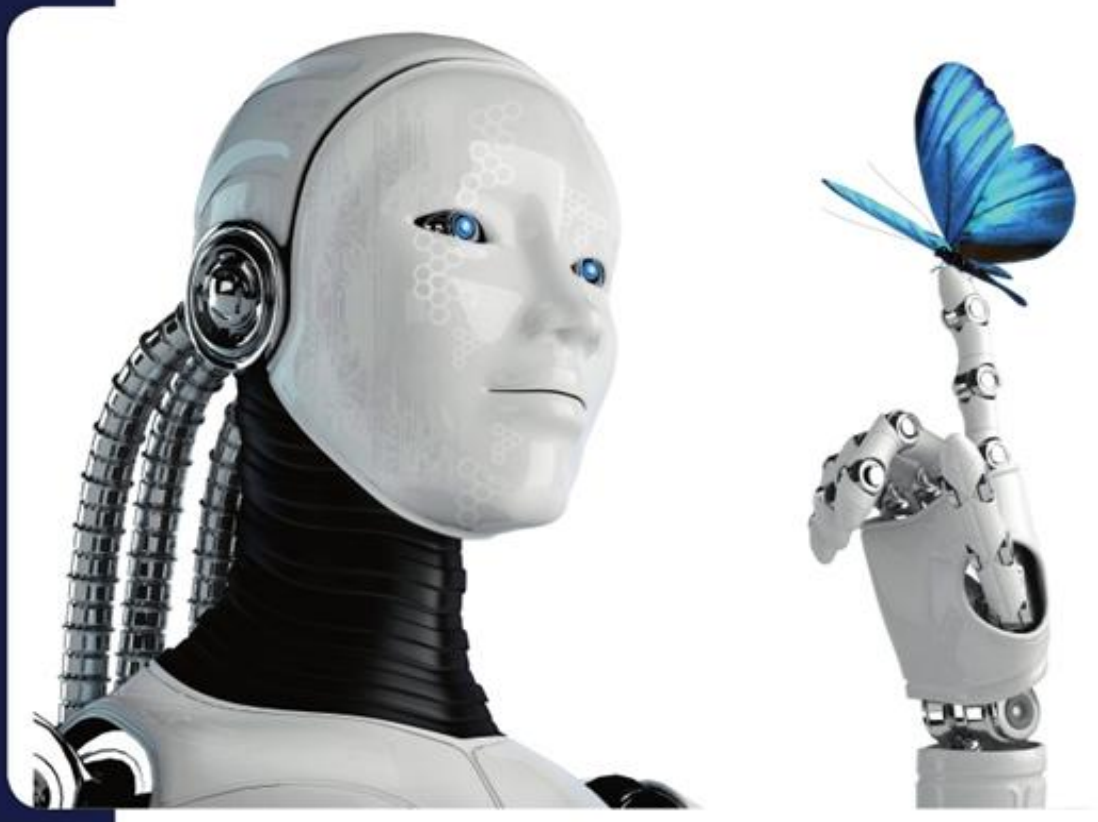
Newsletter
July, 2025

ICR



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Hot Issue

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   MIL-STD-461H Draft Review
2. Introduction LPG Burner
   Fire Resistance Test Equipment
3. Frequently Asked Questions (FAQ)
   During Management System Audits
4. EN 55011 Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics Limits

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Military EMC Standard MIL-STD-461H Draft Review

▣ MIL-STD-461H Draft

US Department of Defense announced the draft of the MIL-STD-461H on July 22, 2024, as **the latest revision of the MIL-STD-461** specification, an electromagnetic test specification applied to military equipment.

▣ Changes to MIL-STD-461H Draft

❖ General Requirements

❖ 4.3.5.1 Metallic ground plane.

When the EUT is installed on a metallic ground plane, the ground plane shall have a surface resistance no greater than 0.1 milliohms per square. The DC resistance between metallic ground planes and the shielded enclosure shall be 2.5 milliohms or less. The metallic ground planes shown on Figures 2 through 4 shall be electrically bonded to the floor or wall of the basic shielded room structure at least once every 1 meter. The metallic bond straps shall be solid and maintain a five-to-one ratio or less in length to width. **Metallic ground planes used outside a shielded enclosure shall extend at least 2.5 meters beyond the test setup boundary in each direction as shown on Figure 5.**

Military EMC Standard MIL-STD-461H Draft Review

→ **Added a phrase** in the title of FIGURE 5. **outside shielded enclosure.**

FIGURE 5. General test setup for free standing EUT.

FIGURE 5. General test setup for free standing EUT outside shielded enclosure.

❖ **4.3.7.3 Overload precautions**.

Measurement receivers and transducers are subject to overload, especially receivers without preselectors and active transducers. **Checks shall be performed and documented for each measurement** setup to assure that an overload condition does not exist. Instrumentation changes shall be implemented to correct any overload condition.

→ **Added that each test should be checked and documented** rather than periodic checks to prevent overload of the EMI receiver.

Periodic checks shall be performed to assure that an overload condition does not exist.

Checks shall be performed and documented for each measurement setup to assure that an overload condition does not exist.

Military EMC Standard MIL-STD-461H Draft Review

❖ **TABLE II. Bandwidth and measurement time.**

Frequency Range	6 dB Resolution Bandwidth	Minimum Dwell Time		Minimum Measurement Time Analog-Tuned Measurement Receiver 1/
		Stepped-Tuned Receiver 1/ (Seconds)	FFT Receiver 2/ (Seconds/ Measurement Bandwidth)	
30 Hz - 1 kHz	10 Hz	0.15	1	0.015 sec/Hz
1 kHz - 10 kHz	100 Hz	0.015	1	0.15 sec/kHz
10 kHz - 150 kHz	1 kHz	0.015	1	0.015 sec/kHz
150 kHz - 10 MHz	10 kHz	0.015	1	1.5 sec/MHz
10 MHz - 30 MHz	10 kHz	0.015	0.15	1.5 sec/MHz
30 MHz - 1 GHz	100 kHz	0.015	0.15	0.15 sec/MHz
Above 1 GHz	1 MHz	0.015	0.015	15 sec/GHz

→ As the analog measurement method disappears, **the Minimum Measurement Time Analog-Tuned Measurement Receiver is deleted** from the Bandwidth and Measurement time table.

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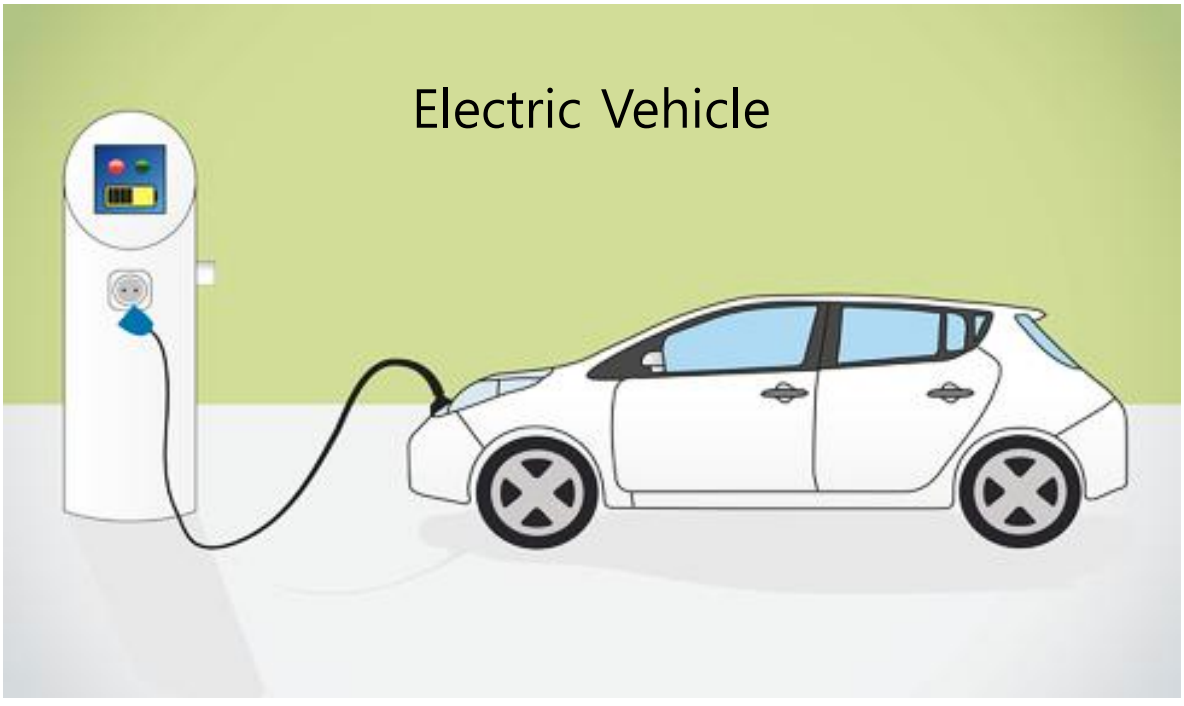
Introduction LPG Burner Fire Resistance Test Equipment

▣ As EVs become more popular, safety concerns are increasing.

Electric vehicles have been available in Korea since 2010, and their popularization began in earnest in 2017 when major models such as the Tesla Model S and Hyundai Ioniq Electric became popular.

In particular, between 2021 and 2023, the penetration rate increased dramatically due to the expansion of infrastructure and increasing consumer demand, and as of 2024, electric vehicles accounted for about 6.5% of all vehicle registrations, exceeding 800,000 cumulative registrations.



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Introduction LPG Burner Fire Resistance Test Equipment

[Status of Electric Vehicle Registrations in Korea]

* Source : Yonhap News Agency

With the government's green policies and the automaker industry's electrification strategy, the share of EV registrations is expected to reach 8-10% by 2025. As the spread of EVs expands, **the safety of EVs is becoming a major issue.**

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Introduction LPG Burner Fire Resistance Test Equipment

[LPG Burner Fire Resistance Test Equipment of ICR]

▣ Introduction LPG Burner Fire Resistance Test Equipment

in April 2025, ICR Pyeongtaek Battery Testing Center introduced an LPG burner test equipment to strengthen our capabilities in battery fire resistance testing.

These enhancements reinforce **our commitment to advancing battery safety and quality.**

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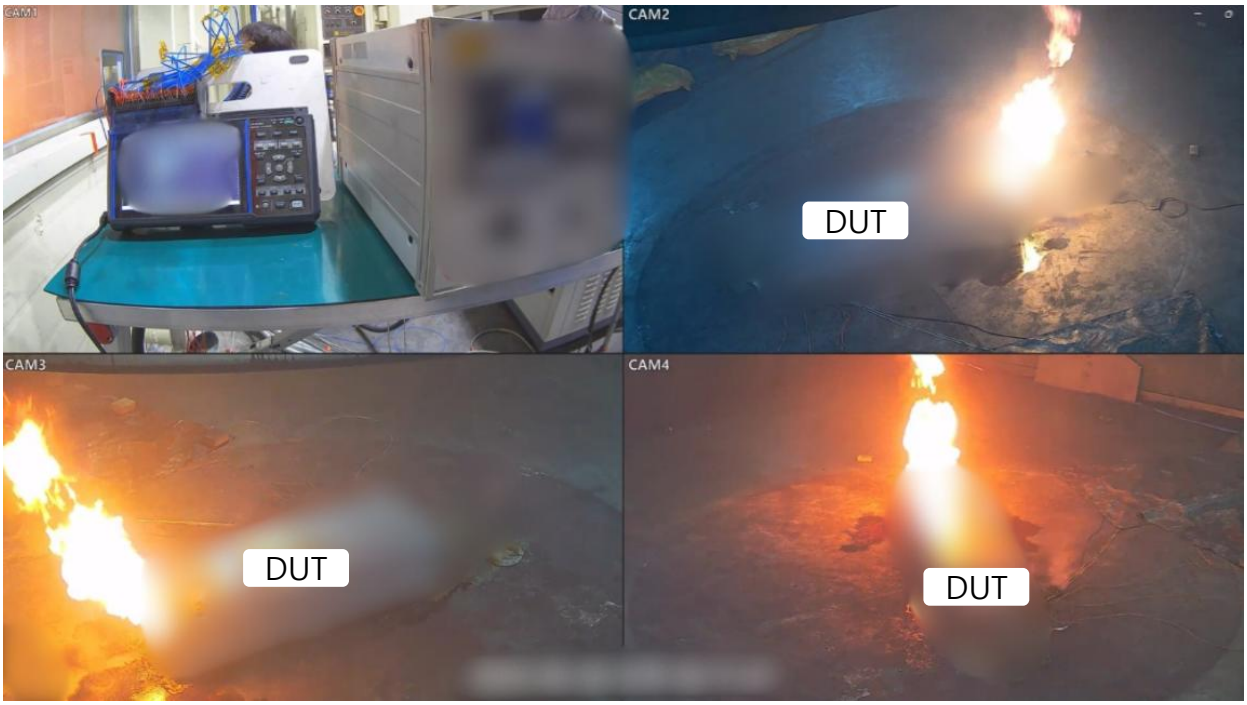
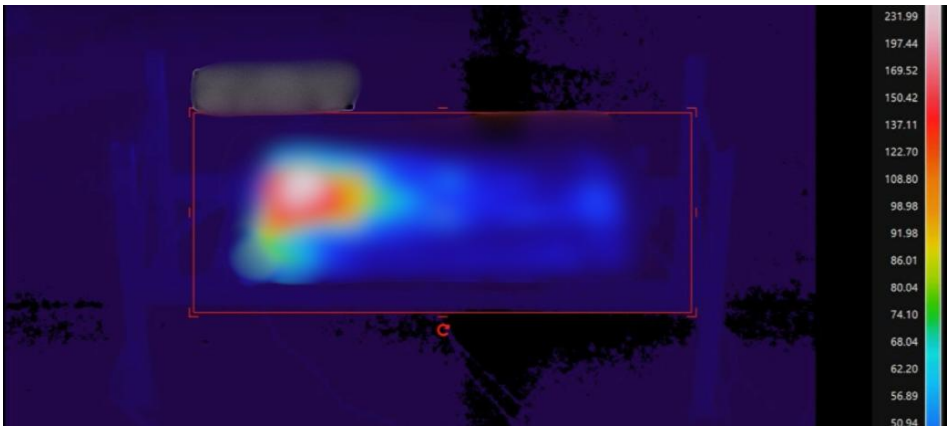
Introduction LPG Burner Fire Resistance Test Equipment

▣ Fire resistance test footage and thermal imaging video





※ For security purposes, the image has been intentionally blurred. The actual image is displayed in high resolution

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Introduction LPG Burner Fire Resistance Test Equipment

▣ Battery fire resistance testing

Battery fire resistance test is a critical component of battery safety validation. This evaluation determines whether a battery can maintain structural integrity and delay thermal runaway or explosion for a designated period when exposed to external fire. **The goal is to ensure a sufficient "golden time" for vehicle occupants to evacuate safely and to minimize the risk of secondary accidents.**

[The view of ICR Pyeongtaek battery testing center]

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Introduction LPG Burner Fire Resistance Test Equipment

▣ ICR, KOLAS-accredited national testing laboratory

In alignment with this purpose, ICR Battery Testing Center has introduced dedicated fire resistance test equipment, reinforcing its role as a leading battery safety research institution. We remain committed to advancing industry standards by proactively enhancing our safety testing capabilities.

As a **KOLAS** accredited national testing laboratory, **ICR offers a comprehensive one-stop solution for all battery testing needs—including performance, environmental, and safety tests for EV and ESS batteries—at our Battery Testing Center** located in Pyeongtaek, Gyeonggi Province, South Korea.

We are committed to delivering top-tier services to help manufacturers improve battery quality.

☎ Inquiries

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Frequently asked questions (FAQ) during management system audits

– A practical guide for responsible personnel

▣ Essential ISO audit response guide for responsible personnel

The ISO certification audit is not merely a review of documented procedures, but a comprehensive evaluation of whether actual operations are being carried out in accordance with the established management system.

During this process, responsible personnel are often faced with unexpected questions or requests for evidence, which may lead to confusion or uncertainty.

In this issue, ICR has selected **10 frequently asked questions** raised during certification audits and provided practical, **case-based guidance** that can be applied directly in the field. ICR hopes this newsletter enhances your understanding of the ISO audit process and strengthens your ability to respond effectively.

Frequently asked questions (FAQ) during management system audits

– A practical guide for responsible personnel

▣ Frequently asked questions (FAQ)

Q1 **What should I do if the auditor asks questions verbally without requesting documents?**

A. Verbal inquiries are allowed as part of assessing the actual implementation status. However, if the subject matter is related to documented procedures or records, it is advisable to provide supporting evidence.

Q2 **What are the criteria for a nonconformity (NC)?**

A. A nonconformity is identified when requirements of the standard are not met. Examples include:

- Failure to follow defined procedures
- Absence of required records
- Recurring or systemic issues

Q3 **There are no records for tasks handled by a former employee. What should we do?**

A. Regardless of an employee's resignation, maintaining records is the organization's responsibility. Proper handover, backup systems, and historical documentation are essential. Lack of such systems may result in a nonconformity due to poor process control.

Frequently asked questions (FAQ) during management system audits

– A practical guide for responsible personnel

▣ Frequently asked questions (FAQ)

Q4 **A nonconformity identified during an internal audit is still being addressed. Is this acceptable?**

A. Yes, as long as a corrective action plan has been established and is being implemented. You must be able to demonstrate that the issue is being addressed within the designated timeframe.

Q5 **What should I do if I receive unexpected or detailed questions during the audit?**

A. If the question is logically connected to the process flow, it is recommended to respond. However, if the purpose of the question is unclear, it is acceptable to ask the auditor for clarification.

Q6 **Our organizational chart does not reflect the actual work structure. Is this a problem?**

A. Yes, misalignment between the organizational chart and actual operations may cause confusion and could be considered a noncomformity. Ensure that the organizational chart, job descriptions, and task assignments are consistent and up to date.

Frequently asked questions (FAQ) during management system audits

– A practical guide for responsible personnel

▣ Frequently asked questions (FAQ)

Q7 A customer complaint was received informally. Does it still need to be recorded?

A. Yes, even if not received through official channels, any feedback from customers should be recorded as a "complaint or opinion" and addressed as necessary.

Q8 What should I prepare if the auditor asks about legal compliance?

A. Please prepare the following:

- A list of applicable legal requirements
- Departments or processes where each law applies
- Methods and frequency of compliance verification
- Records of compliance (e.g., checklists, external inspection results)

Q9 The delegated tasks have not been documented. Is this acceptable?

A. While delegation may occur informally, it is recommended that responsibilities be formally documented to ensure clarity in accountability and workflow. Clear definition of roles and responsibilities is essential for effective system operation.

Frequently asked questions (FAQ) during management system audits

– A practical guide for responsible personnel

▣ Frequently asked questions (FAQ)

Q10 The auditor skipped a specific item, stating it was not relevant. Is that okay?

A. Yes, it is acceptable. Auditors evaluate only those items that fall within the defined scope of the audit in accordance with ISO standards. However, if there are uncertainties or potential risks for future audits, internal review and improvement are advisable.

▣ ICR's Recommendation

ICR fully understands the challenges and situations commonly faced by responsible personnel during ISO audits. **We provide field-oriented audit services based on actual operational workflows,** ensuring that audits go beyond document review to assess the effectiveness of system implementation. Our auditors focus on identifying whether the management system is actively in use within the organization. By aligning audit questions with key points that personnel are expected to prepare for, **we aim to ensure fair, clear, and consistent evaluations.** If your organization is seeking a more structured and reliable approach to ISO certification audits, ICR's services are here to support you.

☎ Inquiries

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EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

▣ EN 55011

This standard defines electromagnetic interference for industrial, scientific, medical(ISM) equipment and household and similar equipments designed to generate or use radio energy in the frequency range of 0 ㎐ to 400 ㎓.

▣ Classification of equipments into group of EN 55011

- ❖ **Group 1 equipments:** Group 1 contains all equipments in the scope of this standard which is not classified as group 2 equipments.
- ❖ **Group 2 equipments:** Group 2 contains all ISM RF equipments in which radio-frequency energy in the frequency range 9 ㎑ to 400 ㎓ is intentionally generated and used or only used locally, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material, for inspection/analysis purposes, or for transfer of electromagnetic energy.

▣ Classification of equipments into classes of EN 55011

- ❖ **Class A equipments:** Equipment suitable for use in all locations other than those allocated in residential environments and those directly connected to a low voltage power supply network which supplies buildings used for domestic purpose.
- ❖ **Class B equipments:** Equipment suitable for use in locations in residential environments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

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EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

▣ Example of equipments classification

❖ Group 1 equipments example

CNC milling machine
(Source of information : HYUNDAI WIA)

Medical electrical equipment
(Source of information : THK)

Laboratory equipment
(Source of information : ROHDE & SCHWARZ)

Metal meltin furnace
(Source of information : KENTON)

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EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

▣ Example of equipments classification

❖ Group 2 equipments example

High-frequency press machine
(Source of information : EWOO CORP)

Microwave dryer
(Source of information : PHARMA)

Industrial laser generators
(Source of information : TRUMPF)

Induction sintering furnace
(Source of information : APS)

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EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

▣ Disturbance voltage limits for class A group 1 equipments measured.

Frequency [MHz]	Rated power of ≤ 20 kVA		20 kVA > Rated power of ≤ 75 kVA		Rated power of > 75 kVA	
	Quasi-peak dB(μV)	Average dB(μV)	Quasi-peak dB(μV)	Average dB(μV)	Quasi-peak dB(μV)	Average dB(μV)
0.15 ~ 0.50	79	66	100	90	130	120
0.50 ~ 5	73	60	86	76	125	115
5 ~ 30	73	60	90 ~ 73 Decreasing linearly with logarithm of frequency to	80 ~ 60 Decreasing linearly with logarithm of frequency to	115	105

▣ Disturbance voltage limits for class A group 2 equipments measured.

Frequency [MHz]	Rated power of ≤ 75 kVA		Rated power of > 75 kVA	
	Quasi-peak dB(μV)	Average dB(μV)	Quasi-peak dB(μV)	Average dB(μV)
0.15 ~ 0.5	100	90	130	120
0.50 ~ 5	86	76	125	115
5 ~ 30	90 ~ 73 Decreasing linearly with logarithm of frequency to	80 ~ 60 Decreasing linearly with logarithm of frequency to	115	105

EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

▣ Radiation disturbance limits for class A group 1 equipments.

Frequency [MHz]	On a test site 10 m Rated power of ≤ 20 kVA	On a test site 10 m Rated power of > 20 kVA	On a test site 3 m Rated power of ≤ 20 kVA	On a test site 3 m Rated power of > 20 kVA
	Quasi-peak dB(μV/m)	Quasi-peak dB(μV/m)	Quasi-peak dB(μV/m)	Quasi-peak dB(μV/m)
30 ~ 230	40	50	50	60
230 ~ 1 000	47	50	57	60

EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

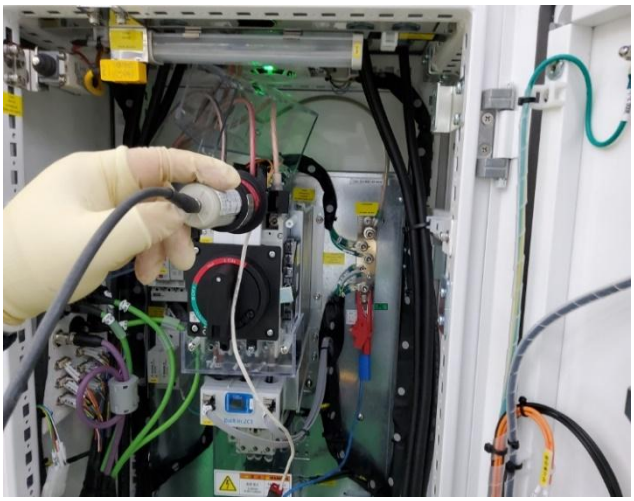
▣ Radiation disturbance limits for class A group 2 equipments

Frequency [MHz]	<Electric field> Quasi-peak [dB(μV/m)] On a test site = 10 m	<Electric field> Quasi-peak [dB(μV/m)] On a test site = 3 m
0.15 ~ 0.49	109	119
0.49 ~ 1.705	99	109
1.705 ~ 2.194	104	114
2.194 ~ 3.95	95	105
3.95 ~ 20	70	80
20 ~ 30	60	70
30 ~ 47	68	78
47 ~ 53.91	50	60
53.91 ~ 54.56	60	70
54.56 ~ 68	50	60
68 ~ 80.872	63	73
80.872 ~ 81.848	78	88
81.848 ~ 87	63	73
87 ~ 134.786	60	70
134.786 ~ 136.414	70	80
136.414 ~ 156	60	70
156 ~ 174	74	84
174 ~ 188.7	50	60
188.7 ~ 190.979	60	70
190.979 ~ 230	50	60
230 ~ 400	60	70
400 ~ 470	63	73
470 ~ 1 000	60	70

EN 55011

Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics limits

▣ Test photos of EN 55011



▣ **ICR** has test equipments for **EN 55011 standard** and can perform on-site testing.

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