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Cisco Response to the Draft RSPG Opinion on Spectrum Aspects of the IoT including M2M

Cisco welcomes the draft RSPG Opinion on spectrum aspects of the Internet-of-things (IoT). As the draft opinion states, the IoT is heterogeneous and requires different types of spectrum to reflect its variable requirements. While it is indisputable that the edge of the IoT will be wireless, the IoT does not need dedicated spectrum per se. What is needed is flexible use spectrum – licensed and licence-exempt that can support a range of uses – low latency and high latency, broadband and narrowband, high reliability and best efforts. And in addition, a range of business models – service provider (for public IoT applications), enterprise (using IoT to improve operations), and residential.

The draft opinion highlights the need for global economies of scale in the allotted bands stretching across spectrum for mobile, short range device and Wi-Fi. A number of such bands are highlighted in the paper, including low band (below 3 GHz) and mid-band (3-6 GHz). We welcome both the recognition of the range of technologies that account for the IoT and the proposals to increase the opportunities for use of the 870 – 876 and 915 - 921 MHz bands. We note, however, that high band (24 GHz and up) should also be considered in this context.

Europe is doing a good job of thinking about how to release more spectrum, but there is room for improvement.

On the side of licensed spectrum, Europe has made its first move to initiate availability of 3.4-3.8 GHz, which is important "mid-band" spectrum that can be used for limited-distance applications, and for spectrum at 26 GHz. The RSPG has identified promising bands at 32 GHz and 42 GHz for possible future allocation. Member States are already moving forward with 700 MHz availability and EU-wide harmonisation of the allocation of this band is close to finalisation. 5G will utilize all of these spectrum bands.

While Europe is making headway for some high band spectrum, it is making slower progress on others that are on the table for the next World Radio Conference, such as the 37 GHz band. There are going to be issues with opening some of these bands, and those issues should be engaged as soon as possible to give regulators time to consider final rules.

In terms of licence-exempt spectrum, the draft opinion references the current allocations at 5 GHz. However, 5 GHz is also the ideal place to *expand* access to spectrum for the Wi-Fi ecosystem. Satellite and radar interests are frustrating attempts at expansion in technical bodies in Europe, and are making existing spectrum harder to access. More spectrum is going to be needed for growth, and Wi-Fi – particularly for residential IoT, but also for enterprise IoT – is also going to be an important part of 5G technology.

In terms of enterprise IoT, licence-exempt spectrum has the virtue that it can be used anywhere, anytime by anyone who has a radio that follows the emissions rules. But that virtue is a vice when an enterprise is trying to deploy a mission-critical IoT network on licence-exempt spectrum, and that mission critical use would be jeopardised by uncoordinated signals from unlicensed devices. Enterprises are going to need spectrum that they can use on their property – at low power

levels – and that has precedence over other uses. Millimeter wave spectrum may present such an opportunity, as the propagation characteristics appear to match the need – enterprise spectrum whose signals fall off quickly. In addition, making sure there is a robust secondary markets policy enabling leasing of licensed spectrum is also important – not just that the policies are in place, but that the policies are actively enabling leasing of spectrum.

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