www.rra.go.kr

RRA
NATIONAL RADIO
RESEARCH AGENCY

National Radio Research Agency

Table of Contents

Vision

A research hub for radio waves
to create smart Korea that everyone can enjoy.

values

Change and innovation
Customer satisfaction
Performance enhancement

Mission

- Development and efficient use of radio resources
- Securement of a safe electromagnetic environment
- Global standard initiative for broadcasting and communications
- Advancement in conformity assessment system

Slogan

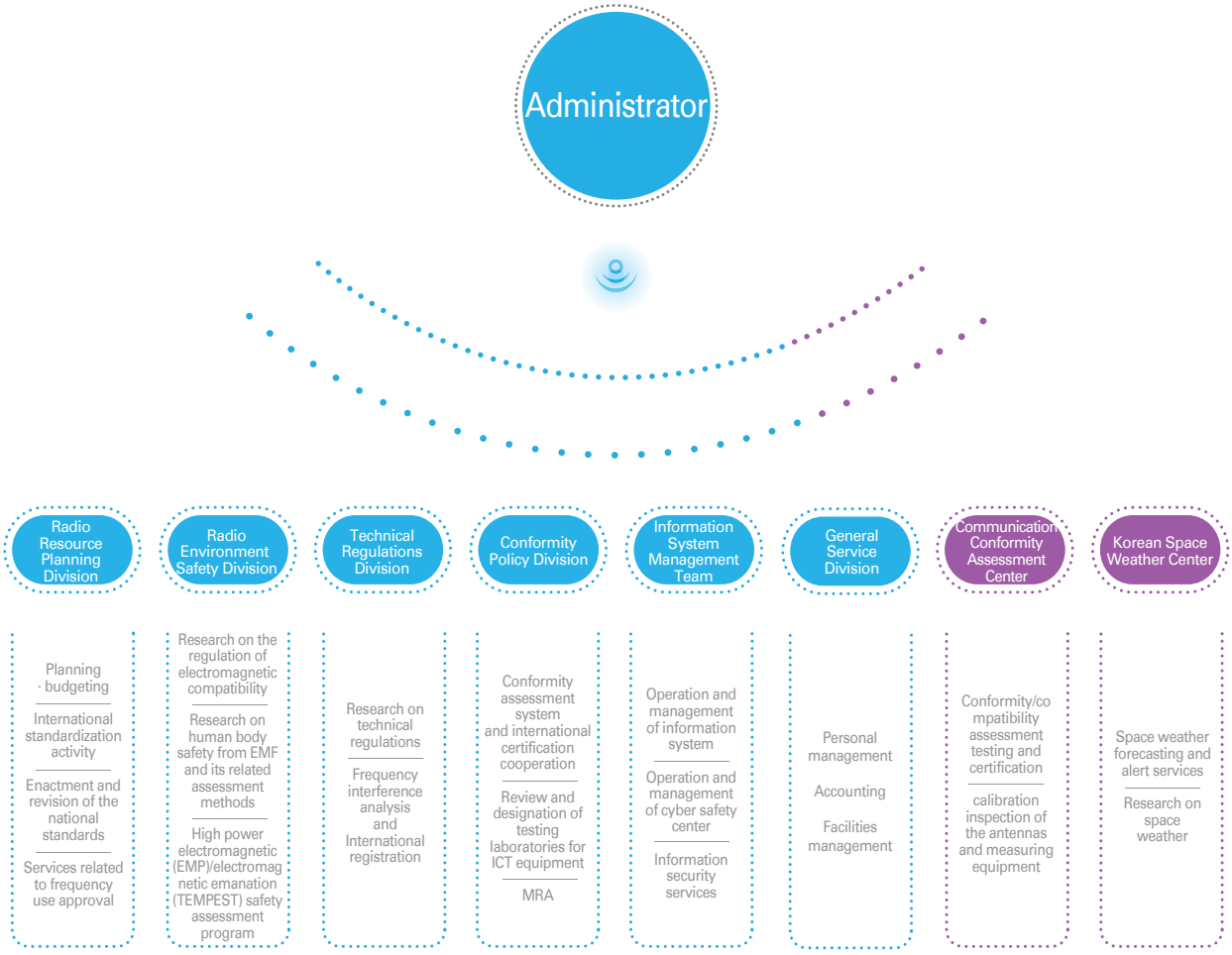
NEW WAVE! NEXT WAVE!

History and Organization

Feb. 1966	Founded Radio Research Laboratory
Mar. 1967	Conducted ionospheric monitoring service
Nov. 1968	Started type certification for radio equipment
Jan. 1975	Conducted geomagnetic variation monitoring
Jul. 1985	Started type approval for electronic communication equipment
Nov. 1990	Started EMI inspection
Nov. 1992	Opened Icheon Branch
Dec. 1995	Conducted solar radio monitoring service
May 1999	Relocated from Anyang to Yongsan
Dec. 2000	Began the national standardization for ICT
Dec. 2005	Established the Electromagnetic Wave Measurement Center
Feb. 2008	Governmental reorganization (MIC -> Korea Communications Commission)
May 2009	Opened the Information System Management Team
Aug. 2009	Anyang Office consolidated into Yongsan Office
Dec. 2009	Opened Cyber Safety Center
Aug. 2011	Reorganized as National Radio Research Agency(RRA) and Established Korean Space Weather Center
Jun. 2012	Changed the name of Icheon Branch to Communication Conformity Assessment Center
Mar. 2013	Governmental reorganization (KCC -> Ministry of Science, ICT and Future Planning)
Jul. 2014	Relocated from Yongsan to Naju

The National Radio Research Agency (RRA)

The National Radio Research Agency (RRA) was founded in 1966 to perform the research on efficient spectrum management and new radio communication technologies. RRA which belongs to Ministry of Science, ICT and Future Planning performs research activities for the purpose of improving the efficient use of radio spectrum, securing a safe electromagnetic environment and enhancing the competition in the fields of radio, information and communication technologies. RRA develops Korean standards and participates in the international standards organizations and cooperates with them actively to develop the international standards in the field of communications and radio technology.



Real life applications of radio waves

Efficient use of radio spectrum resources

RRA studies efficient use of the spectrum such as development of new radio technologies to meet the rapidly increasing demand on spectrum, RRA also develops radio wave propagation models which are more suitable for domestic environment.
Moreover, RRA notifies Korean frequency assignments of terrestrial, satellite and broadcasting stations to ITU for obtaining international right in use of the frequency assignments and coordinates with foreign countries to resolve issues of international interferences. RRA also analyzes interference issues in use of broadcasting stations and in designation of radio stations of national defense, diplomatic purpose and international events.

Radio Spectrum Allocations in Korea

SMIS SYSTEM

Real life applications of radio waves

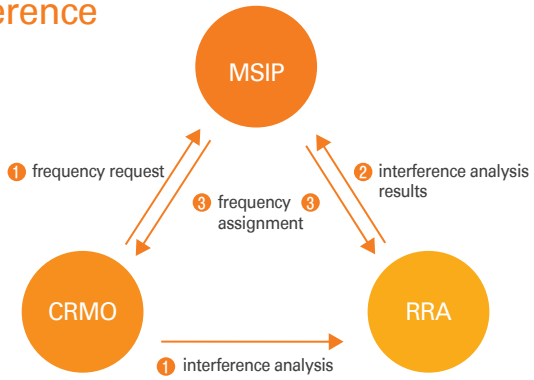
Research on efficient radio spectrum management

RRA studies the development and efficient use of spectrum resources such as deployments of new radiocommunication services in unused or low-used radio frequencies based on rising demands from industries.

Mobile Gwanggaeto Plan

Analysis on frequency interference

RRA analyzes interference issues in authorization of radio communication and broadcasting stations and in designation of radio stations of national defense, diplomatic purpose and international events.



Establishing the groundwork for the use of radio waves

RRA develops the rainfall attenuation and radio propagation models which are suitable to the changing electromagnetic environment to secure the basic frame and ground for the effective use of radio spectrum. Moreover, RRA measures and analyzes the characteristics of propagation of unused spectrum resources and studies the related technologies to support the effective use of radio spectrum.

Notifying frequency assignments of radio stations to ITU

RRA coordinates the frequency uses of radio stations in satellite, broadcasting, and terrestrial service with foreign countries and notifies them to International Telecommunication Union (ITU) to obtain international right of frequency uses and protect Korean radiocommunication networks from harmful interference.

(As of July 2015)

Broadcasting services		
AM		145
FM		415
T-DMB		208
TV	Analog	212
	Digital	1,322

Terrestrial services		
Aeronautical	FD	304
Base	FB	5,924
Mobile	ML	643
Land	FL	406
Fixed	FX	3,275

Satellite services	
Non-geostationary	10
Geostationary	26
Earth	558

Low-power radio laboratory

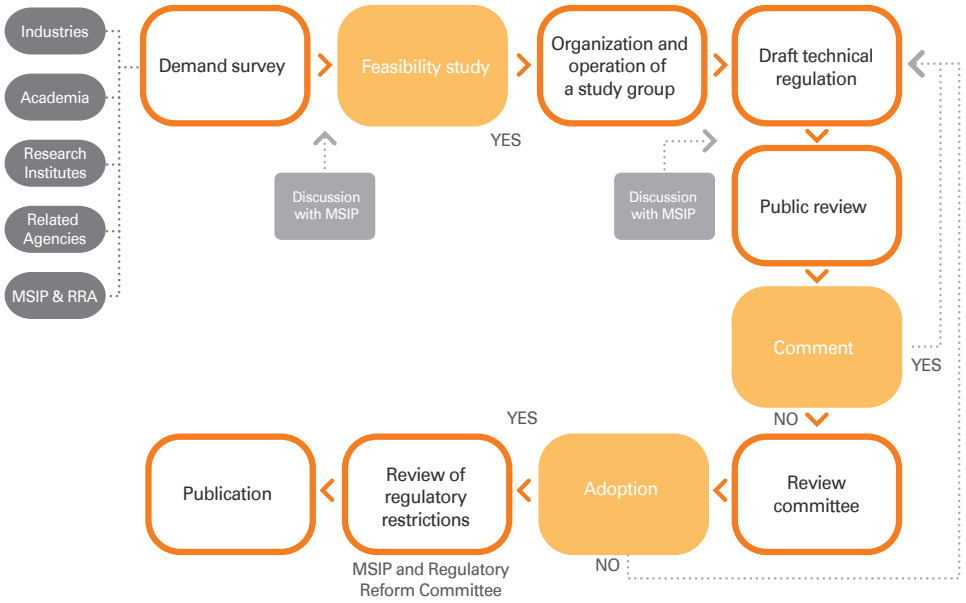
Research on technical regulations for broadcasting and communication services

RRA leads the development of related industries as it studies technical regulations for broadcasting and communication services, which are needed to catch the recent trends rapidly and to spread new technologies and services of broadcasting and communications in early stages in order to deal with changes in the market actively.

Research on technical regulations for broadcasting and communication services

RRA studies the relevant technical regulations which harmonize with the international standards such as ITU, IMO, and IEC, to allocate and allot new frequencies, to introduce new techniques, new products, and new services.

Procedure for establishment and revision of technical regulations



Global standard initiative for broadcasting and communications

RRA establishes the national standards to facilitate safe and convenient use of various devices, and RRA also set up standards for emergency communication in preparation for disasters, supporting underserved communities such as senior citizens and the disabled, with the aim of serving the public interest.
RRA enacts and publishes the national standards for the objective of public interest and industry development, and supports the international standardization activities of "Korea ITU Research Committee" to secure international competitiveness of Korean products and technologies.

Procedure and status of Korea ICT standards

RRA establishes national standards to reflect the need and urgency of ICT industry and services through public review and comments procedure.

Procedure for establishment and revision of Korea ICT standards

Korea ICT standards

(As of July 2015)

Area	Reference standards				Total
	Korea standards	ITU-R, T	ISO	Other	
Telecom.	85	110	51	6	252
Radio com.	56	2	0	1	59
Info. tech.	31	9	11	18	69
Info. protection	19	1	0	2	22
Broadcast tech.	26	1	0	2	29
Total	217	123	62	29	431

International standardization activities

RRA runs『Korea ITU Research Committee』for the international standardization activities internally and externally, consisting of experts to take an initiative in global standards.
In addition, RRA strengthens its competency for international standardization activities in broadcasting and communications sectors by building pivotal strategic infrastructure such as securement of office-bearers, chairmen and vice-chairmen at ITU and APT, a regional organization.

Korean Contribution

(2014)

Sector	Number of conference participation	Number of submission	Number of Reflection
Total	73	268	265
ITU-R	47	68	66
ITU-T	22	195	194
ITU-D	4	5	5

ITU (International Telecommunication Union)

ITU is the specialized agency under the umbrella of United Nations that develops and disseminates international recommendations in the fields of radio frequency, broadcasting, satellite orbit and telecommunication, and play a role of coordination internationally.
http://www.itu.int

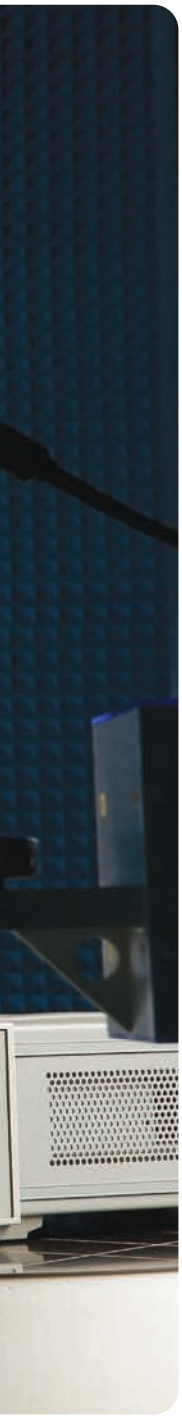
APT (Asia Pacific Telecommunity)

APT is an intergovernmental organization to promote cooperation in the field of broadcasting and communications standardization in Asia-Pacific region.
http://www.aptsec.org

Electromagnetic wave strength laboratory

Securement of a safe electromagnetic environment

RRA develops the technical standards, which are required to assess the impact of electromagnetic waves on broadcasting and communications equipment and the human body as well. RRA also suggests the reference level of electromagnetic waves for the equipment and human body. RRA carries out research to develop how to alleviate the adverse effects of electromagnetic waves, and tries to provide the correct information on what is true or not with regards to misleading information on electromagnetic waves through various channels to communicate with the public.



Research to develop technical regulations of electromagnetic compatibility

RRA develops technical regulations of electromagnetic interference (EMI) and electromagnetic susceptibility (EMS) to apply the regulations to the electric and electronic products before their launch in the market. Thus, RRA contributes to preventing the malfunctions of the products and to providing stable radio broadcasting and communication services from the electromagnetic interference, which is caused by broadcasting and communications equipment, medical devices, vehicles, and electronic railroads facilities.

Research activities to develop new assessment methods and related standards on human body exposure to electromagnetic field

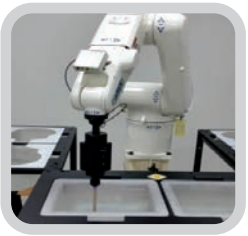
To secure a safe EMF environment and lessen the public concern about the EMF radiation from the radio waves products, RRA develops standards on electromagnetic field strength measurement methods and specific absorption rate (SAR) measurement methods. Recently, wearable devices and wireless power transmission equipments are the target products for the research activities to assess the amount of EMF exposure and to develop new assessment methods.

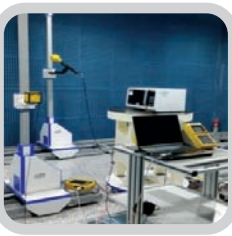
Study on the impact of electromagnetic field on the human body

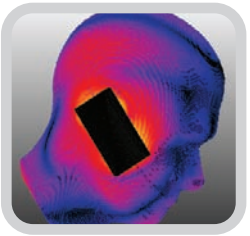
Study on how to evaluate the human exposure to EMF

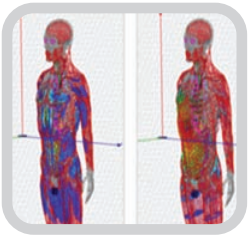
Measurement of the electromagnetic field strength affecting the human body

Numerical analysis to assess the specific absorption rate to the human body









Operation of the high power electromagnetic (EMP) and electromagnetic emanation (TEMPEST) safety assessment program

RRA establishes protection performance standards and test methods to assess and secure the safety of the indispensible national infrastructure from the high power electromagnetic waves radiating from nuclear and electronic bombs. These also help prevent the leakage of important information from the information equipment via electromagnetic waves. For this purpose, RRA operates a high power electromagnetic/electromagnetic emanation safety assessment program to check the safety of private and public protective facilities.

RF risk communications activities

RRA endeavors to provide the correct information on electromagnetic waves and to alleviate the concerns of the general public through interactive communications. RRA offers an education program on electromagnetic safety and runs a forum to enhance risk communication in public. It also runs a web site (www.emf.go.kr) with a title of electromagnetic waves in our daily life space, which provides the general public very exciting information including the Question and Answer parts.

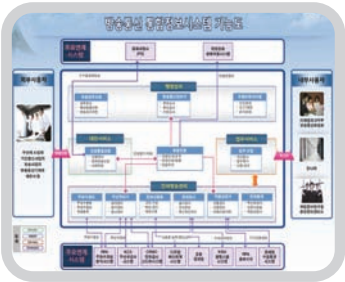
Cyber Safety Center

Informatization of broadcasting and communications, and cyber threat management

RRA develops and operates information service systems to support technically work in the fields of radio wave, communication and broadcasting in the Ministry of Science, ICT and Future Planning (MSIP).
RRA operates a Cyber Safety Center and implements an information security work to protect information service systems from cyber threats.
RRA also establishes a network infrastructure to provide stable communication services.

Establishment and stable operation of information service systems

RRA established an Integrated Broadcasting and Communication Information System that provides customer-oriented civil services and facilitates administrative services such as radio station license and spectrum fee with integrated information of communications and broadcasting services.
In addition, RRA is operating the radio environment information system, which provides the status of the use of radio wave resources, such as the information on the electromagnetic field exposure and Wi-Fi usage. RRA also operates the Spectrum Management Intelligent System (SMIS) to study and analyze the radio interferences for broadcasting stations, mobile base stations and satellite networks.



Integrated broadcasting and communication information system

Radio environment information system

Spectrum management intelligent system

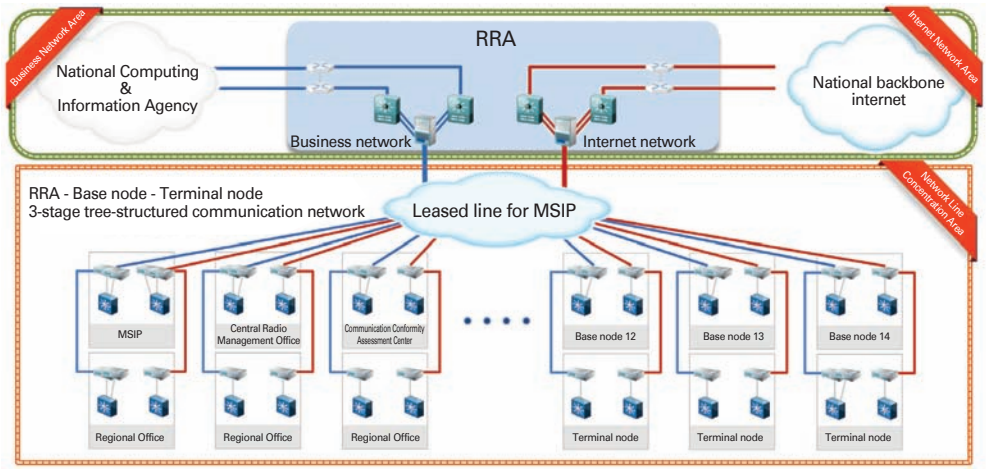
Operation of Cyber Safety Center for the Ministry of Science, ICT and Future Planning

RRA is operating the Cyber Safety Center 24hours a day throughout the year to protect critical information in the field of radio, broadcasting and communications from cyber threats such as DDoS attack, hacking, etc., and to provide reliable service to the public.
RRA also provides various information security services, including real-time monitoring, vulnerability inspection and response to cyber attacks, for 12 agencies, including MSIP, the Central Radio Management Office, Korea Communications Agency, etc.

Operation of network infrastructure for the Ministry of Science, ICT and Future Planning

RRA operates the network infrastructure for MSIP consisting of 81 dedicated lines to provide stable and reliable communications services to 34 agencies, including MSIP, the Central Radio Management Office, Gwacheon National Science Museum, etc.

Network infrastructure for the Ministry of Science, ICT and Future Planning



Conformity assessment system for ICT equipment

RRA operates a conformity assessment system that verifies that ICT equipment conform to domestic standards (technical regulations) before their sale to protect the radio environment and users.
In addition, RRA is engaged in international cooperation activities, such as the promotion of Mutual Recognition Arrangement (MRA) to strengthen the competitiveness of Korea's broadcasting and communications industry, and research activities to advanced our conformity assessment systems.

The conformity assessment system for ICT equipment

RRA performs the conformity assessment system for ICT equipment according to Article 58-2, "Radio Regulation Law". Certification is divided into three types such as conformity certification, conformity registration, and tentative certification. Those who want to manufacture, sell, or import ICT equipment should obtain certification related to corresponding equipment.

Conformity certification

Equipment which can harm the radio environment and the broadcasting communications network and which can give important electromagnetic interference or are affected by electromagnetic waves as much as normal motion is interfered.
ex) Wireless telephones with an alarm automatic receiver, radar equipments for ships, telephones, modems, etc.

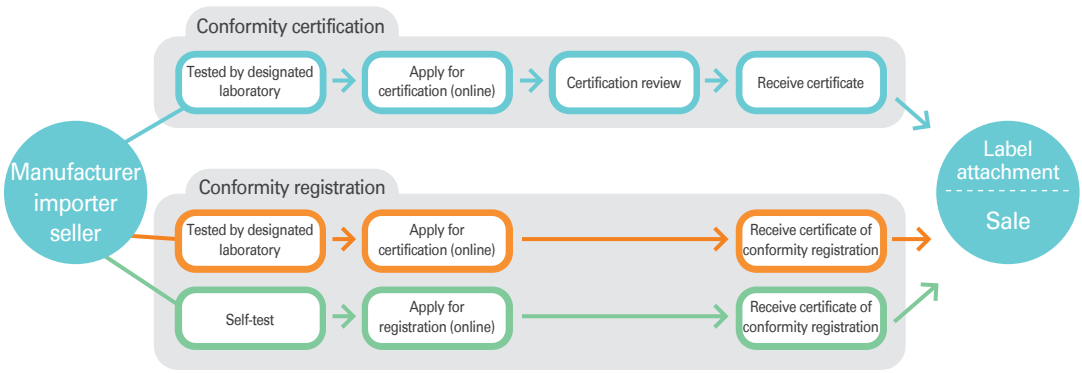
Conformity Registration

Cases that ICT equipment, not subject to conformity certification, are manufactured, sold, or imported.
ex) Computing devices and peripherals, and broadcasting set-top box, measuring instruments, industrial device, connectors, etc.

Interim Certification

Cases that there are no conformity assessment standard for ICT equipment or conformity assessment is difficult because of other reasons.

Procedure for conformity assessment

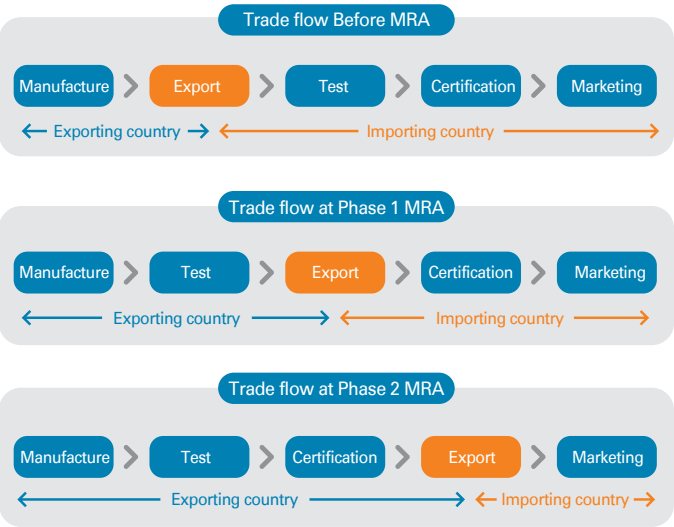


The designation and management of testing labs

RRA designates testing labs as it evaluates whether testing facilities and labor forces conform to international standards (ISO/IEC 17025) to enhance speed of certification for ICT equipment and testing capacity. Moreover, RRA makes efforts to strengthen competitiveness of testing labs by releasing information related to designated testing labs (testing field, possessed equipments, and regulation violations) through the internet.

Promotion of a Government-to-Government MRA

RRA supports overseas expansion of Korean broadcasting and communications industries through a shorten certification testing period for broadcasting and ICT equipment and cost reduction as conformity assessment result of the other party is mutually recognized between parties directly involved in an agreement.



Korea's MRAs

- With US, Canada, Vietnam, Chile(Phase 1 MRA), and EU(FTA)
- For more information on MRA, including target equipment, etc., please visit the RRA website.

The Republic of Korea-ASEAN broadcasting and communications cooperation program

RRA has provided education and training programs for 10 ASEAN countries since 2011, both on site and in Korea, with the aim of transferring Korea's advanced broadcasting and communications services and certification systems, while establishing a pro-Korean network in the region.

The Republic of Korea-ASEAN broadcasting and communication cooperation program is participated in by Korea and 10 ASEAN countries, including Malaysia, Indonesia, Thailand, Cambodia, Brunei, the Philippines, Vietnam, Myanmar, Singapore, Laos in accordance with the FTA dated December 2005.

Education in ASEAN countries

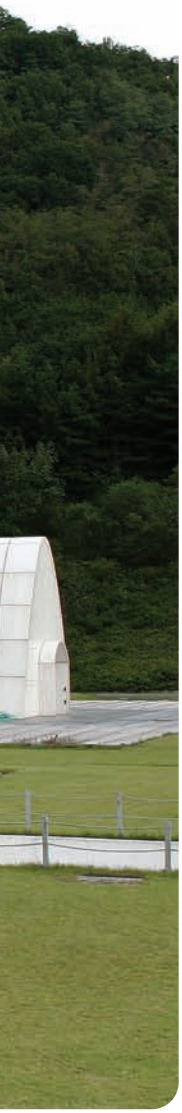
Education in Korea

Open Area Test site

Conformity assessment and the Post-market surveillance for ICT equipment

Communications Conformity Assessment Center

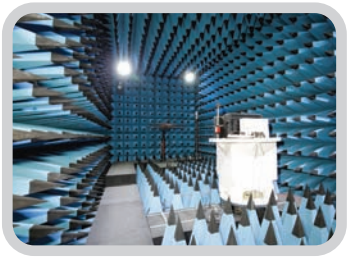
The Communications Conformity Assessment Center (CCAC) provides a range of conformity assessment services including conformity certification, conformity registration, and interim certification, in accordance with the ICT equipment conformity assessment system, as well as post-market surveillance services including market monitoring and testing of collected products.
CCAC also performs a task of calibration inspection of the antennas and measuring instruments required for conformity assessment, as well as post-market surveillance testing and research activities related to measuring technologies.



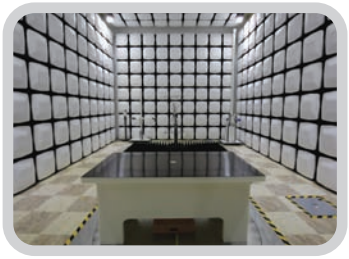
Conformity assessment for ICT equipment

The Communications Conformity Assessment Center (CCAC) provides conformity assessment services for ICT equipment, including conformity certification, conformity registration and interim certification, and also offers conformity assessment of maritime and aeronautical wireless equipment related to human safety as well as conformity assessment testing of equipment and materials that is difficult for private laboratories to test.

Wired telecom and RF Test lab



Full Anechoic EIRP Chamber



EMC Chamber

Post-market surveillance for ICT equipment

CCAC performs inspections to confirm that certified equipments and materials are manufactured, imported or sold in compliance with the standards in place at the time when they obtained their certification, and also conducts post-market surveillance testing and takes administrative measures in the event of violation.

Calibration inspection of the antennas and measuring instruments required for conformity assessment

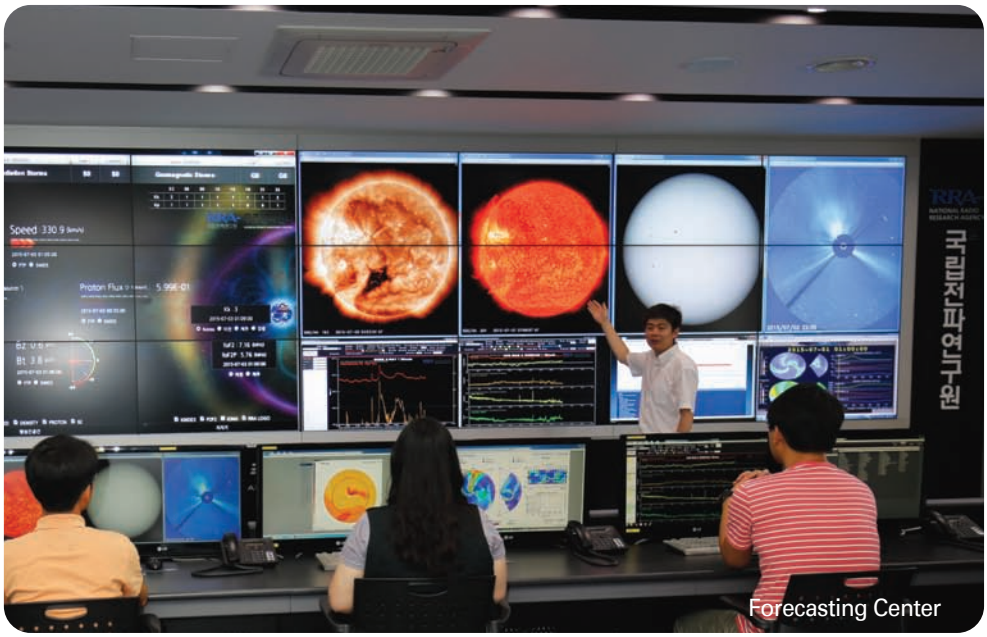
CCAC runs a world-class national standard open Area Test site, and conducts calibration inspection on measuring instruments and antennas of designated testing laboratories for conformity assessment as well as research on measuring technologies, to take the lead in international technical regulations and standards and maintain our credibility through accurate antenna measuring.

Radio environment measuring service and technical support for small and medium businesses

CCAC provides a conformity assessment service for testing sites and shielded rooms for electromagnetic compatibility assessment, does the service of measuring the shielding performance of new shielding materials developed by businesses, and offers technical support for small and medium businesses with regard to the related technologies required to develop new products, such as antenna and EMC measuring.

Observation and forecast/ alert of space weather

Sudden changes in space weather due to solar flares, CMEs (Coronal Mass Ejection) may cause severe impacts on various social infrastructures, such as communications, satellites, aviation, and power grids. The Korean Space Weather Center (KSWC) provides forecasts and alert services that give valuable information on solar activity and its potential impact on industries through its accurate observation and fast analysis of solar activity, so that the damages caused by space weather can be minimized.



Forecasting Center

Space weather forecast and alert services

Damages by the space weather events have been happened since a long time ago. For example, power grids were damaged due to geomagnetic storms in Quebec, Canada in 1989. In 2010, Galaxy 15, one of Unite States communication satellites, was out of order due to a severe space weather event, which resulted in communication disruption for 8 months.
In order to minimize these damages by the space weather events, RRA established Korean Space Weather Center (KSWC), Jeju, in 2011. Since then, KSWC has been accurately monitoring and fast analyzing the solar activity for 24 hours a day and providing space weather forecast and alert services for industrial sectors such as broadcasting and communications, satellites, aviation, and power grids through predicting the possible impacts by space weather events.

Web page for Space Weather Forecasting and Alert Services
http://www.spaceweather.go.kr

Strengthening domestic and oversea space weather cooperation network

KSWC is responsible for managing space weather risk. So, KSWC tries to mitigate the space weather risk through governmental department cooperations and industry-academic role allocations and also strengthens the advanced prevention effort to be able to predict and manage the space weather risk.
Moreover, by building international cooperation network with NOAA and NICT for joint research to develop more accurate prediction models and improve forecast and alert services, KSWC is also managing the space weather risk more effectively.

Joined in International Space Environment Service (ISES)

KSWC became the 14th regional warning center (RWC) of International Space Weather Service (ISES) in November, 2011. As a RWC member of ISES representing Korea, KSWC is on official duty defined by ISES, such as collects space weather observation data from domestic and oversea, exchanges the observation data and analyzed information, and provides space weather forecast and alert services in Korea.

National Radio Research Agency is always with you

We will do our best so that the benefit of good broadcasting and communication services reach the people safely and beneficially.
Please visit our website to access more information, including research project reports and information on civil complaints related to broadcasting and communications certification.

www.rra.go.kr

RRA
NATIONAL RADIO
RESEARCH AGENCY

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