

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington D.C. 20554**

In the Matter of)
)
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
)

REPLY TO OPPOSITIONS

Key Bridge Global LLC (“Key Bridge”) is pleased to file this consolidated Reply to Oppositions concerning the FCC’s goal to allow innovative unlicensed operation in the TV Broadcast Bands while ensuring reasonable protection for incumbents.¹

The commission should require “strong counter-party authentication”

We remain concerned about security risks inherent in the as-specified identifying information and registration methods. Our concern is generally held by industry and cited in several Petitions.² We note that several mature and some developing options exist to secure the TV Band Device (TVBD) / Database registration and channel inquiry exchange. Public-key infrastructure (PKI), a technology for trusted counter-party authentication, is widely available, supports Internet services today, and could provide a ready-made solution. Simple public key infrastructure (SPKI) is a “self-certifying” version of PKI that could support Type-II TVBDs

¹ See *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008).

² Opposition & Comments of MSTV and NAB to Petitions for Reconsideration and Clarification at 14

without the existence and expense of a third party signature authority.³ Lastly, the GSM and WiMAX multi-tiered systems architecture and techniques for equipment authentication, user registration and roaming can serve as a guide to implement assured positive and negative registration of and channel assignments to fixed and Type-II portable TV Band devices.

We cite these three examples only to illustrate that scalable, low cost-per-unit solutions exist and may serve as examples for a TV Bands security framework acceptable to all interested parties.

Google believes that the rules provide a sufficient framework to enable each database administrator to “cost-effectively implement security features as necessary to comply with the Commission’s rules.”⁴ Specifically, Google thinks the Commission’s ability to deny a channel list and remove inaccurate or non-compliant information adequately addresses security risks.⁵ Key Bridge respectfully disagrees. The ability to deny channels to a TV Band device or remove that device from the database may be an appropriate reaction to an interference incident that has already occurred, but it will not proactively prevent the serious security threats Key Bridge addressed in its Petition.⁶ In contrast, strong counter-party authentication prevents security breaches before they occur.

Key Bridge again urges the Commission to adopt our suggestion and require “strong counter-party authentication” but not specify a method or technology. This flexibility will allow

³ Simple Public Key Infrastructure, IETF RFC 2692 and SPKI Certificate Theory, IETF RFC 2693

⁴ Opposition and Comments of Google Inc at 18

⁵ Id

⁶ See Key Bridge Global Petition for Reconsideration at 2 (discussing unauthorized access to the database)

industry to establish and adopt a compliant security architecture appropriate to TV Bands and acceptable to the FCC, incumbents, unlicensed operators and new consumers.

The Commission should license two or more database administrators

Several petitioners claim that a database is more likely to succeed if there is a single database manager. They also claim a potential hardship of registering with multiple databases and cite concerns about operational soundness and accuracy.⁷ These concerns misunderstand or otherwise deny the existence of enterprise data services, distributed information systems and public information infrastructure while ignoring the Commission's goal of ensuring reasonable pricing and fee levels. Assuming the petitioners use computers at work, their own email, IP addressing, domain name and other network services are spread across several independently operated computers, possibly distributed geographically, in near real-time.

There will be no multi-registration hardship as the Rules require database synchronization.⁸ There is little to no risk of inaccurate synchronization as the required database fields are clearly specified and will be exchanged digitally across the Internet or via private network interconnect.⁹ There are, however, significant risks with a monopoly administrator for proprietary database access formats, poor operational performance and unchecked, prohibitive pricing and fees.

⁷ Opposition & Comments of MSTV and NAB to Petitions for Reconsideration and Clarification at 13

Neustar Notice of Ex Parte Meeting, April 29, 2009

Society of Broadcast Engineers Petition at 20

⁸ Part 15, Subpart H Para 15.715 (k)

⁹ Part 15, Subpart H Para 15.713 (b, f, h)

Key Bridge believes there are simply no technical reasons that might require a single database administrator and many practical reasons not to allow a new monopoly. The Commission should license at least two or more database administrators.

The commission should not specify or approve protocols

MSTV and NAB cite concerns over the power of a database administrator to develop any (presumably proprietary) protocol they wish and that the FCC will have no authority to review these protocols.¹⁰ Key bridge believes the Commission's desire is for industry to establish an open information protocol appropriate for TV Bands use. We note this industry-led approach has proven extremely successful through the IETF RFC process and urge the commission not to get involved in protocol development.

Respectfully submitted.

_____/s/_____
Jesse M. Caulfield
President & Owner
Key Bridge Global, LLC
1600 Tysons Blvd., Suite 450
McLean, VA 22102
Phone: 703 414 3500
Fax: 703 414 3501
Email: jesse.caulfield@keybridgeglobal.com

¹⁰ Opposition & Comments of MSTV and NAB to Petitions for Reconsideration and Clarification at 14

CERTIFICATE OF SERVICE

I, Jesse M. Caulfield hereby certify that on this 18th day of May, 2009, I caused copies of the foregoing "Reply to Oppositions" to be sent via first-class U.S. mail, postage prepaid, to the following:

Rich Kennedy
7305 Napier Trail
Austin, TX 78729

R. Paul Margie
Edmond J. Thomas
S. Roberts Carter
1200 18th Street, N.W.
Washington, DC 20036

Susan Eid
Stacy R. Fuller
444 N. Capitol St., N.W.
Suite 728
Washington, D.C. 20001

Richard S. Whitt, Esq.
1101 New York Avenue, N.W.
Second Floor
Washington, D.C. 20005

James Carlson
1385 8th Street
Arcata, CA 95521

Catherine Wang
Timothy Bransford
2020 K Street, NW
Washington, D.C. 20006

E. Ashton Johnston
Mark J. O'Connor
Joanna I. Georgatsos
1776 K Street, N.W., Suite 700
Washington, D.C. 20006

Al Ittner
8484 Westpark Price

Suite 630
McLean, VA 22102

Steve B. Sharkey
Robert D. Kubik
1455 Pennsylvania Avenue, N.W.
Suite 900
Washington, D.C. 20004

Neal M. Goldberg
Loretta P. Polk
25 Massachusetts Avenue, N.W. - Suite 100
Washington, D.C. 20001-1431

Michael Calabrese
Sascha Meinrath
Benjamin Lennett
1899 L Street, N.W.
Washington, D.C. 20036

Harold Feld
1875 Connecticut Avenue, N.W.
Suite 650
Washington, D.C. 20009

Stephen E. Coran
1615 L Street, N.W., Suite 1325
Washington, D.C. 20036

Antoinette C. Bush
David H. Pawlik
1440 New York Avenue, N.W.
Washington, D.C. 20005

Peter Tannenwald
1300 N. 17th St., 11th Floor
Arlington, VA 22209-3801

Jim Hollis
PO Box 2270
Matthews, NC 28106-2270

David Donovan
Bruce Franca
VictorTawil
4100 Wisconsin Avenue, N.W.
Washington, DC 20016

Robert M. Gurs
1426 Prince Street
Alexandria, VA 22314

/s/

Jesse M. Caulfield