{proposed offset} = - \textit{D/U ratio} + \textit{path loss}$$

The Commission further should include a power cap of 100 mW for portable devices, and 1W (4W EIRP) for fixed devices.

OET already has determined from its prior testing of DTV interference rejection thresholds that the D/U ratio is a constant -37 dBm on the N+1 and N-1 interfering channels. The other variable, the free-space path loss and any margin for uncertainty about the propagation model, remains open to further analysis.

The Process

Moreover, the Commission should establish a tailored, time-bound process for OET on delegated authority to confirm the parameters of the VPC mechanism. Specifically, while we believe OET has adequate data initially to adopt a D/U ratio of -37 dB, the FCC's engineers should work with third parties to determine the appropriate path loss figure. OET also should conduct any further analysis deemed necessary to confirm viable uses of the VPC mechanism. This process should be conducted expeditiously, and in no event take longer than 120 days from publication of the white spaces rules.

Should you have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,



Richard S. Whitt, Esq.
Washington Telecom and
Media Counsel
Google Inc.