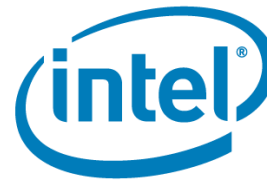


Vijay Auluck  
Intel Corporation  
March 30, 2010



**Intel Corporation comments on the Proposed Regulatory Framework for 60GHz  
Frequency Band in Singapore**

**Ref :** IDA Consultation Paper on 60GHz

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**Introduction**

Intel Corporation® (Intel) welcomes the opportunity to respond to this Consultation to ascertain potential future demand for 60GHz Radio Spectrum Frequencies in Singapore. If our comments are unclear in any area or if additional information is required, we would be pleased to provide the necessary clarification or additional information.

Intel Corporation is the world's largest semiconductor manufacturer and a leader in technical innovation. Intel is also a leading manufacturer of communications and networking chips and equipment.

Intel's comments are contained in the subsequent pages.

Best Regards

Vijay Auluck  
Spectrum Policy Manager  
Global Public Policy Group



### **Intel's General Comments:**

Intel commends IDA Singapore for efforts to accelerate the ICT development in Singapore. Intel supports the development of broadband and Internet access in all countries.

We hope that the below comments would be helpful in formulating your regulatory framework for the 60GHz spectrum band. We would strongly encourage administrations to establish technology and service neutral policies and permit compliance to global standards.

### **Broadband is key for competitiveness and economic growth and any delay of broadband spectrum licensing results in economical loss.**

It is important to provide consumers with access to the benefits of innovation, competition and capable new wireless broadband technologies which are commercially available today.

With respect to this consultation, Intel supports the 57-66GHz spectrum allocation for WPAN use on an unlicensed basis where unlicensed devices may be deployed, and applauds IDA for considering related technical rules consistent with many of the other countries. Intel's interest in this spectrum is primarily for short range indoor use, therefore we would like to limit our comments to questions relevant to WPAN/WLAN only.

### **Intel's Responses to Questions**

#### **PART II: ALLOCATION IN THE 60 GHz FREQUENCY BAND**

*Question 1: IDA invites views and comments on the compatibility report for ITS and Fixed Services to operate in the same frequency band, 63-64 GHz.*

Intel has no comment.

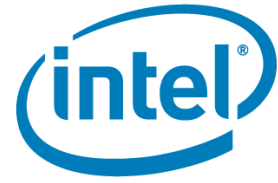
*Question 2: IDA invites views and comments on whether 63-66 GHz frequency band should be opened up for high power fixed wireless services.*

Intel has no comment.

*Question 3: IDA invites views and comments on IDA's proposed frequency bands to be allocated for operations of both low radiation and high radiation equipment. IDA also invites views and comments on a 100 MHz guard band at each end of the band to safeguard operations of other services in the adjacent channels.*

Intel welcomes IDA's proposal to allocate the frequency band 57-66GHz for Wireless Personal Area Network (WPAN) use for low radiation operation. This allocation is same or similar to the allocations made by other countries, and would help greatly towards international harmonization of the spectrum.

Intel, however, discourages use of guard bands in this spectrum primarily because it would result in the loss of valuable spectrum, and it would also make international harmonization more difficult. We would, therefore, recommend that IDA allocation be consistent with allocations from other countries and regions such as the EU, U.S.A., Canada, and Korea. Services in the adjacent



channels may be protected by establishing OOB and unwanted emission limits similar to those in other countries.

*Question 4: IDA invites views and comments on the above two options for IDA to adopt for the channel plan.*

Intel has no comment.

*Question 5: IDA invites views and comments on IDA's preferred channel plan (Option 1).*

We encourage IDA to adopt policies that are technology and service neutral with maximum flexibility.

*Question 6: IDA invites views and comments on IDA's proposed technical framework on RF output power and key requirements for the deployment of multi-gigabit wireless technology in the 60 GHz band.*

Intel recommends adoption of a single power at 40dBm EIRP with a maximum mean EIRP density 13 dBm/MHz for WPAN/WLAN use.

It will be difficult to enforce two different power levels for the equipment that is intended for the same or similar application, and will likely cause confusion in the market.

Our WPAN vision is the development of wireless solutions that provide sufficient bandwidth to enable very high throughput wireless computing and visualisation including, but not limited to, transfer of high definition video and large data streams using personal computing and consumer electronic devices within or between rooms at gigabit per second rates.

*Question 7: IDA invites views and comments on whether there should be a limit cap on the RF output power for high radiated power Fixed Services and whether there are potential health concerns for high radiation equipment.*

Intel has no comment.

*Question 8: IDA invites views and comments on IDA's proposal to exempt low-radiated power devices ( $\leq 40$ dBm EIRP) from licensing.*

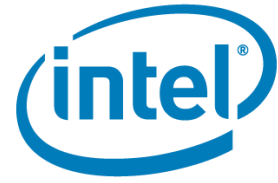
Intel agrees with and supports IDA proposal.

*Question 9: IDA invites views and comments on IDA's preference for a full licensing approach for high radiation equipment ( $> 40$ dBm EIRP) operating in this band.*

Intel has no comment.

*Question 10: IDA invites views and comments on the safety aspects of operation of 60 GHz wireless systems and what guidelines must be established to protect individual users.*

Intel is committed to the safe use of its products and supports the use of international safety



standards that establish limits on electromagnetic Field (EMF) exposure for the public and occupational workers. To ensure a consistent approach to safety, Intel urges countries to adopt guidelines that are consistent and harmonized with the other major EMF safety guidelines in use and adopted by many countries throughout the world.

The two standards most prominently used today – one developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the other established by the US Federal Communications Commission are preeminent examples of standards operating within a harmonized framework. Both standards contain EMF exposure limits with a substantial margin of safety derived from the large body of scientific research on RF and health, and are periodically reviewed incorporating the latest information available. ICNIRP is a non-governmental agency and comprised of government scientists and academic scholars. The FCC RF exposure requirements are derived from the standards developed by the Institute of Electrical and Electronics Engineers (IEEE) and the National Council on Radiation Protection (NCRP) and in consultation with government health organizations (EPA, FDA, and NIOSH).

Similar to other wireless radio transmitters, 60GHz radios must comply with the RF safety rules adopted by governments using either ICNIRP or FCC based rules. Intel undertakes a rigorous testing process to ensure its products comply with the international EMF safety standards and strongly urges IDA to expand its use of ICNIRP guidelines to include 60 GHz.