



(Escalator handrail sterilizer)

A special structure lift safety study report

2017. 2.

**Study institution: KOREA ELEVATOR SAFETY
AGENCY**

CLEARWIN

A special structure lift Suitability study certification

- ☐ Date : 2017. 01. 05
- ☐ Period : 2017. 01. 05 ~ 2017. 02. 10
- ☐ Company : CLEARWIN (IDEACITY)
- ☐ Address : Hyundai 41 Tower 804, Mokdong Paragon, Mok-dong, Yangcheon-gu, Seoul, Korea
- ☐ Representative : Bruce Lee
- ☐ Product : Escalator handrail sterilizer
- ☐ Use : Special structure lift inspection exception approval case
(The sterilizer device attached escalator handrail)

We confirmed that The risk analysis, safety review, and
compliance with the alternative inspection criterion of the special structural lift requested
by your company are considered to be appropriate

- Below-

Inspection clause	Evaluation method	Result	The others
Elevator Global Common Safety Requirements– Part 1 Elevator Global Essential Safety Requirements	KS, B, ISO14798	suitability	
Safety concept suitability	Field test and Design drawing	suitability	
Suitability of structure and design	Design drawing	suitability	
Suitability of alternative criteria	Lift inspection criteria	suitability	

KOREA ELEVATOR SAFETY AGENCY

- CONTENT-

Chapter1	Summary-----	1
1.1	Purpose -----	1
1.2	Subject Feature -----	1
1.3	Range of safety evaluation -----	2
1.4	Field evaluation -----	2
1.5	Reference criteria -----	2
Chapter2	General critique-----	3
Chapter3	Alternative inspection criteria -----	4
3.1	Range of application -----	4
3.2	Condition of application -----	4
3.3	Alternative inspection criteria-----	4
3.4	Lift Alternative inspection criteria (Table of new and old terms) -----	5
Chapter4	Risk analysis and countermeasure on GESR(Global Essential Safety Requirements)	7
4.1	Risk analysis on GESR -----	7
4.2	Risk table -----	13
Chapter5	Handrail sterilizer safety concept inspection	14
5.1	General term -----	14
5.2	Safety inspection for body influx -----	15
5.3	Safety inspection for handrail entrance -----	19
5.4	Safety inspection against electric shock -----	19
5.5	Safety inspection for electromagnetic compatibility --	20
5.6	Safety inspection for sterilization method -----	20
5.7	Safety inspection for fire -----	21

Chapter6	Field evalution	-----	22
-----------------	------------------------	-------	----

Reference	-----	23
------------------	-------	----

Attached	Performance certification and test report ---	23
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1. Certificate of conformity registration and confirmation of broadcasting communication equipments.
2. CE and EMC Test report
3. ISO certification
4. Handrail Sterilizer Test report
5. Flame-retardant ABS Test report

Chapter 1. Summary

1.1 Purpose

The clearwin develop handrail sterilizer for the public using escalator safety who distrust about cleanliness and health of handrail. At the same time, we made it for dilution of contamination may reduce outbreaks.

The purpose of this estimation are confirming safety that installation with escalator and examination for criteria inspections because this product is not relate with safety of escalator directly.

1.2 Subject Feature

○ Was applied to self-generate system.

- This product does not any connect with escalator power supply because it is operated by handrail movement.

○ Was applied to Ultraviolet sterilization system.

- This product use Ultraviolet sterilization system instead of heating or chemicals for the minimum of handrail damage. (Use the dual lamp for maximizing sterilization.)

○ Was applied to light lamp for increase recognition.

- This product is furthered visual circumstance by light indicator for people use handrail.



Figure 1. Escalator handrail sterilizer

1.3 Range of safety evaluation

Confirmed sufficiency safety as criteria inspection according to clause 9-2 by MPSS(Ministry of Public Safety and Security) in Korea.

- Exactly correspond to purpose of safety.
- Risk analysis and measure about Global Essential Safety Requirement.
- Suitability to safety concept.
- Suitability to criteria inspection & alternation.
- Design review of the main structure.

1.4 Range of safety evaluation

A. Purpose

Confirmed same site as present documents according to clause 9-3 by MPSS(Ministry of Public Safety and Security) in Korea.

B. Date : '17.1.24 ~ 25

C. Place : Hyundai 41 tower

D. Attendance : Dong-won Shin (Thyssenkrupp-elevator Korea)
Jae-woo Kim (KOELSA)

1.5 Reference criteria

- The clause No. 2015-86 (2015.5.13) Inspection Criteria by MPPS
- KS B ISO 14798:2009 – Elevator, Escalator and Moving walk – Risk analysis
- ISO TS 25740-1:2011 – Escalator & Moving walk safety necessary – Global Essential Safety Requirement (GESR)

Chapter 2. General Critique

The result of evaluating the suitability for the safety of the special structure elevator (escalator handrail disinfection device) commissioned by Clearwin Co., complying with

the regulations; ISO TS 25740-1:2011-
Escalators and moving work safety requirements – part 1 : Global Essential Safety Requirements (GESR)

KS B ISO 14798:2009—
Elevators, escalators and moving walks – As a result of the analysis according to the risk analysis method, category of severity and the levels of frequency was "**SAFE**" or "**VERY SAFE**" one which almost never happens, so it was evaluated that sufficient safety was ensured.

In order to prevent pinching of the fingers, the design was modified in consideration of the child's body.

A safety guide was installed on the handrail inlet side. For the rollers causing the pinch were reflected., the installation position, the protective cover, the length of the finger of the infant and the pressurizing method when designing

It was designed to utilize self-generated power by handrail without using building power source, Ultraviolet (UV-C) lamps were used to improve sterilization power and to prevent human abnormalities caused by drugs., To minimize the risk of fire, flame-retardant ABS was used for exterior finish, It was evaluated that **the safety was secured.**

Chapter 3. Alternative inspection criteria

3.1 Range of application

Classification	Application
Purpose	Escalator handrail Sterilization
Power Supply	Self-generate
Method	Ultraviolet Sterilization
Position	Upside of handrail (exit site)
The others	Removable product for operating direction

3.2 Condition of application

- A) Apply present inspection criteria except special regulation from Ministry of Public Safety and Security (MPSS No. 2015-86, 2015.5.13)
- B) Apply new inspection criteria when present inspection criteria will be amend from Minister of MMPS like change law, and technical development.
- C) Apply present and new inspection criteria except special regulation

3.3 Alternative inspection criteria

Clause	Alternative inspection criteria	The others
5.6.2.4	If sterilizer is installed on the railing for public sanitation, In order to prevent fingers and clothes from being caught in the gap. And the clearance should be 4 mm or less.	new
5.6.2.3	The distance b5 between the handrail and the end of the railing, and the handrail sterilizer and handrail. The distance between the ends shall not exceed 50 mm (Figure 3).	
5.6.4.1	The lowest point of the handrail entrance into the manual is 0.1m and not more than 0.25 m (Figures 2 and 3). The handrail sterilizer is installed on the handrail exit side from Newell. And the position of the handrail into the sterilizer is 0.5 m or less.	
5.6.4.3	The entrance to the handrail inside the book contains finger and hand. A guide should be installed to prevent this. Also, according to Table 5, should be installed. Hand rail sterilizer installed on the railing, flexible guides should be installed.	

	Clearance should be less than 4mm	
5.6.6	When a hand-rail sterilizer is equipped with a rotating roller for self-generated power, in order to prevent pinching of the roller, etc., It is necessary to install the protective cover on the rollers, the gap between the burr and the handrail shall be 3 mm or less. In addition, the roller pressing method uses an elastic part so that the finger is not squeezed.	new
5.6.7	Hand rail sterilizer is harmful to body and hand rail for sterilization, should not be used.	new
5.9	Escalators and moving walkways are additional hazards in the event of a fire, should be considered. The outer cover of the handrail sterilizer is designed with flame retardant and insulating material.	
5.11.5.3	Electrical installations and escalators Hand rail sterilizers are easy to install. Guidelines for understanding should be placed.	
5.12.2.2.3.1	The emergency stop switch is used to stop the escalator or moving work in case of emergency. It must be installed for keying and each wrist of escalator or moving walk. It should not interfere with or obstruct devices for operation and stopping.	
6.2.10	If the handrail sterilizer is installed outside, have to attach visual indicator like lamp, warning for escalator users.	new

3.4 Lift - Alternative inspection criteria

Inspection criteria (17.1.28)		Alternative inspection criteria		The others
<new>	<new>	5.6.2.4	If sterilizer is installed on the railing for public sanitation, In order to prevent fingers and clothes from being caught in the gap. And the clearance should be 4 mm or less.	GESR 6.5.3
5.6.2.3	Distance between the handrail and the end of the railing b5. Should be less than 50mm (Figure 3)	5.6.2.3	Distance between the handrail and the end of the railing b5 And between hand rail sterilizer and rail ends of 50mm or less.	GESR 6.4.2
5.6.4.1	The lowest entrance of handrail what into	5.6.4.3	The lowest entrance of handrail what into newel have to be	GESR 6.2.7

	newel have to be installed between more than 0.1m and less than 0.25m from the flat (Figures 2 and 3) <New>		installed between more than 0.1m and less than 0.25m from the flat (Figures 2 and 3) The handrail sterilizer has to be installed on the exit side, and the hand rail what go inside is be installed less than 0.5m from the floor.	
5.6.4.3	At the point of handrail entrance has to be installed guide for prevent hand stuck. <new>	5.6.4.3	At the point of handrail entrance has to be installed guide for prevent hand stuck. In addition, according to Table 5, a switch must be installed. Hand rail sterilizer installed in the railing, flexible material for preventing the guide must be installed. The clearance is 4mm or less.	GESR 6.3.1
<new>	<new>	5.6.6	If the self-generated motor is attached handrail sterilizer, it has to be installed inside for prevent hand stuck. And has to installed cover, that distance between roller cover and handrail is less than 3mm In addition, the roller pressing method uses elastic parts.	GESR 6.2.7
<new>	<new>	5.6.7	The handrail sterilizer is designed to do not use hazardous chemicals on the handrail	GESR 6.2.14
5.9	Escalators and	5.9	Escalators and	GESR 6.2.14



	moving walk have a fire, if so that there is no additional risk. <new>		moving walks have a fire, if so, there is no additional risk. And should be the outer cover of the handrail sterilizer is flame retardant and designed with serial quality.	
5.11.5.3.1	The necessary guidance documents must be all for easy understanding of installation work in electrical installations.	5.11.5.3.1	The necessary guidance documents must be all for easy understanding of installation work in electrical installations and escalator handrail sterilizer.	GESR 6.6.8
5.12.2.2.3.1	The emergency stop switch is to stop the moving or moving walk. Must be installed and the escalator or each platform of moving walk. The eyes are leaning on your neck and easily accessible position. <New>	5.12.2.2.3.1	The emergency stop switch is to stop the moving or moving walk. Must be installed and the escalator or each platform of moving walk. The eyes are leaning on your neck and easily accessible position. The escalator handrail sterilizer doesn't have to cover equipments like the emergency stop switch.	GESR 6.5.8
<New>	<New>	6.2.10	If the handrail sterilizer is installed outside, have to attach visual indicator like lamp, warning for escalator users.	GESR 6.4.2

Chapter 4. Risk analysis and countermeasure on GESR(Global Essential Safety Requirements)

4.1 Risk analysis on GESR

The risk analysis on GESR is applied by ISO/TS 25740-1:2011(Safety requirements for escalators and moving walks – Part 1: Global essential safety requirements) about inspection criteria for special typed elevator. The risk analysis about user, manager, inspector and repairer is including safeguard criteria that every dangerous situation as conduction, narrowness, electric shock.

As a result of the risk analysis on GESR, category of severity and the levels of frequency was 'SAFE' or 'VERY SAFE' one which almost never happens, so it was evaluated that sufficient safety was ensured.

<Table 4.1> Category of Severity

classification	Category of Severity
I	Serious accidents such as death or serious environmental damage.
II	Accidents that lead to serious aftereffects.
III	Accidents such as light injury or light environmental destruction.
IV	It can be ignored without reaching an accident.

<Table 4.2> Levels of Frequency

classification	Levels of Frequency
A	It happens frequently.
B	It can happen several times during the lifetime of the product.
C	It can occur at least once during the life of the product.
D	There is a possibility of occurring about once in the life of the product.
E	Not nearly happening, but about once during product life. There is a possibility of occurrence.
F	It can't be possible.

Risk analysis and countermeasure on GESR

N O	Dangerous situation	Cause	Result	First damag e		How to reduce risk	After applicatio n		Possibilit y of applicatio n
				S	F		S	F	

6.2 General GESRs related to people in different locations									
1	Escalator with sterilizer and there are children around.	Put some finger on the entrance side under handrail sterilizer.	stuck	III	B	GESR 6.2.7 for moving parts. a) Roller that interferes with the handrail. Using an elastic spring. Designed to prevent compression b) As far as possible, the sterilizer installation location. Installed close to handrail exit.	IV	B	Possible
2	In crowded areas with a high population An escalator is installed. Hand rail sterilizer sharpened on the surface, there is a small	Many people have escalators . Approach to use.	Injury and damage to personal belongings.	III	A	GESR 6.2.8 Surface what exposed when people move, be designed streamline shape.	IV	A	Possible

	corner.								
3	Use high voltage for operate handrail sterilizer. Leaking of electricity .	a) People contact sterilizer. b) People hold damped handrail by rain. c) Wipe the hand rails for cleaning with a damp cloth.	a) Electric shock b) Failure	I	B	GESR 6.2.9 Use D/C that low voltage for people took minimum damage.	IV	B	Possible
4	The sterilizer is installed on the escalator that working.	On escalators and peripherals, It has an electric influence.	Failure	IV	A	GESR 6.2.11	IV	F	Possible
5	Hand rail sterilizer is flammable material. Welding around escalator .	Welding spark plugs on sterilizer.	a) Fire b) Addicted toxic gas.	I	E	GESR 6.2.14 Material for hazardous materials. It was designed flame retardant ABS.	I	E	Possible
6	Chemicals for hand rail sterilization.	a) The physical response to the chemicals when a person grab handrail. b) React	a) Allergy b) hand rail damage	III	B	GESR 6.2.14 Material for hazardous materials Harmless to human and handrail products.	IV	E	Possible

		to the chemicals on the hand rail.							
6.3 Non-User Related GESR									
7	The escalator is in operation . There is a person who wearing long skirts or knitwear.	Approach escalator o board	Stuck clothes	II	B	GESR 6.3.1 Contact with rotating parts between handrail and sanitizer on the move. Some parts of the body or hem, in order to prevent this, Installation	II	E	Possible
6.4 GESRs related to people on the platform									
8	In crowded areas with a high population An escalator is installed. Hand rail sterilization installed on left and right sides The	Many people have escalators Approach to use.	Crush	III	A	GESR 6.4.2 Access If the sterilizer installation interval is smaller than the step nominal width Widely designed	III	E	Possible

	interval is smaller than the step width.								
6.5 GESR associated with LCU users									
9	Escalator with sterilizer installed. Someone passing including children.	The user does not take off handrail where exit.	Stuck	III	B	GESR 6.5.3 Clearance between LCU parts. There is no gap in the hand rail attachment part.	III	D	Possible
10	A sterilizer is installed. If the sterilizer has an emergency stop switch Cover.	Can't press emergency switch when it happen.	Accident	I	B	GESR 6.5.8 Stop means adjacent to the LCU. Sterilizer is installed that does not jam between stop key and operate key.	I	F	Possible
6.6 GESRs associated with authorizations in the work area									
11	The escalator must be installed sterilizer where exit. The building superviso	Escalator users Leave the handrail on the ramp. Do not.	Stuck	III	B	GESR 6.6.8 Protection from various hazards a) Be changed the escalator operation	III	F	Possible

	r operating opposite side without change sterilizer' s direction for operation					by hand tools b) Provide the education with the user's manual to building supervisor.			
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4.2 Risk table

The risk estimation is analyzed by KS B ISO 14798(2009). And as a result of this, category of severity and the levels of frequency was 'SAFE' or 'VERY SAFE' one which almost never happens, so it was evaluated that sufficient safety was ensured on the GESRs.

<Table 4.1> Particular risk table (evaluation result)

Very dangerous		Dangerous		Safe		Very safe	
Frequency / Potential risk	A			2, 8	4		
	B	3, 10	7	1, 6, 9, 11			
	C						
	D						
	E	5					
	F						
Pre-Action Assessment		I	II	III	IV		
		Criticality / Risk impact category					
Frequency, Risk Cause Steps				Criticality, risk impact category			
A occurred frequently				I Fatalities (Death)			
B Highly likely to occur				II Major (heavy)			
C Occasionally				III minor (ordinary)			
D fairly low				IV can be ignored			

E Almost none	
F impossible	

<Table 4.2>Table of risk after action (state after supplement)

Very dangerous	Dangerous	Safe	Very safe
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Frequency / Potential risk	A				2
	B				1, 3, 6
	C				
	D			9	
	E	5	7	8	
	F	10		11	4
Pre-Action Assessment		I	II	III	IV
		Criticality / Risk impact category			
Frequency, Risk Cause Steps		Criticality, risk impact category			
A occurred frequently B Highly likely to occur C Occasionally D fairly low E Almost none F impossible		I Fatalities (Death) II Major (heavy) III minor (ordinary) IV can be ignored			

Chapter 5. Handrail sterilizer safety concept inspection

5.1 General term

This sterilizer is self-generated handrail cleaner what use rotary motion between roller and handrail surface.

Sterilizer units

- A) Roller for self-generation
- B) Ultraviolet lamp for sterilization
- C) Fixing tools for Installation
- D) Cover for safety

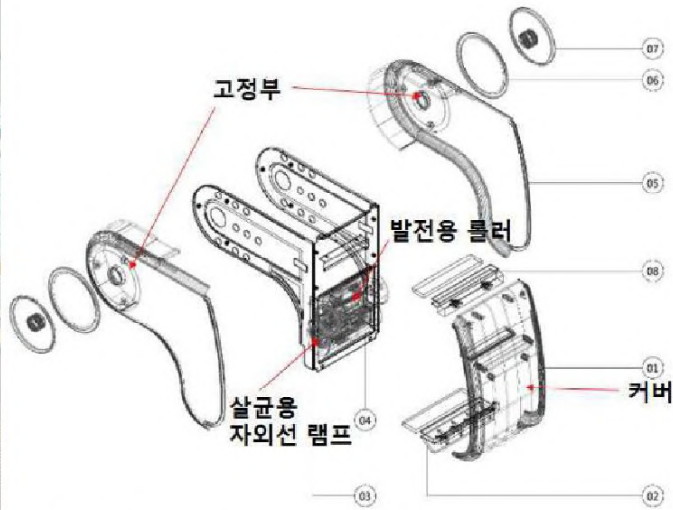


Figure 2. Product components

The clearwin installed handrail's down-side with silicon materials, minimum gaps for convenience & safety like stuck hair, body, clothes

This product use ultraviolet ray instead of chemicals for sterilizing. Because damage free to handrail. (Bacteria reduced 97% per 30times sterilizing)

This product was designed detachable by hand tools when the escalator moving opposite side.

5.2 Safety inspection for body influx

Inspection for prevent stuck body parts and clothes

A) Was designed prevent stuck

The clearwin was designed various solutions to prevent stuck inside like body parts, clothes.

- Install entrance gap guide between handrail and sterilizer.
- Install protect over for self-generated roller.
- The most suitable roller position after due consideration.
- Was applied spring boost system for prevent accident by over boosting.

1) 1st prevent system (install guide)

Install guide made by silicon for preventing, and this gap was designed within 4mm (refer to escalator skirt guard)

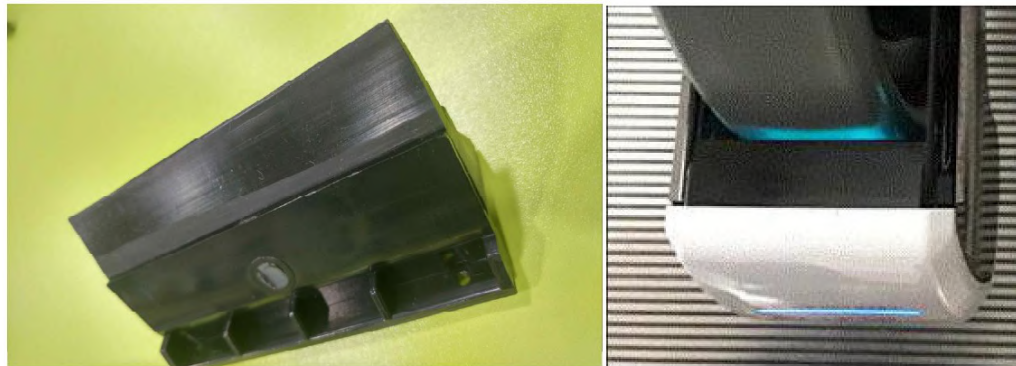


Figure 3. Hand stuck guide

2) 2nd prevent system (roller position)

The roller position was designed 60mm apart from guide after due consideration about a child's longest finger. (55mm)



Figure 4. Roller position after due consideration about child's finger

3) 3rd prevent system (roller cover)

The roller cover was designed 3mm gap between roller cover and

handrail for prevent finger stuck.



Figure 5. Roller cover (within 3mm gap)

4) 4th prevent system (roller boost system)

The clearwin applied torsion spring (elasticity 0.313kgf) for body parts and clothes are caught in a handrail.



Figure 6. Torsion spring

B) Minimum gap between fixing part and handrail.

The gap between fixing part and handrail is 4mm for prevent body

parts and clothes from the clearwin's aging like relic.



Figure 7. Fill up gap

- C) Install the lowest position for prevent stuck from entrance side.
The clearwin is installed under 50cm from the floor after due consideration about children's height. (3years old, 95cm ~ 96cm)

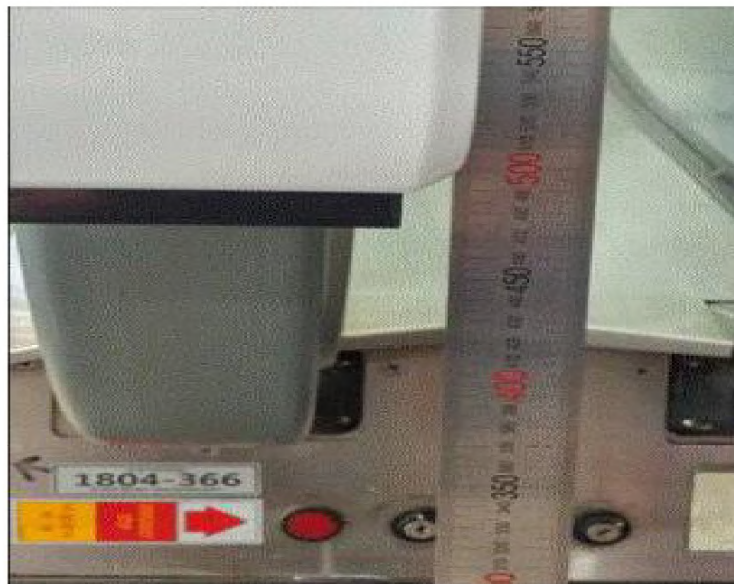


Figure 8. Vertical install position

5.3 Safety inspection for handrail entrance

The clearwin is installed handrail entrance for maximizing sterilization effect (downside-entrance, upside-exit). So, if the clearwin is changed operating direction, it can be easy to re-install by hand tools.

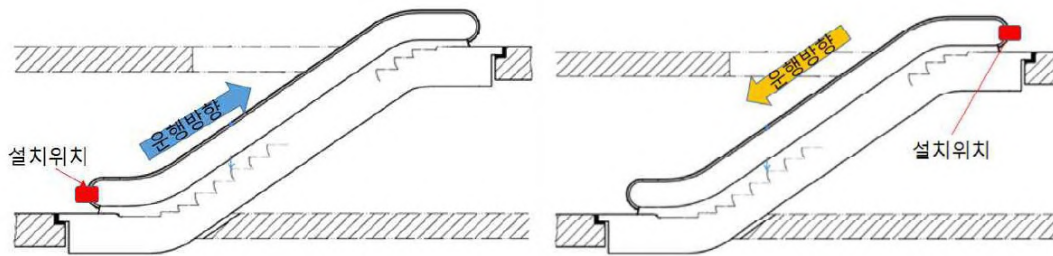


Figure 9. Install position follow operating direction

5.4 Safety Inspection against electric shock

The clearwin generator was designed under DC 24V, 20mA, IEC 60479 DC-2 for prevent electric shock.

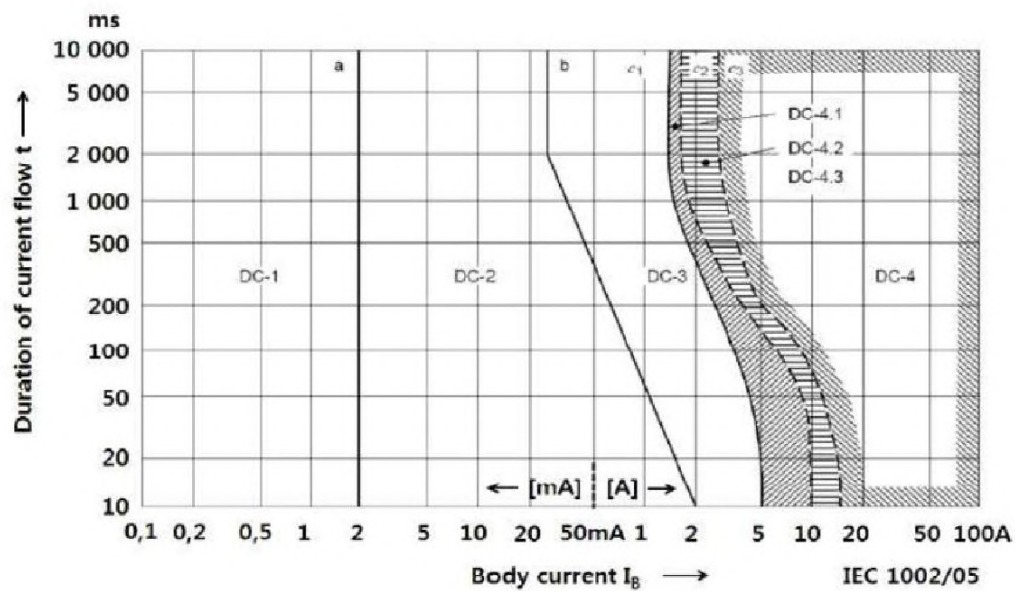


Figure 10. IEC 60479

Add. DC-2 (to curve b from 2 mA)

The clearwin was passed EMC test from NRRRA according to Radio waves act No. 58-2-1 (2016.8.19)

Figure 11. EMS test report

The clearwin use 253.7mm* wave UV-C lamp for increase inactivation rate. At the same time, it was designed that sterilization range was 20mm. And also, the clearwin applied lamp cover that can increase safety.



Figure 12. UV-C lamp

5.7 Safety inspection for fire

The clearwin was applied BLDC generator, and ABS cover for prevent damage from heating and fire.

SolutionPartner



ABS AF312

Injection Molding Grade

Description

Flame Retardant

Application

Electric parts, IT/OA device
TV, monitor housing

구분	측정조건	규격	단위	수치
물리적 특성				
비율		ASTM D792	-	1.19
수축률, 3.2mm		ASTM D955	%	0.4~0.7
압축지수	220℃/10kg	ASTM D1238	g/10min	60
기계적 특성				
인장 강도, 3.2mm		ASTM D638		
① 항복점	50mm/min		kg/cm ²	450
인장신율, 3.2mm		ASTM D638		
① 항복점	50mm/min		%	5
① 파단점	50mm/min		%	Min 20
인장 탄성률, 3.2mm	1mm/min	ASTM D638	kg/cm ²	23,000
굴곡 강도, 6.4mm	15mm/min	ASTM D790	kg/cm ²	700
굴곡 탄성률, 6.4mm	15mm/min	ASTM D790	kg/cm ²	26,000
아이즈드 충격강도, 6.4mm (Notched)	23℃ -30℃	ASTM D256	kg-cm/cm kg-cm/cm	21 7
아이즈드 충격강도, 3.2mm (Notched)	23℃ -30℃	ASTM D256	kg-cm/cm kg-cm/cm	25 7
Rockwell 강도	R-Scale	ASTM D785	-	106
열적 특성				
열변형 온도, 6.4mm (열차지 포함)		ASTM D648	℃	76
	18.6kg 4.6kg		℃	84
Vicat 연화점		ASTM D1525		
	5kg, 60℃/h 1kg, 120℃/h		℃	83
난연성		UL94		
1.0mm			class	HB
1.5mm			class	V-0
2.0mm			class	V-0,5VB
2.5mm			class	V-0,5VA
3.0mm			class	V-0,5VA
Relative Temperature Index:		UL 746B		
Electrical			℃	85
Mechanical with Impact			℃	75
Mechanical without Impact			℃	75

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작성일: 2016년 3월 23일

본 문서에 들어있는 자료, 기술 그리고 모든 수의 분의 정보는 고지 편차와 적용된 것입니다. LG화학은 다양한 다른 제품(들)을 본 문서에서 설명된 목적은 최종 소의 성질에 있어도 들어오는 것, (B) LG화학의 제품, 중점 혹은 적자를 사용한 디자인의 안정성 또는 실패율과 관련하여, 명시적 또는 묵시적으로 어떠한 보증 또는 보증도 하지 않습니다. 또한, 본 문서에 들어있는 어떠한 내용도 법적 구속력이 없으며, 특히, 대표 수치는 참고용의 수치를 본, 법적 구속력이 있는 최소 수치는 아닙니다. 특정 용도에 쓰여져 될 LG 화학의 제품, 자료, 혹은 혹은 제3자의 정보를 제공하는 각각의 사용자 환경에 불충족 또는 다른 오류를 지시해 줍니다. 각각의 사용자를 본 LG화학의 제품나 제품을 사용하여 만든 그룹의 사용자들이 안전성과 최종소에 대해 사용 목적을 증명할 수 있는 모든 실험과 분석을 실행하고 확인해야 합니다. 본 문서에 들어있는 자료 및 수치는 시의 필요 없이 특별한 통보 없이도 언제라도 바뀔 수 있습니다.

Figure 12. ABS test report

Chapter 6. Field evaluation

- A. Purpose : Confirmation safety as inspection criteria in Korea
- B. Date : 2017. 2. 9. (Monday) am11:00
- C. Place : Hyundai 41 tower (Seoul, Korea)
- D, Attendance : Dong-won Shin (Thyssenkrupp-elevator Korea)
Jae-woo Kim (KOELSA)
- D. Substance
- Design inspection that this presentation documents are correspond to the purpose of safety.
 - Inspection risk analysis and countermeasure.
 - Inspection criteria and alternative inspection criteria.
- E. Result
- Reflected in risk analysis and countermeasure on GESR Ch.4



Reference

1. **ISO/TS 25740-1 Safety requirements for escalators and moving walks - part 1: Global essential safety requirements (GESR)**
2. **KS B ISO/14798:2009** – Escalator, Escalator, and moving walk
3. Inspection criteria (Ministry of Public Safety and Security Notification No. 2015-86, 2015.5.13)

Attached

Performance certification and test

1. Certificate of conformity registration and confirmation of broadcasting communication equipments.
2. CE and EMC Test report
3. ISO certification
4. Handrail Sterilizer Test report
5. Flame-retardant ABS Test report

CE **DOC**
Declaration Of Conformity

We **CLEARWIN CO., LTD.**
1112-2, HYUNDAI 41 TOWER, 293 MOKDONGDONG-RO,
YANGCHEON-GU, SEOUL, 07997, KOREA

DECLARE ON OUR SOLE RESPONSIBILITY THAT THE PRODUCT
KIND OF EQUIPMENT : HANDMAIL UV STERILIZER
TYPE DESIGNATION : (CWSE)

This EC Declaration of conformity is following the provisions of EMC DIRECTIVE 2014/53/EU and
RoHS DIRECTIVE 2011/65/EU
It is confirmed that a sample of the product has been tested and found in conformity with below
standards:

EMCD EN 61000-6-1: 2007
EN 61000-6-3: 2007 + A1: 2011 / AC: 2012
RuHSD EN 50581: 2012
IEC 62321-3-1: 2013

Detailed specification of the tested product shown in the following test Report(s):
EMC Test Report : ETLR2160308.0228
RoHS Test Report : ETLR2160308.0038

Date Of Issue : 2018-04-25
Authorized By : 
CLEARWIN CO., LTD.
1112-2, HYUNDAI 41 TOWER, 293 MOKDONGDONG-RO,
YANGCHEON-GU, SEOUL, 07997, KOREA

ETL Test Report No. : ETLR2160308.0038

RoHS TEST REPORT
European Directive 2011/65/EU
Evaluation of RoHS Requirements for Electrical and Electronic Equipment

Test report No. : ETLR2160308.0038
Date of receipt : Mar 09, 2018
Date of issue : Apr 26, 2018
Test of period : Mar 09, 2018 - Apr 26, 2018

Applicant's name : CLEARWIN CO., LTD.
Address : 1112-2, HYUNDAI 41 TOWER, 293 MOKDONGDONG-RO, YANGCHEON-GU, SEOUL, KOREA
Manufacturer's name : Same as applicant
Address : Same as applicant
Product name : HANDMAIL UV STERILIZER
Basic Model : CWSE1
Multiple Models : N/A

Test Specifications:
Directive : 2011/65/EU
Test Standards : EN 50581 : 2012, IEC 62321-3-1 : 2013
Type of Category : Category 11. Other EEE not covered by any of the categories above
Test Result : The equipment which was evaluated has fulfilled with requirement of 2011/65/EU Directive for this materials : Pb, Cd, Hg, Cr(VI), PBBs and PBDEs
Final test result : PASS

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of applicant. Also it is not allowed to copy this report even partly without the allowance of publisher.
Also this publication represent for the evaluation results of the tested test item only : any type of EEE, i.e.
full product, module assembly, component or material including RoHS test result.
The evaluation results means only the tested item is complied with RoHS requirement according to the
evaluation procedures which is described in this publication.

Tested by : Hyung Jun Cho Reviewed By : Yeon Chul Kang
 

Page 1 of 20

ETL **EMC TEST REPORT**

CE TEST REPORT

Report Number : ETLR2160308.0228 Report Issue Date : April 26, 2018

Model / Serial No. : CWSE1 / NONE
Multiple Model Name : -
Product Type : HANDMAIL UV STERILIZER
Brand name : -
Applicant : CLEARWIN CO., LTD.
Address : 1112-2, HYUNDAI 41 TOWER, 293 MOKDONGDONG-RO, YANGCHEON-GU, SEOUL, 07997, KOREA
Manufacturer : CLEARWIN CO., LTD.
Address : 1112-2, HYUNDAI 41 TOWER, 293 MOKDONGDONG-RO, YANGCHEON-GU, SEOUL, 07997, KOREA

Test Standards : EN 61000-6-1: 2007
EN 61000-6-3: 2007 + A1: 2011 / AC: 2012

Test Result : **Positive**
Total pages including Attachments : 01 

Prepared by : Tae Gyun Kim (Test Engineer)

April 26, 2018

Reviewed by : Hyung Min Cho (Chief Engineer)

April 26, 2018

ETL INC.
114, Gasan digital 2-ro, Geumcheon-gu, Seoul, 153-803, Korea
Tel : 82-2-858-0786 Fax : 82-2-858-0788

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Report No. : ETLR2160308.0228 / Page 1 of 20

Head Office : 114, Gasan digital 2-ro, Geumcheon-gu, Seoul, 153-803, Korea Tel : 82-2-858-0786 Fax : 82-2-858-0788

3. ISO Certificate of registration



4. Test Report of Handrail Sterilization



5. Test Report of ABS Flame resisting



