

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
) MM Docket No. 02-380
Additional Spectrum for Unlicensed Devices)
Below 900 MHz and in the 3 GHz Band)

**COMMENTS OF THE
CONSUMER ELECTRONICS ASSOCIATION**

The Consumer Electronics Association (“CEA”) hereby submits comments on the Notice of Inquiry in the above-captioned proceeding (“NOI”). In this proceeding the Commission seeks public comment on the feasibility of authorizing unlicensed devices to operate on a non-interference basis in the TV broadcast and 3 GHz bands.¹ CEA’s comments are limited to permitting unlicensed devices to operate in the digital TV broadcast spectrum (channels 2-51).

INTRODUCTION

CEA represents a wide range of manufacturers and technologies, including the TV set manufacturers whose receivers operate in the spectrum at issue in this proceeding. We agree with the Commission’s conclusion that providing additional spectrum for new and innovative unlicensed Part 15 devices is a high priority,² but sharing in the TV bands must be addressed carefully to ensure that unlicensed devices do not interfere with broadcast TV reception.

¹ *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket No. 02-380, Notice of Inquiry, 17 FCC Rcd 25632 (2002).

² See Comments of CEA filed in ET Docket No. 02-135 on the Spectrum Policy Task Force’s Request for Public Comment on Issues Related to Commission’s Spectrum Policies, July 8, 2002; and on the Spectrum Policy Task Force Report, January 27, 2003.

Ensuring that TV broadcast reception is fully protected must be the primary objective in the Commission's consideration. Successful unlicensed use on a non-interference basis has yet to be demonstrated on this spectrum, but the potential exists and the subject deserves additional attention and study. As we discuss below, there are innovative potential uses for unlicensed devices, including some which are potentially synergistic with broadcast digital television ("DTV"), provided that no interference is caused to reception of the primary DTV signals.

Accordingly, the Commission should proceed to further consider sharing possibilities. In this process broadcasters and TV manufacturers should have a preeminent role in developing the standards and protocols that may be necessary to support unlicensed operation in the TV bands because of the risk of interference. CEA is willing to work in industry fora with the broadcast and other industries to develop and test devices using new and innovative sharing technologies that protect against interference with consumers' broadcast TV receivers.

BACKGROUND

The Consumer Electronics Association is the principal U.S. trade association of the consumer electronics and information technology industries. Our members design, manufacture, distribute and sell a wide range of consumer products that use the radio spectrum, including unlicensed devices such as Wi-Fi network devices that connect personal computers and laptops to peripheral devices and networks, cordless phones, baby monitors, and wireless headsets. Our members also design and manufacture digital and analog television receivers and monitors, videocassette recorders ("VCRs"), direct broadcast satellite radio ("DARS") and television ("DBS") equipment, broadcast AM and FM radios, and many similar devices. Consequently CEA is in the unique position of representing both the manufacturers of the consumer TV receivers that use the TV broadcast channels and manufacturers of the unlicensed devices that the Commission suggests might be permitted to operate on the same channels at locations and times when stations are not broadcasting.

CEA's more than 1,200 companies include all of this country's major consumer electronics manufacturers. CEA consistently participates in a wide variety of proceedings before the FCC that address products and services utilizing the radio frequency spectrum. Our members design and distribute large quantities of products that use the spectrum.

THE COMMISSION SHOULD SEEK WAYS TO SATISFY THE REQUIREMENTS FOR UNLICENSED SPECTRUM

One of the clearest recommendations in the Spectrum Policy Task Force Report ("Spectrum Report") was that more spectrum is needed for unlicensed devices to fuel innovative new uses that will benefit the American public. CEA endorsed the Spectrum Report's conclusion that additional spectrum should be identified and allocated for use by unlicensed devices and networks.

In its comments on the FCC staff's recommendations in the Spectrum Report CEA recommended that the Commission consider the benefits of providing clear spectrum for unlicensed devices -- spectrum that is not already intensely occupied by other operations.³ Small bands of clear unlicensed spectrum exist at 1.910-1.930 and 2.390-2.400 GHz, but these bands are too narrow to accommodate today's common technologies for unlicensed broadband network devices. The Commission has not initiated a proceeding to consider relatively clear spectrum for unlicensed uses, but we note that legislation pending in Congress seeks to clarify that spectrum reallocated from government operations to the commercial sector may be designated by the FCC for unlicensed devices notwithstanding requirements to reimburse government agencies for their relocation costs.⁴

In this proceeding the Commission seeks to determine the feasibility of sharing the TV broadcast spectrum. We believe that there is capacity within these bands that could be tapped if

³ *Id.*

⁴ H.R. 1396, 108th Cong., 1st Sess. (2003).

unlicensed devices are built with new technologies appropriate for preventing interference. As discussed in the record of the Commission's Spectrum Policy Task Force,⁵ the combined effect of the Commission's TV allotment policies and configuration of broadcast station coverage areas results in significant unused spectrum capacity within the broadcast TV band. This capacity cannot be used by additional full-power TV broadcast stations, but with appropriate technologies to protect TV reception, it could be utilized productively by low power devices and, particularly in rural areas, to provide higher-power point-to-point and point-to-multipoint digital connections.

The radio frequency environment is substantially different in the broadcast TV bands from that in other bands on which unlicensed devices currently operate. Therefore the Commission should encourage the development of unlicensed devices with appropriate capabilities to prevent harmful interference to the broadcast TV service and permit their operation within the TV channels only with approved interference avoidance technology.

**PROTECTING VIEWERS' RECEPTION OF BROADCAST TELEVISION SIGNALS
MUST BE GIVEN PRIORITY**

We emphasize that the Commission must continue to protect reception of all existing and future broadcast signals if it permits access to the TV broadcast spectrum for some unlicensed devices. Millions of consumers rely on over-the-air broadcast television programming for news and emergency information in addition to entertainment. Reception of TV broadcast channels – currently analog and digital in channels 2-69, which will become digital-only in channels 2-51 after completion of the digital transition – must be protected from interference from unlicensed signals. Technical study, concrete designs and tested hardware are necessary for sharing to be deemed feasible and any unwanted collateral effects of sharing to be minimized. Means to protect against interference must include consideration of the many millions of analog and digital television receivers that are in use in consumers' homes.

⁵ See *Spectrum Policy Task Force Report*, ET Docket No. 02-135.

The Commission's protections must extend to the reception of secondary as well as primary broadcast operations. The protections should include reception of full-power broadcast stations; satellite stations; Class A stations; low power stations; translators; and booster stations. Also, continued regulatory protection should be extended to the commercial and private systems operating on selected TV channels 14-20 in specific urban areas; and the Commission's ban on channel 37 operations should be continued to protect radio astronomy and medical telemetry uses. Finally, channels 2, 3 & 4 should be excluded to protect against interference on the inputs to many devices connected to home television receivers.

The Commission seeks comment on the feasibility of authorizing unlicensed devices to operate in the TV broadcast spectrum at locations and times when the spectrum is not otherwise being used. We strongly support additional spectrum for unlicensed devices, but we also recognize that the technical and incumbency issues for broadcast TV spectrum are significantly different from those of the other primary unlicensed bands at 900 MHz and 2.4 and 5 GHz. There exist unique technical challenges to sharing the broadcast TV spectrum that are not insuperable, but which must be carefully studied and resolved before unlicensed devices and operations are allowed to commence.

TV broadcasts are transmitted on a point-to-multipoint basis. A high power transmitter is used to reach receivers in consumers' homes and businesses that are located throughout a station's service area. TV receivers can be and are everywhere in the surrounding communities. This "distribution architecture" for broadcast programs is highly efficient for delivering multiple channels of programming and data to every home and person within a wide service area. Service areas typically are circular with a radius of 55 or more miles for a full power broadcast station (the "Grade B" reception contour). The television sets that consumers use to receive the signals are designed and distributed by highly efficient means in the competitive consumer marketplace.

This broadcast architecture results in many variables on the receiving end, however, which results in it being potentially difficult for wireless devices to protect broadcast reception. Receiving devices are not located in known locations. They are everywhere, and can be moved from point to point. The interference potential of unlicensed transmitters is a function of the transmitters' radiated power and physical location as related to a broadcast receiver or its antenna. Interference is created when the undesired signal reaches a certain level as compared with the desired signal, and physical proximity is an important factor in this relationship. Therefore any protection must assume that the receivers can be extremely close to the unlicensed devices and rely upon known characteristics of the transmitted signal as well as the technical characteristics of the receivers.

Accordingly, while there is capacity within the TV broadcast spectrum for certain kinds of unlicensed devices, the radio frequency environment is substantially different in these bands from that in other bands on which unlicensed devices currently operate. Technologies and devices capable of sharing of the broadcast TV bands are yet to be defined, documented and tested. Such technologies must be developed and shown to work in devices to ensure the public's continued access to broadcast news and entertainment programming. Therefore the Commission should encourage the development of unlicensed devices with appropriate capabilities to prevent harmful interference to the broadcast TV service and permit their operation within the TV channels only with approved interference avoidance technology.

In this process broadcasters and TV manufacturers should have a preeminent role in developing the standards and protocols that may be necessary to support unlicensed operation in the TV bands because of the risk of interference. Broadcasters and TV set manufacturers have the relevant expertise to protect against interference. The consumer electronics industry and broadcasters have a long history of working out difficult technical details in CEA's engineering

committees such as R-4, and joint work on interference avoidance requirements could be addressed there.

ACCESS TO UNUSED TV BROADCAST SPECTRUM ON A NON-INTERFERENCE BASIS WILL PROVIDE NEEDED SERVICES TO THE PUBLIC

If the Commission allows unlicensed use of vacant TV channels it could provide a win-win for broadcasters, TV manufacturers, and new 700 MHz licensees by enabling and providing support for new services, including some which are complementary to DTV. For example, CEA is eager to explore the technical feasibility of services such as interactivity through a return path for broadcast stations or wireless video program home distribution.

Fostering new and innovative systems could further the goals of the Commission by enhancing the functionality of digital broadcast stations and thereby likely accelerate the transition to DTV. Consumers, broadcasters, and manufacturers all would benefit directly from the increased functionality, and acceleration would result in the 700 MHz spectrum (channels 52-69) becoming fully available to new licensees at an earlier date.

CONCLUSION

While the Commission staff correctly identified underutilization of broadcast spectrum in its Spectrum Policy Task Force Report, using this spectrum for unlicensed devices as suggested by the Commission in this proceeding will require the development and implementation in unlicensed devices of innovative technologies to ensure that reception by consumers of broadcast stations is not impaired. Ensuring that TV broadcast reception is fully protected must be the primary objective. While successful unlicensed use on a non-interference basis has yet to be demonstrated, the potential exists and the subject deserves additional attention and study. There are innovative potential uses for unlicensed devices that could foster new functionalities for broadcast DTV in particular, provided that no interference is caused to reception of the DTV broadcast signals.

Accordingly, the Commission should proceed to further consider sharing possibilities and encourage the affected industries to consider how to accomplish the task. CEA and its many and diverse member companies are willing to work in industry fora with the broadcast and other industries to develop and test devices using new and innovative sharing technologies.

Respectfully Submitted,



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