



Please Feel free to use articles in this publication, with proper credits.

TOPIC

Radio policies in the age of digital transformation have been compiled — Release of Report of Radio Policy Roundtable in the Age of Digital Transformation

1. Overview

Radio waves are an essential infrastructure in the age of digital transformation, in which Japan aims to solve various issues and achieve further economic growth by incorporating advanced technologies such as IoT, Big Data, AI, as well as digital technologies, which are necessary for a “new normal” triggered by the novel coronavirus disease (COVID-19), into all industries and daily life.

In the age of digital transformation, industries utilizing radio waves are expected to develop further, and the demand for radio waves is expected to expand dramatically. On the other hand, in view of the fact that radio waves are finite and scarce resources shared by all citizens, there is a need to further promote fair and efficient use of radio waves in the future.

For that reason, Radio Policy Roundtable in the Age of Digital Transformation has been held since November 2020. This roundtable has comprehensively discussed the issues of radio wave policies in the age of digital transformation, the establishment of new goals and measures for effective radio use, and the future vision of radio use. As a result, Report of Radio Policy Roundtable in the Age of Digital Transformation was compiled in August 2021.

2. Overview of the report of the Radio Policy Roundtable in the Age of Digital Transformation

(1) Current situation of radio use

The opening up of telecommunication business to the private sector in 1985 led to an explosion in radio use in mobile communication. As of April 2021, the number of licensed radio stations has reached approximately 277.7 million, has nearly doubled in the past decade. In addition, due to the diversification of radio use, there is an increase in the number of radio stations that do not require a license, such as radio stations operating with extremely low power of emission and low-power radio stations, including wireless LANs. A further expansion of radio use is expected in the future.

Mobile communications systems have made rapid technological progress over the past 30 years. New and diverse services have emerged with innovative technologies, such as cloud computing, Big Data, IoT, and AI. Furthermore, the fifth-generation mobile communications system (5G), Local 5G, etc., are progressing to ultra-high-speed and large capacity zones.

CONTENTS**TOPIC**

Radio policies in the age of digital transformation have been compiled — Release of Report of Radio Policy Roundtable in the Age of Digital Transformation



Global Strategy Division,
Global Strategy Bureau,
Ministry of Internal Affairs
and Communications (MIC)
2-1-2 Kasumigaseki,
Chiyoda-ku, Tokyo, 100-8926,
Japan
TEL: +81-3-5253-5920
FAX: +81-3-5253-5924

Radio policies in the age of digital transformation have been compiled — Release of Report of Radio Policy Roundtable in the Age of Digital Transformation

(2) Future vision of radio use in the age of digital transformation and setting of targets for bandwidth securement

In preparation for the age of digital transformation, in which needs for radio use are expanding, diversifying, and becoming more sophisticated, the report classifies the systems that will support the next generation into seven categories based on future use cases and network requirements. These categories consist of the following systems:

- Terrestrial and satellite broadcasting (4K/8K)
- Disaster prevention and public security
- Next-generation mobility
- Satellite communications and High-Altitude Platform Stations (HAPS)
- Mobile networks including 5G, Beyond 5G
- IoT and wireless LAN
- Wireless Power Transmission/Transfer

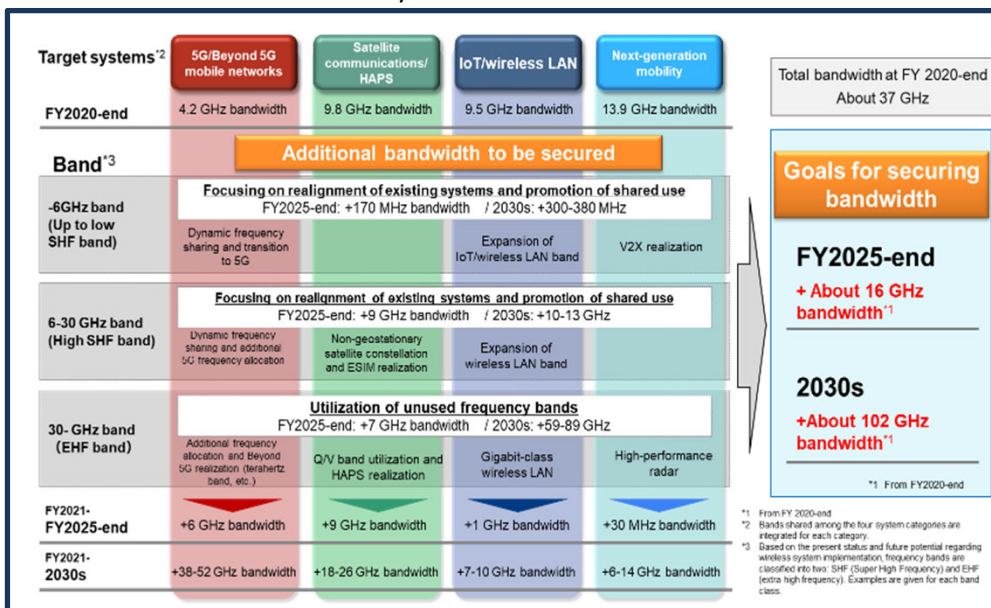


Figure: Goals for securing bandwidth

The report sets targets for securing a new bandwidth of approximately 16 GHz by the end of fiscal 2025 and approximately 102 GHz by the 2030s for the four systems that require particularly large bandwidth: The systems of next-generation mobility, satellite communications and HAPS, mobile networks including 5G and Beyond 5G, and IoT and wireless LAN.

(3) Measures for effective radio use in the age of digital transformation

The major recommendations and comments for effective radio use in the age of digital transformation are as follows:

i. Introduction and diffusion of wireless systems required in the age of digital transformation

- To aim to realize one of the world’s best 5G communication environment, including the installation of approximately 280 thousand of 5G base stations by the end of March 2024.
- To establish an effective mechanism for industry-academia-government collaboration in order to conduct research and development (R&D) and to support R&D projects conducted by relevant organizations toward realization of Beyond 5G efficiently, and to expand international joint research, etc., by using spectrum user fee revenue.

Radio policies in the age of digital transformation have been compiled — Release of Report of Radio Policy Roundtable in the Age of Digital Transformation

- To conduct R&D on higher frequency ranges, where it is easy to secure large bandwidth, which is essential for high-speed and large-capacity communication, and to study the possibility of simplifying the licensing procedures for experimental stations.
- To put dynamic frequency sharing into practical use in the 2.3 GHz band by the end of March 2022.
- To consider the realization of testbeds, which would be useful to study the base stations that adopt communications devices based on open standards.
- To provide intensive support for the overseas deployment of initiatives on open and virtual 5G network technologies.

ii. Measures for verification of effective radio use and policy for frequency allocation.

- To consider evaluation of the result of the survey of actual radio spectrum utilization conducted by a third party to ensure transparency and objectivity in evaluating.
- To introduce a system for reallocating frequencies that have already been allocated for mobile network, based on a comparative review. This system would be applied to such cases where the effective use of radio waves is evaluated to be insufficient based on the results of the survey of actual radio spectrum utilization or a competing application occurs.

iii. Measures for effective use of spectrums used in public services

- To present measures to be taken by government institutions for effective radio use, including the abolition, spectrum migration, spectrum sharing, or digitalization of incumbent radio systems, confirmed in studies on public service radio systems operated by the government institutions.
- Through the above process, spectrums with a total bandwidth of approximately 1,200 MHz, which are already in demand for other applications, are expected to be newly available for mobile systems such as 5G, wireless LAN and other services.

iv. Management and supervision of radio waves in the age of digital transformation

- To establish monitoring methods according to the characteristics of radio waves for 5G mobile networks (e.g., use of higher frequencies).
- To promote the further digitalization of procedures related to radio station licenses and the introduction of a cashless payment system for license application and other fees.

v. Review of the spectrum user fee system

- To promote R&D toward the realization of Beyond 5G by using spectrum user fee revenue.
- To maintain the total expenses for spectrum users' common benefit (total spectrum user fee revenue) at the current level (75 billion yen).

3. The MIC's future action based on the report of the Radio Policy Roundtable in the Age of Digital Transformation

Based on the recommendations in the report, MIC will proceed with concrete implementation.