

April 7, 2008

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

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

Dear Ms. Dortch:

The **undersigned industry organizations (the "Parties")** hereby submit this ex parte presentation to address issues raised in the above-captioned proceeding that is intended to promote the use of unlicensed devices in the frequency bands generally allocated to the television broadcast services.¹ EWA has previously participated in this proceeding, primarily to ensure that existing land mobile stations operating in 11 markets on UHF-TV channels 14-20 (470-512 MHz) are suitably protected **from interference caused by "TV White Space" ("TVWS")** devices. As further discussed below, the Parties now urge the Commission to adopt rules for so-called TVWS devices that enhance their suitability for business enterprise applications by promoting compatibility between unlicensed devices themselves.²

Background

The Parties represent a broad alliance of business enterprise users, communication system operators, wireless sales and service providers. A substantial number of the business enterprise members operate private, internal wireless systems using a diverse range of equipment, such as traditional land mobile radios, ISM devices, RFID technology and virtually every other wireless application that promotes productivity and operational efficiency. Other members represented by the Parties include wireless Internet service providers ("**WISPs**") that wish to introduce economical broadband service to smaller businesses in communities where such services are not yet established. These internal operations and commercial WISP systems may operate in licensed and/or unlicensed spectrum bands depending on their geographic location and operating parameters. Notably,

¹ Unlicensed Operation in the TV Broadcast Bands, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket No. 04-186, *First Report and Order and Further Notice of Proposed Rulemaking*, 21 FCC Rcd 12266 (2006) ("**First R&O and FNPRM**").

² **The American Petroleum Institute's Telecommunications Committee membership** includes virtually every major entity engaged in the exploration, production and distribution of oil and gas products that rely extensively on **wireless networks to promote safety and to improve productivity**. The **Enterprise Wireless Alliance ("EWA")** represents the communication interests of business enterprises, wireless sales/service organizations and technology manufacturers, as well as the views in this proceeding of the American Association of Paging Carriers ("**AAPC**"). **AAPC is an affiliated market council** of EWA, whose members include paging carriers, technology manufacturers and other vendors to the paging industry. The **USMSS** is an independent trade association whose members consist of wireless sales and service entities that are actively engaged in the operation, provision, deployment and maintenance of advanced wireless systems, including the operation of local and regional IP networks.

while a number of bands have been made available through competitive bidding processes for broadband allocations provided by commercial operators, virtually no spectrum has been identified **to support internal broadband systems for the nation's business enterprises.**

The Parties' technology manufacturer members have equally broad interests and include some **of the most advanced technology developers in today's marketplace, providing** equipment that can be deployed on both licensed and unlicensed bands. Thus, the Parties and their members have a substantial, direct interest in the outcome of the instant proceeding due to the significant opportunities to deploy new broadband systems in the TVWS spectrum.

The Commission's proceeding is considering rules that would allow a variety of unlicensed devices to operate in unoccupied portions of the TV broadcast allocation. Appropriately, the Commission's first order of concern has been the protection of incumbent spectrum users. Earlier in this proceeding, EWA participated in the comments and filings submitted by the Land Mobile Communications Council ("LMCC"). The LMCC advised the FCC at the outset about its concerns with respect to potential interference from such devices to primary land mobile systems and the need to protect land mobile facilities operating on TV Channels 14-20 pursuant to Section 90.350 and **Section 22.651 of the FCC's Rules.**³ These systems are used by private commercial carriers, manufacturers, utilities, refineries, and by state and local public safety entities, among others. In its Comments on the further proposal portion of the First R&O and FNPRM, the LMCC also requested that the Commission consider whether some portion of the TV broadcast spectrum could be assigned to expand the licensed use of the **470-512 MHz band under Parts 90 and 22 of the FCC's Rules.**⁴

Analysis

The Parties share the Commission's objectives that this proceeding allow for the **"development of new and innovative types of devices and services for businesses and consumers, without disrupting television and other authorized services using the TV bands."**⁵ We believe that this outcome is best achieved by adopting TVWS rules that protect incumbent operations while making TVWS operations more usable for internal business applications and for those operating commercial systems that serve business enterprise wireless needs.

First, we are concerned with the potential effectiveness of devices that rely solely on spectrum sensing techniques to avoid interference to mobile radio systems operating on TV Channels 14-20. By contrast with television broadcast facilities, land mobile systems operate at relatively low power and are characterized by intermittent, itinerant transmissions between mobile/portable devices and base station facilities. Detecting these transmissions via sensing techniques alone presents a substantial risk of interference. Therefore, we **continue to support the FCC's initial decision to prohibit unlicensed mobile and portable devices on TV Channels 14-20.**⁶ Prohibiting such use will protect commercial, business enterprise and public safety land mobile facilities unless other protocols and technologies such as geolocation are implemented that assure that the integrity of existing land mobile service areas is preserved.

³ See LMCC Reply Comments filed Feb. 1, 2005.

⁴ See LMCC Comments filed Jan. 31, 2007 at 9-10.

⁵ First R&O and FNPRM at ¶ 1.

⁶ EWA also has urged the FCC not to permit unlicensed fixed devices on these channels. That issue is pending before the Commission in this proceeding.

Moreover, even on spectrum and in areas where TVWS can be utilized, the FCC must ensure that unlicensed TVWS devices are not introduced in a manner that results in a **“tragedy of the commons” that so often occurs in unlicensed bands. In ET Docket No. 03-201, the Commission is considering the adoption of “spectrum etiquette”** procedures for unlicensed devices in the 902-928 MHz band, as well as in the 2.4 GHz and 5 GHz bands, to promote greater compatibility among myriad types of very different unlicensed products deployed in those bands.⁷ EWA filed Reply Comments opposing the adoption of a spectrum etiquette provision in the 902-928 MHz band noting that the opportunity to influence the current congestion in that band has long passed.⁸ However, EWA encouraged the Commission to consider at the outset what, if any, spectrum etiquette rules should apply to unlicensed devices in newly allocated bands.⁹ EWA specifically recommended that the FCC apply the principle to the TV White Space proceeding.¹⁰

The Parties’ primary interest in proposing rules for the deployment of TV White Space devices is to ensure that such devices provide the necessary long-term security for critical IP network applications for use by business enterprises and WISPs. Past experience in other unlicensed bands has seen wireless broadband networks receiving increased levels of interference from consumer-oriented devices with limited degrees of sophistication and security. Business enterprise users and WISPs will not invest in TV White Space devices unless there is a sound technical basis for an expectation that similar problems will not occur in these bands. With this objective in mind, the Parties offer the following recommendations for successful TVWS deployment.

Recommendations

The Parties recommend that the FCC adopt the following technical and coordination policies for deployment of TV White Space devices. These recommendations are consistent with the FCC’s **“licensed/unlicensed” regulatory framework adopted for the 3650 MHz band** which, in our opinion, represents a well thought out balancing of ease of entry with the quality of service protections raised here.

Specifically, and assuming appropriate rules are in place to prevent interference to land mobile operations on Channels 14-20, the Parties support the adoption of rules to allow TV White Space devices on TV channels 5-51 subject to the following conditions:

- **Mandatory ULS Registration Requirement for All Fixed Points:** We recommend that the Commission adopt the same registration requirement for all fixed points that it approved for use in the 3650 – 3700 MHz band.¹¹ This approach will allow potential users to better ascertain the spectrum environment prior to investing in equipment and network deployment assets and will augment the technological approaches to promoting compatibility. The Parties support base/mobile, portable, point-to-point and point-to-multipoint operations in the TVWS spectrum,

⁷ Modification of Parts 2 and 15 of the Commission’s Rules for Unlicensed Devices and Equipment Approval, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, ET Docket No. 03-201, 22 FCC Rcd 11383 (2007).

⁸ See EWA Reply Comments filed Nov. 14, 2007.

⁹ *Id.* at 5.

¹⁰ *Id.* at 5-6.

¹¹ See 47 C.F.R. § 90.1307.

and we recommend this registration requirement apply to the fixed points in all of these types of systems.¹²

- **Reliance on Multiple Technology Approaches to Minimize Interference to Incumbents and to Promote Compatibility Among Unlicensed Devices:** The FCC is investigating various technical approaches to govern channel access for TV White Space devices. We believe that the FCC should adopt a layered approach that maximizes the quality of service and protection to incumbent facilities.
 - Geolocation and data base look-up technology should be required in order to provide a first line of protection to incumbents by specifying channels that are not available for use in particular locations. Access to the necessary information can be made available through the data base management options described below.
 - Spectrum sensing and beacon signal detection technologies should be required to provide a second layer of protection to facilities that are not listed in the data base, such as Part 74 wireless microphones and the itinerant mobile/portable devices operated on Channels 14-20 by land mobile licensees.
- **Third Party Data Base Management:** We also recommend that the FCC endorse the formation of one or more third party data base management entities that would gather, organize and make available through the internet the location of ULS registered fixed TV White Space devices, as well as detailed information on incumbent broadcast and land mobile facilities, including location, operating parameters, antenna performance and other technical data needed to fulfill the benefits of geolocation technology. The third party data base would be synchronized continuously **with the FCC's Universal Licensing System to ensure** all incumbent data is up to date. Thus, it would provide the actual TV White Space devices with real-time frequency assignments in order to protect broadcasters, and protected systems operating on broadcast spectrum from harmful interference. This data base could also be made available through the internet to licensees who may wish to predetermine the feasibility of system deployment prior to committing financial resources.
- **Power Levels for Fixed and Mobile Systems:** Devices that deploy the full range of interference protection features described above should be able to operate at the 4 watt ERP power level currently contemplated by **the FCC's rules**. This higher power should be sufficient to provide business enterprises with base/mobile or base/portable facilities capable of covering large campus environments, thereby offering viable broadband operations to support greater operational efficiency and security.

The TV White Space spectrum is a valuable national resource that demands carefully calibrated FCC oversight and technical standards if it is to achieve its maximum potential.

¹² See *ex parte* letter dated Jan. 3, 2008, submitted jointly by Sprint Nextel Corporation and T-Mobile USA, Inc. EWA supports fixed use as one element of the TVWS decision and agrees that it will increase the usefulness and productivity of the TV bands.

While the Parties support a low barrier to entry for potential users of this spectrum by a simplified on-line registration process, the technology must be in place to protect all incumbents, as well as to encourage broadband system investments by business enterprises and WISPs. We urge the Commission to proceed in a thorough and thoughtful manner **to ensure** that all relevant interests are protected in this proceeding.

Respectfully submitted,

**American Petroleum Institute
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