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**APT report on**

**CURRENT STATUS AND FUTURE PLAN OF USAGE IN THE FREQUENCY RANGES OF 7.125 - 24 GHZ AND 92 - 300 GHZ in**

**asia pacific region**

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**apt report on**

**CURRENT STATUS AND FUTURE PLAN OF USAGE IN THE FREQUENCY RANGES OF 7.125-24 GHZ AND 92-300 GHZ in asia pacific region**

**1. Introduction**

In this survey, AWG has initiated the study on current status and future plan of usage in the frequency ranges of 7.125-24 GHz and 92-300 GHz in Asia Pacific countries.

The objective of this Report is to collect information on the current status and future plan in the frequency ranges of 7.125-24 GHz and 92-300 GHz in APT countries.

**2. Terminologies and definitions**

3GPP : 3rd Generation Partnership Project

AI: Artificial Intelligence

A-ESIM: Aeronautical Earth Station in Motion

D2D: Device to Device

ESIM: Earth Station in Motion

IMT: International Mobile Telecommunications

mmWave : Millimetre Waves

M-ESIM: Maritime Earth Station in Motion

RLAN: Radio Local Area Network

THz : Tera Hertz

UHF: Ultra-High Frequency

EHF: Extremely High Frequency

WRC: World Radiocommunication Conference

**3. Current Applications and Usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Some APT Members**

Based on the responses to question# 1 of the questionnaire on current status and future plan usage in the frequency ranges 7.125 – 24 GHz and 92 – 300 GHz from some APT Members received as of AWG-31 meeting, below are their responses to Question#1:

3.1 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Thailand

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Frequency Portion** | **Applications (Services)** | | **Number of** | **Type of use** |  |
|  |  |  |
|  | **licences** |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |
| 7.128 – 7.1955 GHz | Fixed | Point – to – point link | 64 | Government |  |
|  | State Enterprise |  |
|  |  |  |  |  |
|  | Fixed | Point – to – point link |  | Government |  |
|  | Studiolink |  |  |
| 8.0 – 8.5 GHz |  | 22 |  |
|  | State Enterprise |  |
|  | Radar |  |
|  | Radio Location |  |  |
|  |  | Commercial |  |
|  |  |  |  |
|  |  |  |  |  |
|  | Fixed | Radar |  | Government |  |
|  | Radio Navigation |  |  | Commercial |  |
| 9.2 – 9.445 GHz | Radio Location |  | 17 |  |  |
|  | Aeronautical |  |  |  |  |
|  | Radio Navigation |  |  |  |  |
| 10.5 – 11.685 GHz | Fixed | Point – to – point link | 11 | State Enterprise |  |
| Fixed Satellite |  | Commercial |  |
|  |  |  |  |
|  | Fixed | Point – to – point link |  | Government |  |
| 12.2 – 13.775 GHz |  | 17 |  |  |
| Fixed Satellite |  | State Enterprise |  |
|  |  |  |  |
|  |  |  | Commercial |  |
|  |  |  |  |  |
|  | Fixed | Point – to – point link |  | Government |  |
| 14.0 – 15.860 GHz | Fixed Satellite |  | 27 | State Enterprise |  |
|  | Radio Location | Radar |  | Commercial |  |
|  |  |  |  |
|  | Fixed | Point – to – point link |  | Government |  |
| 17.7 – 19.7 GHz | Fixed Satellite |  | 8 | State Enterprise |  |
|  |  |  |  | Commercial |  |
|  |  |  |  |  |  |
| 20.001 – 22.631 GHz | Fixed | Point – to – point link | 4 | State Enterprise |  |
| Fixed Satellite |  | Commercial |  |
|  |  |  |  |  |
| 92 – 300 GHz | - | - | - | - |  |

3.2 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Myanmar

Please see the current applications and usage services in the frequency ranges of 7.125-24 GHz and 92-300 GHz

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| 7.075-7.145 GHz | FIXED, MOBILE, 5.458 |  | Microwave |
| 7.145-7.190 GHz | FIXED, MOBILE, SPACE RESEARCH (deep space) (Earth-to- space)5.458 5.459 |  | Microwave |
| 7.190-7.250 GHz | FIXED, MOBILE, 5.458 |  | Microwave |
| 7.250-7.300 GHz | FIXED, MOBILE, FIXED- SATELLITE (space-to-Earth), S5.461 |  | Microwave |
| 7.300-7.375 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (space-to-Earth), S5.461 |  | Microwave |
| 7.375-7.450 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (space-to-Earth), MARITIME MOBILE-SATELLITE (space-to-Earth), ADD5.A192 ADD5.B192 |  | Microwave |
| 7.450-7.550 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth), MARITIME MOBILE SATELLITE (space-to- Earth), ADD5.A192 ADD5.B192, 5.461A |  | Microwave |
| 7.550-7.750 GHz | FIXED, MOBILE except aeronautical mobile, MARITIME MOBILE-SATELLITE (space-to- Earth), ADD5.A192 ADD5.B192 |  | Microwave |
| 7.750-7.900 GHz | FIXED  MOBILE except aeronautical mobile  METEOROLOGICAL-SATELLITE (space-to-Earth)  5.461B |  | Microwave |
| 7.900-8.025 GHz | FIXED, FIXED-SATELLITE (Earth- to-space), MOBILE, S5.461 |  | Microwave |
| 8.025-8.175 GHz | FIXED, MOBILE5.463, EARTH EXPLORATION-SATELLITE (space-to-Earth), FIXED- SATELLITE (Earth-to-space), S5.462A |  | Microwave/ISRO |
| 8.175-8.215 GHz | FIXED, MOBILE 5.463, EARTH EXPLORATION-SATELLITE (space-to-Earth), FIXED- SATELLITE (Earth-to-space), METEOROLOGICAL-SATELLITE (Earth-to-space), S5.462A |  | Microwave/ISRO |
| 8.215-8.400 GHz | FIXED, MOBILE 5.463, EARTH EXPLORATION-SATELLITE (space-to-Earth), FIXED- SATELLITE (Earth-to-space), S5.462A |  | Microwave/ISRO |
| 8.400-8.500 GHz | FIXED, MOBILE except aeronautical mobile |  | Microwave |
| 8.500-8.550 GHz | RADIOLOCATION, BRM4 |  |  |
| 8.550-8.650 GHz | RADIOLOCATION, EARTH EXPLORATION-SATELLITE (active), Space Research (active), BRM4 5.469A |  | ISRO |
| 8.650-8.750 GHz | RADIOLOCATION, BRM4 |  |  |
| 8.750-8.850 GHz | RADIOLOCATION,  AERONAUTICAL,  RADIONAVICATION, 5.470 BRM4 |  |  |
| 8.850-9.000 GHz | RADIOLOCATION, MARITIME, RADIONAVIGATION5.472 BRM4 |  |  |
| 9.000-9.200 GHz | AERONAUTICAL,  RADIONAVIGATION5.337,  RADIOLOCATION, BRM4 5.471  5.473A |  |  |
| 9.200-9.300 GHz | RADIOLOCATION, MARITIME, RADIONAVIGATION5.472, EARTH EXPLORATION­SATELLITE (active) 5.A112 5.C112 5.D112, BRM4 5.474 5.B112 |  | ISRO |
| 9.300-9.500 GHz | RADIONAVIGATION, EARTH EXPLORATION-SATELLITE (active), RADIOLOCATION, SPACE RESEARCH (active) BRM4 5.476A 5.427 5.475A 5.475B |  | ISRO |
| 9.500-9.800 GHz | EARTH EXPLORATION­SATELLITE (active), RADIOLOCATION, RADIONAVIGATION, SPACE RESEARCH (active) BRM4 5.476A |  | ISRO |
| 9.800-9.900 GHz | RADIOLOCATION, Earth exploration satellite (active), Space research (active), Fixed, BRM4 5.479 5.478B 5.478A |  | ISRO |
| 9.900-10.000  GHz | RADIOLOCATION, EARTH EXPLORATION-  SATELLITE(ACTIVE) 5.A112 5.C112 5.D112, BRM4 5.478A 5.478B 5.479 5.B112 |  | ISRO |
| 10-10.45 GHz | FIXED, MOBILE, RADIOLOCATION, Amateur, EARTH EXPLORATION­SATELLITE (active), ADD 5.A112 ADD 5.C112 Add 5.D112, BRM4 5.479 5.B112 |  | ISRO |
| 10.45-10.5 GHz | RADIOLOCATION, Amateur, Amateur-satellite, BRM30 5.481 |  |  |
| 10.5-10.55 GHz | FIXED, MOBILE, RADIOLOCATION, BRM4 |  |  |
| 10.55-10.6 GHz | FIXED, MOBILE except aeronautical mobile, RADIOLOCATION, BRM4 |  |  |
| 10.6-10.68 GHz | FIXED, MOBILE except aeronautical mobile, EARTH EXPLORATION- SATELLITE (passive), RADIOLOCATION, BRM4 BRM9 S5.482 5.149 5.482A |  | ISRO |
| 10.68-10.7 GHz | EARTH EXPLORATION- SATELLITE (passive), RADIO ASTRONOMY SPACE RESEARCH (passive), BRM4 5.340 |  | ISRO |
| 10.7-11.7 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (space-to-Earth)5.441 5.484A 5.A15, BrM4 |  | Microwave |
| 11.7-12.2 GHz | FIXED, MOBILE except aeronautical mobile, BROADCASTING, BROADCASTING-SATELLITE, 5.492 5.487 5.487A |  | Microwave |
| 12.2-12.5 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (space-to-Earth) 5.484A 5.A15, Broadcasting, BRM4 5.487 |  |  |
| 12.5-12.75 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (space-to-Earth) 5.484A 5.A15 Broadcasting satellite 5.493 BRM4 |  | Microwave |
| 12.75-13.25 GHz | FIXED, MOBILE, FIXED- SATELLITE (Earth-to-space)5.441, BRM4 |  | Microwave |
| 13.25-13.4 GHz | EARTH EXPLORATION- SATELLITE (active), AERONAUTICAL,  RADIONAVIGATION 5.497, SPACE RESEARCH (active), BRM4 5.498A |  | ISRO |
| 13.4-13.75 GHz | EARTH EXPLORATION- SATELLITE (active), RADIOLOCATION, SPACE RESEARCH5.501A ADD 5.B161  ADD 5.B161A, Standard frequency and time signal satellite (Earth-to- space), BrM4 5.501B |  | ISRO |
| 13.75-14 GHz | FIXED-SATELLITE (Earth-to- space) 5,484A, RADIOLOCATION, Standard frequency and time signal satellite (Earth-to-space), Space research BRM4 5,502 5.503 |  |  |
| 14-14.3 GHz | FIXED-SATELLITE (Earth-to- space)5.457A 5.484A 5.506, RADIONAVIGATION5.504 5.A15, Mobile-satellite (Earth-to-space) 5.506A, Space research, 5.504A BRM4 5.505 |  |  |
| 14.3-14.4 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (Earth-to-space)5.457A 5.484A 5.506 5.A15, Mobile-satellite (Earth-to-space) 5.506A, Radio navigation-satellite, BRM4 5.540A |  |  |
| 14.4-14.47 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (Earth-to-space)5.457A 5.484A 5.506 5.A15, Mobile-satellite (Earth-to-space) 5.506A, Space |  |  |
|  | research (space-to-Earth), BRM4 5.540A |  |  |
| 14.47-14.5 GHz | FIXED, MOBILE except aeronautical mobile, FIXED- SATELLITE (Earth-to-space)5.457A 5.484A 5.506 5.A15, Mobile-satellite (Earth-to-space) 5.506A, Radio astronomy, BRM4 BRM9 5.149 5.504A |  |  |
| 14.5-14.8 GHz | FIXED, MOBILE, FIXED- SATELLITE (Earth-to-space)5.510 5.A16 5.B16 5.D16 5.E16 5.F16, Space research 5.C16 BRM4 |  | Microwave |
| 14.8-15.35 GHz | FIXED, MOBILE, Space research BRM4 5.339 |  | Microwave |
| 15.35-15.4 GHz | EARTH EXPLORATION­SATELLITE (passive) RADIO ASTRONOMY, SPACE RESEARCH (passive) 5.340 BRM4 |  | ISRO |
| 15.4-15.43 GHz | RADIOLOCATION 5.511E 5.511F, AERONAUTICAL, RADIONAVIGATION, BRM4 5.511D |  |  |
| 15.43-15.63 GHz | FIXED-SATELLITE (Earth-to- space), AERONAUTICAL, RADIONAVIGATION, BRM4 S5.111A S5.111C |  |  |
| 15.63-15.7 GHz | AERONAUTICAL,  RADIONAVIGATION, BRM4 |  |  |
| 15.7-17.2 GHz | RADIOLOCATION, BRM4 |  |  |
| 17.2-17.3 GHz | EARTH EXPLORATION­SATELLITE (active), RADIOLOCATION, SPACE RESEARCH (active), BRM4 5.513A |  | ISRO |
| 17.3-17.7 GHz | FIXED-SATELLITE (Earth-to- space), Radiolocation, S5.516 |  |  |
| 17.7-18.1 GHz | FIXED, MOBILE, FIXED- SATELLITE (space-to-Earth)5.484A (Earth-to-space)5.516, BRM4 |  | Microwave |
| 18.1-18.4 GHz | FIXED, MOBILE, FIXED- SATELLITE (space-to-Earth)5.484A 5.516B (Earth-to-space)5.520 BRM4 5.519 |  | Microwave |
| 18.4-18.6 GHz | FIXED, MOBILE, FIXED- SATELLITE (space-to-Earth)5.484A 5.516B, BRM4 |  | Microwave |
| 18.6-18.8 GHz | FIXED, MOBILE except aeronautical mobile, EARTH EXPLORATION-SATELLITE (passive), FIXED-SATELLITE (space-to-Earth), Space research (passive) 5.522B, BrM4 5.522A |  | Microwave/ISRO |
| 18.8-19.3 GHz | FIXED, MOBILE, FIXED- SATELLITE (space-to-Earth)5.516B 5.523A |  | Microwave |
| 19.3-19.7 GHz | FIXED, MOBILE, FIXED- SATELLITE (space-to-Earth) (Earth- to-space)5.523B 5.523C 5.523D 5.523E, BRM4 |  | Microwave |
| 19.7-20.1 GHz | FIXED-SATELLITE (space-to- Earth)5.484A 5.516B 5.5X 5.A15, Mobile-satellite (space-to-Earth), BRM4 BRM33 |  |  |
| 20.1-20.25.484A  5.516B | FIXED-SATELLITE (space-to- Earth) 5.5X 5.A15 MOBILE- SATELLITE (space-to-Earth), BRM4 5.525 5.526 5.527 5.528 |  |  |
| 20.2-21.2 GHz | FIXED-SATELLITE (space-to- Earth), MOBILE-SATELLITE (space-to-Earth), Standard frequency and time signal-satellite (space-to- Earth), BRM4 |  |  |
| 21.2-21.4 GHz | FIXED, MOBILE, EARTH EXPLORATION-SATELLITE (passive), SPACE RESEARCH (passive), BRM4 |  | Microwave/ISRO |
| 21.4-22 GHz | FIXED, MOBILE, BROADCASTING-SATELLITE 5.208B, BRM4 5.530A 5.530B 5.530D |  | Microwave |
| 22-22.21 GHz | FIXED, MOBILE except aeronautical mobile, BRM4 BRM9 5.149 |  | Microwave |
| 22.21-22.5 GHz | FIXED, MOBILE except aeronautical mobile, EARTH EXPLORATION-SATELLITE (passive), RADIO ASTRONOMY SPACE RESEARCH (passive), BRM4 BRM9 5.149 5 532 |  | Microwave/ISRO |
| 22.5-22.55 GHz | FIXED, MOBILE, BRM4 |  | Microwave |
| 22.55-23.55 GHz | FIXED, MOBILE, INTER- SATELLITE5.538A, BRM4 BRM9 |  | Microwave |
| 23.55-23.6 GHz | FIXED, MOBILE, BRM4 |  | Microwave |
| 23.6-24 GHz | EARTH EXPLORATION­SATELLITE (passive), RADIO ASTRONOMY SPACE RESEARCH (passive), BRM4 5.340 |  | ISRO |
| Above 86 GHz not allocated | - | - | - |

3.3 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Japan

It is difficult to list all of applications and usages for each frequency band exhaustively since the frequency ranges indicated in the questionnaire are too extensive. Instead, the frequency assignment plan in Japan is attached. You can find the allocated services (in column 4) and the type of use (in column 5) for each frequency band. Regarding the number of licenses, more than 200 licenses have been issued for 92-300GHz, and considerable number of licenses for 7.125-24GHz.

 

3.4 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in New Zealand

Current usage details are extracted from the [Table of Radio Spectrum Usage in New Zealand (PIB 21)](https://www.rsm.govt.nz/about/publications/pibs/pib-21/). New Zealand licence information can be found on the public online [Register of Radio Frequencies](https://rrf.rsm.govt.nz/smart-web/smart/page/-smart/WelcomePage.wdk).

**7.125 – 24 GHz Frequency Bands**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Frequency Portion (MHz)** | **Applications (Services)** | **Number of systems/licenses** | | **Type of use** |
| 7075 – 7250 MHz | Fixed | 6440 – 7100 MHz Fixed “7 GHz (Lower)” band | | Commercial, private |
| 7100 – 7425 MHz Fixed “7 GHz (Middle)” band | |
| 7250 – 7750 MHz | Fixed and  Fixed – Satellite (Space-to-Earth) | 7250 – 7750 MHz  Fixed satellite “X” band – downlink | | Commercial, private |
| 7425 – 7725 MHz  Fixed “7 GHz (Upper)” band | |
| 7725 – 8275 MHz Fixed “8 GHz (Lower)” band | |
| 7750 – 7900 MHz | Fixed | 7725 – 8275 MHz Fixed “8 GHz (Lower)” band | | Commercial, private |
| 7900 – 8400 MHz | Fixed and  Fixed – Satellite (Earth-to-Space) | 7725 – 8275 MHz Fixed “8 GHz (Lower)” band | | Commercial, private |
| 7900 – 8400 MHz Fixed satellite “X” band – uplink | |
| 8275 – 8500 MHz Fixed “8 GHz (Upper)” band | |
| 8400 – 8500 MHz | Fixed | 8275 – 8500 MHz Fixed “8 GHz (Upper)” band | | Commercial, private |
| 8500 – 8750 MHz | Radiolocation | Short Range Devices – Limited to radiolocation use | | Commercial, Private |
| 8750 – 8850 MHz | Radiolocation and Aeronautical Radionavigation | 8750 – 8850 MHz Airborne Doppler radar | | Commercial, private |
| 8500 – 10000 MHz Short Range Devices – Limited to radiolocation usage | |
| 8850 – 9000 MHz | Radiolocation Maritime Radionavigation | 8500 – 10000 MHz Short Range Devices – Limited to radiolocation usage | | Commercial, private |
| 9000 – 9200 MHz | Aeronautical Radionavigation | 8500 – 10000 MHz Short Range Devices – Limited to radiolocation usage | | Commercial, private |
| 9200 – 9300 MHz | Radiolocation and  Maritime Radionavigation | 8500 – 10000 MHz Short Range Devices – Limited to radiolocation usage | | Commercial, private, and emergency |
| 9200 – 9500 MHz Maritime radar | |
| 9200 – 9500 MHz Search and rescue transponders | |
| 9300 – 9500 MHz | Radiolocation and  Maritime Radionavigation | 8500 – 10000 MHz Short Range Devices – Limited to radiolocation usage | | Commercial, private, and emergency |
|  |  | 9200 – 9500 MHz Maritime radar | |
| 9200 – 9500 MHz Search and rescue transponders | |
| 9500 – 10000 MHz | Radiolocation | 8500 – 10000 MHz Short Range Devices – Limited to radiolocation usage | | Commercial, private |
| 10 – 10.5 GHz | Radiolocation  Amateur and Amateur-Satellite | 10 – 10.5 GHz Amateur usage | | Commercial, private |
| 10-10.6 GHz Short Range Devices – limited to radiolocation usage | |
| 10.5 – 10.68 GHz | Fixed and Radiolocation | 10 – 10.6 GHz Short Range Devices – limited to radiolocation usage | | Commercial, private |
| 10.5 – 10.68 GHz Fixed “10 GHz” band | |
| 10.68 – 10.7 GHz | Radio astronomy and Space research (passive) | All emissions prohibited | | |
| 10.7 – 11.7 GHz | Fixed | 10.7 – 11.7 GHz Fixed “11 GHz” Band | Commercial, private | |
| 11.7 – 12.2 GHz | Broadcasting – Satellite | 11.7 – 12.75 GHz Fixed satellite “Ku” band – downlink | Commercial | |
| 12.5 – 12.75 GHz | Broadcasting – Satellite and Fixed-Satellite (Space-to-Earth) | 11.7 – 12.75 GHz Fixed satellite “Ku” band – downlink | Commercial, private | |
| 12.2 – 12.75 GHz Broadcasting-satellite – Freeview and Sky TV satellite services |
| 12.75 – 13.25 GHz | Fixed | 12.75 – 13.25 GHz Fixed “13 GHz” band | Commercial, private | |
| 13.25 – 13.4 GHz | Earth exploration satellite (active), Aeronautical radionavigation, and Space research (active) | Aeronautical radionavigation applications – airborne Doppler radar | Commercial | |
| 13.4 – 14 GHz | Earth exploration satellite (active), Radiolocation, and Space research | Government radiolocation usage | Government | |
| 14 – 14.5 GHz | Fixed-Satellite (Earth-to-space) and Mobile-Satellite (Earth-to-Space) | 14 – 14.5 Fixed satellite “Ku” band – uplink (including earth station in-motion) | Commercial, private | |
| 14-14.5 GHz Maritime mobile satellite service – uplink |
| 14 – 14.5 GHz Aeronautical mobile satellite service – uplink |
| 14.5 – 15.35 GHz | Fixed | 14.5 – 15.35 GHz Fixed “15 GHz” band | Commercial, private | |
| 15.35 – 15.4 GHz | Radio astronomy and Space research (passive) | All emissions prohibited | | |
| 15.4 – 15.43 GHz | Aeronautical navigation | No current use | | |
| 15.43 – 15.63 GHz | Fixed satellite (Space-to-Earth), Aeronautical, and Radionavigation | No current usage | | |
| 15.63 – 15.7 GHz | Aeronautical navigation | No current usage | | |
| 15.7 – 16.6 GHz | Radiolocation | 15.7 – 17.3 GHz Short Range Devices – limited to radiolocation usage | Commercial, private | |
| 16.6 – 17.1 GHz | Radiolocation and Space research (Deep Space, Earth-to-Space) | 15.7 – 17.3 GHz Short Range Devices – limited to radiolocation usage | Commercial, private | |
| 17.1 – 17.2 GHz | Radiolocation | 15.7 – 17.3 GHz Short Range Devices – limited to radiolocation usage | Commercial, private | |
| 17.2 – 17.3 GHz | Earth exploration-satellite (active), Radiolocation, and Space research (active) | 15.7 – 17.3 GHz Short Range Devices – limited to radiolocation usage | Commercial, private | |
| 17.3 – 17.7 GHz | Fixed-satellite (Earth-to-Space) and Radiolocation | No current usage | | |
| 17.7-19.7 GHz | Fixed and Fixed satellite (Space-to-Earth) | 17.7 – 19.7 GHz Fixed satellite “Ka” band – downlink | Commercial, private | |
| 17.7 – 19.7 GHz Fixed “18 GHz” band |
| 19.7 – 20.2 GHz | Fixed satellite (Space-to-Earth) and Mobile-satellite (Space-to-Earth) | 19.7 – 20.2 GHz Fixed satellite “Ka” band – downlink (including Earth station in-motion) | Commercial, private | |
| 19.7 – 20.2 GHz Mobile satellite “Ka” band – downlink |
| 20.2 – 21.2 GHz | Fixed satellite (Space-to-Earth) and Mobile-satellite (Space-to-Earth) | Government fixed and mobile satellite – downlink | Government | |
| 21.2 – 23.6 GHz | Fixed and Mobile | Fixed “23 GHz” band | Commercial, private | |
| 23.6 – 24 GHz | Radio astronomy and Space research (passive) | All emissions prohibited | | |

**92 – 300 GHz Frequency Bands**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Frequency Portion (MHz)** | **Applications (Services)** | **Number of systems/licenses** | | **Type of use** |
| 92 – 94 GHz | Unallocated | All emissions prohibited | | |
| 94 – 102 GHz | Unallocated | No current usage | | |
| 102 – 105 GHz | Unallocated | All emissions prohibited | | |
| 105 – 109.5 GHz | Unallocated | No current usage | | |
| 109.5 – 111.8 GHz | Unallocated | No current usage | | |
| 111.8 – 114.25 GHz | Unallocated | All emissions prohibited | | |
| 114.25 – 119.98 GHz | Unallocated | No current usage | | |
| 119.95 – 122.25 GHz | Mobile | Short Range Devices | Commercial, private | |
| 122.25 – 123 GHz | Mobile  Amateur | 122 – 123 GHz Short Range Devices | Commercial, private | |
| 122 – 123 GHz Industrial scientific and medical band |
| 122.25 – 123 GHz Amateur usage |
| 123 – 134 GHz | Unallocated | No current usage | | |
| 134 – 141 GHz | Amateur and Amateur-satellite | Amateur usage | Private | |
| 141 – 241 GHz | Unallocated | No current usage | | |
| 241 – 250 GHz | Radiolocation, Amateur, and Amateur-satellite | 241-250 Amateur usage | Commercial, private | |
| 244-246 Short Range Devices |
| 244 – 246 GHz Industrial, scientific, and medical band |
| 250 – 300 GHz | Unallocated | No current usage | | |

3.5 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Korea, Republic Of

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| 7075-7300 MHz  7750-7900 MHz  8025-8175 MHz  8215-8500 MHz  10-10.45 GHz  10.5-11.7 GHz  12.5-13.25 GHz  14.4-15.35 GHz  17.7-18.4 GHz  18.8-19.7 GHz  21.2-23.6 GHz | Mobile  (see AFIS for more information) | To be updated | To be updated |
| 7075-8500 MHz  10-10.45 GHz  10.5-13.25 GHz  14-15 GHz  17.7-19.7 GHz  21.2-23.6 GHz | Fixed  (see AFIS for more information) | To be updated | To be updated |
| 8.5-10.55 GHz  13.4-14 GHz  15.4-17.3 GHz | Radiolocation  (see AFIS for more information) | To be updated | To be updated |
| 9.2-10GHz  10.7-14.8 GHz  17.3-22 GHz  23.6-24 GHz | Satellite (FSS, EESS and etc.)  (see AFIS for more information) | To be updated | To be updated |

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| 92-94 GHz  94.1-95 GHz  95-100 GHz  102-109.5 GHz  111.8-114.25 GHz  122.25-123 GHz  130-134 GHz  141-148.5 GHz  151.5-164 GHz  167-171 GHz  171.16-172.2 GHz  172.8-173.3 GHz  174-174.8 GHz  191.8-200 GHz  209-217 GHz  217-226 GHz  231.5-235 GHz  238-241 GHz  252-275 GHz | Mobile  (see AFIS for more information) | To be updated | To be updated |
| 92-94 GHz  94.1-95 GHz  95-100 GHz  102-109.5 GHz  111.8-114.25 GHz  122.25-123 GHz  130-134 GHz  141-148.5 GHz  151.5-164 GHz  167-171 GHz  171.16-172.2 GHz  172.8-173.3 GHz  174-174.8 GHz  191.8-200 GHz  209-217 GHz  217-226 GHz  231.5-235 GHz  238-241 GHz  252-275 GHz | Fixed  (see AFIS for more information) | To be updated | To be updated |
| 92-100 GHz  136-148.5 GHz  151.5-155.5 GHz  238-248 GHz | Radiolocation  (see AFIS for more information) | To be updated | To be updated |
| 92-94 GHz  94.1-116 GHz  128-134 GHz  136-158.5 GHz  164-167 GHz  171-171.16 GHz  172.2-172.8 GHz  173.3-174 GHz  182-185 GHz  200-231.5 GHz | Radio Astronomy | To be updated | To be updated |
| 94-94.1 GHz  100-102 GHz  105-136 GHz  148.5-151.5 GHz  158.5-171 GHz  171.16-172.2 GHz  172.8-173.3 GHz  174-231.5 GHz  232-240 GHz  248-275 GHz | Satellite (FSS, EESS and etc.)  (see AFIS for more information) | To be updated | To be updated |

3.6 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Indonesia

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion (MHz)** | **Applications (Services)** | **Number of systems/licenses\*** | **Type of use** |
| 7 125–7 425 | Point-to-point link | 30.367 | Commercial |
| 7 425–8 500 | Earth exploration-satellite,  Fixed satellite service (BSS feeder link), point-to-point link | 77.705 | Government and commercial |
| 10 154–10 294 | Wireless broadband | 159 | Commercial |
| 10 504–10 644 | Wireless broadband | 2 | Commercial |
| 10 500–10 550 | Point-to-multipoint | 1 | Commercial |
| 10 700–11 700 | Point-to-point link,  Fixed Satellite service | 43.054 | Commercial |
| 10 700–10 950 | Point-to point link,  Fixed satellite-service (planned band) | 12.581 | Commercial |
| 10 990–11 662 | Point-to-point,  Fixed Satellite Service/FSS Ku band (downlink) | 26.997 | Commercial |
| 11 150–11 222 | Point-to-point, Fixed Satellite Service/FSS Ku band (downlink) | 1.061 | Commercial |
| 11 200–11 450 | Point-to-point,  Fixed satellite-service (planned band) | 12.578 | Commercial |
| 11 490–11 562 | Point-to-point,  Fixed Satellite Service/FSS Ku band (downlink) | 1.331 | Commercial |
| 11 650–11 700 | Point-to-point,  Fixed Satellite Service/FSS Ku band (downlink) | 1.060 | Commercial |
| 11 700–12 200 | Broadcasting satellite-service (planned band), | 2 | Commercial |
| 12 750–13 250 | point-to-point link | 41.701 | Commercial |
| **Frequency Portion (MHz)** | **Applications (Services)** | **Number of systems/licenses\*** | **Type of use** |
| 13 790–13 862 | Fixed Satellite Service/FSS Ku band (uplink) | 8 | Commercial |
| 13 950–14 022 | Fixed Satellite Service/FSS Ku band (uplink) | 6 | Commercial |
| 14 290–14 362 | Fixed Satellite Service/FSS Ku band (uplink) | 16 | Commercial |
| 14 400–15 350 | Point-to-point link,  Fixed satellite service | 72.485 | Commercial |
| 14 450–14 522 | Point-to-point,  Fixed Satellite Service/FSS Ku band (uplink) | 4.949 | Commercial |
| 14 500–14 800 | Point-to-point,  Fixed satellite service | 24.886 | Commercial |
| 17 300–18 100 | Point-to-point,  Fixed satellite service | 33 | Commercial |
| 17 700–19 700 | Point-to-point link,  Fixed satellite service | 115 | Commercial |
| 21 200–23 600 | Point-to-point link | 132.179 | Commercial |

***\*including blanket license for FSS and BSS***

3.7 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Viet Nam

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion**  **(GHz)** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| **7,125-7,145** | **Point-to-point link (Fixed)**  (Mobile) | **1500 Licenses Point-to-point link (Fixed)** | **Commercial** |
| **7,145-7,190** | **Point-to-point link (Fixed)**  (Mobile)  (Space Research) |
| **7,190-7,235** | (Earth Exploration - Satellite)  **Point-to-point link (Fixed)**  (Mobile)  (Space Research) |
| **7,235-7,250** | (Earth Exploration - Satellite)  **Point-to-point link (Fixed)**  (Mobile) |
| **7,250-7,300** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) |
| **7,300-7,375** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile except Aeronautical Mobile) |
| **7,375-7,450** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile except Aeronautical Mobile)  (Maritime Mobile - Satellite) |
| **7,450-7,550** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Meteorological - Satellite)  (Mobile except Aeronautical Mobile)  (Maritime Mobile - Satellite) | **1000 Licenses Point-to-point link (Fixed)** |
| **7,550-7,750** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile except Aeronautical Mobile)  (Maritime Mobile - Satellite) |
| **7,750-7,900** | **Point-to-point link (Fixed)**  (Meteorological - Satellite)  (Mobile except Aeronautical Mobile) | **300 Licenses Point-to-point link (Fixed)** |
| **7,900-8,025** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) |
| **8,025-8,175** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile)  (Earth Exploration – Satellite) |
| **8,175-8,215** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Meteorological - Satellite)  (Mobile)  (Earth Exploration – Satellite) |
| **8,215-8,400** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile)  (Earth Exploration – Satellite) | **Several Licenses Point-to-point link (Fixed)** |
| **8,400-8,500** | **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile)  (Space Research) |
| **8,500-8,550** | (Radiolocation) | **/** | **/** |
| **8,550-8,650** | (Earth Exploration - Satellite)  (Radiolocation)  (Space Research) | **/** | **/** |
| **8,650-8,750** | (Radiolocation) | **/** | **/** |
| **8,750-8,850** | (Radiolocation)  (Aeronautical Radionavigation) | **/** | **/** |
| **8,850-9,000** | (Radiolocation)  (Maritime Radionavigation) | **/** | **/** |
| **9,000-9,200** | (Aeronautical Radionavigation)  **Radar (Radiolocation)** | **2000 Licenses Radar (Maritime Radionavigation)**  **Several Licenses Radar (Radiolocation)** | **Government**  **Private**  **Commercial** |
| **9,200-9,300** | (Earth Exploration - Satellite)  **Radar (Radiolocation)**  **Radar (Maritime Radionavigation)** |
| **9,300-9,500** | **Radar (Radiolocation)**  (Earth Exploration - Satellite)  (Space Research Radiolocation) |
| **9,500-9,800** | (Earth Exploration - Satellite)  (Radiolocation)  (Radionavigation)  (Space Research) | **/** | **/** |
| **9,800-9,900** | (Radiolocation)  (Earth Exploration - Satellite)  (Space Research)  **Point-to-point link (Fixed)** | **Several Licenses Point-to-point link (Fixed)** | **Commercial** |
| **9,900-10,000** | (Earth Exploration - Satellite)  (Radiolocation)  **Point-to-point link (Fixed)** |
| **10-10,4** | (Earth Exploration - Satellite)  **Point-to-point link (Fixed)**  (Mobile)  (Radiolocation)  (Amateur) |
| **10,4-10,45** | **Point-to-point link (Fixed)**  (Mobile)  (Radiolocation)  (Amateur) |
| **10,45-10,5** | (Radiolocation)  (Amateur)  (Amateur - Satellite) | **/** | **/** |
| **10,5-10,55** | **Point-to-point link (Fixed)**  (Mobile)  (Radiolocation) | **Several Licenses Point-to-point link (Fixed)** | **Commercial** |
| **10,55-10,6** | **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile)  (Radiolocation) |
| **10,6-10,68** | (Earth Exploration - Satellite)  **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile)  (Radio Astronomy)  (Space Research)  (Radiolocation) |
| **10,68-10,7** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **10,7-10,95** | **Point-to-point link (Fixed)**  **(Fixed – Satellite)**  (Mobile except Aeronautical Mobile) | **Several Licenses (Fixed - Satellite)**  **1500 Licenses Point-to-point link (Fixed)** | **Government**  **Private**  **Commercial** |
| **10,95-11,2** |
| **11,2-11,45** |
| **11,45-11,7** |
| **11,7-12,2** | **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile)  (Broadcasting)  (Broadcasting - Satellite) |
| **12,2-12,5** | **Point-to-point link (Fixed)**  **(Fixed – Satellite)**  (Mobile except Aeronautical Mobile)  (Broadcasting) |
| **12,5-12,75** | **Point-to-point link (Fixed)**  **(Fixed – Satellite)**  (Mobile except Aeronautical Mobile)  (Broadcasting - Satellite) |
| **12,75-13,25** | **Point-to-point link (Fixed)**  **(Fixed – Satellite)**  (Mobile)  (Space Research) |
| **13,25-13,4** | (Earth Exploration - Satellite)  (Aeronautical Radionavigation)  (Space Research) |
| **13,4-13,65** | (Earth Exploration - Satellite)  (Radiolocation)  (Space Research)  (Standard frequency and Time Signal - Satellite) |
| **13,65-13,75** | (Earth Exploration - Satellite)  (Radiolocation)  (Space Research)  (Standard frequency and Time Signal - Satellite) |
| **13,75-14** | **(Fixed – Satellite)**  (Radiolocation)  (Earth Exploration - Satellite)  (Standard frequency and Time Signal - Satellite)  (Space Research) |
| **14-14,25** | **(Fixed – Satellite)**  (Radionavigation)  (Mobile - Satellite)  (Space Research) |
| **14,25-14,3** | **(Fixed – Satellite)**  (Radionavigation)  (Mobile - Satellite)  (Space Research) |
| **14,3-14,4** | **(Fixed – Satellite)**  **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile)  (Mobile - Satellite)  (Radionavigation - Satellite) |
| **14,4-14,47** | **Point-to-point link (Fixed)**  **(Fixed – Satellite)**  (Mobile except Aeronautical Mobile)  (Mobile - Satellite)  (Space Research) |
| **14,47-14,5** | **(Fixed)**  **(Fixed – Satellite)**  (Mobile except Aeronautical Mobile)  (Mobile - Satellite)  (Radio Astronomy) | **/** | **/** |
| **14,5-14,8** | **Point-to-point link (Fixed)**  **(Fixed – Satellite)**  (Mobile)  (Space Research) | **6000 Licenses Point-to-point link (Fixed)** | **Commercial** |
| **14,8-15,35** | **Point-to-point link (Fixed)**  (Mobile)  (Space Research) |
| **15,35-15,4** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **15,4-15,43** | (Radiolocation)  (Aeronautical Radionavigation) | **/** | **/** |
| **15,43-15,63** | (Fixed - Satellite)  (Radiolocation)  (Aeronautical Radionavigation) | **/** | **/** |
| **15,63-15,7** | (Radiolocation)  (Aeronautical Radionavigation) | **/** | **/** |
| **15,7-16,6** | (Radiolocation) | **/** | **/** |
| **16,6-17,1** | (Radiolocation)  (Space Research) | **/** | **/** |
| **17,1-17,2** | (Radiolocation) | **/** | **/** |
| **17,2-17,3** | (Radiolocation)  (Earth Exploration - Satellite)  (Space Research) | **/** | **/** |
| **17,3-17,7** | (Fixed - Satellite)  (Radiolocation) | **/** | **/** |
| **17,7-18,1** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) | **1000 Licenses Point-to-point link (Fixed)** | **Commercial** |
| **18,1-18,4** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) |
| **18,4-18,6** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) |
| **18,6-18,8** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile except Aeronautical Mobile)  (Earth Exploration - Satellite)  (Space Research) |
| **18,8-19,3** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) |
| **19,3-19,7** | **Point-to-point link (Fixed)**  (Fixed - Satellite)  (Mobile) |
| **19,7-20,1** | (Fixed - Satellite)  (Mobile - Satellite) | **/** | **/** |
| **20,1-20,2** | (Fixed - Satellite)  (Mobile - Satellite) | **/** | **/** |
| **20,2-21,2** | (Fixed - Satellite)  (Mobile - Satellite)  (Standard frequency and Time Signal - Satellite) | **/** | **/** |
| **21,2-21,4** | **Point-to-point link (Fixed)**  (Mobile)  (Earth Exploration - Satellite)  (Space Research) | **2000 Licenses Point-to-point link (Fixed)** | **Commercial** |
| **21,4-22** | **Point-to-point link (Fixed)**  (Mobile)  (Broadcasting - Satellite) |
| **22-22,21** | **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile) |
| **22,21-22,5** | **Point-to-point link (Fixed)**  (Mobile except Aeronautical Mobile)  (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) |
| **22,5-22,55** | **Point-to-point link (Fixed)**  (Mobile) |
| **22,55-23,15** | **Point-to-point link (Fixed)**  (Inter - Satellite)  (Mobile)  (Space Research) |
| **23,15-23,55** | **Point-to-point link (Fixed)**  (Inter - Satellite)  (Mobile) |
| **23,55-23,6** | **Point-to-point link (Fixed)**  (Mobile) |
| **23,6-24** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **92-94** | (Fixed)  (Mobile)  (Radio Astronomy)  (Radiolocation) | **/** | **/** |
| **94-94,1** | (Earth Exploration - Satellite)  (Radiolocation)  (Space Research)  (Radio Astronomy) | **/** | **/** |
| **94,1-95** | (Fixed)  (Mobile)  (Radio Astronomy)  (Radiolocation) | **/** | **/** |
| **95-100** | (Fixed)  (Mobile)  (Radio Astronomy)  (Radionavigation)  (Radionavigation - Satellite)  (Radiolocation) | **/** | **/** |
| **100-102** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **102-105** | (Fixed)  (Mobile)  (Radio Astronomy) | **/** | **/** |
| **105-109,5** | (Fixed)  (Mobile)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **109,5-111,8** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **111,8-114,25** | (Fixed)  (Mobile)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **114,25-116** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **116-119,98** | (Earth Exploration - Satellite)  (Inter - Satellite)  (Space Research) | **/** | **/** |
| **119,98-122,25** | (Earth Exploration - Satellite)  (Inter - Satellite)  (Space Research) | **/** | **/** |
| **122,25-123** | (Fixed)  (Inter - Satellite)  (Mobile)  (Amateur) | **/** | **/** |
| **123-130** | (Fixed - Satellite)  (Mobile - Satellite)  (Radionavigation)  (Radionavigation - Satellite)  (Radio Astronomy) | **/** | **/** |
| **130-134** | (Earth Exploration - Satellite)  (Fixed)  (Inter - Satellite)  (Mobile)  (Radio Astronomy) | **/** | **/** |
| **134-136** | (Amateur)  (Amateur - Satellite)  (Radio Astronomy) | **/** | **/** |
| **136-141** | (Radio Astronomy)  (Radiolocation)  (Amateur)  (Amateur - Satellite) | **/** | **/** |
| **141-148,5** | (Fixed)  (Mobile)  (Radio Astronomy)  (Radiolocation) | **/** | **/** |
| **148,5-151,5** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **151,5-155,5** | (Fixed)  (Mobile)  (Radio Astronomy)  (Radiolocation) | **/** | **/** |
| **155,5-158,5** | (Fixed)  (Mobile)  (Radio Astronomy) | **/** | **/** |
| **158,5-164** | (Fixed)  (Fixed - Satellite)  (Mobile)  (Mobile - Satellite) | **/** | **/** |
| **164-167** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **167-174,5** | (Fixed)  (Fixed - Satellite)  (Inter - Satellite)  (Mobile) | **/** | **/** |
| **174,5-174,8** | (Fixed)  (Inter - Satellite)  (Mobile) | **/** | **/** |
| **174,8-182** | (Earth Exploration - Satellite)  (Inter - Satellite)  (Space Research) | **/** | **/** |
| **182-185** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **185-190** | (Earth Exploration - Satellite)  (Inter - Satellite)  (Space Research) | **/** | **/** |
| **190-191,8** | (Earth Exploration - Satellite)  (Space Research) | **/** | **/** |
| **191,8-200** | (Fixed)  (Inter - Satellite)  (Mobile)  (Mobile - Satellite)  (Radionavigation)  (Radionavigation - Satellite) | **/** | **/** |
| **200-202** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **202-209** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **209-217** | (Fixed)  (Fixed - Satellite)  (Mobile)  (Radio Astronomy) | **/** | **/** |
| **217-226** | (Fixed)  (Fixed - Satellite)  (Mobile)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **226-231,5** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **231,5-232** | (Fixed)  (Mobile)  (Radiolocation) | **/** | **/** |
| **232-235** | (Fixed)  (Fixed - Satellite)  (Mobile)  (Radiolocation) | **/** | **/** |
| **235-238** | (Earth Exploration - Satellite)  (Fixed - Satellite)  (Space Research) | **/** | **/** |
| **238-240** | (Fixed)  (Fixed - Satellite)  (Mobile)  (Radiolocation)  (Radionavigation)  (Radionavigation - Satellite) | **/** | **/** |
| **240-241** | (Fixed)  (Mobile)  (Radiolocation) | **/** | **/** |
| **241-248** | (Radio Astronomy)  (Radiolocation)  (Amateur)  (Amateur - Satellite) | **/** | **/** |
| **248-250** | (Amateur)  (Amateur - Satellite)  (Radio Astronomy) | **/** | **/** |
| **250-252** | (Earth Exploration - Satellite)  (Radio Astronomy)  (Space Research) | **/** | **/** |
| **252-265** | (Fixed)  (Mobile)  (Mobile - Satellite)  (Radio Astronomy)  (Radionavigation)  (Radionavigation - Satellite) | **/** | **/** |
| **265-275** | (Fixed)  (Fixed - Satellite)  (Mobile)  (Radio Astronomy) | **/** | **/** |
| **275-300** | Unallocated | **/** | **/** |

***NOTE:***

In the Applications (Services) column:

- Bold letters, eg. **Point-to-point link (Fixed)**: system in operation and associated service

- Normal letters, eg. (Fixed): no system in operation, with allocated service only

3.8 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Papua New Guinea

The current usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz could be referred to Papua New Guinea national frequency plan (i.e. <https://www.nicta.gov.pg/regulatory/spectrum-radio-communications/radiofrequency-spectrum-allocation-chart/>).

Papua New Guinea would like to share the following table and figure represent the number of satellite systems/networks filed at the ITU in the 7-24 GHz range for Asia Pacific region from 25 APT Members including Papua New Guinea.

|  |  |  |
| --- | --- | --- |
|  | Number of satellite systems/networks filed in 7-24GHz range | |
|  | GSO | non-GSO |
| Asia Pacific Region | 2603 | 732 |

The high number of both GSO and NGSO systems/networks for planned and unplanned bands in the range 7-24 GHz demonstrates the importance of this frequency range for current and future satellite services.

***Please provide detail***

***NOTE:***

* *Type of use, for example: commercial, private, government, etc.*

3.9 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in India

|  |  |
| --- | --- |
| **Frequency Portion**  (in MHz below 10 GHz and in GHz beyond 10 GHz) | **Applications (Services) and RR no.s** |
| **7 075-7 145** | FIXED  MOBILE  5.458 |
| **7 145-7 190** | FIXED  MOBILE  SPACE RESEARCH (deep space) (Earth-to-space)  5.458 |
| **7 190-7 235** | EARTH EXPLORATION-SATELLITE (Earth-to-space)     5.460A   5.460B  FIXED  MOBILE  SPACE RESEARCH (Earth-to-space)   5.460  5.458 |
| **7 235-7 250** | EARTH EXPLORATION-SATELLITE (Earth-to-space)     5.460A  FIXED  MOBILE  5.458 |
| **7 250-7 300** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE    5.461 |
| **7 300-7 375** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE except aeronautical mobile    5.461 |
| **7 375-7 450** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE except aeronautical mobile  MARITIME MOBILE-SATELLITE (space-to-Earth)     5.461AA   5.461AB |
| **7 450-7 550** | FIXED  FIXED-SATELLITE (space-to-Earth)  METEOROLOGICAL-SATELLITE (space-to-Earth)  MOBILE except aeronautical mobile  MARITIME MOBILE-SATELLITE (space-to-Earth)     5.461AA   5.461AB  5.461A |
| **7 550-7 750** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE except aeronautical mobile  MARITIME MOBILE-SATELLITE (space-to-Earth)     5.461AA   5.461AB |
| **7 750-7 900** | FIXED  METEOROLOGICAL-SATELLITE (space-to-Earth)     5.461B  MOBILE except aeronautical mobile |
| **7 900-8 025** | FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE  MOBILE-SATELLITE (Earth-to-space)  5.461 |
| **8 025-8 175** | EARTH EXPLORATION-SATELLITE (space-to-Earth)  FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE   5.463  5.462A |
| **8 175-8 215** | EARTH EXPLORATION-SATELLITE (space-to-Earth)  FIXED  FIXED-SATELLITE (Earth-to-space)  METEOROLOGICAL-SATELLITE (Earth-to-space)  MOBILE   5.463  5.462A |
| **8 215-8 400** | EARTH EXPLORATION-SATELLITE (space-to-Earth)  FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE   5.463  5.462A |
| **8 400-8 500** | FIXED  MOBILE except aeronautical mobile  SPACE RESEARCH (space-to-Earth)   5.465 |
| **8 500-8 550** | RADIOLOCATION |
| **8 550-8 650** | EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  SPACE RESEARCH (active)  5.469A |
| **8 650-8 750** | RADIOLOCATION |
| **8 750-8 850** | RADIOLOCATION  AERONAUTICAL RADIONAVIGATION   5.470 |
| **8 850-9 000** | RADIOLOCATION  MARITIME RADIONAVIGATION   5.472 |
| **9 000-9 200** | RADIOLOCATION  AERONAUTICAL RADIONAVIGATION 5.337  5.473A |
| **9 200-9 300** | EARTH EXPLORATION-SATELLITE (active)   5.474A     5.474B   5.474C  RADIOLOCATION  MARITIME RADIONAVIGATION   5.472  5.474   5.474D |
| **9 300-9 500** | EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  RADIONAVIGATION   5.475  SPACE RESEARCH (active)  5.427   5.474   5.475A   5.475B   5.476A |
| **9 500-9 800** | EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  RADIONAVIGATION  SPACE RESEARCH (active)  5.476A |
| **9 800-9 900** | FIXED  RADIOLOCATION  Earth exploration-satellite (active)  Space research (active)    5.477   5.478A   5.478B |
| **9 900-10 000** | FIXED  EARTH EXPLORATION-SATELLITE (active)   5.474A     5.474B   5.474C  RADIOLOCATION    5.474D   5.477   5.479 |
| **10-10.4** | EARTH EXPLORATION SATELLITE (active)   5.474A     5.474B   5.474C  FIXED  MOBILE  RADIOLOCATION  Amateur    5.474D   5.479 |
| **10.4-10.45** | FIXED  MOBILE  RADIOLOCATION  Amateur |
| **10.45-10.5** | RADIOLOCATION  Amateur  Amateur-satellite |
| 10.5-10.55 | FIXED  MOBILE  RADIOLOCATION |
| **10.55-10.6** | FIXED  MOBILE except aeronautical mobile  Radiolocation |
| **10.6-10.68** | EARTH EXPLORATION-SATELLITE (passive)  FIXED  MOBILE except aeronautical mobile  RADIO ASTRONOMY  SPACE RESEARCH (passive)  Radiolocation  5.149   5.482   5.482A |
| **10.68-10.7** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| 10.7-10.95 | FIXED  FIXED-SATELLITE (space-to-Earth)   5.441   IND 17  MOBILE except aeronautical mobile |
| 10.95-11.2 | FIXED  FIXED-SATELLITE (space-to-Earth)   5.484A   5.484B     IND 17   IND 30  MOBILE except aeronautical mobile |
| 11.2-11.45 | FIXED  FIXED-SATELLITE (space-to-Earth)   5.441   IND 17  MOBILE except aeronautical mobile |
| 11.45-11.7 | FIXED  FIXED-SATELLITE (space-to-Earth)   5.484A   5.484B     IND 17   IND 30  MOBILE except aeronautical mobile |
| **11.7-12.2** | FIXED  MOBILE except aeronautical mobile  BROADCASTING  BROADCASTING-SATELLITE    5.492  5.487  5.487A |
| **12.2-12.5** | FIXED  FIXED-SATELLITE (space-to-Earth)  5.484B   IND 30  MOBILE except aeronautical mobile  BROADCASTING      5.487  5.484A |
| **12.5-12.75** | FIXED  FIXED-SATELLITE  (space-to-Earth) 5.484A     5.484B   IND 17   IND 30  MOBILE except aeronautical mobile  BROADCASTING- SATELLITE  5.493 |
| **12.75-13.25** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.441  MOBILE  Space research (deep space) (space-to-Earth) |
| **13.25-13.4** | FIXED  EARTH EXPLORATION-SATELLITE (active)  AERONAUTICAL RADIONAVIGATION   5.497  SPACE RESEARCH (active)  5.498A   5.499 |
| 13.4-13.65 | FIXED  EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  SPACE RESEARCH   5.499C   5.499D  Standard frequency and time signal-satellite (Earth-to-space)  5.499   5.501B |
| **13.65-13.75** | FIXED  EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  SPACE RESEARCH   5.501A  Standard frequency and time signal-satellite (Earth-to-space)  5.499   5.501B |
| **13.75-14** | FIXED  FIXED-SATELLITE (Earth-to-space)  5.484A  RADIOLOCATION  Earth exploration-satellite  Standard frequency and time signal-satellite (Earth-to-space)  Space research  5.499   5.502   5.503 |
| **14-14.25** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.457A     5.484A   5.484B   5.506   5.506B   IND 17  RADIONAVIGATION   5.504  Mobile-satellite (Earth-to-space)   5.504B   5.504C   5.506A  Space research  5.504A   5.505 |
| **14.25-14.3** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.457A     5.484A   5.484B   5.506   5.506B   IND 17  RADIONAVIGATION  5.504  Mobile-satellite (Earth-to-space)   5.504B   5.506A   5.508A  Space research  5.504A   5.505 |
| **14.3-14.4** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.457A     5.484A   5.484B   5.506   5.506B   IND 17  MOBILE except aeronautical   mobile  Mobile-satellite (Earth-to-space)  5.504B   5.506A   5.509A  Radionavigation-satellite  5.504A |
| **14.4-14.47** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.457A     5.484A   5.484B   5.506   5.506B   IND 17  MOBILE except aeronautical mobile  Mobile-satellite (Earth-to-space)   5.504B   5.506A   5.509A  Space research (space-to-Earth)  5.504A |
| **14.47-14.5** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.457A     5.484A   5.506   5.506B   IND 17  MOBILE except aeronautical mobile  Mobile-satellite (Earth-to-space)   5.504B   5.506A   5.509A  Radio astronomy  5.149   5.504A |
| **14.5-14.8** | FIXED  FIXED-SATELLITE (Earth-to-space)   5.509B   5.509C     5.509D   5.509E   5.509F   5.510  MOBILE  Space research   5.509G |
| **14.8-15.35** | FIXED  MOBILE  Space research  5.339 |
| **15.35-15.4** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| **15.4-15.43** | RADIOLOCATION   5.511E   5.511F  AERONAUTICAL RADIONAVIGATION |
| **15.43-15.63** | FIXED-SATELLITE (Earth-to-space)   5.511A  RADIOLOCATION  5.511E  5.511F  AERONAUTICAL RADIONAVIGATION  5.511C |
| **15.63-15.7** | RADIOLOCATION   5.511E   5.511F  AERONAUTICAL RADIONAVIGATION |
| **15.7-16.6** | FIXED  MOBILE  RADIOLOCATION  5.512 |
| **16.6-17.1** | FIXED  MOBILE  RADIOLOCATION  Space research (deep space) (Earth-to-space)  5.512 |
| **17.1-17.2** | FIXED  MOBILE  RADIOLOCATION  5.512 |
| **17.2-17.3** | FIXED  MOBILE  EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  SPACE RESEARCH (active)  5.512   5.513A |
| **17.3-17.7** | FIXED-SATELLITE (Earth-to-space)   5.516  Radiolocation  Fixed  Mobile    5.514 |
| **17.7-18.1** | FIXED  FIXED-SATELLITE    (space-to-Earth)   5.484A   5.517A     (Earth-to-space)   5.516  MOBILE |
| **18.1-18.4** | FIXED  FIXED-SATELLITE (space-to-Earth)   5.484A   5.516B  5.517A     (Earth-to-space)   5.520    5.519 |
| **18.4-18.6** | FIXED  FIXED-SATELLITE (space-to-Earth)   5.484A   5.516B     5.517A |
| **18.6-18.8** | EARTH EXPLORATION-SATELLITE (passive)   IND 31  FIXED  FIXED-SATELLITE (space-to-Earth)   5.517A   5.522B  MOBILE except aeronautical mobile  Space research (passive)  5.522A |
| **18.8-19.3** | FIXED  FIXED-SATELLITE (space-to-Earth)   5.516B   5.523A     5.517A IND 17  MOBILE |
| **19.3-19.7** | FIXED  FIXED-SATELLITE (space-to-Earth) (Earth-to-space)     5.517A   5.523B   5.523C   5.523D   5.523E IND 17  MOBILE |
| **19.7-20.1** | FIXED  MOBILE  FIXED-SATELLITE (space-to-Earth)   5.484A     5.484B   5.516B    5.527A   IND 17   IND 32  Mobile-satellite (space-to-Earth)  5.524 |
| **20.1-20.2** | FIXED  MOBILE  FIXED-SATELLITE (space-to-Earth)   5.484A   5.484B     5.516B   5.527A   IND 17   IND 32  MOBILE-SATELLITE (space-to-Earth)    5.524   5.525   5.526   5.527   5.528 |
| **20.2-21.2** | FIXED  MOBILE  FIXED-SATELLITE (space-to-Earth)   IND 32  MOBILE-SATELLITE (space-to-Earth)  Standard frequency and time signal-satellite (space-to-Earth)  5.524 |
| **21.2-21.4** | EARTH EXPLORATION-SATELLITE (passive)  FIXED  MOBILE  SPACE RESEARCH (passive) |
| **21.4-22** | FIXED  MOBILE  BROADCASTING-SATELLITE    5.208B    5.530A   5.530B |
| **22-22.21** | FIXED  MOBILE except aeronautical mobile  5.149 |
| **22.21-22.5** | EARTH EXPLORATION-SATELLITE (passive)  FIXED  MOBILE except aeronautical mobile  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.149   5.532 |
| **22.5-22.55** | FIXED  MOBILE |
| **22.55-23.15** | FIXED  INTER-SATELLITE  5.338A  MOBILE  SPACE RESEARCH (Earth-to-space)   5.532A  5.149 |
| **23.15-23.55** | FIXED  INTER-SATELLITE   5.338A  MOBILE |
| **23.55-23.6** | FIXED  MOBILE |
| **23.6-24** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| **92-94** | FIXED   5.338A  MOBILE  RADIO ASTRONOMY  RADIOLOCATION  5.149 |
| **94-94.1** | EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  SPACE RESEARCH (active)  Radio astronomy  5.562   5.562A |
| **94.1-95** | FIXED  MOBILE  RADIO ASTRONOMY  RADIOLOCATION  5.149 |
| **95-100** | FIXED  MOBILE  RADIO ASTRONOMY  RADIOLOCATION  RADIONAVIGATION  RADIONAVIGATION-SATELLITE  5.149   5.554 |
| **100-102** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340   5.341 |
| **102-105** | FIXED  MOBILE  RADIO ASTRONOMY  5.149   5.341 |
| **105-109.5** | FIXED  MOBILE  RADIO ASTRONOMY  SPACE RESEARCH (passive)   5.562B  5.149   5.341 |
| **109.5-111.8** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340   5.341 |
| **111.8-114.25** | FIXED  MOBILE  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.562B  5.149   5.341 |
| **114.25-116** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340   5.341 |
| **116-119.98** | EARTH EXPLORATION-SATELLITE (passive)  INTER-SATELLITE   5.562C  SPACE RESEARCH (passive)  5.341 |
| **119.98-122.25** | EARTH EXPLORATION-SATELLITE (passive)  INTER-SATELLITE   5.562C  SPACE RESEARCH (passive)  5.138   5.341 |
| **122.25-123** | FIXED  INTER-SATELLITE  MOBILE   5.558  Amateur  5.138 |
| **123-130** | FIXED-SATELLITE (space-to-Earth)  MOBILE-SATELLITE (space-to-Earth)  RADIONAVIGATION  RADIONAVIGATION-SATELLITE  Radio astronomy  5.149   5.554 |
| **130-134** | EARTH EXPLORATION-SATELLITE (active)   5.562E  FIXED  INTER-SATELLITE  MOBILE   5.558  RADIO ASTRONOMY  5.149   5.562A |
| **134-136** | AMATEUR  AMATEUR-SATELLITE  Radio astronomy |
| **136-141** | RADIO ASTRONOMY  RADIOLOCATION  Amateur  Amateur-satellite  5.149 |
| **141-148.5** | FIXED  MOBILE  RADIO ASTRONOMY  RADIOLOCATION  5.149 |
| **148.5-151.5** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| **151.5-155.5** | FIXED  MOBILE  RADIO ASTRONOMY  RADIOLOCATION  5.149 |
| **155.5-158.5** | FIXED  MOBILE  RADIO ASTRONOMY    5.149 |
| **158.5-164** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE  MOBILE-SATELLITE (space-to-Earth) |
| **164-167** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| **167-174.5** | FIXED  FIXED-SATELLITE (space-to-Earth)  INTER-SATELLITE  MOBILE   5.558  5.149 |
| **174.5-174.8** | FIXED  INTER-SATELLITE  MOBILE   5.558 |
| **174.8-182** | EARTH EXPLORATION-SATELLITE (passive)  INTER-SATELLITE   5.562H  SPACE RESEARCH (passive) |
| **182-185** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| **185-190** | EARTH EXPLORATION-SATELLITE (passive)  INTER-SATELLITE   5.562H  SPACE RESEARCH (passive) |
| **190-191.8** | EARTH EXPLORATION-SATELLITE (passive)  SPACE RESEARCH (passive)  5.340 |
| **191.8-200** | FIXED  INTER-SATELLITE  MOBILE   5.558  MOBILE-SATELLITE  RADIONAVIGATION  RADIONAVIGATION-SATELLITE  5.149   5.341   5.554 |
| **200-209** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340   5.341   5.563A |
| **209-217** | FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE  RADIO ASTRONOMY  5.149   5.341 |
| **217-226** | FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.562B  5.149   5.341 |
| **226-231.5** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 |
| **231.5-232** | FIXED  MOBILE  Radiolocation |
| **232-235** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE  Radiolocation |
| **235-238** | EARTH EXPLORATION-SATELLITE (passive)  FIXED-SATELLITE (space-to-Earth)  SPACE RESEARCH (passive)  5.563A   5.563B |
| **238-240** | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE  RADIOLOCATION  RADIONAVIGATION  RADIONAVIGATION-SATELLITE |
| **240-241** | FIXED  MOBILE  RADIOLOCATION |
| **241-248** | RADIO ASTRONOMY  RADIOLOCATION  Amateur  Amateur-satellite  5.138   5.149 |
| **248-250** | AMATEUR  AMATEUR-SATELLITE  Radio astronomy  5.149 |
| **250-252** | EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340   5.563A |
| **252-265** | FIXED  MOBILE  MOBILE-SATELLITE (Earth-to-space)  RADIO ASTRONOMY  RADIONAVIGATION  RADIONAVIGATION-SATELLITE  5.149   5.554 |
| **265-275** | FIXED  FIXED-SATELLITE (Earth-to-space)  MOBILE  RADIO ASTRONOMY  5.149   5.563A |
| **275-3 00** | (Not allocated) 5.564A   5.565 |

The following table provides some applications in the frequency band (or portion thereof). India has not identified IMT in any of these frequency bands as of now.

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| 7 125-9 500 MHz | point-to-point link,  Radar,  EESS (s-to-E)  Space Research | Multiple | Government,  Public sector,  Private,  Commercial |
| 9 500-9 800 MHz | Radars | Multiple | Public sector  Private |
| 9 800-10 000 MHz | point-to-point link,  Radar | Multiple | Government |
| 10 -10.5 GHz | Radars | Multiple | Government |
| 10.7 – 14.5 GHz | point-to-point link  point-to-multipoint link  VSAT  DTH,  ESIM  SNG  Radar | Multiple | Government,  Public Sector,  Private,  Commercial |
| 14.5 – 15.5 GHz | point-to multipoint link  VSAT | Multiple | Commercial |
| 15.7 – 17.7 GHz | Radar | Multiple | Government  Public Sector,  Private |
| 17.7 – 21.2 GHz | point-to multipoint link,  VSAT  ESIM  Passive sensor | Multiple | Government,  Public Sector,  Commercial |
| 21.2 – 23.6 GHz | point-to-point link  point-to multipoint link  Inter-satellite links | Multiple | Government,  Public Sector, Commercial |

3.10 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Lao PDR

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| 7.125-7.725 GHz | Microwave link |  | commercial |
| 12.75-13.25 GHz | Microwave link |  | commercial |
| 14.4-15.35 GHz | Microwave link |  | commercial |
| 92-300 GHz | None | - | - |

3.11 Current application(s) and usage in the frequency ranges of 7.125 – 24 GHz and 92 – 300 GHz in Australia

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion (GHz)** | **Applications (Services)** | **Number of licences** | **Type of use** |
| **7.125-9.0** | **Fixed** | **26345** | **e.g., Point-to-point links, X-band Uplink/Downlink Government Satellite communications shared with Electronic news gathering services. Government Radiolocation** |
| **Earth Receive** | **86** |
| **Earth** | **61** |
| **Government** | **13 (licences authorise ubiquitous access)** |
| **Radiodetermination** | **10** |
| **Government receive** | **4** |
| **9.0-10.7** | **Fixed** | **1062** | **e.g., Aeronautical navigation, Government Radiolocation, Amateur service.** |
| **Radiodetermination** | **396** |
| **Amateur** | **35** |
| **Scientific** | **4** |
| **Government** | **6 (licences authorise ubiquitous access)** |
| **Aircraft** | **2** |
| **10.7-12.75** | **Fixed** | **44658** | **e.g. Government & commercial Satellite Communications, point-to-point links** |
| **Earth Receive** | **253 (licensed + ubiquitous unlicensed)** |
| **Space** | **47** |
| **Scientific** | **11** |
| **12.75-14.5** | **Fixed** | **3979** | **e.g. Government & commercial Satellite Communications, Radiolocation for Government purposes, point-to-point links** |
| **Earth** | **197** |
| **Space Receive** | **33 licensed (+ ubiquitous unlicensed, in 14-14.5 GHz)** |
| **Scientific** | **6** |
| **Radiodetermination** | **3** |
| **Earth receive** | **6** |
| **14.5-17.7** | **Fixed** | **5292** | **e.g. Radiolocation and mobile for Government purposes, point-to-point links, Commercial Satellite Communications,** |
| **Radiodetermination** | **137** |
| **Earth** | **33** |
| **Government** | **10 (licences authorise ubiquitous access)** |
| **Aeronautical** | **2** |
| **17.7-19.7** | **Fixed** | **21024** | **e.g. Satellite communications for Government & commercial purposes, point-to-point links** |
| **Earth receive** | **235 licensed (+ ubiquitous unlicensed)** |
| **Space** | **23** |
| **Scientific** | **3** |
| **Earth** | **6** |
| **19.7—21.4** | **Earth receive** | **99 licensed (+ ubiquitous unlicensed up to 20.2 GHz)** | **e.g. Satellite communications for Government & commercial purposes** |
| **space** | **20** |
| **21.4-24** | **Fixed** | **4446** | **e.g. point-to-point links** |
| **Earth receive** | **4** |
| **Earth** | **2** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency Portion (GHz)** | **Applications (Services)** | **Number of systems/licences** | **Type of use** |
| **92-122.25** | **Radiodetermination** | **6** |  |
| **122.25-275** | **No current assignments** |  |  |

**4. Future Plan Usage in the Frequency Ranges 7.125 – 24 GHz and 92 – 300 GHz in Some APT Members**

Based on the responses to question# 2 of the questionnaire on current status and future plan usage in the frequency ranges 7.125 – 24 GHz and 92 – 300 GHz from APT Members received as of AWG-31 meeting, below are their responses to question#2 whether they have any plan to change the current applications or not:

|  |  |
| --- | --- |
| **Country** | **Plan to Change the current Applications** |
| Thailand | There is no plan to change the current applications mentioned above in the near future. |
| Myanmar | Not yet |
| Japan | The attached frequency assignment plan is revised regularly, so in general the plan for the frequency bands questioned could also be changed in future. |
| New Zealand | No current plans although we continue to monitor developments. |
| Korea, Republic Of | The Republic of Korea is considering planning which application(s) could be shared with IMT in the future, depending on the studies below Question 3. |
| Indonesia | No plan, taking into account those frequency bands anticipating future plan. |
| Viet Nam | Consider the feasibility of new IMT bands in the frequency bands of 7.125-24 GHz and 92-300 GHz based on sharing and compatibility studies with incumbent primary services |
| Papua New Guinea | Depending on the outcome of WRC-23, A-ESIM and M-ESIM applications in the band 12.75 – 13.25 GHz are the possible changes to the current applications for the band between 7 – 24 GHz.  In general, Papua New Guinea administration believe the changes to the current frequency allocation table (i.e. Article 5 of RR) for the band 7 – 24 GHz and 92 – 300 GHz will depend on the outcome of WRC-23 and future WRC. It would be a challenge to answer the above question without knowing the outcome of WRC-23 and future WRC. In this regard, planning to deploy IMT-2030 in the band 7 – 24 GHz or in the band 92 – 300 GHz would not be reasonable answer to the above question without the proper process and appropriate ITU-R study.  Meanwhile, Papua New Guinea noticed that some administrations have proposed to conduct future ITU-R study on the possible IMT identification for the band 7 – 24 GHz. In this regard, Papua New Guinea don’t have any plan to allow IMT-2030 deployment for the band 7 – 24 GHz at this stage due to the following reasons:   1. Below are the chart indicated all of the services for the band 7 – 24 GHz on primary basis      1. Refer to the outcome of WRC-19, there are already significant amount of spectrum with a total of 17.25 GHz which 14.75 GHz of spectrum have been identified for IMT globally 2. During this WRC-23 study cycle, there are total of 2.2 GHz of spectrum which will be considered for possible IMT identification in regional/global basis. 3. The below chart show the total amount of spectrum identified for IMT for every WRC and the utilization of these IMT spectrum need to be addressed and assessed before asking for more IMT spectrum.     <https://www.itu.int/en/ITU-R/seminars/rrs/2017-Africa/Documents/Plenary/03_%20WRC-15%20Outcomes.pdf> |
| India | No changes planned yet but may consider in future based on co-existence studies and WRC developments/decisions in the frequency ranges of 7.125-24 GHz and 92-300 GHz. |
| Lao PDR | None at this moment. |
| Australia | No. Australia may consider changes to spectrum use within these bands depending on the outcome of WRC-23, however there are no current plans to do so. Details on current and future band planning in Australia is contained in the [Five-year spectrum outlook 2022-27 and 2022-23 work program](https://www.acma.gov.au/publications/2022-09/plan/five-year-spectrum-outlook-2022-27). |

Based on the responses to question# 3 of the questionnaire on current status and future plan usage in the frequency ranges 7.125 – 24 GHz and 92 – 300 GHz from some APT Members received as of AWG-31 meeting, below are their responses to question#3 in relation to the potential future applications in these bands:

|  |  |
| --- | --- |
| **Country** | **Potential Future Applications** |
| Thailand | We would like to maintain current applications in these mentioned bands until there are more specific demands or significant change in technology trends. |
| Myanmar | Not yet |
| Japan | The frequency band 252-275 GHz is allocated to the mobile service and the frequency band 275-296 GHz is able to be used for land mobile service applications. A wide range of contiguous bands could be used for future mobile service applications such as XR, D2D, CPMS, RLAN etc. which may require ultra-high data rates up to Tbit/s and might be supported by future IMT technologies.   |  |  |  | | --- | --- | --- | | **Frequency Portion** | **Future Applications** | **Timeline** | | 252-300 GHz | VR/AR/MR  Device-to-Device communications  Close proximity mobile system  Local area networks  Fronthaul & backhaul  Imaging & sensing radar | 2030  2030  2030  2030  2030  2030 | |
| New Zealand | No current plans although we continue to monitor developments. |
| Korea Republic Of | The Republic of Korea is planning studies on the frequency ranges 7.125-24 GHz (upper mid-band/centimetric wave band) and bands 92-275 GHz (sub-THz band) for IMT for 2030 and beyond. |
| Indonesia | No plan |
| Viet Nam | Viet Nam is planning studies on the frequency ranges 7.125-24 GHz (upper mid-band/centimetric wave band) and bands 92-300 GHz (sub-THz band) for IMT for 2030 and beyond.  Based on the above analysis of current applications and future plans usage in the frequency ranges of 7.125-24 GHz, referring to previous co-existence and/or sharing studies, countries who wish to look for new IMT’s identification may consider the following bands as candidates:   * Bands allocated to MOBILE SERVICE: * ﻿7125 – 7250 MHz * 7750 – 8500 MHz * 12750 – 13250 MHz * 14300 – 15350 MHz * 21200 – 23600 MHz * Bands for new allocation to MOBILE SERVICE: * 8500 – 10000 MHz * 13250 – 14300 MHz * 15350 – 17700 MHz |
| Papua New Guinea | Proposal for the study on IMT identification for the band 7 – 24 GHz would not be feasible and reasonable as mentioned in our responses to Question#2.  In addition to the above reasons, Papua New Guinea would like to share the other justifications why the proposal for future IMT identification for the band 7 – 24 GHz would not be reasonable:   1. On average globally, only 50% of the available IMT identified spectrum below 5 GHz is licensed   <https://www.lstelcom.com/fileadmin/content/lst/marketing/media/2019_Study_LicensingUseofMobileSpectrum.pdf>       1. The work on IMT-2030/6G vision including 6G detailed standards @ WP 5D are expected to be completed by 2030 while the candidate radio-interface technology proposals are expected to be evaluated before then. Considering the timing, we believe a future IMT agenda item relating to 6G should be considered @ WRC-27 as a potential agenda item @ WRC-30. 2. As per OFCOM discussion paper released this year (i.e. <https://www.ofcom.org.uk/__data/assets/pdf_file/0017/232082/mobile-spectrum-demand-discussion-paper.pdf>), OFCOM is of the view that that IMT/mobile spectrum broadly sufficient to meet future demand to 2030 with the greater level of uncertainty beyond 2030. |
| India | No specific planned or potential future applications are in the bands in question. However,the following are initial plans and may change in future depending on consumer needs, future strategic requirements, technology development and global harmonization.   |  |  |  | | --- | --- | --- | | **Frequency Portion** | **Future Applications** | **Timeline** | | 7.125 – 24 GHz | Possibility for considering mobile service to be explored based on coexistence studies. |  | | 92-300 GHz |  | |
| Lao PDR | None at this moment. |
| Australia | |  |  |  | | --- | --- | --- | | **Frequency Portion (GHz)** | **Future Applications** | **Timeline** | | **8.5-10.7** | For Radiolocation, current use is expected to grow |  | | **10.7-10.95** | Foreign-based operators providing services in Australia suggest potential for expanded FSS video and ESIM use under current ubiquitous licensing arrangements |  | | **10.95-12.75** | Foreign-based operators providing services in Australia suggest potential for expanded FSS video, ESIM, VSAT and other data use under current ubiquitous licensing arrangements |  | | **13.4-14** | For Radiolocation, current use is expected to grow |  | | **14.0-14.5** | Foreign-based operators providing services in Australia suggest potential for increased use of mobile terminals under current ubiquitous licensing arrangements |  | | **17.7-20.2** | Foreign-based operators providing services in Australia suggest potential for increased use of mobile terminals under current ubiquitous licensing arrangements |  | |

**5. Summary**

This Report addresses the current status and the future plan of usage in the frequency ranges of 7.125-24 GHz and 92-300 GHz in Asia Pacific Region. According to the answers provided by APT Members, the current usage status of these bands and the future plan vary from country to country. This report collected information for APT Members.

At this stage, most APT countries do not have specific plans to change the current allocation application in these frequency bands. Some APT countries indicated that they may consider to use mobile broadband while some other APT countries may consider to use satellite services for portions of those bands.