



Federal Communications Commission
Washington, D.C. 20554

September 10, 2014

DA 14-1309

Mr. Eric Chu
Engineering Director
Google, Inc.
1600 Amphitheatre Parkway
Mountain View, CA 94043

ET Docket No. 04-186

Dear Mr. Chu,

Approval is hereby granted for Google, Inc. to operate its “TV bands database system” with new procedures for registration of certain protected facilities. The Google database system’s new registration procedures, which were developed by Google itself, replace that database system’s current reliance on the procedures for registering protected facilities of another TVWS database system.

The Commission’s Part 15 rules, 47 C.F.R. § 15.701 *et seq.*, require low power unlicensed radio transmitting devices that operate on unused channels in the broadcast television bands (TV white spaces, or TVWS) to contact an authorized database system to obtain a list of channels that are available for their operation (*i.e.*, channels not occupied by authorized/protected radio services) at their individual locations and then to operate only on those channels. These devices are required to provide their geographic location, by means of a secure Internet connection, to a TV bands database system authorized by the Commission through its OET. The database will then return a list of the channels available for operation by the device at its reported location.

Google’s TV bands database system, which was approved for operation by the Commission’s Office of Engineering and Technology (OET) on June 28, 2013, *Public Notice*, DA 13-1472, supports the operation of unlicensed devices that transmit TV white space channels. As part of their operations, TV white space database administrators, including Google, are required to provide for registration in their databases of certain facilities using the TV bands that are to be provided protection from unlicensed devices and whose operating information is not available from the FCC databases. These facilities include low power auxiliary services (principally licensed and unlicensed wireless microphones), multiple video program distributor (MVPD) receive sites, and temporary broadcast auxiliary links that are not in the FCC databases.

In its *Order* on TVWS database administrators, *Order*, ET Docket No. 04-186, 26 FCC Rcd 12827 (2011), the Commission stated that its authorization process for TV band database systems will subject each database, *inter alia*, to a public trial period of not less than 45 days to ensure that the database is providing accurate results before it is allowed to be made operate for regular public use. Google’s new protected entity registration procedures constitute a major modification of its database system and therefore are subject to the Commission’s TV band database approval process, including the 45-day public trial.

Google conducted the required public trial of its database system with the new registration procedures from June 2, 2014 to July 17, 2014, *Public Notice*, DA 14-720. In this trial, Google made its new procedures for registering protected facilities and its TVWS channel availability calculator available for testing by the public. The 45-day trial allowed the public to access and participate in the testing of Google's new registration procedures to ensure that they properly register facilities entitled to protection and that Google's modified database system provides protection to such facilities as specified in the Commission's rules. Participants in the trial were encouraged to report any inaccuracies or other issues with any aspect of the database system to Google.

Google provided a summary report on the trial of its new registration procedures and modified database system to OET. The purpose of this summary report was to identify: 1) problems reported and their disposition (there were one) and 2) descriptions of changes made by Google to its new registration procedures or its channel availability calculator during the trial period (again, there were none). Google's summary final report was placed in the record of the TV white spaces proceeding, ET Docket No. 04-186, and public comments were requested (*Public Notice*, DA 14-1079).

No comments were received concerning the Google database system's new registration procedures, channel availability calculations for registrations entered through the new systems or any other aspects of the trial. Given the large number of parties that examined the modified Google database system during its public trial, we find the absence of comments on the new registration procedures and channel availability calculator to be indicative that the system is satisfactory in those areas.

Based on our own examination and testing of Google's modified database system, the results of the public trial of that system, including the fact that no comments expressing concerns were submitted in the trial or in response to the Public Notice requesting comment on Google's final report on the trial, we find that Google has demonstrated that its new registration procedures are able to properly record, store and retrieve protected facilities that are not in the FCC databases and to provide those facilities protection from interference from TVWS devices. In addition, we find that the Google database system properly synchronizes registration records with the other TV bands database systems using the White Space Database Administrator Group's *Database-to-Database Synchronization Interoperability Specification*, Version 1.2.2, December 14, 2013. We therefore find that Google's modified TV bands database system is compliant with the Commission's rules for TV bands database systems and ready for operation.

As we indicated in our initial approval of the Google database system for operation, we anticipate that there may be additional changes, generally minor, in various aspects of the Commission's plan for operation of TV bands devices during the implementation process for those devices. There may also be additional elements of Google's database system that will need to be adjusted as experience is gained with TV white spaces operations by the Commission, the database administrators, device manufacturers, and device users. We will provide instructions to Google and the other database administrators to incorporate and test refinements at such time as they may be developed. We do not generally expect that such refinements will necessitate additional testing through a public trial. We anticipate that operation of such refinements features will be verified by the OET staff. Nonetheless, we are reserving the option to request that Google undertake additional public trial testing if we determine that such testing is necessary to ensure that the database systems properly determine available channels and protect authorized services.

Accordingly, we are granting approval for Google to operate its database system as modified to incorporate the new protected facility registration procedures discussed herein to provide service to certified unlicensed devices that operate in the broadcast television bands. Authority for this action is provided in Section 0.241(h) and Sections 15.701-.715 of the Commission's rules, 47 C.F.R. § 0.241(h) and §§ 15.701-.715 and Sections 4, 5, 303, 304, 307, 336, and 554a of the Communications Act of 1934 as amended, 47 U.S.C. Secs. 154, 155, 302a, 303, 304, 307, 336, and 624a.

Sincerely,

Julius P. Knapp
Chief, Office of Engineering and Technology