

Proposed quantitative indicators on spectrum allocation/assignment

8 October 2018

Indicator 1: Amount of spectrum offered for IMT systems, in MHz

Definition:

Total spectrum, in MHz, made available for use (i.e. allocated) through any formal national publication, such as the National Frequency Plan, for IMT systems, including any of the air interfaces in accordance with ITU-R Recommendations concerning these standards for mobile communications.

This indicator is broken down by the following bands (indicated in MHz):

- | 1- Block < 1 GHz: | 2- Block from 1 to 6 GHz: | 3- Block > 6 GHz (WRC-19): |
|--------------------------|--------------------------------|----------------------------|
| a. 450 MHz (450-470) | a. L-band (1427-1518) | a. 24 250-27 500 |
| b. UHF band (470-608) | b. 1.7/1.8 GHz (1710-1885)* | b. 31 800 -33 400 |
| c. 600 MHz (610-69/698) | c. 1.9 GHz (1885-2025) | c. 37 000 -40 500 |
| d. 700 MHz (698-790/806) | d. 2.1 GHz (2110-2200) | d. 40 500 -42 500 |
| e. 800 MHz (790/806-902) | e. 2.3 GHz (2300-2400) | e. 42 500 -43 500 |
| f. 900 MHz (902-960) | f. 2.5 GHz, C-band (2500-2690) | f. 45 500-47 000 |
| | g. 3300-3400 | g. 47 000-47 200 |
| | h. 3400-3500 | h. 47 200-50 200 |
| | i. 3500-3600 | i. 50 400-52 600 |
| | j. 3600-3700 | j. 66 000-71 000 |
| | k. 4.8 GHz (4800-4900) | k. 71 000-76 000 |
| | l. 4.9 GHz (4900-4990) | l. 81 000-86 000 |

* Countries that use AWS-1 use 1710-1755 MHz for UL and 2110-2155 MHz for DL.

Clarifications and scope:

- 1) This indicator refers to spectrum allocated nationally as identified in National Frequency Plans and other documents that can be considered formal announcements of allocation, such as spectrum outlook documents and strategy plans.
- 2) The IMT definition encompasses all IMT versions (IMT-2000, IMT-Advanced, IMT-2020).
- 3) Official documents may use the term IMT or other commercial names, such as 3G, 4G or 5G. All these different denominations should be considered when collecting the data for this indicator.
- 4) It should be noted that for all bands listed, countries may allocate and license the full band, or parts thereof depending on the Radio Regulations, Regional and National Allocations.

Method of collection:

Data can be collected from the national administration responsible for allocating spectrum, such as the telecommunication regulator, the ministry or another public administration in charge of spectrum management. Information on spectrum allocation are found in National Frequency Plans, spectrum outlook documents, strategy plans and other formal documents.

Relationship with other indicators:

This indicator is related to the indicator “Amount of spectrum licensed for IMT systems, in MHz”. Spectrum is first allocated to a given service and, in a subsequent phase, it may be assigned to a licensee. As a result, “Amount of spectrum offered for IMT systems, in MHz” should be greater than or equal to “Amount of spectrum licensed for IMT systems, in MHz”.

Methodological issues:

In order to compare the data submitted for this indicator across countries, the “Amount of spectrum offered for IMT systems, in MHz” will be divided by the spectrum identified for IMT systems in the Radio Regulations (RR) on a per Region basis. In the calculation of the spectrum identified for each Region, each band will be considered as identified for IMT systems for the Region based on the percentage of countries in the Region having identified a band for IMT systems in the RR footnotes.

Example:

5G Americas collects data on mobile spectrum allocations in Latin America based on information from regulators (Chart 1; blue indicates spectrum allocated in that band for mobile services in the specific country). This information is used to inform policy-makers in the region on the progress made towards making available the necessary spectrum to support mobile-broadband development.

Chart 1: Mobile spectrum allocations in Latin America, September 2018

	450 MHz	700 MHz	800 MHz*	850 MHz	900 MHz	1.7/2,1 GHz (AWS)	AWS-3	1.8 GHz	1.9 GHz	2.1 GHz	2.5 GHz**
Argentina											
Bolivia											
Brazil											
Chile											
Colombia											
Costa Rica											
Ecuador											
El Salvador											
Guatemala											
Honduras											
Mexico											
Nicaragua											
Panama											
Paraguay											
Peru											
Dominican Rep.											
Uruguay											
Venezuela											

Notes: * Originally used for iDEN in the region, the band is being refarmed in Argentina, Brazil, Chile, Mexico and Peru. ** In Peru, one operator acquired a group of fixed service providers and their 2.5 GHz licences. Another mobile operator holds regional 2.5 GHz licences, but the band will be reorganized for an upcoming auction. In Paraguay, a mobile operator agreed to return spectrum from the 2.5 GHz band after acquiring a fixed service provider.

Source: 5G Americas (2018).

Source: Adapted from 5G Americas (2018), Analysis of ITU Spectrum Recommendations in Latin America.

Available at

http://www.5gamericas.org/files/6115/3625/2903/EN_Analisis_de_las_Recomendaciones_de_Espectro_de_la UIT_en_America_Latina_Sept_2018.pdf.

Indicator 2: Amount of spectrum licensed for IMT systems, in MHz

Definition:

Total spectrum, in MHz, assigned nationally for use for IMT systems, including any of the air interfaces in accordance with ITU-R Recommendations concerning these standards for mobile communications.

This indicator is broken down by the following bands (indicated in MHz):

1- Block < 1 GHz:	2- Block from 1 to 6 GHz:	3- Block > 6 GHz (WRC-19):
a. 450 MHz (450-470)	a. L-band (1427-1518)	a. 24 250-27 500
b. UHF band (470-608)	b. 1.7/1.8 GHz (1710-1885)*	b. 31 800 -33 400
c. 600 MHz (610-69/698)	c. 1.9 GHz (1885-2025)	c. 37 000 -40 500
d. 700 MHz (698-790/806)	d. 2.1 GHz (2110-2200)	d. 40 500 -42 500
e. 800 MHz (790/806-902)	e. 2.3 GHz (2300-2400)	e. 42 500 -43 500
f. 900 MHz (902-960)	f. 2.5 GHz, C-band (2500-2690)	f. 45 500-47 000
	g. 3300-3400	g. 47 000-47 200
	h. 3400-3500	h. 47 200-50 200
	i. 3500-3600	i. 50 400-52 600
	j. 3600-3700	j. 66 000-71 000
	k. 4.8 GHz (4800-4900)	k. 71 000-76 000
	l. 4.9 GHz (4900-4990)	l. 81 000-86 000

* Countries that use AWS-1 use 1710-1755 MHz for UL and 2110-2155 MHz for DL.

Clarifications and scope:

- 1) This indicator refers to national spectrum that has been assigned to a given operator as a result of an assignment process (e.g. auction, beauty contest).
- 2) The IMT definition encompasses all IMT versions (IMT-2000, IMT-Advanced, IMT-2020).
- 3) Official documents may use the term IMT or other commercial names, such as 3G, 4G or 5G. All these different denominations should be considered when collecting the data for this indicator.
- 4) It should be noted that for all bands listed, countries may allocate and license the full band, or parts thereof depending on the Radio Regulations, Regional and National Allocations.

Method of collection:

Data can be collected from the national administration responsible for licensing spectrum, such as the telecommunication regulator, the ministry or another public administration in charge of spectrum management. In addition, data are often publicly available through press releases informing of the outcomes of spectrum assignment processes.

Relationship with other indicators:

This indicator is related to the indicator “Amount of spectrum offered for IMT systems, in MHz”. Spectrum is first allocated to a given service and, in a subsequent phase, it may be assigned to a licensee. As a result, “Amount of spectrum licensed for IMT systems, in MHz” should be lower than or equal to “Amount of spectrum offered for IMT systems, in MHz”.

Methodological issues:

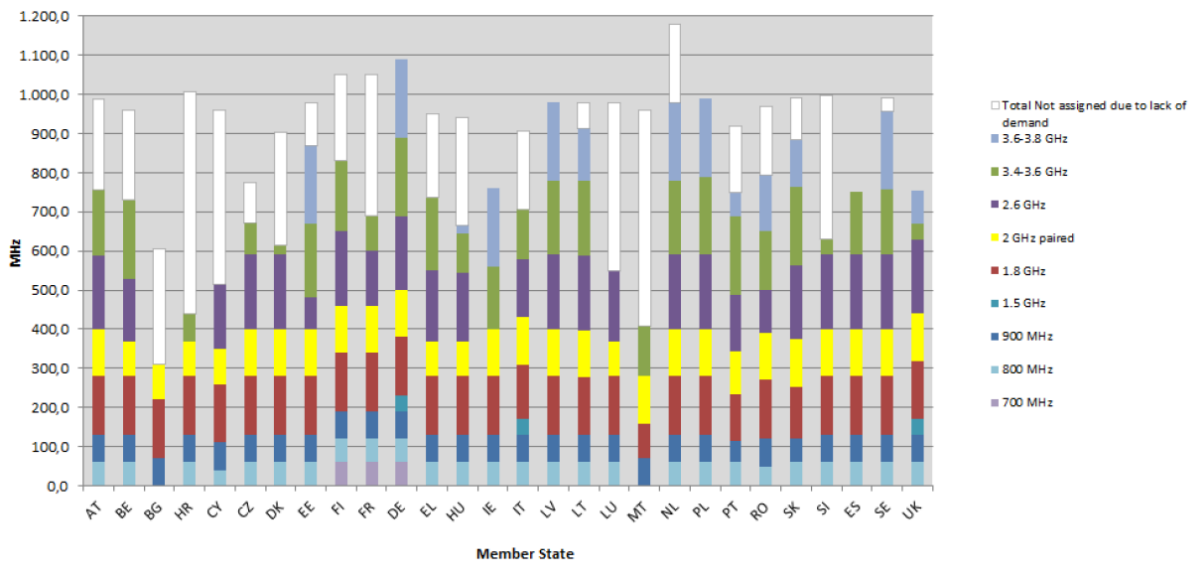
In order to compare the data submitted for this indicator across countries, the “Amount of spectrum licensed for IMT systems, in MHz” will be divided by the spectrum identified for IMT systems in the Radio Regulations (RR) on a per Region basis. In the calculation of the spectrum identified for each Region, each band will be considered as identified for IMT systems for the Region based on the percentage of countries in the Region having identified a band for IMT systems in the RR footnotes.

Example:

The European Commission collects data on assigned spectrum for wireless-broadband services in harmonized European Union (EU) bands (Chart 2). These data are regularly collected and published in order to monitor the progress towards the target of 1200 MHz for wireless-broadband services set by the EU Radio Spectrum Policy Programme (RSPP).

The data collection is carried out separately by band, which allows to track, for instance, the progress achieved by EU Member States in assigning the 800 MHz band (the ‘digital dividend’) for wireless-broadband services.

Chart 2: Assigned spectrum for wireless-broadband services in harmonized EU bands, by EU Member State, December 2016



Note: Assigned bands include guard bands.

Source: European Commission (2017).

Source: Adapted from European Commission (2017), Europe's Digital Progress Report 2017. Available at <https://ec.europa.eu/digital-single-market/en/news/europes-digital-progress-report-2017>.