

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

In the Matter of)	
)	
Revision of the Commission's Rules Regarding)	ET Docket No. 07-113
Operation in the 57-64 GHz Band)	RM-11104

COMMENTS OF CISCO SYSTEMS, INC.

In a Notice of Proposed Rulemaking in the above-captioned docket, the Federal Communications Commission granted a rulemaking petition from the Wireless Communications Association (“WCA”), and sought comment on WCA’s proposals to modify the rules for this unlicensed spectrum. The WCA proposes, among other things, to increase the radiated emission limit for transmitters operating with very high gain antennas. As stated in the Notice, the proposed rule changes are intended to allow manufacturers to offer equipment supporting high speed millimeter wave point-to-point connectivity similar to that available in the 70/80/90 GHz bands, but on an unlicensed basis. Cisco Systems, Inc. (“Cisco”) is concerned that the proposed changes, if applied throughout the band, will result in a set of rules at odds with the ongoing development of open standards-based lower power technology. Cisco urges the Commission not to dedicate the entire seven gigahertz of spectrum to the specific purpose proposed by the WCA, to consider the work of multiple standards bodies in its deliberations, to limit the high EIRP use of the band to outdoor use with rooftop installations, and/or consider the views of IEEE 802.15, which has proposed a transmit power control capability for the high EIRP transmitters.

The most salient fact about the 57 – 64 GHz band is that the band is available globally for unlicensed devices. The world's leading spectrum regulators have set aside a significant amount of spectrum in the frequency range of 56 – 66 GHz, creating an opportunity for development of technologies that could be marketed globally. While the allocation varies slightly by country, the U.S., Canada, Europe, Japan and Australia are examples of countries with significant unlicensed designations in this band. While power limits are generally low, the availability of seven gigahertz (or more) of bandwidth will allow technology to rely on much wider channelization than is typical in lower bands. But the spectrum is subject to the same physical constraints as the 70/80/90 GHz band in that oxygen and water vapor limit the range signals can successfully be received.

Nevertheless, the presence of a potentially global footprint for a technology that could work within the physical constraints of the band has drawn the attention of hundreds of manufacturers globally who are today embarked in multiple discussions around the development of standards for this band. Their goal is to create an ecosystem of manufacturers supporting an open standards-based technology that can be marketed globally to hundreds of millions of end users. Cisco believes that this is a goal the Commission should share.

Cisco has no crystal ball that would allow us to predict with any measure of accuracy what type of standards-based technology could eventually succeed in this band, or what rule modifications might be required to support it. What we can say is that

many of the world's largest manufacturers of information technology, particularly of consumer products, are actively engaged in discussions about standards. Those conversations are at various stages of completion, from "early days" reviews to determine whether significant support exists to proceed with a standard, to the actual drafting of standards with timetables for completion in 2008 and 2009.

Significantly, the success of the technology developed under these future standards could well be incompatible with the high EIRP millimeter wave use that would be enabled by WCA's proposed rule changes. Of greatest concern is the proposal to allow the high EIRP devices to operate indoors "pointed through a window," although the high EIRP use generally may prove problematic to lower power "personal area network" systems that are the subject of a significant discussion in standards groups.

Cisco would like to direct the Commission's attention to the following five standards groups that are today working on specifications for 60 GHz systems. Cisco is not a member of all these groups, and the Commission should refer to their websites for additional information. But we offer these as a way of demonstrating that the global manufacturing community has embarked on a discussion for a standards-based approach to this band. The result may be that different standards-based systems co-exist in this spectrum, or it may be that one standard predominates in the market.

1. Geneva-based ECMA International has a Technical Committee currently writing standards for 60 GHz. The Committee, including members from Sony Corporation (Sony), Intel, Phillips, Matsushita Electric Industrial Co., Ltd. (Panasonic) and Samsung Electronics Co, LTD (Samsung), is working toward a

- standard that they believe could transmit data at a rate up to 10 gigabits per second a distance of 10 meters. www.ecma-international.org
2. IEEE™ 802.15.3c is an 802 task group formed to proceed toward an 802.15 standard for 60 GHz. This group has already been separately represented in this docket. The 802.15 membership numbers approximately 143 voters, of which over 30 attended the last meeting of the 3c task group. The membership is worldwide and includes some of the world's largest manufacturers of information technology and consumer electronics. The material produced by the group thus far indicates that members are thinking in terms of a 1 gigabit per second offering of consumer multimedia in a wireless "personal area network."
<http://www.ieee802.org/15/pub/TG3c.html>
 3. IEEE™ 802.11 has also formed the "Very High Throughput" study group to evaluate interest among .11 manufacturers. The 60 GHz band is among the candidate bands under discussion, as the group works toward a goal statement needed to support transitioning the group from a study group to a task group. Among the manufacturers participating in this group are Cisco, Intel, Motorola, Samsung and Nortel. Minutes of this group's meetings can be accessed at:
<http://grouper.ieee.org/groups/802/11/>
 4. In Europe, ETSI's Broadband Radio Access Networks (BRAN) group is evaluating 60 GHz, looking at multiple gigabit per second wireless personal area networks. Among the members of this group are Cisco, Motorola, SiBEAM, Intel and OFCOM.
http://webapp.etsi.org/WorkProgram/Report_WorkItem.asp?WKI_ID=25753
 5. The WirelessHD group -- LG Electronics Inc., Panasonic, NEC Corporation, Samsung, SiBEAM, Inc., Sony and Toshiba Corporation – is working on a 60 GHz standard in furtherance of their stated goal to define a specification for the next generation wireless digital network interface specification for consumer electronics products. Specifically, WirelessHD wants to enable wireless connectivity for streaming high-definition content between source devices and high-definition displays. <http://www.wirelesshd.org/news/news.html>

In terms of timing, the IEEE 802.15 task group is on a timeline to complete work on a standard by the end of December 2009, while the Very High Throughput study group operates pursuant to a six month deadline. After that time, if there is sufficient interest, 802 will assign the development of a Very High Throughput standard to a task group. The ECMA process is already underway, with a standard under development by a technical committee (TC 32) and task group (TG 20). The ETSI group began work in

April. The WirelessHD initiative was announced in 2006 with a goal completion date of 2007.

In considering the WCA's proposed rules for 60 GHz, the Commission should at a minimum consider the work of these standards groups, and, to the extent possible, not foreclose the development of open standards-based broadband systems for the band. The community of interest represented by the four standards initiatives described above is large, transparent, and worldwide in scope. It would be unfortunate if changes to the US rules in 2007, made at the behest of some portion of WCA's members, dampened the opportunity for US consumers to take advantage of future technology that will eventually be developed and deployed on a global basis.

In addition to taking the standards work into account, the Commission should also consider the likely uses of the band if the rules are adjusted in the manner that WCA suggests. When it initially proposed the rule for a high EIRP with a highly directionalized antenna, WCA presented the idea as one that could support an alternative DSL or cable modem platform. This would suggest placement of transceivers in the windows of residential households. The absence of service provider support for this notion, which has been on file since 2004, speaks volumes about whether that identified use is desirable. In the Notice, the Commission focused more on enterprise use, and specifically use by enterprises who are unable to afford the investment in 70/80/90 GHz technology which provides interference protection. In sum, the proposal would now seem directed at a subset of the enterprise market that cannot afford the interference

protection that 70/80/90 GHz affords, but who nevertheless have a need to transmit high speed data over distances of about a mile. While there may be some demand for this type of service, there is not much information in the record to date to allow the Commission to act with the full confidence that use of the band will substantially intensify. Without that information, the Commission should proceed with caution.

In Cisco's view, the developments in the band worldwide, the standards activities now ongoing, and the probable market conditions for a high speed enterprise data service with no interference protection do not support a full embrace of the WCA position. The Commission should be more concerned with the ability of the US market to participate in the worldwide market that will develop as the standards bodies reach decisions, and as technology is developed. To the extent the Commission finds it desirable to move forward on the WCA's proposal, it may wish to proceed conservatively at first in order to allow time for the future evaluation of the standards activities and the size and robustness of the market for no-interference-protection enterprise data connectivity. Possible alternatives the Commission should consider are limiting the higher EIRP rule to a portion of the band for now, allowing higher EIRP only for outdoor and rooftop installations, and/or adoption of the transmit power control rule suggested by 802.15.¹ Cisco's only concern is that the Commission action now, in response to the WCA, should

¹ Cisco also notes that the elimination of the identification requirement, and the absence of a registration requirement of the type found in the 70/80/90 GHz band, will make the future co-existence exercise more difficult.

not foreclose future standards-based opportunities for the use of the band by low power devices, a market which is capable of producing hundreds of millions of devices worldwide and supporting a large and competitive ecosystem of vendors.

Respectfully submitted,

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