



The WRC series
IMT Spectrum Between 24.25 and 86 GHz
GSMA Public Policy Position

September 2018

Executive Summary

5G will be at the heart of future communications, from very high capacity broadband and connected cars to the industrial internet and smart communities. It will help guarantee the quality of today's most popular applications and drive future growth in connecting everything, everywhere.

The success of 5G is dependent on harmonised mobile spectrum across three categories of frequency bands, which are: sub-1 GHz, 1-6 GHz and above 6 GHz.

Millimetre wave spectrum in the highest category has the potential to transform the mobile broadband experience with ultra-high speeds and low latencies. The extent of mobile's access to this spectrum and the ability of mobile operators to deliver on the true potential of 5G will be determined at the World Radiocommunication Conference 2019 (WRC-19).

The 5G work at WRC-19, centred around Agenda Item 1.13 (AI 1.13), will look at IMT spectrum in frequencies between 24.25 and

86 GHz. This paper outlines the GSMA's positions on the work carried out in relation to AI 1.13:

- 1. A successful identification of spectrum for IMT under Agenda Item 1.13 is vital to realise the full potential of 5G networks**
- 2. The GSMA supports the 26 GHz and 40 GHz bands**
- 3. The GSMA also supports 66-71 GHz**
- 4. Due to the large amount of spectrum needed for 5G services, the range 45.5-52.6 GHz also needs to be considered**
- 5. Technical studies show that coexistence between IMT and other services is possible**

Background

WRC-19 will address the needs of upcoming evolutions of mobile networks. Spectrum between 24.25 and 86 GHz will be considered for IMT under WRC-19 Agenda Item 1.13.

To that end, sharing and compatibility studies have been carried out. They have been discussed by countries all over the world, within the framework of the ITU, to agree on the way in which IMT systems can coexist with other primary services both in the same and adjacent bands.

The development of 5G is accelerating worldwide, creating network architectures with new technologies such as massive MIMO and network slicing. The line-up of potential services is also growing rapidly alongside this expansion, but a lack of new widely harmonised spectrum risks hampering these advances. Regulators and industry stakeholders each have a crucial role to play. Regulatory certainty on what bands will be available creates a platform for the necessary investment to bring innovative, affordable new products and services to citizens.

WRC Positions

1. A successful identification of spectrum for IMT under Agenda Item 1.13 is vital to realise the full potential of 5G networks

The GSMA has laid out its vision for 5G, including ultra-high data speeds and low latencies. The ITU's work is crucial in standardising IMT-2020 and ensuring it delivers instant, high bandwidth connectivity. Spectrum above 24.25 GHz will form a critical part of 5G and must be identified to enable this vision. The work carried out on AI 1.13 is an important opportunity to make this a reality within the WRC process.

2. The GSMA supports the 26 GHz and 40 GHz bands

There are several reasons why 26 GHz and 40 GHz are the most promising out of the WRC-19 bands for 5G network rollouts. 26 GHz (24.25-27.5 GHz) is already seeing traction around the globe for mobile broadband services. Europe has picked it as one of its 'pioneer bands', while Africa, the Middle East, Asia, member countries of RCC and parts of the Americas are also planning to use this spectrum for 5G. Identifying the band for IMT at WRC-19 sets the stage for harmonisation and helps build the scale necessary for low-cost devices and services.

There are technical and economic benefits as well. The 26 GHz band is adjacent to the 28 GHz band, allowing wide harmonisation, low handset complexity, economies of scale and early equipment availability. The 28 GHz band will be used for millimetre-wave 5G in the US, South Korea, Japan, India and Canada. This implementation is done outside of the WRC-19 process under an existing mobile allocation.

The GSMA also supports the identification of 37-43.5 GHz (known as the 40 GHz band) to IMT. Identifying the whole band for IMT at WRC-19 allows for flexibility. It lets different countries and regions choose which part to implement and delivers harmonisation of equipment. It will therefore help drive the economies of scale needed to lower equipment costs.

3. The GSMA also supports 66-71 GHz

Another band that holds strong interest for the mobile community is 66-71 GHz. The FCC decision to use this band for unlicensed 5G adds momentum to the existing support for this band in Europe, Africa, and member countries of RCC.

The GSMA supports the identification of the band 66-71 GHz for IMT and that it should be available for use by 5G systems with flexibility to allow different licensing regimes, enabling both IMT and non-IMT technologies.

4. Due to the large amount of spectrum needed for 5G services, the range 45.5-52.6 GHz also needs to be considered

To determine the feasibility of the bands 45.5-47 GHz, 47.2-50.2 GHz and 50.4-52.6 GHz, there is a need to further investigate the question of compatibility with services in adjacent bands. The studies that have already been conducted indicate that there is potential for these bands to be used for IMT.

5. Technical studies show that coexistence between IMT and other services is possible

Sharing and compatibility studies have been performed in the ITU to ensure IMT systems can co-exist with other primary services in the same and in adjacent bands where necessary. The smaller coverage area of higher frequencies lessens interference concerns between mobile networks and other services and increase the opportunity for spectrum sharing. The use of these higher bands will also simplify cross-border interference issues as neighbouring countries can use the same spectrum for different services.

With respect to compatibility with space science services, any conditions imposed on IMT should, while protecting the space science services, not be overly restrictive. This overprotection would compromise deployment of IMT networks in terms of cost, coverage and performance.

With regards to coexistence with other services, studies show there is no need for any conditions to be included in the Radio Regulations. Coexistence can instead be dealt with through national decisions and bilateral coordination.

To keep up with demands for higher speeds and better coverage mobile operators need more spectrum. Whether they get it or not, is in part based on decisions made at the World Radiocommunication Conference in 2019 (WRC-19). An event the GSMA WRC series helps you get ready for.

Read more at: <https://www.gsma.com/spectrum/wrc-series/>

Frequencies Considered Under AI 1.13

24.25-27.5 GHz	
31.8-33.4 GHz	
37-43.5 GHz	
45.5-50.2 GHz	
50.4-52.6 GHz	
66-71 GHz	
71-76 GHz	
81-86 GHz	

IMT Spectrum Needs

The ITU has analysed IMT spectrum needs for frequencies above 24 GHz and the results are shown in three ranges: 24.25-33.4 GHz, 37-52.6 GHz and 66-86 GHz. Different metrics were applied including application-based and technical performance-based approaches. Information from individual countries is also included, each country having stated its needs based on national considerations.

The results vary depending upon the approach used and the assumed metrics. In broad terms, the highest needs come from the densest urban areas (between 15-20 GHz across the three ranges, depending on the assumptions).

A summary of results can be found in the Annex with the full document at <https://www.itu.int/md/R15-TG5.1-C-0036/en>.

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