



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: December 06 – 09, 2019

Test Report S/N: LR500121912T

Test Site : LTA Co., Ltd.

Model No.

**DC-Y3C14WRX**

APPLICANT

**IDIS CO., LTD.**

**Equipment name** : Network Camera  
**Manufacturer** : IDIS CO., LTD.  
**Model name** : DC-Y3C14WRX  
**Additional Model Name** : NC-Y3C14WRX, NC-FE690-XWI  
**Test Device Serial No.:** Identification  
**Directive** : Electromagnetic Compatibility Directive 2014/30/EU  
**Rule Part(s)** : EN 55032:2015  
 EN 50130-4:2011/A1:2014  
 EN 61000-3-2:2014  
 EN 61000-3-3:2013  
**Date of issue** : December 10, 2019

This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, Technical Manager

Jae Gyu Kang, 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	10.12.2019	LR500121912T	Initial

---

## TABLE OF CONTENTS

1. General information's .....	4
2. Information's about test item .....	5
3. Test Report .....	8
3.1 Summary of tests .....	8
3.2 EMISSION .....	9
3.2.1 Conducted emissions .....	9
3.2.2 Radiated Emission .....	15
3.2.3 Harmonic Current (AC power input port) .....	23
3.2.4 Voltage Variation and Flicking (AC power input port).....	25
3.3 IMMUNITY .....	28
3.3.1 Electrostatic Discharge .....	28
3.3.2 RF Electromagnetic Field .....	32
3.3.3 Electrical fast transients .....	34
3.3.4 Surge .....	35
3.3.5 Conducted disturbances, induced by radio-frequency fields .....	37
3.3.6 Mains supply voltage dips, short interruptions.....	38
3.3.7 Mains supply voltage variations .....	39
APPENDIX A TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS.....	40
APPENDIX B PERFORMANCE CRITERIA .....	44
APPENDIX C PHOTOGRAPHS .....	47

## 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](mailto: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	2020-09-30	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	2021-06-16	IC filing
KOLAS	KOREA	NO.KT551	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-Y3C14WRX  
Additional Model Name : NC-Y3C14WRX, NC-FE690-XWI  
The Additional Models are DC-Y3C14WRX marketing purpose.  
Serial number : Identification  
Date of receipt : November 25, 2019  
EUT condition : Pre-production, not damaged  
Interface Ports : DC IN, LAN, AUDIO IN/OUT, ALARM IN.OUT, GRUND, Micro SD Slot  
Power rating : DC 12 V  
Modulator : -  
Crystal/Oscillator(s) : -  
Firmware version : xxxx

### 2-3 Modification

-NONE

### 2-4 Model Specification

-NONE

### 2-5 Test conditions

Temp. / Humid. / Pressure : (21 - 22) °C / (30 - 40) % R.H. / (101.2 – 101.3) kPa  
Tested Model : DC-Y3C14WRX  
Test mode : REC + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)  
Tested Voltage : AC 230 V, 50 Hz

**2-5 EUT**

Equipment	Model No.	Serial No.	Manufacturer
Network Camera	DC-Y3C14WRX	N/A	IDIS CO., LTD.

**2-6 Accessory / REC + 1 kHz Play mode (DC)**

Equipment	Model No.	Serial No.	Manufacturer
DC Adapter	PA-1061-71	N/A	LITE ON
Alarm zig	N/A	N/A	N/A
Audio zig	N/A	N/A	N/A
Speaker	N/A	N/A	BonoBoss
Smart Phone	LG-H791	N/A	LG
Micro SD Card (4 GB)	KDJD8K9	0104GB4010020	N/A
Notebook	Ideapad330	N/A	Lenovo

**/ REC + 1 kHz Play mode (POE)**

Equipment	Model No.	Serial No.	Manufacturer
POE Adapter	GT96300-3656-T3-APOE	N/A	GlobTek, Inc
Alarm zig	N/A	N/A	N/A
Audio zig	N/A	N/A	N/A
Speaker	N/A	N/A	BonoBoss
Smart Phone	LG-H791	N/A	LG
Micro SD Card (4 GB)	KDJD8K9	0104GB4010020	N/A
Notebook	Ideapad330	N/A	Lenovo

**2-7 Cable List / REC + 1 kHz Play mode (DC)**

From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	DC IN	DC Adapter	DC OUT	0.8	NO	Plastic
	LAN	Notebook	LAN	31	NO	Plastic
	Micro SD Slot	Micro SD Card	-	-	-	-
	AUDIO IN/OUT	Audio zig	DC BLOCK	0.5	NO	Plastic
	ALARM IN/OUT	Alarm zig	DC BLOCK	0.4	NO	Plastic
	GROUND	GROUND	-	0.8	NO	Plastic
DC Adapter	AC IN	AC Power Source	3 Pin AC Line	0.8	NO	Plastic
Audio zig	AUDIO OUT	Speaker	AUDIO IN	0.7	NO	Plastic
	AUDIO IN	Smart Phone	AUDIO OUT	0.8	NO	Plastic
Alarm zig	DC IN	Notebook	USB Type A	0.5	NO	Plastic
Speaker	AC IN	AC Power Source	2 Pin AC Line	0.8	NO	Plastic

**/ REC + 1 kHz Play mode (POE)**

From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	LAN	POE Adapter	DATA OUT/POWER	31	NO	Plastic
	Micro SD Slot	Micro SD Card	-	-	-	-
	AUDIO IN/OUT	Audio zig	DC BLOCK	0.5	NO	Plastic
	ALARM IN/OUT	Alarm zig	DC BLOCK	0.4	NO	Plastic
	GROUND	GROUND	-	0.8	NO	Plastic
DC Adapter	AC IN	AC Power Source	3 Pin AC Line	0.8	NO	Plastic
Audio zig	AUDIO OUT	Speaker	AUDIO IN	0.7	NO	Plastic
	AUDIO IN	Smart Phone	AUDIO OUT	0.8	NO	Plastic
Alarm zig	DC IN	Notebook	USB Type A	0.5	NO	Plastic
Speaker	AC IN	AC Power Source	2 Pin AC Line	0.8	NO	Plastic

### 3. Test Report

#### 3.1 Summary of tests

Parameter	Applied Standard	Status
<b>I. Emission</b>		
Conducted Emission	EN 55032:2015	C
Radiated Emission	EN 55032:2015	C
Harmonic Current Emission	EN 61000-3-2:2014	NA <sup>Note 3</sup>
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	C
<b>II. Immunity</b>		
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
Conducted disturbances, induced by radio-frequency fields	EN 61000-4-6:2014/AC:2015	C
Voltage dips and Interruptions	EN 61000-4-11:2004/A1:2017	C
Main supply voltage variations	EN 50130-4:2011/A1:2014	C

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 EN61000-3-2 (Harmonic current emissions) for the DC-Y3C14WRX because equipment whose rated power is less or equal 75W 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.

Test method	: EN 55032:2015
Measurement Frequency range	: 150 kHz - 30 MHz
Measurement RBW	: 9 kHz
Test mode	: REC + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

#### Measurement Data:

- Refer to the Next page (Maximum emission configuration)

#### A sample calculation:

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

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) dB $\mu$ V	(84 – 74) dB $\mu$ V	(53 – 43) dB $\mu$ A	(40 – 30) dB $\mu$ A
(0.5 – 30) MHz	87 dB $\mu$ V	74 dB $\mu$ V	43 dB $\mu$ A	30 dB $\mu$ A

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 150 $\Omega$  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) dB $\mu$ V	(74 – 64) dB $\mu$ V	(40 – 30) dB $\mu$ A	(30 – 20) dB $\mu$ A
(0.5 – 30) MHz	74 dB $\mu$ V	64 dB $\mu$ V	30 dB $\mu$ A	20 dB $\mu$ A

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

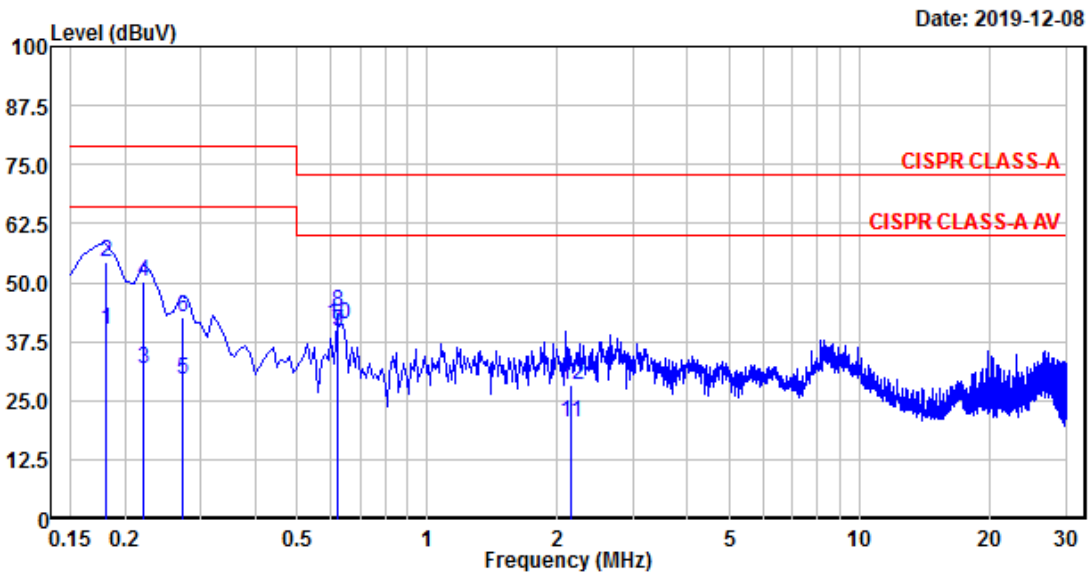
Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 $\Omega$  to the telecommunication port under test (conversion factor is  $20 \log_{10} 150/I = 44$  dB)

Conducted emissions (LINE) / REC + 1 kHz Play mode (DC)



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-Y3C14WRX	Phase : Line
Test Mode : REC + 1 kHz Play mode (DC)	Test Power : 230 V / 50 Hz
Temp./ Humi. : 22 'C / 31 % R.H.	Test Engineer : KANG J G



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	0.181	34.73	20.70	19.43	54.16	40.13	79.00	66.00	24.84	25.87	Line
4.	0.221	30.59	12.40	19.44	50.03	31.84	79.00	66.00	28.97	34.16	Line
6.	0.272	23.12	9.97	19.45	42.57	29.42	79.00	66.00	36.43	36.58	Line
8.	0.622	24.43	20.23	19.47	43.90	39.70	73.00	60.00	29.10	20.30	Line
10.	0.622	21.62	20.27	19.47	41.09	39.74	73.00	60.00	31.91	20.26	Line
12.	2.146	8.94	0.81	19.53	28.47	20.34	73.00	60.00	44.53	39.66	Line

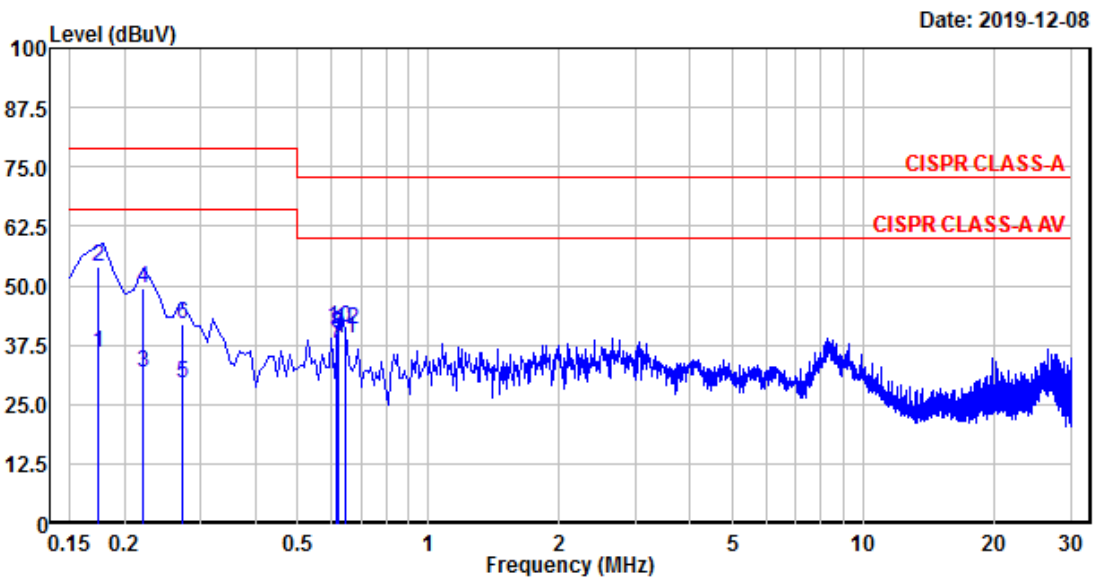
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted emissions (NEUTRAL) / REC + 1 kHz Play mode (DC)



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-Y3C14WRX	Phase : Neutral
Test Mode : REC + 1 kHz Play mode (DC)	Test Power : 230 V / 50 Hz
Temp./ Humi. : 22 'C / 31 % R.H.	Test Engineer : KANG J G



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	0.175	34.52	16.19	19.49	54.01	35.68	79.00	66.00	24.99	30.32	neutral
4.	0.222	30.10	12.12	19.49	49.59	31.61	79.00	66.00	29.41	34.39	neutral
6.	0.272	22.31	9.91	19.50	41.81	29.41	79.00	66.00	37.19	36.59	neutral
8.	0.618	20.31	18.18	19.51	39.82	37.69	73.00	60.00	33.18	22.31	neutral
10.	0.619	21.54	20.04	19.51	41.05	39.55	73.00	60.00	31.95	20.45	neutral
12.	0.643	21.28	19.49	19.51	40.79	39.00	73.00	60.00	32.21	21.00	neutral

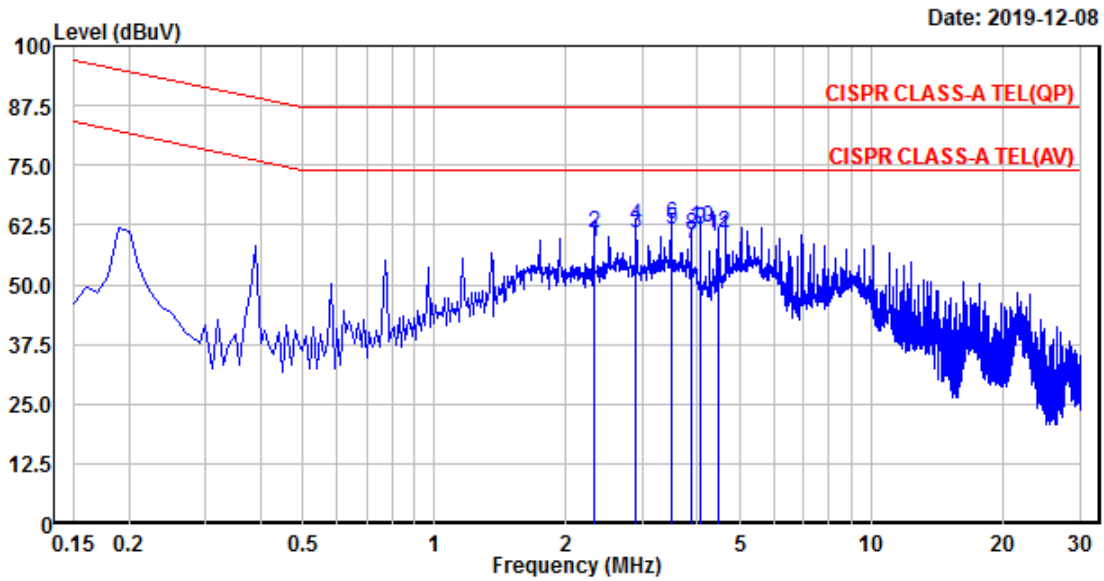
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted emissions (TEL\_1000 M) / REC + 1 kHz Play mode (DC)



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-Y3C14WRX	Phase : TEL 1000M
Test Mode : REC + 1 kHz Play mode (DC)	Test Power : 230 V / 50 Hz
Temp./ Humi. : 22 'C / 31 % R.H.	Test Engineer : KANG J G



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	2.321	41.50	39.60	19.32	60.82	58.92	87.00	74.00	26.18	15.08	Line
4.	2.900	42.98	41.31	19.31	62.29	60.62	87.00	74.00	24.71	13.38	Line
6.	3.480	43.29	42.18	19.31	62.60	61.49	87.00	74.00	24.40	12.51	Line
8.	3.867	41.06	39.16	19.31	60.37	58.47	87.00	74.00	26.63	15.53	Line
10.	4.061	42.73	42.09	19.32	62.05	61.41	87.00	74.00	24.95	12.59	Line
12.	4.448	41.59	40.80	19.32	60.91	60.12	87.00	74.00	26.09	13.88	Line

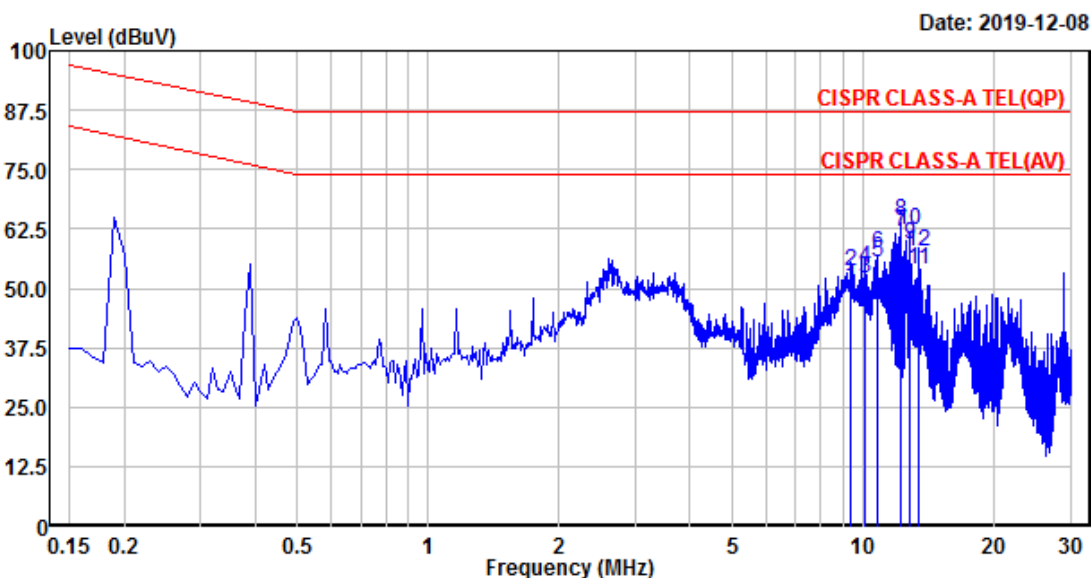
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted emissions (TEL\_1000 M) / REC + 1 kHz Play mode (POE)



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-Y3C14WRX	Phase : TEL 1000M
Test Mode : REC + 1 kHz Play mode (POE)	Test Power : 230 V / 50 Hz
Temp./ Humi. : 22 'C / 33 % R.H.	Test Engineer : KANG J G



Date: 2019-12-08

No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	9.388	34.20	30.79	19.38	53.58	50.17	87.00	74.00	33.42	23.83	Line
4.	10.060	35.00	32.87	19.38	54.38	52.25	87.00	74.00	32.62	21.75	Line
6.	10.793	37.78	35.95	19.40	57.18	55.35	87.00	74.00	29.82	18.65	Line
8.	12.198	44.68	42.42	19.42	64.10	61.84	87.00	74.00	22.90	12.16	Line
10.	12.747	42.81	39.82	19.43	62.24	59.25	87.00	74.00	24.76	14.75	Line
12.	13.359	38.45	34.66	19.44	57.89	54.10	87.00	74.00	29.11	19.90	Line

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 55032:2015
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 + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

**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 only 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 $\mu$ V/m)	Peak limit @ 3m (dB $\mu$ 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 $\mu$ V/m)	Peak limit @ 3m (dB $\mu$ 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.	

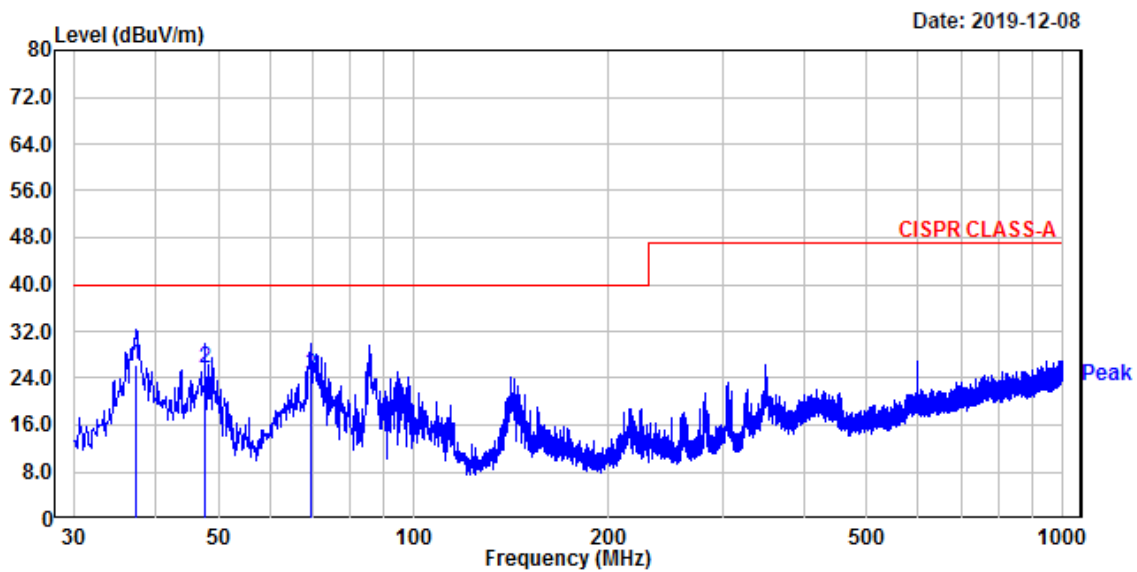


**Radiated Emission (Below 1 GHz) / V \_ REC + 1 kHz Play mode (DC)**



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-Y3C14WRX	Temp/Humi:	21 'C / 40 % R.H.
Test Mode	: REC + 1 kHz Play mode(DC)	Tested by:	KANG J G
Power	: 230 V / 50 Hz		



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	37.40	40.70	-14.34	26.36	40.00	13.64	101	45	vertical
2.	47.82	38.90	-13.30	25.60	40.00	14.40	123	50	vertical
3.	69.65	39.70	-15.29	24.41	40.00	15.59	100	20	vertical

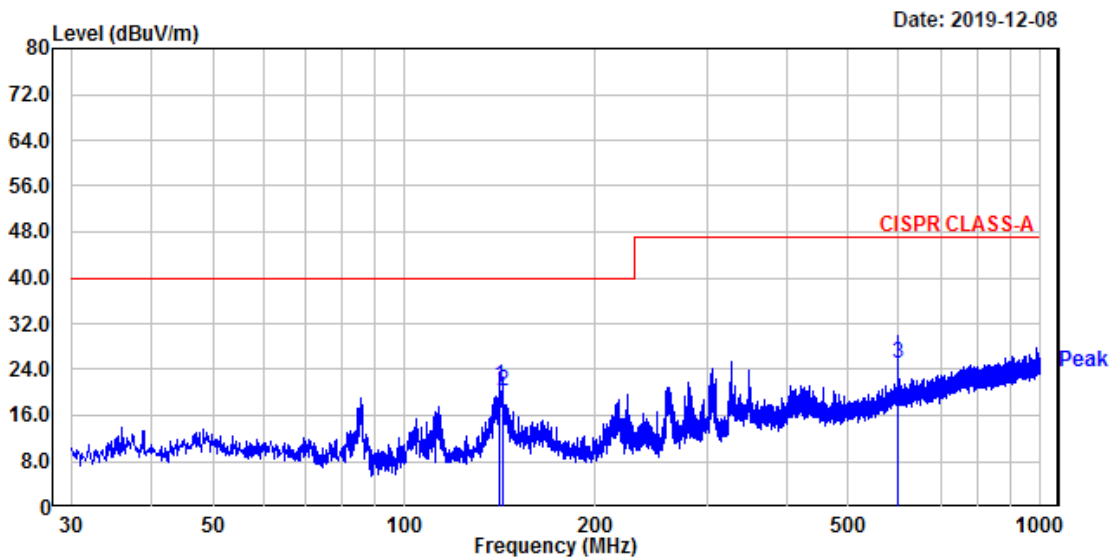
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Below 1 GHz) / H \_ REC + 1 kHz Play mode (DC)



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-Y3C14WRX                      Temp/Humi: 21 'C / 40 % R.H.  
-----  
Test Mode     : REC + 1 kHz Play mode(DC)        Tested by: KANG J G  
-----  
Power           : 230 V / 50 Hz  
-----



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	141.19	34.20	-12.96	21.24	40.00	18.76	380	206	horizontal
2.	143.25	33.10	-12.84	20.26	40.00	19.74	364	247	horizontal
3.	599.88	29.80	-4.78	25.02	47.00	21.98	102	71	horizontal

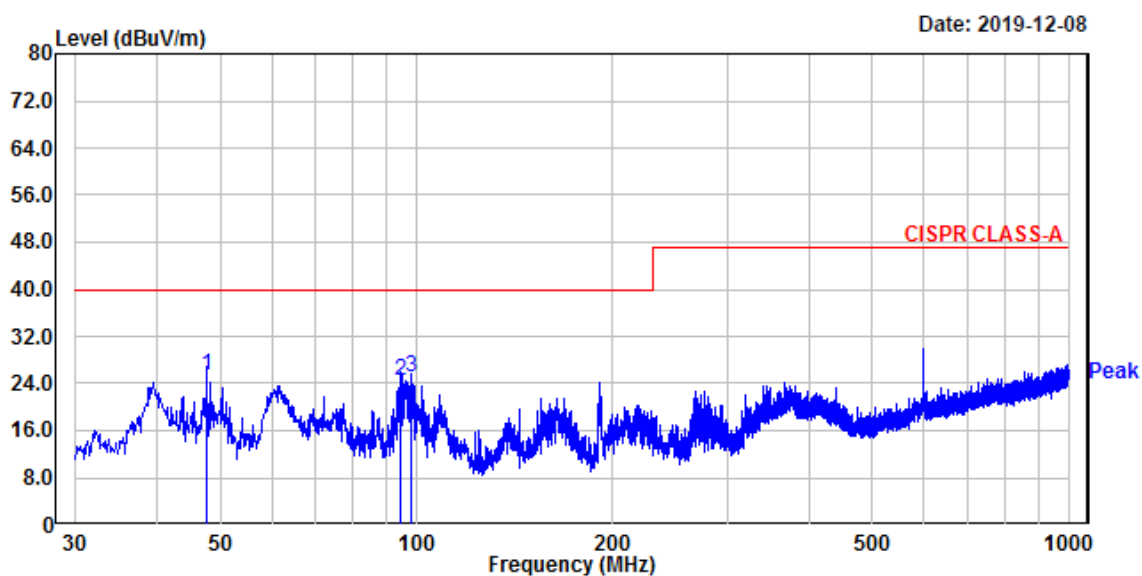
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

## Radiated Emission (Below 1 GHz) / V \_ REC + 1 kHz Play mode (POE)



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-Y3C14WRX  
Temp/Humi: 21 'C / 40 % R.H.  
Test Mode : REC + 1 kHz Play mode(POE) Tested by: KANG J G  
Power : 230 V / 50 Hz



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	47.70	38.70	-13.31	25.39	40.00	14.61	105	316	vertical
2.	94.38	42.80	-18.42	24.38	40.00	15.62	108	115	vertical
3.	98.39	42.80	-17.77	25.03	40.00	14.97	110	93	vertical

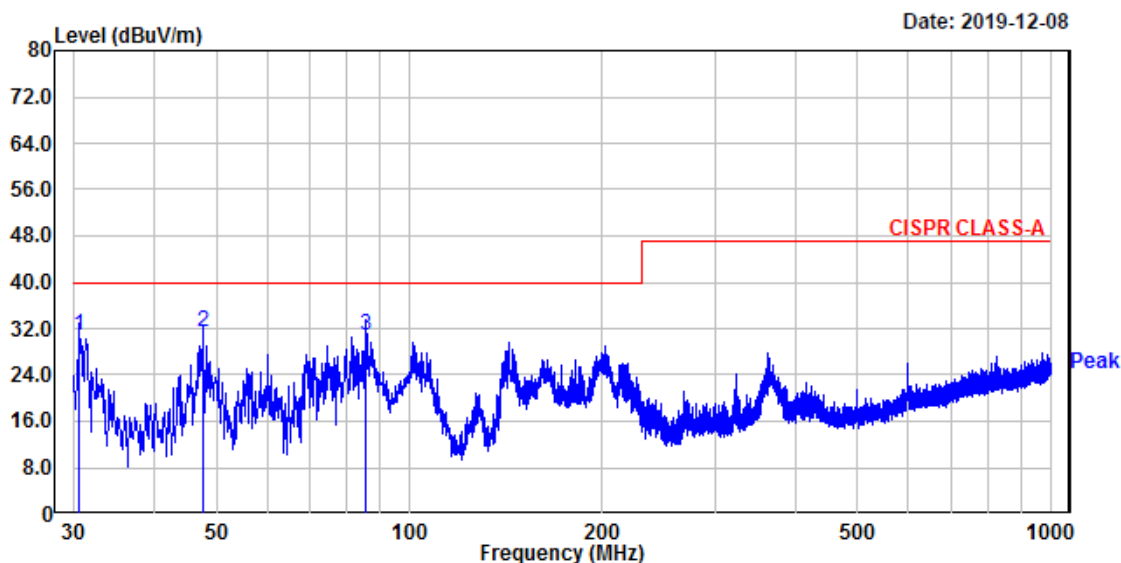
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Below 1 GHz) / H\_REC + 1 kHz Play mode (POE)



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-Y3C14WRX                      Temp/Humi: 21 'C / 40 % R.H.  
-----  
Test Mode       : REC + 1 kHz Play mode(POE)      Tested by: KANG J G  
-----  
Power            : 230 V / 50 Hz  
-----



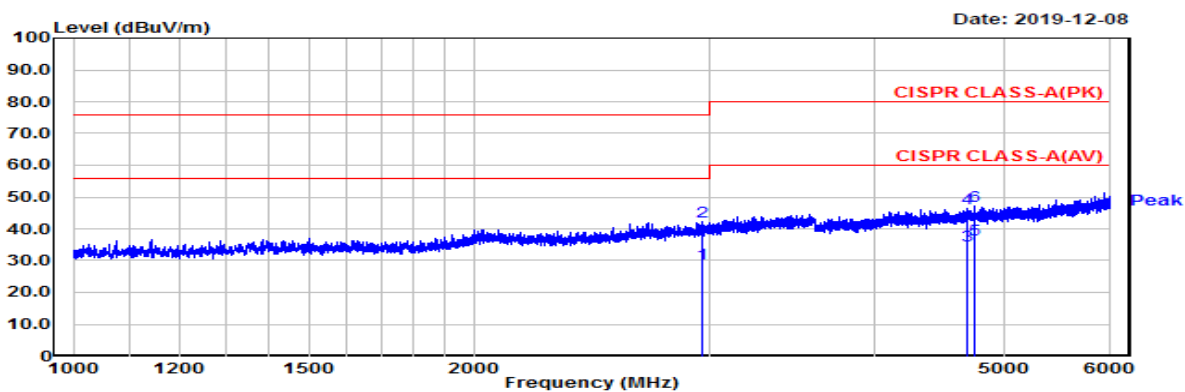
No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	30.61	45.80	-15.02	30.78	40.00	9.22	380	350	horizontal
2.	47.82	44.80	-13.30	31.50	40.00	8.50	388	313	horizontal
3.	85.41	49.51	-18.61	30.90	40.00	9.10	255	11	horizontal

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

### Radiated Emission (Above 1 GHz) / REC + 1 kHz Play mode (POE)

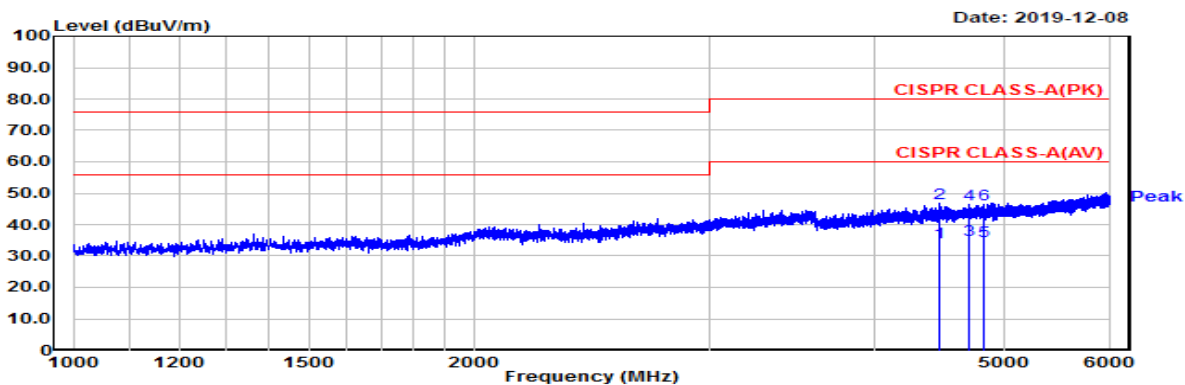
#### (Above 1 GHz) / V

EUT/Model No.: DC-Y3C14WRX  
 Temp/Humi: 21 °C / 40 % R.H.  
 Test Mode : REC + 1 kHz Play mode(DC) Tested by: KANG J G  
 Power : 230 V / 50 Hz



#### (Above 1 GHz) / H

EUT/Model No.: DC-Y3C14WRX  
 Temp/Humi: 21 °C / 40 % R.H.  
 Test Mode : REC + 1 kHz Play mode(DC) Tested by: KANG J G  
 Power : 230 V / 50 Hz



Manufacture : IDIS CO., LTD.

Test Date

Temp.: 21.00  
 Humidity : 40.00  
 Distance (m) 3.8

Model : DC-Y3C14WRX

2019-12-08

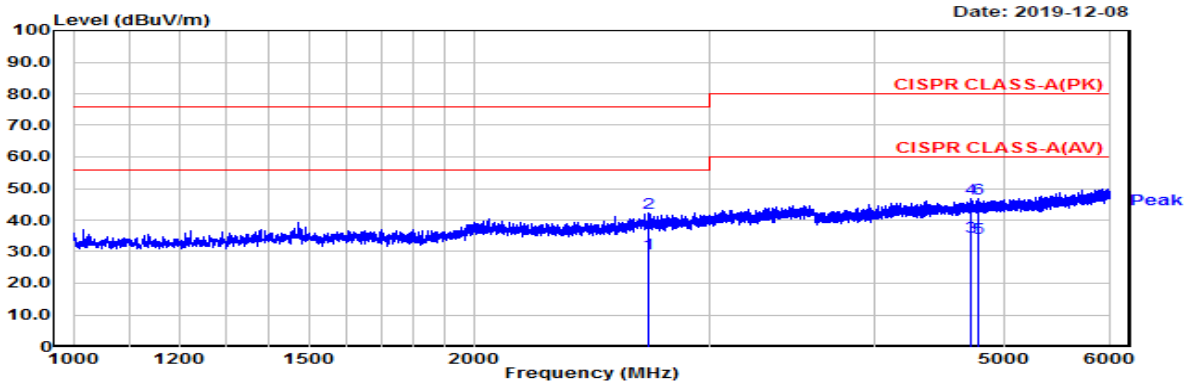
TEST mode : REC + 1 kHz Play mode(DC)

Frequency MHz	Reading(PK) dBuV	Reading(AV) dBuV	C.F dB	Result(PK) dBuV/m	Result(AV) dBuV/m	Limit(PK) dBuV/m	Limit(AV) dBuV/m	Margin(PK) dB	Margin(AV) dB	Height cm	Angle deg	Polarity H/V
4468.13	25.15	25.15	11.32	36.47	36.47	80.00	60.00	43.53	23.53	100	223	H
4709.38	24.84	24.84	12.45	37.29	37.29	80.00	60.00	42.71	22.71	100	291	H
4824.38	23.85	23.85	12.97	36.82	36.82	80.00	60.00	43.18	23.18	100	346	H
2968.75	39.99	26.75	4.46	44.45	31.21	76.00	56.00	31.55	24.79	100	6	V
4691.25	36.00	24.46	12.34	48.34	36.80	80.00	60.00	31.66	23.20	100	358	V
4753.75	36.48	25.85	12.72	49.20	38.57	80.00	60.00	30.80	21.43	100	350	V

**Radiated Emission (Above 1 GHz) / REC + 1 kHz Play mode (POE)**

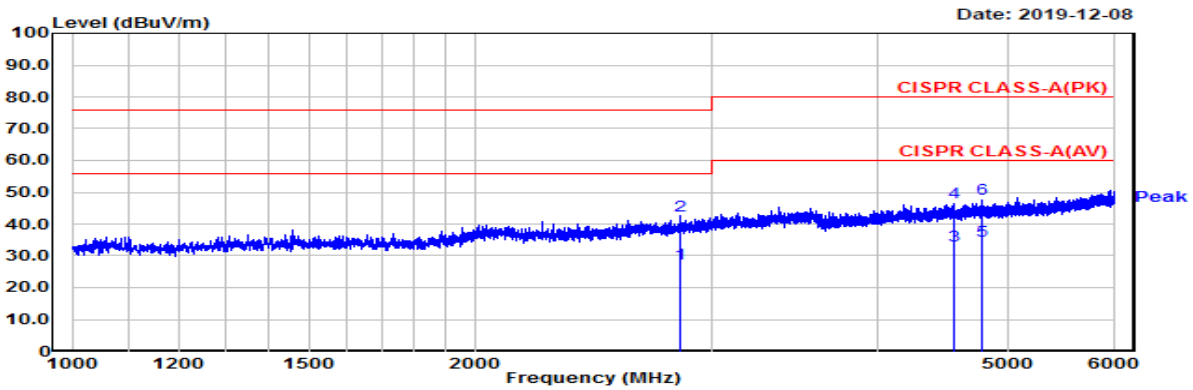
**(Above 1 GHz) / V**

EUT/Model No.: DC-Y3C14WRX Temp/Humi: 21 °C / 40 % R.H.  
 Test Mode : REC + 1 kHz Play mode(POE) Tested by: KANG J G  
 Power : 230 V / 50 Hz



**(Above 1 GHz) / H**

EUT/Model No.: DC-Y3C14WRX Temp/Humi: 21 °C / 40 % R.H.  
 Test Mode : REC + 1 kHz Play mode(POE) Tested by: KANG J G  
 Power : 230 V / 50 Hz



Manufacture : IDIS CO., LTD. Test Date 2019-12-08 Temp.: 21.00 °C Humidity : 40.00 % Distance (m) 3.8  
 Model : DC-Y3C14WRX  
 TEST mode : REC + 1 kHz Play mode(POE)

Frequency MHz	Reading(PK) dBuV	Reading(AV) dBuV	C.F dB	Result(PK) dBuV/m	Result(AV) dBuV/m	Limit(PK) dBuV/m	Limit(AV) dBuV/m	Margin(PK) dB	Margin(AV) dB	Height cm	Angle deg	Polarity H/V
2847.50	25.54	25.54	4.01	29.55	29.55	76.00	56.00	46.45	26.45	100	123	H
4558.13	23.45	23.45	11.67	35.12	35.12	80.00	60.00	44.88	24.88	100	191	H
4777.50	23.95	23.95	12.82	36.77	36.77	80.00	60.00	43.23	23.23	100	288	H
2700.00	40.57	27.75	3.92	44.49	31.67	76.00	56.00	31.51	24.33	100	344	V
4723.75	36.41	24.36	12.52	48.93	36.88	80.00	60.00	31.07	23.12	100	324	V
4778.13	35.95	23.44	12.83	48.78	36.27	80.00	60.00	31.22	23.73	100	254	V

### 3.2.3 Harmonic Current (AC power input port)

**Definition:**

This part deals with the Limitation of harmonic currents injected into the public supply system.



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

Test method	: EN 61000-3-2:2014
Test mode	: REC + 1 kHz Play mode (DC)
Rated power	: 5.489 W
Result	: <b>Not Applicable</b>

**Measurement Data:**

- We did not test EN61000-3-2 (Harmonic current emissions) for the DC-Y3C14WRX because equipment whose rated power is less or equal 75W don't need to be tested.

## Harmonic Current / REC + 1 kHz Play mode (DC)

08th December 2019 - 16:14:25		Page 1/1	IECSoft v2_6
		<b>IEC61000-3-2:2014 Fluctuating Harmonics</b>	
			
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.179		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Class A		
Mode	Measured		
Equipment Under Test			
Brand	IDIS CO., LTD.		
Model	DC-Y3C14WRX		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	230.586V	
Rated Current	N/A	87.862mA	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	5.489W	
Additional Test Information			
Measured Power Factor	0.2709		
Max Current THD	0.00%		
Average THC	84.828mA		
Max Power	5.568W		
Max F.Current	32.554mA		
Average F.Current	31.699mA		
Minimum Current	100A		
Test Duration	2.5 minutes		
Additional Test Details			
Operator	KANG J G		
Lab Name	N/A		
Location	N/A		
Notes			
Signature			
<b>Results</b>	<b>Test - N/A. Rated Power &lt; 75W</b>		

Test not applicable

With the exception of lighting equipment section 7 of the IEC61000-3-2:2014 standard declares that no Harmonic current limits are specified for equipment with a rated power of 75W or less.



### 3.2.4 Voltage Variation and Flicking (AC power input port)

**Definition:**

This section is concerned with the limitation of voltage fluctuations and flicker impressed on the public low-voltage system.



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

Test method	:	EN 61000-3-3:2013
Test mode	:	REC + 1 kHz Play mode (DC)
Result	:	<b>Complies</b>

**Measurement Data:**

- Refer to the Next page (Maximum emission configuration)

## Voltage Variation and Flicking / REC + 1 kHz Play mode (DC)

08th December 2019 - 17:22:19		Page 1/2		IECSoft v2.6	
		<b>IEC61000-3-3:2013 Ed.3.0</b>			
		<b>Flickermeter</b>			
<b>Instrument Details</b>					
Instrument Model	PPA5511				
Serial Number	162-04957				
Firmware Version	2.179				
N4L Calibration Date	18th September 2017				
Instrument Version	Standard				
<b>Test Settings</b>					
Class	Voltage				
Mode	Normal (4.0%)				
Minimum Current	10A				
PST	10 minutes				
PLT	12 PSTs				
<b>Equipment Under Test</b>					
Brand	IDIS CO., LTD.				
Model	DC-Y3C14WRX				
Serial	N/A				
Impedance Network ID	N/A				
<b>Test Conditions</b>					
	<b>User Entered</b>		<b>Measured</b>		
Rated Voltage	N/A		230.564V		
Rated Current	N/A		N/A		
Rated Frequency	N/A		50.000Hz		
Rated Power	N/A		N/A		
D max	0.0728% (Limit: 4.0%)				
T max	0.0000 s (Limit: 0.5 s)				
DC max	0.0018% (Limit: 3.3%)				
<b>Additional Test Details</b>					
Operator	KANG J G				
Lab Name	N/A				
Location	N/A				
Notes					
Signature					
<b>Results</b>	<b>Phase1: PASS</b>				

08th December 2019 - 17:22:19		Ph:1 Page 2/2		IECSoft v2_6				
IEC61000-3-3:2013 Ed.3.0 Flickermeter								
Instrument Details								
Instrument Model	PPA5511							
Instrument Serial	162-04957							
Instrument Firmware	2.179							
Equipment Under Test								
Brand	IDIS CO., LTD.							
Model	DC-Y3C14WRX							
Serial	N/A							
Flicker Test Results								
PST no.	Status	DC (%)	Dmax (%)	Tmax (s)	PST	PST Lim	PLT	PLT Lim
1	Phase1: PASS	0.00178	0.06194	0.00000	0.08226	1.00000	0.08226	N/A
2	Phase1: PASS	0.00178	0.06673	0.00000	0.08226	1.00000	0.08226	N/A
3	Phase1: PASS	0.00178	0.06673	0.00000	0.08226	1.00000	0.08226	N/A
4	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
5	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
6	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
7	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
8	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
9	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
10	Phase1: PASS	0.00178	0.07100	0.00000	0.08226	1.00000	0.08226	N/A
11	Phase1: PASS	0.00178	0.07275	0.00000	0.08226	1.00000	0.08226	N/A
12	Phase1: PASS	0.00178	0.07275	0.00000	0.08226	1.00000	0.08226	0.65000

### 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	: 2019.12.08.
Test method	: EN 61000-4-2 :2009
Temperature / Humidity / Pressure	: 22 °C / 32 % R.H. / 100.3 kPa
Discharge Impedance	: (330 ±10%)Ω / (150 ±10%) pF
Type of Discharge (air discharge)	: ± 2kV, ± 4 kV, ± 8 kV
Type of Discharge (contact discharge)	: ± 6 kV
Number of discharges at each point	: 10 of each polarity
Discharge Repetition on Rate	: 1 / sec
Test mode	: REC + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

**Measurement Data:**

MODE : REC + 1 kHz Play mode (DC)

**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/OUT	Air	Complies	No reaction recognized
4	LENS	Air	Complies	No reaction recognized
5	AUDIO IN/OUT	Air	Complies	No reaction recognized
6	LAN	Air	Complies	No reaction recognized
7	GROUND	Air	Complies	No reaction recognized
8	Screw	Contact	Complies	No reaction recognized
9	DC IN	Air	Complies	No reaction recognized

MODE : REC + 1 kHz Play mode (POE)

**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**

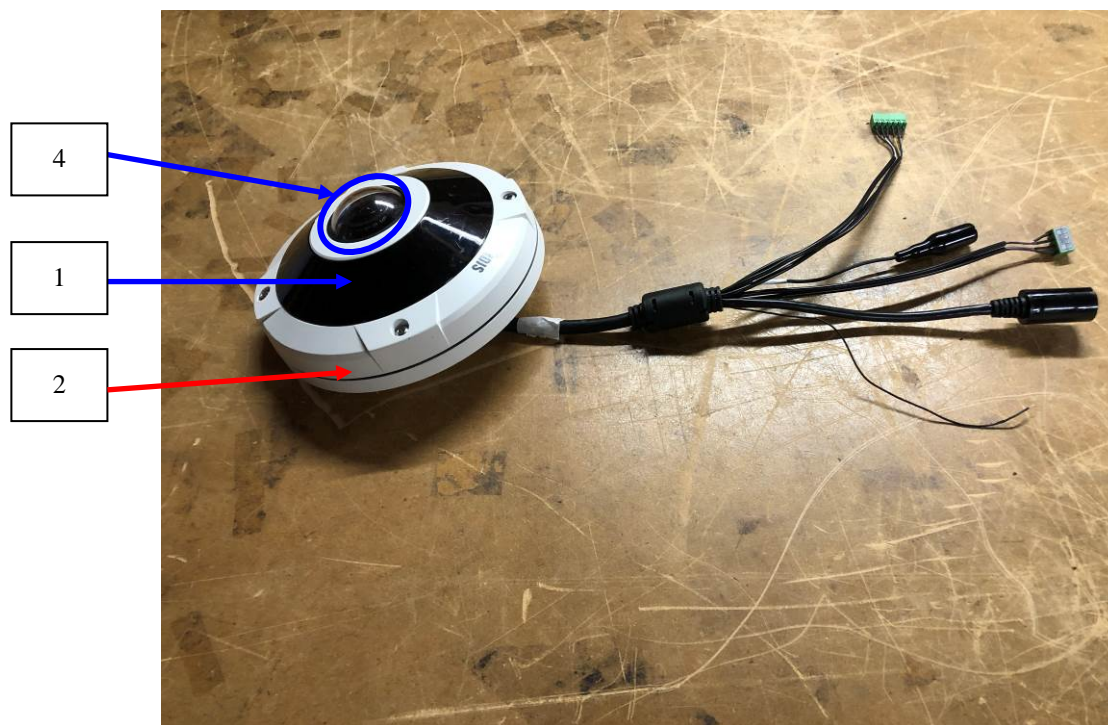
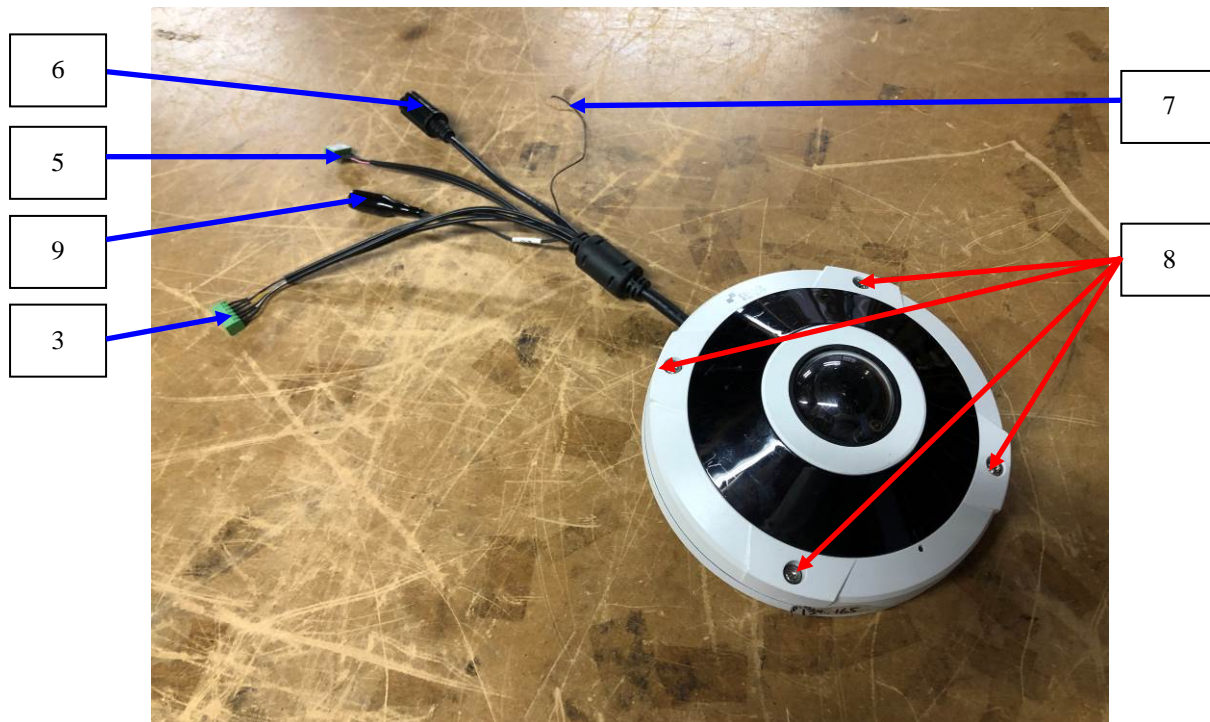
No.	Position	Kind of Discharge	Result	Remarks
1	Enclosure #1	Air	Complies	No reaction recognized
2	Enclosure #2	Contact	Complies	No reaction recognized
3	ALARM IN/OUT	Air	Complies	No reaction recognized
4	LENS	Air	Complies	No reaction recognized
5	AUDIO IN/OUT	Air	Complies	No reaction recognized
6	LAN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

※ Results are complies in each test mode.

### ESD TEST POINT

MODE : REC + 1 kHz Play mode (DC)

← Air discharge  
← Contact discharge

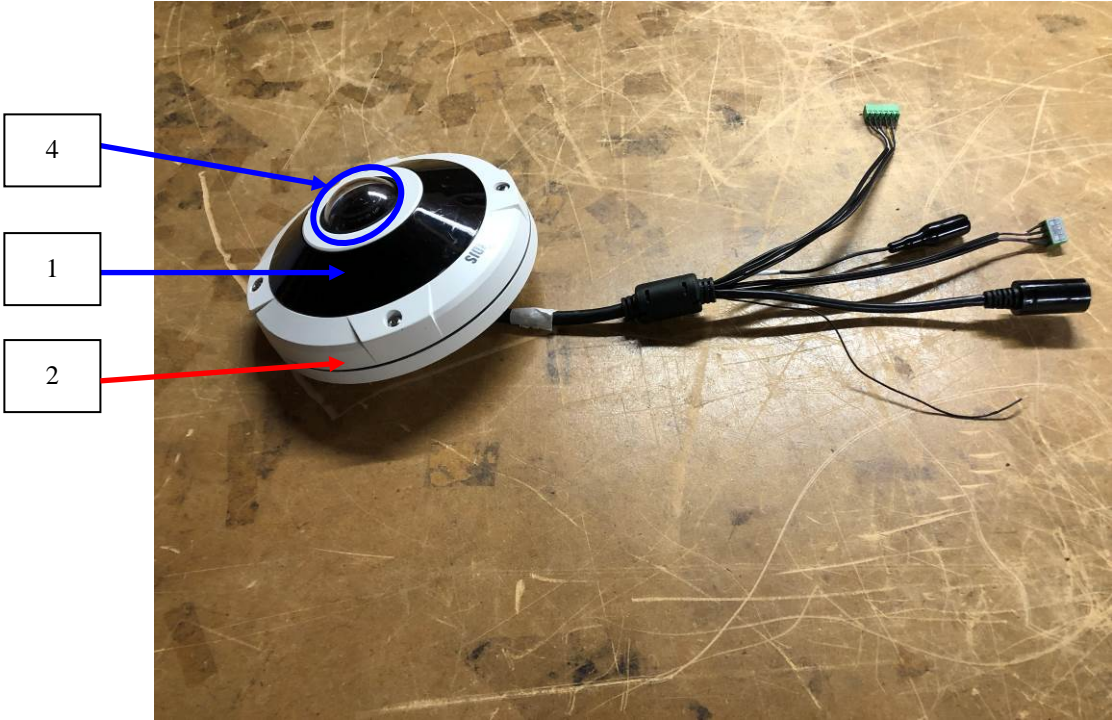
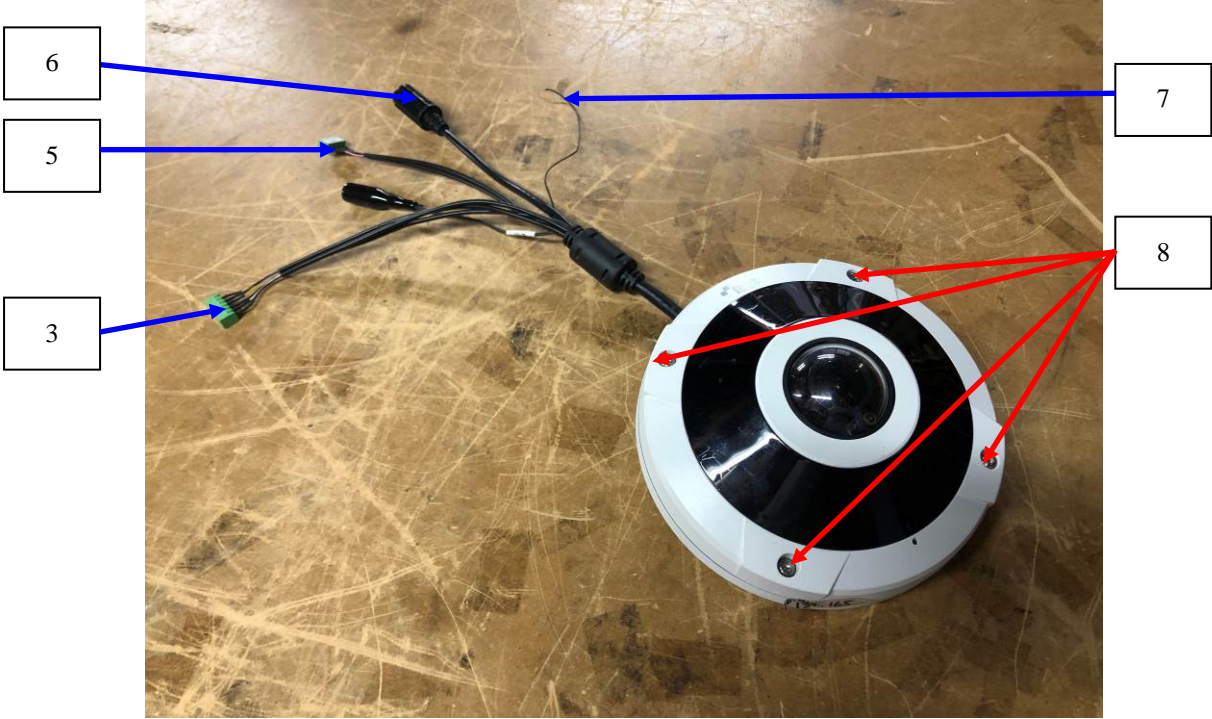




### ESD TEST POINT

MODE : REC + 1 kHz Play mode (POE)

← 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	: 2019.12.06.
Test method	: EN 61000-4-3:2006/A1:2008/A2:2010
Temperature / Humidity / Pressure	: 21 °C / 30 % R.H. / 101.2 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 + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

#### Measurement Data:

MODE : REC + 1 kHz Play mode (DC)

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

Audio Port	Result	Remarks
AUDIO OUT	Complies	No reaction recognized



MODE : REC + 1 kHz Play mode (POE)

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

Audio Port	Result	Remarks
AUDIO OUT	Complies	No reaction recognized

※ Results are complies in each test mode.

### 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	: 2019.12.08.
Test method	: EN 61000-4-4:2012
Temperature / Humidity / Pressure	: 22 °C / 33 % R.H. / 101.3 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 + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

#### Measurement Data:

MODE : REC + 1 kHz Play mode (DC)

AC power Line	Test level	Result	Remarks
L – N – PE	± 2 kV	Complies	No reaction recognized

Signal Line	Test level	Result	Remarks
LAN	± 1 kV	Complies	No reaction recognized
AUDIO IN	± 1 kV	Complies	No reaction recognized
AUDIO OUT	± 1 kV	Complies	No reaction recognized
ALARM IN	± 1 kV	Complies	No reaction recognized
ALARM OUT	± 1 kV	Complies	No reaction recognized

MODE : REC + 1 kHz Play mode (POE)

Signal Line	Test level	Result	Remarks
LAN	± 1 kV	Complies	No reaction recognized
AUDIO IN	± 1 kV	Complies	No reaction recognized
AUDIO OUT	± 1 kV	Complies	No reaction recognized
ALARM IN	± 1 kV	Complies	No reaction recognized
ALARM OUT	± 1 kV	Complies	No reaction recognized

※ Results are complies in each test mode.

### 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	: 2019.12.08.
Test method	: EN 61000-4-5:2014/A1:2017
Temperature / Humidity / Pressure	: 21 °C / 32 % R.H. / 101.3 kPa
Test level	: ± 0.5 kV, ±1 kV (line to line) ± 0.5 kV, ± 1 kV, ± 2 kV (line to ground), ± 0.5 kV, ± 1 kV (signal line)
Polarity	: Negative/ positive
Wave shape	: 1.2/ 50 µs pulse
Number of surges	: 5 (at each phase)
Test mode	: REC + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

#### Measurement Data:

MODE : REC + 1 kHz Play mode (DC)

Phase	Line	level	Result	Remark
0°	Line(L) to line(N)	± 0.5, 1.0 kV	Complies	No reaction recognized
	Line(L) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
	Line(N) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
90°	Line(L) to line(N)	± 0.5, 1.0 kV	Complies	No reaction recognized
	Line(L) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
	Line(N) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
180°	Line(L) to line(N)	± 0.5, 1.0 kV	Complies	No reaction recognized
	Line(L) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
	Line(N) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
270°	Line(L) to line(N)	± 0.5, 1.0 kV	Complies	No reaction recognized
	Line(L) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized
	Line(N) to ground(PE)	± 0.5, 1.0, 2.0 kV	Complies	No reaction recognized

Signal Line	level	Result	Remark
LAN	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
AUDIO IN	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
AUDIO OUT	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
ALARM IN	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
ALARM OUT	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized

MODE : REC + 1 kHz Play mode (POE)

Signal Line	level	Result	Remark
LAN	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
AUDIO IN	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
AUDIO OUT	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
ALARM IN	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized
ALARM OUT	$\pm 0.5, 1.0$ kV	Complies	No reaction recognized

※ Results are complies in each test mode.

### 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	: 2019.12.06.
Test method	: EN 61000-4-6:2014/AC:2015
Temperature / Humidity / Pressure	: 22 °C / 32 % R.H. / 101.2 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 + 1 kHz Play mode (DC), REC + 1 kHz Play mode (POE)
Result	: <b>Complies</b>

#### Measurement Data:

MODE : REC + 1 kHz Play mode (DC)

Port	Result	Remarks
Power	Complies	No reaction recognized

Signal Port	Result	Remarks
LAN	Complies	No reaction recognized
AUDIO IN	Complies	No reaction recognized
AUDIO OUT	Complies	No reaction recognized
ALARM IN	Complies	No reaction recognized
ALARM OUT	Complies	No reaction recognized

MODE : REC + 1 kHz Play mode (POE)

Signal Port	Result	Remarks
LAN	Complies	No reaction recognized
AUDIO IN	Complies	No reaction recognized
AUDIO OUT	Complies	No reaction recognized
ALARM IN	Complies	No reaction recognized
ALARM OUT	Complies	No reaction recognized

※ Results are complies in each test mode.

### 3.3.6 Mains supply voltage dips, short interruptions

#### Definition:

The test assesses the ability of the EUT to operate as intended in the event of voltage dips and interruptions present on the AC mains power input ports.

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

Test date : 2019.12.06.  
 Test method : EN 61000-4-11:2004/A1:2017  
 Temperature / Humidity / Pressure : 22 °C / 31 % R.H. / 101.3 kPa  
 Ut : 230 Vac  
 Test mode : REC + 1 kHz Play mode (DC)  
 Result : **Complies**

#### Measurement Data:

MODE : REC + 1 kHz Play mode (DC)

Test Level %Ut	Voltage droop and interruptions %Ut	Duration of Reduction ( period)	Result	Remarks
80	20	250	Complies	No reaction recognized
70	30	25	Complies	No reaction recognized
40	60	10	Complies	No reaction recognized
0	100	250	Complies	EUT OFF during the test. Re-operation about user's control. After the test, EUT was normally operated.

### 3.3.7 Mains supply voltage variations

#### Definition:

The test assesses the ability of the EUT to operate as intended in the event of voltage variations present on the AC mains power input ports.

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

Test date	: 2019.12.06.
Test method	: EN 50130-4:2011/A1:2014
Temperature / Humidity / Pressure	: 22 °C / 31 % R.H. / 101.3 kPa
Supply Voltage maximum	: $U_{nom} + 10 \%$
Supply Voltage minimum	: $U_{nom} - 15 \%$
Ut	: 230 Vac
Test mode	: REC + 1 kHz Play mode (DC)
Result	: <b>Complies</b>

#### Measurement Data:

$U_{nom}$  = Nominal mains voltage. Where provision is made to adapt the equipment to suit a number of nominal supply voltages (e.g. by transformer tap changing), the above conditioning severity shall be applied for each nominal voltage, with the equipment suitably adapted. For equipment which is claimed to be suitable for a range of nominal mains voltages (e.g. 220/240 V) without adaptation,  $U_{max} = (\text{Maximum } U_{nom}) + 10 \%$ , and  $U_{min} = (\text{Minimum } U_{nom}) - 15 \%$ . In any case the range of  $U_{nom}$  must include the European nominal mains voltage of 230 V.

#### Mains supply voltage variations

MODE : REC + 1 kHz Play mode (DC)

230 V, 50 Hz

Test LevelCondition		Test Level (V)	Result	Remarks
Unom	+10%	253	Complies	No reaction recognized
Unom	-15%	195.5	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	2020.07.04	1 year
<input checked="" type="checkbox"/>	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2020.03.16	1 year
<input type="checkbox"/>	ISN	ISN T800	TESEQ	27109	2020.09.09	1 year
<input checked="" type="checkbox"/>	ISN	ENY81-CA6	Rohde & Schwarz	101565	2020.09.09	1 year
<input type="checkbox"/>	ISN	ISN S8	Schwarzbeck	79	2020.09.06	1 year
<input type="checkbox"/>	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2020.09.09	1 year
<input type="checkbox"/>	CDN	TSCDN-C1-BNC-75	F.C.C	07004	2020.05.23	-
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	100378	2020.09.05	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	101468	2020.09.05	1 year
<input checked="" type="checkbox"/>	LISN(main)	ENV216	Rohde & Schwarz	101222	2020.09.06	1 year
<input checked="" type="checkbox"/>	LISN(sub)	LT32C/10	AFJ	32031518210	2020.09.05	1 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	1 year

**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	2020.09.05	1 year
<input checked="" type="checkbox"/>	Amplifier (25 dB)	8447D	HP	2944A07684	2020.03.16	1 year
<input checked="" type="checkbox"/>	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.03.26 (KOLAS)	2 year
<input type="checkbox"/>	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.11.12 (RRA)	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	2020.09.05	1 year
<input checked="" type="checkbox"/>	Amplifier	8449B	HP	3008A00671	2020.09.05	1 year
<input checked="" type="checkbox"/>	Amplifier	PAM-840A	COM-POWER	461314	2020.03.18	1 year
<input type="checkbox"/>	HORN ANTENNA	3116B	ETS	133350	2020.05.10	2 year
<input type="checkbox"/>	HORN ANTENNA	3116B	ETS	81109	2020.05.10	2 year
<input checked="" type="checkbox"/>	HORN ANTENNA	3115	ETS	114105	2021.09.17 (KOLAS)	2 year
<input type="checkbox"/>	HORN ANTENNA	3115	ETS	114105	2021.11.11 (RRA)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

**Harmonic Current / Voltage Variation and Flicking**

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Precision Power Analyzer	PPA5511	Newtons4th Ltd	162-04957	2020.09.16	1 year
<input checked="" type="checkbox"/>	Reference Impedance Network	ES4152	NF Corp.	9074424	2020.09.09	1 year

**Electrostatic Discharge**

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	ESD Simulator	ESS-2000	NOISEKEN	8000C03241	2020.09.09	1 year
<input checked="" type="checkbox"/>	ESD GUN	TC-815R	NOISEKEN	ESS0564361	2020.09.09	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	-	-
<input checked="" type="checkbox"/>	Signal Generator	E4438C	Agilent	MY42080843	2020.09.06	1 year
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120 A	SCHWARZBECK	BBHA 9120 A 481	-	-
<input checked="" type="checkbox"/>	Sound Acoustic Tester	TST-1000	TESTEK	150065-A	2020.09.09	1 year
<input type="checkbox"/>	Microphone	MP201	BSWA	530147	2020.10.20	1 year

**Electrical fast transients**

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Compact Generator	Compact NX	EMTEST	P1725200196	2020.10.31	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	2020.10.31	1 year
<input checked="" type="checkbox"/>	Capacitive Coupling Clamp	CCI	EMTEST	P1744207071	2020.10.31	1 year

**Surge**

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Compact Generator	Compact NX	EMTEST	P1725200196	2020.10.31	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	2020.10.31	1 year
<input checked="" type="checkbox"/>	CDN	CNV 508T5	EMTEST	P1742204978	2020.10.31	1 year
<input type="checkbox"/>	CDN	CNV 508N1	EMTEST	P1742204940	2020.10.31	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	2020.09.06	1 year
<input type="checkbox"/>	CDN (M2)	TSCDN-M2-16A	F.C.C	07008	2020.09.06	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	2020.09.06	1 year
<input checked="" type="checkbox"/>	Sound Acoustic Tester	TST-1000	TESTEK	150065-A	2020.09.09	1 year
<input type="checkbox"/>	Microphone	MP201	BSWA	530147	2020.10.20	1 year

**Mains supply voltage dips, short interruptions**

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Compact Generator	Compact NX	EMTEST	P1725200196	2020.10.31	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	2020.10.31	1 year

**Mains supply voltage variations**

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	Compact Generator	Compact NX	EMTEST	P1725200196	2020.10.31	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	2020.10.31	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.

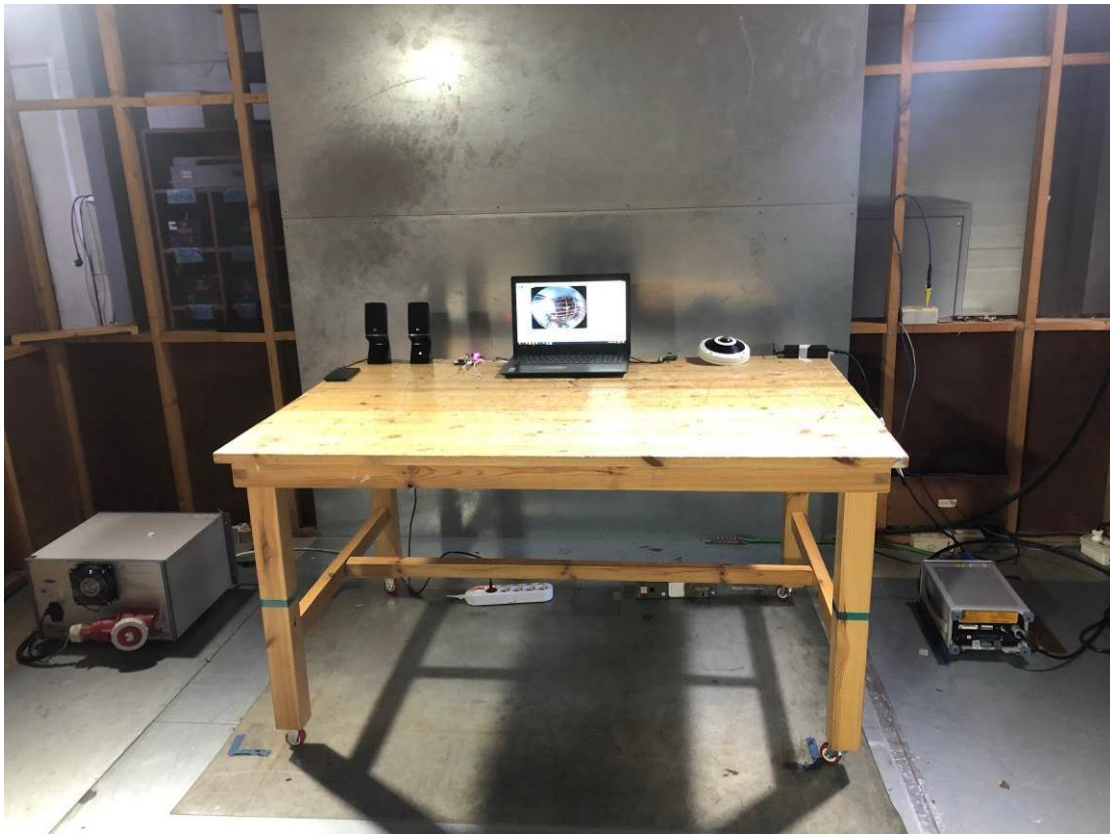
### **Mains supply voltage variations**

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 emissions (Maximum emission configuration) / REC + 1 kHz Play mode (DC)**





---

**Conducted emissions (Maximum emission configuration) / TEL**  
**\_ REC + 1 kHz Play mode (DC)**

---



---

**Conducted emissions (Maximum emission configuration) / TEL**  
**\_ REC + 1 kHz Play mode (POE)**

---

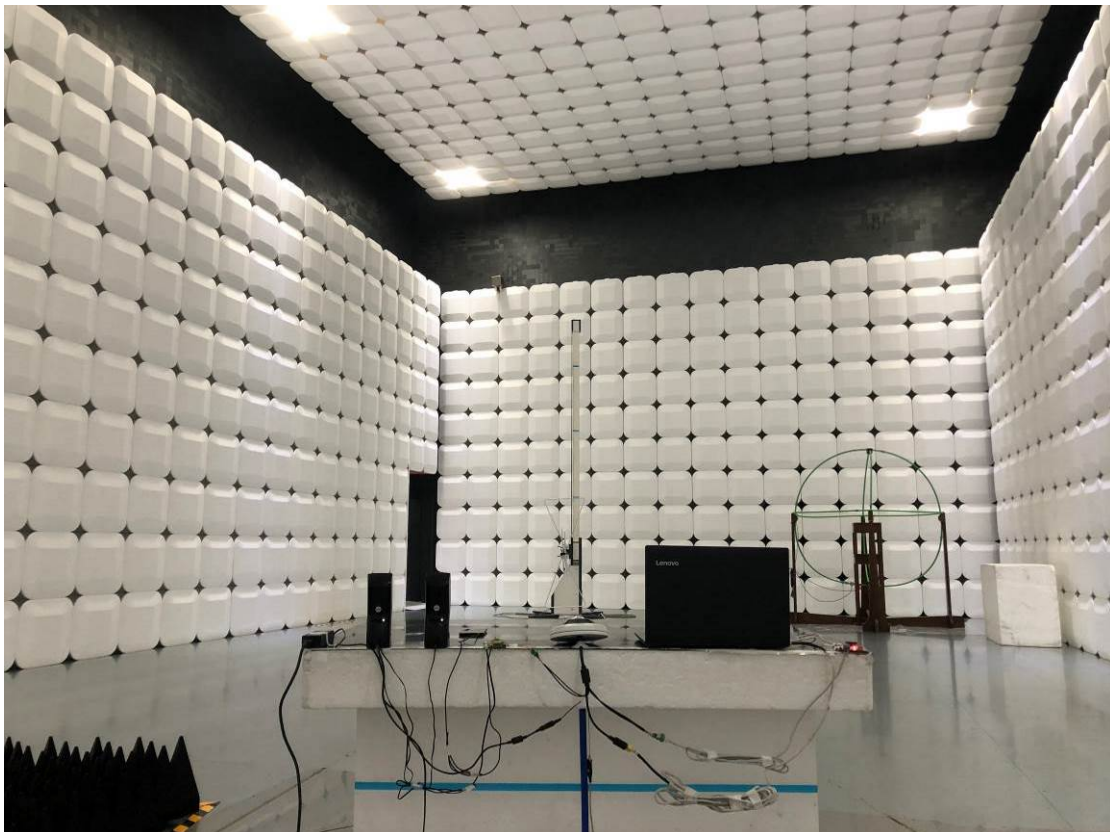
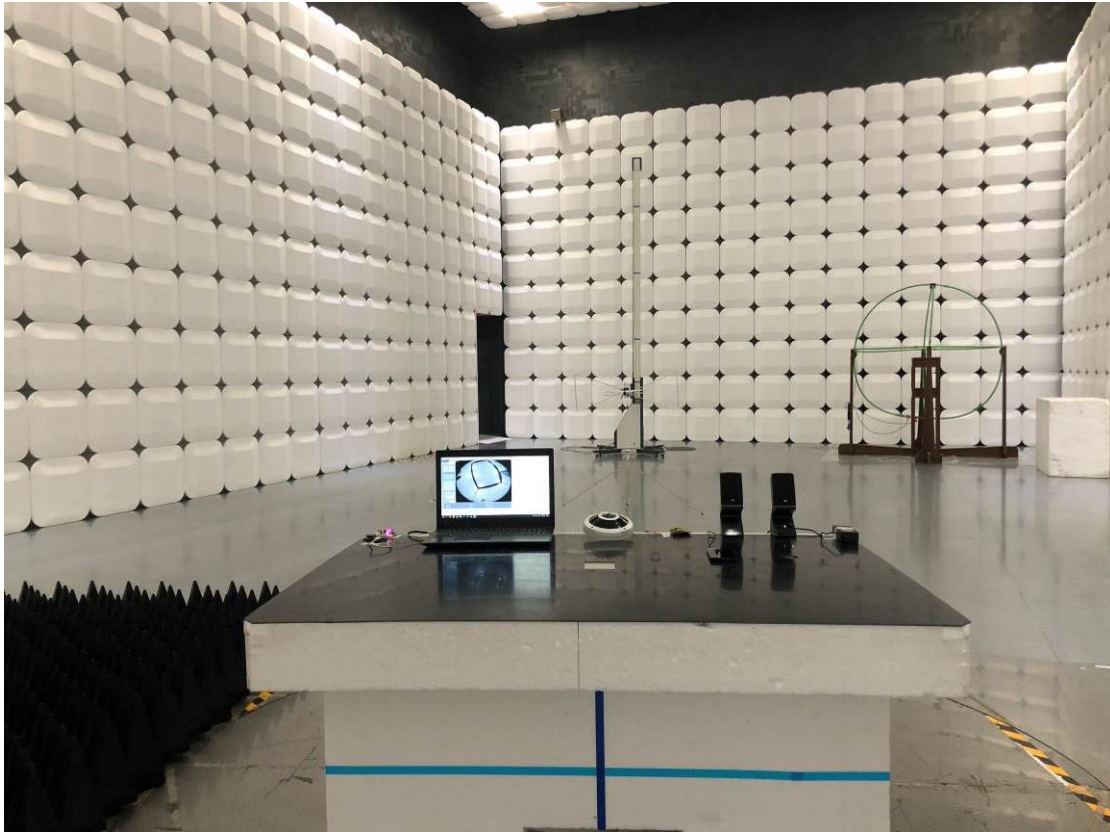




---

**Radiated emission (Maximum emission configuration)-Below 1 GHz  
/ REC + 1 kHz Play mode (DC)**

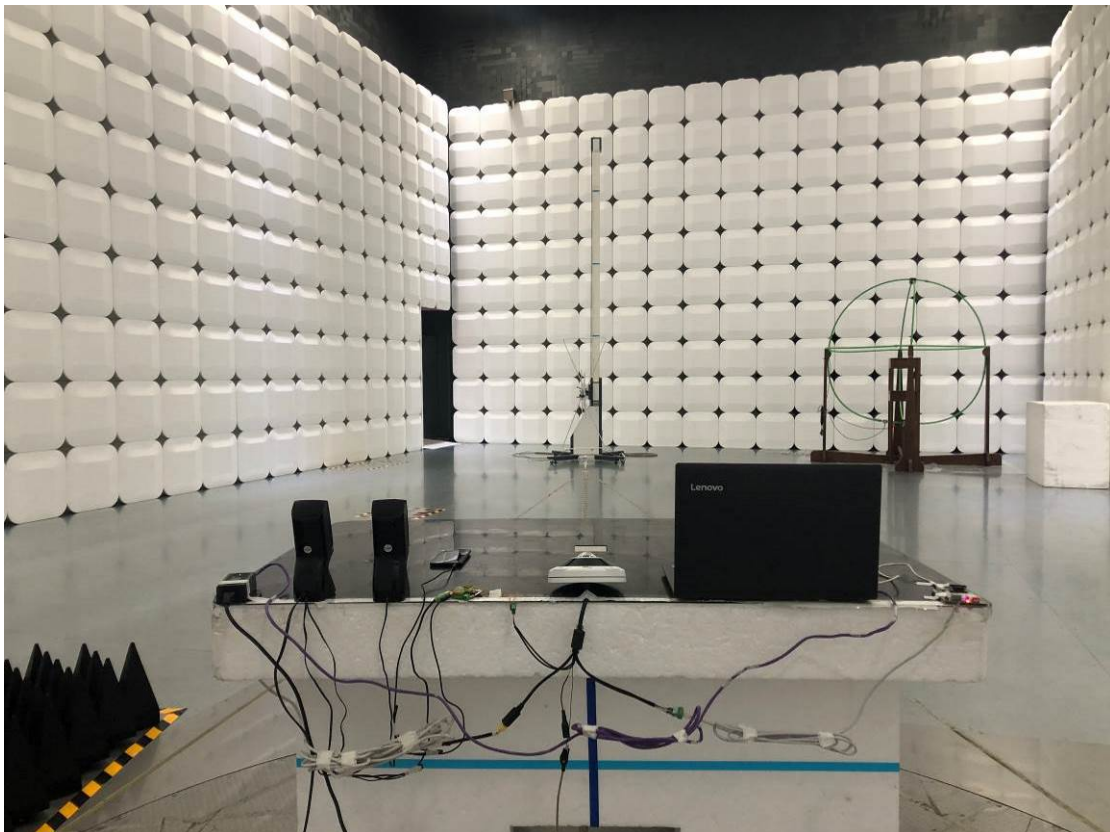
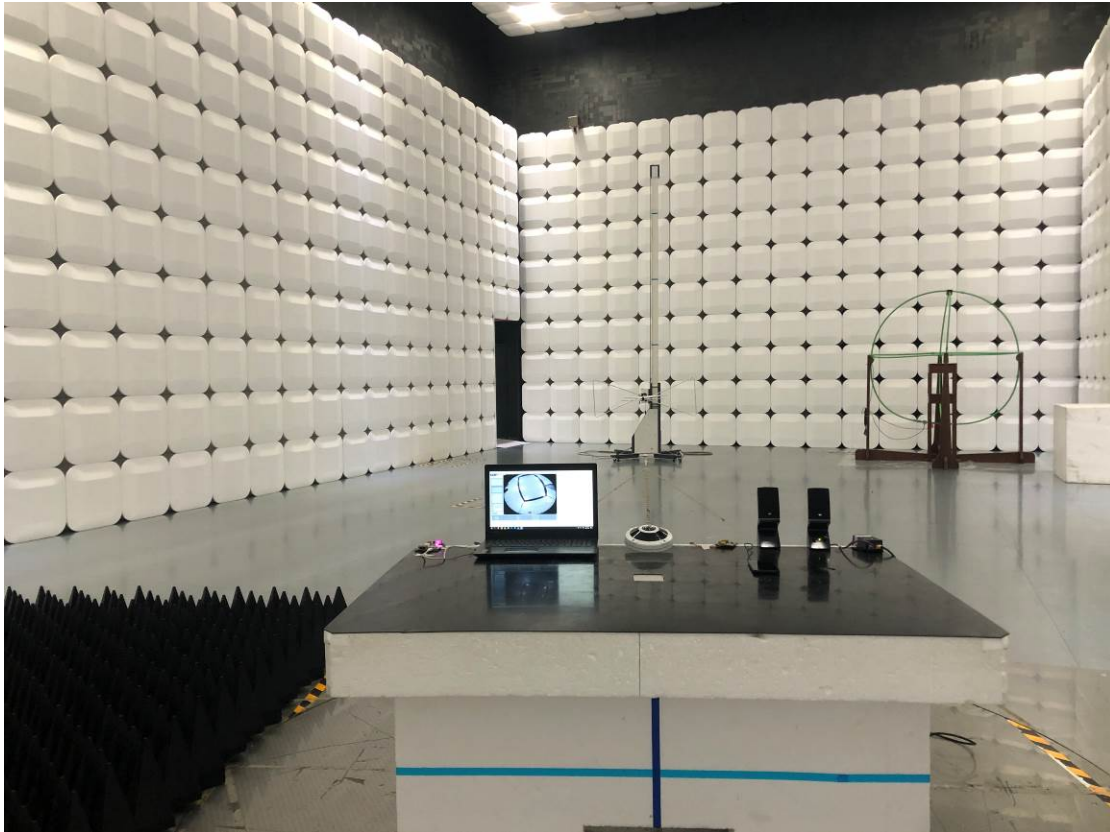
---



---

**Radiated emission (Maximum emission configuration)-Below 1 GHz  
/ REC + 1 kHz Play mode (POE)**

---

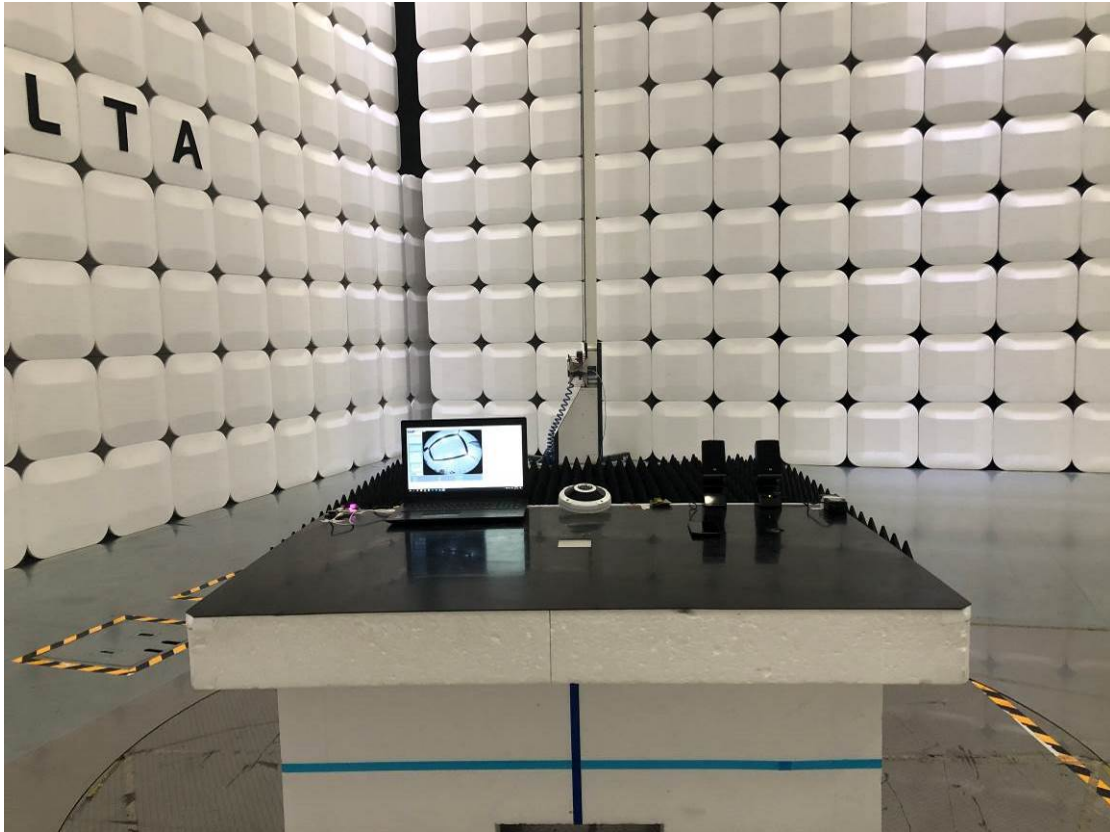




---

**Radiated emission (Maximum emission configuration)-Above 1 GHz  
/ REC + 1 kHz Play mode (DC)**

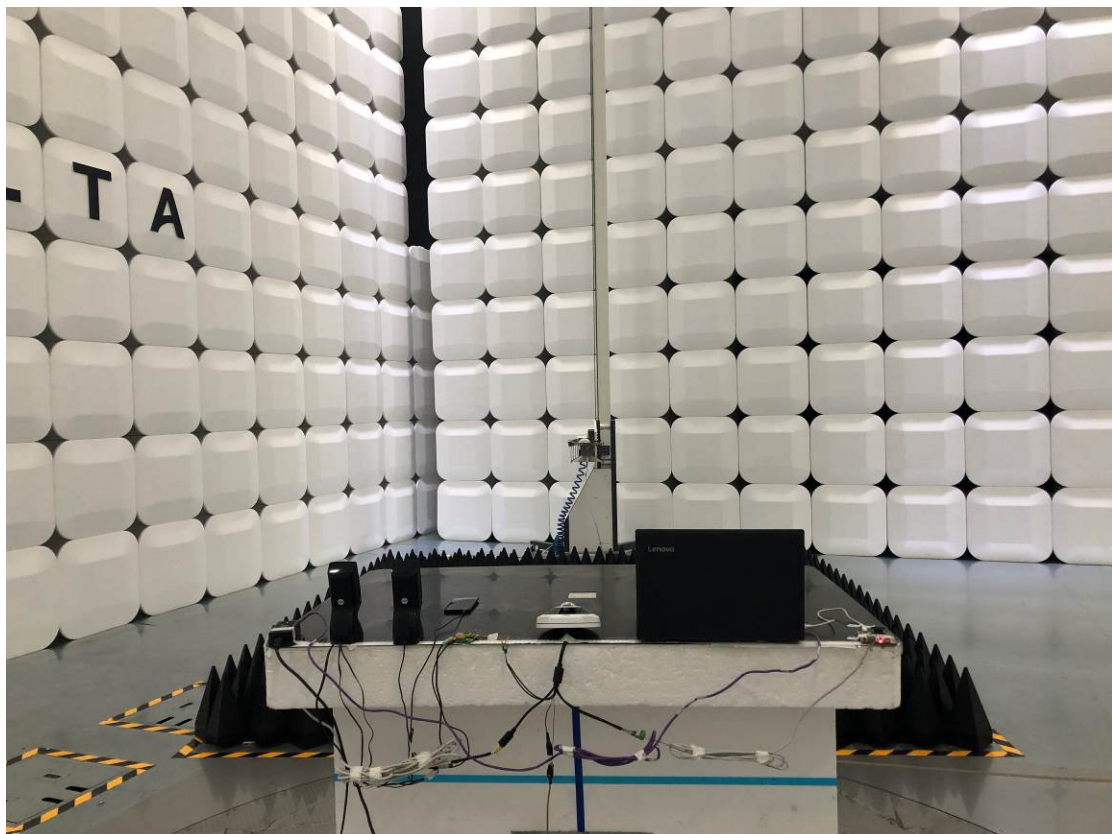
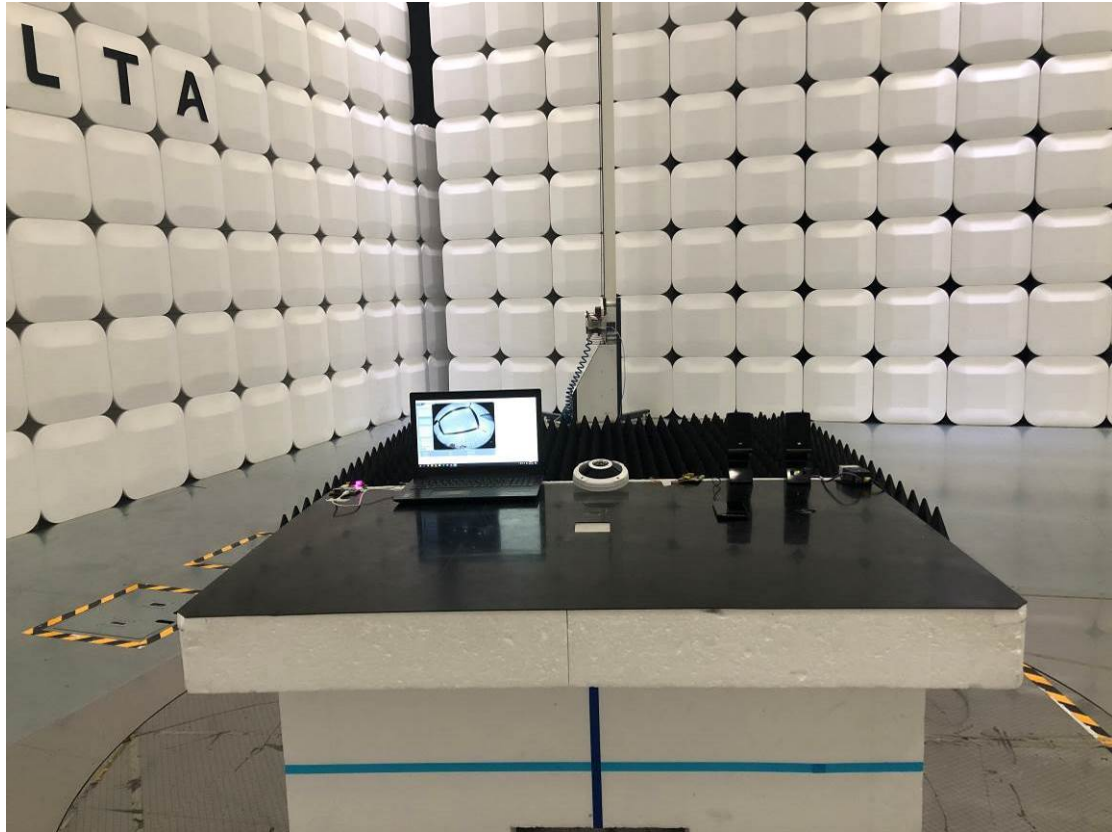
---



---

**Radiated emission (Maximum emission configuration)-Above 1 GHz  
/ REC + 1 kHz Play mode (POE)**

---





---

---

**Harmonic Current / Voltage Variation and Flicking / REC + 1 kHz Play mode (DC)**

---

---



---

---

**Electrostatic discharge / REC + 1 kHz Play mode (DC)**

---

---



---

---

**Electrostatic discharge / REC + 1 kHz Play mode (POE)**

---

---





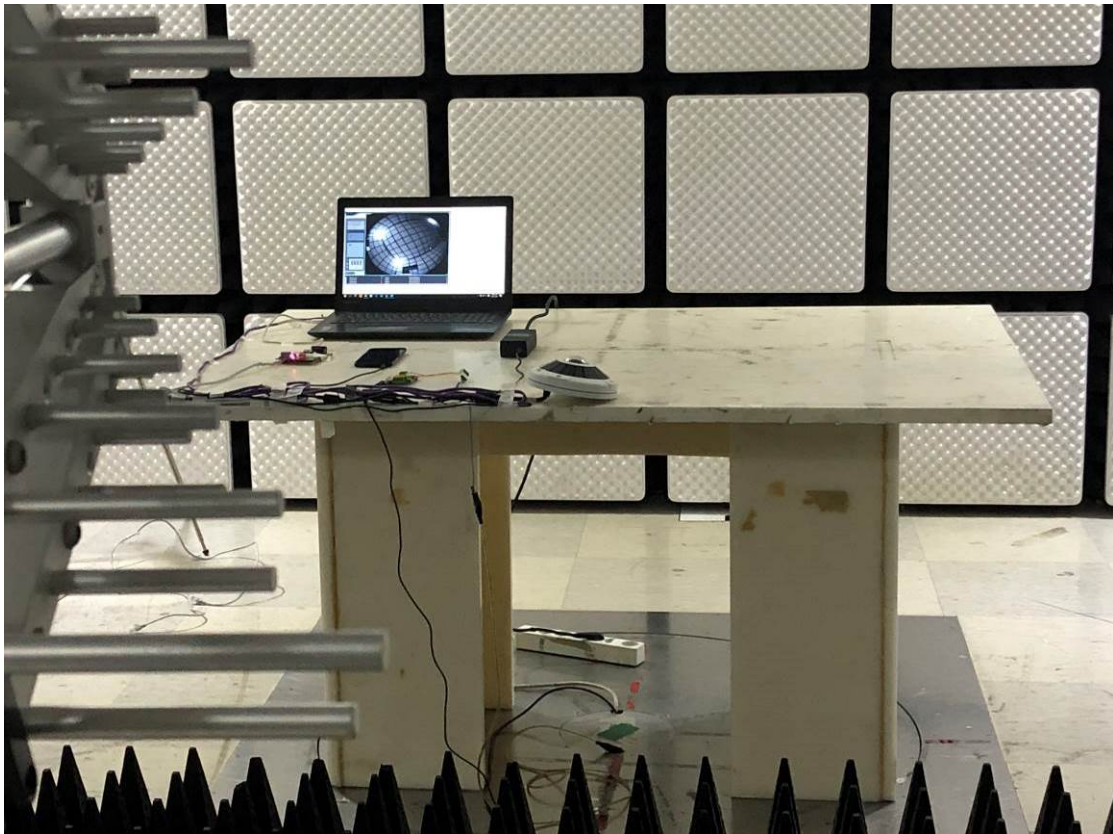
---

---

**RF Electromagnetic Field / REC + 1 kHz Play mode (DC)**

---

---



---

---

**RF Electromagnetic Field / REC + 1 kHz Play mode (POE)**

---

---





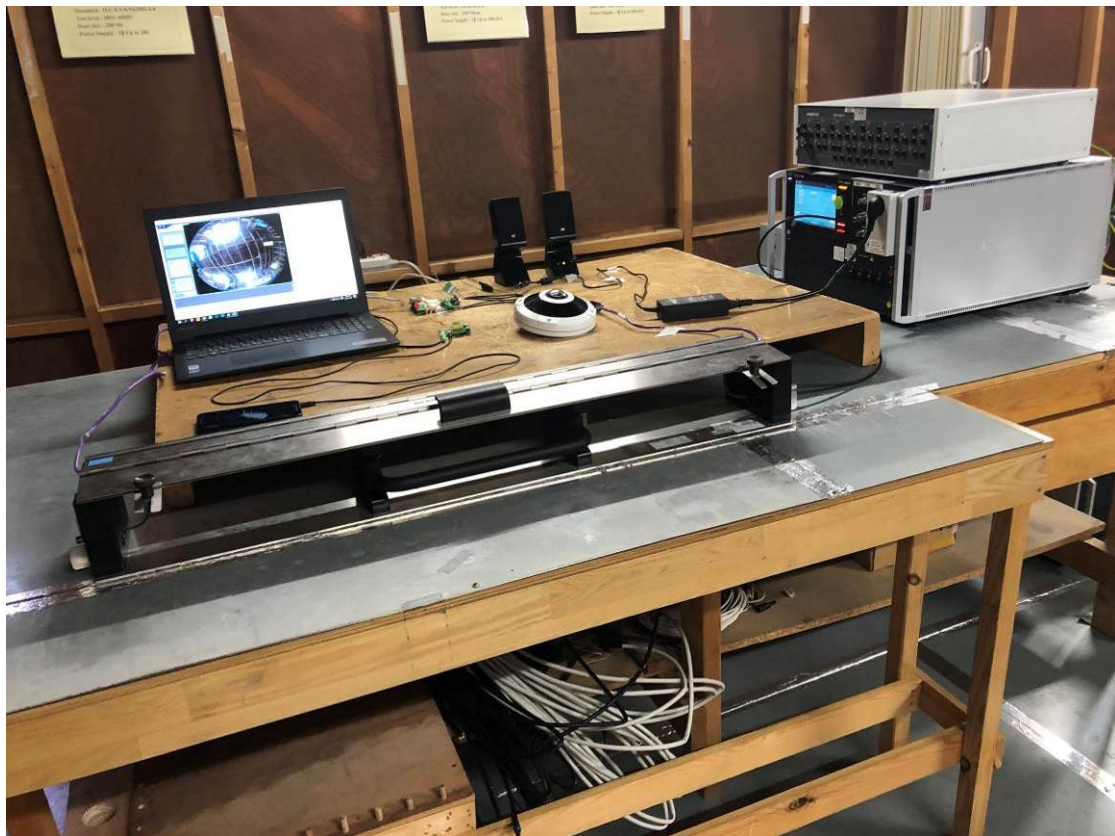
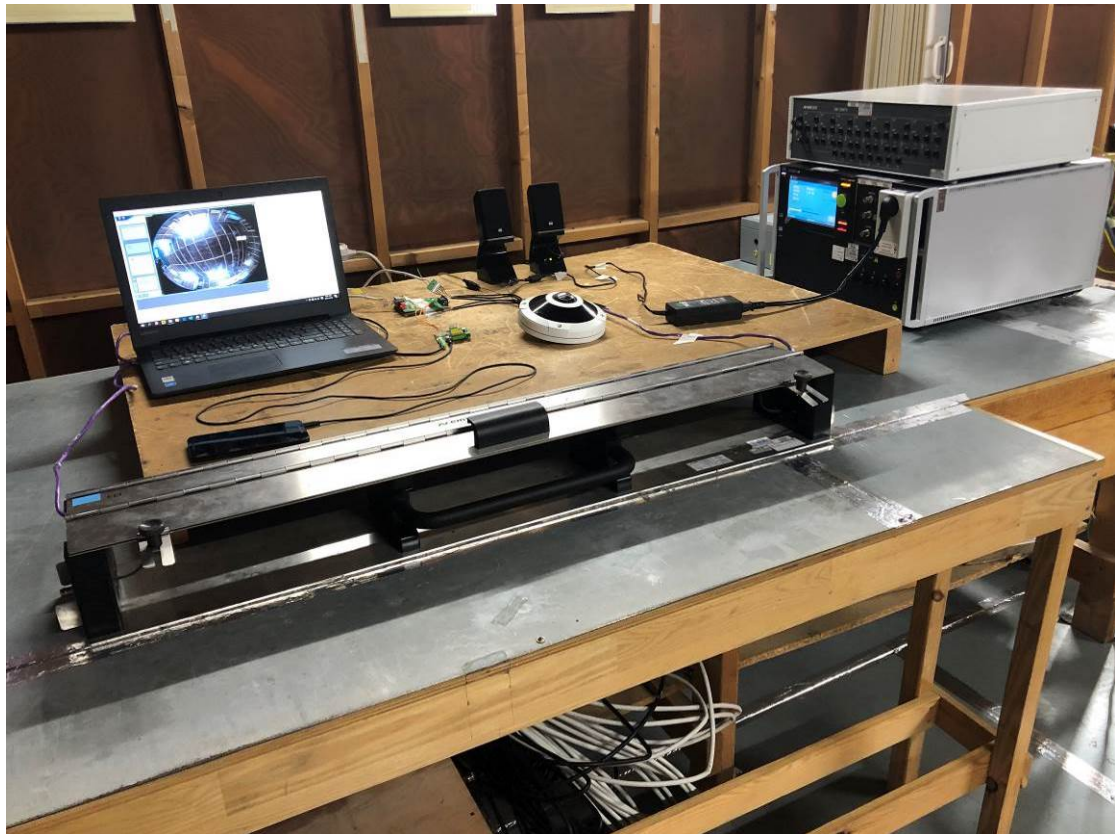
---

---

Electrical fast transients / REC + 1 kHz Play mode (DC)

---

---



---

---

**Electrical fast transients / REC + 1 kHz Play mode (POE)**

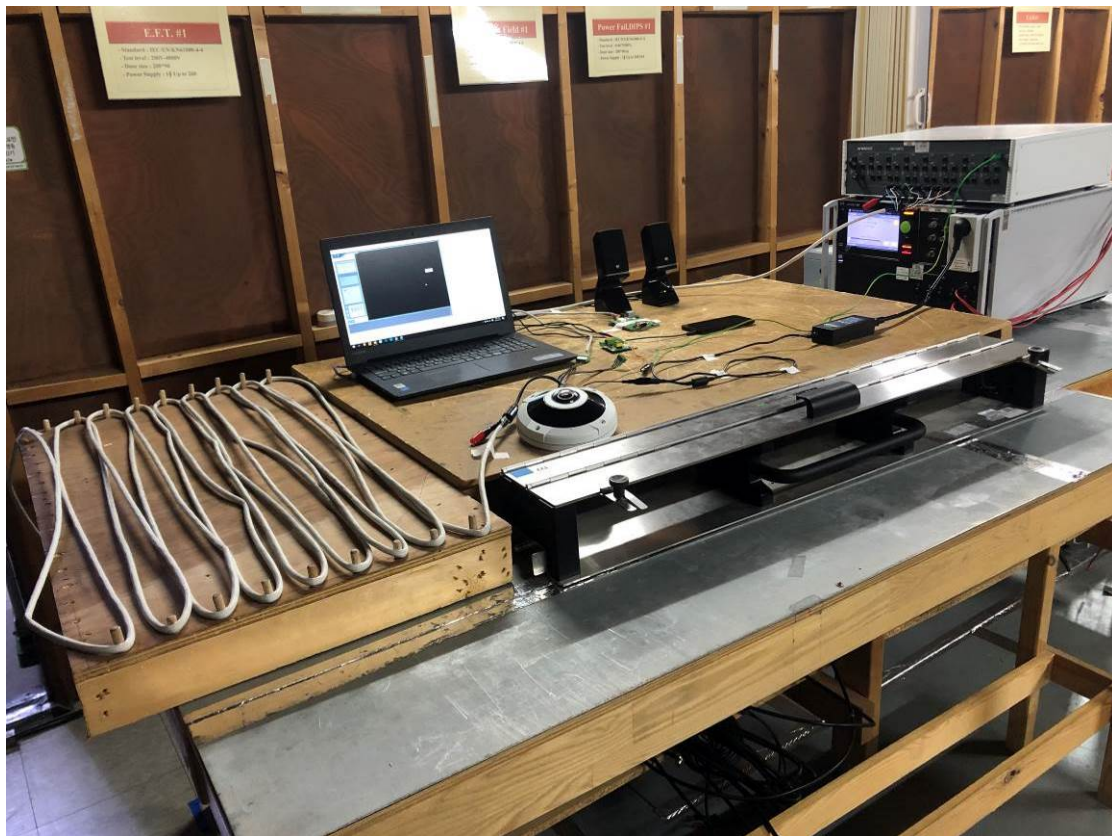
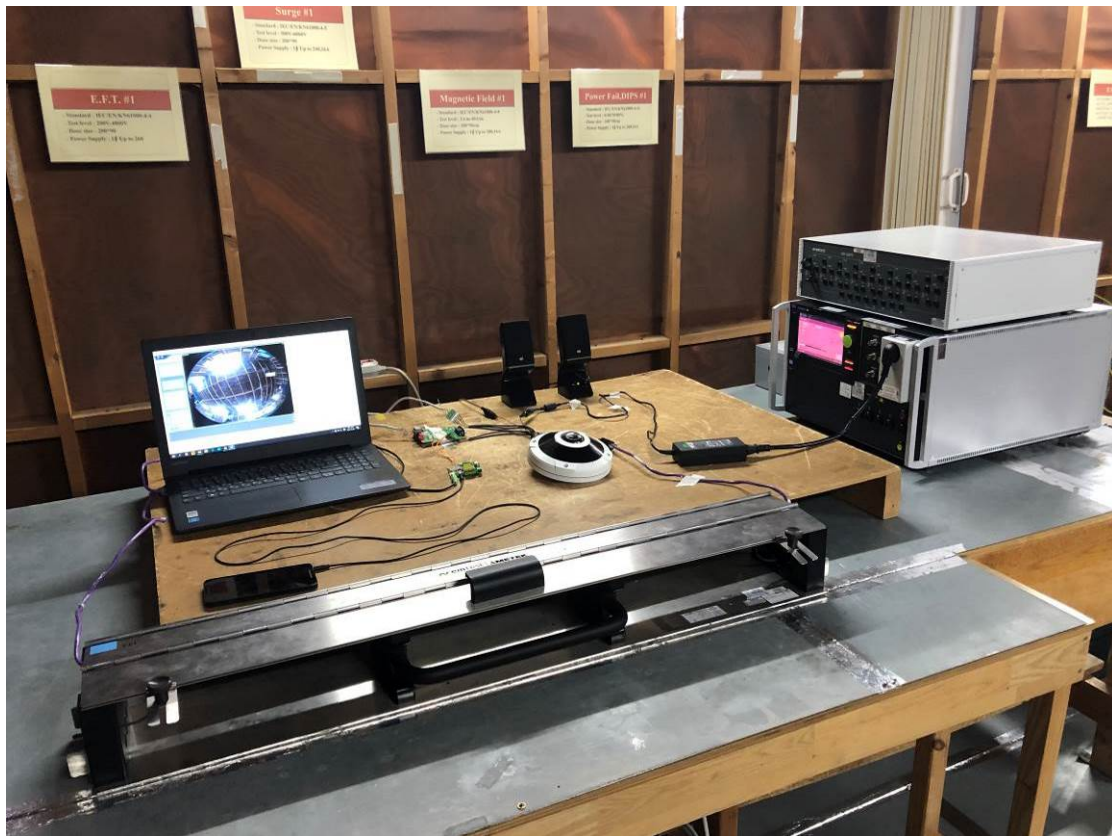
---

---

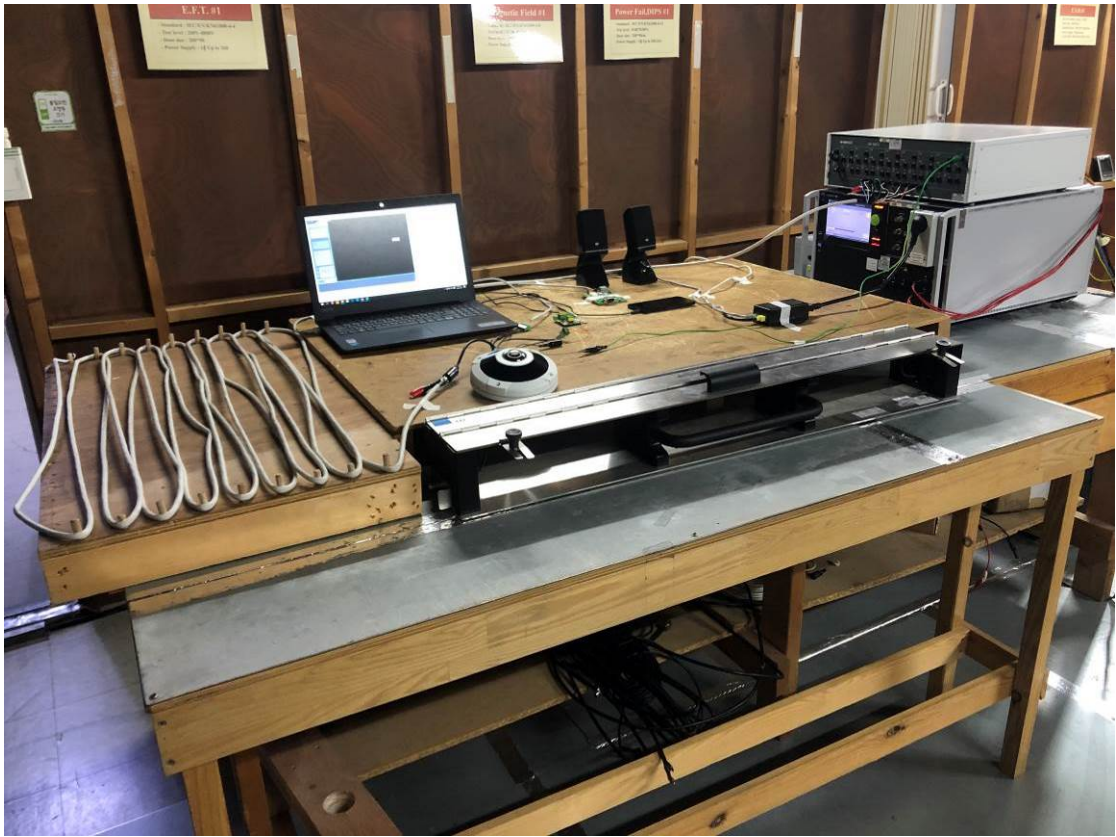




**Surge / REC + 1 kHz Play mode (DC)**



Surge / REC + 1 kHz Play mode (POE)

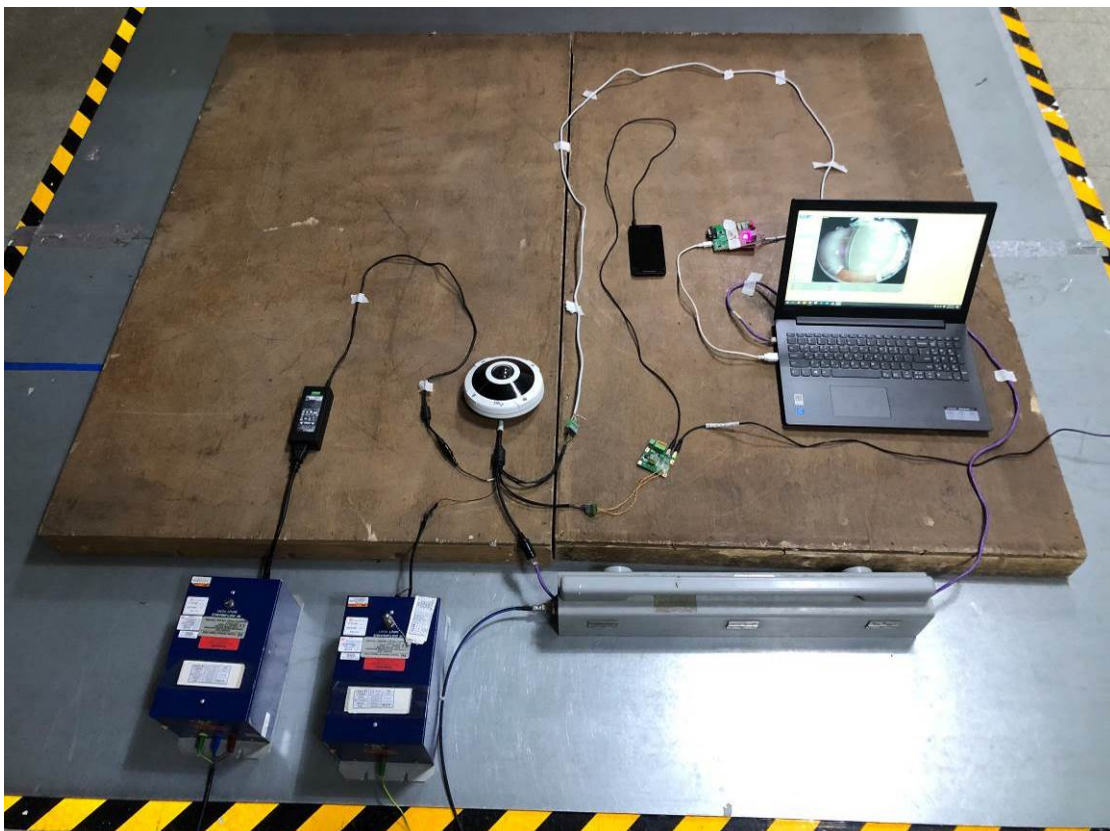
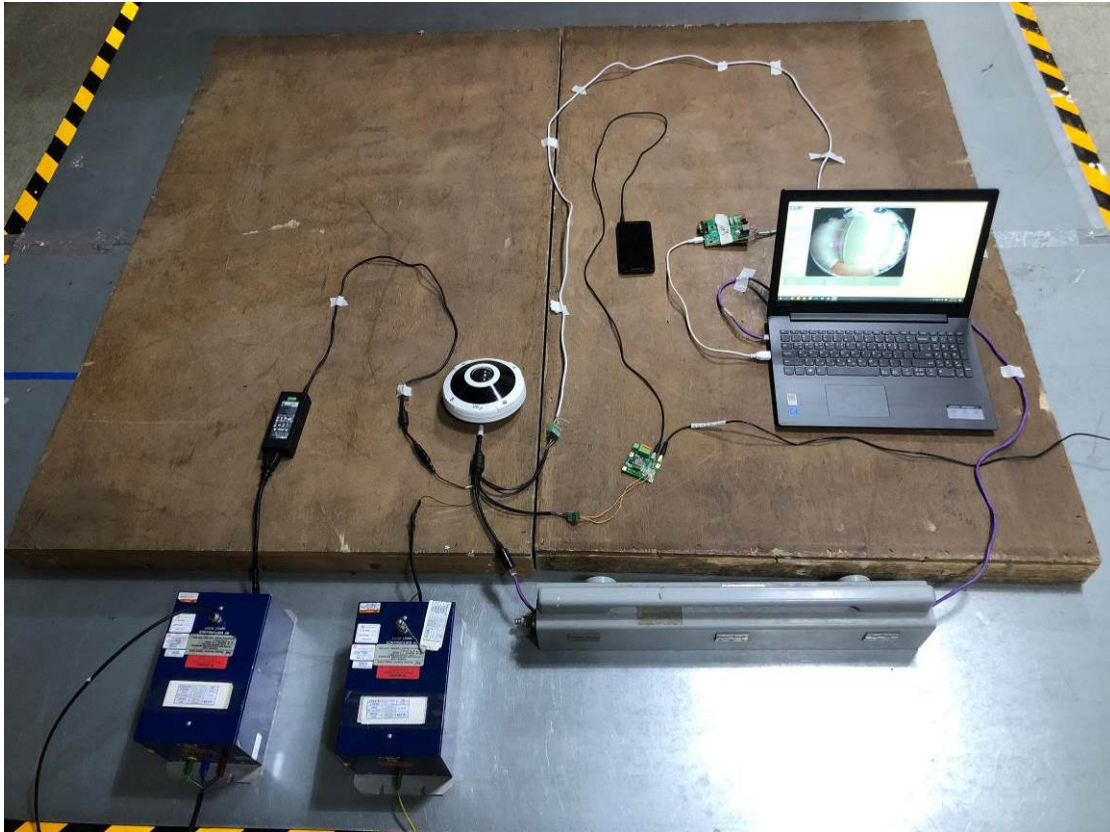




---

**Conducted Disturbances, Induced by Radio-Frequency Fields**  
**/ REC + 1 kHz Play mode (DC)**

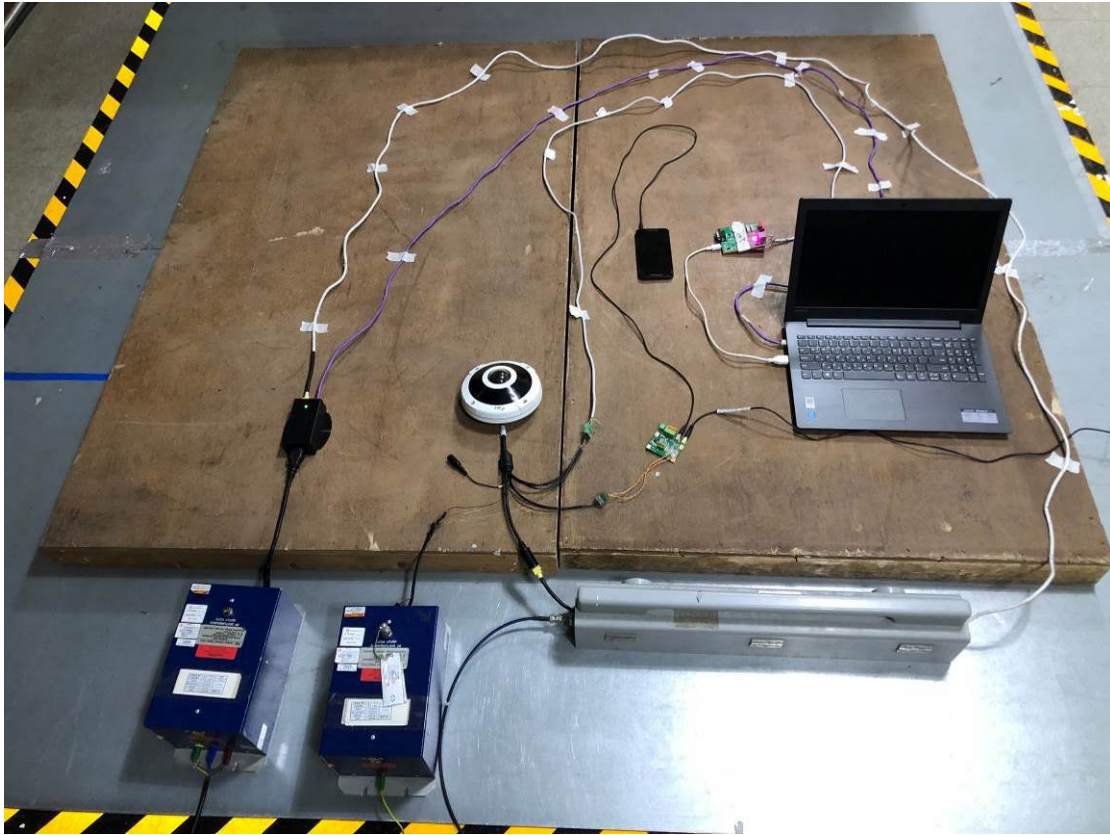
---



---

**Conducted Disturbances, Induced by Radio-Frequency Fields**  
**/ REC + 1 kHz Play mode (POE)**

---

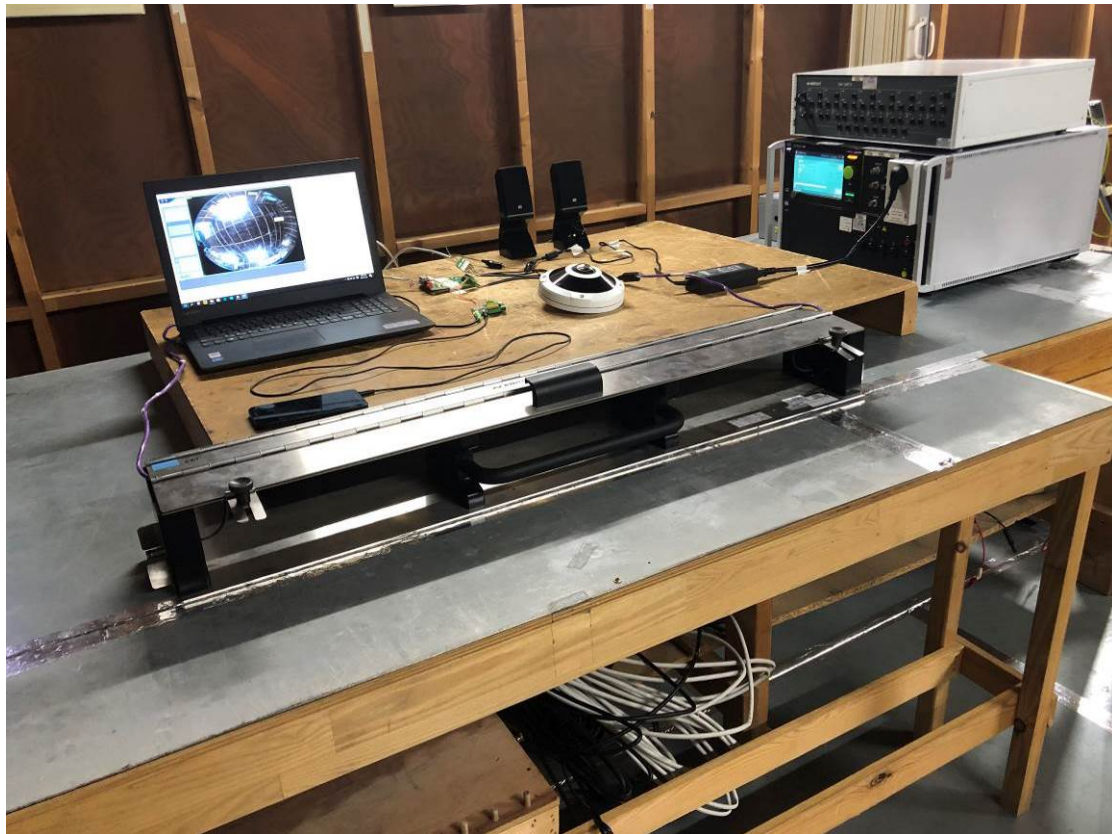




---

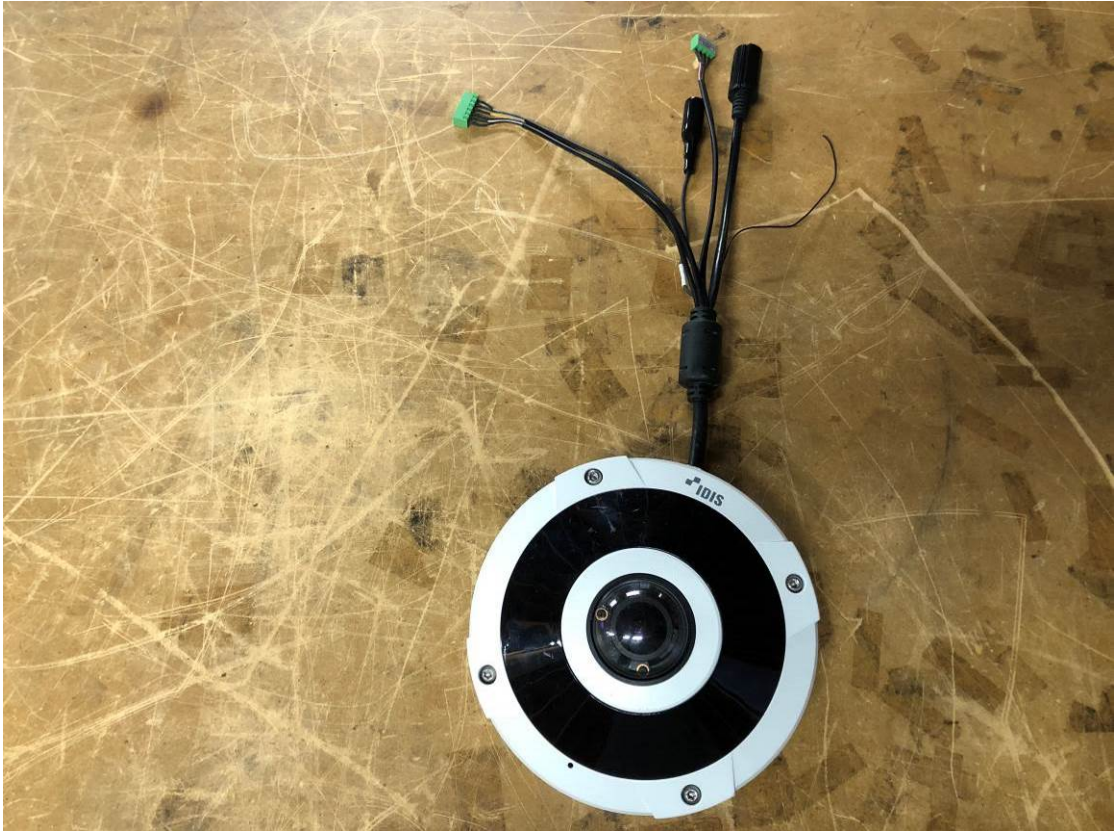
**Main supply voltage (dips, variations) short interruptions / REC + 1 kHz Play mode (DC)**

---





EUT



---

---

**EUT**

---

---

