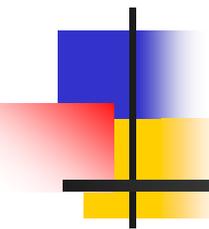


Conformity Assessment Systems in Japan

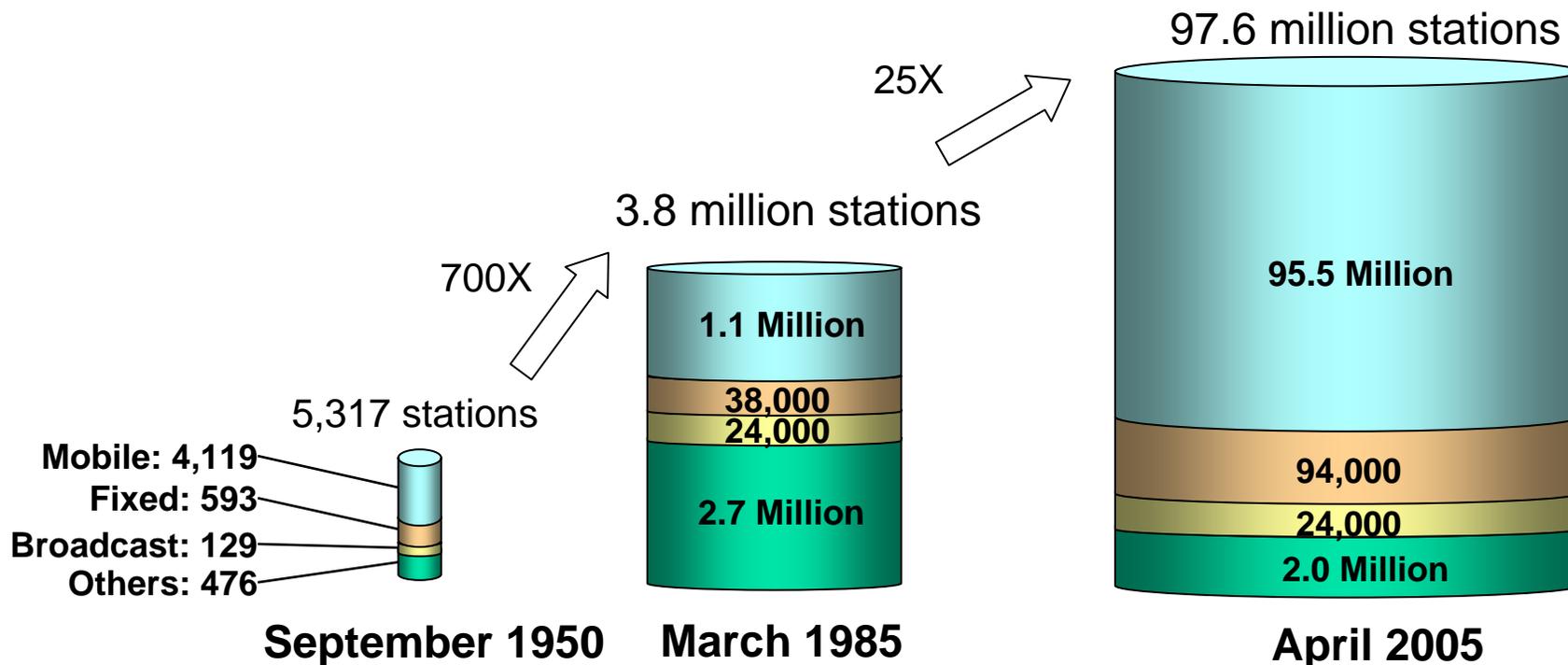
Electromagnetic Environment Division
Telecommunications Bureau
Ministry of Internal Affairs and Communications

- Radio Policy in Japan
- Radio Station License and Equipment Certification
- Technical Requirements for Radio Equipment
- Testing Procedures
- Certification Procedures
- Inspection in Production Process & Post-Regulations
- Certification Body for Radio Equipment
- MRA Status in Japan
- Japan-US Telecom MRA

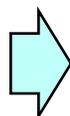


Radio Policy in Japan

The Number of Licensed Radio Stations



Advance of
IT society



Increasing Demand for
New Radio Services



Shortage of Spectrum

Outline of Frequency Open Policy

“Radio Policy Vision”

(Telecommunications Council report, July 2003)

Increasing demand for radio spectrums

Frequency Open Policy

- I. Dynamic review of radio spectrum allocation
- II. Development of frequency reallocation facilitation scheme
- III. Reform of Spectrum User Fee
- IV. Promotion of R&D
- V. Facilitating smooth prevalence of radio equipment
- VI. Enhancing international strategy
- VII. Building a safer and securer environment for radio spectrum use

“Guidelines for Spectrum Reallocation”

(formulated and announced in October 2003)

(1) [Amendment of Radio Law: in May 2002]

Surveys on actual radio spectrum usage

(detailed surveys since FY2003)

“Action Plan for Spectrum Reallocation”

(formulated and announced in August 2004)

Concrete measures for wireless broadband promotion

Reforming of current spectrum use

Allocation for the new system

(3) [under discussion in the Diet]

Amendment of a radio spectrum usage fee that takes into account congested radio spectrum usage and considers economic value

Research and development for the expansion of radio spectrum resources

(2) [Amendment of Radio Law in May 2004]

Introduction of compensation system for radio spectrum reforming

Introduction of registration system

Implementation of radio spectrum reallocation

Development of an more flexible environment for radio utilization

Change of “Frequency Assignment Plan”

Basic roles of radio spectrum use

- Realization of comfortable high quality of life
- Revitalization of industrial/economic activities
- Formation of a safe and disaster-tolerant society/country
- Invigoration of local economies

Mid- and long-term outlook for radio spectrum use

- Expectations for realization of a wireless broadband environment
It is expected that various radio spectrum uses have been drastically expanding in such areas as the home, business, medicine/welfare, security of Japanese nationals, so that the radio spectrum uses contribute to realization of convenient/ safe/secure daily lives and society.
- Expansion of radio-related market sizes (92 trillion yen, 2013)

Mid- and long-term outlook for radio policy

- Mid- to long-term goals (in 5 to 10 years)
- Contribution to realization of a ubiquitous network society through construction of the world's most advanced wireless broadband environment
 - Ensuring national security through use of diversified networks
 - Fostering internationally competitive wireless ICT industry

Desirable Radio Policy

- I. Dynamic review of radio spectrum allocation
- II. Development of frequency reallocation facilitation scheme
- III. Reform of Spectrum Usage Fee
- IV. Promotion of R&D
- V. Facilitating smooth prevalence of radio equipment
- VI. Enhancing international strategy
- VII. Building a safer and securer environment for radio spectrum use

Realization of a ubiquitous network society

Reallocation

[FUTURE CORE RADIO WAVE UTILIZATION SYSTEM]

Mobile Radio Communication System

Following is the frequency demand (5-6 GHz band or below) calculated by the ITU-formulated prediction method. This data is based on estimation of such as the number of medium/long-term cellular phone and PHS subscribers and necessary transmission speeds.

- Width of approx. 270 MHz (At present)
- **Width of 330-340 MHz (5 years later)**
- **Width of 1,060-1,380 MHz (10 years later)**

Wireless LAN/NWA

Following is the frequency demand (mainly the 5 GHz band) calculated by the ITU-formulated prediction method. This data is based on estimation of such as the number of medium/long-term users of wireless LANs and necessary transmission speeds.

- Width of approx. 160-200 MHz (At present)
- **Width of approx. 480 MHz at maximum (5 years later)**
- **Width of approx. 740 MHz at maximum (10 years later)**

Terrestrial TV Broadcasting

Prompt promotion and dissemination/development of digitalization

Digital broadcasting will start in December 2003 in the three major metropolitan areas (Kanto, Chukyo, Kinki); with introduction of digital broadcasting completed in all remaining areas by the end of 2006. Analog broadcasting will end in 2011.

RFID

Advanced use of RFID is being developed in various fields such as physical distribution.

UWB, ITS, Quasi-Zenith Satellite System, Intelligent Home Appliances, etc.

The radio wave utilization system will be improved, its core technology development will be fostered, and introduction of the system will be promoted.

[POLICY FOR FREQUENCY REORGANIZATION]

- 1) Within 5 years, a width of approx. 330-340 MHz shall be reserved, mainly in the 1.7 GHz and 2.5 GHz bands.
 - **800 MHz band** : width of 8 MHz
 - **1.7/2.5 GHz bands** : part of the bands
 - **2 GHz band** : width of 15 MHz
 - Others
 - 2) Within 5 to 10 years, a width of approx. 1.38 GHz at maximum shall be reserved, mainly in the 5 to 6 GHz band and below.
 - **VHF/UHF bands** : part of the bands
 - **800 MHz band** : width of 10 MHz
 - **1.5 GHz band** : width of 18 MHz
 - **3.5 GHz band** : part of the band width of 200 MHz
 - **4 G/5 GHz bands** : part of the bands
 - 1) Within 5 years, a width of approx. 480 MHz at maximum shall be reserved, mainly in the 5 GHz band, to respond to the frequency demand.
 - **4.9-5.0 GHz band** : width of 100 MHz
 - **5.25-5.35 GHz band** : width of 100 MHz
 - **5.47-5.725 GHz band** : part of the band
 - 2) Within 5 to 10 years, a width of approx. 740 MHz at maximum shall be reserved, mainly in the 5 GHz band, to respond to the frequency demand.
 - **5 GHz band** : part of the band
 - Expansion in utilization of the **sub-millimeter wave band**, and development and introduction of technology utilizing the **millimeter wave band (59-66 GHz)**
 - 1) Frequency assignment for prompt development of digital broadcasting at a national level.
 - 2) From 2012 onward, the **UHF band** will be utilized by mobile radio communication systems, etc.
 - 3) From 2011 onward, the **VHF band** will be assigned to respond to new demands, in light of the possible future needs such as digital terrestrial sound broadcasting and mobile radio communication
- At present, 135 kHz band (10-135 kHz), 13.5 MHz band (13.553-13.567 MHz), 2.4 GHz band (2.4-2.4835 GHz), etc. are reserved. Nevertheless, reservation of new frequency bands near the **950 MHz band** is also taken into consideration to respond to various needs.
- 1) UWB wireless system: A system is planned to be established next year by the Telecommunications Council, based on the results of a study of technical requirements, to utilize the **micro wave band (3.1-10.6 GHz)**.
 - 2) ITS related radio wave system: Efficient use of existing frequencies in the **5.8 GHz band (5.77-5.85 GHz)** shall be promoted, along with a study to utilize other frequencies, to respond to future technological developments.
 - 3) Quasi-zenith satellite system: Possibilities shall be studied in regard to communication, broadcasting, and Global Positioning services by taking the following into consideration: WRC-03 decision to allocate the 2.6 GHz band (2.605-2.630 GHz) for sound satellite broadcasting, Frequencies that can be assigned for communication and Global Positioning services, Future R & D trends.
 - 4) Intelligent home appliances: Based on the investigation results of radio wave utilization and market needs, details such as frequencies to be utilized and the necessary bandwidth shall be studied, with assignment of frequencies **near the 5 GHz band** taken into consideration.

In the coming years, phased revision of the frequency assignment plan will be implemented in compliance with the Radio Law.

Spectrum Usage

Survey Items

- Number of radio stations
- Traffic
- Years radio facilities have been in use
- Replaceability with other means

Surveys on Actual Radio Spectrum Usage

All of the radio spectrum is divided into the following three sections. Surveys are conducted every year on one of the sections.

- 1 Below 770MHz
- 2 Above 770MHz/below 3.4GHz
- 3 Above 3.4GHz

Public Comments - - - ->

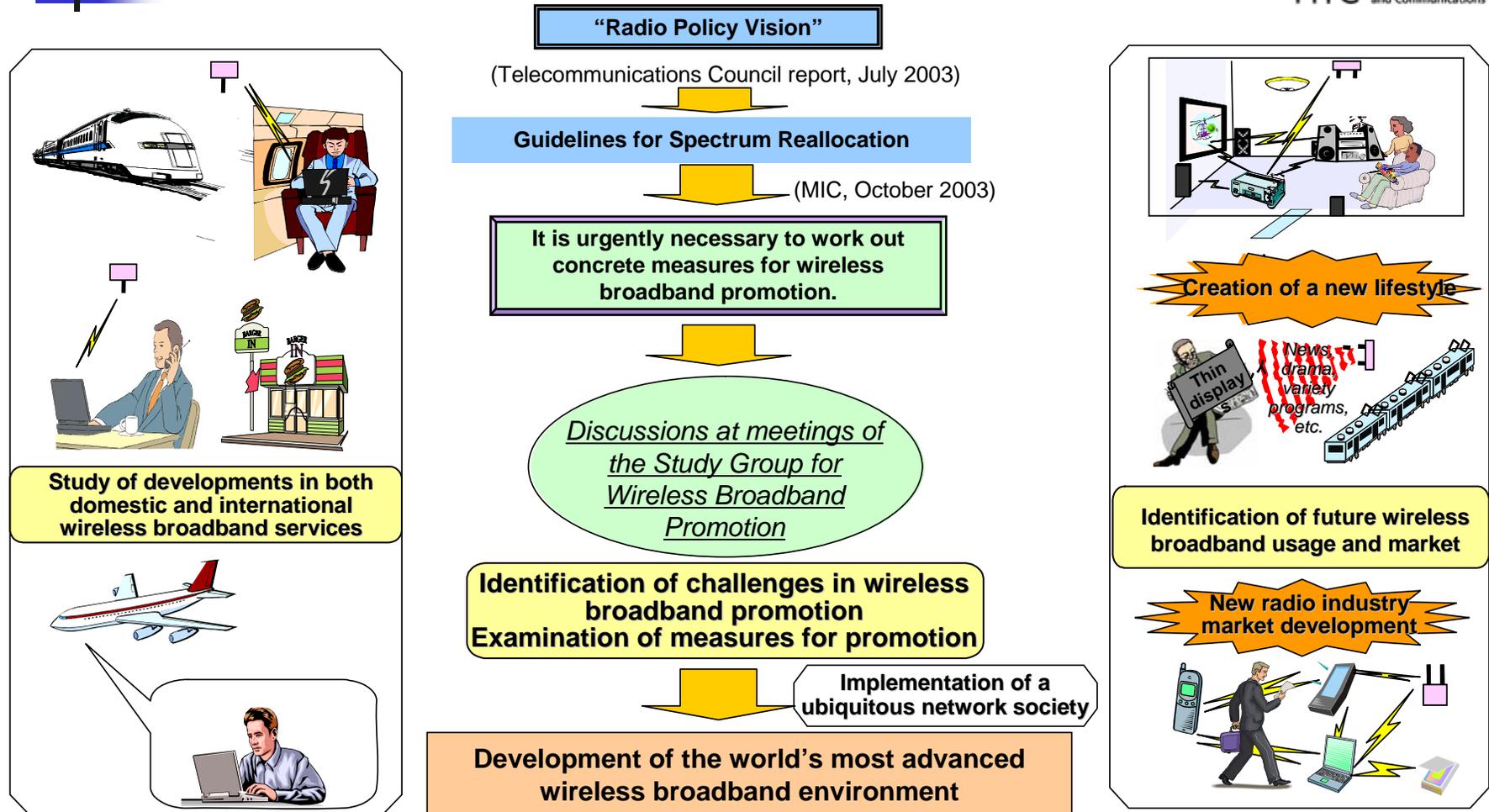
Publication of the survey results

Consultation to the Radio Regulatory Council - ->

Evaluation of the extent of efficiency in radio spectrum usage on each frequency band

Ex. of survey results
Spectrum is used effectively now.
Spectrum should be compressed.
Fixed micro wave links should be transferred to optical fiber, etc..

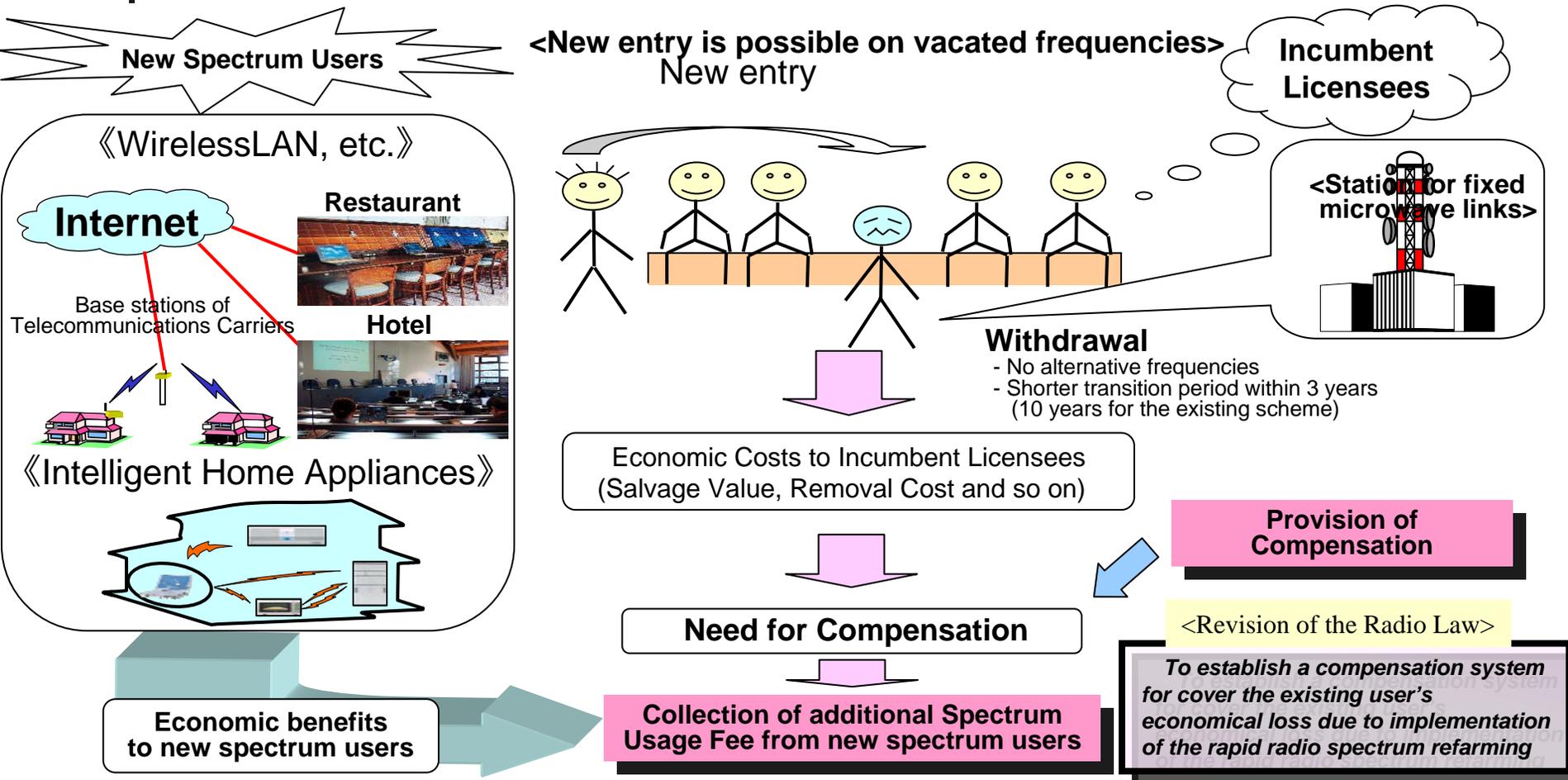
Modification of Frequency Assignment Plan



This study group mainly aims at developing the world's most advanced wireless broadband services environment and providing concrete measures for frequency reallocation. We will discuss the following issues openly, as well as at an industry-wide level.

- Study of developments in both domestic and international wireless broadband services
- Identification of future wireless broadband usage and market
- Identification of challenges in wireless broadband promotion, examination of measures for promotion, etc.

< Reference 5 > Compensation System for Spectrum Reforming



Implementation: to establish an environment in which everyone can use the Outdoor Wireless LAN in metropolitan areas within 2005

1 For 100MHz from 4.9 to 5.0GHz

2 Front loading of expiration date (Nov. 2007) of radio stations (fixed microwave stations for telecommunications business) will be implemented in Tokyo, Nagoya and Osaka.

<Reference 6> Outline of Registration System

Current system

License System
※ No license required for Small Power or Limited Bandwidth

<Revision of the Radio Law>
To introduce the ex post facto simple registration system comparing to the present ex ante facto license system to promote a business unrestricted development regarding best effort style wireless system such as high power outdoor wireless LAN

Background: Evolution of Technological Development, etc.

Introduction (planned)

<Bandwidth Guaranteed Type>
Broadcasting stations, Cellular Phones, etc.

< Shared Use Type >
Best Effort systems such as High Power Out-door Wireless LAN

Ex-ante Checking (License System)

- High Power
- Exclusive Use

Advantages of introduction

<Present>
To license each base station in accordance with detailed information (standard period is 2 or 3 weeks (from application to licensing))

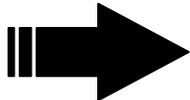
Ex-post Checking (Registration System)

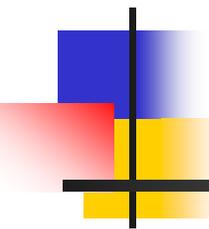
- Shared use of spectrum through interference avoidance mechanism
- Avoid interference with other systems

To promote shared use of radio spectrum

<After>

- To register name of the applicant area to install base stations, and etc. (minimum period is 1 day (from application to licensing))
- To install each base station in accordance with registered scheme (ex post facto notification of detailed information)





Radio Station License and Equipment Certification

Related Laws & Ordinances

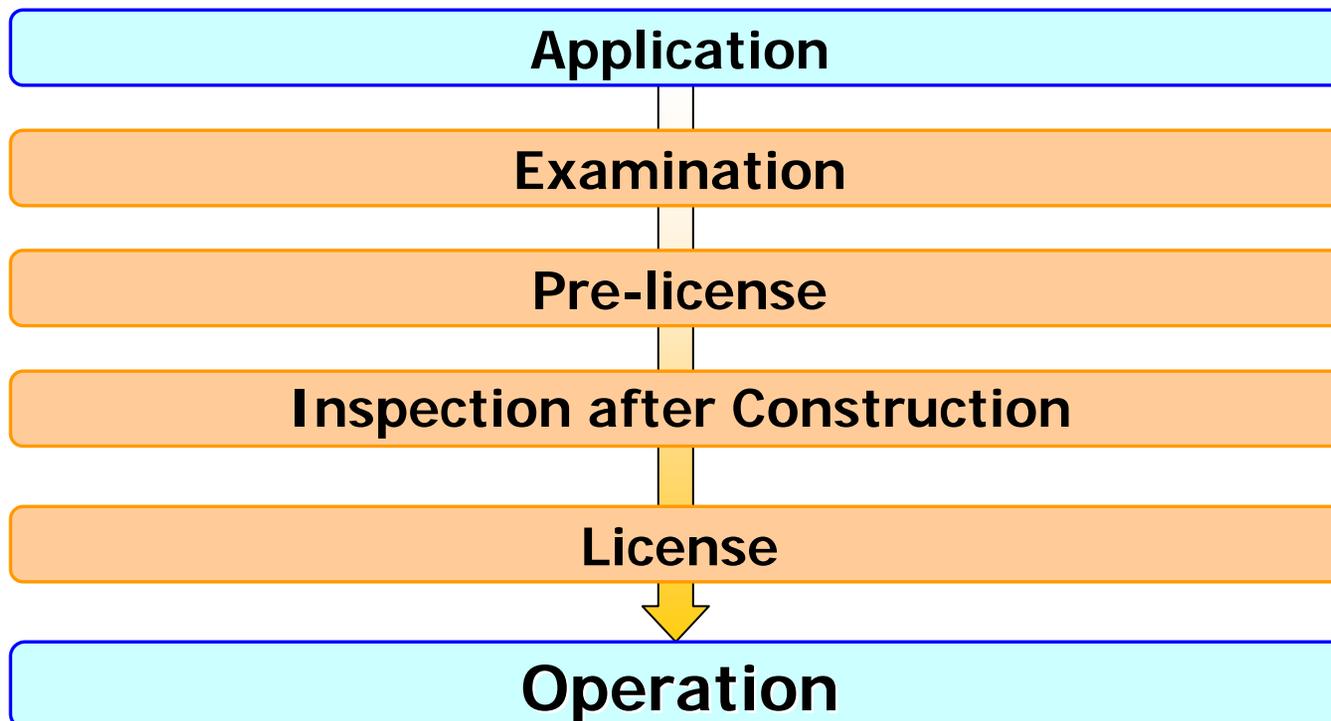
	Radio equipment	Terminal equipment
Laws	<ul style="list-style-type: none">• Radio Law	<ul style="list-style-type: none">• Telecommunications Business Law
Ordinances regarding Technical Requirements	<ul style="list-style-type: none">• Ordinance Regulating Radio Equipment (Radio Regulatory Commission Regulation No. 18, 1950)	<ul style="list-style-type: none">• Ordinance Concerning Terminal Facilities etc. (MPT Ordinance No.31, 1985)
Ordinances regarding Conformity Assessment Procedures	<ul style="list-style-type: none">• Ordinance concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment (MPT Ordinance No.37, 1981. Hereinafter referred as to “Certification Ordinance”)	<ul style="list-style-type: none">• Ordinance Concerning Technical Conditions Compliance Approval etc. of Terminal Equipment (MIC Ordinance No.15, 2004. Hereinafter referred as to “Approval Ordinance”)

Main contents of Radio Law

- ✚ Licenses for Radio Stations *(Chapter II)*
- ✚ Technical Requirements for Radio Equipment *(Chapter III)*
- ✚ Certification of Specified Radio Equipment *(Chapter III - II)*
- ✚ Radio Operators *(Chapter IV)*
- ✚ Operations and Supervision of Radio Stations *(Chapter V & VI)*

“Radio Station License” is required to establish and operate a radio station

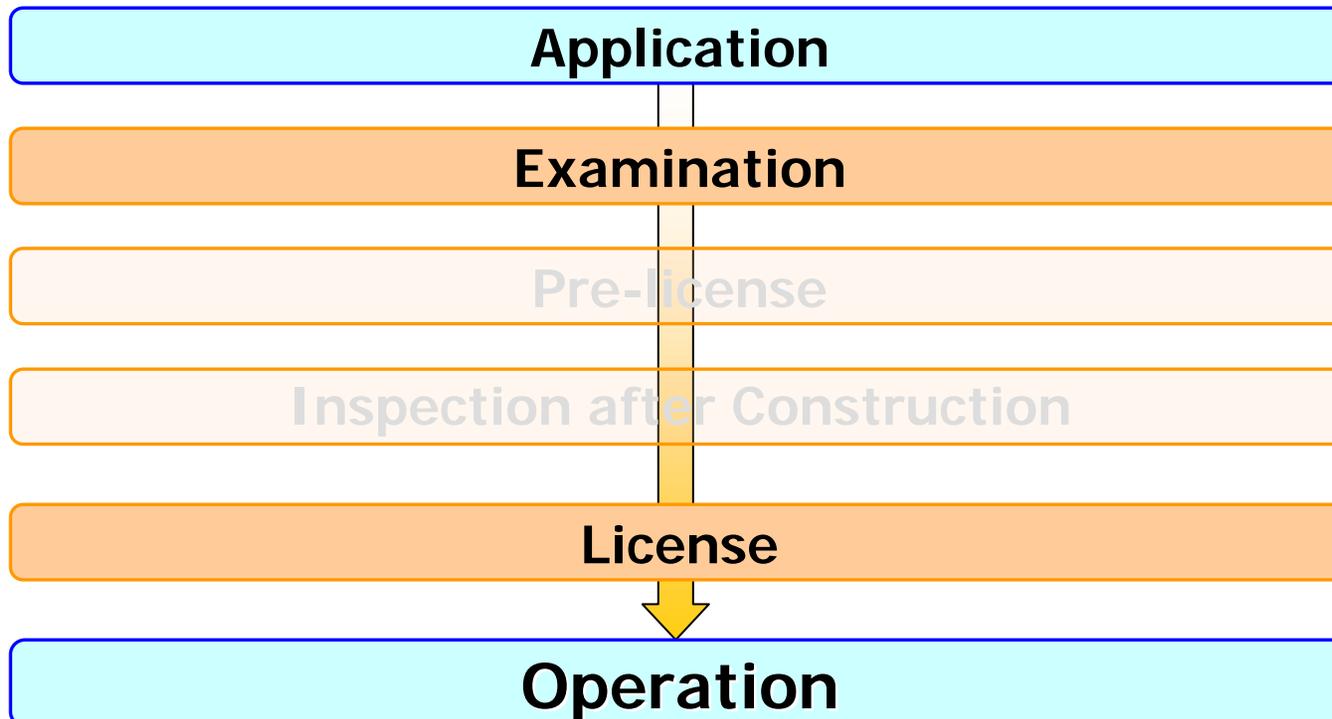
Licensing Procedures



1. Simplified Licensing Procedures

“Pre-license” and “Inspection” are omitted if a radio station uses solely certified Type 3 Specified Radio Equipment such as Amateur Radio Equipment.

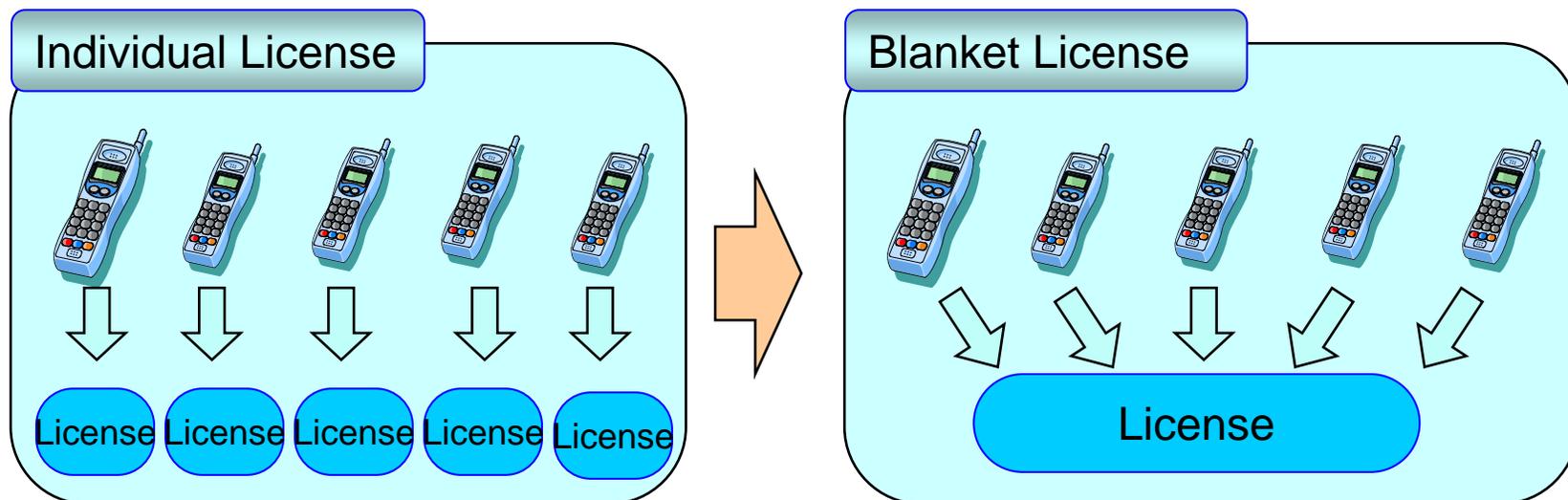
Simplified Licensing Procedures



2. Blanket License

The MIC issues a blanket license that allows to operate multiple radio stations if these stations use the same type of Certified Type 2 Radio Equipment such as cellular phone.

Blanket License



3. Unlicensed Radio Stations

An Extremely Low Power Radio Station and a Radio Station that use Certified Type 1 Specified Radio Equipment such as Wireless LAN do not need Radio Station License.

<Examples of Low Power Radio Station>



Wireless Remote-control

Keyless entry



<Examples of Type1 Specified Radio Equipment>



Wireless LAN



Cordless Phone

■ Unlicensed radio station equipment

- Extremely Low Power Radio Station Equipment
- Type 1 Specified Equipment

■ Licensed radio station equipment

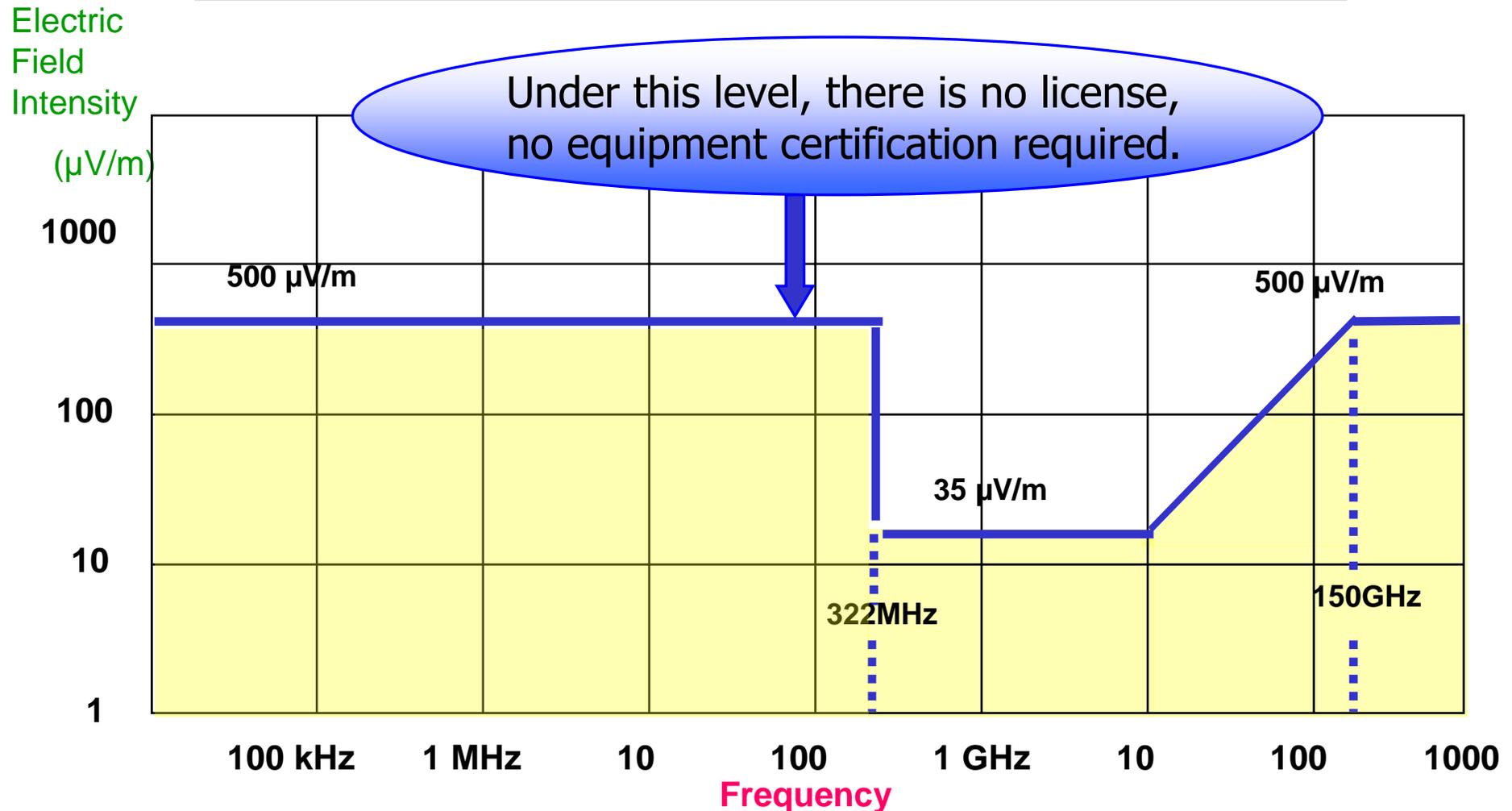
- Type 2 Specified Equipment
- Type 3 Specified Equipment
- Others

Certification Required

Extremely Low Power Radio Station

Tolerance of the Electric field Intensity of the Extremely Low Power Radio Station at the distance of 3m

Under this level, there is no license,
no equipment certification required.



Specified Radio Equipment

Article 2 Paragraph 1 of Certification Ordinance lists Specified Radio Equipment

Type 1 Specified Radio Equipment (13 types)

Specified Radio Equipment	Item # in Art.2 Para.1 of the Ordinance
Citizen band radio	Item (3)
Cordless telephones	Item (7)
Specified low power radio station	Item (8)
Low power security system	Item (13)
Low power data communications system in the 2.4GHz band (2,400 – 2,483.5MHz)	Item (19)
Low power data communications system in the 2.4GHz band (2,471 – 2,497 MHz)	Item (19)-2
Low power data communications system in the 5.2GHz band	Item (19)-3
Low power data communications system in the 25GHz and 27GHz bands	Item (19)-4
Land mobile station for a 5GHz band wireless access system	Item (19)-11
Radio station for digital cordless telephones	Item (21)
Land mobile station of PHS	Item (22)
Land mobile station of a dedicated short range communications system	Item (32)
Test station for dedicated short range communications system	Item (33)-2

Specified Radio Equipment

Type 2 Specified Radio Equipment (23 types)

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
Aeronautical portable radio telephone	Item (1)-2
MCA (land mobile station only)	Item (1)-4
Airport MCA	Item (1)-8
VSAT	Item (9)
TDMA cellular phone	Item (10)
CDMA cellular phone	Item (11)
DS-CDMA cellular phone	Item (11)-3
MC-CDMA cellular phone	Item (11)-4
T-CDMA cellular phone	Item (11)-7
Portable mobile earth station	Item (14)
Portable mobile earth station for Orbcomm system	Item (14)-2
Land mobile station for subscriber radio access communication (point-to-multipoint type)	Item (15)-2

Specified Radio Equipment

Type 2 Specified Radio Equipment (Cont')

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
Land mobile station for 5GHz band wireless access system (low spurious type)	Item (19)-9
Land mobile station for 5GHz band wireless access system (limited for use in specified zones)	Item (19)-10
Digital MCA (1.5GHz band, land mobile station only)	Item (20)
Digital MCA (800MHz band, land mobile station only)	Item (20)-2
S-band portable mobile earth station	Item (28)
Portable mobile earth station for Iridium system	Item (28)-2
INMARSAT portable mobile earth station	Item (30)
Rural subscriber radio	Item (31)
Land mobile station in the 60GHz band (point-to-multipoint type)	Item (31)-3
Land mobile station for digital aeronautical radio communication	Item (39)
Aircraft earth station	Item (46)

Specified Radio Equipment

Type 3 Specified Radio Equipment (62 types)

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
MCA (except for land mobile station)	Item (1)-4
SSB for land mobile station and portable radio station	Item (1)-9
Angle-modulation system for land mobile station and portable radio station (F3E etc.)	Item (1)-10
Frequency modulation system for land mobile station and portable radio station (F3E etc.)	Item (1)-11
Specified radio microphone	Item (1)-12
DSB maritime mobile telephone	Item (1)-13
SSB maritime mobile telephone less than 50W	Item (1)-14
Frequency modulation system	Item (1)-15
Radiolocation	Item (2)
Radio buoys	Item (2)-2
Meteorological aids	Item (3)-2
Convenience radio (900MHz band)	Item (4)
Convenience radio (350MHz band)	Item (4)-3

Specified Radio Equipment

Type 3 Specified Radio Equipment (Cont')

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
Convenience radio (27MHz band)	Item (4)-4
Convenience radio (50GHz band)	Item (5)
Premises radio	Item (6)
Base station for TDMA cellular phone	Item (10)-3
Base station for CDMA cellular phone	Item (11)-2
Base station for DS-CDMA cellular phone	Item (11)-5
Base station for MC-CDMA cellular phone	Item (11)-6
Base station for T-CDMA cellular phone	Item (11)-8
Amateur station	Item (12)
Base station subscriber radio access communication (point-to-multipoint type)	Item (15)
Land mobile station band subscriber radio access communication (point-to-point type)	Item (15)-3
Fixed station for telemeter and broadcasting type simplex communication	Item (16)
Fixed station for emergency alarms in the 60MHz band	Item (17)

Specified Radio Equipment

Type 3 Specified Radio Equipment (Cont')

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
Fixed station for telecommunications service in the 22GHz band	Item (18)
Base station for 5GHz band wireless access system	Item (19)-5
Base station for 5GHz band wireless access system (low spurious type)	Item (19)-6
Land mobile station for 5GHz band wireless access system (limited for use in specified zones)	Item (19)-7
Land mobile station for 5GHz band wireless access system (low spurious type, limited for use in special zones)	Item (19)-8
Digital MCA (1.5GHz band, except for land mobile station)	Item (20)
Digital MCA (800MHz band, except for land mobile station)	Item (20)-2
PHS base station	Item (23)
PHS relay station	Item (23)-2
PHS test station	Item (23)-3
Fixed station for telecommunications service in the 38GHz band	Item (24)
RZSSB system	Item (25)

Specified Radio Equipment

Type 3 Specified Radio Equipment (Cont')

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
Automatic frequency selecting RZSSB system	Item (25)-2
Frequency tracking RZSSB system	Item (25)-3
Narrow-band digital system	Item (25)-4
Automatic frequency selecting Narrow-band digital system	Item (25)-5
Frequency tracking Narrow-band digital system	Item (25)-6
Vehicle detection system	Item (26)
Beacon system	Item (27)
Radar Class III	Item (28)-3
Radar Class IV	Item (29)
Base station in the 60GHz band (point-to-point type)	Item (31)-2
Land mobile station in the 60GHz band (point-to-point type)	Item (31)-4
Base station for dedicated short range communications system	Item (33)
Fixed station for subscriber wireless access system in the 1.9GHz band	Item (34)

Specified Radio Equipment

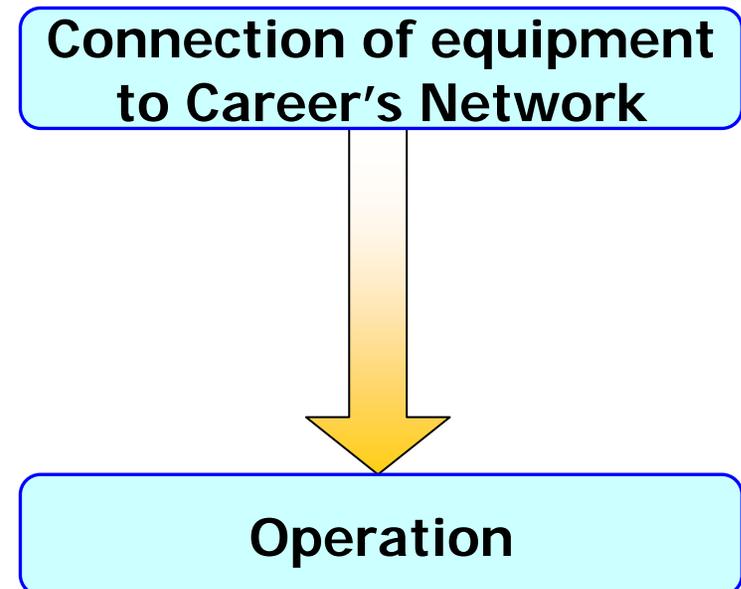
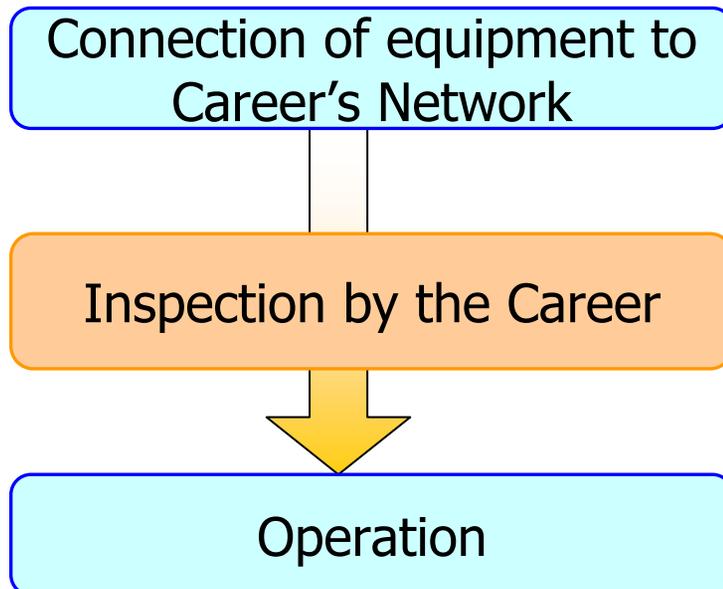
Type 3 Specified Radio Equipment (Cont')

Specified Radio Equipment	Item # in Art. 2 Para.1 of the Ordinance
Fixed station for subscriber wireless access system in the 1.9GHz band	Item (35)
Relay fixed station for subscriber wireless access system in the 1.9GHz band	Item (36)
Test fixed station for subscriber wireless access system in the 1.9GHz band	Item (37)
Fixed station for the municipal digital disaster prevention service in the 60MHz band	Item (38)
Land mobile station for digital aeronautical radio communication	Item (40)
Base station in the 18GHz band	Item (41)
Land mobile station in the 18GHz	Item (42)
Base station and land mobile relay station in the e18GHz band	Item (43)
Fixed station telecommunication service in the 18GHz band	Item (44)
Fixed station public service in the 18GHz band	Item (45)
Fixed station for subscriber wireless access system in the 1.9GHz band	Item (35)

Inspection by Telecommunications Careers is not required in case of connection of Certified Terminal Equipment to their network

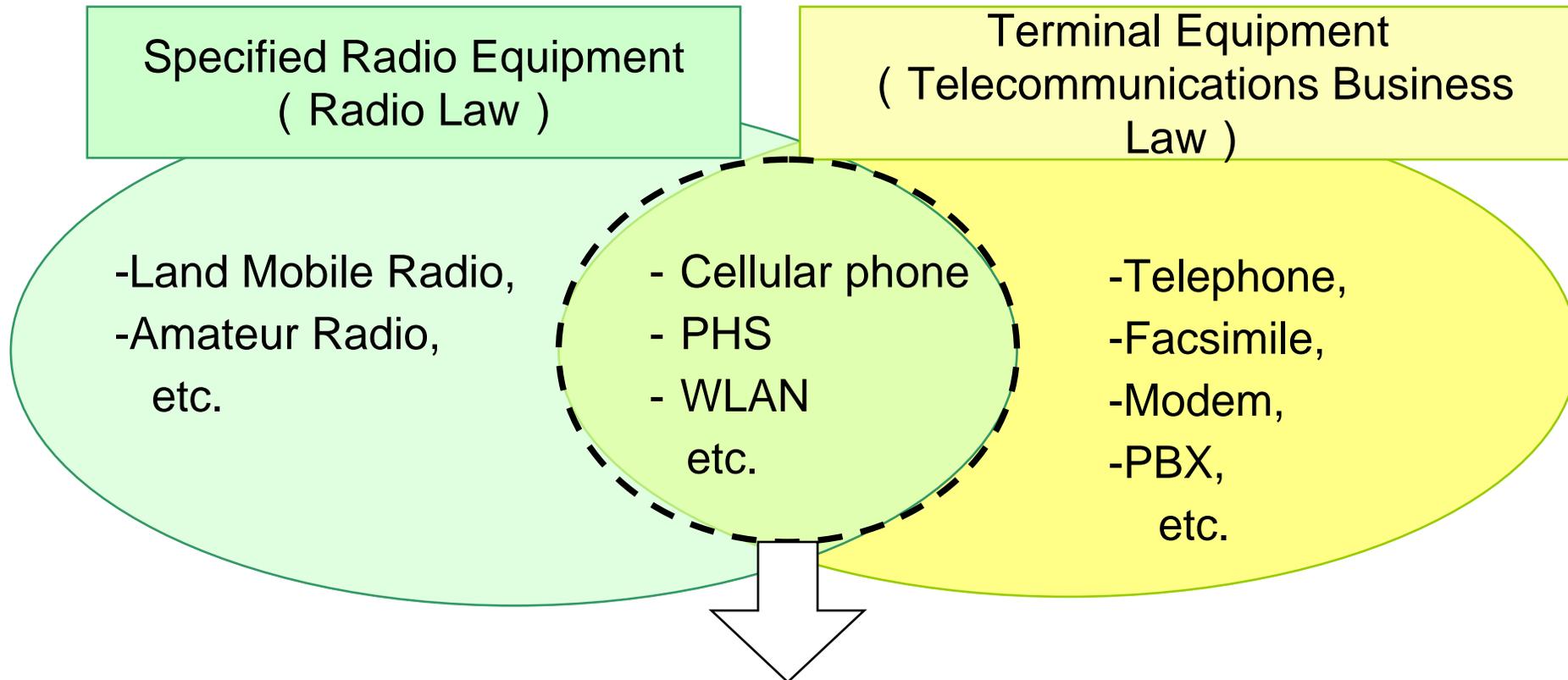
<Uncertified Terminal Equipment>

<Certified Terminal Equipment>

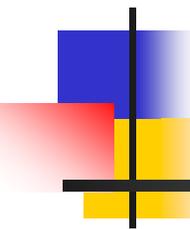


- Terminal equipment connected to telephone facilities
 - Telephone sets, Private Branch Exchanges, Key Telephones, Modems, facsimiles, etc.
- Terminal equipment connected to the radio paging facilities
- Terminal equipment connected to Integrated Services Digital Network (ISDN) facilities
- Terminal equipment connected to leased circuit facilities or digital data transmission facilities
 - WLAN, DSL Modem, etc.

Scope of Certification System



2 types of Certification (as Radio Equipment and as Terminal Equipment) Required



Technical Requirements for Radio Equipment

1. Purpose

- Prevent harmful interference
- Use radio frequency efficiently, etc.

2. Items

- Radio frequency
 - Maximum transmitting power
 - Spurious emissions, etc.
- ➡ Protocol or other standards for various services are stipulated by standards established by private organizations (ex. ARIB)

Description in Certification Ordinance

Article 2, Paragraph 1:

Item 19: Radio equipment for low-power data communications system radio station using a radio wave of 2,400 -2,483.5 MHz

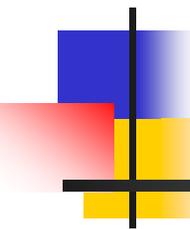
Item 19-2: Radio equipment for low-power data communications system radio station using a radio wave of 2,471 -2,497 MHz

Applicable Articles of Ordinance Regulating Radio Equipment

- Article 5 (Frequency tolerance)
- Article 6 (Permissible Values for Occupied Bandwidth)
- Article 7 Paragraph 14 (Permissible Values for Spurious Emission Intensity)
 - Item 2 (for equipment using emissions of a frequency from 2400 to 2483.5MHz)
 - Item 4 (for equipment using emissions of a frequency from 2471 to 2497MHz)
- Article 9.4 Item 9 (Interference Prevention Function)
- Article 14 Paragraph 1 Item 7 in the Table, sub-item (3) (Tolerances for Antenna Power)
- Article 24 Paragraph 2 (Limit on Secondary Radiated Emissions, etc.)
- Article 49.20 (Conditions for Radio Equipment of Radio Stations of a Low-Power Data Communication System)
 - Item 1 (for equipment using emissions of a frequency from 2400 to 2483.5MHz)
 - Item 2 (for equipment using emissions of a frequency from 2471 to 2497MHz)

Items		Requirements	
		Item 19	Item 19-2
Assigned or designated frequency		2,400 - 2,483.5MHz	2,471-2,497MHz
Communication method		One-way communication, simplex, semi-duplex, or duplex operation of digital signal transmission including spread spectrum	One-way communication, simplex, semi-duplex, or duplex operation using spread spectrum (DS, FH or DS+FH)
Tolerance of Frequency (x10 ⁻⁶)		50	
Tolerance of occupied bandwidth		FH: 83.5MHz, FT+DS: 83.5MHz FH+OFDM: 83.5MHz, OFDM,DS: 26MHz Others: 26MHz	26MHz
Tolerance of Spurious emission intensity		(1) Below 2387 MHz: 2.5 μW, (2) 2387 to 2400 MHz: 25 μW (3) 2483.5 through 2496.5 MHz: 25 μW, (4) Over 2496.5 MHz: 2.5 μW	(1) Below 2458 MHz : 2.5μW, (2) 2458 to 2471 MHz : 25μW (3) 2497 through 2510 MHz : 25μW, (4) Over 2510 MHz : 2.5μW
Antenna power	Designated value	(1) FH, FH + DS, FH + OFDM (used in the range of 2427 – 2470.75 MHz): 3mW/MHz or less (2) DS, OFDM (other than (1)): 10mW/MHz or less (3) Other than (1) & (2): 10mW or less	Designated value : 10mW/MHz
	Tolerance	+20%, -80%	
Limit of secondary radiated emissions		Below 1 GHz: 4nW, 1 GHz or higher: 20nW	

Items	Requirements	
	Item 19	Item 19-2
Antenna gain	1) 2.14 dBi or less in principle 2) In case of directional antenna (1) FH, FH+DS or FH+OFDM using 2427-2470.75 MHz, EIRP≤16.91 dBm/MHz (2) OFDM or DS other than (1) EIRP≤22.14 dBm/MHz (3) Other than (1) and (2): 22.14 dBm or less (4) Half-power angle of directional antenna (e) in case of the item 2): $e \leq 360/A$ (The A is 10 in maximum.)	2.14 dBi or less (EIRP: 12.14 dBm/MHz or less) in principle
Spreading bandwidth	FH, DS, FH + DS, FH + OFDM: 500 kHz or more	500 kHz or more
Spreading rate of Spectrum	For DS system; (Spreading bandwidth) / (Frequency corresponding to transmission rate) ≥ 5	(Spreading bandwidth) / (Frequency corresponding to transmission rate) ≥ 10
Holding time of hopping frequency	FH, FH + DS, FH + OFDM: 0.4 sec or less (The total sum of holding time at arbitrary frequencies within the time multiplied 0.4 sec by the spreading rate)	-
Interference prevention function	Shall have the function of automatic transmission and reception of identification sign.	Shall have the function of automatic transmission and reception of identification sign. Carrier sensing or Correlation signal sensing (Limited to the equipment connected to telecommunication circuit.)
Structure	Shall be of the structure that the RF and modulator sections excluding antenna cannot easily be opened.	



Japanese Conformity Assessment Systems for Radio Equipment

Third-party certification

Technical regulations conformity certification

Certification of each equipment

Construction type certification

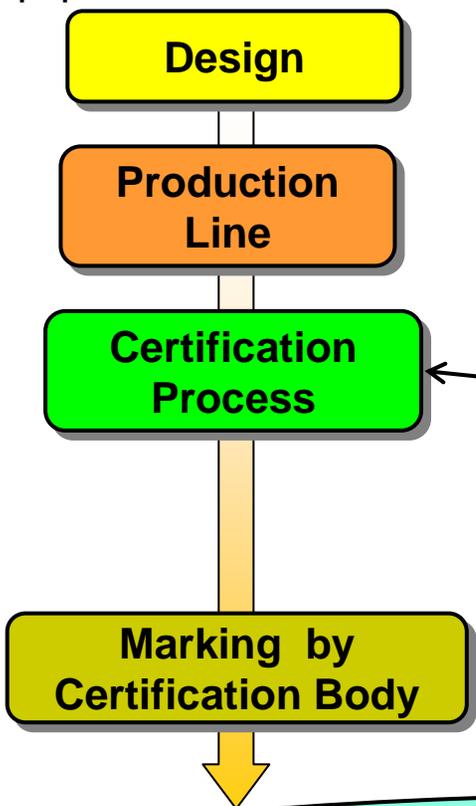
Certification of type of equipment

Supplier's Declaration of Conformity (SDoC)

The View of whole procedure

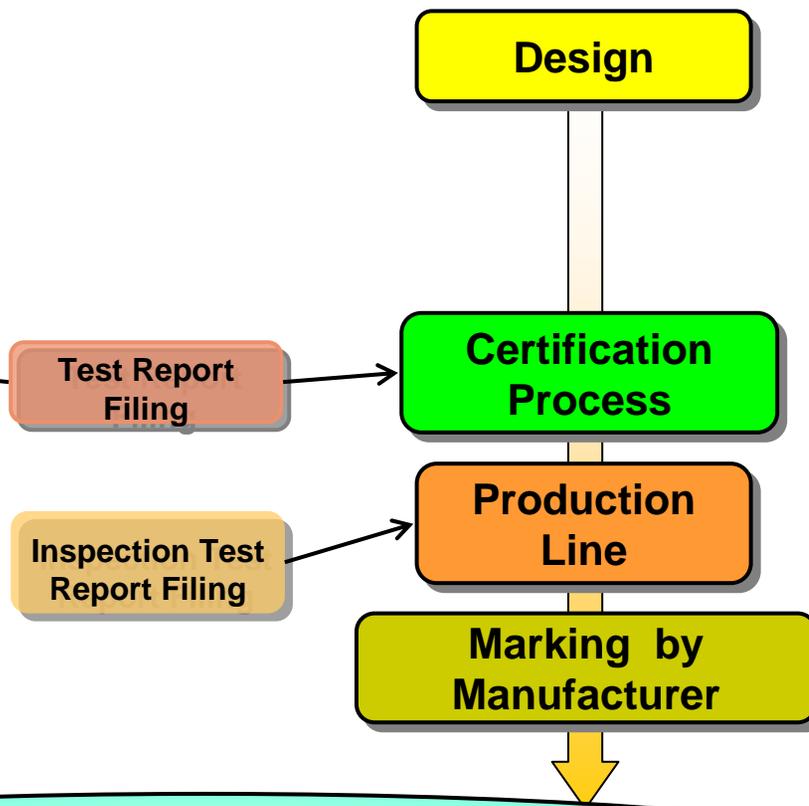
Technical Regulations Conformity Certification

Certification for each individual equipment



Construction Type Certification /SDoC

Certification for equipment type



Market

1. Certification Bodies

- ✚ Japanese Bodies Registered by the MIC
- ✚ Foreign Bodies Recognized or Registered in accordance with MRAs.

2. Applicants

- ✚ Foreign entities can apply for certification (No local presence required)
- ✚ Applicants shall have responsibility of Quality Control process in case of Construction Type Certification.

1. Overview

- ✚ No accreditation of testing laboratories required
- ✚ Equipment registration after declaration required

2. Equipment subject to SDoC

- ✚ Special Specified Radio Equipment (Subset of Specified Radio Equipment): cordless telephone, mobile phone, PHS terminal
- ✚ Telecommunications Terminal Equipment : All Terminal Equipment

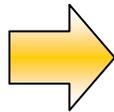
⇒ Suppliers can choose either certification or SDoC for these equipment.

3. Declarers

- ✚ Manufacturers or Importers (Local Presence Required)

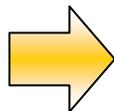
Two application procedures. (Applicant can select)

Submitting application equipment accompanied with necessary documents (not including test report)

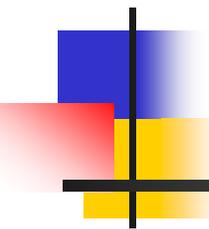


Certification Bodies will conduct tests and certification

Submitting photographs and test reports accompanied with necessary documents (not submitting equipment)



- **Test labs do not need authorization from MIC**
- **Certification Bodies shall check credibility of test reports**



Testing Procedures

- # Table 1 of Certification Ordinance stipulates test items and measurement instruments for each classification of equipment.
- # Art. 24-2, Para 4, Item 2 of Radio Law stipulates calibration methods for measurement instruments
- # MIC public notice No.88, 2004 stipulates test methods for each classification. Test shall be conducted in accordance with methods that are equivalent to or more stringent than MIC's methods.

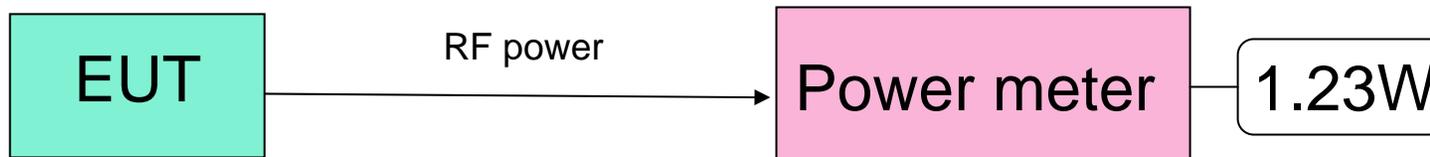
Table 1 of Certification Ordinance (abstract)

1 Device		Transmitter			Receiver		
2 Test Item		Frequency	Occupied frequency bandwidth	Adjacent channel leakage power or out-band leakage power	Limit of radio waves which are secondarily emitted	Sensitivity	Overall distortion and noise
3 Measuring Instruments etc.		Frequency counter or spectrum analyzer	False voice generator or false signal generator, band meter or spectrum analyzer	Low frequency oscillator, power measuring receiver or spectrum analyzer	Electric-field intensity measuring equipment or spectrum analyzer	Standard signal generator, level meter or distortion factor/noise meter	Standard signal generator, distortion/noise meter
4 Classification	Radio equipment specified in Item (11)-3 of Article 2	○	○		○		
	Radio equipment specified in Item (11)-4 of Article 2	○	○		○		
	Radio equipment specified in Item (11)-5 of Article 2	○	○		○		

- Frequency Tolerance
- Occupied Bandwidth
- Spurious Emission Intensity
- Antenna Power Tolerance
- SAR: Specific Absorption Rate (for mobile phone)
- Frequency Deviation or Shift (or degree of modulation)
- Adjacent Channel Power
- Limit of secondary radiated emissions (RX spurious)
- Other items depend on classification of radio equipment

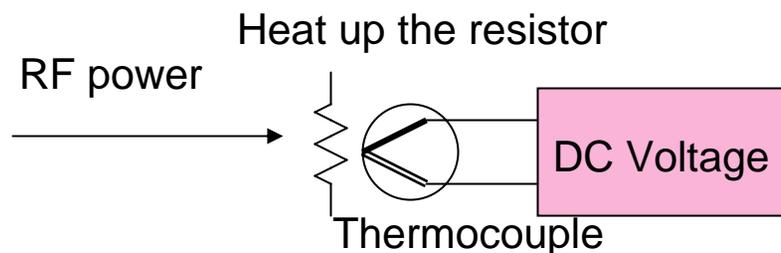
- Test method is different from the type of radio equipments.
- The following test methods are the examples.
- The following test methods are for the PDC and the Wireless LAN.

Antenna power error

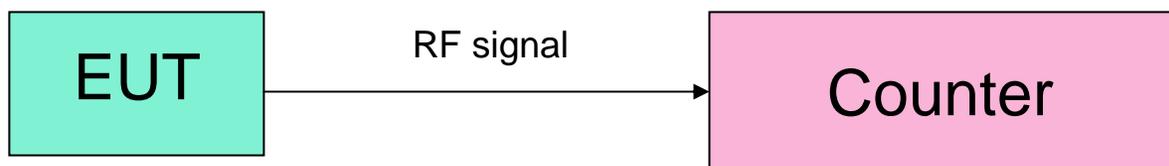


EUT:equipment under test

Thermocouple type power meter



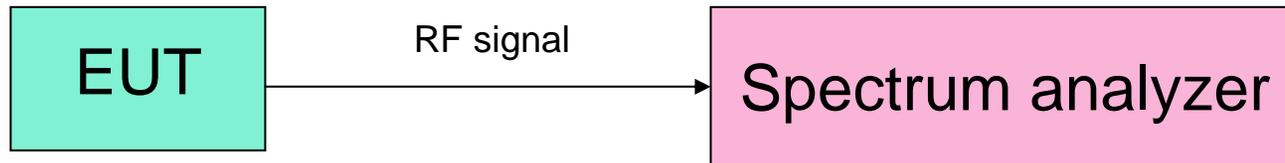
- Low reflection
- Flat frequency response
- High sensitivity



■ Cause of frequency error

- Time-base error
- Trigger error (Signal amplitude)

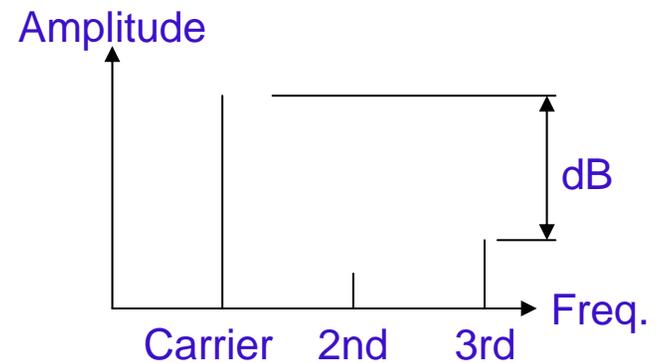
- Frequency counter
- Modulation analyzer
- Modulation domain analyzer
- Spectrum analyzer
- Vector signal analyzer

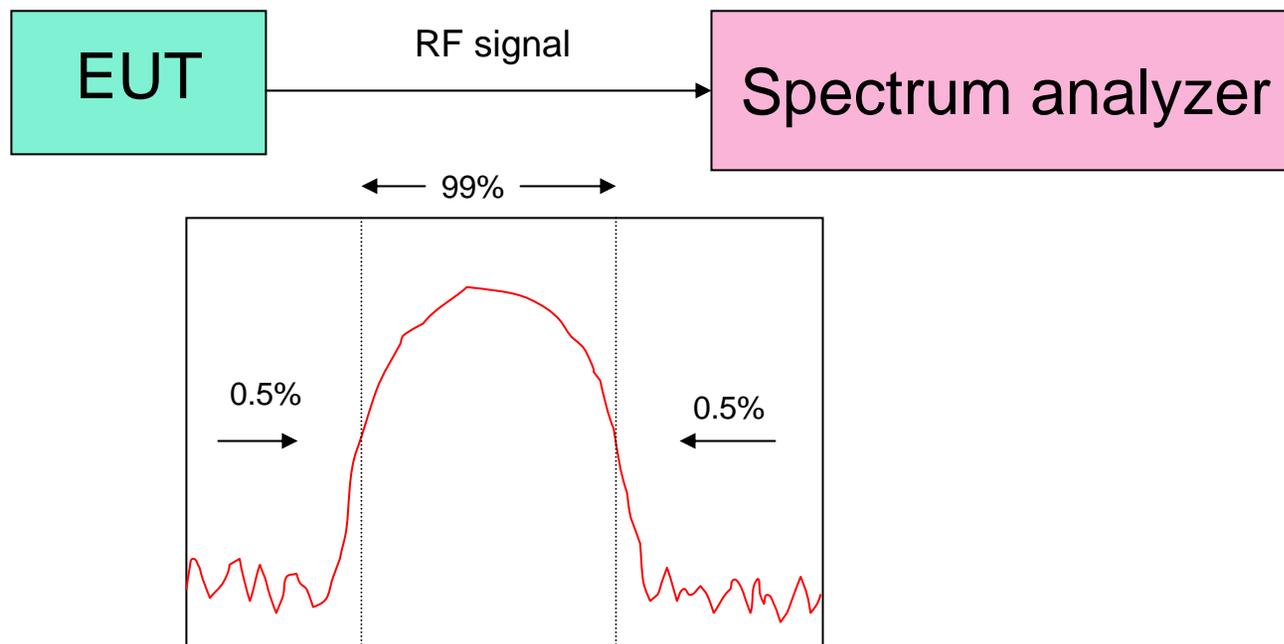


- Sweep from as low frequency as possible to the third order harmonics frequency

- Procedure

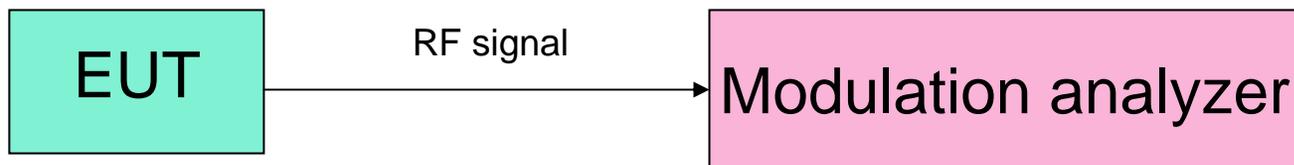
1. Measure the ratio of spurious amplitude to the carrier
2. Multiply the ratio to the antenna power





1. Sweep double or triple width of tolerance value at carrier frequency
2. Accumulate all sampling data points as the total power (W)
3. Find 0.5% points accumulated from upper side and from lower side

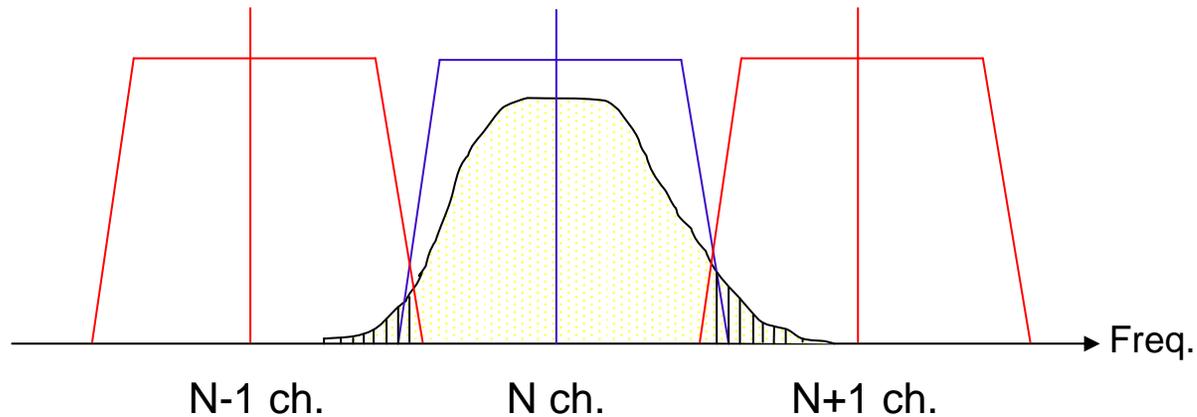
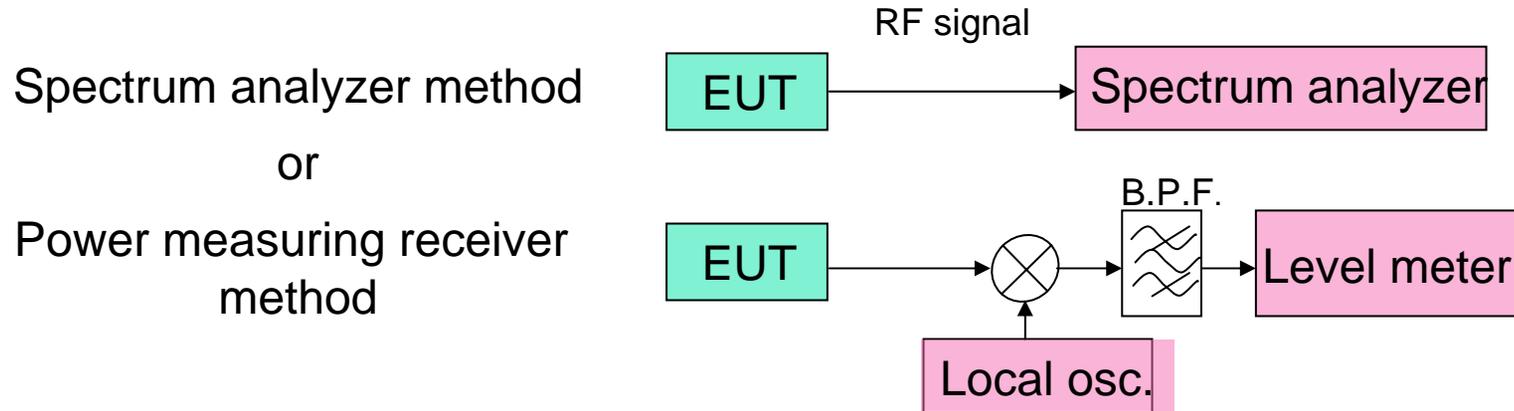
Maximum frequency deviation



Measure the plus and minus peak deviation.

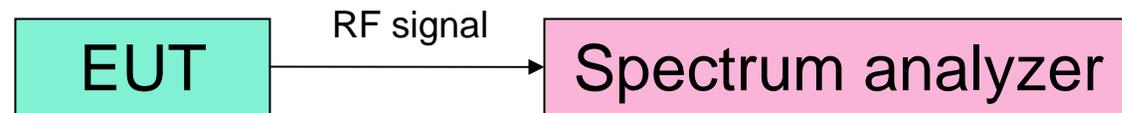
$$\text{Maximum frequency deviation} = \frac{(+\text{peak}) + (-\text{peak})}{2}$$

Adjacent channel leakage power ratio



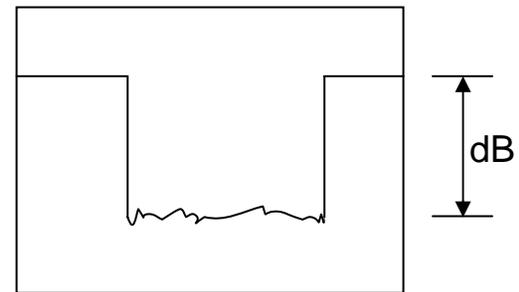
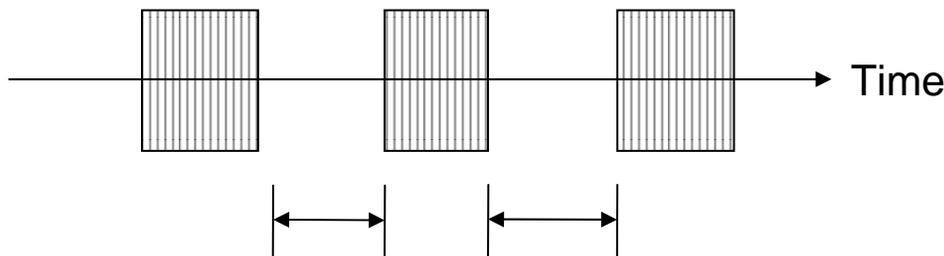
Carrier-off leakage power

For the TDMA



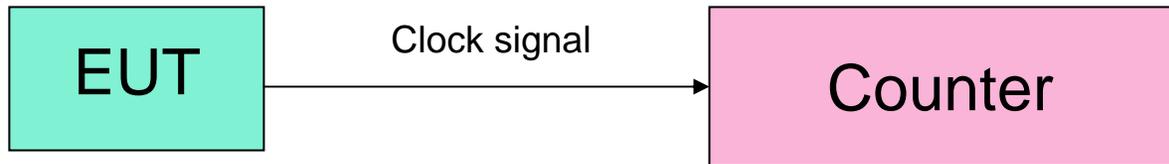
Synchronize to the envelope of carrier wave

Carrier wave



Measure the leakage power at carrier-off time

Signal transmission rate



Time-base error
Trigger error (Signal amplitude)

Frequency counter
Modulation analyzer
Modulation domain analyzer



- EUT is set to the condition for continuous reception mode
- Sweep from as low frequency as possible to the third order harmonics frequency
- Typical tolerance of this test item is under 4nW which is quite low



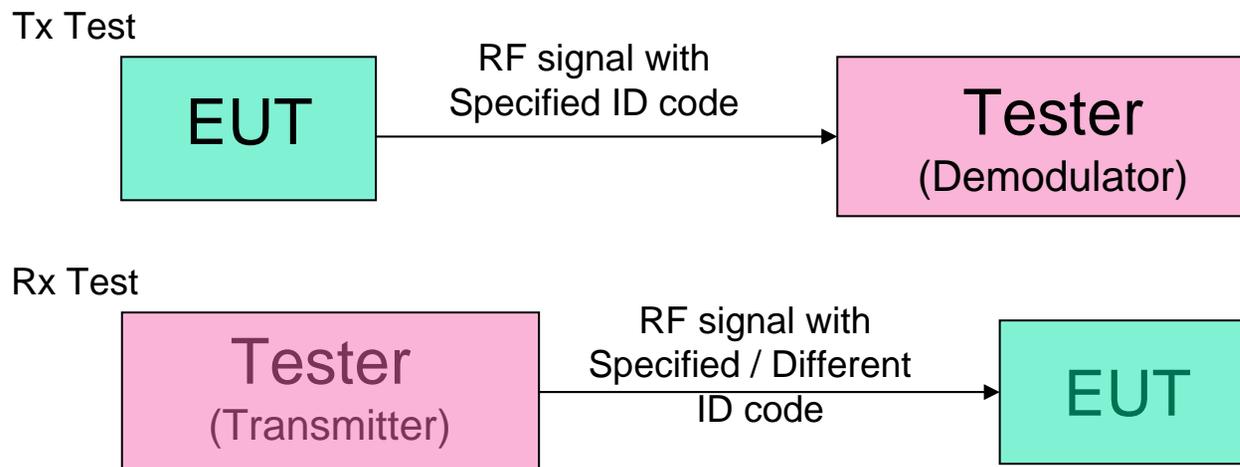
■ Test item

- Waiting and receiving calls operation
- Location registration
- Incoming call operation
- (including speech, switching speech ch, BS call ending)
- Outgoing call operation
- (including speech, switching speech ch, MS call ending)

■ Procedure

- Connect and communicate between the EUT (MS) and the Test Equipment (have a BS Simulation function).
- Execute the above test.

*: MS: Mobile Station, BS: Base Station



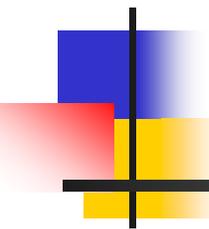
■ Purpose

Check the Interference Protection ability.

■ Procedure

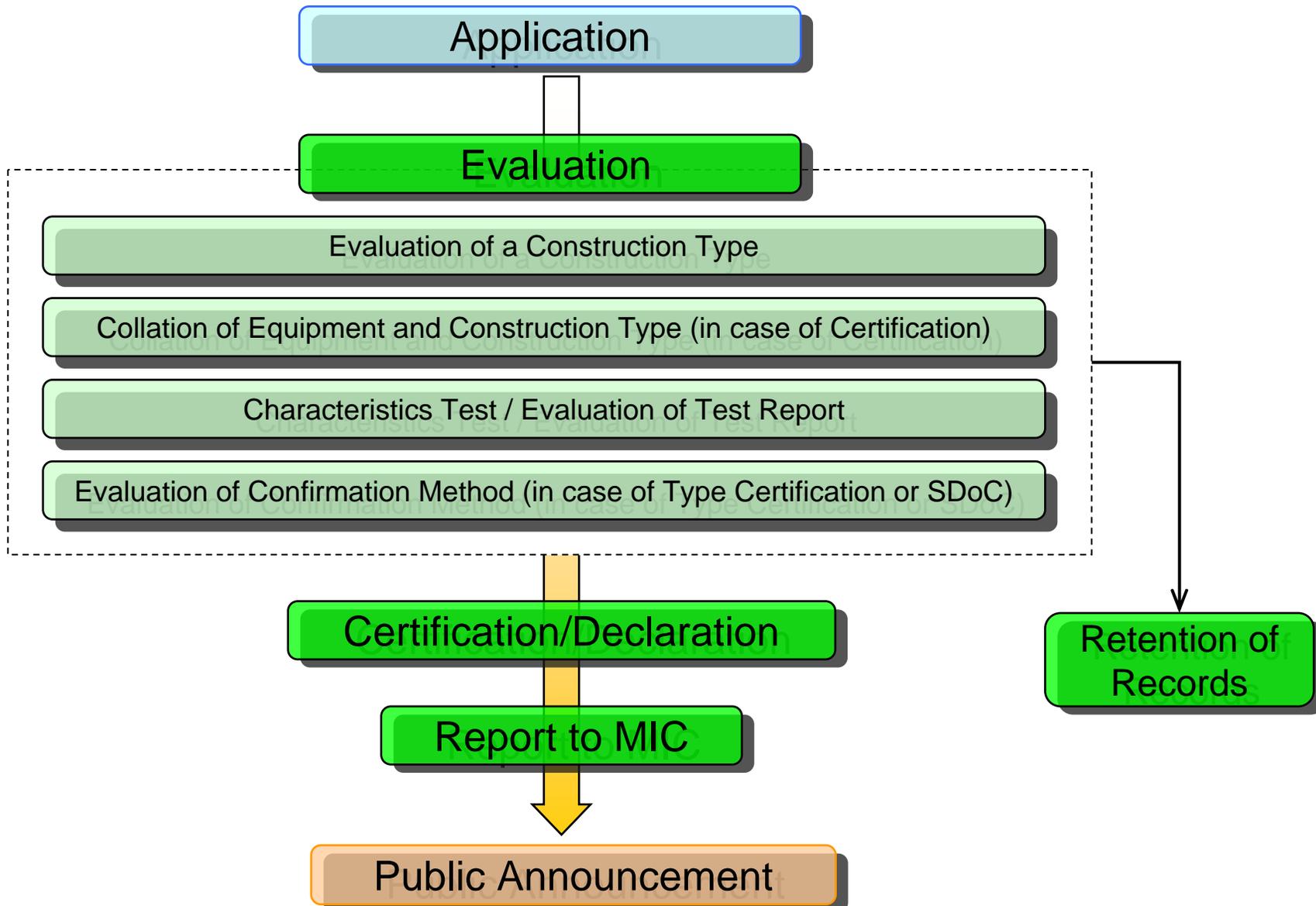
- Tx Test: Confirm the decoded ID code on the Tester vs. specified ID code.
- Rx Test: Confirm decoded ID code on the EUT vs. specified ID code.
Confirm the EUT action if decode the different ID code.
Action: stops transmission or indicate the ID code error.

*: Tester shall be provided by the examinee.



Certification Procedures

Flowchart of Certification/SDoC Procedures



Evaluation of a Construction Type

- Evaluate the content of the construction type as to whether they meet the relevant technical requirements.

Collation of Equipment and Construction Type

- Evaluate the submitted radio equipment as to whether it conforms to the construction type.



Evaluation of Confirmation Method

- Evaluate whether each piece of equipment constructed based on the type conforms to the type by inspecting the statement of Confirmation Method and submitted radio equipment.
- Confirmation method contains the following entry items :

Entry Items

1. Organization, and responsibility and authority of the administrator
2. Administration method for fulfilling the type conformance obligation
3. Inspection of Specified Radio Equipment
4. Administration of measuring instruments and other equipment
5. Other

Retention of Records

- Certification Bodies /declarers are obliged to retain examination records.
- Retention period: 10 years after preparation of the records.

Items to record

- The testing method for the characteristics examination
 - Information about measurement such as the name of measuring instruments, the measurer, etc.
 - Transition and results of the examination
- etc.

Report or Notification to MIC

- **Report:** from Certification Bodies (in Certification)
- **Notification:** from declarers (in SDoC)

Report

1. Name and address of applicants
2. Class of the Specified Radio Equipment
3. Model type or name of the Specified Radio Equipment
4. Certification number
5. Type and frequency of the radio wave and the antenna power
6. Date of the certification

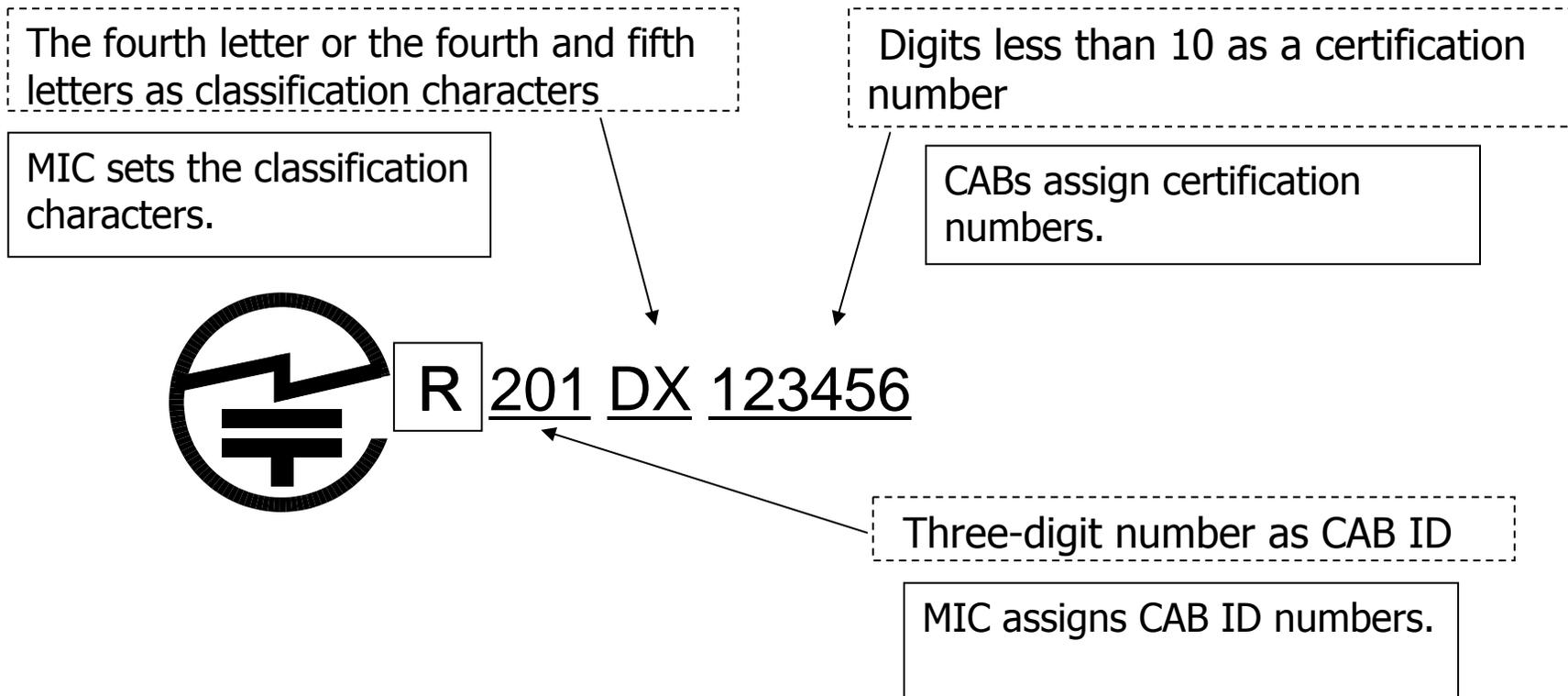
Notification

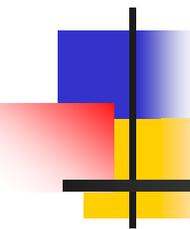
1. Name and address of declarers
2. Class and construction type of the special specified radio equipment
3. Outline of the verification results
4. Confirmation Method
5. Model type or name of the special specified radio equipment
6. Name and location of the factory or place of business
7. Information about measuring instruments used in inspection



- MIC makes public announcement based on the Report or Notification

The mark below must be affixed to an easily noticeable section of the specified radio equipment.

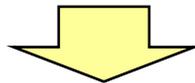




Inspection in Production Process & Post-Regulations

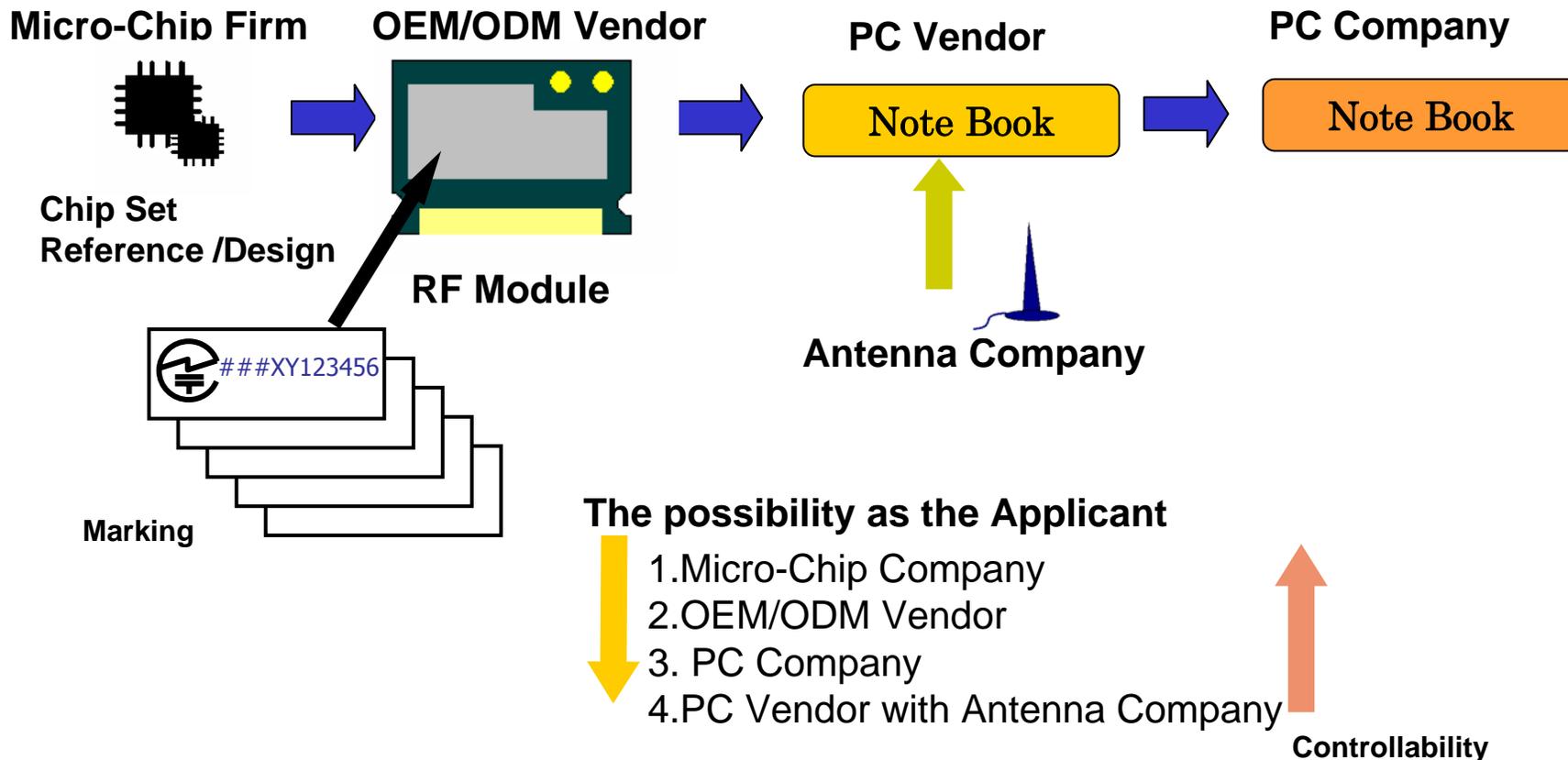
In case of Construction Type Certification or SDoC,

- ✚ Grantees or Declarers have an obligation to ensure that all units conform to certified/declared construction type.
- ✚ In order to ensure that, they shall:
 - inspect units in accordance with certified confirmation method,
 - retain records of inspection for 10 years after inspection.

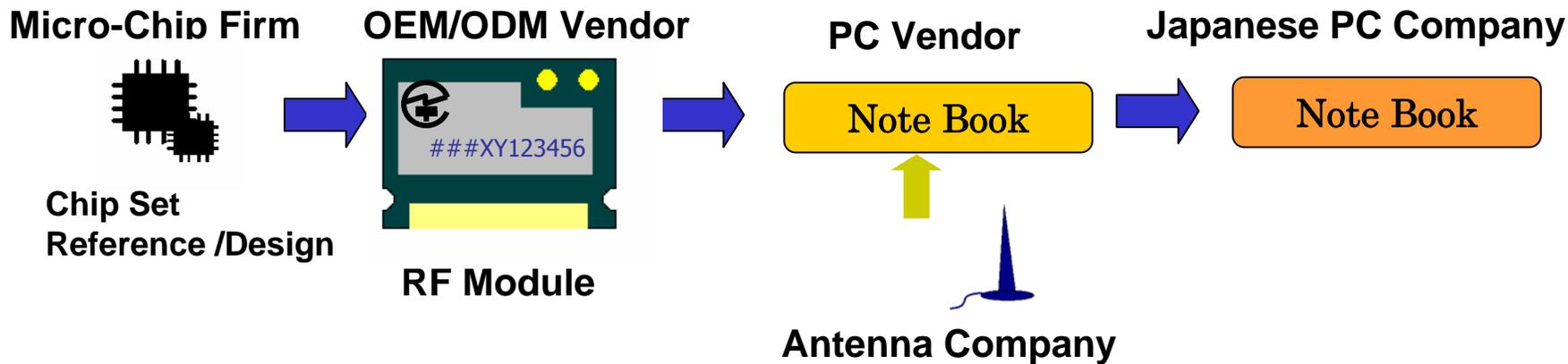


Violation of the obligations of inspection and retention of records leads to Suspension of Certification/Declaration up to 2 years.

Who is Applicant ?(1)



Who is Applicant ?(2)



If Micro-Chip company is Applicant, Micro-Chip Company have an **OBLIGATION of QC PROCESS of RADIO EQUIPMENT (not just Chip Set or RF Module).**

Additionally, Marking, Additional antenna application & QC process should be done.

Market Surveillance

Purchase of certified/declared equipment from the market.



Evaluation of their conformity to the technical requirements
and the certified type.



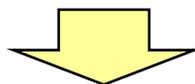
An Order for Corrective Actions (if necessary)

Result of 2004 surveillance

- 17 cases of violation were detected (out of 78 subjects).

MIC may:

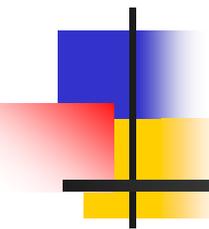
- require suppliers to report on certified equipment
- inspect certified equipment, etc. in suppliers' offices
- suspension of certification
- revoke certification
- order suppliers to recall certified equipment from the market



Penalty for failure to comply with orders above

Fine: up to one million YEN, or

Imprisonment: up to one year



Certification Body for Radio Equipment

Scope

Certification Bodies will obtain registration according to one or more of the following equipment categories that they will certify.

Categories

Terminal Equipment

- Terminal Equipment for the purpose of calls
- Terminal Equipment except the preceding item

Specified Radio Equipment

- Type 1: Non-Licensed Radio Equipment
- Type 2: Blanket Licensed Radio Equipment
- Type 3: Radio Equipment subject to simplified licensing procedure

Qualification Criteria

- Knowledge and experiences of certifiers
- Measuring instruments and calibration method of those instruments
- Impartiality

Disqualification Criteria

- Previous convictions
- Previous revocation of registration

■ RCBs shall:

- renew its registration every five years
- conduct examinations upon request
- notify the MIC appointment or removal of its officer or certification examiner
- establish operational rules and procedures and submit them to MIC
- prepare and retain financial statements, etc.
- prepare and retain record books related to the certification service

- MIC may:
 - require a registered body to report on the situation of the certification service
 - inspect facilities, record books, documents, etc.
 - order improvement of its activities
 - revoke registration

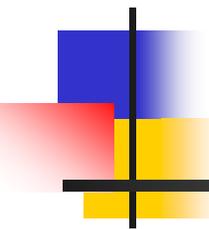
- Penalty for failure to comply with orders above
 - **Fine**: up to one million YEN
or
 - **Imprisonment** : up to one year

Japanese Bodies

- Telecom Engineering Center (TELEC)
 - *Type 1-3 Specified Radio Equipment*
- The Japan Approvals Institute for Telecommunications Equipment (JATE)
 - *Terminal Equipment*
- The Japan Amateur Radio Development Association Inc. (JARD)
 - *Amateur Radio Equipment Only*
- DSP Research, Inc.
 - *Terminal Equipment, Type 1 Specified Radio Equipment*
- TÜV Rheinland Japan Ltd.
 - *Terminal Equipment, Type 1, 2 Specified Radio Equipment*
- Chemitox, Inc.
 - *Terminal Equipment, Type 1 Specified Radio Equipment*
- RF Technology
 - *Type 1 Specified Radio Equipment*
- UL Apex
 - *Type 1 Specified Radio Equipment*

Foreign Bodies

- TELEFICATION B.V. (Netherlands)
 - *Terminal Equipment, Type 1-3 Specified Radio Equipment*
- CETECOM ICT Services GmbH (Germany)
 - *Terminal Equipment, Type 1-3 Specified Radio Equipment*



MRA Status in Japan

Stance on MRA

Considering positively to implement MRA with countries which will benefit Japanese industry and consumers judging from the cost-benefit analysis.

Approach to MRA relating to telecommunications equipment

- Certification Bodies can accept foreign Test Reports without Phase 1 MRA
- MRA with the EC and Singapore are under implementation
- MRA with USA is under negotiations

Overview

- Signed in April 2001, Entered into force in January 2002
- Parties to the agreement: Member states of the EU
- Scope: 1. Telecommunications Equipment 2. Electrical appliance
3. Chemicals GLP 4. Pharmaceuticals GMP
- Related Regulations in the EU (in the telecommunications equipment area): R&TTE Directive, Low-Voltage Directive, EMC Directive

Status of Implementation

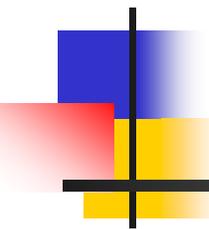
- Fully Implemented
- 2 EU Bodies conduct certification service.
- A couple of Japanese Bodies are preparing to be NBs.

Overview

- Signed in January 2002, Entered into force in November 2002
- Part of Economic Partnership Agreement (EPA) between Japan and Singapore
- Scope: 1. Telecommunications Equipment 2. Electrical appliance
- Related Regulations in Singapore (in the telecommunications Area):
IDA Act, Telecommunications Act, Guide for Approval

Status of Implementation

- Under preparation for fully implementation



Japan-US Telecom MRA

Japan-US Telecom MRA is still in negotiation process.

Following contents is subject to change.

Scope

Japan and the US will mutually recognize following items:

- Certification of Radio Equipment and Terminal Equipment
- Test Reports regarding IT Equipment*

* Regarding IT Equipment, VCCI will recognize test reports.

Related Regulations

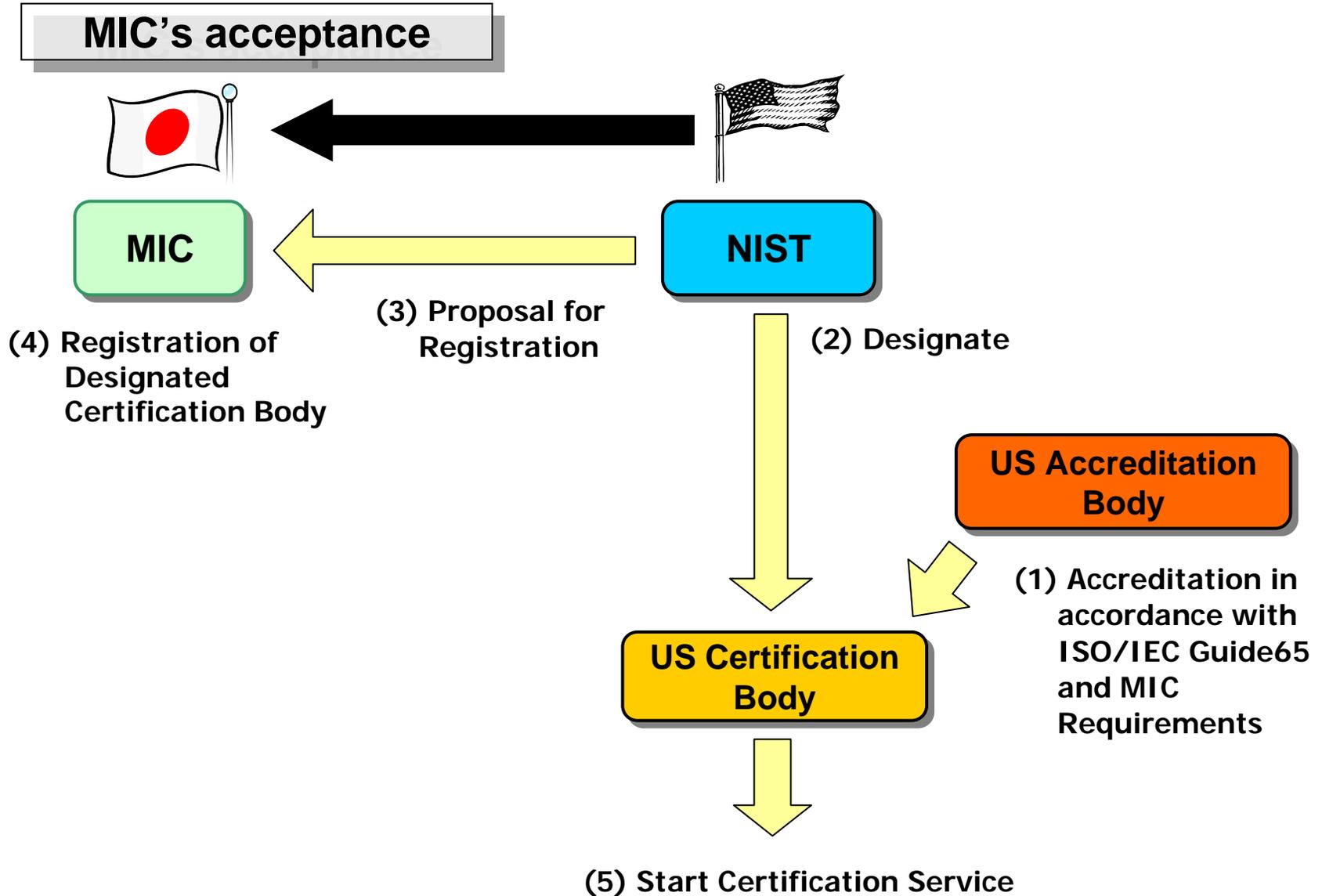
The United States

- FCC Rule

Japan

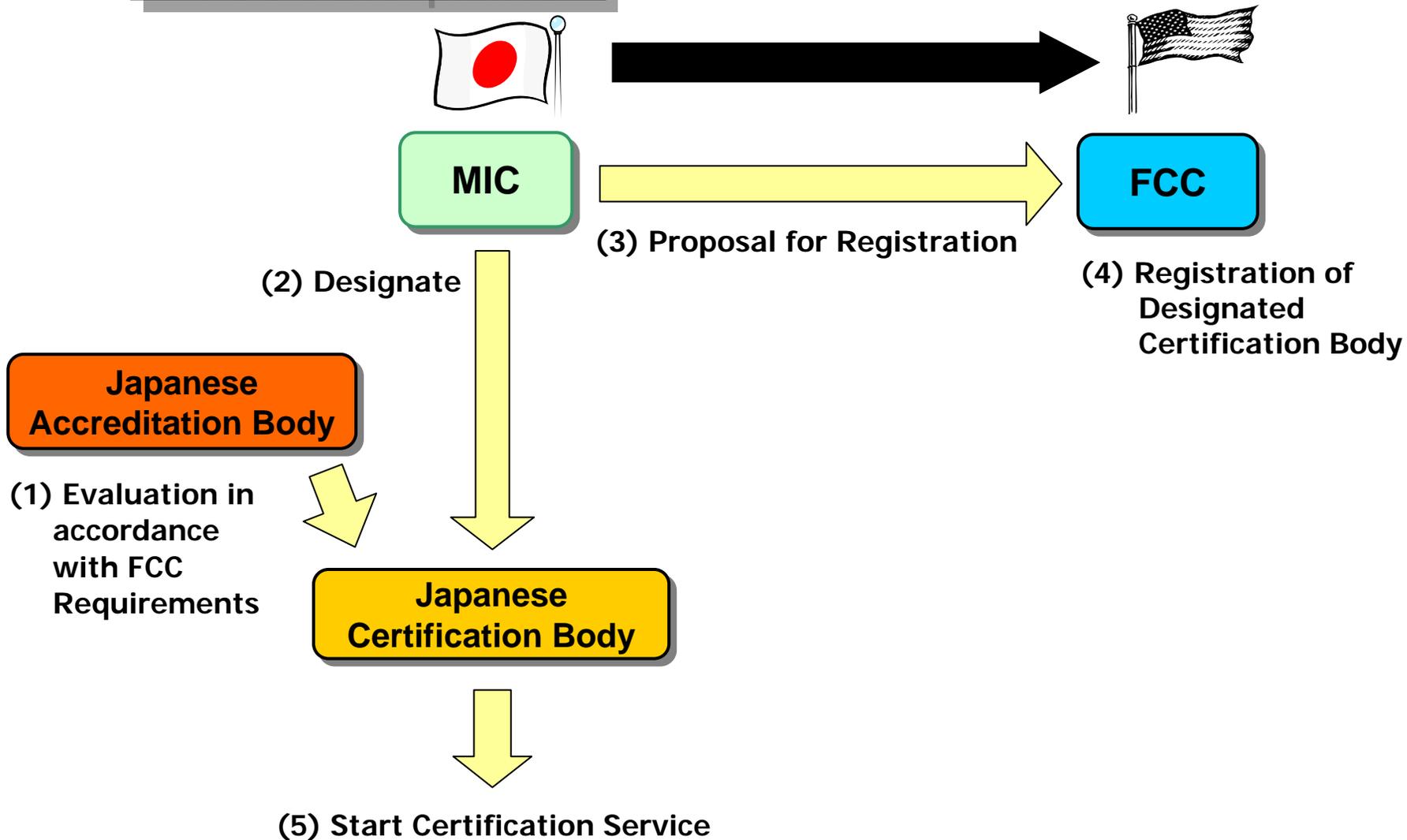
- Radio Law and related ordinances (for Radio Equipment)
- Telecommunications Business Law and related ordinances (for Terminal Equipment)
- VCCI Requirements (for IT Equipment)

Procedures for Radio & Terminal Equipment



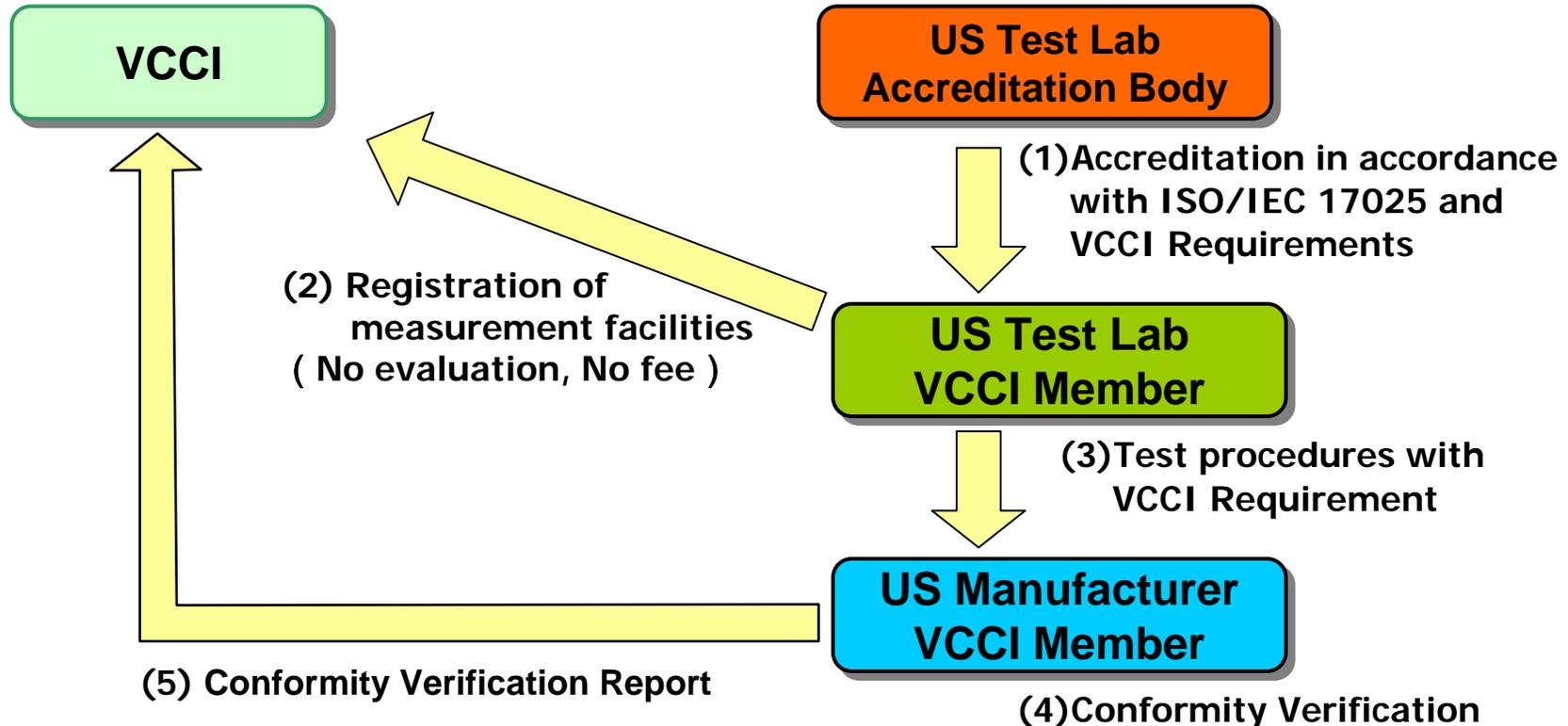
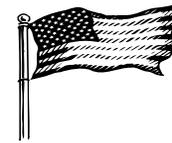
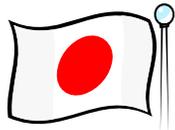
Procedures for Radio & Terminal Equipment

FCC's acceptance



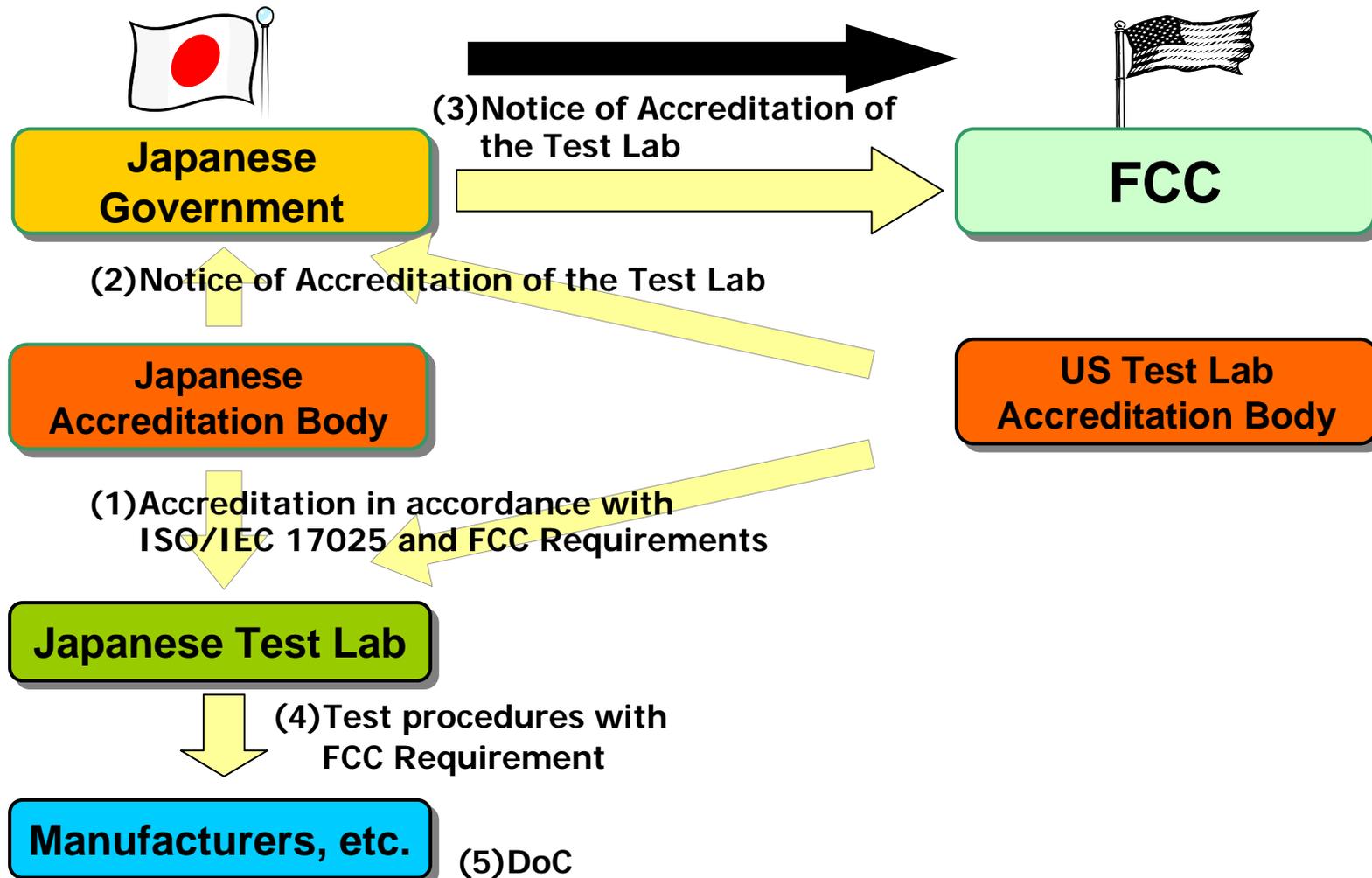
Procedures for IT Equipment

VCCI's acceptance



Procedures for IT Equipment

FCC's acceptance



Current Status

- FCC and MIC agreed on core elements of the MRA and made draft jointly.
- Both governments are now preparing to start official negotiations as soon as possible.

Target Schedule

- Conclusion of the MRA: by the end of March 2006 (end of Japanese FY 2005)
- Commencement of Operation: late 2006

- MIC “The Radio Use System Website”

Information on Radio Policy

<http://www.tele.soumu.go.jp/e/index.htm>

- MIC “MRA Related Legislation”

Unofficial Translation of related regulations

http://www.soumu.go.jp/joho_tsusin/eng/Resources/Legislation/MRA/index.html

For questions and suggestions: mra.r@soumu.go.jp