

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Unlicensed Operation in the TV Broadcast)	ET Docket No. 04-186
Bands)	
)	

**COMMENTS OF
ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC. AND
THE NATIONAL ASSOCIATION OF BROADCASTERS**

David Donovan
Victor Tawil
Bruce Franca
THE ASSOCIATION FOR MAXIMUM SERVICE
TELEVISION, INC.
4100 Wisconsin Avenue, N.W.
Washington, D.C. 20016

Jane E. Mago
THE NATIONAL ASSOCIATION OF
BROADCASTERS
1771 N Street N.W.
Washington, D.C. 20036
(202) 429-5430

Jennifer A. Johnson
Lindsey L. Tonsager
COVINGTON & BURLING LLP
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2401

*Counsel for the Association for
Maximum Service Television, Inc.*

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On November 25, 2009, the Commission, through the Office of Engineering and Technology, released a *Public Notice* inviting interested parties to submit proposals to be designated as TV band device database managers (“Proposals”).¹ Nine Proposals were submitted in response to this request. The Association for Maximum Service Television, Inc. (“MSTV”) and the National Association of Broadcasters (“NAB”) have reviewed each of these Proposals and file these comments to urge the Commission to clarify what criteria will be applied when it designates a database manager and the responsibilities of designated database managers. MSTV and NAB also request that the Commission establish clear procedures for monitoring compliance and for enforcing its database manager and database operation rules.

Because the TV band device database will be the first of its kind to define on-the-spot what frequencies may lawfully be used by fixed and personal and portable unlicensed devices, it is critical that the Commission perform this task with rigor and great care. The parameters and precedent set by this process will have a profound impact

¹ Julius Knapp, Chief, Office of Engineering and Technology, “Office of Engineering and Technology Invites Proposals from Entities Seeking To Be Designated TV Band Device Database Managers,” *Public Notice*, ET Docket No. 04-186 (rel. Nov. 25, 2009) (hereinafter *Public Notice*).

on whether the Commission can meet its goal of ensuring that TV band devices (“TVBDs”) will be used “without disrupting the incumbent television and other authorized services that operate in the TV bands.”²

I. INTRODUCTION AND SUMMARY

MSTV and NAB’s comments on the Proposals are informed by broadcasters’ participation in all aspects of this proceeding since it was launched nearly six years ago.³ For example, both MSTV and NAB have been active during the Commission’s television receiver and unlicensed device testing programs. MSTV and NAB also have long advocated for the use of a geolocation/database approach as a more reliable means of protecting the public’s local television service than sensing alone.⁴ MSTV was an active member of Google’s White Spaces Database Group⁵ and has had numerous conversations with many of the authors of the Proposals.

² Unlicensed Operation in the TV Broadcast Bands and Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band, *Second Report and Order and Memorandum Opinion and Order*, 23 FCC Rcd 16,807, ¶ 2 (rel. Nov. 14, 2008) (hereinafter *Second Report and Order*).

³ See Unlicensed Operation in the TV Broadcast Bands and Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band, *Notice of Proposed Rulemaking*, 19 FCC Rcd 10,018 (rel. May 25, 2004).

⁴ See, e.g., Joint Reply Comments of the Association for Maximum Service Television, Inc. and the National Association of Broadcasters, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band, ET Docket No. 02-380, at 17 (Mar. 2, 2007). In the case of digital television signals, the database should override sensing, and, as explained in MSTV’s and NAB’s earlier filings in this proceeding, sensing should not be used as a stand-alone method for protecting digital television signals. See, e.g., Opposition and Comments of MSTV and NAB To Petitions for Reconsideration and Clarification, 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, at 16–22 (May 8, 2009). Nevertheless, the positive detection of a digital television signal using sensing may help address database errors, mistakes made during device installation, and failures in a device’s geo-location capabilities. Sensing also provides an important back-up feature for Mode I devices.

⁵ See e.g., White Spaces Database Group, Ex Parte, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186 (Apr. 10, 2009).

MSTV and NAB urge the Commission to carefully scrutinize and evaluate the submitted Proposals before selecting a database manager. The Commission's selections here will define the parameters and set precedent for future database operations and management. If any of the designated databases are poorly designed, improperly implemented or insufficiently secure, the public's reception of important local television services, including emergency information, will be disrupted.

Because the Commission is breaking new ground with its designation process and the success or failure of the database manager is so significant to the public interest, it is imperative that the Commission apply clear criteria when selecting a database manager. Specifically, the Commission should approve only Proposals that provide a complete end-to-end solution and that demonstrate that the database manager:

- Complies with all the Commission's rules and policies;
- Is a neutral third party that is not aligned with any commercial or other interests of incumbent licensees, other protected entities, or TVBD manufacturers;
- Clearly explains its responsibilities for and relationships with third parties that will perform some database functions on its behalf;
- Confirms that TVBDs are certified by the Commission before transmitting any channel availability information;
- Automatically denies access or "black lists" devices that have not been certified by the Commission; and
- Implements and maintains reasonable security measures.

As part of the selection process, the Commission also should use "real world" testing to determine and confirm whether database managers and their database operations, including all of the algorithms used by the database provider (and any third parties), are compliant with the Commission's rules and policies.

In addition, there is a need for the Commission to establish clear, efficient, and effective procedures for monitoring database management and operations and for enforcing the Commission's rules and policies. Given that the database will be performing such a critical public function and that the majority of TVBDs likely will be personal/portable devices, close oversight and efficient enforcement is necessary to protect the nation's airwaves from unlawful interference.

II. THE COMMISSION SHOULD APPLY SEVERAL CRITERIA IN SELECTING DATABASE MANAGERS IN ORDER TO ENSURE THAT ALL THE COMMISSION'S RULES AND REQUIREMENTS ARE MET.

The success or failure of allowing the unlicensed operation of TVBDs depends, in significant part, on the Commission's designation of a TVBD database manager. If a TVBD database manager fails to perform each of its functions, for example, by failing to transmit or relay accurate channel information to TVBDs, the public will lose confidence in both local broadcast television and TVBD services. It therefore is critical that the Commission set clear parameters and good precedent in this first-of-its-kind selection process.

Several parties expected the *Public Notice* to provide additional detail about the criteria the Commission will apply in selecting a database manager. For example, prior to the release of the *Public Notice*, Microsoft stated that "the *Public Notice* provides an opportunity to specify additional qualifications that the Commission will consider . . . [and] should make clear any other undertakings the Commission reasonably would expect of a database administrator."⁶ Likewise, the White Spaces Database Group expected that the *Public Notice* would explain "various elements

⁶ Microsoft, Ex Parte, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 1, 3 (Aug. 27, 2009) (emphasis supplied).

necessary for establishing the white spaces database,” and suggested that the *Public Notice* address several topics related to the functional requirements of the database.⁷

To avoid any confusion about the Commission’s selection process and the responsibilities of the TVBD database manager that the Commission ultimately designates, MSTV and NAB encourage the Commission to carefully scrutinize and evaluate the submitted Proposals, each of which is currently incomplete, and to approve only those Proposals that have been amended to fully comply with the criteria identified below.

A. Database Managers Must Provide Sufficient Information To Demonstrate That They, and Their Database Operations, Comply with the Commission’s Rules and Policies.

The Commission should carefully review each of the Proposals to confirm that they provide enough information about how the database manager will perform its functions and about how the database will operate to demonstrate compliance with all the Commission’s rules and policies. This means that the Proposals should contain information sufficient to show compliance with each of the requirements for TV band databases set forth in Section 15.713 of the Commission’s rules, including a clear explanation and explicit demonstration of how the database will determine the available channels at a number of specific locations using the required interference protection requirements.⁸ The Proposals also should contain information sufficient to demonstrate compliance with each of the requirements for database managers included in Section 15.715, such as a detailed description of security and how the database manager will respond to requests from the Commission or a party to verify, correct, or remove

⁷ White Spaces Database Group, Ex Parte, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186 (Apr. 10, 2009).

⁸ 47 C.F.R. § 15.713(d).

inaccurate data.⁹

In addition, because the operation of the database will implicate a number of the Commission's other rules, such as the interference protection requirements of Section 15.712, the database manager should do more than just attest that it will comply with all applicable rules and policies. Rather, it should demonstrate that it can meet these requirements as well.

All of the Proposals submitted to date fail to fully demonstrate compliance with all of the requirements contained in the Commission's rules and to provide all of the information requested in the *Public Notice*. For example:

- KB Enterprise/LS Telcom do not demonstrate that they have a viable business plan to operate a TVBD database for the required five-year term.
- Frequency Finder does not describe fully the methods that will be used by TVBDs to communicate with the database. For example, Frequency Finder describes communication between the database and devices acting on their own behalf as being "straightforward."¹⁰
- Google fails to describe in detail how each function will operate. For example, with respect to its device and "registered protected entity" management, Google states that the exact processes are "at the operational discretion of Google."¹¹ Google's proposal is incomplete and overly vague.¹²
- Neustar does not describe whether and how security methods will be used to verify that Mode I personal/portable devices that rely on another device for their geographic location information have received equipment authorization.

⁹ *Id.* § 15.715(h).

¹⁰ Proposal of Frequency Finder, Inc., Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 6 (Jan. 4, 2010) (hereinafter *Frequency Finder Proposal*).

¹¹ Proposal by Google Inc. To Provide a TV Band Device Database Management Solution, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 9-10 (Jan. 4, 2010) (hereinafter *Google Proposal*).

¹² *See id.* at 10 (a specified process "may be used"); *see also id.* at 16 (security mechanisms "likely would be comparable," and Google "could provide" a second layer of security).

- Spectrum Bridge does not specify whether it will make its services available to all unlicensed TVBD users on a non-discriminatory basis.¹³
- Several aspects of the Proposals submitted by Telecordia, Frequency Finder, and KB Enterprise/LS Telecom are so vague or generic in nature to make it difficult to determine what is being proposed. For example, KB Enterprise/LS Telecom fail to explain how their SPECTRA system will be adopted or implemented for TVBD operation in the United States.

In addition, none of the Proposals, with the exception of Spectrum Bridge, provide any actual examples of how available channels will be computed, and none of the proposals demonstrate that available channel information will be accurate.¹⁴ For example, Google, Frequency Finder, and Telecordia provide no examples or descriptions of calculations. While Key Bridge describes its process for determining channel availability, it fails to supply any examples demonstrating this process or establishing that it will produce accurate results.¹⁵ In addition, Comsearch provides no examples of specific channel availability for the locations in the continental United States that it identifies as having spectrum availability; rather, Comsearch states only that it will “[d]etermine the initial list of channels for which the device can legally operate based on the type of device” and “[e]liminate channels from the initial list if the device is located within the protected contour (including the appropriate separation distance, co- and adjacent-channel criteria) of any TV, translator receive site, cable headend, or BAS fixed link incumbent.”¹⁶

¹³ Spectrum Bridge Response to PN DA-09-2479 Proposals for Designated TV Band Database Manager, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186 (Jan. 4, 2010) (hereinafter *Spectrum Bridge Proposal*).

¹⁴ As described below in Section II.G, Spectrum Bridge’s examples contain significant errors.

¹⁵ Key Bridge, Proposal to Administer a TV Bands Database, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 122–23 (Jan. 7, 2010) (hereinafter *Key Bridge Proposal*).

¹⁶ Comsearch Proposal To Be Designated As a TV Band Device Database Manager, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 40 (Jan. 4, 2010) (hereinafter

Moreover, Neustar simply states that the Shared Spectrum Company will provide Neustar with a contour calculation reference code that Neustar's White Spaces Service Providers will use to calculate available channels.¹⁷ And, although Neustar submitted the draft TV White Spaces Database Computational Practices developed by the Google White Spaces Group, this document is incomplete and contains numerous areas where members of the group critique and dispute what processes and calculations should be used.¹⁸ Neustar does not describe how it intends to resolve these differences. These submissions are hardly sufficient to ensure that the complex calculations involved in protecting incumbent operations are carried out properly and correctly.

MSTV has been in contact with some of the applicants in order to obtain additional information and clarification regarding these and other aspects of their proposals, and these discussions have been productive. However, unless the applicants amend their Proposals to include this additional information, the public record will remain incomplete. Therefore, MSTV and NAB urge the Commission to encourage and allow applicants to amend their Proposals to include this information so that the Commission can make a reasoned and fully informed decision about which, if any, of the applicants should be designated as a database manager.

B. Database Managers Must Be Neutral Third Parties That Do Not Have an Incentive To Discriminate Against Incumbent Licensees, Other Protected Entities, or TVBD Manufacturers.

MSTV and NAB agree with Neustar and Key Bridge that database managers "should be a neutral third party, unaffiliated with any party with an interest in

Comsearch Proposal).

¹⁷ Neustar, Proposal for Designated TV Band Device Database Manager, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 14 (Jan. 4, 2010) (hereinafter *Neustar Proposal*).

¹⁸ *Id.* at Appendix A.

the spectrum used by white space devices.”¹⁹ More specifically, the Commission should define a “neutral third party” to be one that has no affiliation with or other incentive to discriminate against incumbent licensees, other protected entities, or TVBD manufacturers.

Complete neutrality is critical because incumbent licensees, other protected entities, TVBD manufacturers, and consumers are unlikely to have access to much of the information collected and controlled by the database manager, making it difficult for them to determine whether the database manager is engaging in discriminatory conduct. Moreover, given the nature of personal/portable TVBDs, which are expected to be the most common type of unlicensed devices used in the broadcast bands, the integrity of TVBD operation in the broadcast bands will be jeopardized if any aspect of database management or operations is compromised as a result of a manager’s bias or discriminatory practices.

C. Database Managers Must Clearly Explain Their Responsibilities for and Relationships with Third Parties That Will Perform Some Database Functions on Their Behalf.

Although the Commission’s rules do not explicitly allow a TVBD database manager to contract with other third-party entities to perform some of the TVBD database functions,²⁰ the *Public Notice* appears to suggest that the Commission will permit designated TVBD database managers to enter into such agreements.²¹

Database managers should clearly explain which database operations they will retain

¹⁹ Neustar, Notice of Ex Parte Meeting, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186 (Apr. 29, 2009); *see also Key Bridge Proposal*, at 184.

²⁰ *See* 47 C.F.R. § 15.715 (“Each database administrator shall . . .”).

²¹ *See, e.g., Public Notice*, at 2–3 (requiring an applicant to specify whether it will “provide all or only some of these functions,” explain “how it will have functions performed in a secure and reliable manner by another entity,” and “provide information on the entities operating other functions and the business relationship between itself and these other entities”).

control over and describe the relationship the database manager will have with the third-party vendor.

To avoid any uncertainty about the parameters of the database manager's responsibilities, MSTV and NAB urge the Commission to provide several clarifications regarding the scope of the database manager's responsibilities when it contracts with third parties to perform database functions. In order to provide transparency in the database management process and to help ensure that the database functions are performed in a secure and accurate manner, it is essential that the Commission requires database managers to rely only on other designated TVBD database managers or other parties that have been approved by the Commission to perform database functions.

If, however, the Commission does allow database managers to contract with third parties that are not themselves approved by the Commission, the Commission should identify baseline requirements that will govern the manager's relationships with unapproved third-party vendors. Specifically, the Commission should clarify that the designated database manager remains responsible if the third-party vendor does not perform its duties in compliance with the Commission's rules and policies. This appears to be consistent with the position taken by Neustar, which states that it "is willing to take complete responsibility for the performance of the [White Spaces Clearinghouse] and all [White Spaces Service Providers] it serves."²² Consistent with the criteria for designated database managers, the Commission also should clarify that designated database managers may contract only with neutral third parties that do not have an incentive to discriminate against incumbent licensees, other protected entities, or TVBD manufacturers.

²² *Neustar Proposal*, at 20.

D. Database Managers Must Confirm That TVBDs Are Certified By the Commission Before Transmitting Any Channel Availability Information.

Because there appears to be some confusion about whether TVBD database managers have a responsibility to confirm that all TVBDs communicating with the database are certified by the Commission, the Commission should clarify that this requirement does, in fact, apply. A number of the Proposals, including the Proposals submitted by Key Bridge, WSdb, Spectrum Bridge, and KB Enterprises/LS Telecom, already describe this capability.²³ Applicants that failed to describe in their Proposals the mechanism that they will use to meet this requirement should be afforded an opportunity to amend their Proposals to include this information, and applicants that do not comply with this requirement should be rejected.

Properly understood, the Commission's rules require database managers to determine whether TVBDs are certified by the Commission before any channel availability information is transmitted back to the TVBD. There is no question that TVBDs must be certified by the Commission, and that operation of non-certified devices is an unlawful activity.²⁴ Devices that have been certified by the Commission are assigned a FCC identifier ("FCC ID"). Therefore, a database manager can reasonably presume that TVBDs with valid FCC IDs operate properly and in accordance with the Commission's rules. Fixed TVBDs and personal/portable TVBDs operating in Mode II

²³ See, e.g., White Spaces Proposal By KB Enterprises LLC and LS Telcom, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 15 (Jan. 4, 2010) (including provisions to "ensure TV band database access only by type-accepted equipment") (hereinafter *KB Enterprises LLC/LS Telcom Proposal*).

²⁴ See, e.g., 47 C.F.R. §§ 15.701, 15.703(o) (defining TVBDs as unlicensed intentional radiators); *id.* § 15.201(b) (indicating that TVBDs must be certificated by the Commission).

must transmit their FCC ID to the database.²⁵ For devices that do not have a FCC ID (i.e., that have not been certified by the Commission), database managers should be prohibited from responding as though such devices are valid — they should neither provide available channel information nor register the device in the database.

A contrary interpretation would undermine the core principles upon which the TVBD database approach was adopted. The Commission authorized the operation of TVBDs in the television broadcast bands based on the premise that the operation of the geolocation/database approach would allow TVBDs to be used “without disrupting the incumbent television and other authorized services that operate in the TV bands.”²⁶ However, if database managers have no responsibility to validate that TVBDs comply with the Commission’s technical requirements by confirming that the device has a FCC ID, then unauthorized transmissions by uncertified devices will be common and the public will experience regular interference of local television and other incumbent services.

Database managers can easily validate each device by checking a TVBD’s FCC ID against the FCC IDs approved in the Commission’s Equipment Authorization database. Such a requirement is a simple and automatic process that adds no cost or complexity to the functioning of the database’s operations. Indeed, as indicated above, a number of the proposals, including the proposals submitted by Key Bridge, WSdb, Spectrum Bridge, and KB Enterprises/LS Telecom, already include this capability.

Some parties, however, claim that there is no requirement for the database to check whether TVBDs have been certified by the Commission. For example, Google

²⁵ 47 C.F.R. § 15.713(f)(3)(i), (g).

²⁶ *Second Report and Order*, ¶ 2.

states that “verification that any white space device has received equipment authorization is beyond the scope of the TV white spaces database services contemplated by the Commission . . . and is not required by the rules adopted in that decision.”²⁷ Although Comsearch states that it will “report to the FCC . . . any and all criminal or improper activity from a user, database manager and/or device,”²⁸ it goes on to state that it “does not believe the current rules for white space[s] require that the database verify whether any devices have received equipment authorization. . . . The database should not be considered a barrier to the operation of devices that might function outside of the Commission’s rules.”²⁹ Other applicants, such as Neustar, do not specifically address this issue.

While Google, Comsearch, Neustar and others indicate that they will take some action to “register,” “authenticate,” or “enroll” each TVBD, their descriptions of these processes reveal that they intend only to ensure that the TVBD is from an entity or manufacturer that has contracted with the database provider and, where applicable, that fees were paid. These procedures are inadequate, and the Commission should make clear that aiding and abetting the unlawful transmissions of illegal devices is prohibited under the rules.

The Commission’s *Public Notice* correctly indicates that database managers must verify that personal/portable TVBDs operating in Mode I (i.e., “client” devices that do not directly contact the database and that operate based on another “master” device’s geographic location information) are certified.³⁰ The Commission

²⁷ *Google Proposal*, at 11.

²⁸ *Comsearch Proposal*, at 40.

²⁹ *Id.* at 42.

³⁰ *Public Notice*, at 3. These Mode I devices are likely to be the most common TVBDs.

should also make clear that any designated database must have some mechanism to ensure that Mode I devices are valid and have been certified by the Commission as complying with the rules governing TVBDs. Several parties filing database proposals suggested mechanisms for this in response to the questions set forth in the *Public Notice*. The Commission should ensure that there are mechanisms in place that would require the “master” device to forward the FCC IDs of its client devices to the database for confirmation that the devices are valid.

E. Database Managers Must Automatically Black List Devices That Have Not Been Certified by the Commission.

To implement the requirement that only devices that have been certified by the Commission should be provided available channel information, the Commission should clarify that its rules require database managers to automatically black list devices that are not certified by the Commission by returning a response of “no channels available.” The *Public Notice* anticipates this requirement by requiring applicants to describe “the security methods that will be used to ensure that unauthorized parties can not access or alter the database or otherwise corrupt the operation of the database system in performing its intended functions.”³¹ As described above, users of devices that are not certified by the Commission are “unauthorized parties” that should be prevented from accessing the database, and aiding and abetting unlawful transmissions by uncertified devices constitutes corruption that undermines the ability of the database to perform its intended functions.

Although each of the database manager applicants indicate that they will have the capability to deny service upon request by the Commission, this places the entire

³¹ *Public Notice*, at 3.

burden on the Commission to monitor all communications between the database and TVBDs and to affirmatively request that the database deny service to each uncertified device of which the Commission becomes aware. The public interest clearly is better served by avoiding such waste of agency resources and by requiring database managers to automatically return a “no channels available” response for devices that do not have a FCC ID.

Given that there appears to be confusion over this requirement as well, MSTV and NAB ask the Commission to clarify that all TVBD database managers must ensure that all uncertified devices are automatically black listed by returning a response of “no channels available.” Applicants that failed to demonstrate how they will meet this requirement should be provided an opportunity to amend their Proposals to include this information.

F. Database Managers Must Implement and Maintain Reasonable Security Measures.

The Proposals must describe the security measures that will be taken to prevent unauthorized transmissions, including measures to ensure that communications between TVBDs and the database are secure. For example, the Proposal should explain whether the manager will use encryption and require verification of both the TVBD and the database to prevent hackers from falsely listing occupied channels as “available” for unlicensed device operation. The Proposal also should describe the steps that will be taken to prevent unauthorized databases from sending false information on channel availability to TVBDs. Spectrum Bridge correctly outlines this need for security when it states: “Security is primarily focused on the interface between the [White Spaces Devices (“WSDs”)] and the Database. The objective is to ensure that the WSDs obtain

accurate channel information from an authorized source and will not get spoofed with invalid information from an unauthorized source.”³²

As MSTV and NAB have pointed out in earlier filings in this proceeding, Mode I devices operating as “clients” to “master” devices raise additional security concerns because the Mode I client, by definition, does not access the database directly to determine channel availability.³³ Rather, client devices rely solely on information obtained from a fixed or Mode II personal/portable device operating as the master device. Because Mode I client devices are one step removed from the authentication and geolocation process, database managers should take the steps necessary to authenticate and secure such transmissions so as to prevent breaches in security.

A number of parties include mechanisms to bridge this Mode I security deficiency. Spectrum Bridge includes a Mode I authentication process and notes that if Mode I devices were required to send their identification information to the database through the master device they could be authenticated using the shared secrets method.³⁴ WSdb proposes a similar approach whereby the Mode I client device is authenticated using the FCC ID, serial number, and authentication evidence (e.g., digital signature) by the database through the master device.³⁵ Frequency Finder and Key Bridge also propose

³² See *Spectrum Bridge Proposal*, at 19.

³³ See Opposition and Comments of MSTV and NAB To Petitions for Reconsideration and Clarification, 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, at 15–16 (May 8, 2009).

³⁴ See *Spectrum Bridge Proposal*, at 20–21.

³⁵ See WSdb, LLC, Proposal to be Designated TV Band Device Database Manager, Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, at 5(c)-2 (Jan. 4, 2010) (hereinafter *WSdb Proposal*).

possible solutions.³⁶

The Commission should make clear that all database proposals must address this issue and provide some means of authenticating Mode I devices to ensure that the Mode I device has received an equipment authorization identification from the Commission and will operate properly and in accordance with the rules. For example, devices operating in Mode I client mode, at a minimum, should have their FCC ID and other authentication information transmitted to the database through the fixed or Mode II master device for authentication at least once during each session to increase the likelihood that unauthorized devices can be located.

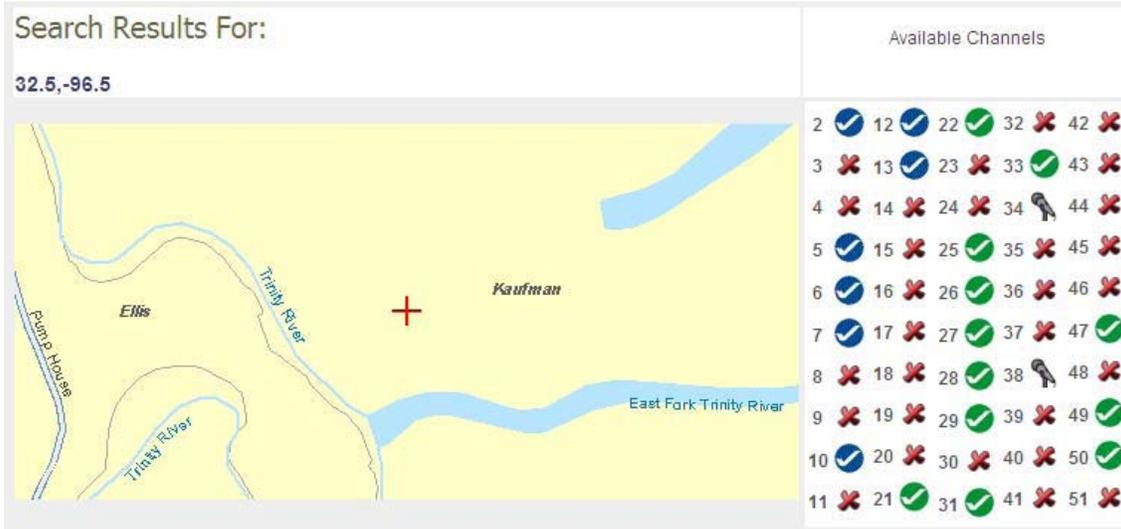
G. As Part of the Selection Process, the Commission Should Use “Real World” Testing To Determine Whether Database Managers and Their Database Operations Are Compliant with the Commission’s Rules.

In order to confirm that the proposed databases actually perform each of the required functions and operate properly, the Commission should subject the databases to “real world” testing before selecting a database manager. Such testing should confirm that communications between the database and TVBDs are accurate and secure and that the database is capable of black listing devices that do not have a FCC ID.

The need for testing prior to approval is particularly acute because implementation of the database is complex and errors can be made that could result in the transmission of inaccurate channel availability information. For example, Spectrum Bridge provides the following example of available channels for Dallas, Texas in

³⁶ See *Frequency Finder Proposal*, at 6 (proposing a “combined use of hardware-based mutual authentication systems in TVBDs utilizing, for example, secret keys known only to TVBD database administrators and hardware manufacturers”); *WSdb Proposal*, at 5(c)-2.

Appendix 1 of its filing:



This example contains significant errors that would permit TVBDs to operate on prohibited channels and cause interference to the public’s local television service. Under Section 15.707(b) of the Commission’s rules, operation on channels 2 through 20 is restricted to fixed TVBDs that communicate only with other fixed TVBDs,³⁷ and Section 15.712(a)(2) requires that fixed TVBDs be located outside the co-channel *and adjacent* channel contour of all television stations.³⁸ Spectrum Bridge’s example of its database operation suggests that it would allow TVBD operation on Channels 7, 10, and 12 when such use is clearly prohibited under the rules.

TV Channel	Spectrum Bridge	Call Sign of TV Stations in Operation
7	✓	Error – Adj. Channel Use Prohibited
8	☒	WFAA
9	☒	KFWD
10	✓	Error – Adj. Channel Use Prohibited
11	☒	KTVT
12	✓	Error – Adj. Channel Use Prohibited

Spectrum Bridge has been responsive in making corrections to earlier versions of its ShowMyWhiteSpace website in connection with other errors that MSTV

³⁷ 47 C.F.R. § 15.707(b).

³⁸ *Id.* § 15.712(a)(2).

brought to its attention,³⁹ and MSTV and NAB have no reason to believe that it will not correct this error as well. However, the example clearly demonstrates that mistakes in implementing the Proposals are likely to be made, regardless of which applicants are designated as database managers, and that careful review, oversight, and real world testing of all database functions prior to designation is therefore critical.

To assist the Commission in these testing efforts, the Commission could establish a cross-industry technical advisory group composed of all interested parties — including the Commission and representatives of TVBD manufacturers, incumbent licensees, and TVBD database managers — to develop procedures and appropriate tests to confirm the proper operation of the TVBD databases and TVBDs prior to their designation and commercial release.

III. THE COMMISSION SHOULD ESTABLISH PROCEDURES FOR OVERSIGHT OF THE DATABASE OPERATIONS AND MANAGEMENT AND SHOULD DEVELOP ENFORCEMENT MECHANISMS TO ADDRESS NONCOMPLIANCE.

The Communications Act of 1934, as amended, is clear that the Commission is responsible for controlling and managing the use of the public’s airwaves and for enforcing the rules and policies that the Commission adopts in furtherance of the Act.⁴⁰ Consequently, the Commission should develop an oversight process to periodically test the management and operation of designated TVBD databases.

The Commission could rely on the cross-industry technical advisory group referenced above to establish procedures to monitor continued performance and

³⁹ For example, in earlier implementations, the Spectrum Bridge’s Showmywhitespace website would erroneously report that all TV channels were available if the address was new and not recognized or contained a slight typographical error.

⁴⁰ *See, e.g.*, 47 U.S.C. § 151 (“[T]here is created a commission to be known as the ‘Federal Communications Commission,’ which shall . . . execute and enforce the provisions of this chapter.”).

compliance. This approach not only would help ensure that the Commission's resources are put to efficient use, but also would provide needed flexibility for the industry to respond to unforeseen technical challenges as they arise. For example, a technical advisory group could work with the database managers to quickly adapt to advancements in TVBD technology and to update the databases as industry practices evolve.

In addition, the Commission should establish enforcement mechanisms to address circumstances where database managers are unable to complete the required five-year term or where database operations and management become noncompliant with the Commission's rules and policies. Efficient and effective enforcement mechanisms are particularly important given that, as described above, there is a significant risk that available channel information may be miscalculated.

* * *

The TV band device database will be the first of its kind to define on-the-spot what frequencies may lawfully be used by fixed and personal and portable unlicensed devices. The success or failure of this experiment will determine whether the public may continue to receive uninterrupted free, local television service. In order to maximize the likelihood for success, MSTV and NAB urge the Commission to carefully scrutinize and evaluate the submitted Proposals and take the following steps before designating one or more database managers:

- Clarify that Proposals must provide an end-to-end solution and demonstrate that the database manager: (1) complies with all of the Commission's rules and policies; (2) is a neutral third party that is not aligned with any commercial or other interests of incumbent licensees, other protected entities, or TVBD manufacturers; (3) is responsible for third parties that will perform some database functions on its behalf; (4) confirms that TVBDs are certified by the Commission before transmitting any channel availability information; (5) automatically denies access or

“black lists” devices that have not been certified by the Commission; and
(6) implements and maintains reasonable security measures;

- Allow applicants to amend their Proposals to provide additional information responsive to these six criteria;
- Establish clear procedures for monitoring database management and operations;
- Develop efficient and effective procedures for enforcing the Commission’s rules and policies applicable to database managers and operations; and
- Form a cross-industry technical advisory group that would develop procedures and tests to confirm the proper operation of the database and would establish procedures to monitor continued performance and compliance.

The introduction of unlicensed TVBDs in the television broadcast bands presents uncharted waters for all stakeholders — including the Commission, the TVBD database managers, local television licensees and other protected entities, TVBD manufacturers, and the public. More likely than not, additional questions and concerns will arise as TVBDs are commercially launched and the selected database managers begin operations. MSTV and NAB will continue to work with the Commission and others in the relevant industries to meet the Commission’s primary goal: to ensure that TVBDs are used “without disrupting the incumbent television and other authorized services that operate in the TV bands.”⁴¹

⁴¹ *Second Report and Order*, ¶ 2.

