

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

ORIGINAL

In the Matter of)
)
Amendment of Parts 2, 15, and 97) ET Docket No. 94-124
of the Commission's Rules to Permit) RM-8308
Use of Radio Frequencies Above 40 GHz)
for New Radio Applications)

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

OPPOSITION OF THE MILLIMETER WAVE
COMMUNICATIONS WORKING GROUP
TO PETITION FOR RECONSIDERATION

The Millimeter Wave Communications Working Group ("MWCWG"),¹ by its attorneys, hereby opposes the Petition of Reconsideration for the Third Report and Order (the "Petition") filed by Harmonix Corporation on August 20, 1998.²

I. HARMONIX HAS MISINTERPRETED THE RULES THAT IT IS CHALLENGING.

In its Petition, Harmonix confuses two distinct rules governing operation in the 59-64 GHz unlicensed band. The first — the "transmitter ID" rule — requires each transmitter operating in the 59.05-64.0 GHz band with a peak output power of 0.1 mW or greater, or with a peak power density equal to or greater than 3 nW/cm², periodically to transmit a "transmitter ID" containing the device's FCC ID number, its serial number, and a user-definable field of up to 24 bytes of information. The second — the "coordination channel" requirement — reserves a small portion of the 60 GHz unlicensed band, from 59.0-59.05 GHz, and provides that this slice of spectrum may be used exclusively for transmissions designed to help to

¹ The Millimeter Wave Communications Working Group is an industry group formed in response to the Commission's decision in the First Report and Order and Second Notice of Proposed Rule Making in this proceeding. 11 FCC Rcd 4481 (1995). Member entities are: Hughes Research, Apple Computer, Sun Microsystems, Hewlett-Packard Co., Motorola, Metricom, Rockwell International and Eaton Division of Cutler Hammer.

² On September 14, 1998, New England Digital Distribution submitted a letter to the Commission in which it also sought reconsideration of certain rules adopted in this proceeding on grounds that are essentially identical to those raised by Harmonix. If the Commission decides to accept this late-filed petition, HP also opposes it for the reasons stated herein.

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mitigate or eliminate interference.³ As a result of its confusion, Harmonix challenges the technical rules for the 59-64 GHz band in ways that are completely misplaced.⁴

According to Harmonix, the transmitter ID and coordination channel requirements impose unnecessary costs on products that do not operate with multiple transmitters because: (i) these products do not need a coordination channel to prevent interference; (ii) if the product uses a frequency far apart from the coordination channel frequencies, it must add a second transmitter to meet the transmitter ID requirement; and (iii) the transmitter ID would not solve any interference problem that exists unless “a publicly known standardized methodology for modulation, demodulation, access, and conflict resolution in the coordination channel is established.”⁵ Each of these assertions is incorrect.

As to Harmonix’s first claim, the transmitter ID and coordination channel requirements are intended to help resolve interference across networks and across different manufacturers’ products — not, as Harmonix assumes, to resolve interference within a single network. As a result, the fact that a given product or network installation does not involve multiple transmitters in no way negates the need for these tools.

Harmonix’s second point is equally in error. Not only do the rules not require a manufacturer to include a coordination channel transmitter in its product, they affirmatively prohibit products from transmitting in the coordination channel (other than to develop and, ultimately, implement coordination methods). The transmitter ID needs to be transmitted only on the frequencies being used for communications purposes; as a result, it requires no additional transmitter to be included in a device.

³ A consensus method for using the coordination channel has not yet been developed and, therefore, at this time the coordination channel is being used solely to test alternative methods.

⁴ Harmonix also misunderstands the meaning of the term “diverse transmitters” and, therefore, misapprehends the reason for adopting the transmitter ID and coordination channel requirements. See Petition at 2. Harmonix apparently believes the term “diverse transmitters” means multiple transmitters within a single network. In actuality, as the MWCWG’s proposed etiquette made clear, the term means non-interoperable transmitters: *i.e.*, transmitters in different networks involving different end users and/or different manufacturers’ products.

⁵ Petition at 2.

As to Harmonix's third point, the rules require each application for certification to specify how interested parties can obtain sufficient information, at no cost, to enable them to detect fully and decode the transmitter ID information. Using this information, an entity experiencing interference can decode the interfering signal's transmitter ID and identify the source of the interference. The specific means for resolving the interference problem would be determined by the parties involved in the conflict. Under this model, there is no need for a "publicly known standardized methodology for modulation, demodulation, access, and conflict resolution in the coordination channel."

Harmonix also underestimates the interference potential of a "focused" point-to-point transmitter. While the MWCWG agrees that the inherent characteristics of the 59-64 GHz band improve the likelihood of successful sharing among users of unlicensed technologies, interference may arise in discrete cases. In some cases, this may involve a wide beam width antenna; in others, however, it may involve a focused transmitter. For example, a point-to-point transmitter with an output power of 0.1 mW or greater that is proximate to another network's receiver(s) and is radiating directly into those receiver(s) could cause objectionable interference. The Commission, therefore, should not adopt any new exemption for transmitters with "controlled power" or for point-to-point "focused" transmitters, as Harmonix suggested.

II. HARMONIX HAD AMPLE NOTICE OF THE TRANSMITTER ID AND COORDINATION CHANNEL REQUIREMENTS AND SHOULD NOT BE ALLOWED TO CHALLENGE THEM AT THE "ELEVENTH HOUR."

If a manufacturer integrates the transmitter ID and coordination channel rules into its product design at an early stage, it can do so with little or no cost or delay. Compliance with the coordination channel rule requires only that a manufacturer avoid using certain frequencies; compliance with the transmitter ID requirement requires only that a manufacturer integrate into the product the ability regularly to transmit, on the device's working frequencies, a very brief set of characters.

Harmonix had ample notice of these requirements and, hence, could have integrated them in its product planning process. More fundamentally,

it could have participated in the rules' development or raised its concerns before the Commission long before the date on which it filed its Petition. Its failure to participate in this proceeding prior to now does not justify abandoning two important tools for promoting spectrum sharing within the 59-64 GHz band.

The Commission made clear as early as 1995 that it seriously was considering adopting a spectrum etiquette for the 59-64 GHz band.⁶ In so doing, it put all manufacturers on notice that they might be required to comply with technical rules designed to promote sharing. Over the course of the following year, the MWCWG was formed and held its deliberations. Each of its meetings was open to all potentially affected parties, and information regarding its deliberations was maintained on a publicly-accessible website. Furthermore, announcements of the formation of the MWCWG and its activities were sent to all relevant trade press, and stories were published in such publications. Like other manufacturers, Harmonix had the opportunity to monitor and, at its option, to participate in the MWCWG's deliberations.

Harmonix also had more than 1 1/2 years' notice of the specific contents of the transmitter ID and coordination channel rules. The MWCWG submitted its proposed etiquette — which included these two rules — to the Commission on December 13, 1996, and the Commission placed that etiquette on public notice on February 10, 1997.⁷ By early 1997, then, Harmonix not only had effective notice that the Commission was considering adopting these rules but also had the opportunity to raise any concerns it had directly with the Commission.

On August 14, 1997, the Commission gave Harmonix yet another opportunity to make itself aware of the rules and publicly to state any objections to them. On that date, the Commission released its Fourth Notice of Proposed Rulemaking in this proceeding, in which it proposed to adopt the MWCWG's etiquette, and a Memorandum Opinion and Order, in which it permitted the operation of authorized unlicensed devices in the 60 GHz band on an interim basis, subject to compliance with the proposed spectrum

⁶ See First Report and Order and Second Notice of Proposed Rule Making, *supra* n.1.

⁷ Public Notice, "Commission Receives Industry Spectrum Etiquette Proposal for Unlicensed Operations Above 40 GHz," DA 97-288 (Feb. 10, 1997).

etiquette.⁸ In the Fourth Notice, the Commission expressly warned all parties that permanent operation in the band would be subject to compliance with the final spectrum etiquette.

By the time Harmonix filed its Petition, it had been on notice for at least one year — and arguably for much longer — that it might have to comply with the transmitter ID and coordination channel requirements. Harmonix's apparent failure to consider the transmitter ID and coordination channel rules in a timely fashion should not be remedied by the Commission's abandoning two tools that promise to mitigate interference problems in the millimeter wave bands.

The existence of a transmitter ID will make it possible for those using unlicensed 60 GHz devices to identify all other 60 GHz devices operating within interference range and, thereby, to plan their deployments in a manner that minimizes the risk of harmful interference. In addition, it will help users to identify the source of harmful interference when such interference occurs and, thereby, increase their capacity to resolve inconsistent spectrum uses. In this manner, the transmitter ID will promote efficient use of the 60 GHz band and increase the robustness and reliability of 60 GHz devices. Its importance will increase over time, as the 60 GHz band becomes more heavily occupied.

The coordination channel offers a somewhat longer-term promise for using technology to mitigate interference among unlicensed devices. If affected parties are able to develop a consensus means for controlling emissions across unrelated networks and products, the capabilities of the 59-64 GHz band would dramatically increase.

⁸ Memorandum Opinion and Order and Fourth Notice of Proposed Rule Making, ET Docket No. 94-124, 12 FCC Rcd 12212, ¶¶ 4, 23-26 (1997).

CONCLUSION

Harmonix misunderstands the requirements and purposes of the transmitter ID and coordination channel requirements. Based upon its misunderstanding, it has come in at the eleventh hour to suggest changes to these important requirements. Not only are its proposed changes unwarranted, they are untimely and should be rejected by the Commission.

Respectfully submitted,

MILLIMETER WAVE COMMUNICATIONS
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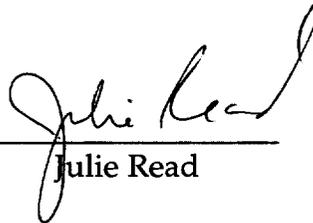
February 22, 1999

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Opposition was sent by first-class mail, postage prepaid, this 22nd day of February, 1999, to each of the following:

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