



시험 성적서

TEST REPORT

페이지(page) : (1) / (총(Total) 12)

성적서 번호 Report No.		ICRT-TR-I210740-0A	
신청자 Client	기관명 Name	Hanwha Techwin Co., Ltd.	
	주 소 Address	6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA	
시험대상품목 Sample description		NETWORK CAMERA	
모델명 Type designation		TNV-8011C	
정 격 Ratings		-	
시험장소 Place of test		☒ 고정시험(Inside test) ☐ 현장시험(Field test) 주소지(Address): 112, Hwanggeum 3-ro 7beon-gil, Yangchon-eup, Gimpo-si, Gyeonggi-do, Republic of Korea	
시험기간 Date of test		2021. 11. 18 ~ 2021. 11. 19	
시험방법/항목 Test Method/Item		Customer request specification. [ISO 20653 : 2013 (IP6K9K, IPX6K)]	
시험결과 Test Results		Refer to test results	
확 인 Affirmation	작성자 Tested by	기술책임자 Technical Manager	
	성 명 안 민 호 Name M. H. Ahn	성 명 이 한 국 Name H. K. Lee	
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경기도 김포시 양촌읍 황금3로7번길 112 / Tel: 02-6351-9001 ~ 6



1. Specimen Information

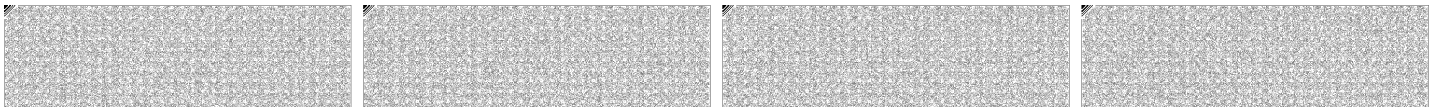
1-1) Test Specimen



Fig. 1) Photo of the specimen #1

Product name	Model	Ratings	Note
NETWORK CAMERA	TNV-8011C	-	-

Table 1) Specimen information





2. Test Item & Condition

2-1) Dust Test

2-1-1) Test Specification – ISO 20653 : 2013 (IP6KX)

2-1-2) Test Method

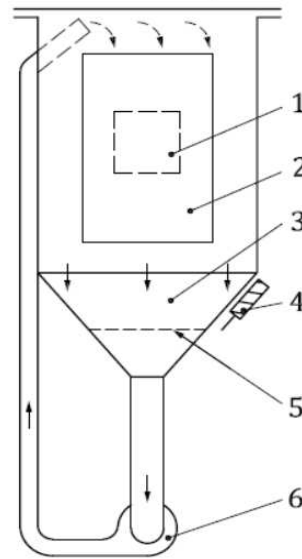
- Put the specimen into the dust chamber.
- The test is carried out under the test conditions given in Table 2).
- After completion of the test, Remove dust on the specimen surface.

2-1-3) Test Judgment

- After completion of the test, Visually check the dust penetration inside the specimen.

Kind of dust	Density of dust	Operating mode		Test time
		Air-dust mixture	Break time	
A2 (Arizona dust)	2 kg/m ³	6 s	15 min	Total 20 cycles shall be performed.

Table 2) Test condition (IP6KX)



Key

- 1 DUT
- 2 glass window
- 3 dust
- 4 vibrator
- 5 protective grating
- 6 circulating pump or other equipment for suspending the dust

Fig. 2) Test device to verify protection against dust 6K



2-2) Waterproof test #1

2-2-1) Test Specification - ISO 20653 : 2013 (IPX6K)

2-2-2) Test Method

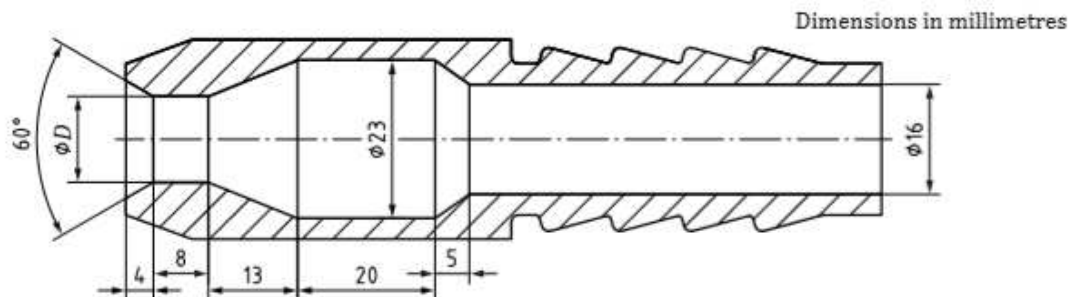
- Fix the specimen on the test shelf of IPX6K tester.
- Fix spray nozzle of test equipment at (2.5 ~ 3) m distance from specimen.
- The test is carried out under the test conditions given in Table 3).
- After completion of the test, Remove water on the specimen surface.

2-2-3) Test Judgment

- After completion of the test, Visually check the water penetration inside the specimen.

Nozzle diameter	Distance from nozzle	Water flow rate	Test time
6.3 mm	(2.5 ~ 3) m	75 L/min $\pm$ 5 %	1 min/m ² (Minimum time 3 min)

Table 3) Test condition (IPX6K)



$D = 6,3$ mm for tests regarding degrees of protection against water 5 and 6K.

$D = 12,5$ mm for tests regarding degree of protection against water 6.

Fig. 3) Nozzle for determining the protection against high-velocity water;
degrees of protection against water 5, 6 and 6K



2-3) Waterproof test

2-2-1) Test Specification - ISO 20653 : 2013 (IPX9K)

2-2-2) Test Method

- a) Fix the specimen on the test shelf of IPX9K tester.
- b) The test is carried out under the test conditions given in Table 3).
- c) After completion of the test, Remove water on the specimen surface.

2-2-3) Test Judgment

- a) After completion of the test, Visually check the water penetration inside the specimen

Turn table speed (r/min)	Water temperature (°C)	Water flow rate (L/min)	Operating Pressure (kPa)
5 ± 1	80 ± 5	14 ~ 16	8 000 ~ 10 000
	Spray angle position (°)	Distance (mm)	Exposure time
	0, 30, 60, 90	100 ~ 150	30 s per position

Table 4) Test condition (IPX9K)

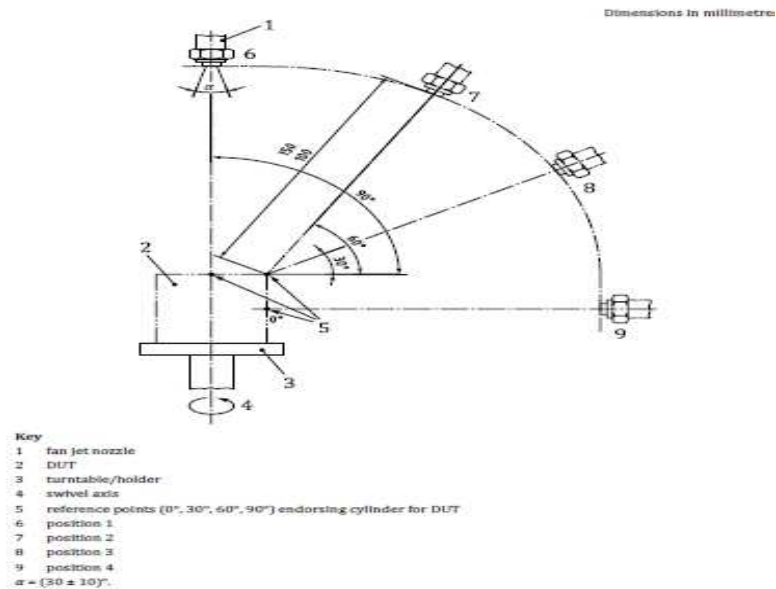


Fig. 4) Test device to verify protection against water 9K



3. Photo of test

3-1) Dust test (IP6KX)



Fig. 5) Photo of the test specimen set up



Fig. 6) Photo of the test specimen set up
(Enlarge)



Fig. 7) Photo of the test condition



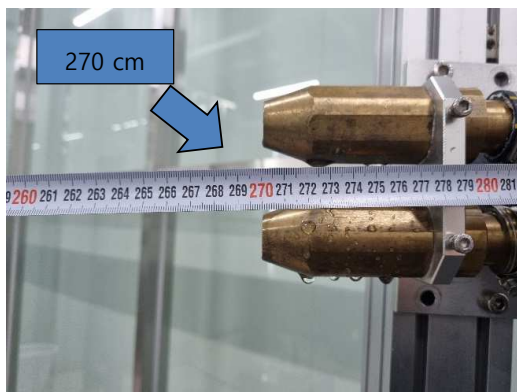
Fig. 8) Photo of the test specimen set up
(After of the test)



3-2) Waterproof test (IPX6K)



Fig. 9) Photo of the test specimen set up

Fig. 10) Photo of the specimen set up
(Distance from nozzle)Fig. 11) Photo of the specimen set up
(Distance from nozzle, Enlarge)Fig. 12) Photo of the test condition
(Test time)Fig. 13) Photo of the test condition
(Water flow rate)Fig. 14) Photo of the test specimen set up
(After of the test)



3-3) Waterproof test (IPX9K)



Fig. 15) Photo of the test specimen set up

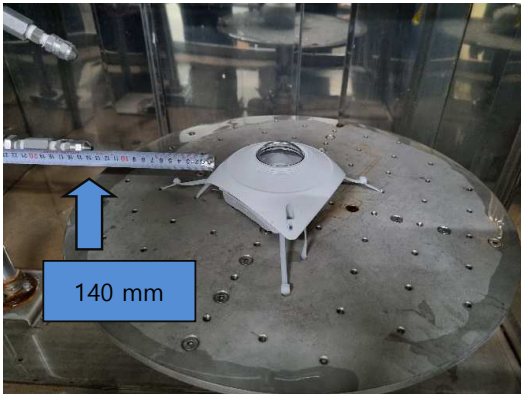
Fig. 16) Photo of the test specimen set up
(Enlarge)

Fig. 17) Photo of the test specimen set up (0°)

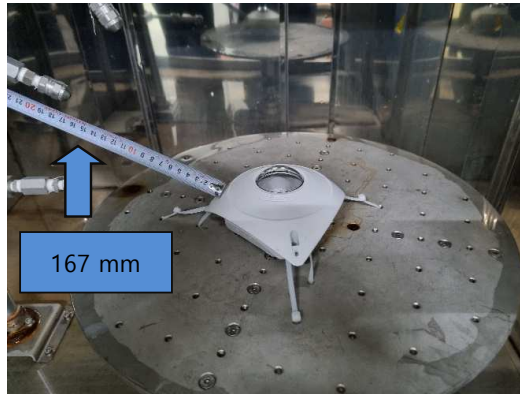


Fig. 18) Photo of the test specimen set up (30°)

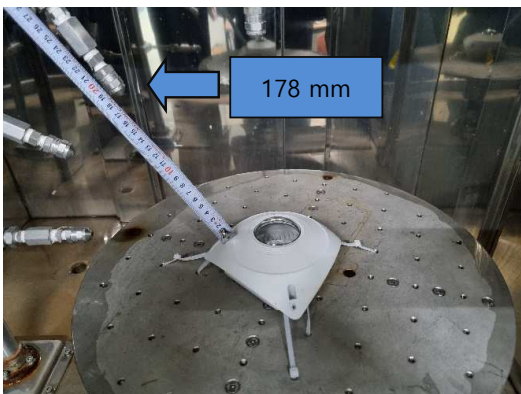


Fig. 19) Photo of the test specimen set up (60°)

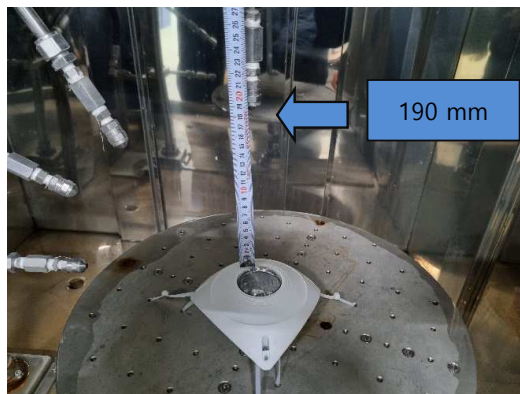


Fig. 20) Photo of the test specimen set up (90°)



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Fig. 21) Photo of the test condition
(Exposure time ~ 30 s per position)



Fig. 22) Photo of the test condition
(Water pressure)

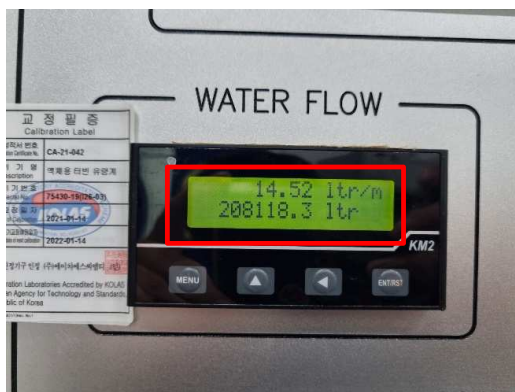


Fig. 23) Photo of the test condition
(Water flow rate)



Fig. 24) Photo of the test condition
(Water temperature)

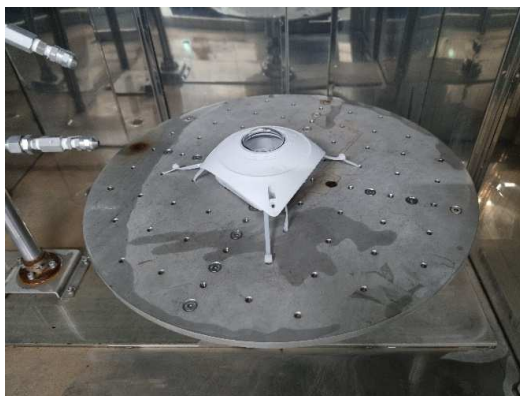


Fig. 25) Photo of the test specimen set up
(After of the test)



Fig. 26) Photo of the test specimen set up
(After of the test, Enlarge)



4. Test Result

4-1) Dust test (IP6KX), Waterproof test (IPX6K,IPX9K)



Fig. 27) Photo of the specimen after the test

Test item	Test result		Note
IP6KX	Penetration check	No Dust penetration inside the test product	Visual inspection (Tester who has vision 1.0 or higher)
IPX6K		No Water penetration inside the test product	
IPX9K		No Water penetration inside the test product	

Table 5) Test result





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5. Test equipment

Equipment name	Model Name	Manufacture	Next Calibration data
Dust test chamber	JFMD-0004	JFMTECH / KOREA	2022. 08. 12
Waterproof tester	JFMB-008-IPX	JFMTECH / KOREA	2022. 01. 13
Waterproof tester	JFMB-008-9K	JFMTECH / KOREA	2022. 01. 12
Tape measure	KMC-34 (5.5 m * 19 mm)	KOMELON / CHINA	2023. 06. 05

- END -





※ Appendix
- Product drawing

