

Comments to Second Public Consultation on 5G Mobile Services and Networks

18-June-2019



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CLOPTech is a A*STAR spin-off company, founded in 2015, supported by National Research Foundation and Enterprise Singapore, focusing on 60GHz wireless design and solution business. It has licensed A*STAR technology and created a fabless IC design company, producing 60GHz IC to global suppliers for 60GHz network equipment.

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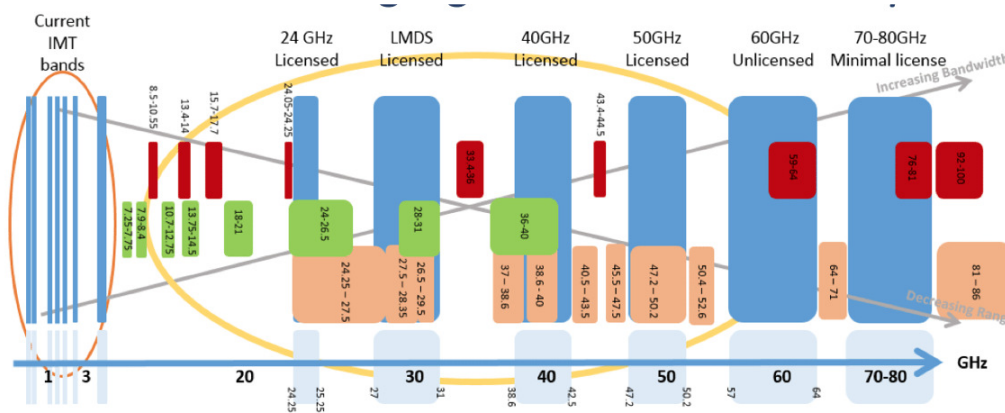
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1. SUMMARY

5G development and deployment is a big leap in mobile and wireless communications globally. There had been on-going trials and deployments worldwide.

It was correctly pointed out, 5G deployments will involve network densification and small cell deployments within building premises and on outdoor facilities, such as lamp posts and bus stops. This situation is not peculiar to Singapore, except that Singapore has an extensive NGBN to homes and buildings. However, it is noted that NGBN is not well extended to outdoor facilities at this stage. For MNO to have good 5G coverage, especially in mmWave spectrum, they may need to invest to build the infrastructure for 5G small cells for outdoor facilities.

We like to propose IMDA to consider including 5G NR mmWave 60GHz Unlicensed Spectrum to improve the efficiency and cost of deployment for 5G small cells.

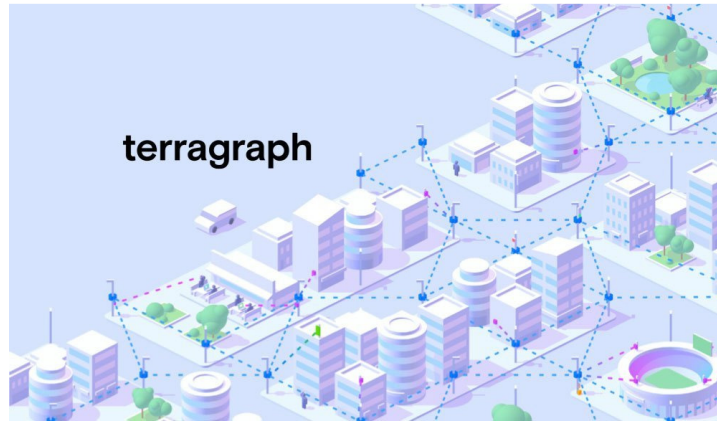


60GHz mmWave is used in WiFi 802.11ad/ay specification and standard. It uses beamforming technique for wireless communication. With the abundant of bandwidth in this frequency band, fast wireless transmission of > 10Gbps is attainable.

These created a growing interest in the industry to use 60GHz mmWave for wireless backhaul / Fixed Wireless Access, to replace cable/fiber.

With proven techniques and technology for creating high transmit power, narrow beam 60GHz radio, it is able to deliver multi Gigabits over the air at distance of few hundred meters. Notably Facebook Terragraph initiative had achieved street-level high bandwidth wireless mesh networking using 60GHz. <https://terragraph.com/>

Global network equipment suppliers are gearing up to support this Terragraph 60GHz wireless deployment.



With the liberty to use 60GHz, a different frequency band from 24 – 29GHz, it allows co-existence of these two mmWave networks in 5G small cells deployment. i.e. 60GHz for backhaul, 24-29GHz for IMT.

This will potentially reduce significantly the cost for 5G infrastructure and time of deployment for MNO. In addition, it can also improve network reliability through multiple wireless redundancy links.

2. COMMENTS

To facilitate the adoption of 60GHz mmWave wireless in Singapore, we seek IMDA to consider revising the regulatory framework for this band, reference to IDA'S DECISION AND EXPLANATORY MEMORANDUM ON THE REGULATORY FRAMEWORK FOR 60 GHz FREQUENCY BAND, dated 30 March 2011.

We seek IMDA to consider allowing MNOs and other service providers to use 60GHz in narrow beam high power transmission for use in wireless backhaul, to improve the speed of development and deployment of Singapore next generation of wireless network.

3. CONCLUSION

60GHz unlicensed frequency band is currently under-utilized in Singapore. The use of 60GHz wireless has the potential to reduce the cost and speed up the pace of 5G small cells deployment in Singapore. The technology is proven and available.

We urge IMDA to consider including 60GHz technology and framework in planning for next generation 5G wireless deployment.