Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Modification of Parts 2 and 15 of the	)	
Commission's Rules for unlicensed	)	ET Docket No. 03-201
devices and equipment approval	)	
	)	

COMMENTS OF THE BLUETOOTH SIG

The Bluetooth SIG, Inc., representing over 2400 companies participating in the development, manufacture or sale of Bluetooth-enabled devices, appreciates this opportunity to comment on the Commission's request for a review of Modification of Parts 2 and 15 of the Commission's Rules for unlicensed devices and equipment approval. The Bluetooth Special Interest Group (SIG) is a trade association comprised of leaders in the telecommunications, computing, automotive, industrial automation and network industries that is driving the development of Bluetooth wireless technology, a low cost short-range wireless specification for connecting mobile devices and bringing them to market. This Commission's continuing commitment to facilitating innovation and eliminating regulatory barriers is in no small way responsible for the increasingly important role that unlicensed devices play in the lives of individuals and American businesses. The Bluetooth SIG asks only that the Commission continue to facilitate innovation in the future as it has in the past.

In this proceeding, the Bluetooth SIG urges the Commission to remove the limitation of 15.247 (a) (1) in section 12 which stipulates that the systems shall employ fewer than 75 hopping channels.

Such a limitation would prevent backwards compatibility between next generation Bluetooth devices and those presently on the market, which cannot use less than 79 hopping frequencies and may be sharing a multi-device piconet with next generation devices.

Furthermore, we do not believe that there is value in limiting the maximum number of hopping channels for the purpose of reducing the interference potential of the system, as we explain in section II.

I. The Bluetooth SIG and the Bluetooth Standard

The Bluetooth SIG is an association of companies that oversees the development of the Bluetooth standard. It is sponsored by Agere, Ericsson, IBM, Intel, Microsoft, Motorola, Nokia, and Toshiba, and has more than 2,400 other member companies. The Bluetooth SIG oversees standards development committees, standards compliance testing, and global promotion of the standard.

The existing Bluetooth communications standard enables the low-cost, low-power wireless transmission of data and voice packets at speeds up to 1 Mbps, and at distances ranging from ½ a meter to 100 meters. Bluetooth enabled devices are now being sold in enormous quantities all across the globe. The technology is used for wireless connections between mobile phones, headsets, and speakerphones for greater safety and convenience while driving. It is used for cordless connections between computers and printers, and wireless networking from laptops to the Internet via a cell phone or access point. It is also being used for synchronizing a variety of communications devices such as PDAs and smart-phones.

II. Hopping Channels

Section 30 of the NPRM states the following:

> *"We tentatively conclude that an output power limit of no more than 125 mW is also appropriate for those systems that use more narrowly spaced channels than currently permitted. In line with previous Commission findings, we believe that this restriction will ensure that systems using the narrow-spaced, slightly wider hopping channels will not overcrowd the 2.4 GHz band with relatively high-power emissions."*

We agree with these conclusions. However, the draft change to the text for 15.247 (a) (1) in section 12 is as follows:

> *"Frequency hopping systems in the 2.4 GHz band may have hopping channel carrier frequencies separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems employ fewer than 75 hopping channels and operate with an output power no greater than 125 mW."*

Our experience shows there would be no value in limiting the maximum number of hopping channels to 74 ("fewer than 75") rather than 79. Indeed, a larger maximum number of hopping channels provides greater flexibility to minimize the interference with other systems. For example in the presence of another frequency hopping system it is preferable to use the maximum number of hopping channels because this reduces the probability of both systems transmitting on the same or similar frequency at the same time. However, in the presence of a non-frequency hopping system it is preferable to use a reduced set of hopping channels to avoid those frequencies used by the non-hopping system (using the adaptive frequency hopping feature of next generation Bluetooth devices).

We note that the current generation Bluetooth system uses up to 79 hopping channels. For reasons of backwards compatibility the next generation Bluetooth system will use the same hopping pattern and thus the same initial number of channels as the current generation Bluetooth system. This allows current and next generation Bluetooth devices to co-exist on the same Bluetooth network and also allows the modulation method to be selected on a packet by packet basis to optimize link performance and spectral occupancy (i.e. by sending data at a higher bit-rate when the channel and devices permit that, less 'air-time' is consumed thus potentially reducing interference to other users of the band). Limiting devices to fewer than 75 hopping channels would prevent the backward compatibility between next generation Bluetooth devices and Bluetooth devices presently on the market.

We also note that since revision 1.2 of the Bluetooth communications standard has been released recently, the adaptive hopping scheme is becoming more prevalent, enabling the automatic reduction in the number of hopping channels in accordance with available bandwidth. This feature will work with the next generation higher-rate devices as well and will ensure that they reduce their spectral occupancy adaptively to avoid other users of the spectrum such as 802.11b and 802.11g WLAN systems. It is only for the sake of interoperability with Bluetooth 1.1 devices, which will gradually phase out, that the initial number of frequencies must be set at 79.

Therefore, we propose the following change to the draft text:

"Frequency hopping systems in the 2.4 GHz band shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW."

Our experience and studies show that this would have no adverse impact on interference between systems and would allow a Bluetooth system operating with the next generation Bluetooth modulation scheme to use the same number of hopping channels as current generation Bluetooth systems, thereby enabling their targeted interoperability.

III. Laboratory Approvals

Regarding the Commission's proposal that test laboratories be re-evaluated every two years, the Bluetooth SIG agrees. We welcome this move to harmonize requirements worldwide.

IV. Importation Conditions

The Bluetooth SIG supports the request made by the Hewlett Packard Company relaxing the importation conditions for pre-approval importation of prototype products.

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Respectfully submitted, January 23, 2004

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