

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

In the Matter of)
)
Unlicensed Operation in the TV Broadcast) ET Docket No. 04-186
Bands)
) ET Docket No. 02-380
Additional Spectrum for Unlicensed Devices)
Below 900 MHz and in the 3 GHz Band)
)

To: The Commission

COMMENTS OF THE CONSUMER ELECTRONICS ASSOCIATION

The Consumer Electronics Association (“CEA”)¹ respectfully submits the following comments in response to the Commission’s Further Notice of Proposed Rulemaking in the above-captioned proceeding.² CEA commends the Commission for adopting the First Report & Order in October 2006 that was part of this important proceeding.³ The decision was an important step towards the introduction of new, innovative devices using vacant spectrum in the TV broadcast bands.

CEA believes that the Commission should ultimately adopt operating and technical rules for unlicensed devices in the TV bands. At the same time, the Commission should take steps to ensure that such devices do not cause interference to TV viewers and users of other

¹ CEA is the principal trade association promoting growth in the consumer technology industry through technology policy, events, research, promotion and the fostering of business and strategic relationships. CEA represents more than 2,100 corporate members involved in the design, development, manufacturing, distribution and integration of audio, video, mobile electronics, wireless and landline communications, information technology, home networking, multimedia and accessory products, as well as related services that are sold through consumer channels. Combined, CEA’s members account for more than \$140 billion in annual sales.

² *In the Matter of Unlicensed Operation in the TV Broadcast Bands*, ET Docket Nos. 04-186 and 02-380, FCC 06-156, First Report and Order and Further Notice of Proposed Rulemaking (rel. Oct. 18, 2006) (“First R&O and FNPRM”).

³ *See id.*

authorized services. As the deadline for the end of analog broadcasting approaches, CEA supports the Commission's decision in the First R&O to wait until February 18, 2009 to permit the marketing of TV band devices.⁴

CEA has consistently supported unlicensed use of the so-called "white spaces", specifically with respect to fixed low-power devices. Historically, we have suggested a more cautious approach with respect to personal/portable devices to avoid risk of harmful interference to digital TV receivers and broadcasting services, but generally promote Commission action in this regard.

I. The Commission Should Adopt a Reasonable Framework for Unlicensed Fixed Devices in the TV White Spaces

New devices operating in unused TV spectrum offer the promise of significant benefits to the public, including the potential to promote broadband Internet access, particularly in rural areas. CEA urges the FCC to take actions necessary to allow unlicensed fixed devices on unused channels within the TV bands.

In the FNRPM, the Commission asks whether it should adopt a licensed, unlicensed, or hybrid regime for TV band devices.⁵ CEA maintains its position (and that of the FCC in its original NPRM)⁶ that these devices should be permitted on an unlicensed basis once FCC rules are implemented that would protect against harmful interference. CEA believes that a licensed regime would be cumbersome and thus hinder the innovation that the FCC seeks to promote. Unlicensed devices (e.g., 802.11 Wi-Fi devices and cordless phones) have proven

⁴ See *id.*, at para. 22.

⁵ See *id.*, at paras. 26-32.

⁶ See *In the Matter of Unlicensed Operations in the TV Broadcast Band*, ET Docket No. 04-186, FCC 04-113, Notice of Proposed Rulemaking ("NPRM") (rel. May 25, 2004).

to be of significant value to consumers, the global economy, and they reflect efficient spectrum use.⁷

The Commission seeks comment on whether the TV spectrum should be divided into blocks of channels.⁸ CEA assumes that the Commission asks this question in the context of a licensed regime. As discussed above, CEA does not support a licensed regime. Dividing the spectrum into blocks of channels, therefore, would be inefficient and detrimental for the operation of unlicensed devices.

A. **Technical Requirements**

CEA responds to the Commission's request for input regarding technical requirements, as follows:

1. Spectrum Sensing

In the past, CEA has supported the efforts of IEEE 802.22 to forge appropriate standards for the operation of fixed devices in unused channels within the TV bands, while ensuring that authorized services are protected from harmful interference. As the only open standards body working in this arena, IEEE 802.22's project has been based on using spectrum sensing as an augmentation of geo-location/database.⁹ CEA supports the FCC's tentative conclusion that spectrum sensing may provide tremendous potential benefits in preventing harmful interference. CEA further believes that spectrum sensing is generally acceptable as a means to determine the availability of unused frequencies in the TV bands.¹⁰

⁷ The CE industry manufactures and sells millions of wireless products in the unlicensed areas of the RF spectrum. Cordless phones alone generated \$943 million of revenue in 2005. Unlicensed CE products allow consumers to get the most out of a natural resource that belongs to everyone.

⁸ See First R&O and FNPRM, at para. 31.

⁹ See *id.*, at fn. 49.

¹⁰ See *id.*, at para. 33 et seq.

If spectrum sensing can be demonstrated to adequately avoid the risk of harmful interference, then CEA believes that it would be appropriate for the Commission to consider it as a method to determine the availability of unused channels in the TV bands.

The basic framework derived from the 5GHz U-NII DFS approach that the Commission has suggested is reasonable for this proceeding. There are, however, substantial differences between radar detection and receiver protection in which receiver and transmitter are co-located and broadcast receiver operation in which receivers are located a long distance from the transmitter location, receiving very weak desired signals, and potentially located in close proximity to TV band devices.

Based on current information, CEA encourages further study to determine whether spectrum sensing alone is sufficient for either fixed access or personal/portable devices. If distributed sensing is pursued, then the Commission should not require more than two devices as a prerequisite to assessing channel availability as the market for consumer devices is likely to start with simple point-to-point connections. Similarly, the exact parameters of spectrum sensing, such as detection threshold, can be determined only through further testing that takes into account the difference in operating environments (e.g., indoor, outdoor and antenna heights).

2. *Transmit Power Control*

CEA recommends that the Commission adopt transmit power control requirements, as proposed.¹¹ This requirement ensures that TV band device manufacturers will incorporate this basic interference mitigation and spectrum efficiency mechanism into their design. Because the industry will likely go beyond 6 dB as a matter of good design practice, it is not necessary for the Commission to require greater than the 6 dB dynamic range.

¹¹ See *id.*, at para. 45.

3. *Spectrum Sharing*

In the FNPRM, the Commission requests comment regarding spectrum sharing.¹² CEA advises against any technical requirements intended to facilitate spectrum sharing among unlicensed devices. Instead, the FCC should leave any spectrum sharing initiatives in the hands of industry in order to promote market-based, efficient use of spectrum. Traditionally, industry has proven to be more facile in adopting self-regulatory standards that improve the spectrum efficiency versus government-mandated regulations. For example, IEEE 802.11 has successfully improved the available bandwidth from a few megabits per second to over 100 megabits per second. This rapid growth was made possible by technologies that were never envisioned by the FCC when rules were originally contemplated.

II. The Commission Must Engage in Rigorous Testing to Create a Sufficient Interference Protection Regime

CEA commends the Commission's commitment to engage in rigorous testing to ensure that the rules it adopts will afford sufficient protection for TV viewers and other users of authorized services in the TV bands. As this proceeding has unfolded over the last several years, CEA recognizes that the Commission has patiently awaited industry input before permitting new technologies to enter the white spaces arena. Under increasing pressure to move forward, CEA applauds the Commission for pursuing its own studies.¹³

With respect to the scope of devices under review, the Commission must test not only DTVs, but also NTSC TVs, as millions of viewers continue to rely on analog sets to receive over-the-air signals. Further, there are some services that will continue to transmit analog

¹² See *id.*, at para. 47.

¹³ See *Office of Engineering and Technology Invites Submittal of Prototype TV Band Devices For Testing*, Public Notice (rel. Dec. 21, 2006).

signals after the DTV transition date, including the low power television service.¹⁴ The Commission's proposal to subject the sensing capabilities of TV band devices to an ATSC DTV signal, an NTSC signal, and a 200 KHz FM signal is a sound approach for protecting the three incumbent, licensed services that use the TV bands.¹⁵ CEA has not reached a conclusion regarding the appropriate detection threshold for these signals.

A. Operation on Channels 14 through 20 and 2 through 4

CEA asserts that the use of fixed TV band devices on Channels 14-20 is appropriate, provided that the Commission adopts technical rules to prevent operations on these channels in the 13 metropolitan areas where public safety operations exist.¹⁶ On initial review, it appears that a combination of spectrum sensing and geo-location/database approaches could provide a reasonable solution to preventing operation of fixed TV band devices in these sensitive areas. This approach should be considered only in Channels 14 through 20 since prohibiting operation in these channels in all parts of the country would be unnecessarily restrictive.

The FNPRM asks whether to permit devices to operate on Channels 2 through 4, where TV interface devices such as VCRs, DVDs, cable and satellite boxes operate, and perhaps most importantly, digital-to-analog converter boxes that will be used by consumers as a result of our nationwide transition to digital television. The FNPRM properly recognizes that issues of direct pickup and shielding are of particular relevance to such devices. In these channels, it is especially important that the Commission consider the potential to cause interference in the installed base of analog TV receivers which may be receiving their content from a multi-channel video distributor, such as cable or satellite. CEA, therefore,

¹⁴ See First R&O and FNPRM, at para. 48.

¹⁵ The 200 KHz signal is used for devices licensed under C.F. R. Part 74, including wireless microphones.

¹⁶ See First R&O and FNPRM, at para. 56.

recommends against operation on Channels 2 through 4 until more data is available regarding the susceptibility of the combination of TV interface devices and TVs connected with consumer-grade coaxial cables.¹⁷

B. Certification by TCBs

CEA agrees with the Commission's proposal to disallow Telecommunication Certification Bodies (TCBs) from certifying TV band transmitters until more experience with TV band devices is gained.¹⁸

C. Identification Signals and Interference Remediation

In the original NPRM, the Commission proposed to require identification signals to enable parties to track down sources of interference.¹⁹ CEA believes that this issue has not been fully addressed in the current FNPRM. The rules should provide some means to identify and remedy possible harmful interference. Registration of fixed access base stations could provide a means to address actual cases of interference. While we have no specific proposals, we believe that the Commission should continue to examine this issue in a way that is productive for all parties.

IV. Conclusion

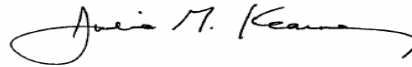
The Commission should proceed with adoption of operating and technical rules for unlicensed devices in the TV bands. Prompt action will pave the way for TV band devices to come to market. At the same time, the Commission should ensure that such devices do not cause interference to TV viewers and users of other authorized services.

¹⁷ See *id.*, at para. 57.

¹⁸ See *id.*, at para. 64.

¹⁹ See NPRM, at para. 22.

Respectfully submitted,



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January 31, 2007