

Motivation for new SID on parameters for IMT
studies on frequencies below 5 GHz, 6-7 GHz and 10
GHz

Huawei, HiSilicon



Background

- WRC-19 established a number of WRC-23 agenda items related to IMT, and Working Party 5D (WP 5D) needs to prepare the characteristics of terrestrial component of IMT for sharing and compatibility studies. An LS (RP-200042) was therefore sent from WP 5D to 3GPP and 3GPP RAN4 for relevant information.
- Information for many frequency ranges is requested by WP 5D:
 - Information on IMT parameters for the frequency bands 470-694 MHz, 694-960 MHz, 1 710-1 885 MHz, 1 885-1 980 MHz, 2 010-2 025 MHz, 2 110-2 170 MHz, 2 500-2 690 MHz, 3 300-3 400 MHz, 3 600-3 800 MHz, 4 800-4 990 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz
 - Information on any other current or future feature of IMT systems that could be relevant for the sharing and compatibility studies w.r.t. other services, including e.g. deterministic calculations or Monte Carlo simulations, would be welcome.
- Expected timeline from WP 5D should be met:
 - Information already available by June 2020 meeting of WP 5D.
 - Final submission, with the additional information, by February 2021 meeting of WP 5D.

Proposals

- In order to reply to ITU-R WP5D, it is proposed to approve a RAN4 study item at RAN#87e. A proposal is provided in RP-200119 to cover all the frequency ranges with a RAN4 Study Item from March 2020 to December 2020.
 - Frequency ranges can be categorized into four groups:
 - Frequency ranges, for which the NR bands and corresponding requirements are specified in 3GPP (Target at RAN#88)
 - » 694-960 MHz, 1 710-1 885 MHz, 1 885-1 980 MHz, 2 010-2 025 MHz, 2 110-2 170 MHz, 2 500-2 690 MHz, 3 300-3 400 MHz, 3 600-3 800 MHz, 4 800-4 990 MHz
 - Frequency ranges of 6 425-7 025 MHz and 7 025-7 125 MHz, for which studies are needed in 3GPP (Target at RAN#90)
 - Frequency ranges of 10.0-10.5 GHz, for which studies can be based on TR 38.820 of SI on 7~24GHz for NR (Target at RAN#90)
 - Frequency ranges of 470-694 MHz, for which no NR band is specified and studies can be based on LTE specification (Target at RAN#90)
 - The following system parameters will be provided
 - IMT technology related parameters (template as attached in Table 1)
 - Beamforming antenna characteristics for IMT (template as attached in Table 2)
 - Information on any other current or future feature of IMT systems that could be relevant for the sharing and compatibility studies w.r.t. other services, including e.g. deterministic calculations or Monte Carlo simulations
 - Note: When providing these parameter values, qualify if these values are based on the maximum value, average value, specific range, or others.
- A draft response LS to ITU-R WP5D is provided in RP-200118

TABLE 1 TEMPLATE
IMT technology related parameters in [xx-yy] MHz

No.	Parameter	IMT	
		Base station	Mobile station
1	Duplex Method		
2	Channel bandwidth (MHz)		
3	Signal bandwidth (MHz)		
4	Transmitter characteristics		
4.1	Power dynamic range (dB)		
4.2	Spectral mask (dB)		
4.3	ACLR		
4.4	Spurious emissions		
4.5	Maximum output power		
4.6	Average output power		
5	Receiver characteristics		
5.1	Noise figure (dB)		
5.2	Sensitivity (dBm)		
5.3	Blocking response		
5.4	ACS		
5.5	SINR operating range (dB)		

TABLE 2 TEMPLATE
Beamforming antenna characteristics for IMT in [xx-yy] MHz

		Rural	Macro suburban	Macro urban	Small cell outdoor/ Micro urban	Small cell indoor/ Indoor urban
1	Base station Antenna Characteristics					
1.1	Antenna pattern					
1.2	Element gain (dBi)					
1.3	Horizontal/vertical 3 dB beamwidth of single element (degree)					
1.4	Horizontal/vertical front-to-back ratio (dB)					
1.5	Antenna polarization					
1.6	Antenna array configuration (Row × Column)					
1.7	Horizontal/Vertical radiating element spacing					
1.8	Array Ohmic loss (dB)					
1.9	Conducted power (before Ohmic loss) per antenna element					
1.10	Base station maximum coverage angle in the horizontal plane (degrees)					
2	Mobile station Antenna Characteristics					
2.1	Antenna pattern					
2.2	Element gain (dBi)					
2.3	Horizontal/vertical 3 dB beamwidth of single element (degree)					
2.4	Horizontal/vertical front-to-back ratio (dB)					
2.5	Antenna polarization					
2.6	Antenna array configuration (Row × Column)					
2.7	Horizontal/Vertical radiating element spacing					
2.8	Array Ohmic loss (dB)					
2.9	Conducted power (before Ohmic loss) per antenna element					