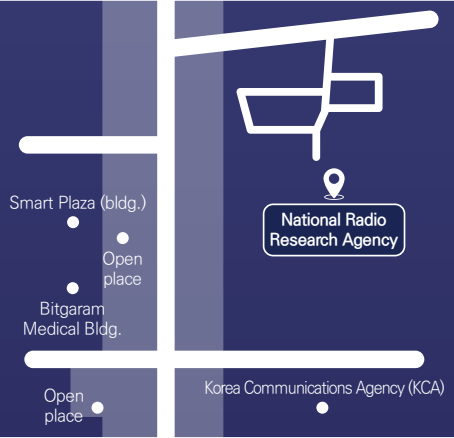


National Radio Research Agency



The National Radio Research Agency is always here for you.
We will continue to do our utmost to ensure all citizens can enjoy the abundant benefits of radio, broadcasting, and communication services.



Headquarters (Naju)
767 Bitgaram-ro, Naju-si, Jeonnam



Communications Conformity Assessment Center (Icheon, Gyeonggi)
194 Sinam-ro, Seolseong-myeon, Icheon-si, Gyeonggi



Website of the National Radio Research Agency
<https://www.rra.go.kr/en/>



Website of the Communication Conformity Assessment Center
<https://ccac.rra.go.kr/en/>



CONTENTS

The National Radio Research Agency is a governmental research agency of the Republic of Korea that ensures Korean citizens to use radio waves in an orderly and safe manner.

We conduct various activities, including:

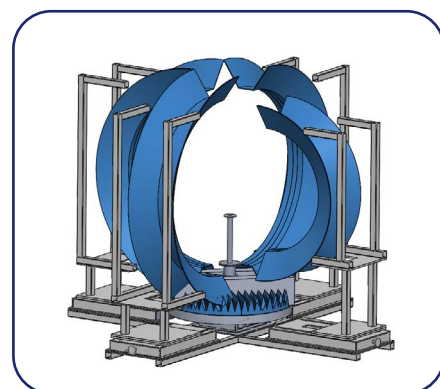
- discovering new radio resources and researching efficient spectrum usage
- establishing technical regulations for communication equipment, including IMT, maritime and aeronautical equipment, satellites, and wired networks
- developing requirements to protect radio devices, humans, and critical national facilities from harmful electromagnetic waves
- overseeing national conformity assessment system

We represent the Republic of Korea in international organizations to secure spectrum resources and satellite orbits, and to engage in international standardization activities. Additionally, we work hard to invigorate the global trade market of ICT devices by supporting the signing of Mutual Recognition Arrangements (MRA) between Korea and foreign countries.

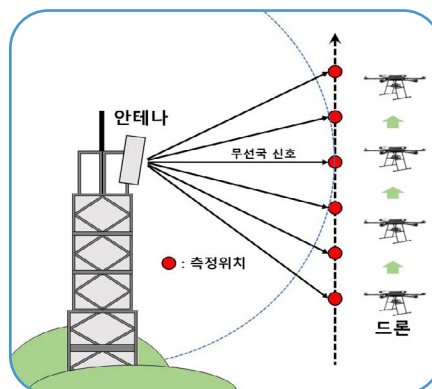
History	04
Mission and Organization	05
Exploration of Future Spectrum Resources	06
Securing Safe Electromagnetic Wave Environment	08
Establishing Technical Regulations And National Standards for Telecommunication Devices	10
Overseeing Conformity Assessment System of ICT Devices	12
Operation of Information Systems for Radio and Communication Sectors	14

History

- Feb 1966** • Foundation of the Radio Research Laboratory
- Oct 1967** • Initiated ionosphere monitoring
- Nov 1968** • Initiated type approval for radio equipment
- Jul 1985** • Initiated type approval for telecommunication devices
- Nov 1990** • Started Electromagnetic Interference (EMI) testing
- Nov 1992** • Foundation of the Icheon branch office
- Dec 2000** • Initiated development of national Information and communication technologies (ICT) standards
- Dec 2004** • Establishment of the Korea ITU committee
- Aug 2011** • Reorganization as the National Radio Research Agency, and foundation of the Space Weather Center
- Jun 2012** • Reformation of the Icheon branch office into the Communication Conformity Assessment Center, integrating conformity assessment testing and certification services
- Jul 2014** • Moved headquarters to Naju
- Aug 2024** • Transferred the Space Weather Center to Korea Aerospace Administration (KASA)



High-speed antenna measurement system for 5G applications



Field measurement technology for radiation patterns of broadcasting station using drones



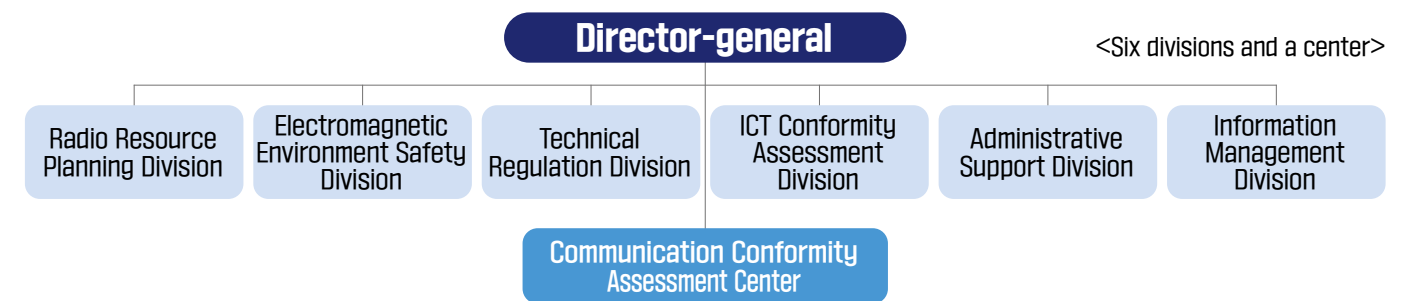
Prediction of electromagnetic field exposure levels based on the big data

Mission and Organization

Mission

- ◀ Exploration of Future Spectrum Resources and international cooperation
- ◀ Securing Safe Electromagnetic Wave Environment
- ◀ Establishing Technical Regulations and National Standards for Telecommunication Devices
- ◀ Overseeing conformity assessment system of ICT products
- ◀ Operation of Information Systems for Radio and Communication Sectors

Organization



- Radio Resource Planning Division**
 - Planning and performance management of spectrum research
 - Development of study items and long-term roadmaps for spectrum research, and research on radio propagation characteristics
 - Management of National ICT standards, and support for national ISO/IEC JTC 1 standardization-related activities
 - Management of the Korea ITU Committee and support for national ITU-related activities
- Electromagnetic Environment Safety Division**
 - Research on technical regulations and testing methods for Electromagnetic Compatibility (EMC)
 - Research on protection requirements against EMP attacks and electromagnetic information leakage, and assistance in establishing countermeasures for critical facilities
 - Research on technical regulations and testing methods for human exposure to the electromagnetic fields (EMF)
 - Public communication regarding EMF safety
- Technical Regulation Division**
 - Research on technical regulations and testing methods for both wireline and wireless communication devices
 - Research on effective utilization methods of radio spectrum
 - Feasibility analysis of frequency utilization, and international registration for radio stations and satellite networks
 - Support for national policy-making regarding spectrum management
 - Support for coordination meetings for satellite networks between countries
- ICT Conformity Assessment Division**
 - Oversight of national ICT conformity assessment system
 - Designation and oversight of test laboratories
 - Support for Mutual Recognition Arrangements (MRA), and international cooperation in conformity assessment systems
- Administrative Support Division**
 - Administrative support for the Agency, including human resources managements
 - Management of contracts, procurement and auditing
 - Management of buildings and facilities of the Agency
- Information Management Division**
 - Operation of information systems, including the Korea Radio and Broadcasting Information System (K-RABI) and the Spectrum Management Intelligent System (SMIS)
 - Operation of network infrastructure for the Ministry of Science and ICT (MSIT)
 - Support for the agency's informatization duties
- Communication Conformity Assessment Center**
 - Post-market surveillance and testing for ICT products
 - Provision of conformity assessment services for ICT equipment, and operation of test facilities
 - Research on antenna measurement technologies and provision of technical support for industry, academia, research institutes in conformity and antenna testing

Exploration of Future Spectrum Resources

Research on future radio technologies and spectrum resources

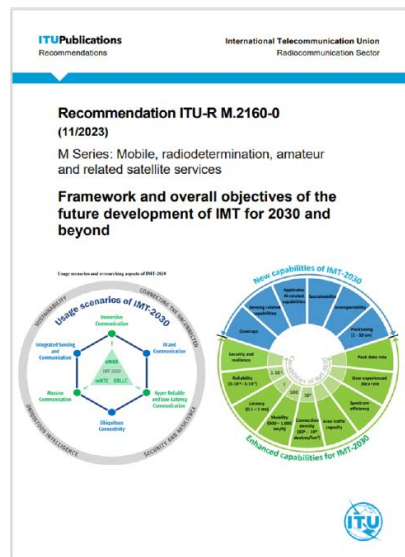
To address the soaring demand of radio frequencies resulting from emerging communication technologies such as 6G, low-earth orbit satellites, and wireless power transmission, We conduct research to explore efficient methods for spectrum utilization, including identification of new spectrum resources, and development of radio propagation models suitable for the domestic environment.

Study for 6G network standards

We lead international standardization efforts by developing ITU's 6G technological vision, which encompasses 6G usage scenarios and capabilities, in preparation for the advent of the 6G era around 2030.

Facilitating widespread adoption of "Eum 5G"

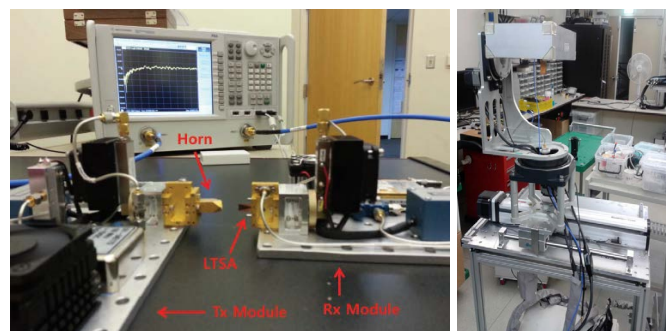
We conduct interference analysis and provides on-site consultation to facilitate the widespread adoption of "Eum 5G", a private 5G network service tailored for various industrial sectors, including manufacturing, healthcare, and energy.



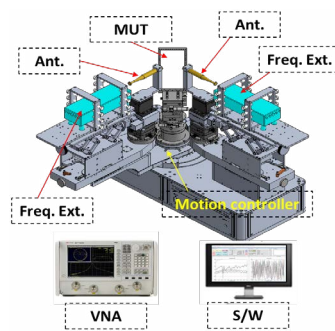
ITU's 6G technological vision



Simulation of coverage and interference analysis of "Eum 5G" system in indoor environments



Terahertz-band radio signal path loss measurement system for extra short-range environments

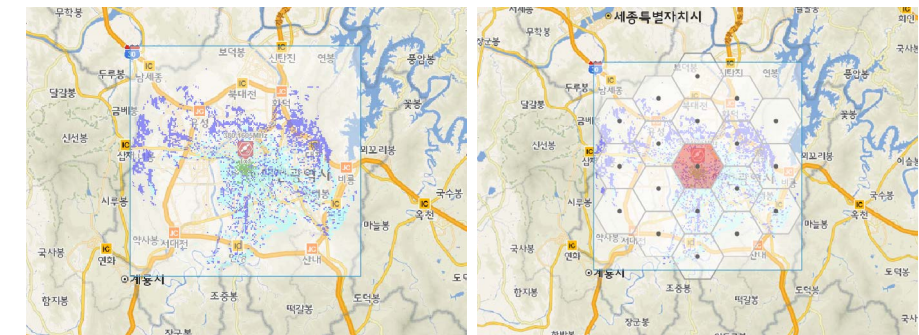


Terahertz-band radio propagation characteristics measurement system by material



Establishing effective use of spectrum resources

We conduct activities to ensure convenient use of various radio devices within limited spectrum resources, including feasibility analyses of frequency utilization for radio stations and research on spectrum sharing methods. Additionally, we register information about Korean satellite networks and radio stations to the International Telecommunication Union (ITU) and coordinate satellite networks with foreign administrations to prevent and resolve frequency interference. These efforts are essential for providing international protection for domestic radio stations.



Receiver RF power simulation and coverage assessment using potential radio station specifications and GIS data



TV white space channel availability search system



The 9th Korean-Indonesian satellite networks coordination meeting (Sep 2023)

Securing Safe Electromagnetic Wave Environment

Research on electromagnetic compatibility (EMC)

We develop technical regulations about electromagnetic interference (EMI) and electromagnetic susceptibility (EMS) to ensure stable operation of communication services by preventing malfunction of ICT products caused by unwanted EM waves emitted by other devices.

Electromagnetic safety management of complex facilities

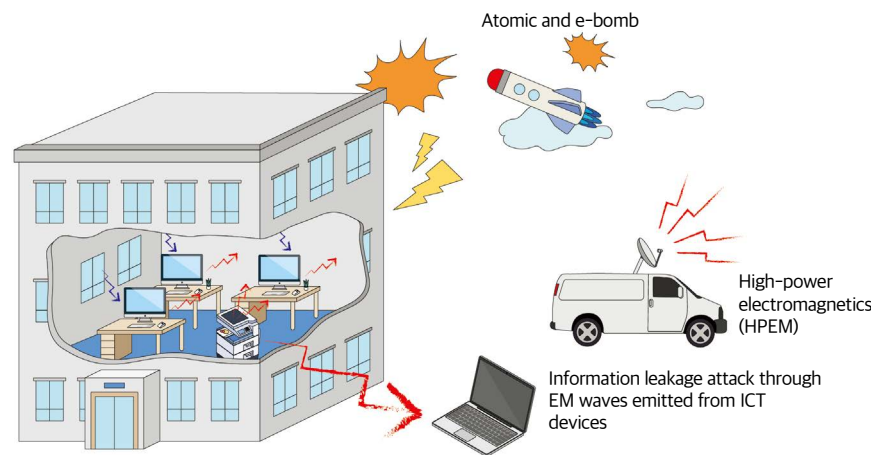
As the risk of device malfunction, caused by EM waves from various types of Electronic and Electric devices in complex facilities, increases, comprehensive management of electromagnetic safety are becoming essential. We provide the "Electromagnetic Safety Management Guideline", which serves as a standard for complex facilities, and strives to ensure safe management the EM threats in the facilities by consistent field testing, risk analysis, and consultation on EM wave reduction measures.



On-site measurement of EM wave intensity in the factories using Eum 5G

Establishing countermeasures against EMP attacks and Electromagnetic information leakage

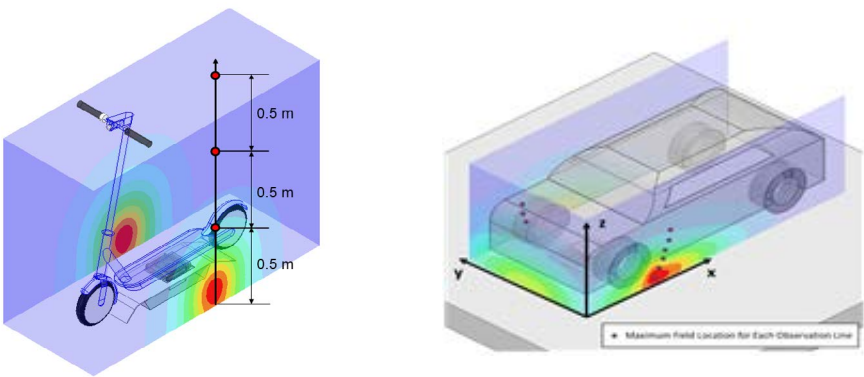
We conduct research on performance specifications, testing methods and safety assessment systems for protection facilities against EMP attacks and electromagnetic information leakage to prevent incapacitation of critical national facilities and ICT infrastructure due to EMP attacks, as well as to mitigate information leakage through EM waves emitted from ICT devices.



Concept of EMP Attacks and Electromagnetic Information Leakage

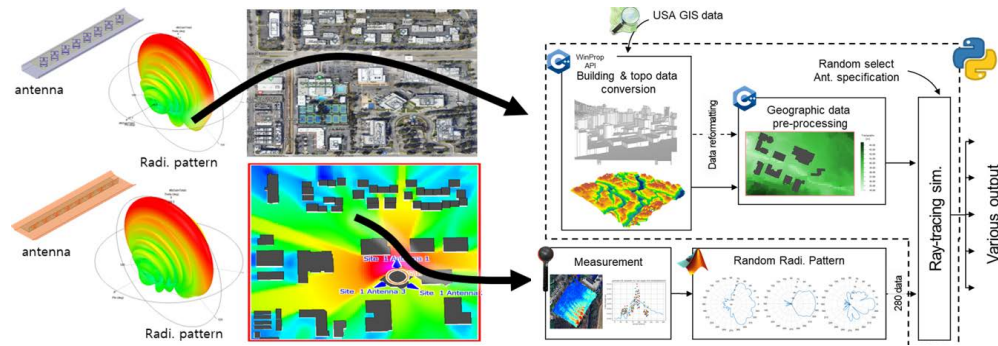
Research on regulations for human exposure to Electromagnetic fields(EMF) and communication with the public

We study technical regulations and measurement methods to protect public health from EMF exposure from everyday devices such as mobile phones and its base stations, and home appliances. We also regularly disclose EMF measurement results upon public request and operate educational programs and safety forums to provide accurate information and raise awareness about EMF safety.



EMF human exposure measurement of wireless charger of the electric bicycles

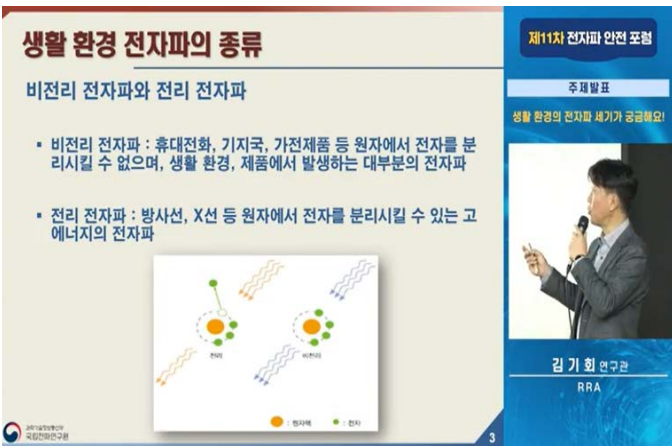
EMF human exposure measurement of wireless charger of the electric vehicles



Prediction method of electromagnetic field exposure levels based on the big data



EMF measurement experience program for the public



EMF safety forum

Establishing Technical Regulations And National Standards for Telecommunication Devices

Research on technical regulations of ICT products

We study technical regulations for ICT products to ensure safe and orderly use of various devices used in eveyday life, and to protect communication facilities and connected networks from physical and electronical hazards.



Maritime and aeronautical radio stations



Broadcasting



Wireline network



Short-ranged devices



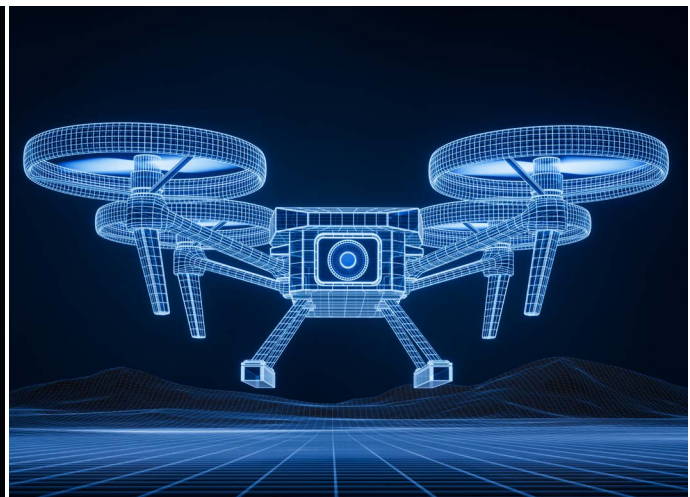
Satellites Communication



ISM applications



6G network



Urban Air Mobility

Establishment of ICT national standards

Standards refer to established norms or requirements for a repeatable technical task which is applied to a common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods. Standards ensure compatibility between products, and enhances consumer’s benefit and efficiency of society and economy.

National standards are officially recognized standards established by a country to promote accuracy and rationality across all sectors of society. We work to establish and revise ICT national standards to enhance social benefits of ICT technologies and economic activities of businesses.

<Key ICT national standards>

Controller and device interface, metadata, registration procedure and technical requirement for smart greenhouse

Korean web contents accessibility guidelines

Assistive broadcasting services for the vision and hearing impaired

Conducting international standardization activities

With the rapid advancement of ICT technologies, the leading of international standards has become closely tied to the global dissemination of technologies and the establishment of leadership. We respond to international standardization-related activities through the operation of the Korea ITU Committee and ICT expert committees, striving to incorporate Korean technologies into international standards.



Participation in the World Radiocommunication Conference 2023



Hosting the international meeting of ITU-T Study Group 17, 2023



Participation in the Digital Government Exchange 2023

Overseeing Conformity Assessment System of ICT Devices

Overseeing Conformity Assessment System of ICT Devices

We oversee conformity assessment system of ICT devices to verify compliance with ICT technical standards of the products before they enter the market, striving to create safe spectrum usage environment and protect users.

<Types and processes of conformity assessment system>

	Types	Where to test	Where to Apply	Est. processing time		
manufacturer, importer, seller	Conformity Certification (products with high risk of radio interference and network hazards) e.g., mobile phones, walkie-talkies	Designated testing laboratories	apply online (https://www.emsit.go.kr/)	5 days	Issuance of the certification	Available to sell products
	Conformity Registration (products with high EMC and EMF risk) e.g., desktop and laptop computers, printers	Designated testing laboratories	apply online	under 3 hours	Issuance of the registration	
	Supplier's Declaration of Conformity (products with low EMC and EMF risk) e.g., measuring instrument, lighting appliances	by oneself, or available testing laboratories	declare publicly via online(https://www.rra.go.kr/)	→		

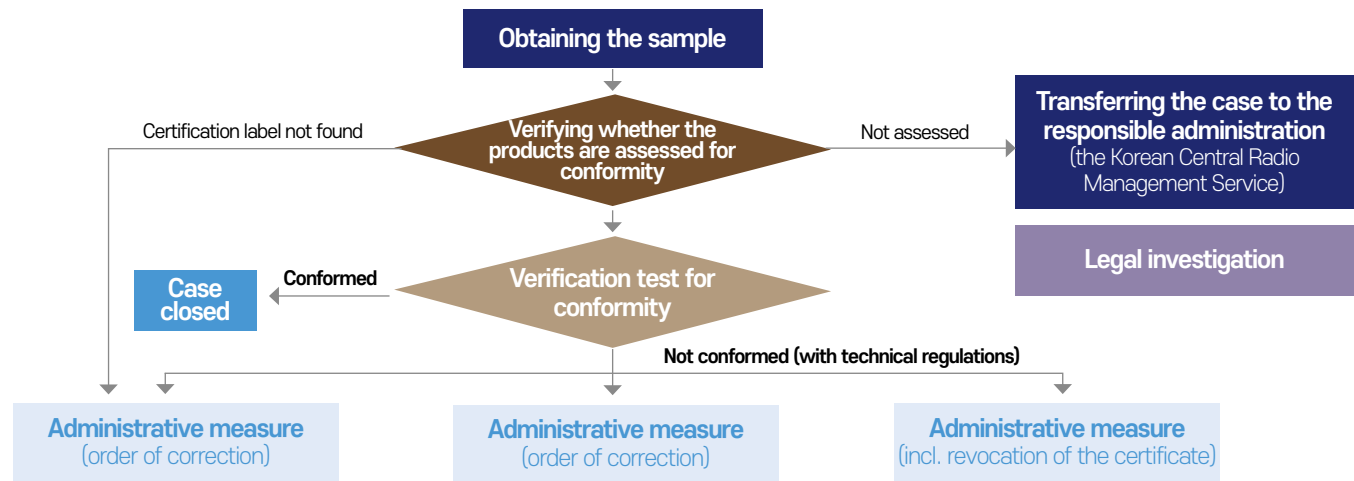
※ It is possible to manufacture, import, or sell ICT products after receiving interim certification, by conducting conformity assessment in accordance with the relevant the Korean national or international standards and technical regulations, if the assessment criteria for those products are not yet established or due to other reasons, and the products do not cause harm to the network, spectrum environment, or the health and property of users,



- **Make sure to check the KC Mark!**
ICT products certified or registered under the Korean conformity assessment system must display the Korea Certification Mark (KC Mark), certification number and related information on their packaging or the products themselves.

Post-market surveillance for assessed ICT products

We conduct post-market surveillance for assessed ICT products to ensure they are distributed and sold in compliance with standards. This consistent investigation, verification and testing help prevent the distribution of illegal devices and create a safe environment for using ICT products.



Designation and administration of testing laboratories, and human resource development in testing

For the efficient operation of the conformity assessment system, it is essential to manage the capabilities of testing laboratories conducting actual tests. We designate and oversee testing laboratories by categories, while also providing training programs to related personnel to enhance national conformity assessment capabilities.



Measurement techniques competition for ICT conformity assessment

Providing support for signing Mutual Recognition Arrangements (MRA)

Mutual Recognition Arrangements (MRA) are arrangements between participating countries to recognize each other's testing results or certificates from conformity assessment bodies. These streamline the import and export processes for ICT products, facilitating market activation.

<Conformity assessment process by phase of MRA>

MRA Phase	In your country		In Korea		
Not arranged		→	Testing	Certification	Available to sell
Phase I	Manufacture		→		
Phase II		Testing	Certification	→	

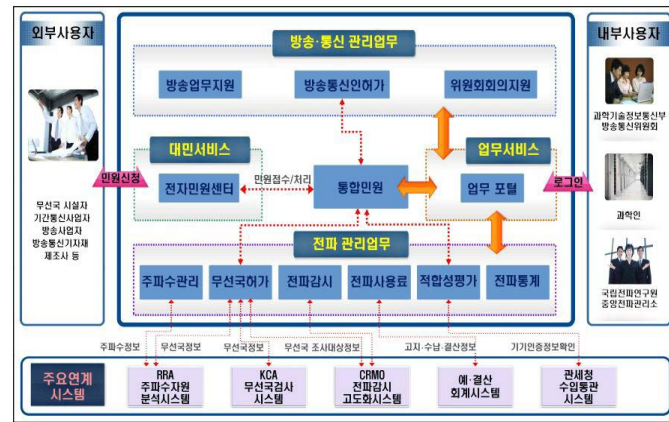
<Countries that arranged MRA with the Republic of Korea (as of August 2024)>

Arranged countries	USA	Canada	EU	UK	Viet Nam	Chile	Indonesia
Phase	Phase I	Phase I & II	Recognized by FTA	Recognized by FTA	Phase I	Phase I	Phase I
Date of arrangement	May 2005	Sep 2001 (Phase I) Dec 2017 (Phase II)	Oct 2010	Aug 2019	Jan 2006	Jun 2008	May 2024

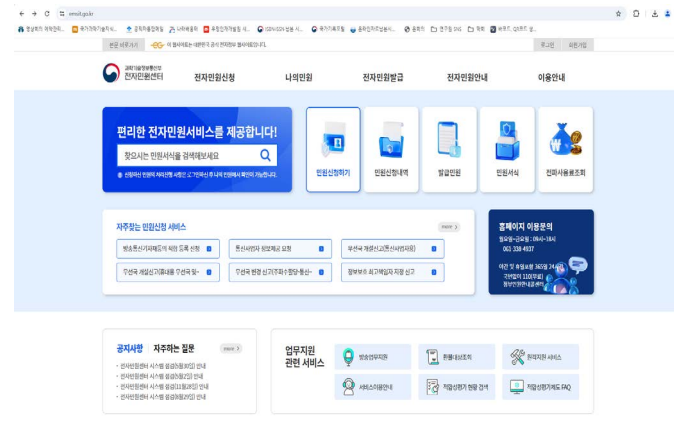
Operation of Information Systems for Radio and Communication Sectors

Operation of the Korea Radio and Broadcasting Information System (K-RABI)

To support the stable management of the increasing radio, broadcasting, and communication infrastructure and the conformity assessment system, we operate the Korea Radio and Broadcasting Information System (K-RABI) to assist government administrative tasks and provide services to the public.



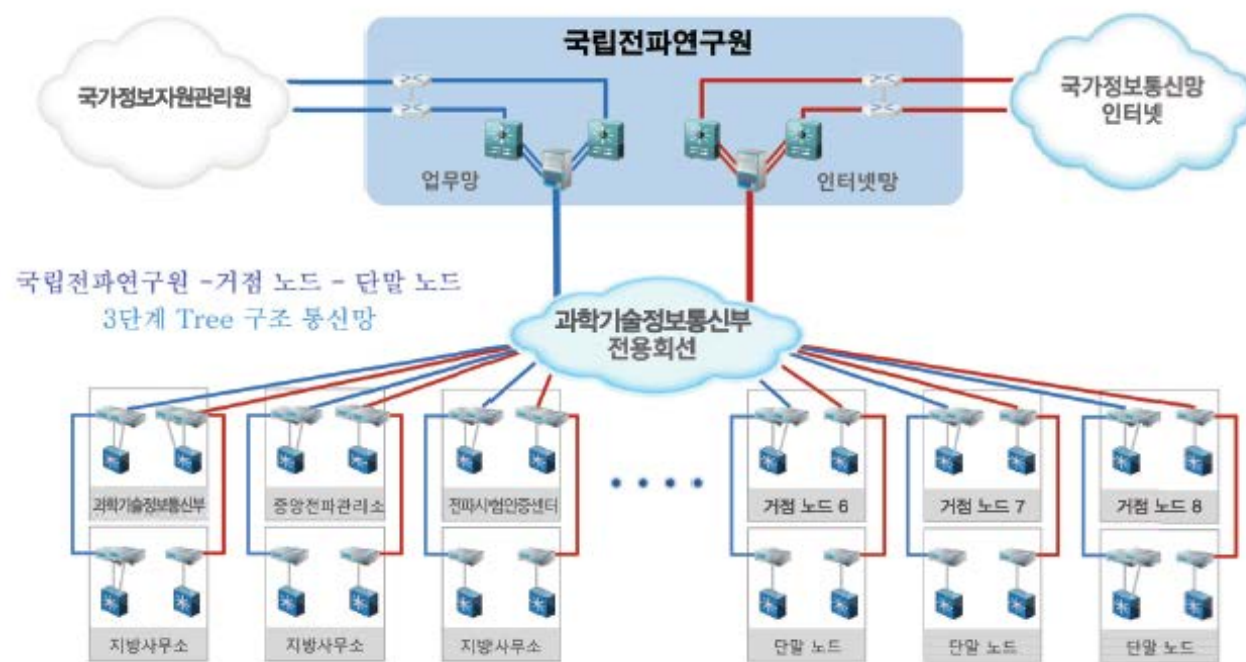
Structures of K-RABI



Electronic civil service center of MSIT (emsit.go.kr: part of K-RABI)

Operation of network infrastructure of the MSIT

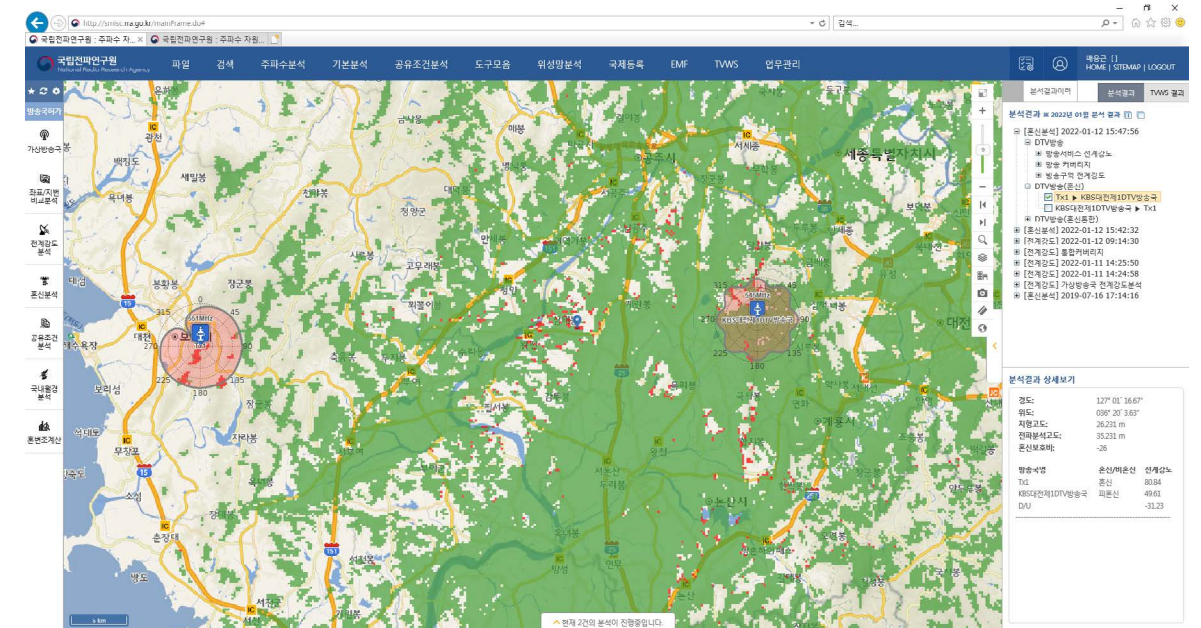
To provide stable and reliable communication services to the Ministry of Science and ICT (MSIT) and its affiliated organizations, we have established and operate a dedicated network infrastructure of the ministry.



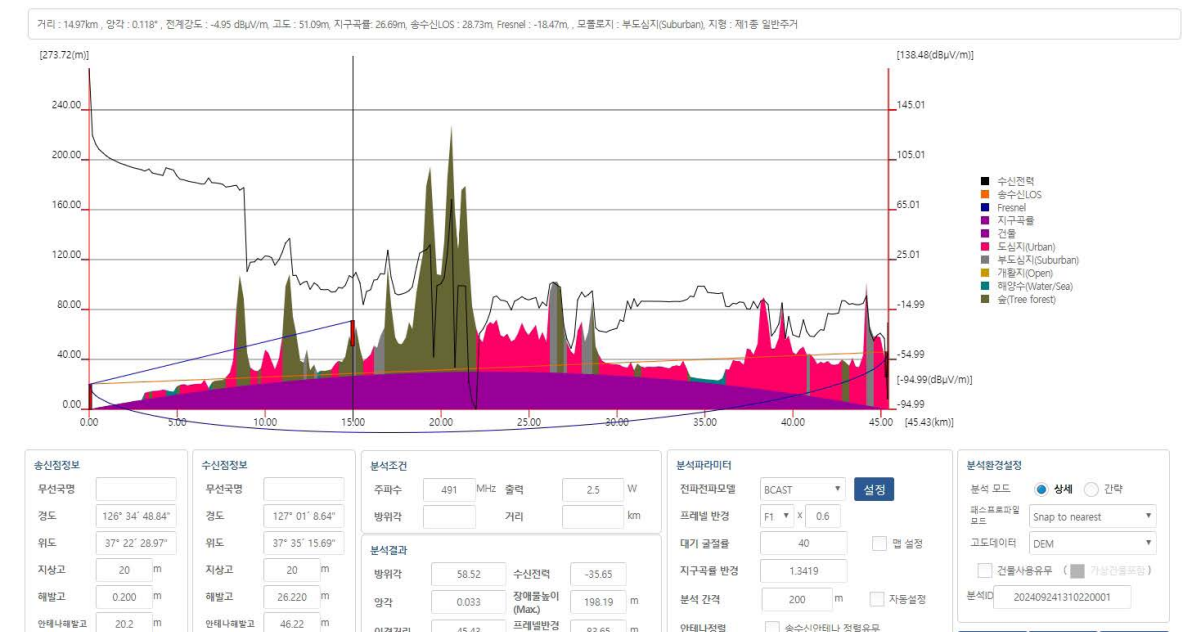
Structure of the network infrastructure of MSIT

Operation of the Spectrum Management Intelligent System (SMIS)

As the demand for radio spectrum surges and the radio environment becomes increasingly complex, the need for efficient management of limited spectrum resources is becoming more critical. We operate the Spectrum Management Intelligent System (SMIS) to support decision-making in spectrum policy and improve administrative efficiency. The system provides services to the users including frequency interference analysis and identification of available frequency channels based on GIS spatial information and radio station data, as well as computerized international frequency registration services,



Computerized analysis of radio interference between digital TV broadcasting stations



Path profiling simulation using GIS data between radio station