

# Newsletter February, 2024



# ICR



# Hot Issue

1. ICR battery testing center had acquired accreditation by KOLAS
2. IEC 62040-2:2016  
Uninterruptible power supplies (UPS) -  
Electromagnetic compatibility requirements
3. Notification No. 2023-24 of the National Radio  
Research Institute



# ICR battery testing center had acquired accreditation by KOLAS



- **ICR Battery Testing Center had acquired accreditation** in the fields of electrical materials and components, environment, and reliability **by the Korea Laboratory Accreditation Scheme (KOLAS)** on December 29.
- It's for 28 Korea and international standards (KS, IEC, etc.) related to battery testing, and we promise to provide reliable services in the inspection and testing field as a testing laboratory specializing in battery testing.
- ICR Battery Testing Center is actively **strengthen technology exchange and business cooperation with ICR Polska to support the overseas export market.**
- This extension of KOLAS scope is an intermediate step in building up a certification system related to battery product and is an important leap to become ICR Global.  
We will continue to develop and strive to become a world-class inspection and testing organization in the field of battery industry.



# ICR battery testing center had acquired accreditation by KOLAS

## ■ Scope of KOLAS

- IEC 62619:2022
- IEC 62620:2014
- IEC 62620:2014+ AMD1:2023 CSV
- KS C IEC 62619:2022
- KS C IEC 62620:2014
- KS R 1204:2019
- ST/SG/AC.10/11/Rev.7:2019
- ST/SG/AC.10/11/Rev.7/Amend.1:2021
- ECE Regulation No.136(2016.02.05)
- ECE Regulation No.100 Rev.3 (2022.03.23)
- SPS-C KBIA-10104-03-7312:2022
- Notification of MOLIT 2023-481(2023.8.22)
- KC 10031:2023(2023.10.19)
- IEC 60068-2-1:2007
- IEC 60068-2-2:2007
- IEC 60068-2-11:2021
- IEC 60529:2013
- IEC 61373:2010
- KS C IEC 60068-2-1:2007
- KS C IEC 60068-2-2:2007
- KS C IEC 60068-2-11:2021
- KS C IEC 60529:2013
- KS C IEC 61373:2010
- KS R 1034:2006
- KS R 9144:2021
- EN 61373:2010
- MIL-STD-810G:2008
- MIL-STD-810G:w/Change 1:2014

■ If you have any inquiry about **battery testing and certification service**, please feel free to contact our Battery Testing Center.

 **Inquiries**

Battery Testing Center / Yang, Chul-Ho  
T. 02-6351-9003 / yangch@icrqa.com



# IEC 62040-2:2016

## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

### ■ What is an uninterruptible power supply (UPS)?

- A device that regulates the power supply to a computer and its peripherals.
- It prevents the voltage in an electrical circuit from breaking or rising or falling instantaneously.

### ■ What is IEC 62040-2:2016?

- Standard for electromagnetic compatibility of uninterruptible power supplies (UPS) in industrial areas and public.
- Before UPS devices and units can be placed on the market, they must meet **the electromagnetic compatibility assessment for Category C1, C2, C3, and C4 products as defined by the criteria in IEC 62040-2:2016.**

# IEC 62040-2:2016



## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

■ The corresponding C1 through C4 are categorized as follows.

### ▶ A. First Categorization

- First environment : directly connected to the public low-voltage main grid without intermediate transformers Residential, commercial, light industrial → **C1, C2**
- Second Environment: Public Low Voltage Supplied to Buildings Used for Residential Purposes All commercial, light industrial, other than direct connection to the main power grid, industrial facilities other than those directly connected to the mains electricity grid → **C2, C3**

### ▶ B. Second Categorization

- C1 : Corresponds to the first environment
- C2 : Output current does not exceed 16 A
- C3 : Used in the second environment and the output current exceeds 16 A
- C4 : Applicable to the first environment, not applicable to the second environment. The radiated and immunity limit is need to be agreed between supplier and customer



# IEC 62040-2:2016

## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

■ Currently, the categories that can be tested at the ICR Industrial Safety Center are **C2** and **C3**.

■ Power port conducted emission voltage limit for Category **C2** UPS devices

UPS Output Current (A)	Frequency Range (MHz)	Limit (dBμV)	
		Quasi-peak	Average
Less than 16 A	0.15 ~ 0.5	79	66
	0.50 ~ 5.0	73	60
	5.0 ~ 30.0	73	60

■ Power port conducted emission voltage limit for Category **C3** UPS devices

UPS Output Current (A)	Frequency Range (MHz)	Limit (dBμV)	
		Quasi-peak	Average
From 16 A 100 A or less	0.15 ~ 0.5	100	90
	0.50 ~ 5.0	86	76
	5.0 ~ 30.0	90 ~ 73	80 ~ 60
More than 100 A	0.15 ~ 0.5	130	120
	0.50 ~ 5.0	125	115
	5.0 ~ 30.0	115	105

# IEC 62040-2:2016



## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

- Radiated interference emission for Category **C2** and **C3** UPS  
Units

Frequency Range (MHz)	Limit (dB( $\mu$ V/m))	
	Category C2 UPS	Category C3 UPS
30 ~ 230	40	50
230 ~ 1,000	47	60

- The test distance is based on 10 meters, and if 10 meters cannot be measured, the distance interpolation method can be used to determine the regulatory value.





# IEC 62040-2:2016

## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

### ■ Harmonic current limits for **Class A** devices

Harmonic Order (N)	Limit (A)
<b>Odd harmonics</b>	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 \quad 15/n$
<b>Even harmonics</b>	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 \quad 8/n$

- Class A : balanced three-phase appliances, household appliances  
**(UPS is considered Class A because it is not included in the rating)**
- Class B : portable appliances, arc welders not included in professional appliances
- Class C : Lighting equipment
- Class D : Appliances with a specified power of 600 W or less



# IEC 62040-2:2016

## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

### Immunity requirements for Category C2 and C3 UPS devices

Port	Environmental phenomena	Conditions	Remarks	Performan cecriterion
Enclosure port	Electrostatic discharge	4 kV (Contact discharge) 8 kV (Air discharge)	○	B
	Radiated RF electromagnetic fields	80 MHz ~ 1,000 MHz 10 V/m 80 % AM(1 kHz)	○	A
	Power frequency magnetic field	30 A/m	○	A
AC input and output power port	Electrical Fast Transients	2 kV/5 kHz Capacitive clamp	○	B
	Surge 1.2/50 μs 8/20 μs	1 kV (L-L) 2 kV (L-PE)	○	B
	Conducted RF electromagnetic fields	0.15 MHz ~ 80 MHz 10 V 80 % AM(1 kHz)	Applies when exceeding 3 meters	A
	Low-frequency signals	10 V 140 Hz ~ 300 Hz	○	A
DC power port	Electrical Fast Transients	2 kV/5 kHz Capacitive clamp	Applies when exceeding 3 meters	B
Signal and control port	Electrical Fast Transients	2 kV/5 kHz Capacitive clamp	Applies when exceeding 3 meters	B
	Surge 1.2/50 μs 8/20 μs	1 kV (L-PE)	Applies when exceeding 3 meters	B
	Conducted RF electromagnetic fields	0.15 MHz ~ 80 MHz 10 V 80 % AM(1 kHz)	○	A

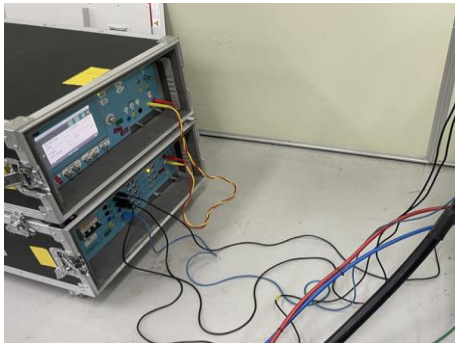
# IEC 62040-2:2016

## Uninterruptible power supplies (UPS) - Electromagnetic compatibility requirements

### ■ Equipment and test photos



<Harmonic Current Emission Test Equipment> <Low Frequency Signal Immunity Test Equipment>



<Surge immunity test>



<EFT/Burst immunity test>

■ ICR has the **equipment to conduct tests under the conditions** specified in IEC 62040-2:2016.

**Enable field testing** of uninterruptible power supplies (UPS) used in industrial environments.

**☎ Inquiries**

Industrial Safety Center / Kang, Gyeong Man  
T.070-5083-2620 / kkm@icrqa.com

# Partial revision of the Notice on the Appropriateness Evaluation of Broadcasting and Communication Equipment, etc.



## Notification No. 2023-24 of the National Radio Research Institute

In accordance with Article 58-2 to 58-4 of the Radio Act and Article 77-2 to 77-8 of the Enforcement Decree of the same Act, the Notice on the Appropriateness Evaluation of Broadcasting and Communication Equipment, etc. shall be revised and announced as follows

December 29, 2023

Director of the National Radio Research Institute

### ▣ 1. Reasons for revision

In order to make it possible to exempt imported equipment for re-export without an exemption confirmation procedure, and to improve the provision and classification system of judgment information so that it can be clearly identified whether it is subject to conformity evaluation

# Partial revision of the Notice on the Appropriateness Evaluation of Broadcasting and Communication Equipment, etc.



## ■ 2. Main contents

### ▶ 2-1 Relaxation of equipment exemption confirmation procedures subject to conformity evaluation.

(New establishment of Article 19 (4) 5)

- Improvement of equipment brought into Korea for the purpose of re-exporting to allow exemption from the application of import requirements without confirmation of compliance assessment exemption.

### ▶ 2-2 Improve clarification of equipment classification system subject to conformity evaluation.

(Attachment No. 1 11 completely revised)

- To provide judgment information and reorganize the classification system so that the target equipment in the field of electromagnetic compatibility, which is unclear and ambiguous, can be clearly identified.

 **Inquiries**

EMC&RF Testing Center / Yoon, Tae-Yang  
T. 070-5083-2677 / ysun@icrqa.com