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EMC TEST REPORT

Dates of Tests: July 15 – 19, 2019
 Test Report S/N: LR500121907R
 Test Site : LTA Co., Ltd.

Model No.

HCV-6080

APPLICANT

Hanwha Techwin Co., Ltd.

Equipment Name : ANALOG CAMERA
 Manufacturer : Hanwha Techwin Co., Ltd.
 Model name : HCV-6080
 Test Device Serial No.: Identification
 Directive : Electromagnetic Compatibility Directive 2014/30/EU
 Rule Part(s) : EN 55032:2012/AC2013
 EN 50130-4:2011/A1:2014
 EN 61000-3-2:2014
 EN 61000-3-3:2013
 Data of reissue : July 19, 2019

This test report is issued under the authority of:

The test was supervised by:

Gi Won Lee, Technical Manager

Se Ho Shin, 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	19.07.2019	LR500121907R	Initial

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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>
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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	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 : Hanwha Techwin Co., Ltd.
 Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
 Telephone / Facsimile : +82-70-7147-8753

Factory #1

Company name : Hanwha Techwin (Tianjin) Co., Ltd.
 Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin, 300385, People's Republic of China

Factory #2

Company name : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
 Address : Lot O-2, Que Vo Industrial Zone extended area ,Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam

Factory #3

Company name : D-TECH CO.,LTD.
 Address : 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

2-2 Equipment Under Test (EUT)

Class : A
 Equipment Name : ANALOG CAMERA
 Model name : HCV-6080
 Serial number : Identification
 Date of receipt : July 11, 2019
 EUT condition : Pre-production, not damaged
 Interface Ports : DC IN, Alarm OUT, GND, BNC
 Power rating : AC 24 V (AC), DC 12 V (DC)

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure : +(24 - 26) °C / (43 - 48) % R.H. / (100) kPa
 Tested Model : HCV-6080
 Test mode : Play mode (AC 24 V), Play mode (DC 12 V)
 Tested Voltage : AC 230 V, 50 Hz

2-5 EUT

Equipment	Model No.	Serial No.	Manufacturer
ANALOG CAMERA	HCV-6080	N/A	Hanwha Techwin (Tianjin) Co., Ltd.

2-6 Accessary / Play mode (AC 24 V)

Equipment	Model No.	Serial No.	Manufacturer
Digital Video Recorder	SRD-1694U	N/A	N/A
Monitor	U2412Mc	N/A	DELL
Alarm	N/A	N/A	N/A
Adapter	SW60-12005000-W	N/A	SHENZHEN TOP-ASIA ELECTRONICS CO., LTD

/ Play mode (DC 12 V)

Equipment	Model No.	Serial No.	Manufacturer
Digital Video Recorder	SRD-1694U	N/A	N/A
Monitor	U2412Mc	N/A	DELL
Alarm	N/A	N/A	N/A
Adapter	DLA24300SKA	N/A	DreamElectronic

2-7 Cable List / Play mode (AC 24 V)

From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	AC IN	Adapter	AC OUT	1.5	NO	Plastic
	Alarm OUT	Alarm	Alarm IN	0.6	NO	Plastic
	GND	Alarm	GND	0.6	NO	Plastic
	BNC	Digital Video Recorder	BNC	3.0	NO	Plastic
Digital Video Recorder	VGA	Monitor	VGA	1.5	NO	Plastic
	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Monitor	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Adapter	AC IN	AC Power Source	2 Pin AC Line	1.5	NO	Plastic

/ Play mode (DC 12 V)

From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	DC IN	Adapter	DC OUT	1.5	NO	Plastic
	Alarm OUT	Alarm	Alarm IN	0.6	NO	Plastic
	GND	Alarm	GND	0.6	NO	Plastic
	BNC	Digital Video Recorder	BNC	3.0	NO	Plastic
Digital Video Recorder	VGA	Monitor	VGA	1.5	NO	Plastic
	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Monitor	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Adapter	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic

3. Test Report

3.1 Summary of tests

Parameter	Applied Standard	Status
I. Emission		
Radiated Emission	EN 55032:2012/AC2013	C
Conducted Emission	EN 55032:2012/AC2013	C
Harmonic Current Emission	EN 61000-3-2:2014	NA ^{Note 3}
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	C
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	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 HCV-6080 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.

Measurement Frequency range	: 150 kHz – 30 MHz
Test method	: EN 55032:2012/AC2013
Measurement RBW	: 9 kHz
Test mode	: Play mode (AC 24 V), Play mode (DC 12 V)
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 (LINE) / Play mode (AC 24 V)



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EUT /Model No. : HCV-6080

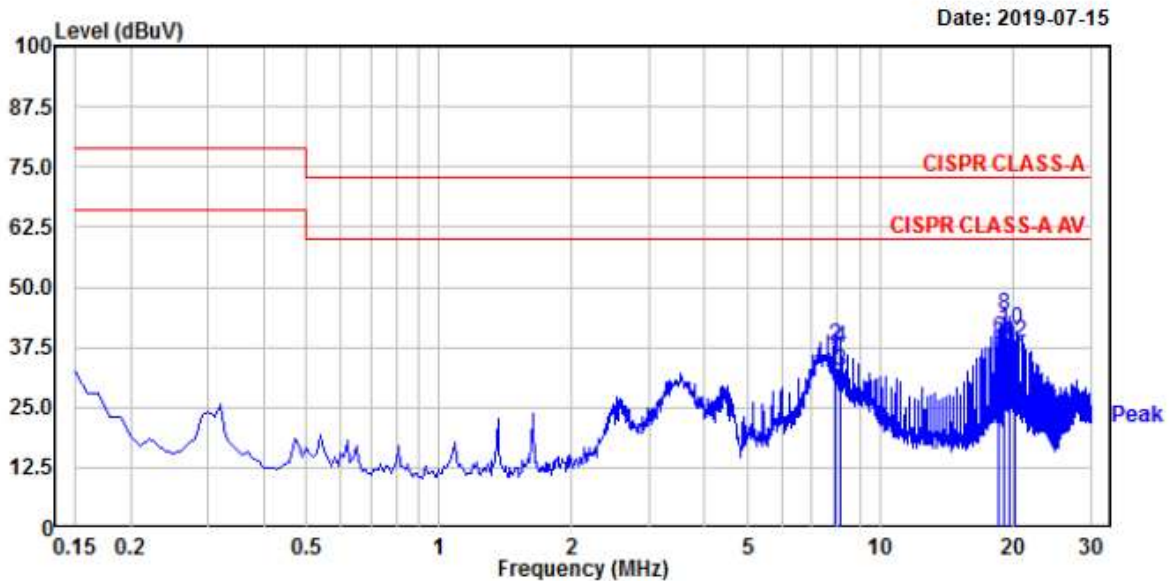
Phase : LINE

Test Mode : Play mode (AC24V)

Test Power : 230 / 50

Temp./ Humi. : 24 'C / 43 % R.H.

Test Engineer : SHIN S 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
7.865	18.06	15.04	19.70	37.76	34.74	73.00	60.00	35.24	25.26
8.143	17.59	12.70	19.70	37.29	32.40	73.00	60.00	35.71	27.60
18.454	19.16	15.00	19.96	39.12	34.96	73.00	60.00	33.88	25.04
18.991	24.31	17.17	19.97	44.28	37.14	73.00	60.00	28.72	22.86
19.534	21.30	17.59	19.99	41.29	37.58	73.00	60.00	31.71	22.42
20.086	18.47	15.07	19.99	38.46	35.06	73.00	60.00	34.54	24.94

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

Conducted emissions (NEUTRAL) / Play mode (AC 24 V)



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EUT /Model No. : HCV-6080

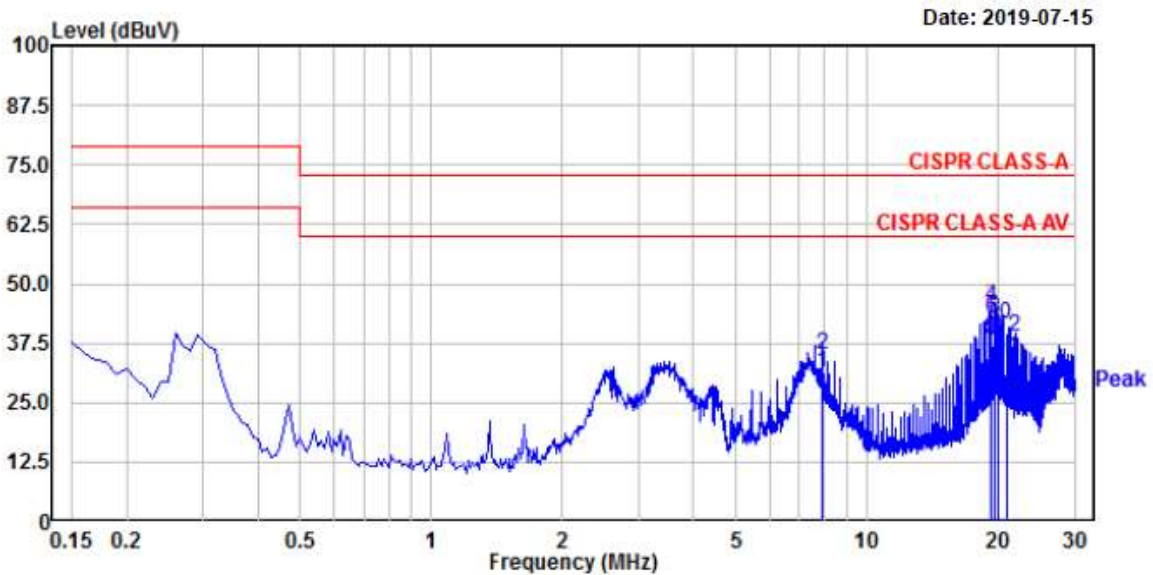
Phase : Neutral

Test Mode : Play mode (AC24V)

Test Power : 230 / 50

Temp./ Humi. : 24 'C / 43 % R.H.

Test Engineer : SHIN S 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
7.871	15.24	11.62	19.72	34.96	31.34	73.00	60.00	38.04	28.66
19.268	25.22	18.09	20.06	45.28	38.15	73.00	60.00	27.72	21.85
19.271	22.63	18.30	20.06	42.69	38.36	73.00	60.00	30.31	21.64
19.544	22.73	18.52	20.06	42.79	38.58	73.00	60.00	30.21	21.42
20.080	21.31	17.53	20.07	41.38	37.60	73.00	60.00	31.62	22.40
20.900	18.63	14.38	20.12	38.75	34.50	73.00	60.00	34.25	25.50

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

Conducted emissions (LINE) / Play mode (DC 12 V)



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EUT /Model No. : HCV-6080

Phase : Line

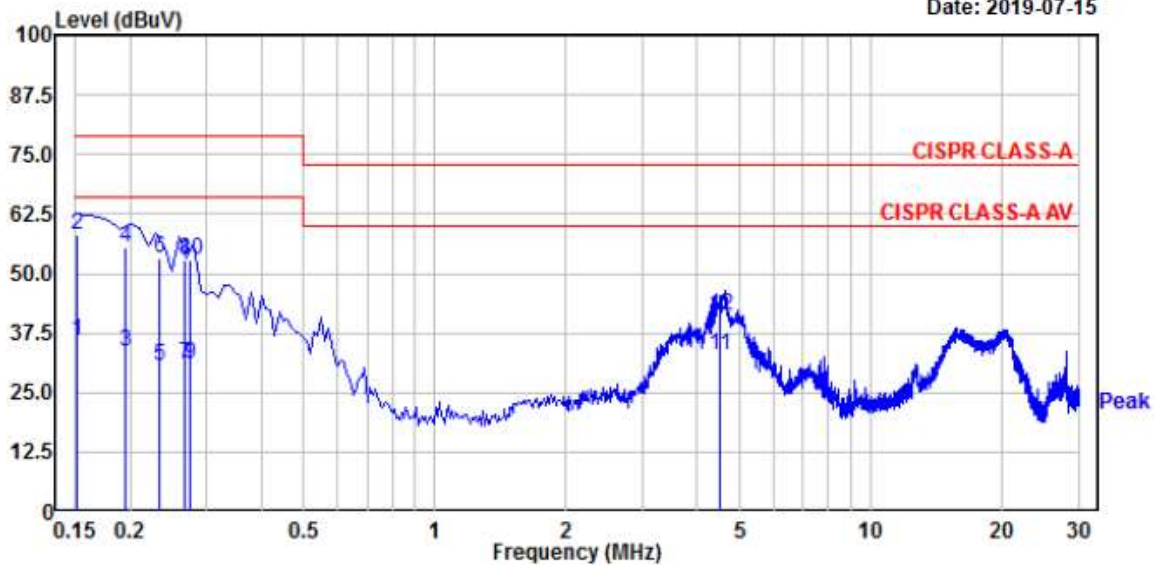
Test Mode : Play mode (DC12V)

Test Power : 230 / 50

Temp./ Humi. : 24 'C / 43 % R.H.

Test Engineer : SHIN S H

Date: 2019-07-15



Trace: 1

Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.151	38.54	16.42	19.43	57.97	35.85	79.00	66.00	21.03	30.15
0.196	36.00	14.31	19.44	55.44	33.75	79.00	66.00	23.56	32.25
0.234	33.61	11.22	19.44	53.05	30.66	79.00	66.00	25.95	35.34
0.267	33.30	11.35	19.45	52.75	30.80	79.00	66.00	26.25	35.20
0.275	33.28	11.43	19.45	52.73	30.88	79.00	66.00	26.27	35.12
4.503	21.42	13.12	19.60	41.02	32.72	73.00	60.00	31.98	27.28

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

Conducted emissions (NEUTRAL) / Play mode (DC 12 V)



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EUT /Model No. : HCV-6080

Phase : Neutral

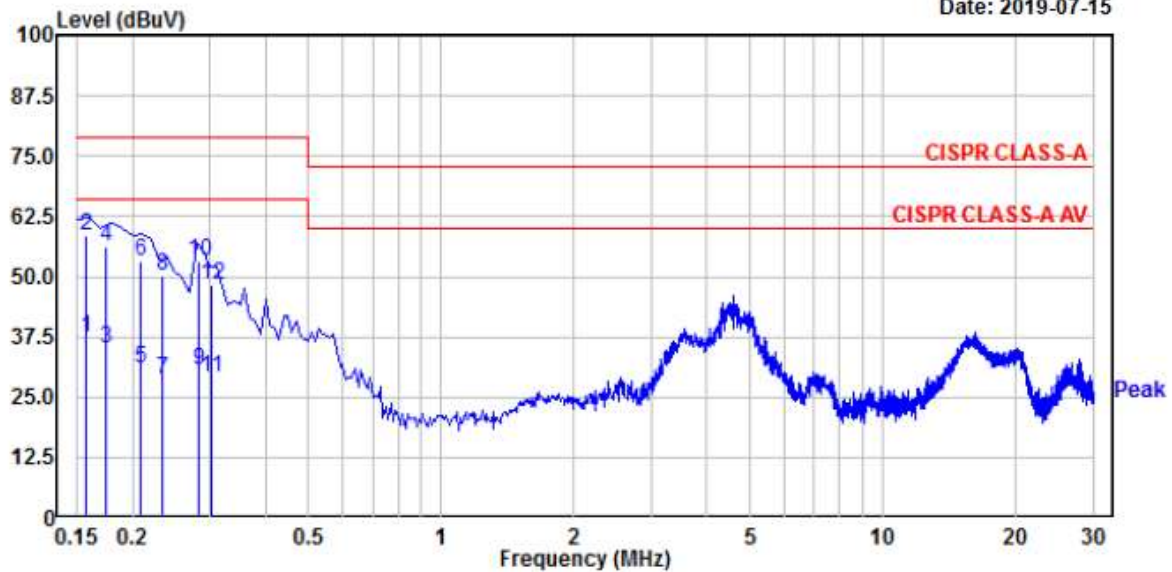
Test Mode : Play mode (DC12V)

Test Power : 230 / 50

Temp./ Humi. : 24 'C / 43 % R.H.

Test Engineer : SHIN S H

Date: 2019-07-15



Trace: 1

Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.157	38.90	17.99	19.44	58.34	37.43	79.00	66.00	20.66	28.57
0.175	36.91	15.53	19.44	56.35	34.97	79.00	66.00	22.65	31.03
0.208	33.82	11.47	19.44	53.26	30.91	79.00	66.00	25.74	35.09
0.233	30.72	9.17	19.45	50.17	28.62	79.00	66.00	28.83	37.38
0.282	33.61	11.26	19.46	53.07	30.72	79.00	66.00	25.93	35.28
0.301	28.80	9.41	19.46	48.26	28.87	79.00	66.00	30.74	37.13

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/AC2013
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	: Play mode (AC 24 V), Play mode (DC 12 V)
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 : higher than 108 MHz)

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 _ Play mode (AC 24 V)



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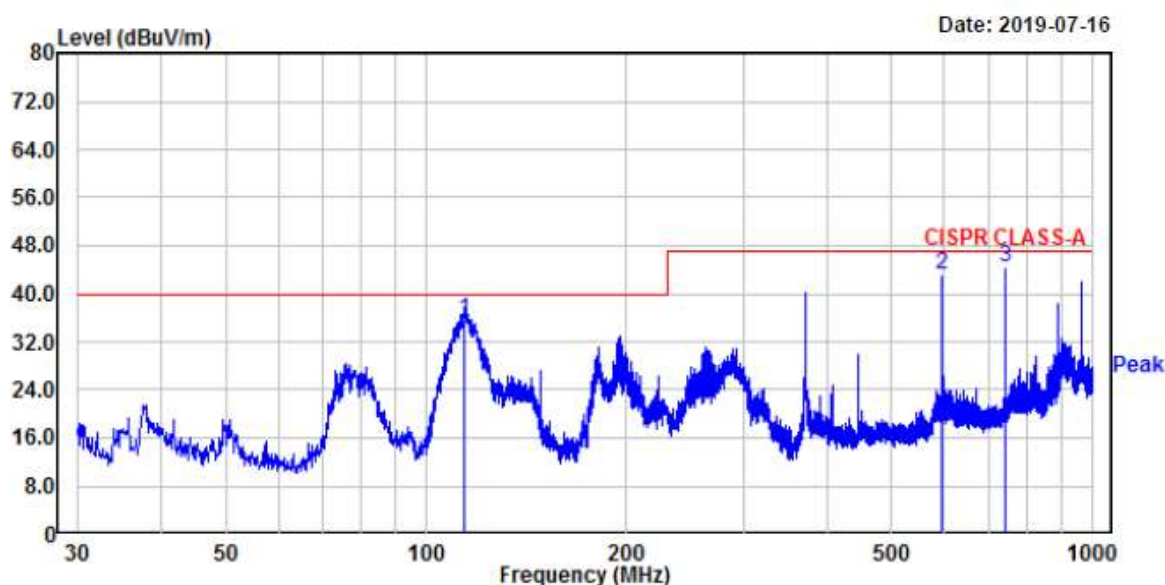
EUT/Model No.: HCV-6080

Temp/Humi: 26 'C / 44 % R.H.

Test Mode : Play mode (AC24V)

Tested by: SHIN S H

Power : 230 V / 50 Hz



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
114.27	51.12	-15.47	35.65	40.00	4.35	152	182	vertical
594.06	48.04	-4.94	43.10	47.00	3.90	292	351	vertical
742.50	46.34	-2.08	44.26	47.00	2.74	210	20	vertical

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

Radiated Emission (Below 1 GHz) / H _ Play mode (AC 24 V)



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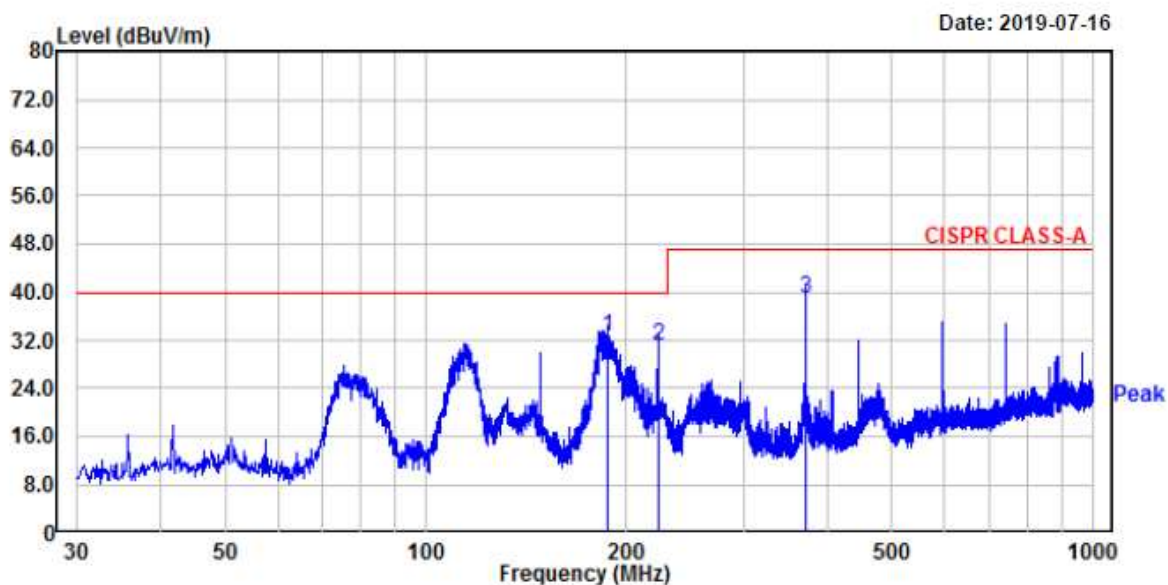
EUT/Model No.: HCV-6080

Temp/Humi: 26 'C / 44 % R.H.

Test Mode : Play mode (AC24V)

Tested by: SHIN S H

Power : 230 V / 50 Hz



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
187.26	47.16	-14.60	32.56	40.00	7.44	248	332	horizontal
222.79	46.39	-15.19	31.20	40.00	8.80	228	270	horizontal
371.20	48.55	-9.51	39.04	47.00	7.96	261	294	horizontal

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

Radiated Emission (Below 1 GHz) / V _ Play mode (DC 12 V)



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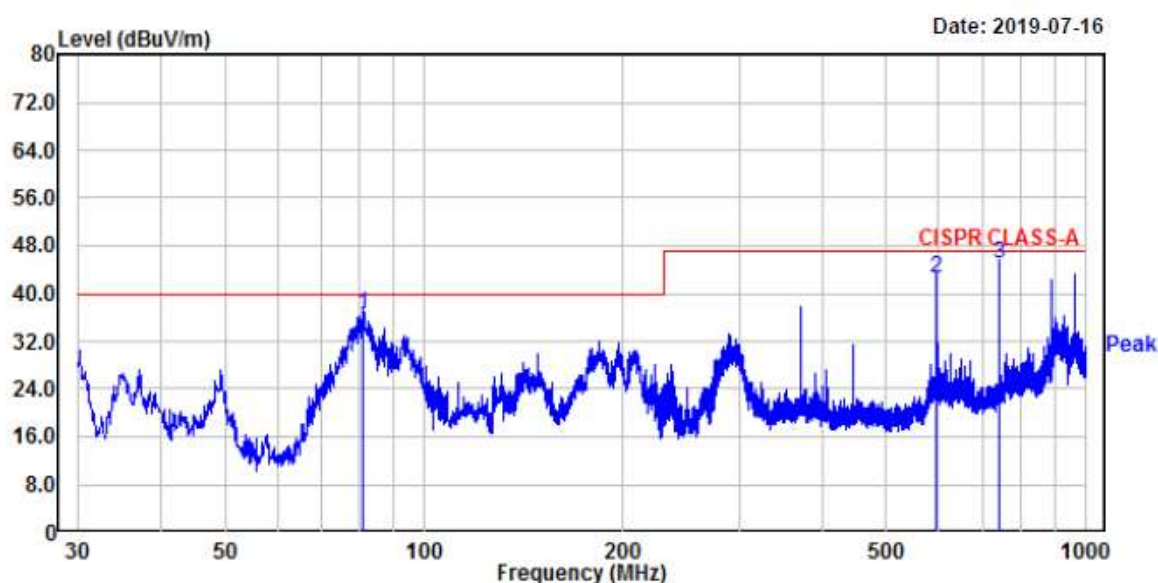
EUT/Model No.: HCV-6080

Temp/Humi: 26 'C / 44 % R.H.

Test Mode : Play mode (DC12V)

Tested by: SHIN S H

Power : 230 V / 50 Hz



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
80.80	54.28	-17.65	36.63	40.00	3.37	143	120	vertical
594.06	47.43	-4.94	42.49	47.00	4.51	167	109	vertical
742.50	47.20	-2.08	45.12	47.00	1.88	223	25	vertical

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

Radiated Emission (Below 1 GHz) / H _ Play mode (DC 12 V)



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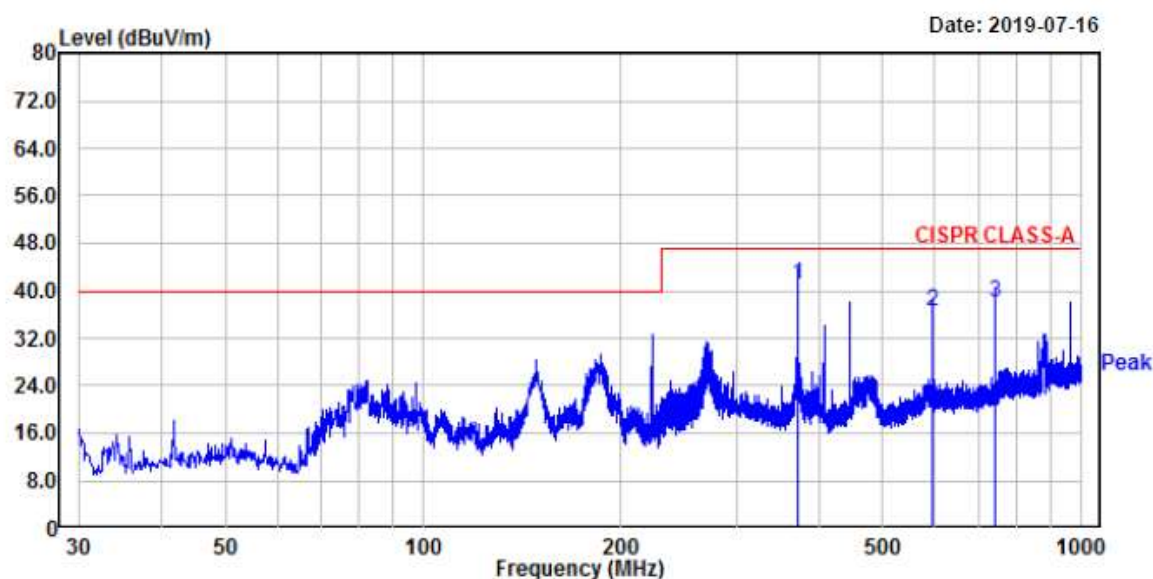
EUT/Model No.: HCV-6080

Temp/Humi: 26 'C / 44 % R.H.

Test Mode : Play mode (DC12V)

Tested by: SHIN S H

Power : 230 V / 50 Hz



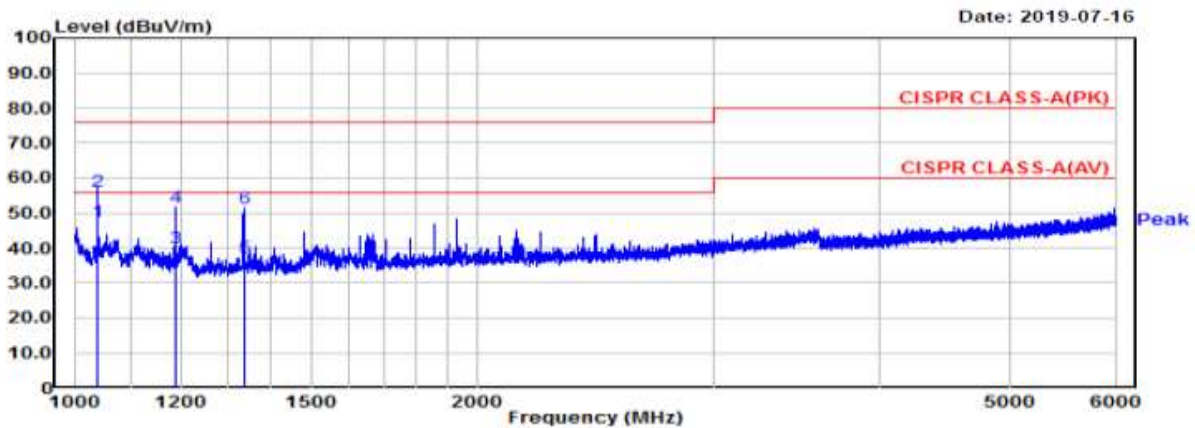
Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
371.20	50.60	-9.51	41.09	47.00	5.91	244	34	horizontal
594.06	41.44	-4.94	36.50	47.00	10.50	220	96	horizontal
742.59	40.14	-2.08	38.06	47.00	8.94	193	17	horizontal

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

Radiated Emission / Play mode (AC 24 V)

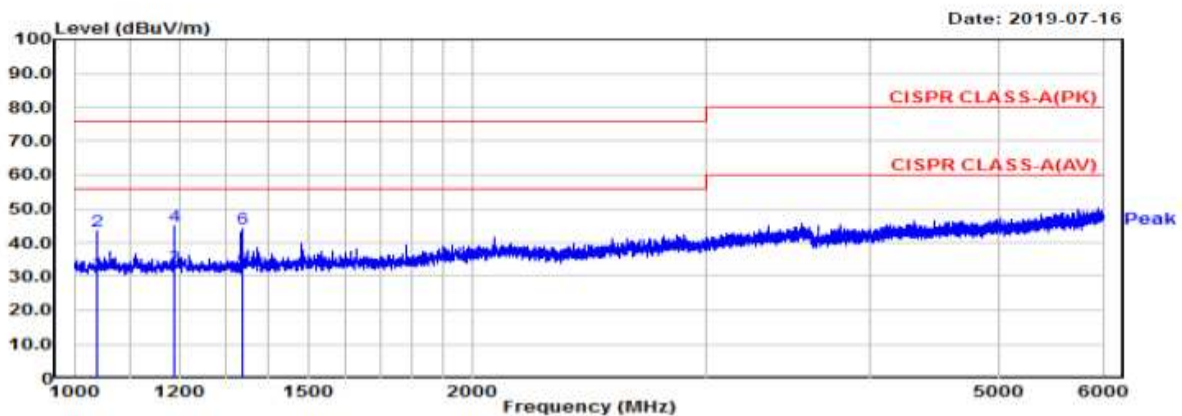
(Above 1 GHz) / H

EUT/Model No.: HCV-6080 Temp/Humi: 26 °C / 44 % R.H.
 Test Mode : Play mode (AC24V) Tested by: SHIN S H
 Power : 230 V / 50 Hz



(Above 1 GHz) / V

EUT/Model No.: HCV-6080 Temp/Humi: 26 °C / 44 % R.H.
 Test Mode : Play mode (AC24V) Tested by: SHIN S H
 Power : 230 V / 50 Hz



Manufacture : Hanwha Techwin (Tianjin) Co., Ltd.

Test Date

Temp.: Humidity: Distance

Model : HCV-6080

2019-07-16

[°C]

[%]

(m)

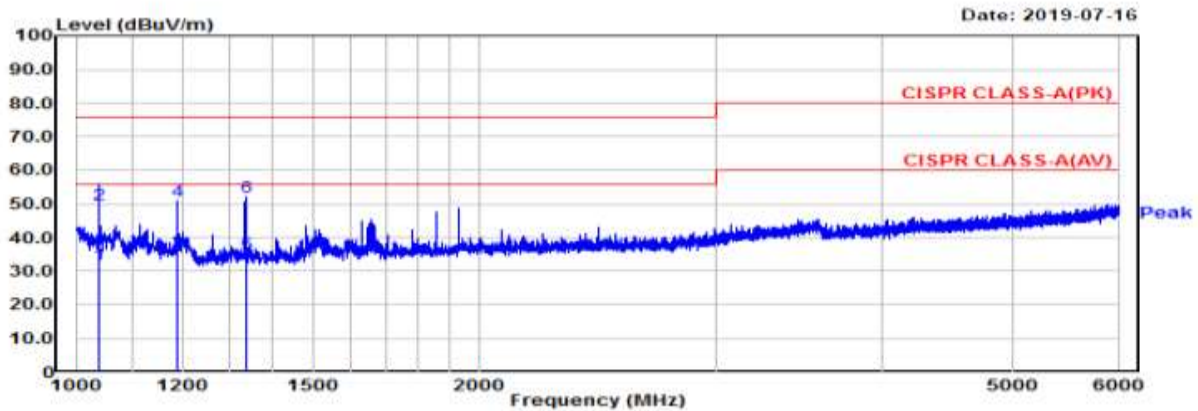
TEST mode : Play mode (AC24V)

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
1039.38	52.6	40.4	-7.21	45.37	33.17	76.00	56.00	30.63	22.83	100	227	H
1188.13	53.0	40.9	-6.14	46.85	34.75	76.00	56.00	29.15	21.25	100	313	H
1336.25	51.5	39.2	-5.21	46.25	33.95	76.00	56.00	29.75	22.05	100	206	H
1039.38	65.5	56.8	-7.13	58.32	49.62	76.00	56.00	17.68	6.38	100	239	V
1187.50	60.0	48.0	-6.10	53.87	41.87	76.00	56.00	22.13	14.13	100	277	V
1336.25	58.3	44.4	-5.07	53.19	39.29	76.00	56.00	22.81	16.71	100	305	V

Radiated Emission / Play mode (DC 12 V)

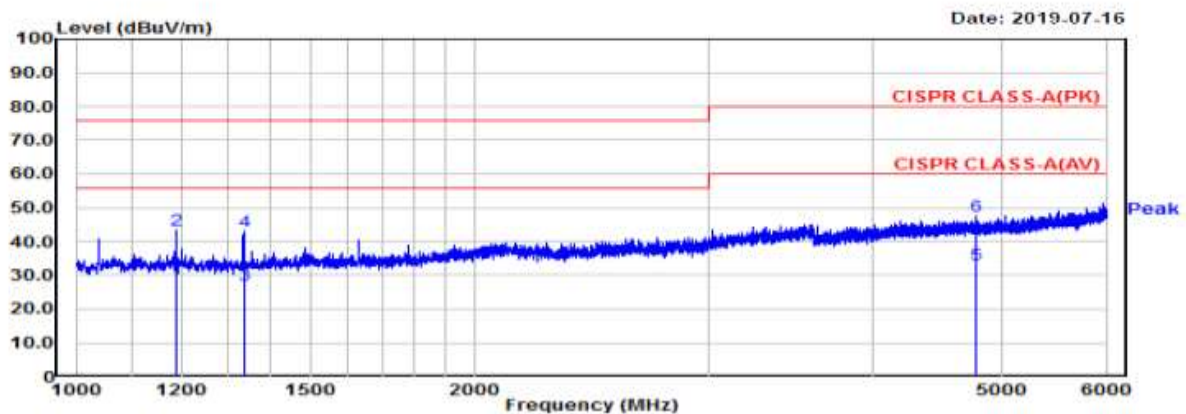
(Above 1 GHz) / H

EUT/Model No.:	HCV-6080	Temp/Humi:	26 °C / 44 % R.H.
Test Mode	: Play mode (DC12V)	Tested by:	SHIN S H
Power	: 230 V / 50 Hz		



(Above 1 GHz) / V

EUT/Model No.:	HCV-6080	Temp/Humi:	26 °C / 44 % R.H.
Test Mode	: Play mode (DC12V)	Tested by:	SHIN S H
Power	: 230 V / 50 Hz		



Manufacture : Hanwha Techwin (Tianjin) Co., Ltd.

Test Date

Temp.:
[°C]Humidity
: [%]Distance
(m)

Model : HCV-6080

2019-07-16

26

44

3.8

TEST mode : Play mode (DC12V)

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
1187.50	51.6	37.3	-6.14	45.50	31.20	76.00	56.00	30.50	24.80	100	270	H
1336.25	50.4	34.4	-5.21	45.22	29.16	76.00	56.00	30.78	26.84	100	327	H
4778.13	36.9	22.8	12.55	49.45	35.35	80.00	60.00	30.55	24.65	100	84	H
1038.75	59.2	41.4	-7.14	52.02	34.22	76.00	56.00	23.98	21.78	100	263	V
1187.50	58.9	43.4	-6.10	52.84	37.34	76.00	56.00	23.16	18.66	100	252	V
1336.25	59.3	42.2	-5.07	54.25	37.15	76.00	56.00	21.75	18.85	100	299	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	: Play mode (AC 24 V), Play mode (DC 12 V)
Rated power	: 5.913 W (MODE : Play mode (AC 24 V)) 2.600 W (MODE : Play mode (DC 12 V))
Result	: Not Applicable

Measurement Data:

- We did not test EN61000-3-2 (Harmonic current emissions) for the HCV-6080 because equipment whose rated power is less or equal 75W don't need to be tested.



Harmonic Current / Play mode (AC 24 V)

17th July 2019 - 16:08:15		Page 1/1	IECSoft v2_5a
		IEC61000-3-2:2014 Fluctuating Harmonics	
			
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.168		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Class A		
Mode	Measured		
Equipment Under Test			
Brand	Hanwha Techwin Co., Ltd.		
Model	HCV-6080		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	230.891V	
Rated Current	N/A	49.843mA	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	5.913W	
Additional Test Information			
Measured Power Factor	0.514		
Max Current THD	78.24%		
Max THC	35.126mA		
Max Power	5.958W		
Max F.Current	46.047mA		
Average F.Current	45.185mA		
Minimum Current	100A		
Test Duration	2.5 minutes		
Additional Test Details			
Operator	N/A		
Lab Name	N/A		
Location	N/A		
Notes			
Signature			
Results	Test - N/A. Rated Power < 75W		

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.

Harmonic Current / Play mode (DC 12 V)

17th July 2019 - 15:20:25		Page 1/1	IECSoft v2_5a
		IEC61000-3-2:2014 Fluctuating Harmonics	
			
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.168		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Class A		
Mode	Measured		
Equipment Under Test			
Brand	Hanwha Techwin Co., Ltd.		
Model	HCV-6080		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	230.888V	
Rated Current	N/A	38.218mA	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	2.600W	
Additional Test Information			
Measured Power Factor	0.295		
Max Current THD	239.38%		
Max THC	44.032mA		
Max Power	2.640W		
Max F.Current	19.945mA		
Average F.Current	19.162mA		
Minimum Current	100A		
Test Duration	2.5 minutes		
Additional Test Details			
Operator	N/A		
Lab Name	N/A		
Location	N/A		
Notes			
Signature			
Results	Test - N/A. Rated Power < 75W		

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	: Play mode (AC 24 V), Play mode (DC 12 V)
Result	: Complies

Measurement Data:


- Refer to the Next page

Voltage Variation and Flicking / Play mode (AC 24 V)

17th July 2019 - 16:15:43		Page 1/2	IECSoft v2_5a
		IEC61000-3-3:2013 Ed.3.0 Flickermeter	
			
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.168		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Voltage		
Mode	Normal (4%)		
Minimum Current	10A		
PST	10.00 minutes		
PLT	12 PSTs		
Equipment Under Test			
Brand	Hanwha Techwin Co., Ltd.		
Model	HCV-6080		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	230.876V	
Rated Current	N/A	N/A	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	N/A	
D max	0.0685% (Limit: 4.0%)		
T max	0.0000 s (Limit: 0.5 s)		
DC max	0.0071% (Limit: 3.3%)		
Additional Test Details			
Operator	N/A		
Lab Name	N/A		
Location	N/A		
Notes			
Signature			
Results	Phase1: PASS		

17th July 2019 - 16:15:43			Ph:1 Page 2/2			IECSoft v2 5a		
IEC61000-3-3:2013 Ed.3.0 Flickermeter								
Instrument Details								
Instrument Model		PPA5511						
Instrument Serial		162-04957						
Instrument Firmware		2.168						
Equipment Under Test								
Brand		Hanwha Techwin Co., Ltd.						
Model		HCV-6080						
Serial		N/A						
Flicker Test Results								
PST no.	Status	DC (%)	Dmax (%)	Tmax (s)	PST	PST Lim	PLT	PLT Lim
1	Phase1: PASS	0.007	0.06676	0	0.082	1.00	0.082	N/A
2	Phase1: PASS	0.007	0.06676	0	0.082	1.00	0.082	N/A
3	Phase1: PASS	0.007	0.06676	0	0.082	1.00	0.082	N/A
4	Phase1: PASS	0.007	0.06676	0	0.082	1.00	0.082	N/A
5	Phase1: PASS	0.007	0.06676	0	0.082	1.00	0.082	N/A
6	Phase1: PASS	0.007	0.06676	0	0.082	1.00	0.082	N/A
7	Phase1: PASS	0.007	0.06847	0	0.082	1.00	0.082	N/A
8	Phase1: PASS	0.007	0.06847	0	0.082	1.00	0.082	N/A
9	Phase1: PASS	0.007	0.06847	0	0.082	1.00	0.082	N/A
10	Phase1: PASS	0.007	0.06847	0	0.082	1.00	0.082	N/A
11	Phase1: PASS	0.007	0.06847	0	0.082	1.00	0.082	N/A
12	Phase1: PASS	0.007	0.06847	0	0.082	1.00	0.082	0.65

Voltage Variation and Flicking / Play mode (DC 12 V)

17th July 2019 - 15:50:51		Page 1/2	IECSoft v2_5a
		IEC61000-3-3:2013 Ed.3.0 Flickermeter	
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.168		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Voltage		
Mode	Normal (4%)		
Minimum Current	10A		
PST	10.00 minutes		
PLT	12 PSTs		
Equipment Under Test			
Brand	Hanwha Techwin Co., Ltd.		
Model	HCV-6080		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	230.895V	
Rated Current	N/A	N/A	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	N/A	
D max	0.0716% (Limit: 4.0%)		
T max	0.0000 s (Limit: 0.5 s)		
DC max	0.0053% (Limit: 3.3%)		
Additional Test Details			
Operator	N/A		
Lab Name	N/A		
Location	N/A		
Notes			
Signature			
Results	Phase1: PASS		

17th July 2019 - 15:50:51			Ph:1 Page 2/2			IECSoft v2 5a		
IEC61000-3-3:2013 Ed.3.0 Flickermeter								
Instrument Details								
Instrument Model		PPA5511						
Instrument Serial		162-04957						
Instrument Firmware		2.168						
Equipment Under Test								
Brand		Hanwha Techwin Co., Ltd.						
Model		HCV-6080						
Serial		N/A						
Flicker Test Results								
PST no.	Status	DC (%)	Dmax (%)	Tmax (s)	PST	PST Lim	PLT	PLT Lim
1	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
2	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
3	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
4	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
5	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
6	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
7	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
8	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
9	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
10	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
11	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	N/A
12	Phase1: PASS	0.005	0.07164	0	0.082	1.00	0.082	0.65

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	: 2019.07.16.
Test method	: EN 61000-4-2 :2009
Temperature / Humidity / Pressure	: 24 °C / 46 % R.H. / 100 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	: Play mode (AC 24 V), Play mode (DC 12 V)
Result	: Complies

Measurement Data:

MODE : Play mode (AC 24 V), Play mode (DC 12 V)

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

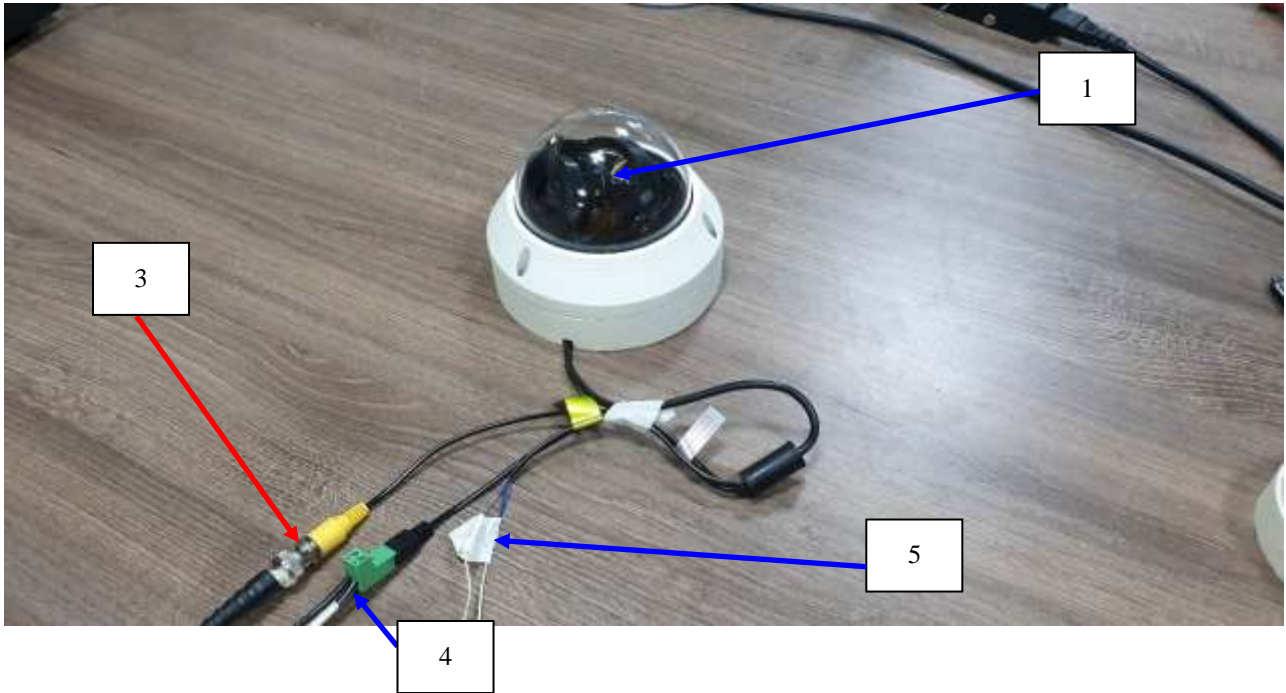
No.	Position	Kind of Discharge	Result	Remarks
1	Enclosure #1	Air	Complies	No reaction recognized
2	Enclosure #2	Contact	Complies	No reaction recognized
3	BNC	Contact	Complies	No reaction recognized
4	AC IN, DC IN	Air	Complies	No reaction recognized
5	Alarm	Air	Complies	No reaction recognized

※ Results are complies in each test mode.

ESD TEST POINT

MODE : Play mode (AC 24 V), Play mode (DC 12 V)

← 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	:	2019.07.19
Test method	:	EN 61000-4-3:2006/A1:2008/A2:2010
Temperature / Humidity / Pressure	:	24 °C / 48 % R.H. / 100 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	:	Play mode (AC 24 V), Play mode (DC 12 V)
Result	:	Complies

Measurement Data:

MODE : Play mode (AC 24 V)

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

MODE : Play mode (DC 12 V)

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

※ 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	:	2019.07.16.
Test method	:	EN 61000-4-4:2012
Temperature / Humidity / Pressure	:	24 °C / 46 % R.H. / 100 kPa
Cable length	:	> 3 m
Test level	:	2.0 kV (AC power input port) 1.0 kV (DC power input port, Signal port)
Polarity	:	Negative/ positive
Repetition frequency	:	100 kHz
Test mode	:	Play mode (AC 24 V), Play mode (DC 12 V)
Result	:	Complies

Measurement Data:

MODE : Play mode (AC 24 V)

Power Line	Test level	Result	Remarks
L – N	± 2 kV	Complies	No reaction recognized

Signal Line	Test level	Result	Remarks
BNC	± 1 kV	Complies	No reaction recognized

MODE : Play mode (DC 12 V)

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

Signal Line	Test level	Result	Remarks
BNC	± 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	:	2019.07.16.
Test method	:	EN 61000-4-5:2014/A1:2017
Temperature / Humidity / Pressure	:	24 °C / 46 % R.H. / 100 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	:	Play mode (AC 24 V), Play mode (DC 12 V)
Result	:	Complies

Measurement Data:

MODE : Play mode (AC 24 V)

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

Signal Line	level	Result	Remark
BNC	± 1.0 kV	Complies	No reaction recognized

MODE : Play mode (DC 12 V)

Phase	Line	level	Result	Remark
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
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
BNC	± 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	:	2019.07.18.
Test method	:	EN 61000-4-6:2014/AC:2015
Temperature / Humidity / Pressure	:	24 °C / 48 % R.H. / 100 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	:	Play mode (AC 24 V), Play mode (DC 12 V)
Result	:	Complies

Measurement Data:

MODE : Play mode (AC 24 V)

Power Port	Result	Remarks
Power	Complies	No reaction recognized

Signal Port	Result	Remarks
BNC	Complies	No reaction recognized

MODE : Play mode (DC 12 V)

Power Port	Result	Remarks
Power	Complies	No reaction recognized

Signal Port	Result	Remarks
BNC	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	:	2019.07.16.
Test method	:	EN 61000-4-11:2004/A1:2017
Temperature / Humidity / Pressure	:	24 °C / 46 % R.H. / 100 kPa
Ut	:	230 Vac
Test mode	:	Play mode (AC 24 V), Play mode (DC 12 V)
Result	:	Complies

Measurement Data:

MODE : Play mode (AC 24 V)

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 Power OFF during the test. Automatic replay without user's control. After the test, EUT was operated normally.

MODE : Play mode (DC 12 V)

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 Power OFF during the test. Automatic replay without user's control. After the test, EUT was operated normally.

※ Results are complies in each test mode.

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	:	2019.07.16.
Test method	:	EN 50130-4:2011/A1:2014
Temperature / Humidity / Pressure	:	24 °C / 46 % R.H. / 100 kPa
Supply Voltage maximum	:	$U_{nom} + 10 \%$
Supply Voltage minimum	:	$U_{nom} - 15 \%$
Ut	:	230 Vac
Test mode	:	Play mode (AC 24 V), Play mode (DC 12 V)
Result	:	Complies

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.

2 Mains supply voltage variations

MODE : Play mode (AC 24 V) / 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

MODE : Play mode (DC 12 V) / 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"/>	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 checked="" 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	-	-	-

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	2019.09.10	1 year
<input checked="" type="checkbox"/>	Reference Impedance Network	ES4152	NF Corp.	9074424	2019.09.07	1 year

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	-	-
<input checked="" type="checkbox"/>	Signal Generator	E4438C	Agilent	MY42080843	2019.09.06	1 year
<input checked="" type="checkbox"/>	HORN ANTENNA	3115	ETS	00055005	-	-
<input type="checkbox"/>	Sound Acoustic Tester	TST-1000	TESTEK	150065-A	2019.09.11	1 year
<input type="checkbox"/>	Microphone	MPA201	BSWA	530147	2019.09.13	1 year

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 type="checkbox"/>	CDN	CNV 508T5	EMTEST	P1742204978	2019.09.07	1 year
<input checked="" 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 checked="" type="checkbox"/>	CDN (M2)(AC main)	TSCDN-M2-16A	F.C.C	07009	2020.03.16	1 year
<input checked="" type="checkbox"/>	CDN (M3)(DC main)	TSCDN-M3-16A	F.C.C	07016	2020.03.16	1 year
<input checked="" type="checkbox"/>	CDN (M3) (sub)	TSCDN-M3-16A	F.C.C	07017	2019.09.06	1 year
<input type="checkbox"/>	Sound Acoustic Tester	TST-1000	TESTEK	15065-A	2019.09.11	1 year
<input type="checkbox"/>	Microphone	MP201	BSWA	530147	2019.09.13	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	2019.09.06	1 year
<input checked="" type="checkbox"/>	AC Power Source	Variac NX	EMTEST	P1745207276	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

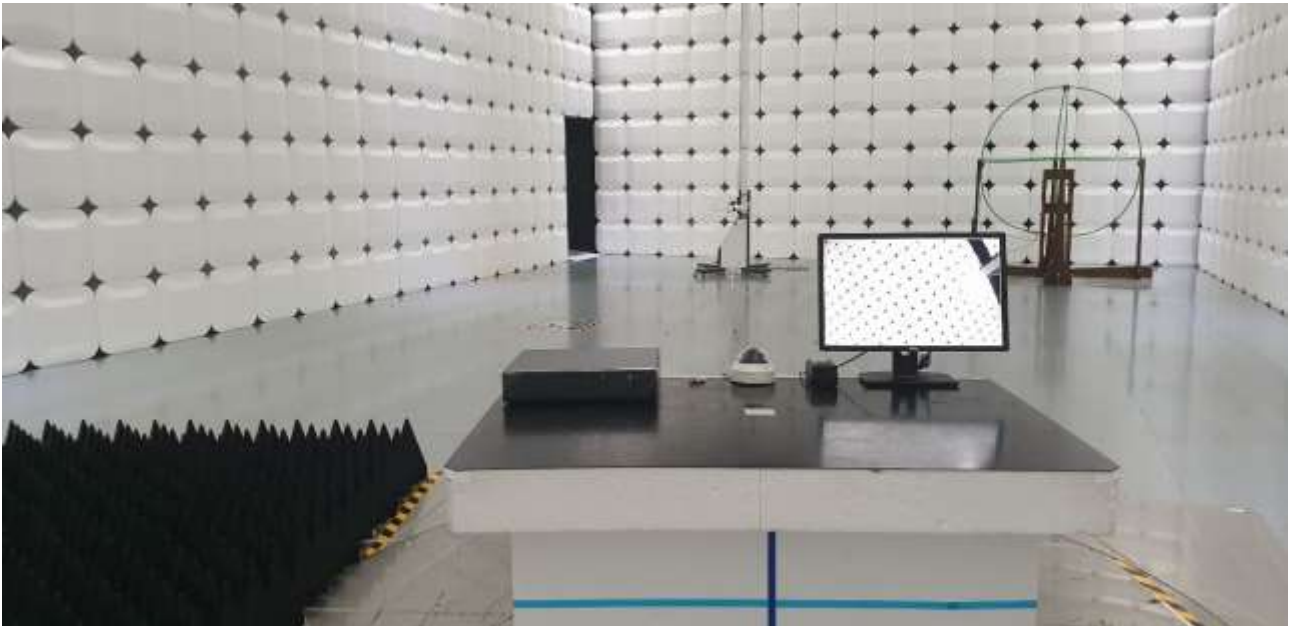
Conducted emissions (Maximum emission configuration) / Play mode (AC 24 V)



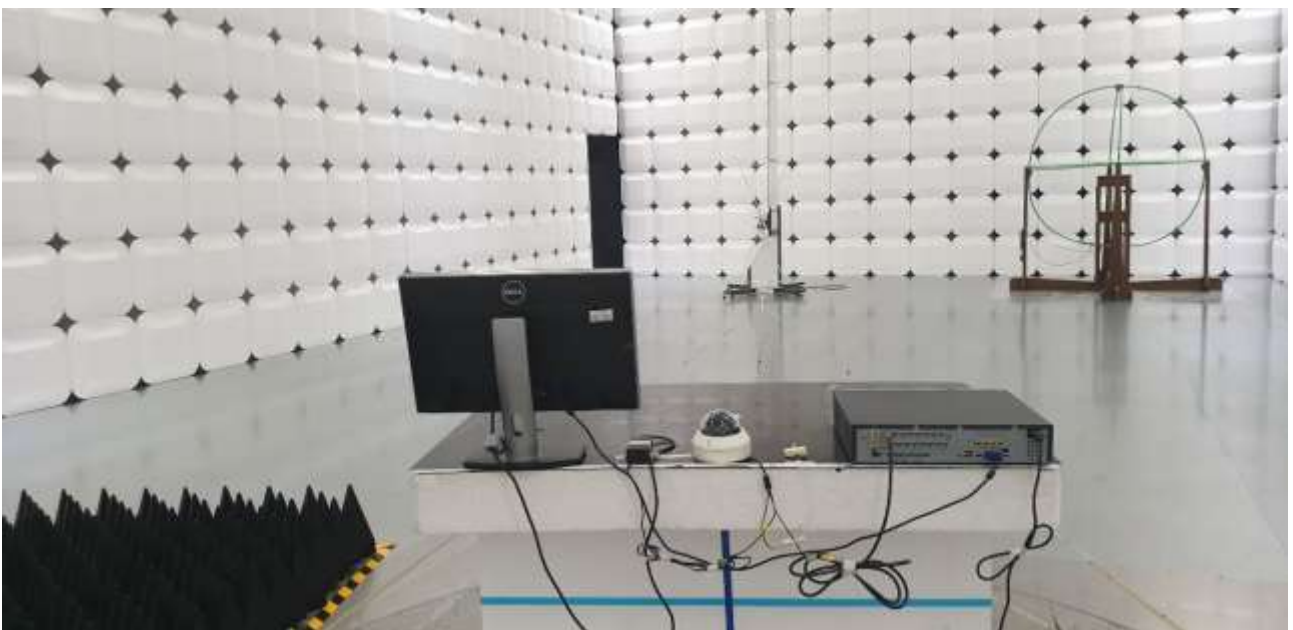
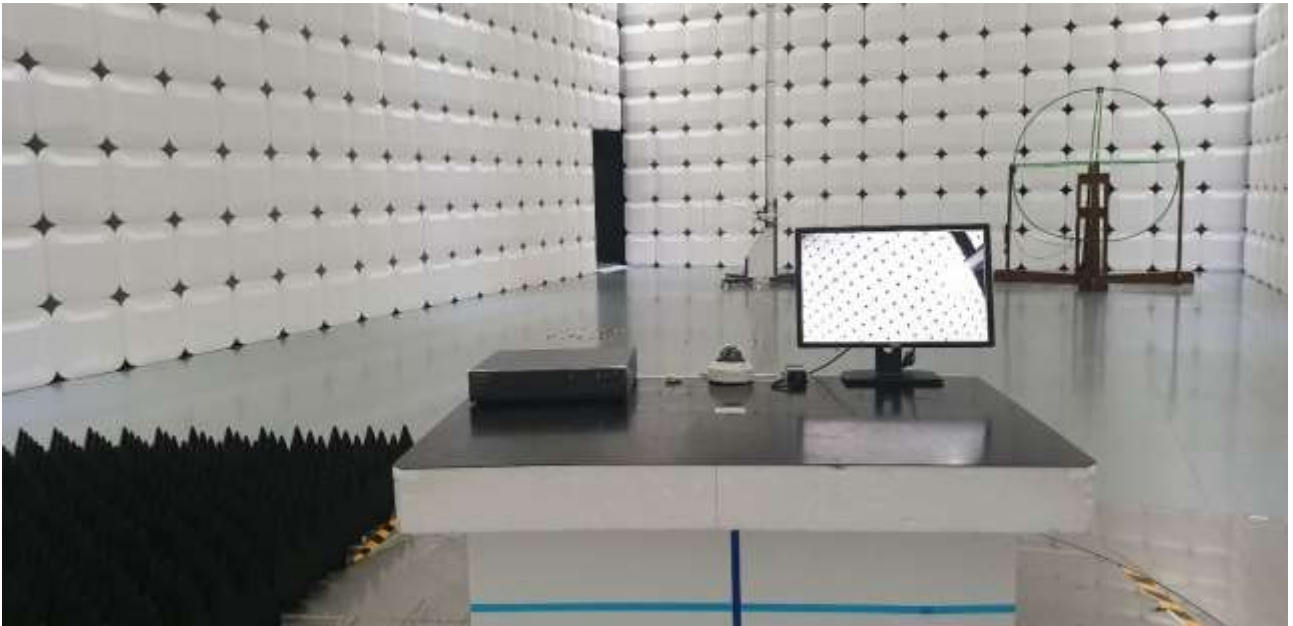
Conducted emissions (Maximum emission configuration) / Play mode (DC 12 V)



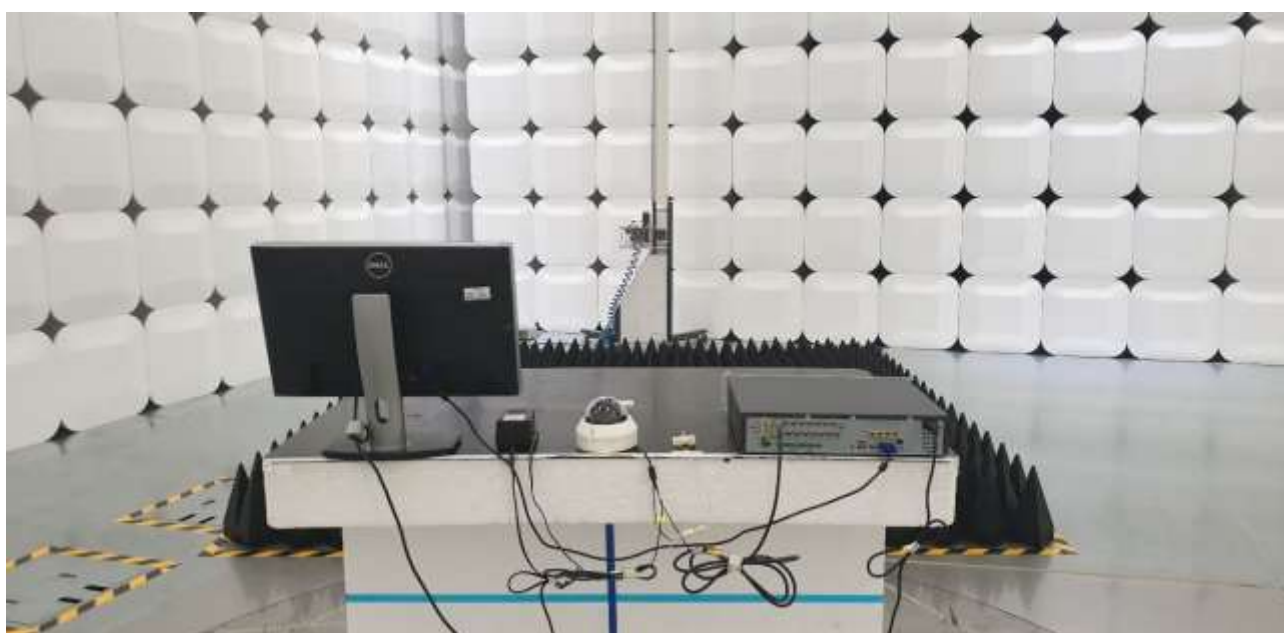
Radiated emission (Maximum emission configuration)-Below 1 GHz / Play mode (AC 24 V)



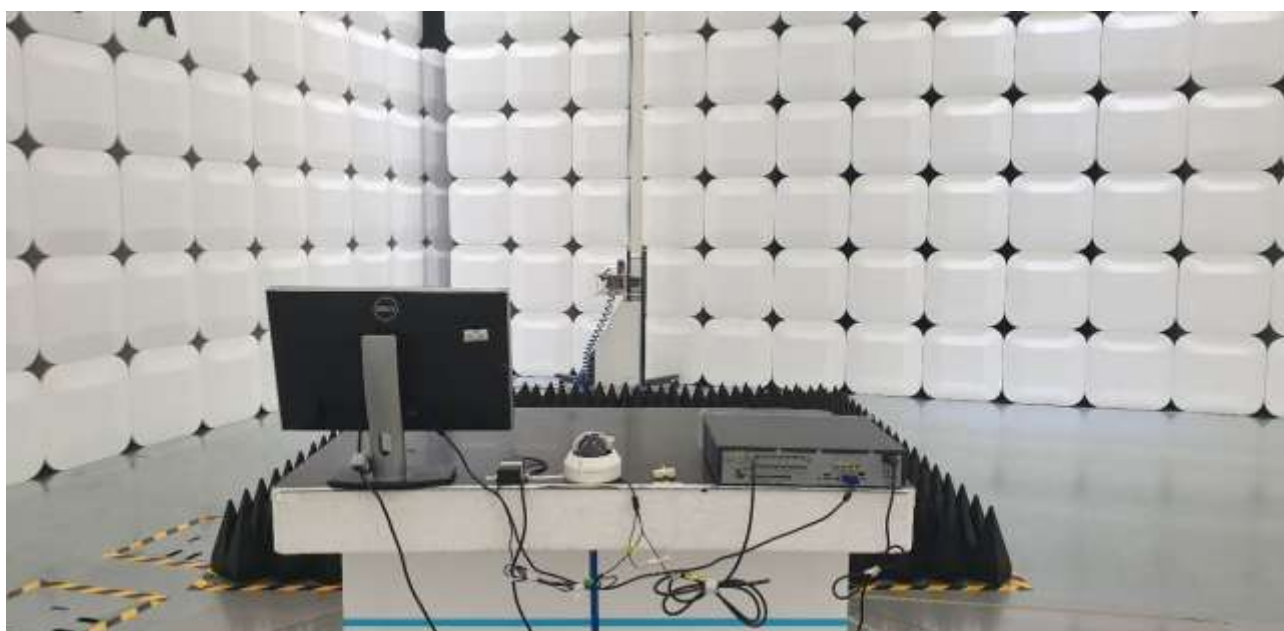
Radiated emission (Maximum emission configuration)-Below 1 GHz / Play mode (DC 12 V)



Radiated emission (Maximum emission configuration)-Above 1 GHz / Play mode (AC 24 V)



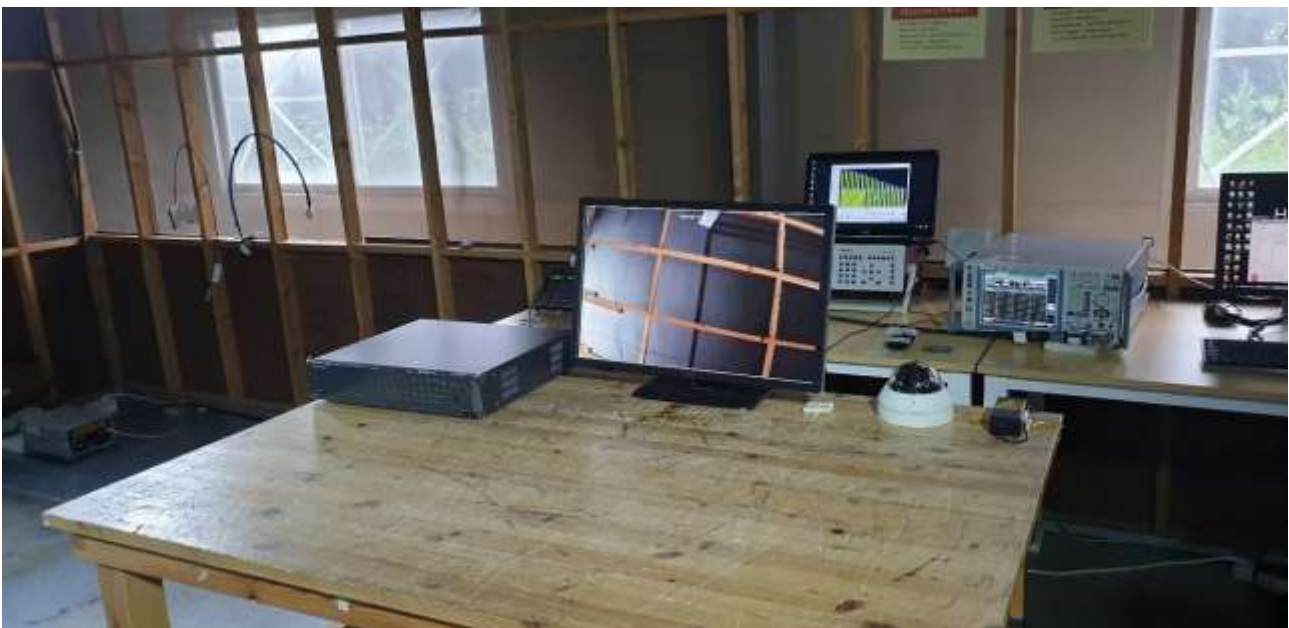
Radiated emission (Maximum emission configuration)-Above 1 GHz / Play mode (DC 12 V)



Harmonic Current / Play mode (AC 24 V)



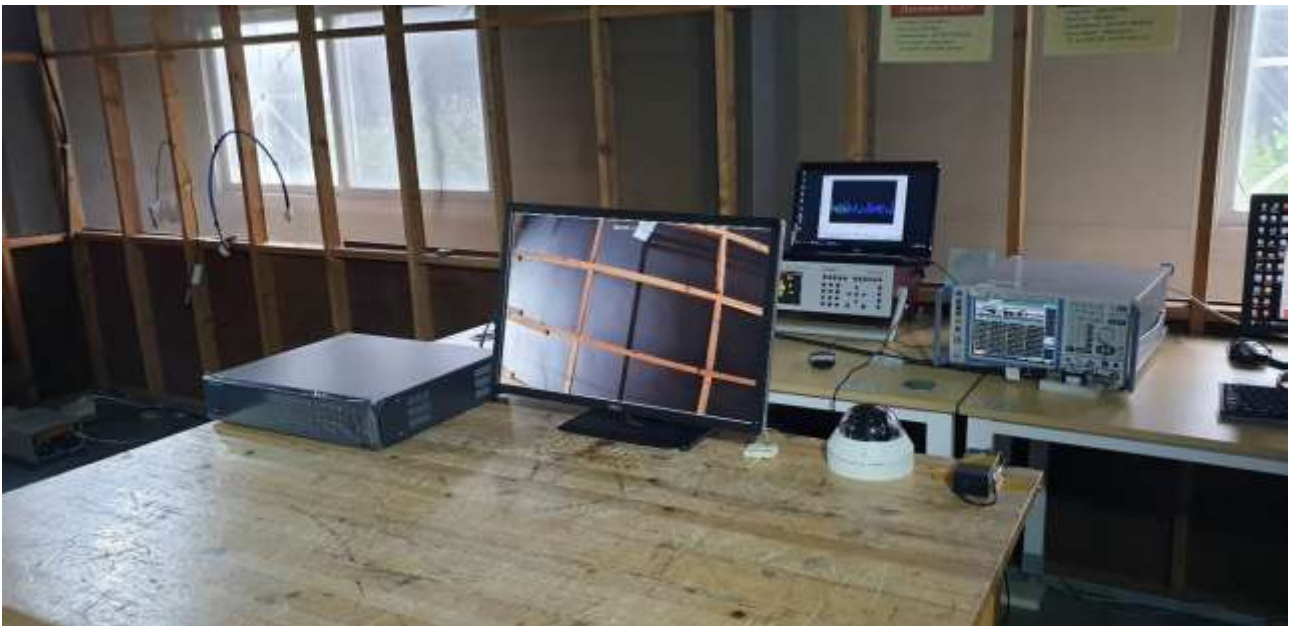
Harmonic Current / Play mode (DC 12 V)



Voltage Variation and Flicking / Play mode (AC 24 V)



Voltage Variation and Flicking / Play mode (DC 12 V)



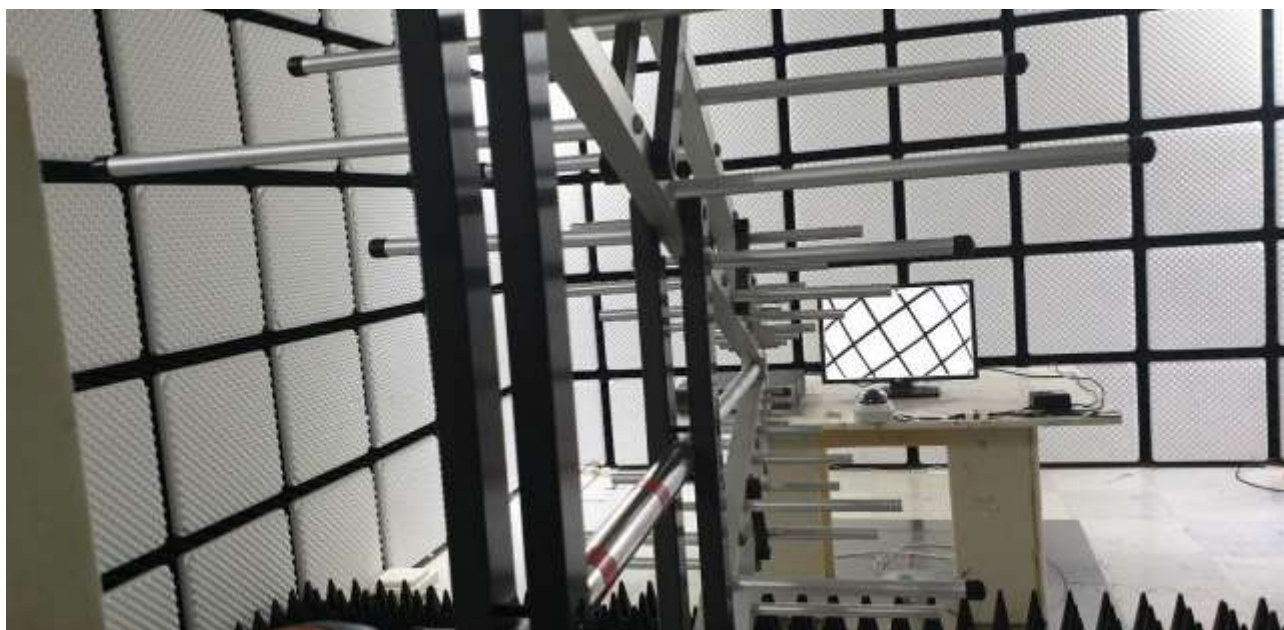
Electrostatic discharge / Play mode (AC 24 V)



Electrostatic discharge / Play mode (DC 12 V)



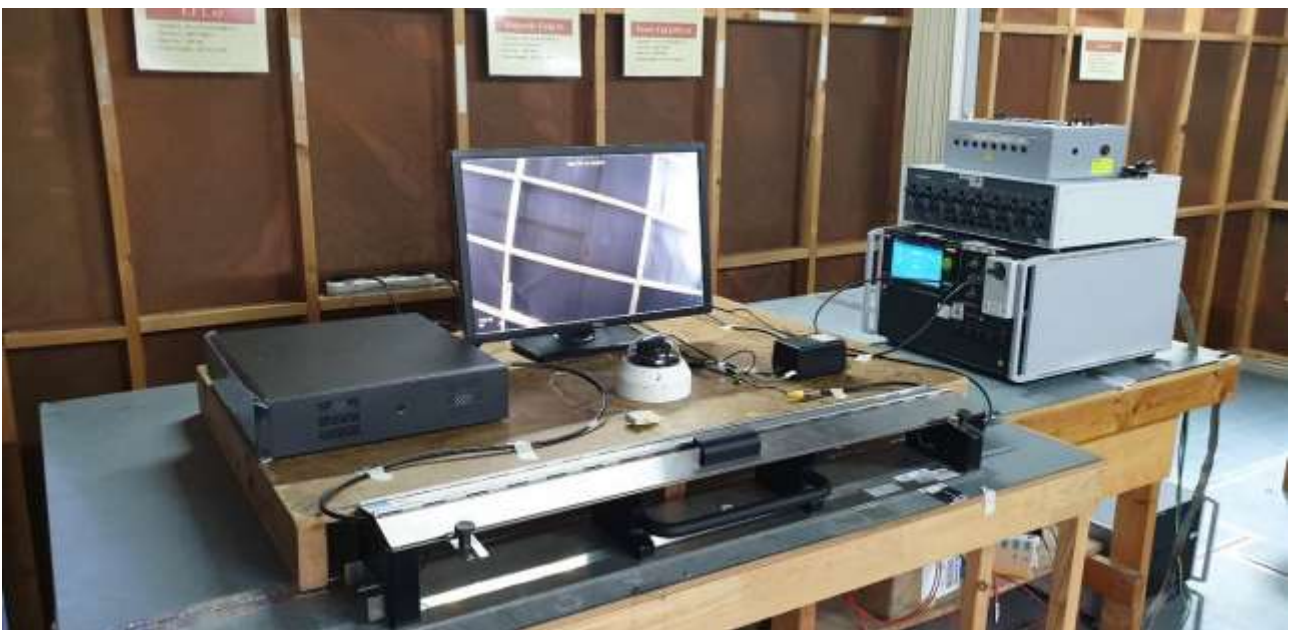
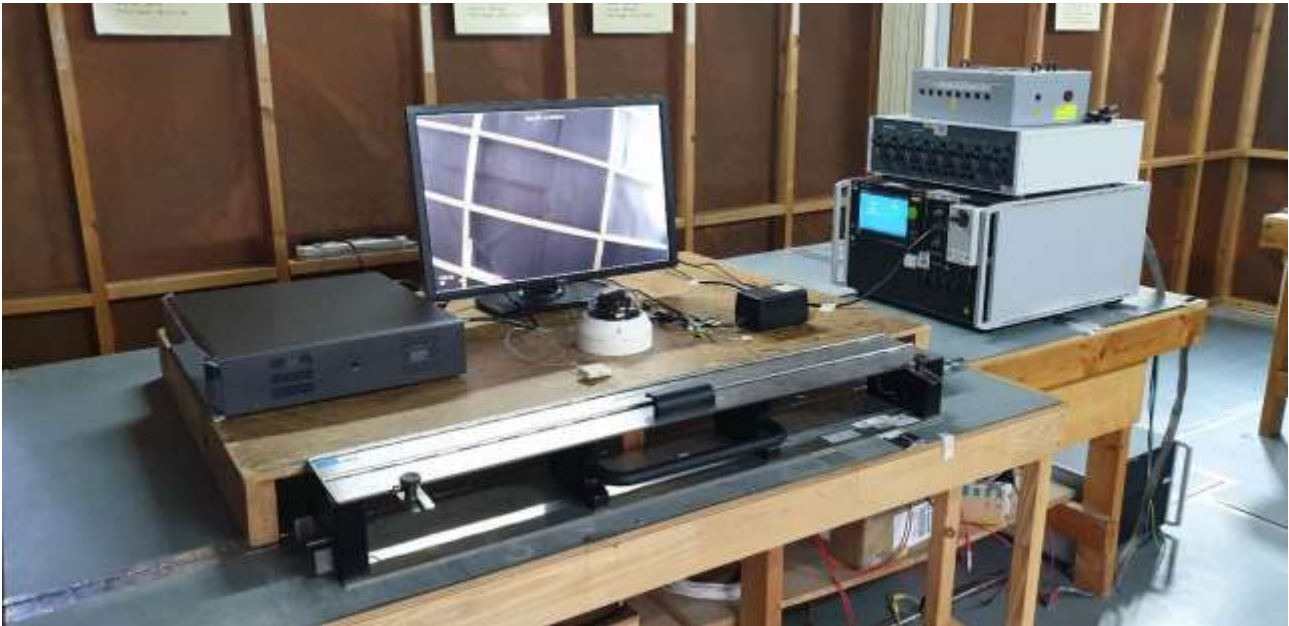
RF Electromagnetic Field / Play mode (AC 24 V)



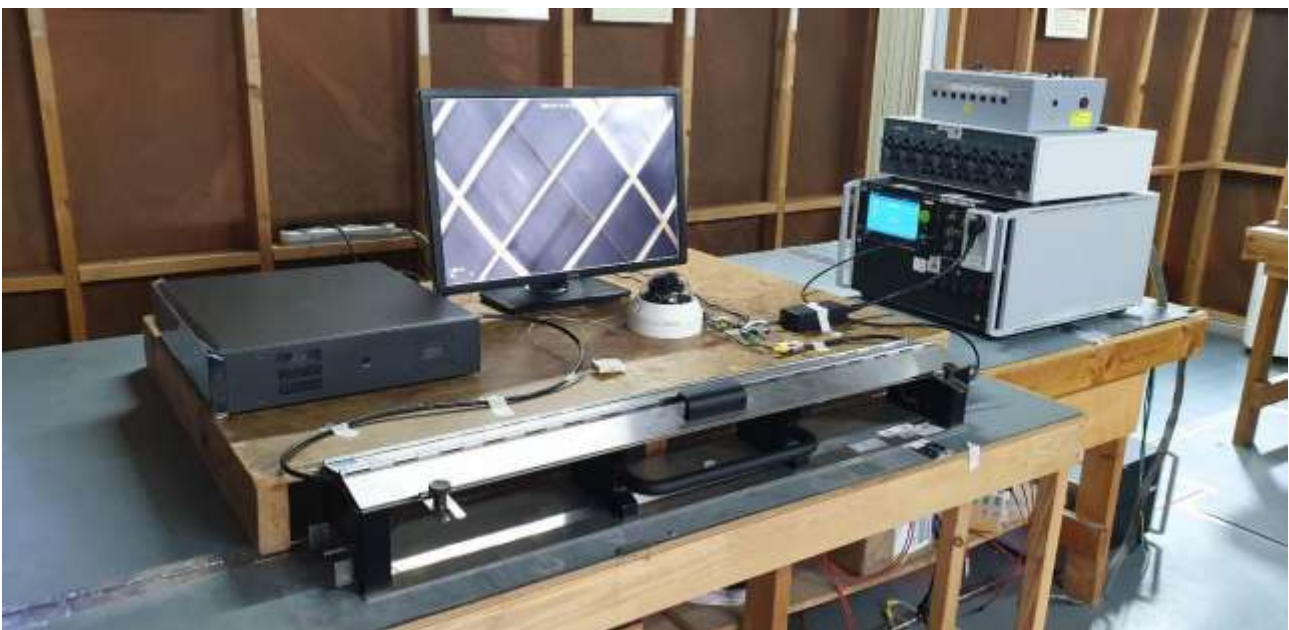
RF Electromagnetic Field / Play mode (DC 12 V)



Electrical fast transients / Play mode (AC 24 V)



Electrical fast transients / Play mode (DC 12 V)



Surge / Play mode (AC 24 V)



Surge / Play mode (DC 12 V)



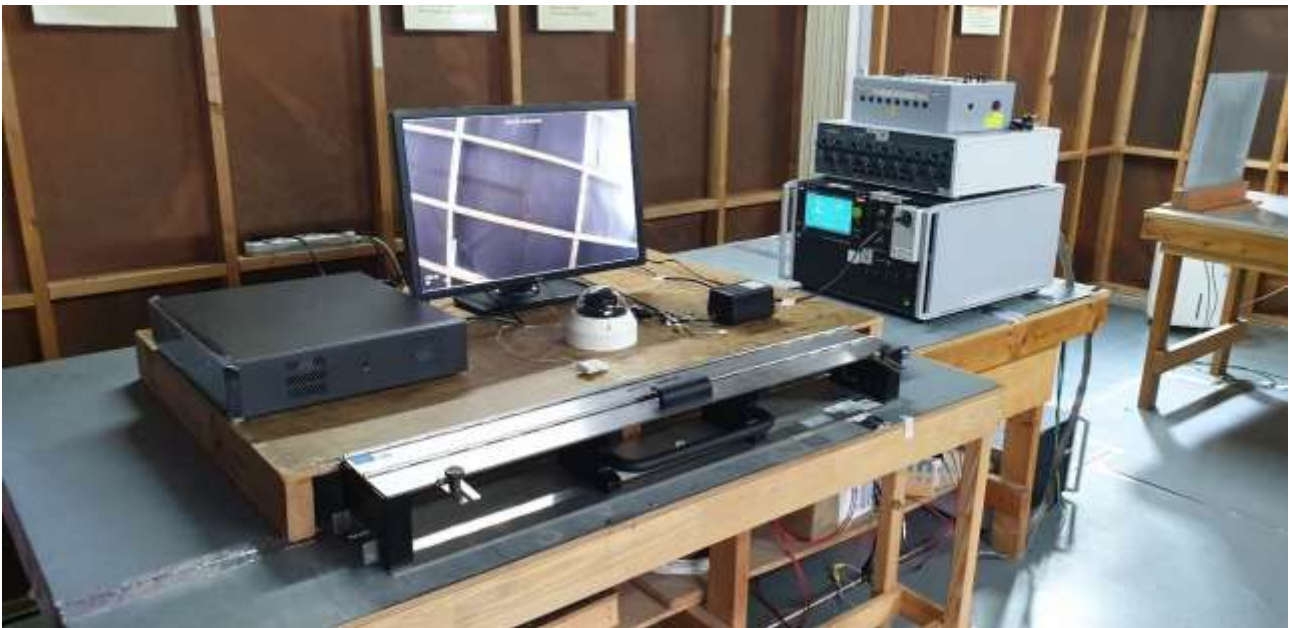
Conducted Disturbances, Induced by Radio-Frequency Fields / Play mode (AC 24 V)



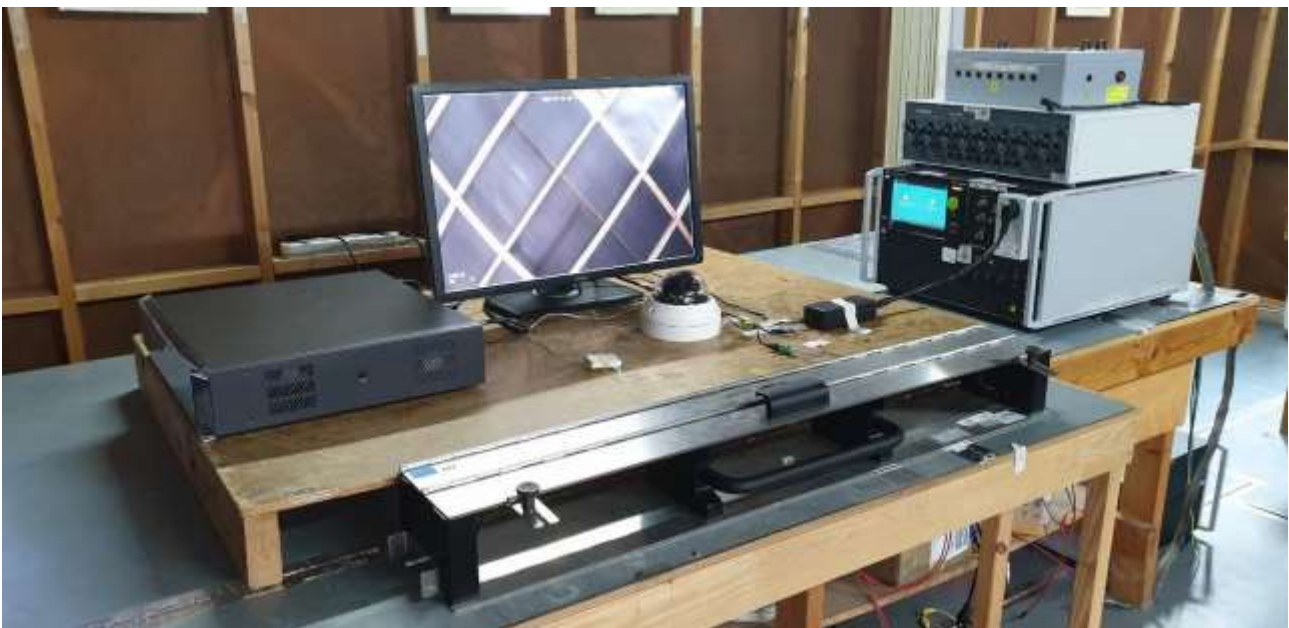
Conducted Disturbances, Induced by Radio-Frequency Fields / Play mode (DC 12 V)



Mains supply voltage dips, short interruptions / Play mode (AC 24 V)



Mains supply voltage dips, short interruptions / Play mode (DC 12 V)



EUT



EUT



EUT

