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| **World Radiocommunication Conference (WRC-19) Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Addendum 14 to Document 28-E** |
|  | **30 September 2019** |
|  | **Original: Chinese** |
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| China (People's Republic of) | |
| Proposals for the work of the conference | |
|  | |
| Agenda item 1.14 | |

1.14 to consider, on the basis of ITU-R studies in accordance with Resolution **160 (WRC‑15)**, appropriate regulatory actions for high-altitude platform stations (HAPS), within existing fixed-service allocations;

Background

The 2015 World Radiocommunication Conference (WRC) adopted Resolution **160 (WRC-15)** to set up agenda item 1.14 for WRC-19 with the purpose of facilitating access to broadband applications delivered by high altitude platform station (HAPS), including to study the additional spectrum requirements for the HAPS gateway and fixed terminal links, the validity of applying the existing HAPS spectrum identifications, and if necessary, the availability of the following frequency bands: 38-39.5 GHz on global level, 21.4-22 GHz and 24.25-27.5 GHz in Region 2.

ITU-R has identified three HAPS identifications, namely 6 440-6 520/6 560-6 640 MHz, 27.9-28.2/31-31.3 GHz and 47.2-47.5/47.9-48.2 GHz for HAPS in the Radio Regulations (RR), as illustrated in Table 1.

Table 1

Existing HAPS identifications in FS bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Frequency band | Use | Direction | Bandwidth | Identification |
| 6 440-6 520 MHz | GW | ↓ | 80 MHz | 5 Admins (R1, R3) |
| 6 560-6 640 MHz | GW | ↑ | 80 MHz | 5 Admins (R1, R3) |
| 27.9-28.2 GHz | GW, CPE | ↓ | 300 MHz | 23 Admins (R1, R3) |
| 31-31.3 GHz | GW, CPE | ↑ | 300 MHz | 23 Admins (R1, R3) |
| 47.2-47.5 GHz | GW, CPE | ↑↓ | 300 MHz | Worldwide |
| 47.9-48.2 GHz | GW, CPE | ↑↓ | 300 MHz | Worldwide |
| GW: Gateway  CPE: fixed terminal customer premises equipment | | | | |

ITU-R Working Party (WP) 5C conducted sharing and compatibility studies in the frequency bands mentioned above between HAPS and MS, FSS, EESS etc., as well as other applications in FS. But for frequency band 38-39.5 GHz, no sharing study was conducted to address the collision issue between HAPS and potential IMT identification under agenda item 1.13.

Proposals

China is of the view that HAPS can provide broadband services in rural and remote areas lacking of terrestrial telecommunication infrastructures. On the other hand, HAPS can provide emergency communication services to the public while other communication infrastructures were broken.

Noting that the existing HAPS identifications were not been fully utilized, China considers that the HAPS requirement should be primarily met by existing identifications, while not causing adverse impact on existing services.

For frequency bands 6 440-6 520 MHz and 6 560-6 640 MHz, China supports Method A in the CPM Report, i.e. no change to the RR.

For frequency bands 27.9-28.2 GHz and 31.0-31.3 GHz, China supports to add its country name under RR Nos. **5.537A** and **5.543A** respectively.

For the frequency band 38-39.5 GHz, China supports Method A (NOC), i.e. no change to the RR.

In addition, China is of view that any consideration of the frequency band 24.25-27.5 GHz in Region 2 under this agenda item should not limit the possibility to identify the band for IMT on a global basis under WRC-19 agenda item 1.13.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations  
(See No. 2.1)

NOC

5 570-6 700 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 5 570-5 650 MOBILE except aeronautical mobile 5.446A 5.450A  RADIOLOCATION 5.450B  MARITIME RADIONAVIGATION  5.450 5.451 5.452 | | |
| 5 650-5 725 MOBILE except aeronautical mobile 5.446A 5.450A  RADIOLOCATION  Amateur  Space research (deep space)  5.282 5.451 5.453 5.454 5.455 | | |
| 5 725-5 830  FIXED-SATELLITE (Earth-to-space)  RADIOLOCATION  Amateur | 5 725-5 830  RADIOLOCATION  Amateur | |
| 5.150 5.451 5.453 5.455 | 5.150 5.453 5.455 | |
| 5 830-5 850  FIXED-SATELLITE (Earth-to-space)  RADIOLOCATION  Amateur  Amateur-satellite (space-to-Earth) | 5 830-5 850  RADIOLOCATION  Amateur  Amateur-satellite (space-to-Earth) | |
| 5.150 5.451 5.453 5.455 | 5.150 5.453 5.455 | |
| 5 850-5 925  FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE | 5 850-5 925  FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE  Amateur  Radiolocation | 5 850-5 925  FIXED  FIXED-SATELLITE  (Earth-to-space)  MOBILE  Radiolocation |
| 5.150 | 5.150 | 5.150 |
| 5 925-6 700 FIXED 5.457  FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B  MOBILE 5.457C  5.149 5.440 5.458 | | |

NOC

5.457In Australia, Burkina Faso, Cote d'Ivoire, Mali and Nigeria, the allocation to the fixed service in the bands 6 440-6 520 MHz (HAPS-to-ground direction) and 6 560-6 640 MHz (ground-to-HAPS direction) may also be used by gateway links for high-altitude platform stations (HAPS) within the territory of these countries. Such use is limited to operation in HAPS gateway links and shall not cause harmful interference to, and shall not claim protection from, existing services, and shall be in compliance with Resolution **150 (WRC‑12)**. Existing services shall not be constrained in future development by HAPS gateway links. The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links.    (WRC‑12)

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24.75-29.9 GHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 24.75-25.25  FIXED  FIXED-SATELLITE (Earth-to-space) 5.532B | 24.75-25.25  FIXED-SATELLITE (Earth-to-space) 5.535 | 24.75-25.25  FIXED  FIXED-SATELLITE (Earth-to-space) 5.535  MOBILE |
| 25.25-25.5 FIXED  INTER-SATELLITE 5.536  MOBILE  Standard frequency and time signal-satellite (Earth-to-space) | | |
| 25.5-27EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B  FIXED  INTER-SATELLITE 5.536  MOBILE  SPACE RESEARCH (space-to-Earth) 5.536C  Standard frequency and time signal-satellite (Earth-to-space)  5.536A | | |
| 27-27.5  FIXED  INTER-SATELLITE 5.536  MOBILE | 27-27.5  FIXED  FIXED-SATELLITE (Earth-to-space)  INTER-SATELLITE 5.536 5.537  MOBILE | |
| 27.5-28.5 FIXED MOD 5.537A  FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539  MOBILE  5.538 5.540 | | |
| 28.5-29.1 FIXED  FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539  MOBILE  Earth exploration-satellite (Earth-to-space) 5.541  5.540 | | |
| 29.1-29.5 FIXED  FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A  5.539 5.541A  MOBILE  Earth exploration-satellite (Earth-to-space) 5.541  5.540 | | |
| 29.5-29.9  FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539  Earth exploration-satellite (Earth-to-space) 5.541  Mobile-satellite (Earth-to-space) | 29.5-29.9  FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539  MOBILE-SATELLITE (Earth-to-space)  Earth exploration-satellite (Earth-to-space) 5.541 | 29.5-29.9  FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539  Earth exploration-satellite (Earth-to-space) 5.541  Mobile-satellite (Earth-to-space) |
| 5.540 5.542 | 5.525 5.526 5.527 5.529 5.540 | 5.540 5.542 |

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5.537A In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People’s Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC‑12)**.    (WRC‑19)

**Reasons:** China supports to add its name under RR No. **5.537A.**

MOD CHN/28A14/3

29.9-34.2 GHz

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| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 29.9-30 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539  MOBILE-SATELLITE (Earth-to-space)  Earth exploration-satellite (Earth-to-space) 5.541 5.543  5.525 5.526 5.527 5.538 5.540 5.542 | | |
| 30-31 FIXED-SATELLITE (Earth-to-space) 5.338A  MOBILE-SATELLITE (Earth-to-space)  Standard frequency and time signal-satellite (space-to-Earth)  5.542 | | |
| 31-31.3 FIXED 5.338A MOD 5.543A  MOBILE  Standard frequency and time signal-satellite (space-to-Earth)  Space research 5.544 5.545  5.149 | | |
| 31.3-31.5 EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 | | |
| 31.5-31.8  EARTH EXPLORATION- SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  Fixed  Mobile except aeronautical mobile | 31.5-31.8  EARTH EXPLORATION- SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive) | 31.5-31.8  EARTH EXPLORATION- SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  Fixed  Mobile except aeronautical mobile |
| 5.149 5.546 | 5.340 | 5.149 |
| 31.8-32FIXED 5.547A  RADIONAVIGATION  SPACE RESEARCH (deep space) (space-to-Earth)  5.547 5.547B 5.548 | | |
| 32-32.3FIXED 5.547A  RADIONAVIGATION  SPACE RESEARCH (deep space) (space-to-Earth)  5.547 5.547C 5.548 | | |
| 32.3-33 FIXED 5.547A  INTER-SATELLITE  RADIONAVIGATION  5.547 5.547D 5.548 | | |
| 33-33.4 FIXED 5.547A  RADIONAVIGATION  5.547 5.547E | | |
| 33.4-34.2 RADIOLOCATION  5.549 | | |

MOD CHN/28A14/4

5.543A In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People’s Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the frequency band 31-31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the frequency band 31-31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. **5.545**. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the frequency band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the frequency band 31.3-31.8 GHz, taking into account the protection criterion as given in the most recent version of Recommendation ITU‑R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the frequency band 31.3-31.8 GHz shall be limited to −106 dB(W/MHz) under clear-sky conditions, and may be increased up to −100 dB(W/MHz) under rainy conditions to mitigate fading due to rain, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions. See Resolution **145 (Rev.WRC‑12)**.    (WRC‑19)

**Reasons:** China supports to add its name under RR No. **5.543A.**

NOC

RESOLUTION 145 (Rev.WRC‑12)

Use of the bands 27.9-28.2 GHz and 31-31.3 GHz by   
high altitude platform stations in the fixed service

NOC

RESOLUTION 150 (WRC‑12)

Use of the bands 6 440-6 520 MHz and 6 560-6 640 MHz by gateway links   
for high-altitude platform stations in the fixed service

SUP CHN/28A14/5

RESOLUTION 160 (WRC‑15)

Facilitating access to broadband applications delivered   
by high-altitude platform stations

**Reasons:** No further study is needed.

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