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VIEWS AND PROPOSALS ON WRC-15 AGENDA ITEMS 10

Agenda Item 10:
"to consider identification to IMT in the frequency band(s) between [6 GHz to 100 GHz] [including possible additional allocations to mobile service on a primary basis], in accordance with Resolution YYY (WRC-15)".

1. Background

Consideration of IMT use above 6 GHz is premature at this time because the IMT spectrum needs are highly overestimated and there has been no studies introduced that demonstrate that IMT could share on a non-interference basis with critical incumbent services operating above 6 GHz. While we recognise that IMT is an important element in modern communications networks, its role must be considered in context. In this regard, the available data does not support considering IMT in any potential future WRC agenda items.

The call by the IMT community for consideration of the use of spectrum above 6 GHz for terrestrial mobile services is highly premature at this point in time. While it may be technically feasible to demonstrate certain theoretical mobile services capabilities in any frequency band without prior consideration of demand and business model, actual considerations on future additional or alternative spectrum allocations require in-depth prior analysis thereof. No operator or consumer demand justifying significant additional spectrum for terrestrial IMT above 6 GHz has been demonstrated to date. Indeed, it is relevant to note that the allocated IMT spectrum below 6 GHz has still not been fully utilized yet, and may not even be in full use by 2020 or even later.

It must be emphasized that IMT systems are a subset of the larger class of mobile broadband systems – not all mobile broadband systems meet the IMT requirements – and therefore the criteria for determining technical feasibility for IMT is more extensive than that for mobile broadband systems generically (under the purview of WP 5A). Is it possible to utilize the IMT radio interfaces to achieve the objectives of IMT in bands above 6 GHz? The current IMT radio interfaces (in bands below 6 GHz) have been extensively evaluated and shown to achieve these IMT objectives and requirements for IMT. To which extent can these IMT radio interfaces be implemented in bands above 6 GHz? Would such implementations continue to meet the overall objectives for the future development of IMT? In that context, any evaluation of the technical feasibility of IMT in bands above 6 GHz should address the level of mobility that can be supported e.g. pedestrian speed, vehicular speeds, etc.

Therefore PTA is invited to encourage exploring the technical feasibility of technologies above 6 GHz to meet the requirements of International Mobile Telecommunications (IMT) outside the WRC preparatory cycle, given that the technology has yet to be proven as being able to potentially qualify

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the evolving requirements of IMT. It would be premature to support any WRC Agenda Item proposing IMT use above 6 GHz at this time.

Any new agenda item for a future WRC related to allocations / identification for future IMT systems shall be based on proper evidence and analysis after the full technical and operational aspects of future IMT characteristics are defined.

In any case, we urge PTA to consider only bands above 31.0 GHz for future IMT terrestrial use and not to consider future bands which are allocated on a primary or co-primary basis to satellite services by the ITU. The higher bands above 31 GHz will provide wider bandwidths and increased isolation between co-existing terrestrial radio systems, in turn enabling a substantial increase in the overall system capacity. Those higher bands are also less congested, which will facilitate potential future deployments.

2. Views and Proposals

Before considering a new agenda item for the identification of additional spectrum to IMT in WRC-19, an exhaustive study on current spectrum usage and the possibility of optimizing the use of IMT is needed. The frequency bands above 6 GHz and below 31 GHz are currently well used by a large number of services, including satellite communication systems, mostly operating in the C-band, X-band, Ku- and Ka-band frequencies. Satellite networks are designed to share spectrum efficiently with multiple other spectrum users, but to date there are no technical studies that demonstrate that IMT can share with these services. For example, C-band satellite networks have long operated on a shared basis with fixed point-to-point microwave networks on a coordinated basis. Satellite networks also share with each other; for example nearly all of the approximately 180 C-band satellites in operation today use much of the same spectrum, employing precise orbital spacing and directional antennas to avoid interference into each other. Same arrangement is also valid for other frequency bands such as X-band, Ku- and Ka-band. IMT services fundamentally break these carefully calibrated sharing assumptions and thus are not compatible with the existing intensive use of spectrum above 6 GHz.

Many satellite system operators around the world currently operate / plan to operate global or regional satellite services using C, X, Ku and Ka-band frequencies. These satellite networks do and will provide valuable services in many regions around the world and are also enablers for terrestrial operators. For example, Measat, ABS, AsiaSat, Ipstar, Chinasat, Arabsat, Avanti, EchoStar, Eshailsat, Eutelsat, Gascom, Hispasat, Inmarsat, Intelsat, Nilesat, Nigcomsat, O3b, RSCC, SES, Telenor, Telesat, Thaicom, Turksat, Viasat, Yahsat, and the governments of Brazil, Australia, China, and France currently operate or plan to operate satellite systems within the C-band 6000-7075 MHz frequencies, Ku-band 12.75-13.25 / 13.75-14.50 / 17.30-18.10 / 10.70-12.75 GHz frequencies and Ka-band 24.65-25.25 / 17.3-17.8 / 21.4-22 GHz and 27.0 – 30.0 / 17.7 – 20.2 GHz frequencies .

Additionally, satellite communications are often used as a basis for other broadband access technologies and billions of investment have already been spent on the satellite networks. If the frequencies supporting these systems were to be placed within the scope of any new WRC agenda item that act alone would create uncertainty for FSS operators, their customers, and their investors. FSS systems usually take 20 years from initial planning and funding, through end of life, and during this period regulatory certainty is required. Such regulatory certainty would be undermined by any proposal to accommodate terrestrial IMT above 6 GHz.

There remains significant uncertainty about whether IMT even requires such additional spectrum and at the same time significant risk that IMT will disrupt critical incumbent services already using that spectrum.
We recommend that until there are well-supported studies projecting realistic spectrum usage for future IMT operations, and clearly-established radio interfaces/mature IMT systems characteristics in bands above 6 GHz that can be used in sharing studies to assess compatibility, there cannot be an agenda item to modify the table of allocations. If and when such reliable data is available, any consideration on candidate frequency bands for IMT terrestrial should be limited in scope to frequency bands above 31.0 GHz and outside the frequency bands allocated by the ITU on a primary or co-primary basis to satellite services.

Conclusion

In summary additional spectrum for IMT should not be at the expense of other radio services that are an integral part of the global broadband infrastructure in Asia and around the world. It has been recognized globally that satellites are indeed a key component of the global broadband network, and many countries rely on satellites to provide ubiquitous broadband access to their citizens.
Considering that there are no ITU approved IMT terrestrial radio interfaces for bands above 6 GHz and in fact many of the frequency bands currently identified for IMT terrestrial below 3 GHz are not used or not used efficiently, we recommend that until there are vetted IMT radio interfaces and specific/mature/widely accepted IMT systems characteristics in bands above 6 GHz that can be used in sharing studies to assess compatibility, there cannot be an agenda item to modify the table of allocations.

If there is properly validated requirement for additional spectrum for terrestrial IMT above 6 GHz, and the technical feasibility for such IMT systems is mature and has been fully vetted and demonstrated, any consideration on candidate frequency bands for IMT terrestrial should be limited in scope to frequency bands above 31.0 GHz and outside the frequency bands allocated by the ITU on a primary or co-primary basis to satellite services.

This is because more opportunities exist in higher mmWave frequencies (above 31.0 GHz) than in lower sub-mmWave bands (between 6 – 31.0 GHz). This is due to the significantly increased isolation between co-existing terrestrial radio systems that follows from the propagation properties in the mmWave bands. This is also reflected in the EU METIS studies [ref 4], where the assessment focused on finding wide bands of contiguous spectrum (1 GHz and above). Such bands are difficult to find in lower frequencies due to current regulation and usage.

References

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