



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: July 21 - 22, 2020
Test Report S/N: LR500172008C
Test Site : LTA Co., Ltd.

Model No.

XRP-4310DB4

APPLICANT

Hanwha Techwin Co., Ltd.

Equipment Name : NVR
Manufacturer : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
Model name : XRP-4310DB4
Test Device Serial No. : Identification
Rule Part(s) : VCCI-CISPR 32:2016

Date of issue : August 05, 2020

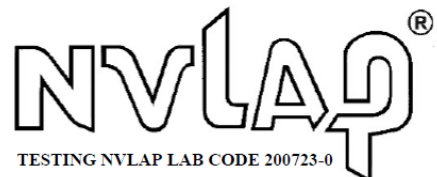
This test report is issued under the authority of:

Gi Won Lee, Technical Manager

The test was supervised by:

Jun Hwan Park, 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 history

Revision	Date of issue	Test report No.	Description
0	05.08.2020	LR500172008C	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
4. EMISSION.....	9
4.1 Conducted Emissions	9
4.2 Radiated Emissions	25
APPENDIX A TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS.....	33
APPENDIX B PHOTOGRAPHS	35

1. General information's

1-1 Test Performed

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

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which “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	-	RRA accredited Lab.
	U.S.A		2021-04-11	
	CANADA		2021-06-16	
	VIETNAM		2021-04-12	
VCCI	JAPAN	C-14948	2023-09-10	VCCI registration
		T-12416	2023-09-10	
		R-14483	2023-10-15	
		G-10847	2021-12-13	
KOLAS	KOREA	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(<http://hanhwa-security.com>)

Factory #1

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 #2

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
 Category : NVR
 Model name : XRP-4310DB4
 Serial number : Identification
 Date of receipt : July 15, 2020
 EUT condition : Pre-production, not damaged
 Interface Ports : AC IN, LAN, HDMI, USB 3.0, USB 2.0, HDD, AUDIO OUT, HDD
 Power rating : AC 100 V, 50 / 60 Hz

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure : (21 - 23) °C / (51 - 55) % R.H.
 Tested Model : XRP-4310DB4
 Test mode : REC mode
 Test Voltage : AC 100 V, 50 / 60 Hz

2-5 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
NVR	XRP-4310DB4	N/A	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. D-TECH CO.,LTD.	-
Keyboard	PKB-650U	N/A	SHENZHEN TYCHO TECHNOLOGY CO., LIMITED	-
Mouse	MOKJUO	N/A	PRIMAX ELECTRONICS LTD	-
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Monitor #1	P2018H	N/A	DELL	-
Monitor #2	24MA53D	N/A	LG	-
Monitor #2 Adapter	A11-120P1A	N/A	Chicony	-
Speaker	MINI-X3	N/A	Shenzhen Music Technology Co., Ltd	-
Notebook	TFG13	N/A	HANSUNG	-
Switch Hub	H608	N/A	ipTIME	-
Switch Hub Adapter	DCP015A050600K	N/A	Zioncom Electronics	-
Network Camera	QNV-6082R	N/A	HANWHA TECHWIN CO.,LTD.	-
PoE Injector	SFC501G	N/A	SOLTECH INFONET INC.	-
USB Memory Stick #1	Ultra Flair CZ73 32GB	N/A	SanDisk	64 GB
USB Memory Stick #2	Ultra Z48USB 3.0 32GB	N/A	SanDisk	64 GB
HDD	WD40PURX- 64N96Y0	N/A	Western Digital	4 TB

2-6 Cable List

Cable List						
From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	AC IN #1	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	AC IN #2	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	LAN #1	Poe Injector	LAN	3.0	NO	Plastic
	LAN #2	Switch Hub	LAN	3.0	NO	Plastic
	LAN #3	Switch Hub	LAN	3.0	NO	Plastic
	USB 2.0 #1	Keyboard	-	1.5	NO	Plastic
	USB 2.0 #2	Mouse	-	1.5	NO	Plastic
	USB 3.0 #1	USB Memory Stick #1	-	-	-	Metal
	USB 3.0 #2	USB Memory Stick #2	-	-	-	Plastic
	AUDIO OUT	Speaker	AUDIO IN	1.0	NO	Plastic
	HDMI #1	Monitor #1	HDMI	1.5	YES	Plastic
	HDMI #2	Monitor #2	HDMI	1.5	YES	Plastic
	HDD	HDD	-	-	-	-
Switch Hub	LAN	Notebook	LAN	2.0	NO	Plastic
	DC IN	Switch Hub Adapter	DC OUT	1.5	NO	Plastic
Switch Hub Adapter	AC IN	AC Power Source	2 Pin AC Line	-	-	-
Monitor #2	DC IN	Monitor #2 Adapter	DC OUT	1.3	NO	Plastic
Monitor #2 Adapter	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
PoE Injector	PoE	Network Camera	PoE	2.0	NO	Plastic
	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Notebook	-	-	-	-	-	-

3. Test Report

3.1 Summary of tests

Parameter	Applied Standard	Status
I. Emission		
Conducted Emissions	VCCI-CISPR 32:2016	C
Conducted Emissions at telecommunication ports	VCCI-CISPR 32:2016	C
Radiated Emissions	VCCI-CISPR 32:2016	C
Radiated Emissions at above 1 GHz	VCCI-CISPR 32:2016	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.

4. EMISSION

4.1 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/Telecommunication ports.

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

Test method	: VCCI-CISPR 32:2016
Measurement Frequency range	: 150 kHz - 30 MHz
Measurement RBW	: 9 kHz
Test mode	: REC mode
Result	: Complies

Measurement Data:

- Refer to the Next page (Maximum emission configuration)

A sample calculation:

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

Emission Level= meter reading + COR.F

Limits for Conducted Emissions at the mains ports of class A ITE

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

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

Limits for Conducted Emissions at the mains ports of class B ITE

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

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 μ V	(84 – 74) dB μ V	(53 – 43) dB μ V	(40 – 30) dB μ V
(0.5 – 30) MHz	87 dB μ V	74 dB μ V	43 dB μ V	30 dB μ V

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 Ω 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 μ V	(74 – 64) dB μ V	(40 – 30) dB μ V	(30 – 20) dB μ V
(0.5 – 30) MHz	74 dB μ V	64 dB μ V	30 dB μ V	20 dB μ V

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 Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Conducted Emissions (LINE) / AC #1 _ 50 Hz



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. : XRP-4310DB4

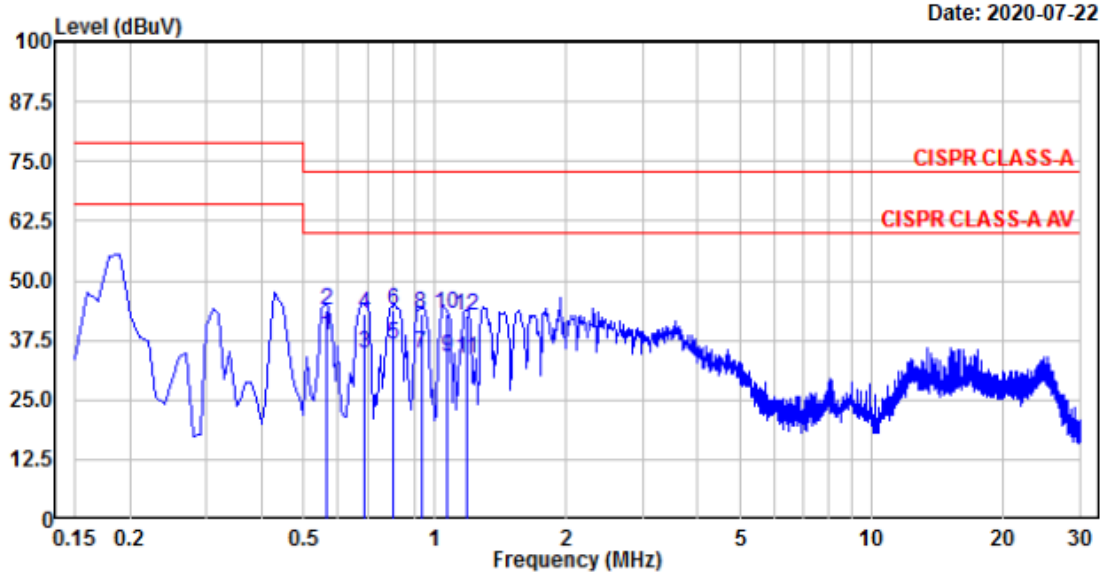
Phase : Line (AC #1)

Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 °C / 51 % R.H.

Test Engineer : PARK J H



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.	0.563	24.23	18.80	19.51	43.74	38.31	73.00	60.00	29.26	21.69	Line
4.	0.693	23.60	15.14	19.51	43.11	34.65	73.00	60.00	29.89	25.35	Line
6.	0.806	24.26	17.19	19.52	43.78	36.71	73.00	60.00	29.22	23.29	Line
8.	0.930	23.35	15.18	19.54	42.89	34.72	73.00	60.00	30.11	25.28	Line
10.	1.062	23.31	14.60	19.54	42.85	34.14	73.00	60.00	30.15	25.86	Line
12.	1.179	22.94	13.93	19.55	42.49	33.48	73.00	60.00	30.51	26.52	Line

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

Conducted Emissions (NEUTRAL) / AC #1 _ 50 Hz



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. : XRP-4310DB4

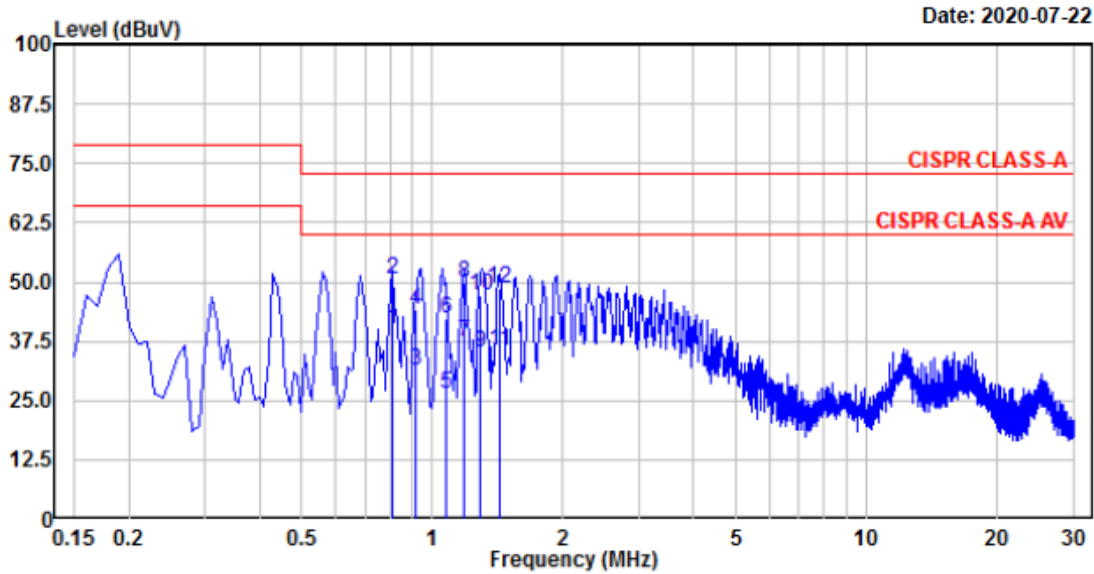
Phase : Neutral(AC #1)

Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	0.809	30.98	20.46	19.56	50.54	40.02	73.00	60.00	22.46	19.98	neutral
4.	0.916	24.45	11.74	19.58	44.03	31.32	73.00	60.00	28.97	28.68	neutral
6.	1.077	22.71	6.94	19.58	42.29	26.52	73.00	60.00	30.71	33.48	neutral
8.	1.183	30.18	17.83	19.60	49.78	37.43	73.00	60.00	23.22	22.57	neutral
10.	1.295	27.70	15.51	19.60	47.30	35.11	73.00	60.00	25.70	24.89	neutral
12.	1.425	29.21	15.95	19.60	48.81	35.55	73.00	60.00	24.19	24.45	neutral

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

Conducted Emissions (LINE) / AC #1 _ 60 Hz



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. : XRP-4310DB4

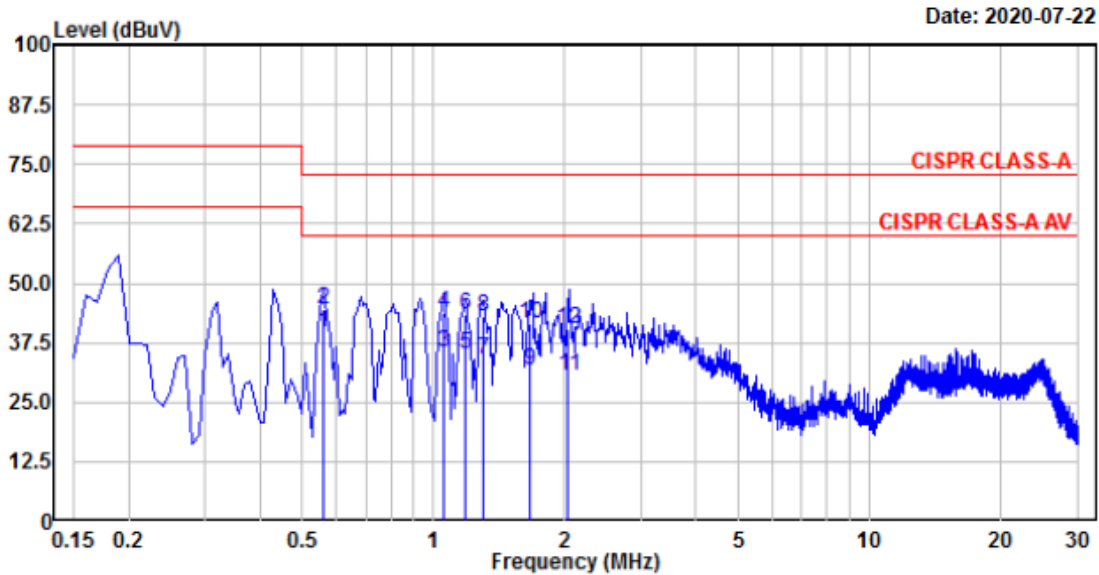
Phase : Line (AC #1)

Test Mode : REC mode

Test Power : 100 V / 60 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	0.561	24.87	20.23	19.51	44.38	39.74	73.00	60.00	28.62	20.26	Line
4.	1.061	24.14	15.79	19.54	43.68	35.33	73.00	60.00	29.32	24.67	Line
6.	1.186	23.87	15.37	19.55	43.42	34.92	73.00	60.00	29.58	25.08	Line
8.	1.303	23.40	14.33	19.56	42.96	33.89	73.00	60.00	30.04	26.11	Line
10.	1.672	21.86	12.05	19.57	41.43	31.62	73.00	60.00	31.57	28.38	Line
12.	2.040	20.65	10.84	19.58	40.23	30.42	73.00	60.00	32.77	29.58	Line

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

Conducted Emissions (NEUTRAL) / AC #1 _ 60 Hz



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. : XRP-4310DB4

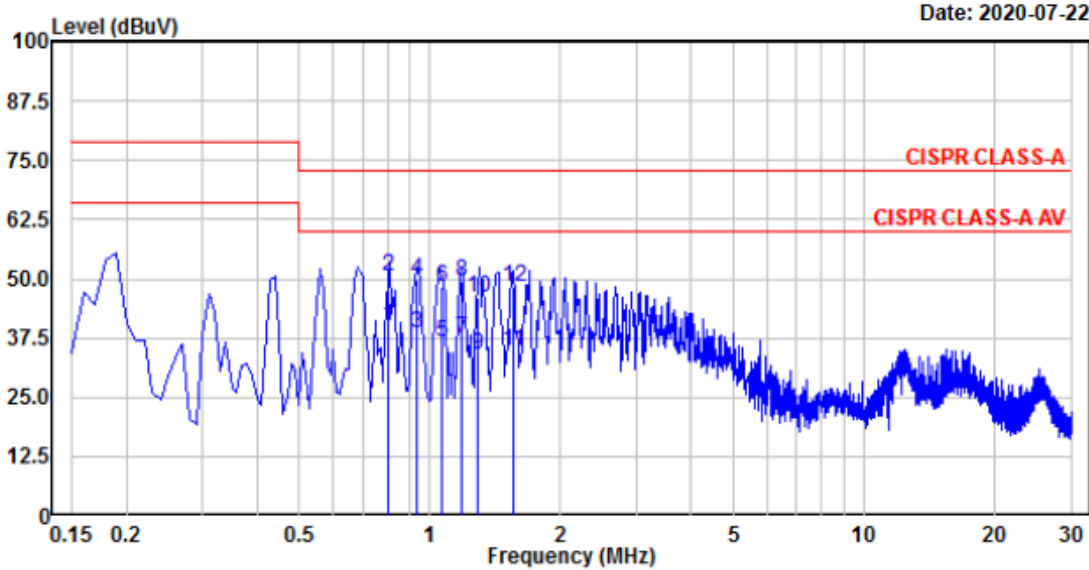
Phase : Neutral(AC #1)

Test Mode : REC mode

Test Power : 100 V / 60 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	0.806	31.01	20.38	19.56	50.57	39.94	73.00	60.00	22.43	20.06	neutral
4.	0.935	30.11	18.84	19.58	49.69	38.42	73.00	60.00	23.31	21.58	neutral
6.	1.063	28.80	16.86	19.58	48.38	36.44	73.00	60.00	24.62	23.56	neutral
8.	1.183	29.87	17.79	19.60	49.47	37.39	73.00	60.00	23.53	22.61	neutral
10.	1.289	26.46	14.36	19.60	46.06	33.96	73.00	60.00	26.94	26.04	neutral
12.	1.553	28.72	15.27	19.61	48.33	34.88	73.00	60.00	24.67	25.12	neutral

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

Conducted Emissions (LINE) / AC #2 _ 50 Hz



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. : XRP-4310DB4

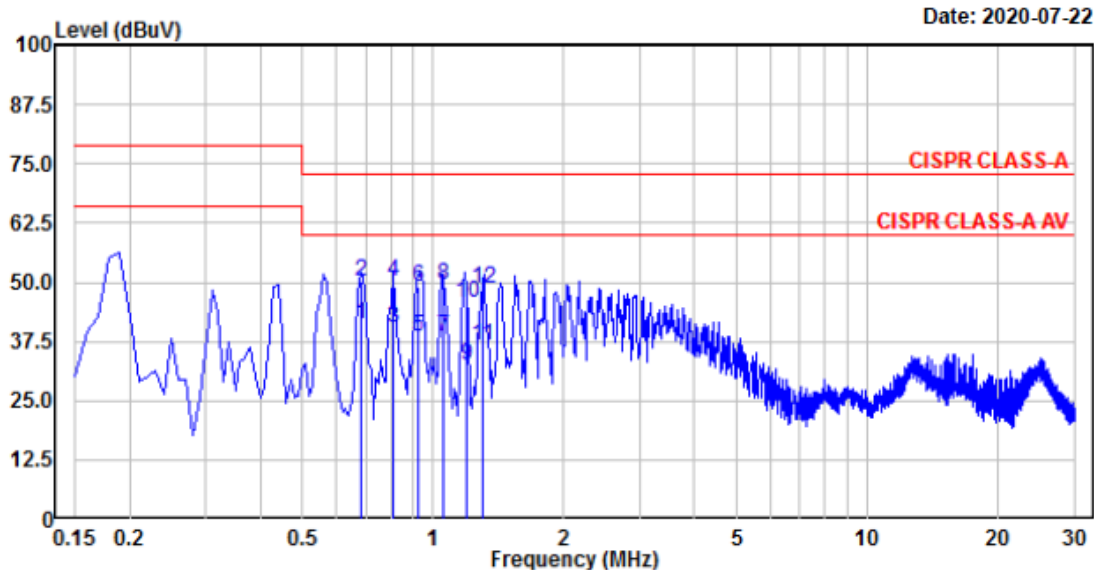
Phase : Line (AC #2)

Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	0.686	30.51	21.76	19.51	50.02	41.27	73.00	60.00	22.98	18.73	Line
4.	0.810	30.70	20.92	19.52	50.22	40.44	73.00	60.00	22.78	19.56	Line
6.	0.927	29.42	19.13	19.54	48.96	38.67	73.00	60.00	24.04	21.33	Line
8.	1.057	30.03	18.82	19.54	49.57	38.36	73.00	60.00	23.43	21.64	Line
10.	1.194	26.19	12.74	19.55	45.74	32.29	73.00	60.00	27.26	27.71	Line
12.	1.302	29.25	16.98	19.56	48.81	36.54	73.00	60.00	24.19	23.46	Line

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

Conducted Emissions (NEUTRAL) / AC #2 _ 50 Hz



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. : XRP-4310DB4

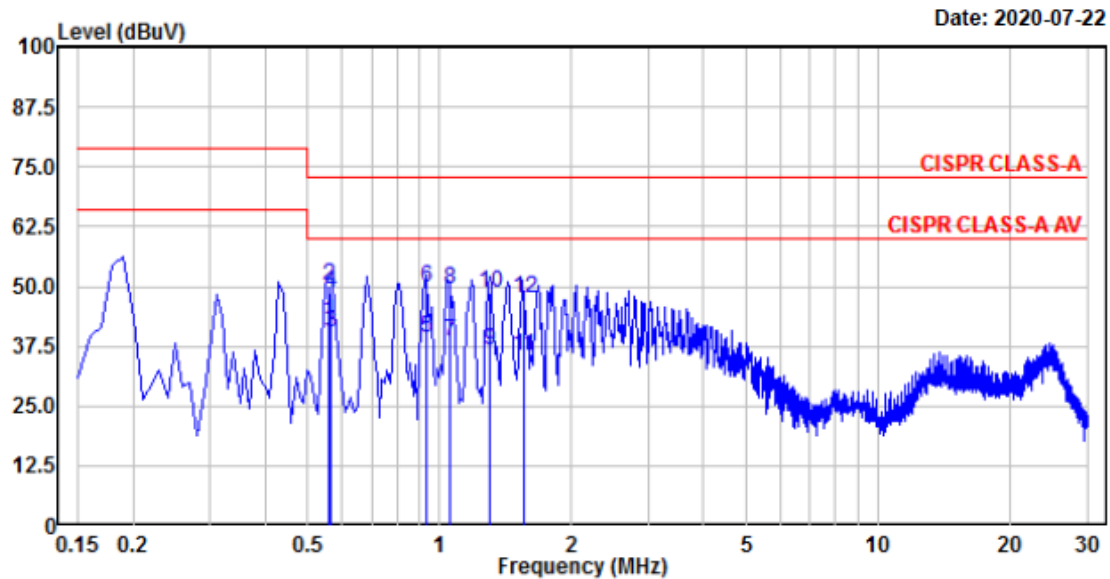
Phase : Neutral (AC #2)

Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	0.560	30.60	23.18	19.55	50.15	42.73	73.00	60.00	22.85	17.27	neutral
4.	0.564	29.18	20.97	19.55	48.73	40.52	73.00	60.00	24.27	19.48	neutral
6.	0.930	30.14	19.74	19.58	49.72	39.32	73.00	60.00	23.28	20.68	neutral
8.	1.056	30.01	18.90	19.58	49.59	38.48	73.00	60.00	23.41	21.52	neutral
10.	1.305	28.94	17.17	19.61	48.55	36.78	73.00	60.00	24.45	23.22	neutral
12.	1.553	28.08	15.90	19.61	47.69	35.51	73.00	60.00	25.31	24.49	neutral

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

Conducted Emissions (LINE) / AC #2 _ 60 Hz



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. : XRP-4310DB4

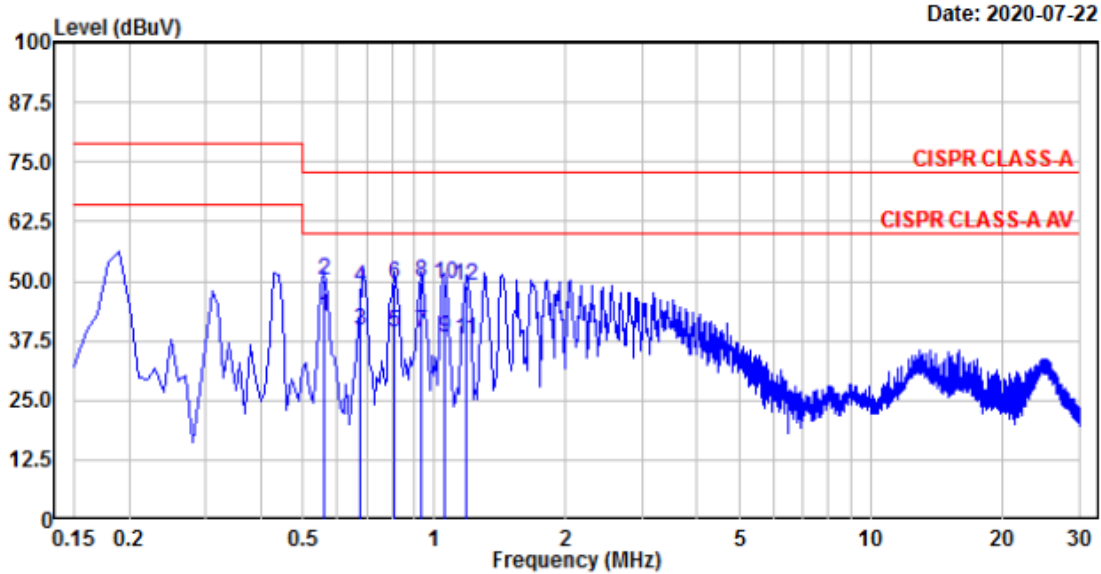
Phase : Line (AC #2)

Test Mode : REC mode

Test Power : 100 V / 60 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	0.562	30.50	23.09	19.51	50.01	42.60	73.00	60.00	22.99	17.40	Line
4.	0.678	29.14	20.04	19.51	48.65	39.55	73.00	60.00	24.35	20.45	Line
6.	0.812	29.87	19.87	19.52	49.39	39.39	73.00	60.00	23.61	20.61	Line
8.	0.934	30.20	19.78	19.54	49.74	39.32	73.00	60.00	23.26	20.68	Line
10.	1.054	29.98	18.44	19.54	49.52	37.98	73.00	60.00	23.48	22.02	Line
12.	1.179	29.63	18.22	19.55	49.18	37.77	73.00	60.00	23.82	22.23	Line

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

Conducted Emissions (NEUTRAL) / AC #2 _ 60 Hz



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. : XRP-4310DB4

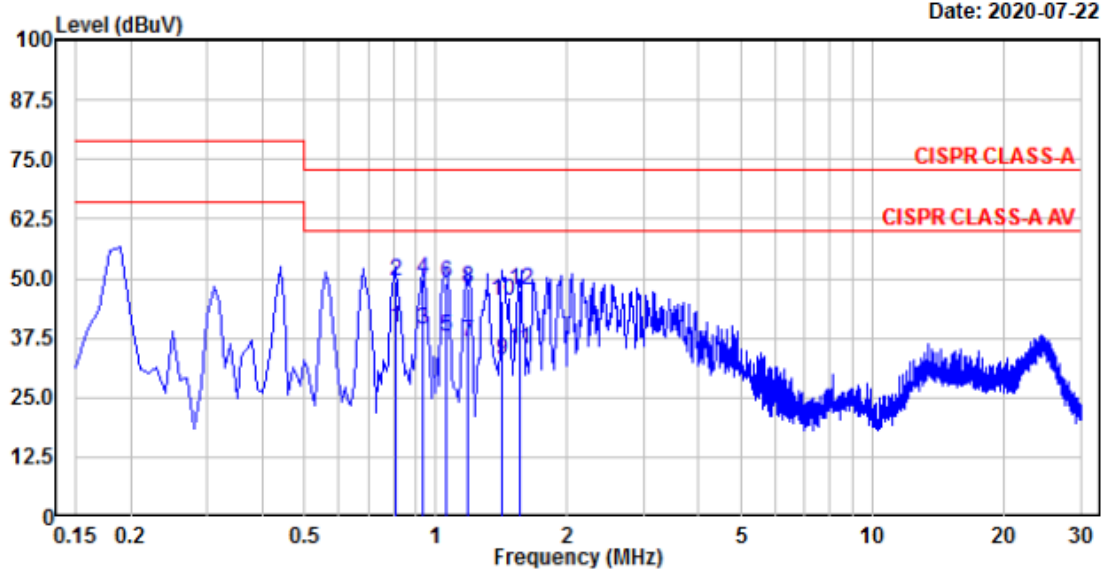
Phase : Neutral (AC #2)

Test Mode : REC mode

Test Power : 100 V / 60 Hz

Temp./ Humi. : 23 °C / 51 % R.H.

Test Engineer : PARK J H



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.	0.812	29.79	19.96	19.56	49.35	39.52	73.00	60.00	23.65	20.48	neutral
4.	0.933	30.29	19.70	19.58	49.87	39.28	73.00	60.00	23.13	20.72	neutral
6.	1.061	29.53	18.31	19.58	49.11	37.89	73.00	60.00	23.89	22.11	neutral
8.	1.187	28.49	17.00	19.60	48.09	36.60	73.00	60.00	24.91	23.40	neutral
10.	1.415	25.84	13.36	19.60	45.44	32.96	73.00	60.00	27.56	27.04	neutral
12.	1.557	28.00	15.54	19.61	47.61	35.15	73.00	60.00	25.39	24.85	neutral

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

Conducted Emissions (TEL_1000 M) / LAN #1 _ 50 Hz



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. : XRP-4310DB4

Phase : TEL_1000M(LAN #1)

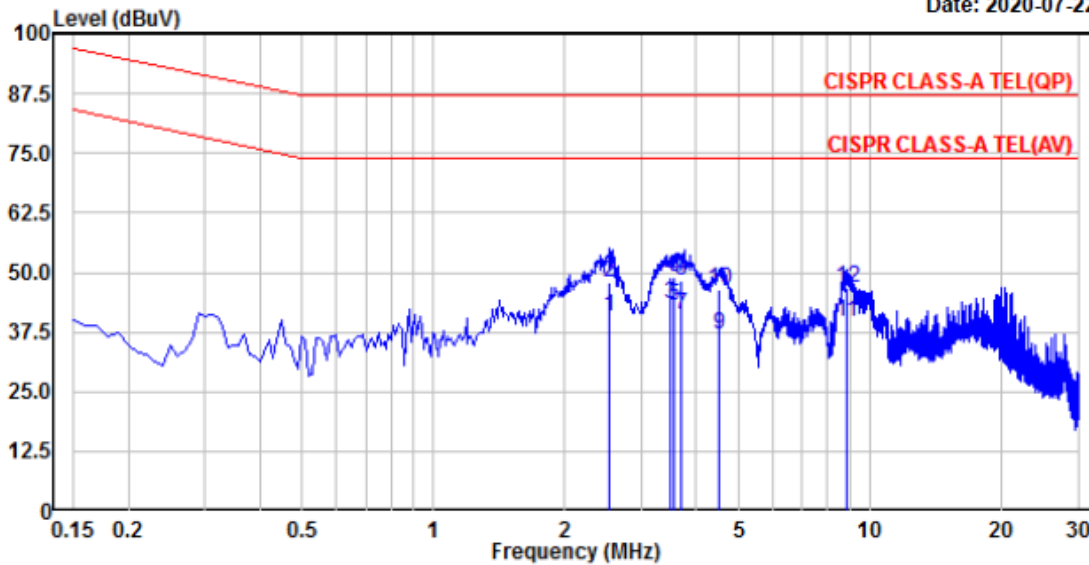
Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H

Date: 2020-07-22



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.	2.521	28.40	21.47	19.39	47.79	40.86	87.00	74.00	39.21	33.14	Line
4.	3.491	29.74	24.16	19.40	49.14	43.56	87.00	74.00	37.86	30.44	Line
6.	3.555	29.71	23.57	19.40	49.11	42.97	87.00	74.00	37.89	31.03	Line
8.	3.684	29.03	21.87	19.40	48.43	41.27	87.00	74.00	38.57	32.73	Line
10.	4.512	27.18	17.39	19.42	46.60	36.81	87.00	74.00	40.40	37.19	Line
12.	8.853	27.39	20.05	19.51	46.90	39.56	87.00	74.00	40.10	34.44	Line

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

Conducted Emissions (TEL_1000 M) / LAN #2 _ 50 Hz



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. : XRP-4310DB4

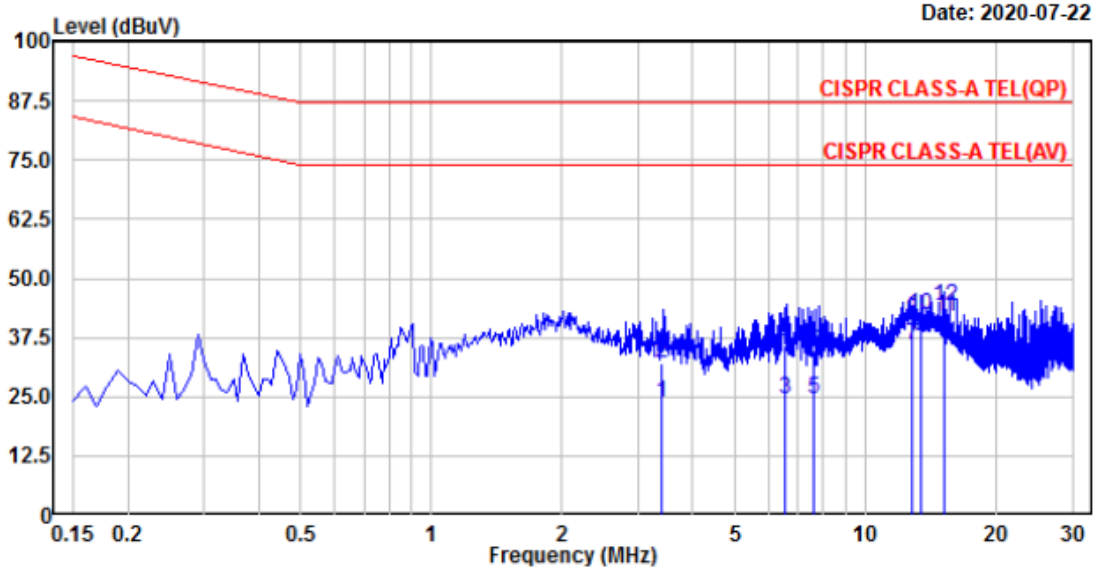
Phase : TEL_1000M(LAN #2)

Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	3.399	12.83	4.27	19.40	32.23	23.67	87.00	74.00	54.77	50.33	Line
4.	6.507	16.52	4.94	19.44	35.96	24.38	87.00	74.00	51.04	49.62	Line
6.	7.589	15.18	5.06	19.46	34.64	24.52	87.00	74.00	52.36	49.48	Line
8.	12.746	21.65	16.24	19.61	41.26	35.85	87.00	74.00	45.74	38.15	Line
10.	13.359	22.50	18.13	19.62	42.12	37.75	87.00	74.00	44.88	36.25	Line
12.	15.251	24.66	22.26	19.66	44.32	41.92	87.00	74.00	42.68	32.08	Line

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

Conducted Emissions (TEL_1000 M) / LAN #3 _ 50 Hz



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. : XRP-4310DB4

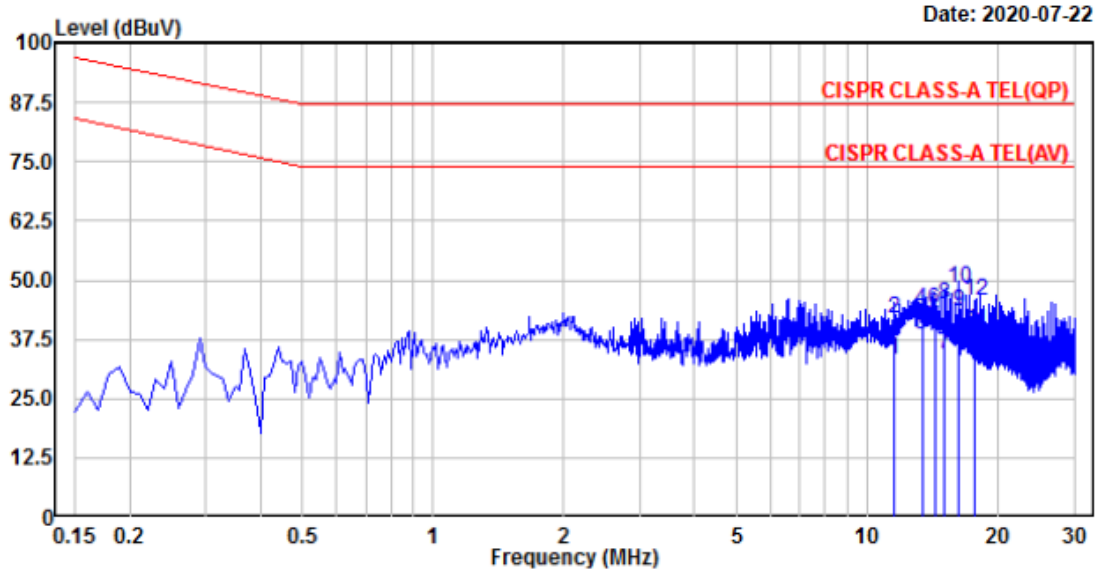
Phase : TEL_1000M(LAN #3)

Test Mode : REC mode

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	11.540	22.22	13.77	19.58	41.80	33.35	87.00	74.00	45.20	40.65	Line
4.	13.358	24.28	19.04	19.62	43.90	38.66	87.00	74.00	43.10	35.34	Line
6.	14.273	24.12	20.17	19.65	43.77	39.82	87.00	74.00	43.23	34.18	Line
8.	15.023	25.21	14.82	19.66	44.87	34.48	87.00	74.00	42.13	39.52	Line
10.	16.227	28.45	23.68	19.69	48.14	43.37	87.00	74.00	38.86	30.63	Line
12.	17.694	25.78	19.60	19.71	45.49	39.31	87.00	74.00	41.51	34.69	Line

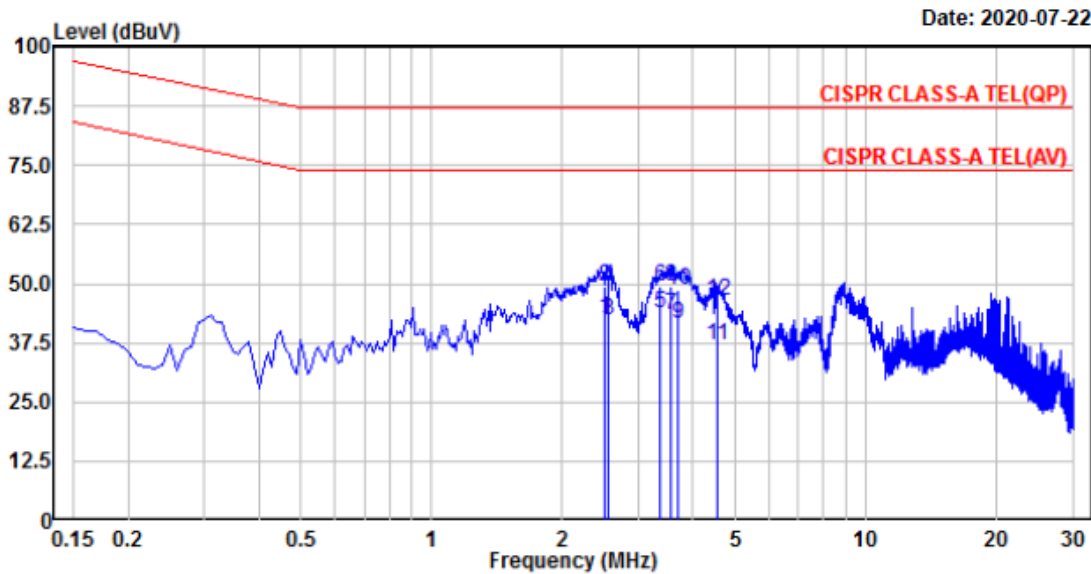
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / LAN #1 _ 60 Hz



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. : XRP-4310DB4	Phase : TEL_1000M(LAN #1)
Test Mode : REC mode	Test Power : 100 V / 60 Hz
Temp./ Humi. : 23 'C / 51 % R.H.	Test Engineer : PARK J H



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.	2.514	30.22	23.43	19.39	49.61	42.82	87.00	74.00	37.39	31.18	Line
4.	2.563	30.00	22.81	19.39	49.39	42.20	87.00	74.00	37.61	31.80	Line
6.	3.361	29.91	24.47	19.40	49.31	43.87	87.00	74.00	37.69	30.13	Line
8.	3.552	30.18	24.02	19.40	49.58	43.42	87.00	74.00	37.42	30.58	Line
10.	3.703	29.41	22.02	19.40	48.81	41.42	87.00	74.00	38.19	32.58	Line
12.	4.546	26.87	17.49	19.42	46.29	36.91	87.00	74.00	40.71	37.09	Line

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

Conducted Emissions (TEL_1000 M) / LAN #2 _ 60 Hz



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. : XRP-4310DB4

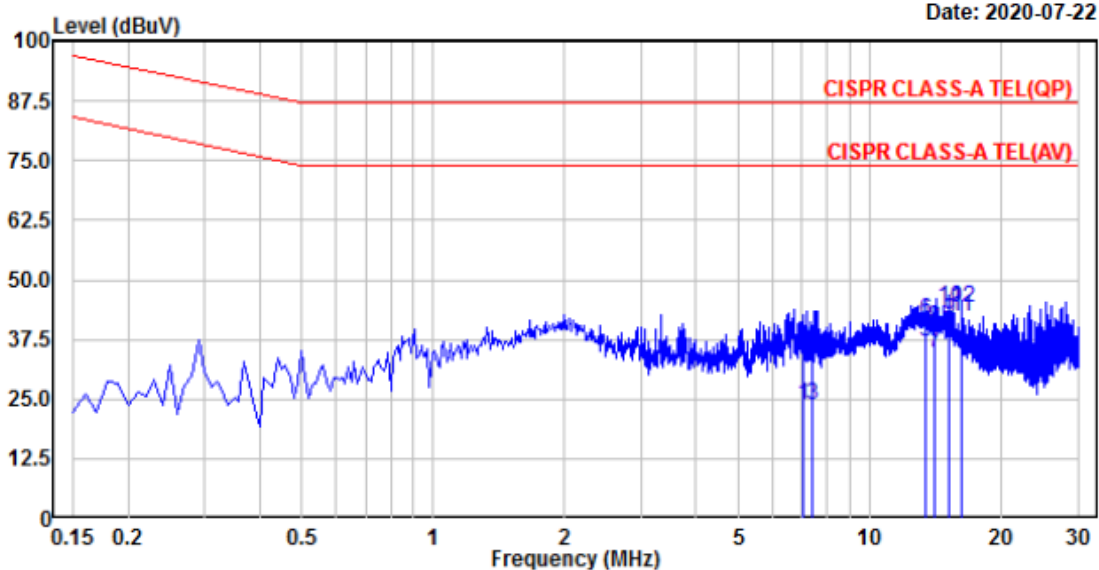
Phase : TEL_1000M(LAN #2)

Test Mode : REC mode

Test Power : 100 V / 60 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	7.025	16.27	4.39	19.45	35.72	23.84	87.00	74.00	51.28	50.16	Line
4.	7.382	13.87	4.24	19.46	33.33	23.70	87.00	74.00	53.67	50.30	Line
6.	13.482	21.92	17.23	19.62	41.54	36.85	87.00	74.00	45.46	37.15	Line
8.	14.093	20.40	15.26	19.64	40.04	34.90	87.00	74.00	46.96	39.10	Line
10.	15.249	24.37	21.68	19.66	44.03	41.34	87.00	74.00	42.97	32.66	Line
12.	16.226	24.37	22.59	19.69	44.06	42.28	87.00	74.00	42.94	31.72	Line

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

Conducted Emissions (TEL_1000 M) / LAN #3 _ 60 Hz



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. : XRP-4310DB4

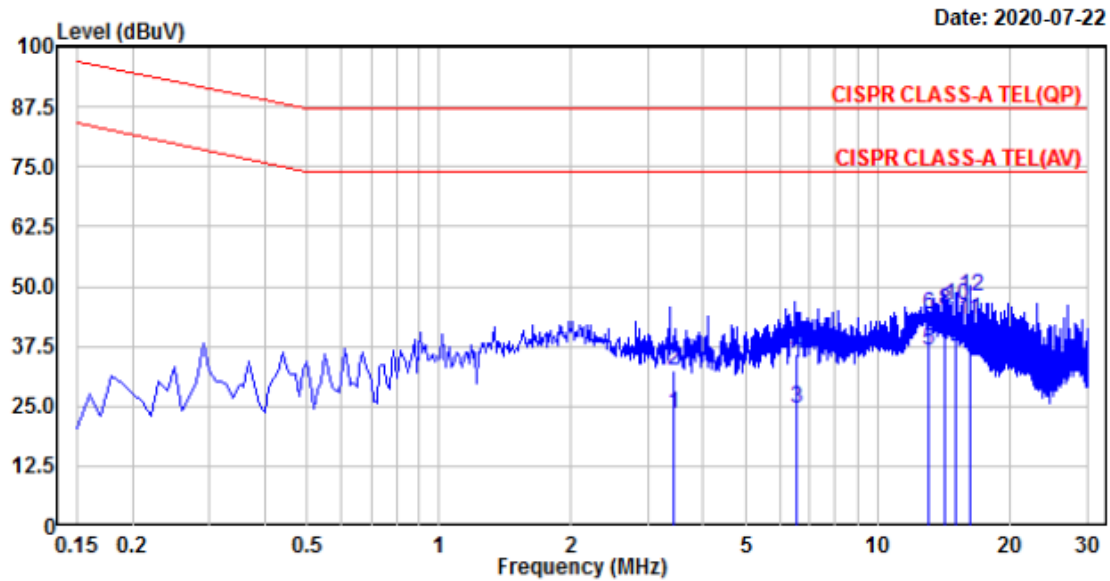
Phase : TEL_1000M(LAN #3)

Test Mode : REC mode

Test Power : 100 V / 60 Hz

Temp./ Humi. : 23 'C / 51 % R.H.

Test Engineer : PARK J H



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.	3.413	13.21	4.12	19.40	32.61	23.52	87.00	74.00	54.39	50.48	Line
4.	6.501	16.34	4.97	19.44	35.78	24.41	87.00	74.00	51.22	49.59	Line
6.	13.006	24.40	16.98	19.62	44.02	36.60	87.00	74.00	42.98	37.40	Line
8.	14.214	25.30	20.36	19.65	44.95	40.01	87.00	74.00	42.05	33.99	Line
10.	15.021	26.52	17.52	19.66	46.18	37.18	87.00	74.00	40.82	36.82	Line
12.	16.226	28.25	23.41	19.69	47.94	43.10	87.00	74.00	39.06	30.90	Line

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

4.2 Radiated Emissions

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	: VCCI-CISPR 32:2016
Measuring Distance	: 10 m below 1 GHz / 3 m above 1 GHz
Measurement Frequency range	: 30 MHz – 6 000 MHz
Measurement RBW	: 120 kHz @ 10 m / 1 MHz @ 3 m
Test mode	: REC mode
Result	: Complies

Measurement Data:

- Refer to the Next page (Maximum emission configuration)
- The highest internal source of an EUT is higher than 108 MHz, the measurement shall only be made up to 6 GHz.
(The highest internal source of an EUT : 4 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 below 1 GHz

CLASS A

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

CLASS B

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

Limit of 3m 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 Emissions (Below 1 GHz) / V _ 50 Hz



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.: XRP-4310DB4

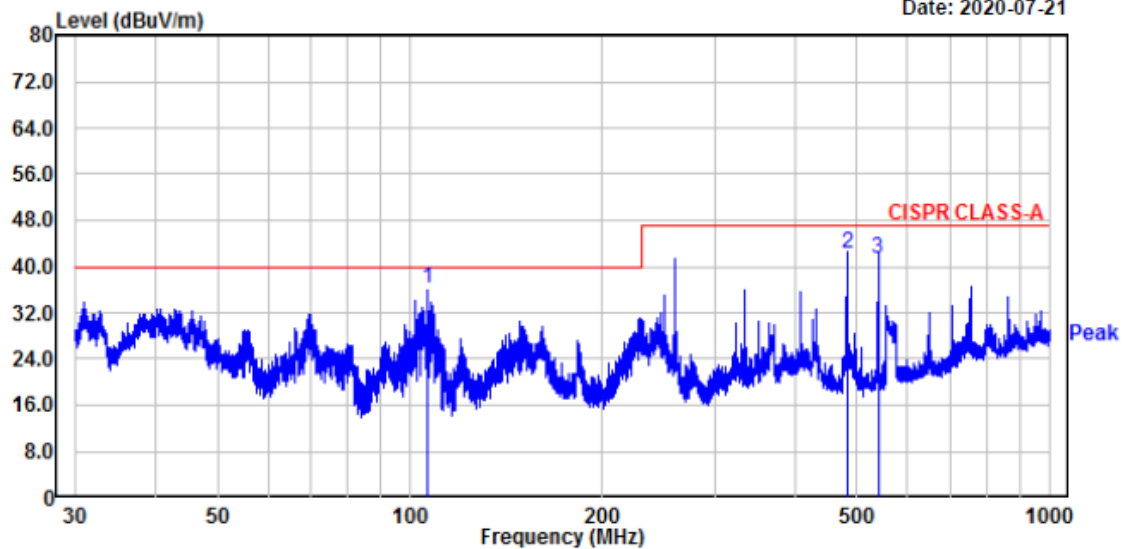
Temp/Humi: 23 'C / 55 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 50 Hz

Date: 2020-07-21



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	106.71	52.57	-16.21	36.36	40.00	3.64	103	289	vertical
2.	482.64	49.52	-7.14	42.38	47.00	4.62	107	261	vertical
3.	539.48	47.69	-6.34	41.35	47.00	5.65	103	30	vertical

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

Radiated Emissions (Below 1 GHz) / H_ 50 Hz



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

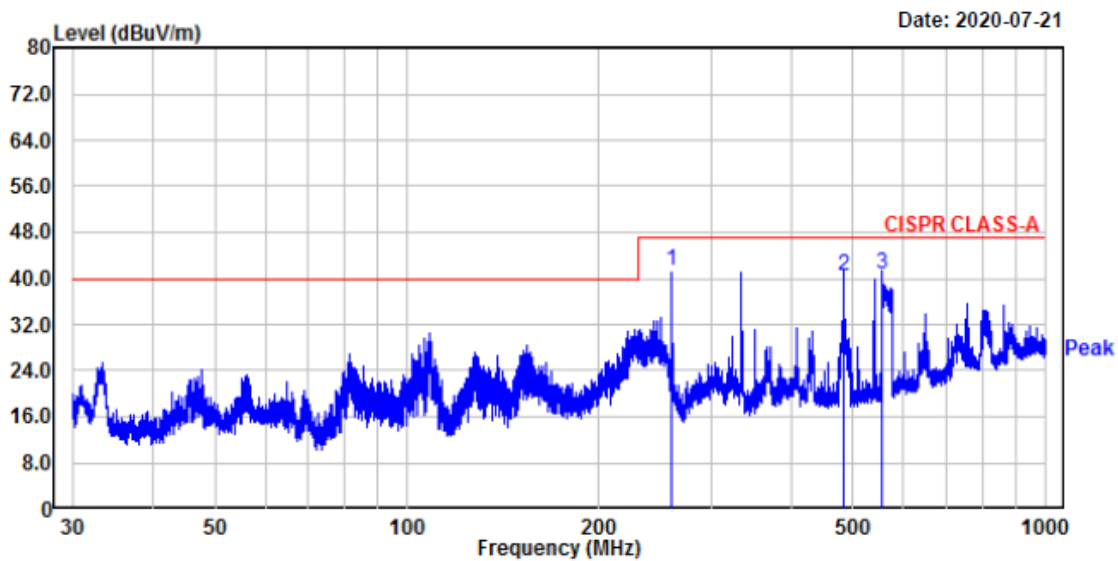
EUT/Model No.: XRP-4310DB4

Temp/Humi: 23 'C / 55 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 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.	259.92	53.60	-12.34	41.26	47.00	5.74	389	315	horizontal
2.	482.64	47.47	-7.14	40.33	47.00	6.67	375	256	horizontal
3.	554.83	46.92	-6.12	40.80	47.00	6.20	385	141	horizontal

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

Radiated Emissions (Below 1 GHz) / V _ 60 Hz



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

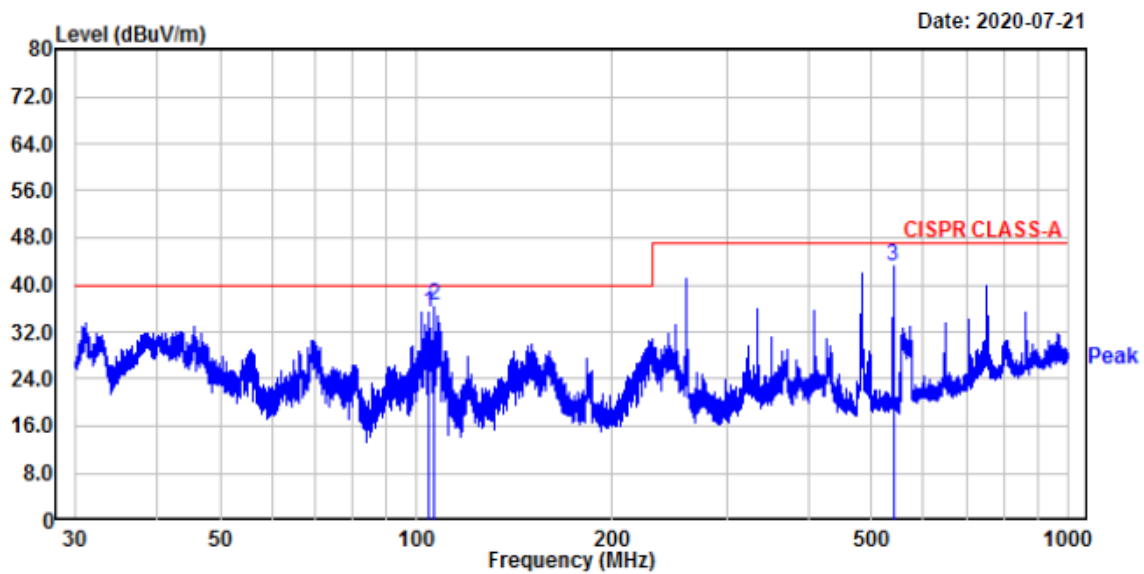
EUT/Model No.: XRP-4310DB4

Temp/Humi: 23 'C / 55 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 60 Hz



No.	Freq MHz	Reading dBuV	C.F dB	Result QP dBuV/m	Limit dBuV/m	Margin dB	Height cm	Angle deg	Polarity
1.	104.72	51.92	-16.54	35.38	40.00	4.62	103	277	vertical
2.	106.71	52.74	-16.21	36.53	40.00	3.47	104	289	vertical
3.	539.48	49.39	-6.34	43.05	47.00	3.95	100	35	vertical

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

Radiated Emissions (Below 1 GHz) / H_ 60 Hz



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.: XRP-4310DB4

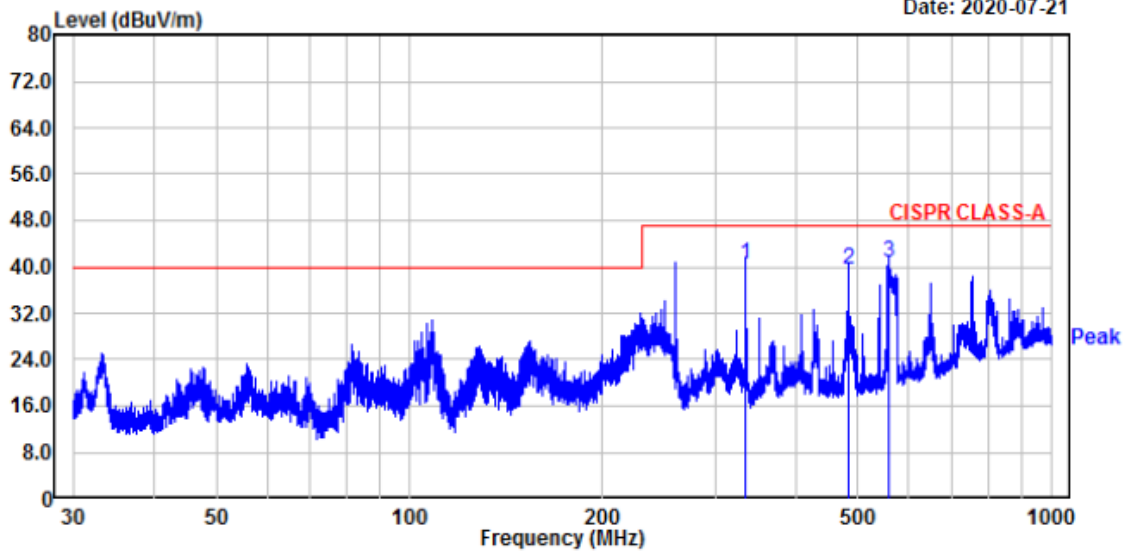
Temp/Humi: 23 'C / 55 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 60 Hz

Date: 2020-07-21



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	334.13	50.25	-9.70	40.55	47.00	6.45	394	210	horizontal
2.	482.64	46.57	-7.14	39.43	47.00	7.57	376	246	horizontal
3.	558.98	46.92	-6.10	40.82	47.00	6.18	384	140	horizontal

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

Radiated Emissions / 50 Hz

(Above 1 GHz) / V

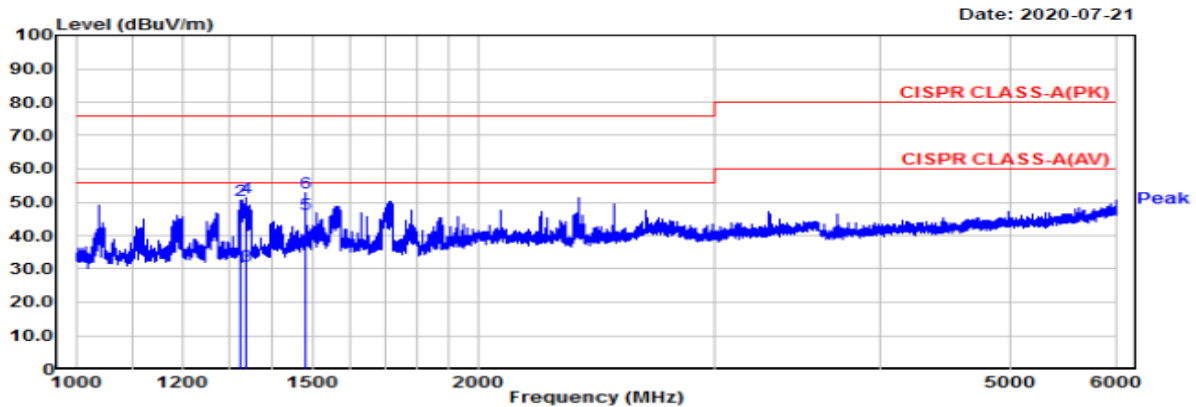
EUT/Model No.: XRP-4310DB4

Temp/Humi: 21 °C / 54 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 50 Hz



(Above 1 GHz) / H

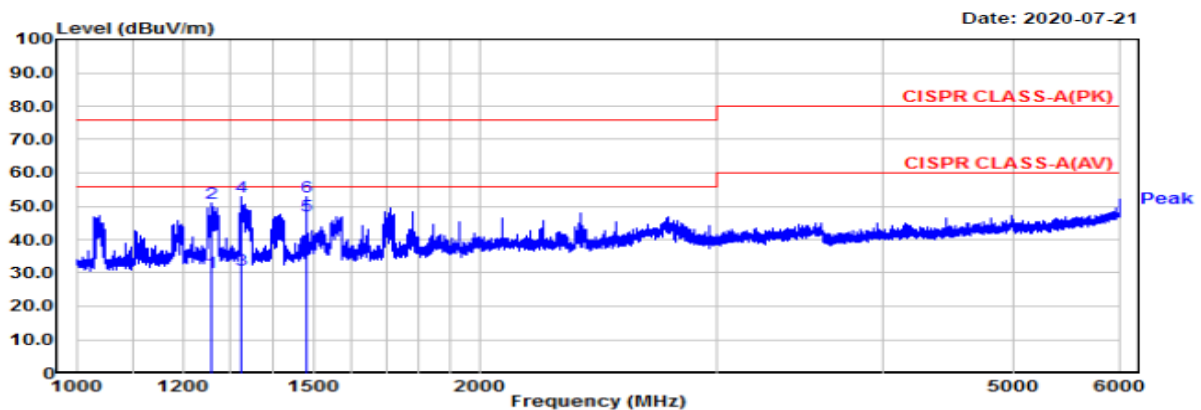
EUT/Model No.: XRP-4310DB4

Temp/Humi: 21 °C / 54 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 50 Hz



Manufacture : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.

Test Date

Temp.: [°C]

Humidity: [%]

Distance (m)

Model : XRP-4310DB4

2020-07-21

21.00

54.00

3.85

TEST mode : REC mode

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
1260.88	58.66	38.09	-5.64	53.02	32.45	76.00	56.00	22.98	23.55	100	124	H
1325.75	59.89	38.20	-5.07	54.82	33.13	76.00	56.00	21.18	22.87	100	62	H
1483.51	59.18	53.31	-4.04	55.14	49.27	76.00	56.00	20.86	6.73	100	98	H
1324.27	57.83	37.85	-5.10	52.73	32.75	76.00	56.00	23.27	23.25	100	70	V
1339.48	58.32	37.99	-4.91	53.41	33.08	76.00	56.00	22.59	22.92	100	59	V
1483.51	59.03	52.56	-4.04	54.99	48.52	76.00	56.00	21.01	7.48	100	103	V

Radiated Emissions / 60 Hz

(Above 1 GHz) / V

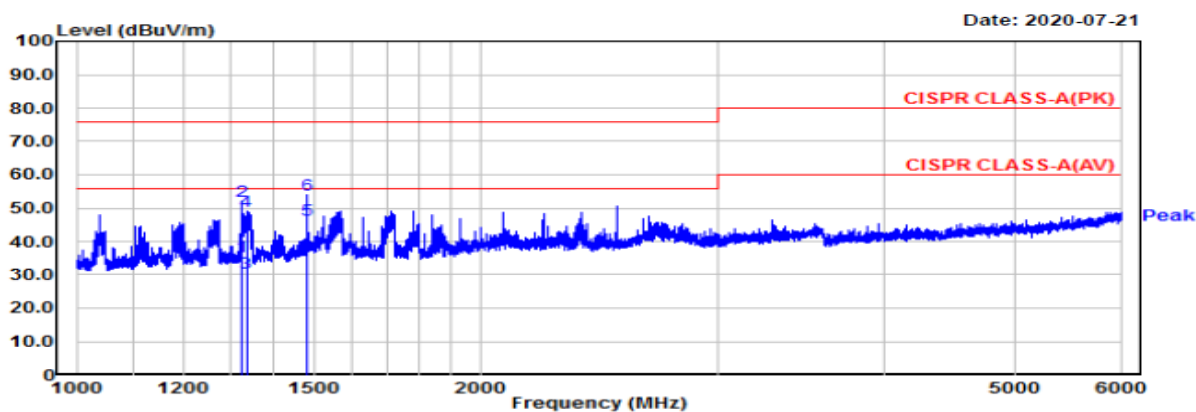
EUT/Model No.: XRP-4310DB4

Temp/Humi: 21 °C / 54 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 60 Hz



(Above 1 GHz) / H

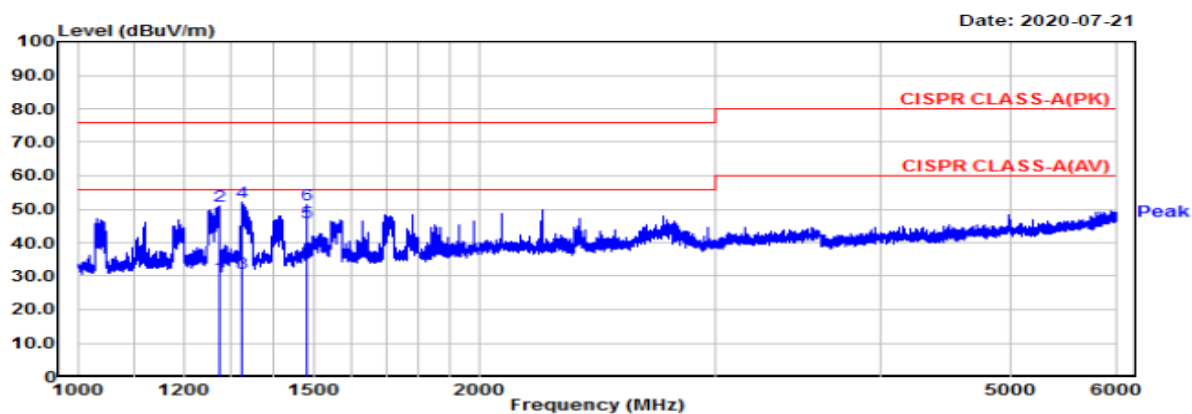
EUT/Model No.: XRP-4310DB4

Temp/Humi: 21 °C / 54 % R.H.

Test Mode : REC mode

Tested by: PARK J H

Power : 100 V / 60 Hz



Manufacture : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.

Test Date

Temp.:
[°C]Humidity:
[%]Distance
(m)

Model : XRP-4310DB4

2020-07-21

21.00

54.00

3.85

TEST mode : REC mode

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
1273.94	58.52	37.49	-5.55	52.97	31.94	76.00	56.00	23.03	24.06	100	23	H
1323.97	59.17	38.11	-5.10	54.07	33.01	76.00	56.00	21.93	22.99	100	35	H
1483.51	57.49	52.31	-4.04	53.45	48.27	76.00	56.00	22.55	7.73	100	56	H
1326.64	59.42	42.78	-5.07	54.35	37.71	76.00	56.00	21.65	18.29	100	62	V
1336.18	56.26	37.84	-4.95	51.31	32.89	76.00	56.00	24.69	23.11	100	52	V
1483.18	60.03	52.52	-4.05	55.98	48.47	76.00	56.00	20.02	7.53	100	244	V

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
☒	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2021.07.02	1 year
☒	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2021.03.16	1 year
☐	ISN	ISN T800	TESEQ	27109	2020.09.09	1 year
☒	ISN	ENY81-CA6	Rohde & Schwarz	101565	2020.09.09	1 year
☐	ISN	ISN S8	Schwarzbeck	79	2020.09.06	1 year
☐	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2020.09.09	1 year
☐	CDN	TSCDN-C1-BNC-75	F.C.C	07004	2021.03.16	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	100378	2020.09.05	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	101468	2020.09.05	1 year
☒	LISN(main)	ENV216	Rohde & Schwarz	101222	2020.09.06	1 year
☒	LISN(sub)	LT32C/10	AFJ	32031518210	2020.09.05	1 year
☒	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2020.09.05	1 year
☒	Amplifier (25 dB)	8447D	HP	2944A07684	2021.03.16	1 year
☒	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.03.26 (KOLAS)	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

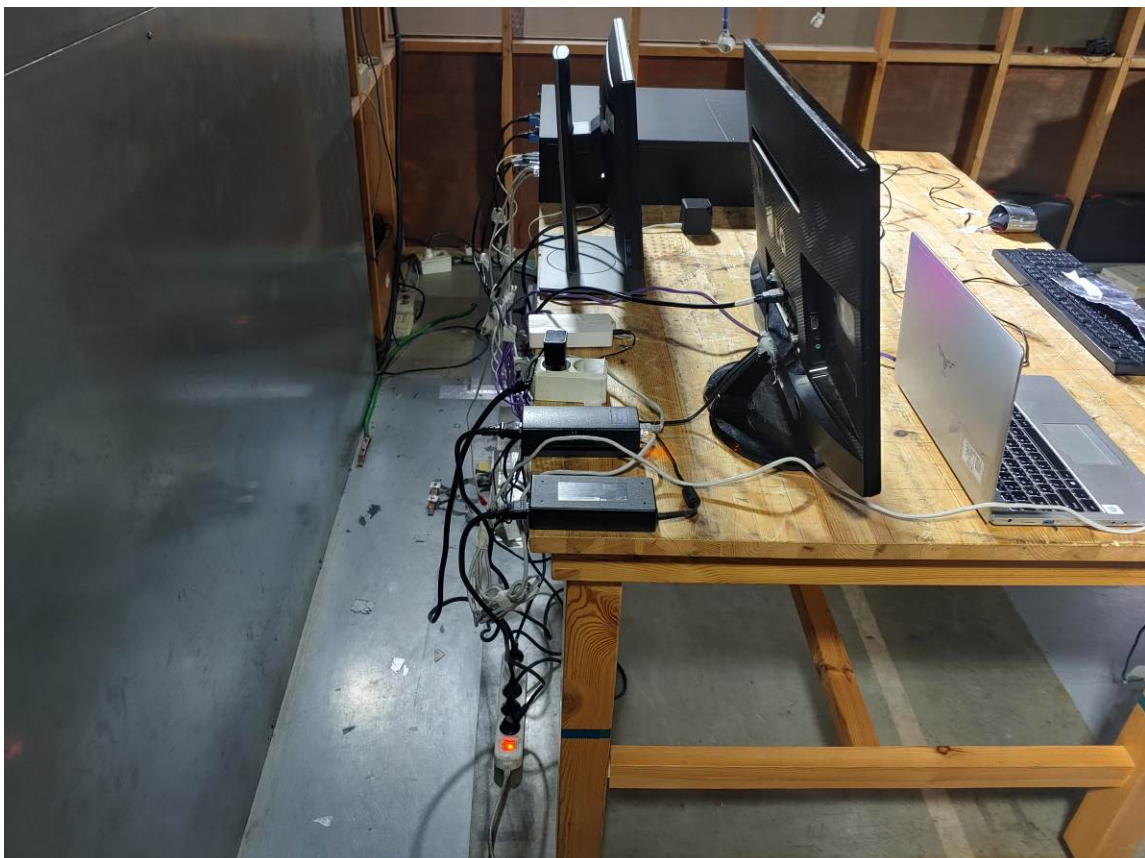
Radiated Emissions – Above 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2020.09.05	1 year
☒	Amplifier	8449B	Agilent	3008A02126	2021.03.17	1 year
☐	Amplifier	PAM-840A	COM-POWER	461314	2021.03.16	1 year
☐	HORN ANTENNA	3116B	ETS	133350	2022.05.12	2 year
☐	HORN ANTENNA	3116B	ETS	81109	2022.05.12	2 year
☒	HORN ANTENNA	3115	ETS	114105	2021.09.17 (KOLAS)	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

APPENDIX B

PHOTOGRAPHS

Conducted Emissions



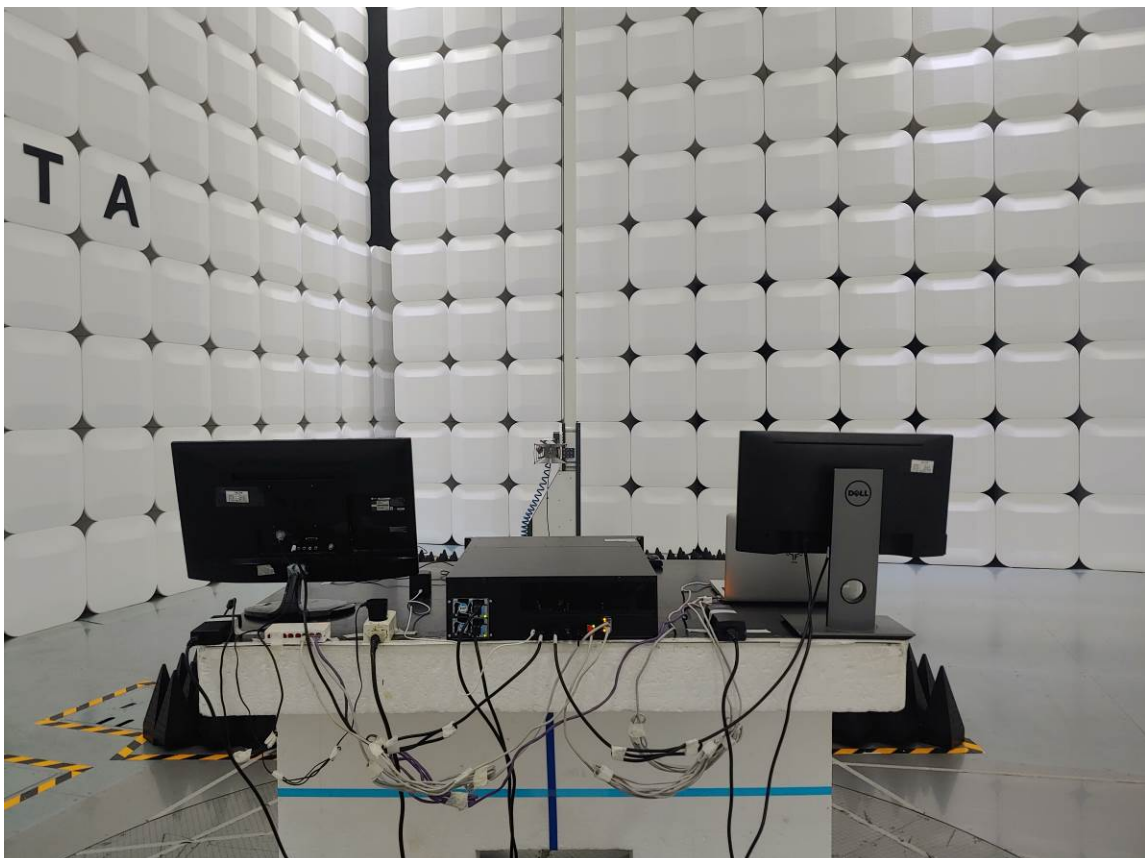
Conducted Emissions (TEL)



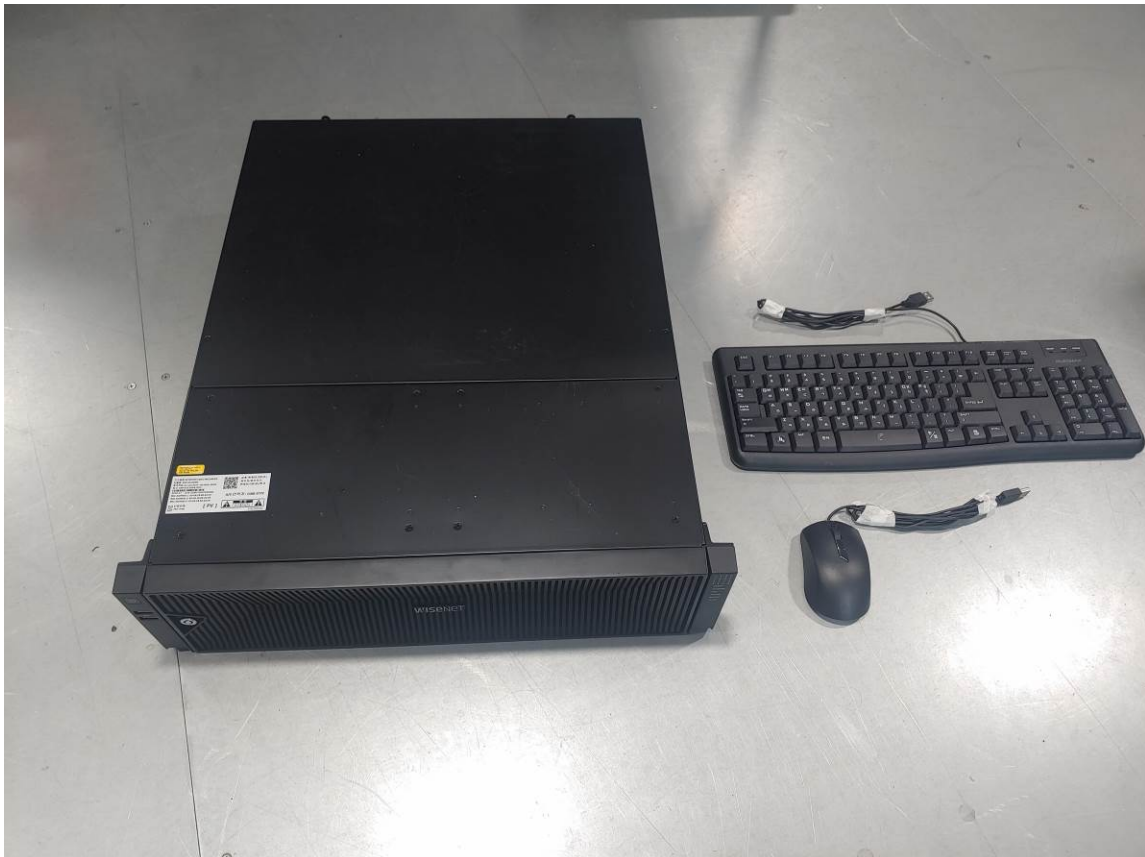
Radiated Emissions - Below 1 GHz



Radiated Emissions - Above 1 GHz



EUT



EUT

