



4, Songju-ro 236beon-gil, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do,
17159, Korea
Tel: +82-31-323-6008 Fax: +82-31-323-6010
<http://www.ltalab.com>

EMC TEST REPORT

Dates of Tests: May 07 - 16, 2019
Test Report S/N: LR500121905W
Test Site : LTA Co., Ltd.

Model No.

DC-D4513WRX 4.0mm

APPLICANT

IDIS CO., LTD.

Equipment Name : Network Camera
Manufacturer : IDIS CO., LTD.
Model name : DC-D4513WRX 4.0mm
Additional Model name : DC-D4513WRX 2.8mm, NC-D4513WRX 4.0mm,
NC-D4513WRX 2.8mm, DC-E1345WRX
Test Device Serial No.: Identification
Directive : Electromagnetic Compatibility Directive 2014/30/EU
Rule Part(s) : EN 55032:2012/AC :2013
EN 50130-4:2011/A1:2014

Data of reissue : May 24, 2019

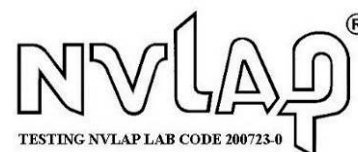
This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, Technical Manager

Young Hun Choi, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



Revision	Date of issue	Test report No.	Description
0	24.05.2019	LR500121905W	Initial

TABLE OF CONTENTS

1. General information's	4
2. Information's about test item	5
3. Test Report	7
3.1 Summary of tests	7
3.2 EMISSION	8
3.2.1 Conducted emissions	8
3.2.2 Radiated Emission	11
3.3 IMMUNITY	16
3.3.1 Electrostatic Discharge	16
3.3.2 RF Electromagnetic Field	18
3.3.3 Electrical fast transients	19
3.3.4 Surge	20
3.3.5 Conducted disturbances, induced by radio-frequency fields	21
APPENDIX A TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS.....	22
APPENDIX B PERFORMANCE CRITERIA	25
APPENDIX C PHOTOGRAPHS	28

1. General information's

1-1 Test Performed

Company name : **LTA Co., Ltd**
 Address : 4, Songju-ro 236beon-gil, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, 17159, Korea
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2019-09-30	ECT accredited Lab.
RRA	KOREA	KR0049	-	EMC accredited Lab.
FCC	U.S.A	649054	2021-04-11	FCC CAB
VCCI	JAPAN	C-4948,	2020-09-10	VCCI registration
		T-2416,	2020-09-10	
		R-4483(10 m),	2020-10-15	
		G-10847	2022-06-13	
IC	CANADA	5799A-2	2019-06-15	IC filing
KOLAS	KOREA	NO.551	2021-08-20	KOLAS accredited Lab.

2. Information's about test item

2-1 Client/ Manufacturer

Company name : IDIS CO., LTD.
Address : 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA
Telephone / Facsimile : +82-31-723-5205/ +82-31-723-5108

Factory

Company name : IDIS CO., LTD.
Address : 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA

2-2 Equipment Under Test (EUT)

Class : A
Equipment Name : Network Camera
Model name : DC-D4513WRX 4.0mm
Additional Model name : DC-D4513WRX 2.8mm, NC-D4513WRX 4.0mm, NC-D4513WRX 2.8mm, DC-E1345WRX
Additional Models are identical to DC-D4513WRX 4.0mm except for Model Name, marketing purpose.
Serial number : Identification
Date of receipt : April 30, 2019
EUT condition : Pre-production, not damaged
Interface ports : LAN, AUDIO IN, AUDIO OUT, GND #1, ALARM IN, ALARM OUT, GND #2, Micro SD
Power rating : DC 12 V

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure : +(22 - 24) °C / (33 - 37) % R.H. / (101) kPa
Tested Model : DC-D4513WRX 4.0mm
Test mode : REC mode
Tested Voltage : AC 230 V, 50 Hz

2-5 EUT

Equipment	Model No.	Serial No.	Manufacturer
Network Camera	DC-D4513WRX 4.0mm	N/A	IDIS CO., LTD.

2-6 Accessory

Equipment	Model No.	Serial No.	Manufacturer
Notebook	N16Q2	NXGRZSJ001802033F47600	Acer Inc.
PoE Injector	PE30	N/A	N/A
Alarm #1	N/A	N/A	N/A
Alarm #2	SPL-0030	N/A	SECOM
Smart Phone	SHV-E210L	R33C9026JXE	SAMSUNG
Speaker	BR-3000Mini	N/A	Britz
Micro SD Card	MB-MP32D	MBMPBGVEODFW-F	SAMSUNG

2-7 Cable List

From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	LAN	PoE Injector	PoEOUT	5.0	NO	Plastic
	AUDIO IN	Smart Phone	AUX	1.8	NO	Plastic
	GND #1	Smart Phone	AUX	1.8	NO	Plastic
	GND #1	Speaker	AUX	1.8	NO	Plastic
	AUDIO OUT	Speaker	AUX	1.8	NO	Plastic
	ALARM IN	Alarm #1	-	1.4	NO	Plastic
	GND #2	Alarm #1	-	1.4	NO	Plastic
	GND #2	Alarm #2	-	1.2	NO	Plastic
	ALARM OUT	Alarm #2	-	1.2	NO	Plastic
	Micro SD	Micro SD Card	-	-	-	-
PoE Injector	DATA IN	Notebook	LAN	5.0	NO	Plastic
	AC IN	AC Power Source	3 Pin AC Line	1.6	NO	Plastic

3. Test Report

3.1 Summary of tests

Parameter	Applied Standard	Status
I. Emission		
Radiated Emission	EN 55032:2012/AC:2013	C
Conducted Emission	EN 55032:2012/AC:2013	C
Harmonic Current Emission	EN 61000-3-2:2014	NA ^{Note 3}
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	NA ^{Note 3}
II. Immunity		
Electrostatic Discharge	EN 61000-4-2:2009	C
RF Electromagnetic field	EN 61000-4-3:2006/A1:2008/A2:2010	C
Fast Transients Common mode	EN 61000-4-4:2012	C
Surges, line to line and line to ground	EN 61000-4-5:2014/A1:2017	C
RF common mode	EN 61000-4-6:2014/AC:2015	C
Voltage dips and Interruptions	EN 61000-4-11:2004/A1:2017	NA ^{Note 3}
Main supply voltage variations	EN 50130-4:2011/A1:2014	NA ^{Note 3}

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

Note 3: We did not test for the DC-D4513WRX 4.0mm because equipment whose rated power is DC 12 V don't need to be tested.

3.2 EMISSION

3.2.1 Conducted emissions

Definition:

The test assesses the ability of the EUT to limit its internal noise from being present on the AC mains Power In/Output ports.

We were performed the test according to LTA procedure LTA-QI-04.

Measurement Frequency range	: 150 kHz – 30 MHz
Test method	: EN 55032:2012/AC:2013
Measurement RBW	: 9 kHz
Test mode	: REC mode
Result	: Complies

Measurement Data:

- Refer to the Next page (Maximum emission configuration)

A sample calculation:

COR. F (correction factor)= LISN Insertion loss + Cable loss + Pulse Limiter Factors

Emission Level= meter reading + COR.F

Limits for conducted disturbance at the mains ports of class A ITE

Frequency Range	Quasi-peak	Average
(0.15 – 0.5) MHz	79 dBuV	66 dBuV
(0.5 – 30) MHz	73 dBuV	60 dBuV

Note: The limits will decrease with the frequency logarithmically within 0.15MHz to 0.5MHz

Limits for conducted disturbance at the mains ports of class B ITE

Frequency Range	Quasi-peak	Average
(0.15 – 0.5) MHz	(66 – 56) dBuV	(56 - 46) dBuV
(0.5 – 5) MHz	56 dBuV	46 dBuV
(5 – 30) MHz	60 dBuV	50 dBuV

Note: The limits will decrease with the frequency logarithmically within 0.15 MHz to 0.5 MHz

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class A equipment

Frequency Range	Voltage limits		Current limits	
	Quasi-peak	Average	Quasi-peak	Average
(0.15 – 0.5) MHz	(97 – 87) dBuV	(84 – 74) dBuV	(53 – 43) dBuV	(40 – 30) dBuV
(0.5 – 30) MHz	87 dBuV	74 dBuV	43 dBuV	30 dBuV

Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class B equipment

Frequency Range	Voltage limits		Current limits	
	Quasi-peak	Average	Quasi-peak	Average
(0.15 – 0.5) MHz	(84 – 74) dBuV	(74 – 64) dBuV	(40 – 30) dBuV	(30 – 20) dBuV
(0.5 – 30) MHz	74 dBuV	64 dBuV	30 dBuV	20 dBuV

Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Conducted emissions (TEL_100 M)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : DC-D4513WRX 4.0mm

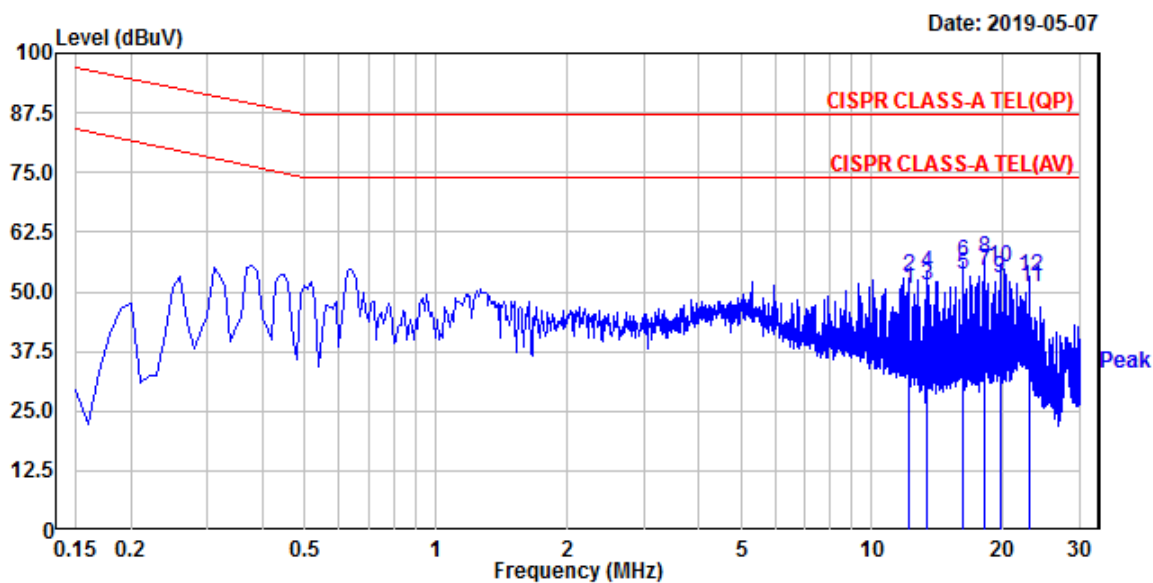
Phase : TEL_100M

Test Mode : REC mode

Test Power : 230 / 50

Temp./ Humi. : 24°C / 37% R.H.

Test Engineer : CHOI Y H



Trace: 1

Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
12.198	33.49	30.87	19.66	53.15	50.53	87.00	74.00	33.85	23.47
13.419	34.23	31.76	19.68	53.91	51.44	87.00	74.00	33.09	22.56
16.229	36.60	33.92	19.76	56.36	53.68	87.00	74.00	30.64	20.32
18.243	37.18	34.48	19.81	56.99	54.29	87.00	74.00	30.01	19.71
19.708	35.41	32.88	19.86	55.27	52.74	87.00	74.00	31.73	21.26
23.128	33.06	30.80	19.97	53.03	50.77	87.00	74.00	33.97	23.23

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

3.2.2 Radiated Emission

Definition:

The test assesses the ability of ancillary equipment to limit their internal noise from being radiated from the enclosure.

We were performed the test according to LTA procedure LTA-QI-04.

Test method	: EN 55032:2012/AC:2013
Measuring Distance	: 10 m for below 1 GHz / 3 m for above 1 GHz
Measurement Frequency range	: 30 MHz – 6 000 MHz
Measurement RBW	: 120 kHz @ 10 m / 1 MHz @ 3 m
Test mode	: REC mode
Result	: Complies

Measurement Data:

- Refer to the Next page (Maximum emission configuration)

- The highest internal source of an EUT is higher than 108 MHz, the measurement shall be made up to 6 GHz.

(The highest internal source of an EUT : 1.25 GHz)

A sample calculation:

COR. F (correction factor)= Antenna factor + Cable loss- Amp.gain- Distance correction

Emission Level= meter reading + COR.F

Limit of 10 m for below 1 GHz

CLASS A

Frequency Range	Quasi-peak
(30 – 230) MHz	40 dBuV/m
(230 – 1 000) MHz	47 dBuV/m

CLASS B

Frequency Range	Quasi-peak
(30 – 230) MHz	30 dBuV/m
(230 – 1 000) MHz	37 dBuV/m

Limit of 3m for above 1 GHz

CLASS A

Frequency Range	Average Limit @ 3m (dB μ V/m)	Peak limit @ 3m (dB μ V/m)
(1 000 – 3 000) MHz	56	76
(3 000 – 6 000) MHz	60	80
NOTE:	The lower limit applies at the transition frequency.	

CLASS B

Frequency Range	Average Limit @ 3m (dB μ V/m)	Peak limit @ 3m (dB μ V/m)
(1 000 – 3 000) MHz	50	70
(3 000 – 6 000) MHz	54	74
NOTE:	The lower limit applies at the transition frequency.	

Radiated Emission (Below 1 GHz) / V



4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

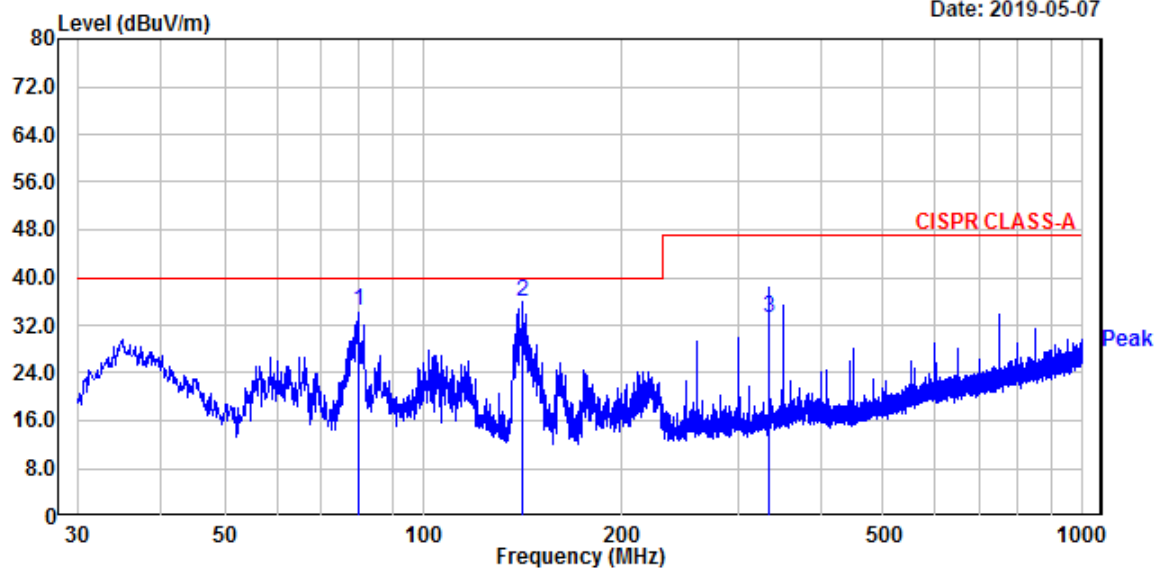
EUT/Model No.: DC-D4513WRX 4.0mm

Temp/Humi: 23 / 33

Test Mode : REC mode

Tested by: CHOI Y H

Date: 2019-05-07



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
79.71	51.71	-17.33	34.38	40.00	5.62	110	206	vertical
141.19	48.87	-12.96	35.91	40.00	4.09	100	276	vertical
334.10	43.28	-10.07	33.21	47.00	13.79	100	341	vertical

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Below 1 GHz) / H



4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

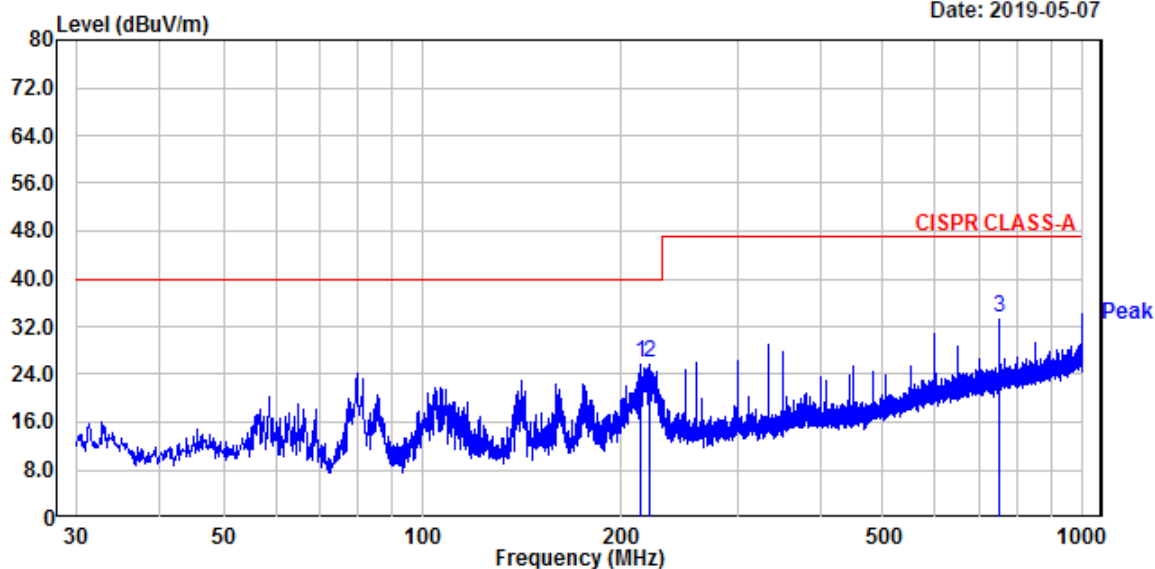
EUT/Model No.: DC-D4513WRX 4.0mm

Temp/Humi: 23 / 33

Test Mode : REC mode

Tested by: CHOI Y H

Date: 2019-05-07



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
214.06	41.04	-15.06	25.98	40.00	14.02	330	103	horizontal
220.36	41.00	-15.12	25.88	40.00	14.12	371	301	horizontal
749.98	35.48	-1.89	33.59	47.00	13.41	345	48	horizontal

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission

(Above 1 GHz) / H

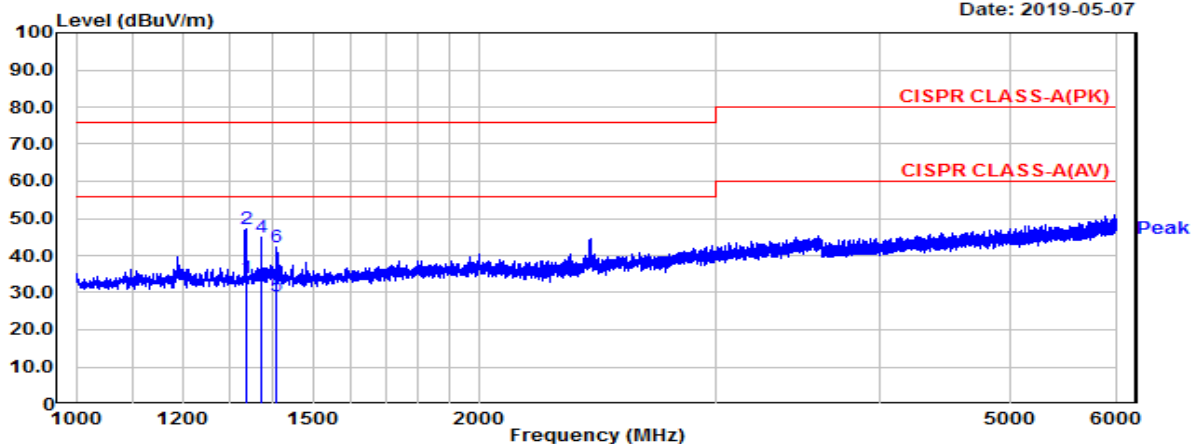
EUT/Model No.: DC-D4513WRX 4.0mm

Temp/Humi: 23 / 33

Test Mode : REC mode

Tested by: CHOI Y H

Date: 2019-05-07



(Above 1 GHz) / V

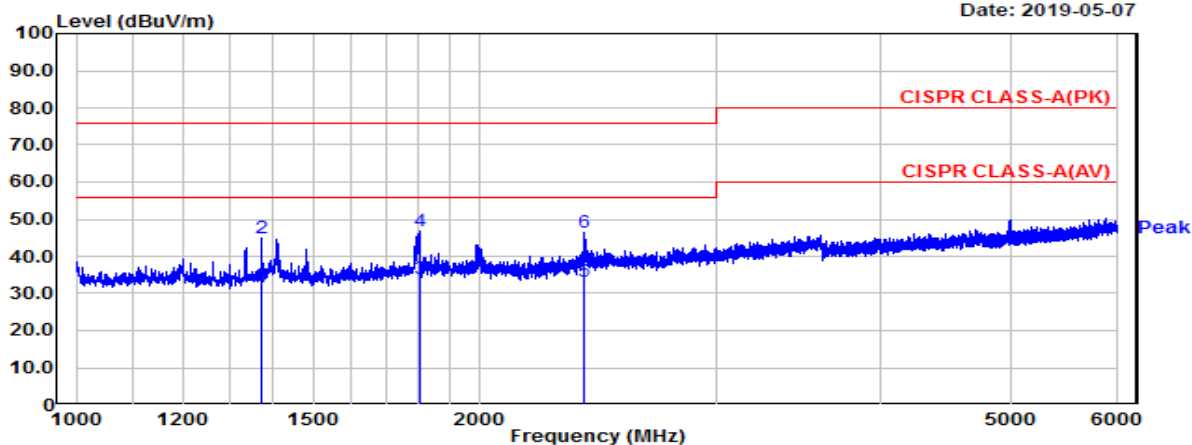
EUT/Model No.: DC-D4513WRX 4.0mm

Temp/Humi: 23 / 33

Test Mode : REC mode

Tested by: CHOI Y H

Date: 2019-05-07



Manufacture : IDIS CO., LTD.

Test Date

Temp.: Humidity Distance

[°C]

: [%]

(m)

Model : DC-D4513WRX 4.0mm

2019-05-07

23

33

3.8

TEST mode : REC mode

Freq.(MHz)	Reading(PK)	Reading(AV)	C.F	Result(PK)	Result(AV)	Limit(PK)	Limit(AV)	Margin(PK)	Margin(AV)	Height	Angle	Polarity
MHz	dBuV	dBuV	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	cm	deg	Hor/Ver
1336.25	54.5	41.4	-5.21	49.24	36.17	76.0	56.0	26.76	19.83	100	199	H
1373.75	51.9	38.7	-4.96	46.97	33.74	76.0	56.0	29.03	22.26	100	186	H
1410.63	49.1	35.8	-4.71	44.42	31.09	76.0	56.0	31.58	24.91	100	201	H
1373.13	51.7	38.6	-4.82	46.85	33.73	76.0	56.0	29.15	22.27	100	173	V
1801.88	50.2	37.3	-1.31	48.89	35.94	76.0	56.0	27.11	20.06	100	303	V
2394.38	46.7	33.6	1.79	48.52	35.34	76.0	56.0	27.48	20.66	100	48	V

3.3 IMMUNITY

3.3.1 Electrostatic Discharge

Definition:

The test assesses the ability of the EUT to operate as intended in the event of an electrostatic discharge.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2019.05.15.
Test method	: EN 61000-4-2 :2009
Temperature / Humidity / Pressure	: 24 °C / 37 % R.H. / 101 kPa
Discharge Impedance	: $(330 \pm 10\%) \Omega / (150 \pm 10\%) \text{ pF}$
Type of Discharge (air discharge)	: $\pm 2\text{ kV}, \pm 4\text{ kV}, \pm 8\text{ kV}$
Type of Discharge (contact discharge)	: $\pm 6\text{ kV}$
Number of discharges at each point	: 10 of each polarity
Discharge Repetition on Rate	: 1 / sec
Test mode	: REC mode
Result	: Complies

Measurement Data:
1-1. Indirect Discharge

No.	Position	Kind of Discharge	Results	Remarks
1	HCP	Contact	Complies	No reaction recognized
2	VCP	Contact	Complies	No reaction recognized

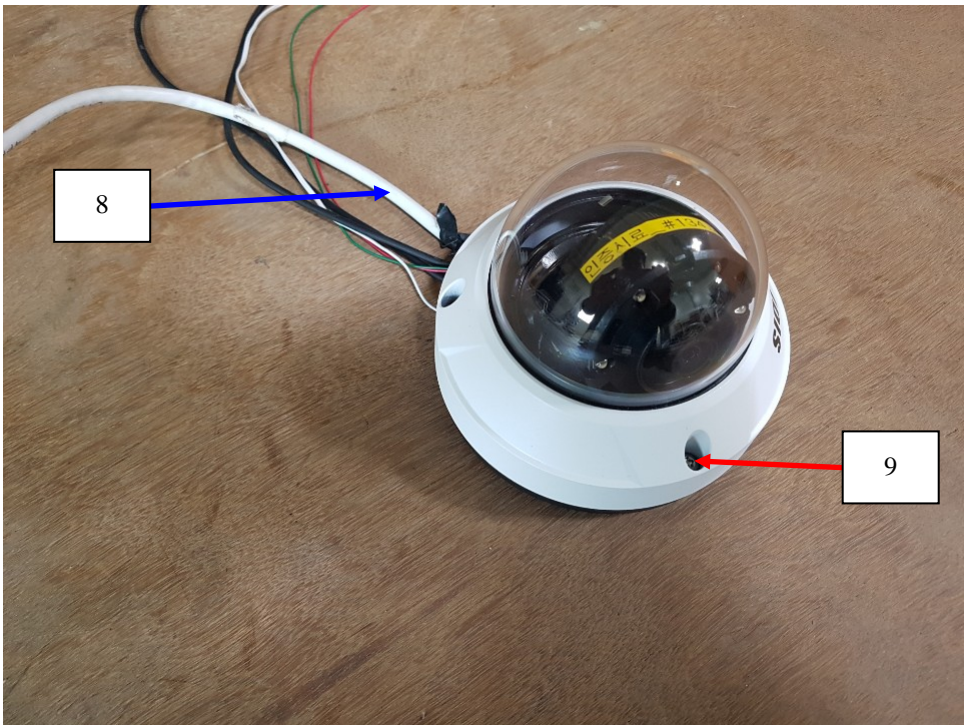
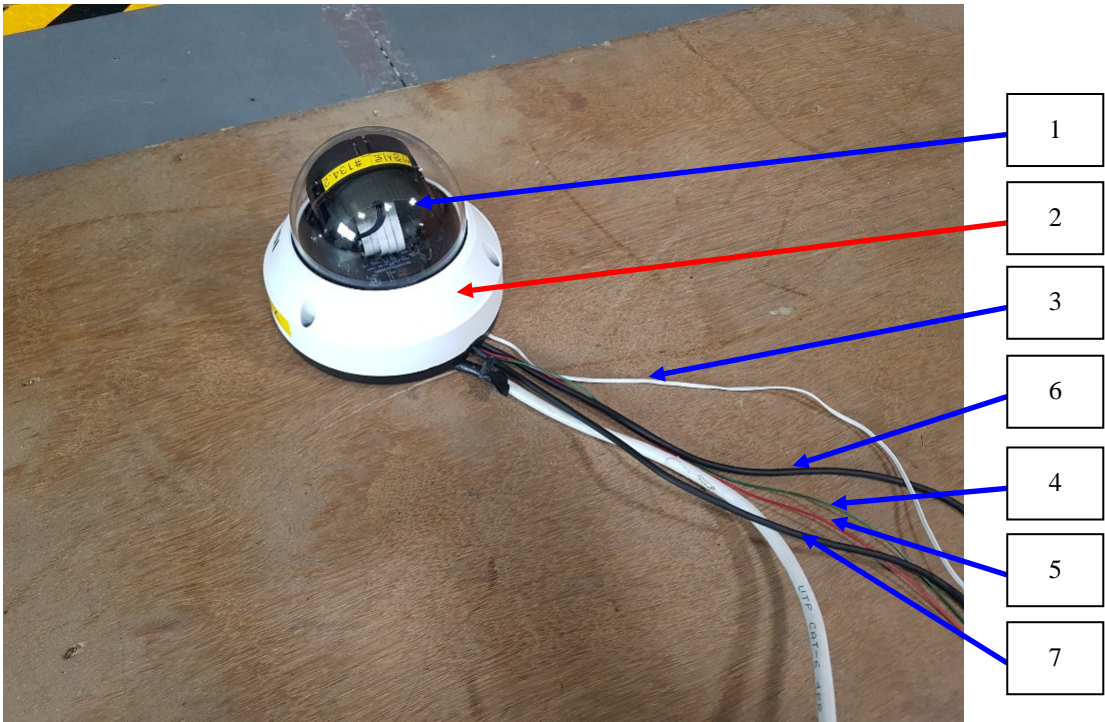
1-2. Direct Discharge

No.	Position	Kind of Discharge	Result	Remarks
1	Enclosure #1	Air	Complies	No reaction recognized
2	Enclosure #2	Contact	Complies	No reaction recognized
3	ALARM IN	Air	Complies	No reaction recognized
4	ALARM OUT	Air	Complies	No reaction recognized
5	GND	Air	Complies	No reaction recognized
6	AUDIO IN	Air	Complies	No reaction recognized
7	AUDIO OUT	Air	Complies	No reaction recognized
8	LAN	Air	Complies	No reaction recognized
9	Screw	Contact	Complies	No reaction recognized

ESD TEST POINT

[Air discharge]

[Contact discharge]



3.3.2 RF Electromagnetic Field

Definition:

The test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic field disturbance.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	:	2019.05.10.
Test method	:	EN 61000-4-3:2006/A1:2008/A2:2010
Temperature / Humidity / Pressure	:	22 °C / 34 % R.H. / 101 kPa
Frequency range	:	80 MHz to 2,700 MHz
Test level	:	10 V/m (measured unmodulated)
Amplitude Modulation	:	AM, 80 %, 1 kHz Sinusoidal PM, 1 Hz (0.5s ON : 0.5s OFF)
Step size	:	1 % of fundamental
Dwell Time	:	3 s
Test mode	:	REC mode
Result	:	Complies

Measurement Data:

Port	Side	Result	Remarks
Horizontal	Front	Complies	No reaction recognized
	Left	Complies	No reaction recognized
	Rear	Complies	No reaction recognized
	Right	Complies	No reaction recognized
Vertical	Front	Complies	No reaction recognized
	Left	Complies	No reaction recognized
	Rear	Complies	No reaction recognized
	Right	Complies	No reaction recognized

3.3.3 Electrical fast transients

Definition:

The test assesses the ability of the EUT to operate as intended in the event of fast transients presence on one of the input/output ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	:	2019.05.15.
Test method	:	EN 61000-4-4:2012
Temperature / Humidity / Pressure	:	23 °C / 36 % R.H. / 101 kPa
Cable length	:	> 3 m
Test level	:	2.0 kV (AC power input port) 1.0 kV (Signal port)
Polarity	:	Negative/ positive
Repetition frequency	:	100 kHz
Test mode	:	REC mode
Result	:	Complies

Measurement Data:

Signal Line	Test level	Result	Remarks
LAN	± 1 kV	Complies	No reaction recognized
ALARM IN, GND #1	± 1 kV	Complies	No reaction recognized
ALARM IN, GND #2	± 1 kV	Complies	No reaction recognized
ALARM OUT, GND #1	± 1 kV	Complies	No reaction recognized
ALARM OUT, GND #2	± 1 kV	Complies	No reaction recognized

3.3.4 Surge

Definition:

The test assesses the ability of the EUT to operate as intended in the event of surge presence on the AC main power input ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date : 2019.05.15.

Test method : EN 61000-4-5:2014/A1:2017

Temperature / Humidity / Pressure : 23 °C / 36 % R.H. / 101 kPa

Test level : **AC mains Supply . /Lines**
 $\pm 0.5 \text{ kV}, \pm 1 \text{ kV}$ (line to line)
 $\pm 0.5 \text{ kV}, \pm 1 \text{ kV}, \pm 2 \text{ kV}$ (line to ground),
Other Supply / Signal Line
 $\pm 0.5 \text{ kV}, \pm 1 \text{ kV}$ (signal line)

Polarity : Negative/ positive

Wave shape : 1.2/ 50 μs pulse

Number of surges : 5 (at each phase)

Test mode : REC mode

Result : **Complies**

Measurement Data:

Signal Line	Test level	Result	Remarks
LAN	$\pm 0.5, 1.0 \text{ kV}$	Complies	No reaction recognized
ALARM IN, GND #1	$\pm 0.5, 1.0 \text{ kV}$	Complies	No reaction recognized
ALARM IN, GND #2	$\pm 0.5, 1.0 \text{ kV}$	Complies	No reaction recognized
ALARM OUT, GND #1	$\pm 0.5, 1.0 \text{ kV}$	Complies	No reaction recognized
ALARM OUT, GND #2	$\pm 0.5, 1.0 \text{ kV}$	Complies	No reaction recognized

3.3.5 Conducted disturbances, induced by radio-frequency fields

Definition:

The test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic disturbance on the input/output ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	:	2019.05.16.
Test method	:	EN 61000-4-6:2014/AC:2015
Temperature / Humidity / Pressure	:	22 °C / 35 % R.H. / 101 kPa
Frequency range	:	0.15MHz – 100 MHz
Test level	:	10 Vrms unmodulated
Amplitude Modulation	:	AM, 80 %, 1 kHz Sinusoidal PM, 1 Hz (0.5s ON : 0.5s OFF)
Step size	:	1 % of fundamental.
Test mode	:	REC mode
Result	:	Complies

Measurement Data:

Signal Port	Result	Remarks
LAN	Complies	No reaction recognized
ALARM IN, GND #1	Complies	No reaction recognized
ALARM IN, GND #2	Complies	No reaction recognized
ALARM OUT, GND #1	Complies	No reaction recognized
ALARM OUT, GND #2	Complies	No reaction recognized

APPENDIX A

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment are identified by the Test Laboratory.

Conducted emissions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2019.07.11	1 year
<input checked="" type="checkbox"/>	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2020.03.16	1 year
<input checked="" type="checkbox"/>	ISN	ISN T800	TESEQ	27109	2019.09.12	1 year
<input type="checkbox"/>	ISN	ENY81-CA6	Rohde & Schwarz	101565	2019.09.12	1 year
<input type="checkbox"/>	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2019.09.06	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	100378	2019.09.07	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	101468	2019.09.07	1 year
<input checked="" type="checkbox"/>	LISN(main)	ENV216	Rohde & Schwarz	100408	2019.10.10	1 year
<input type="checkbox"/>	LISN(sub)	LT32C/10	AFJ	32031518210	2019.09.06	1 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

Radiated Emission – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2019.09.06	1 year
<input checked="" type="checkbox"/>	Amplifier (25 dB)	8447D	HP	2944A07684	2019.09.06	1 year
<input checked="" type="checkbox"/>	BILOG Antenna	VULB9168	SCHWARZBECK	775	2020.03.16 (KOLAS)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Radiated Emission – Above 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2019.09.06	1 year
<input checked="" type="checkbox"/>	Amplifier	8449B	HP	3008A00671	2019.09.06	1 year
<input checked="" type="checkbox"/>	HORN ANTENNA	3115	ETS	114105	2019.11.03 (KOLAS)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Electrostatic Discharge

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	ESD Simulator	ESS-2000	NOISEKEN	8000C03241	2019.09.11	1 year
<input checked="" type="checkbox"/>	ESD GUN	TC-815R	NOISEKEN	ESS0564361	2019.09.11	1 year

RF Electromagnetic Field

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Signal Generator	E4432B	Agilent	MY41310632	2020.03.16	1 year
<input checked="" type="checkbox"/>	Power Meter	E4419B	Agilent	GB38410133	2020.03.16	1 year
<input checked="" type="checkbox"/>	Power Sensor	E9300A	Agilent	MY41497992	2020.03.16	1 year
<input checked="" type="checkbox"/>	Power Sensor	E9300A	Agilent	MY41497618	2020.03.16	1 year
<input checked="" type="checkbox"/>	RF POWER AMPLIFIER	ITA0300KL-300	INFINITECH	0300KL 1507 001	-	-
<input checked="" type="checkbox"/>	RF POWER AMPLIFIER	ITA2000KL-120	INFINITECH	200KL 1507 001	-	-
<input checked="" type="checkbox"/>	RF POWER AMPLIFIER	ITA4500KL-70	INFINITECH	4500KL 1507 001	-	-
<input checked="" type="checkbox"/>	RF POWER AMPLIFIER	ITA0750KL-300	INFINITECH	0750KL 1507 001	-	-
<input checked="" type="checkbox"/>	Log.-Per.Antenna (80 MHz ~ 3 GHz)	K9128	RAPA	NONE	-	-

Electrical fast transients

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Compact Generator	Compact NX	EMTEST	P1725200196	2019.09.06	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	2019.09.06	1 year
<input checked="" type="checkbox"/>	Capacitive Coupling Clamp	CCI	EMTEST	P1744207071	2019.09.06	1 year

Surge

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Compact Generator	Compact NX	EMTEST	P1725200196	2019.09.06	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	2019.09.06	1 year
<input checked="" type="checkbox"/>	CDN	CNV 508T5	EMTEST	P1742204978	2019.09.07	1 year
<input type="checkbox"/>	CDN	CNV 508N1	EMTEST	P1742204940	2019.09.07	1 year

Conducted disturbances, induced by radio-frequency fields

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Signal generator	SML03	R&S	103026/0013	2020.03.16	1 year
<input checked="" type="checkbox"/>	POWER METER	NRVD	R&S	101689	2020.03.16	1 year
<input checked="" type="checkbox"/>	POWER Sensor	URV5-Z2	R&S	100755	2020.03.16	1 year
<input checked="" type="checkbox"/>	POWER Sensor	URV5-Z2	R&S	100756	2020.03.16	1 year
<input checked="" type="checkbox"/>	RF Power Amplifier	FLL75A	FRANKONIA	1033	-	-
<input checked="" type="checkbox"/>	EM INJECTION CLAMP	TSIC-23	F.C.C	529	2020.03.25	1 year
<input type="checkbox"/>	CDN (M1)	TSCDN-M1-16A	F.C.C	07004	2020.03.16	1 year
<input type="checkbox"/>	CDN (M2)	TSCDN-M2-16A	F.C.C	07008	2019.09.06	1 year
<input type="checkbox"/>	CDN (M2)	TSCDN-M2-16A	F.C.C	07009	2020.03.16	1 year
<input type="checkbox"/>	CDN (M3)	TSCDN-M3-16A	F.C.C	07016	2020.03.16	1 year
<input checked="" type="checkbox"/>	CDN (M3)	TSCDN-M3-16A	F.C.C	07017	2019.09.06	1 year

APPENDIX B

PERFORMANCE CRITERIA

Performance criteria

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of the bursts is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test

(see Clause 6), after the conditioning.

Slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of the surges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test

(see Clause 6), after the conditioning.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at $U_0 = 130 \text{ dB}\mu\text{V}$.

For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at $U_0 = 140 \text{ dB}\mu\text{V}$, providing

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable settings, etc.)

(b) at $U_0 = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used, and

(c) there is no observable deterioration of the picture at $U_0 = 120 \text{ dB}\mu\text{V}$.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Voltage dip/interruption

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

It is permitted to use ancillary equipment (e.g. A UPS) to meet the requirements of this clause. This shall be detailed in the test report and the manufacturer's installation manual.

Signaling a mains fault during the 100 % voltage reduction test is permitted.

Mains supply voltage variations

There shall be no damage, malfunction or change of status due to the different supply voltage conditions. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), during the conditioning.

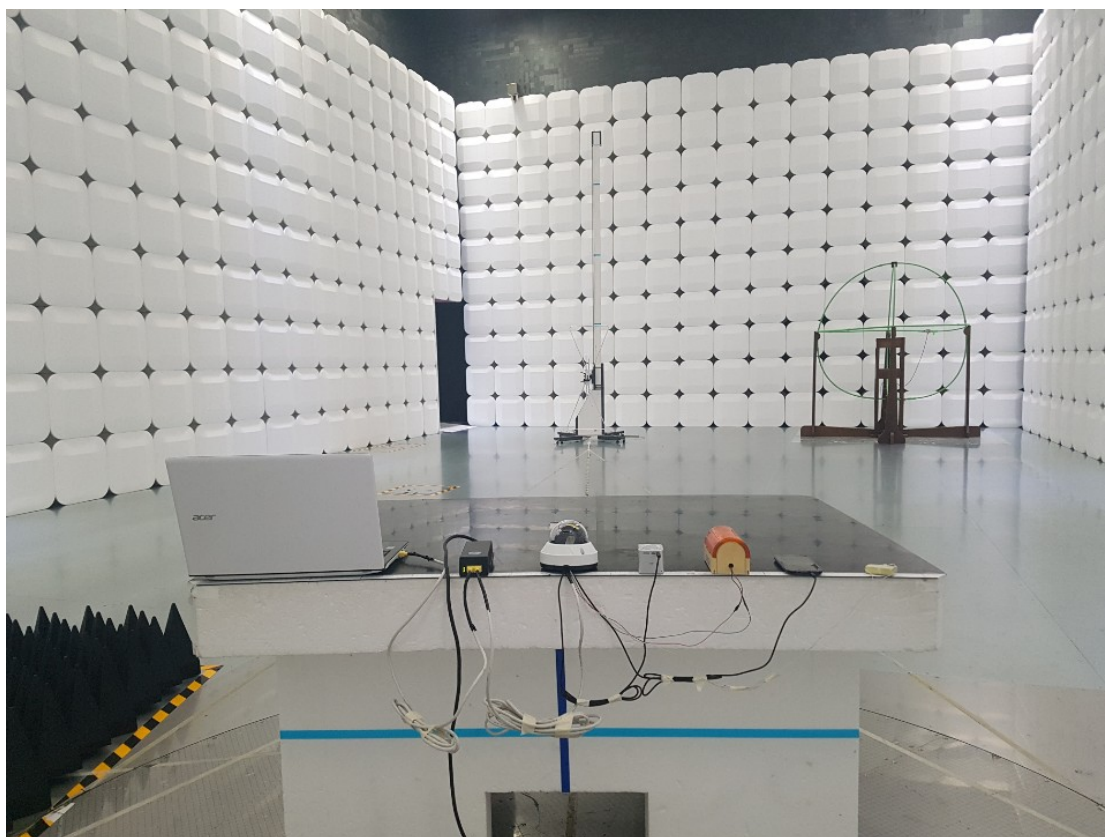
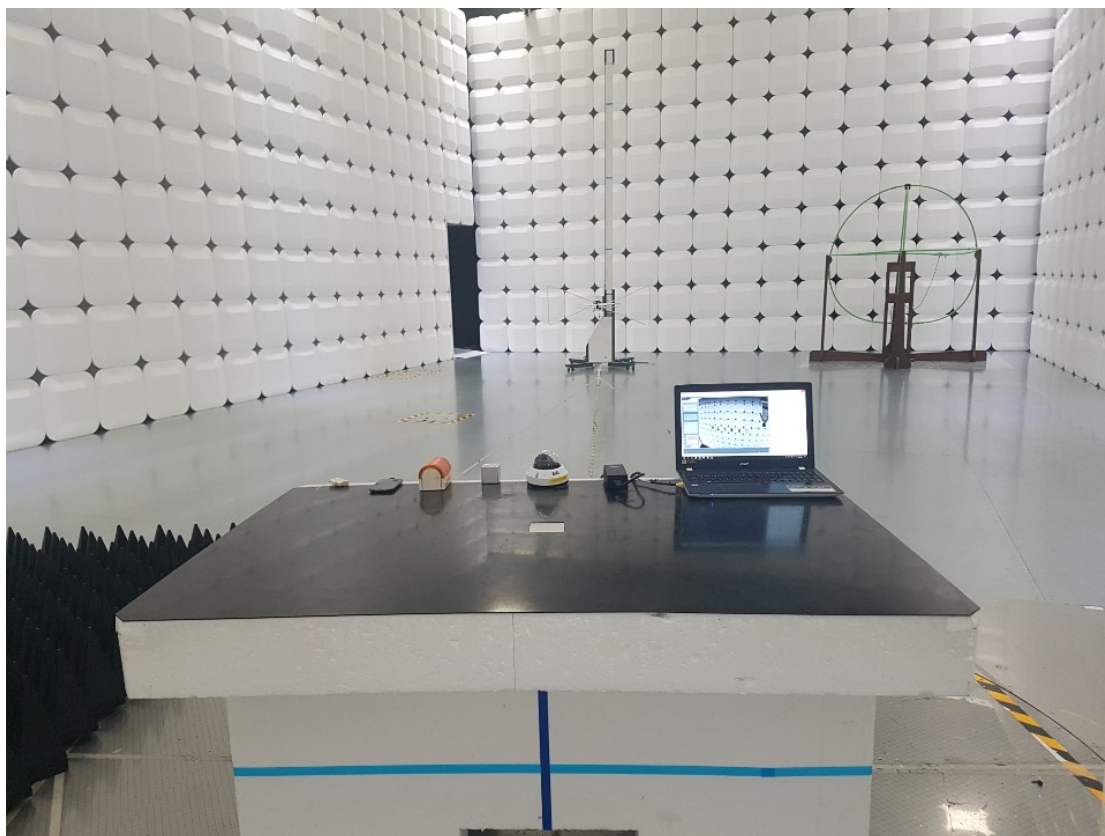
APPENDIX C

PHOTOGRAPHS

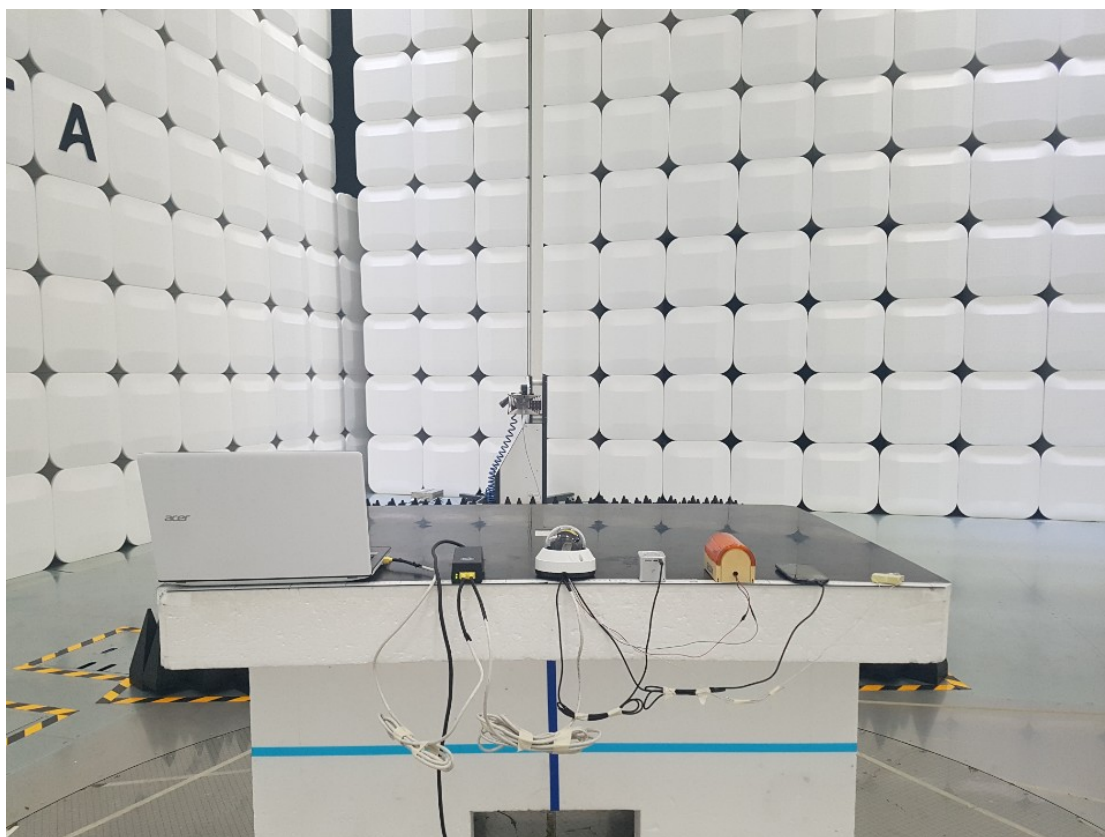
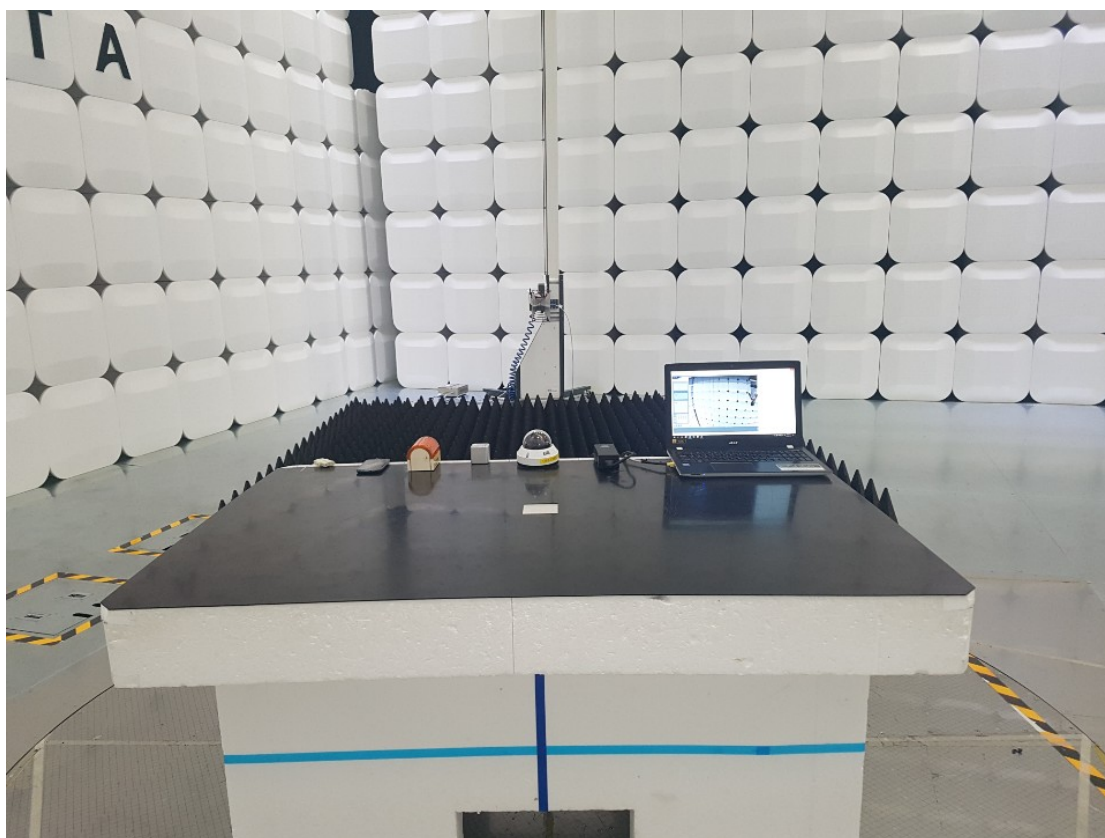
Conducted emission (Maximum emission configuration) / TEL



Radiated emission (Maximum emission configuration)-Below 1 GHz



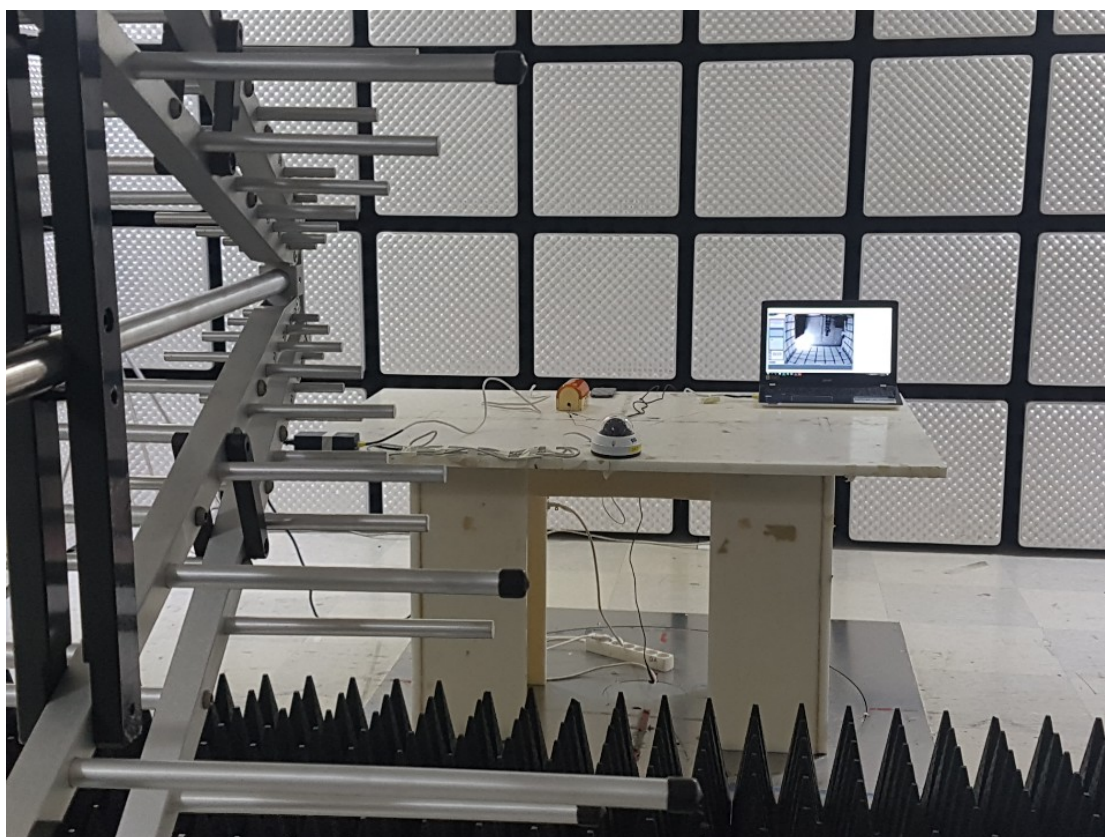
Radiated emission (Maximum emission configuration) – Above 1GHz



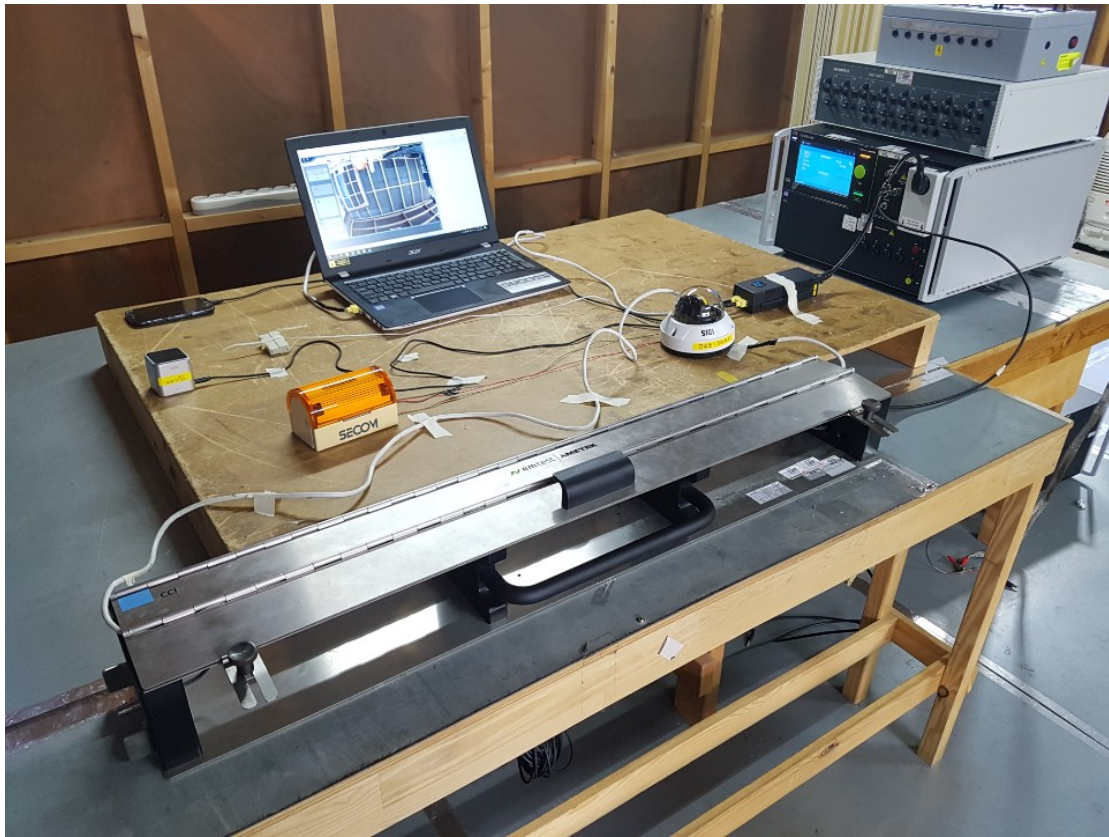
Electrostatic discharge



RF Electromagnetic Field



Electrical fast transients



Surge



Conducted Disturbances, Induced by Radio-Frequency Fields



EUT



EUT

