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The Road to 5G — Challenges Ahead

Few technological developments have generated as much publicity as the advent of the latest generation of mobile technology, or 5G. As with its predecessors, 5G networks will operate using radiofrequency waves belonging to different bands or spectrum, as follows:

Frequency Band	Frequency Range
Low Band	Below 1 GHz
Mid-Band (C-Band)	1-6 GHz
High Band (mmWave)	20-100 GHz

The higher the frequency utilised, the faster the speed of transmission. 5G technology accordingly promises to enable Internet access at a broadband speed of up to 20 Gbps (gigabits per second) with little to no latency or lagging, approximately 100 times faster than is possible using existing 4G technology. Hence, though revolutionary in many respects, the forthcoming rollout of 5G technology is not without its challenges, the most salient of which are considered below.

Insufficient spectrum and risk of interference

In Malaysia, all use of spectrum is governed by the Communications and Multimedia Act 1998 (**CMA 1998**) and overseen by the Malaysian Communications and Multimedia Commission (**MCMC**), the relevant regulatory body. Pursuant to Section 157 of the CMA 1998, entitlement to use any spectrum is dependent upon ownership of an assignment. As spectrum is a finite resource with only a limited number of assignments in any spectrum consequently being available, the spectrum assignment process is naturally one that is highly competitive.

Although the 5G spectrum has yet to be conclusively determined, three bands have thus far been identified for potential use; namely, 700 MHz, 2,300 MHz and 2,600 MHz. The main issue with such identification, however, arises from recent reports that there simply may not be room within these bands for new assignments, particularly if no local telecommunications service provider or mobile network operator is to be left out of the 5G network rollout. Indeed, the likelihood exists that not only are there assignments still in subsistence within these bands which will either need to be converted or even vacated for 5G use, but also that these same bands may already be in use by other technologies. Although the CMA 1998 and the

Communications and Multimedia (Spectrum) Regulations 2000 do address the possibility of conversion of certain classes of assignments, as regards interference with other technologies, however, Section 175 of the CMA 1998 in essence merely provides that the MCMC "may resolve disputes about interference".

Application of 5G technology

Further regulatory challenges posed by the development of 5G wireless technology relate to its obvious potential for spurring technology advancements in other critical verticals, such as the automobile industry, artificial intelligence (AI), healthcare, education, and media and entertainment. At present, prospective applications for 5G technology are being explored at 32 different 5G sites across the country, with several key use cases having emerged — autonomous (self-driving) vehicles; remote surgery and virtual or augmented reality. In light of such innovations and the novel legal issues which stand to arise therefrom, the adequacy of existing laws and regulations in those areas and as a whole will need to be reviewed in the near future.

Concluding remarks

It is clear that 5G technology will bring about revolutionary changes extending far beyond telecommunications. It is therefore imperative that these far-reaching changes also be reflected in all aspects of the legal sphere to prevent obsolescence in the digital era.

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