The Latest EMC Regulations in Korea

November 16, 2017

Korea Testing Laboratory

Contents

I. Introduction of Conformity Assessment in KC EMC

☐ Outline of conformity assessment

○ 3 types of Certification based on the Radio Wave Act(電波法, 21/04/2015) of Korea

- Certification of Conformity, Registration of Compatibility, and Interim of Conformity

○ Essential requirement for broadcasting and telecommunication equipment among 3 types of certification

<Classification of conformity assessment>

① Certification of Conformity

- In the case of manufacturing/marketing/importing the product
  1) having hazard to radio environment or communications network,
  2) affecting huge electromagnetic interference, or
  3) affected by electromagnetic susceptibility

② Registration of Compatibility

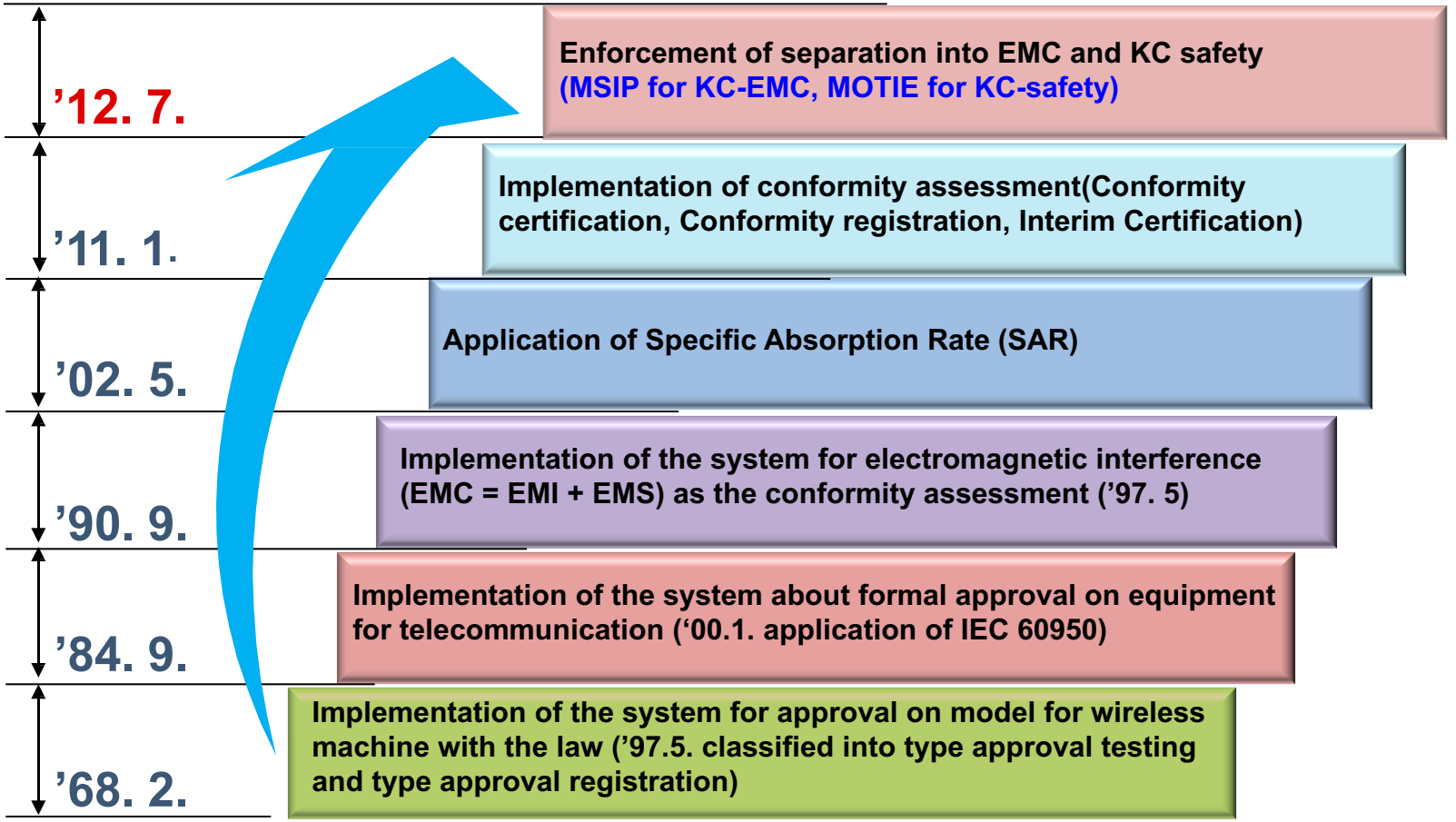
- In the case of manufacturing/marketing/importing the product which is not subject to certification of conformity

③ Interim of Conformity

- In the case of manufacturing/marketing/importing the product tested by the Certification of Conformity following the international/domestic standardization with the location, valid date, certificated condition when there is no criteria for Certification of Conformity or in a tricky situation.

I. Introduction of Conformity Assessment in KC EMC

☐ Major history of KC conformity assessment



I. Introduction of Conformity Assessment in KC EMC

□ Criteria of conformity assessments (1/4)

Categorization of Conformity Assessment regarding the degree of hazard
(e.g., interference of EM wave, safety)

Category	Criteria to categorize
Certification of Conformity	o The product which is affecting interference of EM wave, health safety, information security. *(e.g., : wireless transmitter/receiver, mobile, WLAN etc.)*
Registration of Compatibility	o (Authorized testing lab.) Registration after finishing test the product which has less hazard in authorized testing lab. *(e.g. product having the extremely low power radio wave, personal computer, washing machine etc.)* o (Self-test) Registration the product which is limited only for specific area after testing by oneself. *(e.g. spectrum analyzer, industrial computer etc.)*
Interim of Conformity	o Under the situation of assuring the safety or no hazard of the new product to radio environment when there isn't any test criteria

I. Introduction of Conformity Assessment in KC EMC

☐ Criteria of conformity assessment (2/4)

○ Common standard [A bulletin on conformity assessment > appendix 1, 2, 3]

: Based on EMC according to the Radio Wave Act(電波法) (Clause 47 line 3-1)

○ Individual standard [A bulletin on conformity assessment > appendix 1]

Application area	Technical regulation
Wireless communication field	Radio Wave Act(電波法, 37 / 45 / 47-2) or the Broadcast Act(放送法, 79) technical standard
Wire communication field	Basic Act for the Development of Broadcasting (放送通信發展 基本法) or the Telecommunications Business Act(電氣通信事業法)
Specific absorption rate (SAR)	Standard for measuring SAR followed by the Radio Wave Act(電波法, 47-2)

○ Equipment-related technical standard determined by Ministry of Science and ICT in other Korean law

I. Introduction of Conformity Assessment in KC EMC

☐ Criteria of conformity assessment (3/4)

Test type	Example	Category for model	Documents
Certification of Conformity	Cell phone, WLAN, Bluetooth etc.	Wireless communication	- User's manual - Test report - Instrument appearance - Component layout - Circuit diagram - Delegation of authority
	telephone, modem, fax etc. *product connecting the backbone network directly.	Wire communication	
Registration of Compatibility	Computer and peripheral device, a broad receiver, electric products etc.	Authorized testing lab. Conformity registration	- Confirmation of conformity assessment - Delegation of authority
	Measuring instrument, industrial machine, connector etc.	Self-test Conformity registration	
Interim of Conformity	New product with no criteria in conformity assessment		- Technical manual - self-test report etc.

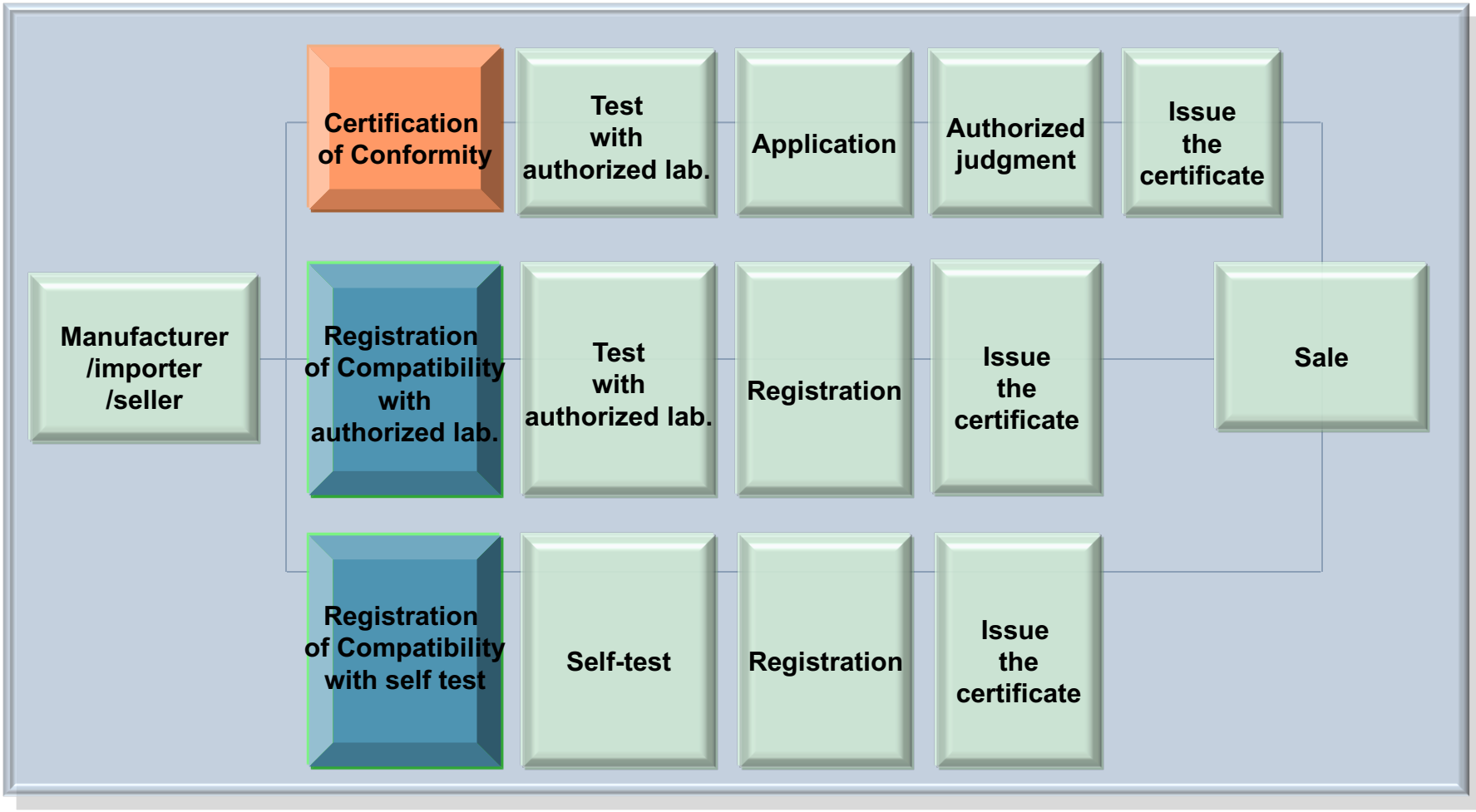
I. Introduction of Conformity Assessment in KC EMC

☐ Criteria of conformity assessment (4/4) - examples

Sample	Product Spec.	Required test	Conformity assessment
Bluetooth headset	BT v3.0+EDR	RF, wireless EMC (KN301 489)	Certification of Conformity
	USB port : for charging	n/a	
Official replicator with WLAN	802.11 b/g/n	RF, wireless EMC (KN301 489)	Certification of Conformity
	USB, LAN : Data communication	KN22/24	
	PSTN : fax communication	Wire communication	
Mobile	LTE, WCDMA, BT, WLAN	RF, wireless EMC (KN301 489), SAR	Certification of Conformity
	USB : Data communication	KN22/24	
Receiver (amp)	Tuner (FM receiver)	KN13/20	Registration of Compatibility
Navigation	Vehicle electrical equipment	KN41	Registration of Compatibility

I. Introduction of Conformity Assessment in KC EMC

☐ Procedure of processing the conformity assessment



I. Introduction of Conformity Assessment in KC EMC

☐ Identification code of conformity assessment

M	S	I	P	-	C	R	M	-	A	B	C	-	X	X	X	X	X	X	X	X	X	X	X	X	X
①					②	③	④		⑤				⑥												
Department					Identification code for basic certification				Applicant ID				Product identification												

② type	Identification code
conformity certification	**C** (Certification)
Conformity registration	**R** (Registration)
Interim Certification	**I** (Interim)
③ testing area	Identification code
wireless	**R** (Radio)
With wire	**T** (Telecommunication)
RF, EMC	**E** (Electromagnetic Wave)
Complex (Wireless, wire, RF, EMC)	**M** (Multi Function)
④ applicant	Identification code
Manufacturer	**M** (Manufacturer)
Import	**I** (Importer)
Seller	**S** (Seller)

Mark>

- Fill out the applicant as the manufacturer when manufacturer and seller is identical.
- Fill out the applicant as the importer when importer and seller is identical.

II. EMC Policy in Korea

(1) History

- Korea made to EMC System at 30/12/1989
  - ☞ Ability to protect radio frequency and service from unintentional radiation of electric, electronic, information, broadcasting, communication equipment (EMI : Electromagnetic interference))
  - ☞ Ability to protect performance and technical function of itself (electronic, information, broadcasting, communication equipment) under electromagnetic environment(broadcasting radio station, land mobile radio station) (EMS : Electromagnetic Susceptibility)

- Korea situation in 1989
  - ☞ Personal computers and mobile phone were being used widely at that time
  - ☞ The increase of using electromagnetic devices provide the convenience to the people
  - ☞ However, electromagnetic dysfunction problems are arise

II. EMC Policy in Korea

(1) History (cont'd)

- Korea EMC policy were made in order to active the industry and create an environment of safe electromagnetic wave
  - ☞ Make the EMC criteria
  - ☞ Make the certification that a manufacture, importer shall sale the device by the compliance of EMC criteria
  - ☞ Make the market monitor and surveillance

- Radio wave act include the EMC criteria, certification and market surveillance

II. EMC Policy in Korea

(2) Main progress of Korea EMC policy

○ At The beginning of the step, enact the EMC policy to Radio Wave Act, 30/12/1989

☞ Make foundation for EMC criteria to Ministry Decree of Radio Wave Act

☞ Introduce the certification on EMC

○ Make the criteria of Electromagnetic interference and enforce certification, 3/9/1990

☞ Limit of Conducted emission and Radiated emission

☞ Subject : Electric-Electro device, ISM, wire communication and information device

○ Make the criteria of the Electromagnetic susceptibility(immunity) and expand the criteria of the EMI, 3/9/1996

☞ EMS criteria were enforced at 1/1/2000

☞ Subject : ISM, Vehicles, broadcasting receivers, household appliances tools and electro motion apparatus, lighting equipment, Information technology equipment, etc

II. EMC Policy in Korea

(2) Main progress of Korea EMC policy (cont'd)

○ Make the criteria of EMC(EMI and EMS) on radio facility 28/9/2007

☞ EMC criteria of radio facility were enforced 24/1/2011

☞ EMC criteria of radio facility reference EU harmonized standard(EN 301 489 series) by the EMC directive

○ Separated from EMC and electrical safety regulations on certification(1/7/2012)

☞ RRA(MSIP) has certified the EMC

☞ KATS(MOTIE) has certified the electrical safety

☞ Subject : information and wire communication, household appliances tools and electro motion apparatus, lighting equipment, electrical device

☞ Confront that convergence of electrical and information device are going to emerge new device

○ Make the EMC criteria of multimedia device and wireless power transmission device using at home(1/7/2013)

II. EMC Policy in Korea

(3) Technical regulation Structure on Broadcasting and communication Act

Act	Broadcasting and Telecommunication Basic Act	Radio Waves Act	Broadcasting Act
Decree	Regulation on technical criteria of telecom. facility	Enforcement of Radio Waves Act	Enforcement of Radio Waves Act
Notice	Technical Criteria of Equipment facility (other 9 notice)	Technical criteria of EMI and EMS Technical criteria of Radio facility	Technical criteria of Broadcasting facility

II. EMC Policy in Korea

(4) Act related EMC

○ Radio Waves Act article 2(definition)

☞ "EMC(Electromagnetic Compatibility)" refers a situation in which any equipment that causes electromagnetic interference or is affected by radio waves satisfies the criteria of electromagnetic interference prevention or protection from radio waves as provided in Article 47-3.

☞ "Electromagnetic interference" refers to a phenomenon in which radio waves emitted (means that radio wave energy transmits into space) or conducted (means that radio wave energy flows through power lines) from any equipment that generates radio waves interfere with the performance of other equipments

II. EMC Policy in Korea

(4) Act related EMC (cont'd)

○ Radio Waves Act article 47-3(Electromagnetic Compatibility)

☞ "The regulation of electromagnetic interference prevention for the equipment interfered with radio wave and the regulation of electromagnetic protection for the equipment affected by radio waves shall be as defined in the present decree

☞ Manufacture and importer of EMC device shall be satisfied by EMC criteria

○ Enforcement of Radio Waves Act article 67-2(EMI and EMS of Criteria)

☞ "Electromagnetic wave from electromagnetic interference equipments will not interfere with the performance of other equipments

☞ Any equipment, device or system in environment where electromagnetic interference exists will operate without reduced performance

☞ MSIP(RRA) shall determine and notify publicly the detailed criteria of EMC

III. EMC Requirements and Test Methods

(1) EMC Notices

○ Technical Criteria for Electromagnetic Compatibility(RRA Notice 2016-26, 12/19/2016)

Article/Annex	Object Product	EMC Test Methods	Reference standard
5/Annex 1	for residential, commercial and light-industrial environments	KN 61000-6-3 KN 61000-6-1	IEC 61000-6-3 IEC 61000-6-1
5/Annex 2	for industrial environments	KN 61000-6-4 KN 61000-6-2	IEC 61000-6-4 IEC 61000-6-2
6/Annex 3-1	for Industrial, Scientific and Medical(ISM) equipment	KN 11	CISPR 11
6/Annex 3-2	for medical electrical equipment	KN60601-1-2	IEC 60601-1-2
6/Annex 3-3	for arc welding equipment	KN 60974-10	IEC 60974-10
7/Annex 4	for vehicles and internal combustion engine	KN 41	ECE R 10/Rev.3

III. EMC Requirements and Test Methods

(1) EMC Notices (cont'd)

Article/Annex	Object Product	EMC Test Methods	Reference standard
8/Annex 5	household appliances, electric tools and associated equipment	KN 14-1 KN 14-2	CISPR 14-1 CISPR 14-2
9/Annex 6	for electrical lighting and associated equipment	KN15 KN 61547	CISPR 15 IEC 61547
10/Annex 7	for electrical train and associated equipment	KN 50 KN 51	IEC 62236
11/Annex 8	for power line communication equipment	KN 60	-
12/Annex 9	for radio communication and associated equipment	KN 301 489	EN 301 489
13/Annex 10	for uninterruptible power system(UPS)	KN 62040-2	IEC 62040-2
14/Annex 11	for low-voltage switchgear and control gear	KN 60947	IEC 60947

III. EMC Requirements and Test Methods

(1) EMC Notices (cont'd)

Article/Annex	Object Product	EMC Test Methods	Reference standard
15/Annex 12	for multimedia equipment	KN 32 KN 35	CISPR 32 CISPR 35
16/Annex 13	for adjustable speed electrical power drive systems	KN 61800-3	IEC 61800-3
17/Annex 14	for lifting equipment	KN 12015 KN 12016	EN 12015 EN 12016
18/Annex 15	for maritime navigation and radio communication equipment and systems	KN 60945_60533	IEC 60945 IEC 60533
19/Annex 16	for metering equipment	KN 100	-
20/Annex 17	for fire equipment	KN 101	-
21/Annex 18	for airborne equipment	KN 160	RTCA DO-160G based

IV. The Latest EMC Regulations in Korea

□ **RRA Notice No.2016-24(12/07/2016)**

: Broadcasting and communications equipment conformity assessment system

○ **New requirement for Electromagnetic Field strength(EMF)**

- Object products : Electric mat, Electric blanket, Electric bed etc.(effective date **01/01/2017**)
  IH cooker, IH heater, Induction hob etc.(effective date **07/01/2019**)

□ **RRA Notice No.2017-07(29/05/2017)**

: Technical requirements for Measurement of Electromagnetic Field Strength

○ Reference standard : IEC 62233 modified (Time domain evaluation applied only)

IV. The Latest EMC Regulations in Korea

□ **New EMC requirements and test methods**

○ **EMC test methods for Electric Bicycle(KN 15194)**

□ **The Revisions of KN EMC standards according to International standards**

○ KN 11
○ KN 14-1
○ KN 14-2
○ KN 61000-6-1
○ KN 61000-6-2
○ KN 301 489-1
○ KN 60974-10


תודה
Dankie
Gracias
Спасибо
شكراً
Merci
Takk
Köszönjük
Terima kasih
Grazie
Dziękujemy
Dėkojame
Ďakujeme
Vielen Dank
Paldies
Kiitos
Täname teid
谢谢
Thank You
Tak
感謝您
Obrigado
Teşekkür Ederiz
감사합니다
Σας Ευχαριστούμ
ขอบคุณ
Bedankt
Děkujeme vám
ありがとうございます
Tack