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 29 - 30, 2020
Test Report S/N: LR500122101F
Test Site : LTA Co., Ltd.

Model No. **XRN-6410B2**

APPLICANT **Hanwha Techwin Co., Ltd.**

Equipment Name	:	**NVR**
Manufacturer	:	**HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.**
Model name	:	**XRN-6410B2**
Model name	:	**XRN-3210B2**
Test Device Serial No.:	:	**Identification**
Rule Part(s)	:	**AS/NZS CISPR 32:2015**
		CISPR 32 Ed2.0
Date of issue	:	**January 06, 2021**

This test report is issued under the authority of:

Young Kyu Shin, Technical Manager

The test was supervised by:

Seong Jae Cheon, Tst 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.

NVLAP® TESTING NVLAP LAB CODE 200723-0

Revision history

Revision	Date of issue	Test report No.	Description
0	06.01.2021	LR500122101F	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
E-mail	:	chahn@ltalab.com
Telephone	:	+82-31-323-6008
Facsimile		+82-31-323-6010

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

1-2 Accredited agencies

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

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2021-09-30	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	:	XRN-6410B2
Additional Model name	:	XRN-3210B2 Additional Model is different number of channels.
Serial number	:	Identification
Date of receipt	:	December 21, 2020
EUT condition	:	Pre-production, not damaged
Interface Ports	:	AC IN, LAN #1, LAN #2, LAN #3, USB #1, USB #2, USB #3, USB #4, HDMI #1, HDMI #2, Audio OUT, Alarm IN / OUT, HDD Slot
Power rating	:	AC 240 V, 50 Hz

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure	:	(20 - 21) °C / (34 - 38) % R.H.
Tested Model	:	XRN-6410B2
Test mode	:	Operating mode
Test Voltage	:	AC 240 V, 50 Hz

2-5 List of EUT and ACCESSORY

EUT				
Equipment Name	**Model Name**	**Serial No.**	**Manufacturer**	**Remarks**
NVR	**XRN-6410B2**	**N/A**	**Hanwha Techwin Co., Ltd. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. D-TECH CO.,LTD.**	-
Mouse	**MOKJUO**	**N/A**	**N/A**	-
ACCESSORY				
Equipment Name	**Model Name**	**Serial No.**	**Manufacturer**	**Remarks**
Keyboard	KUB-1407	N/A	SHANGHAI RONGTENG ELECTRON TECHNOLOGICAL CO.,LTD	-
Network Camera	QNV-6083R	N/A	Hanwha Techwin Co., Ltd.	-
Poe Injector	SFC501G	N/A	N/A	-
Monitor	24BK550Y	N/A	LG Electronics Nanjing New Technology Co.,Ltd	2 EA
Smart Phone	G4	N/A	LG	-
Notebook	P56	NKW650RB 0006B02606	HANSUNG	-
HUB	SW1600-mini	N/A	IpTIME	-
Ear Phone	N/A	N/A	N/A	-
Alarm	N/A	N/A	N/A	-
USB Memory Stick	N/A	N/A	N/A	8 GB 2 EA
HDD	WD40PURX-64NN96Y0	N/A	Western Digital	4 TB

2-6 Cable List

Cable List						
From		To		Length	Shielding	
Type	I/O Port	Type	I/O Port	(m)	Cable	backshell
EUT	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	LAN #1	Poe Injector	LAN	3.0	NO	Plastic
	LAN #2	HUB	LAN	3.0	NO	Plastic
	LAN #3	HUB	LAN	3.0	NO	Plastic
	USB #1	Mouse	USB	1.5	NO	Plastic
	USB #2	Keyboard	USB	1.5	NO	Plastic
	USB #3	USB Memory Stick #1	USB	-	-	-
	USB #4	USB Memory Stick #2	USB	-	-	-
	HDMI #1	Monitor #1	HDMI	1.4	YES	Plastic
	HDMI #2	Monitor #2	HDMI	1.4	YES	Plastic
	Audio OUT	Ear Phone	-	1.5	NO	Plastic
	Alarm IN / OUT	Alarm	Alarm IN / OUT	1.0	NO	Plastic
	HDD Slot	HDD	-	-	-	-
Poe Injector	LAN	Network Camera	LAN	3.0	NO	Plastic
	AC IN	AC Power Source	3 Pin AC Line	1.2	NO	Plastic
HUB	LAN	Notebook	LAN	1.0	NO	Plastic
	AC IN	AC Power Source	3 Pin AC Line	1.6	NO	Plastic
Network Camera	Audio IN	Smart Phone	-	1.4	NO	Plastic
Notebook	DC IN	Battery	DC OUT	-	-	-
Monitor #1	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Monitor #2	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		
Conducted Emissions	AS/NZS CISPR32:2015	C
Radiated Emissions	AS/NZS CISPR32:2015	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. Test Items

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	:	AS/NZS CISPR32:2015
Measurement Frequency range	:	150 kHz - 30 MHz
Measurement RBW	:	9 kHz
Test mode	:	Operating 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 disturbance at the mains ports of class A ITE

Frequency Range	Quasi-peak	Average
(0.15 - 0.5) MHz	79 dBµV	66 dBµV
(0.5 – 30) MHz	73 dBµV	60 dBµV
Note: The limits will decrease with the frequency logarithmically within 0.15 MHz to 0.5 MHz		

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

Frequency Range	Quasi-peak	Average
(0.15 – 0.5) MHz	(66 – 56) dBµV	(56 - 46) dBµV
(0.5 – 5) MHz	56 dBµV	46 dBµV
(5 – 30) MHz	60 dBµV	50 dBµV
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) dBμV	(84 – 74) dBμV	(53 – 43) dBμV	(40 – 30) dBμV
(0.5 – 30) MHz	87 dBμV	74 dBμV	43 dBμV	30 dBμV

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) dBμV	(74 – 64) dBμV	(40 – 30) dBμV	(30 – 20) dBμV
(0.5 – 30) MHz	74 dBμV	64 dBμV	30 dBμV	20 dBμV

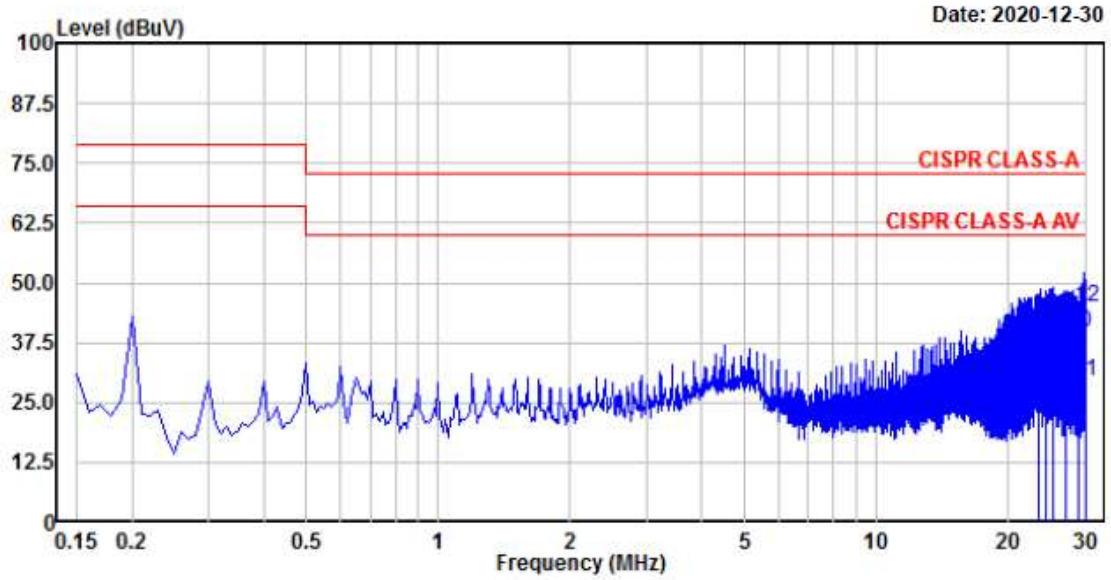
Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

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)

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.	: XRN-6410B2	Phase	: Line
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



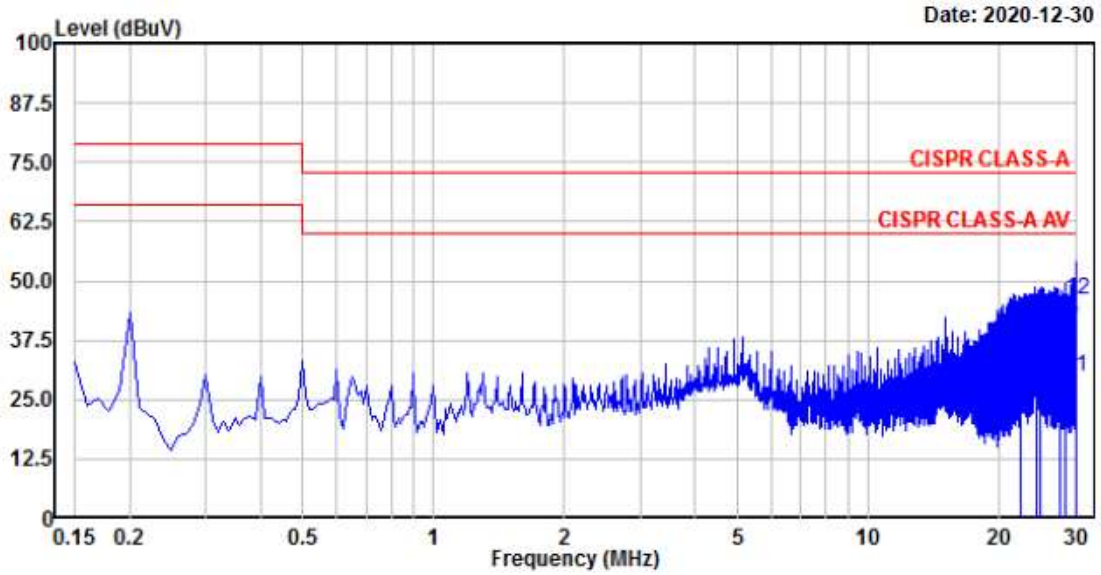
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	23.585	20.44	7.16	20.03	40.47	27.19	73.00	60.00	32.53	32.81	Line
4.	24.370	20.55	4.42	20.05	40.60	24.47	73.00	60.00	32.40	35.53	Line
6.	25.298	21.27	7.05	20.05	41.32	27.10	73.00	60.00	31.68	32.90	Line
8.	27.199	21.01	4.50	20.09	41.10	24.59	73.00	60.00	31.90	35.41	Line
10.	28.824	19.56	3.31	20.11	39.67	23.42	73.00	60.00	33.33	36.58	Line
12.	29.947	24.93	9.16	20.13	45.06	29.29	73.00	60.00	27.94	30.71	Line

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

Conducted Emissions (NEUTRAL)

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.	: XRN-6410B2	Phase	: Neutral
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



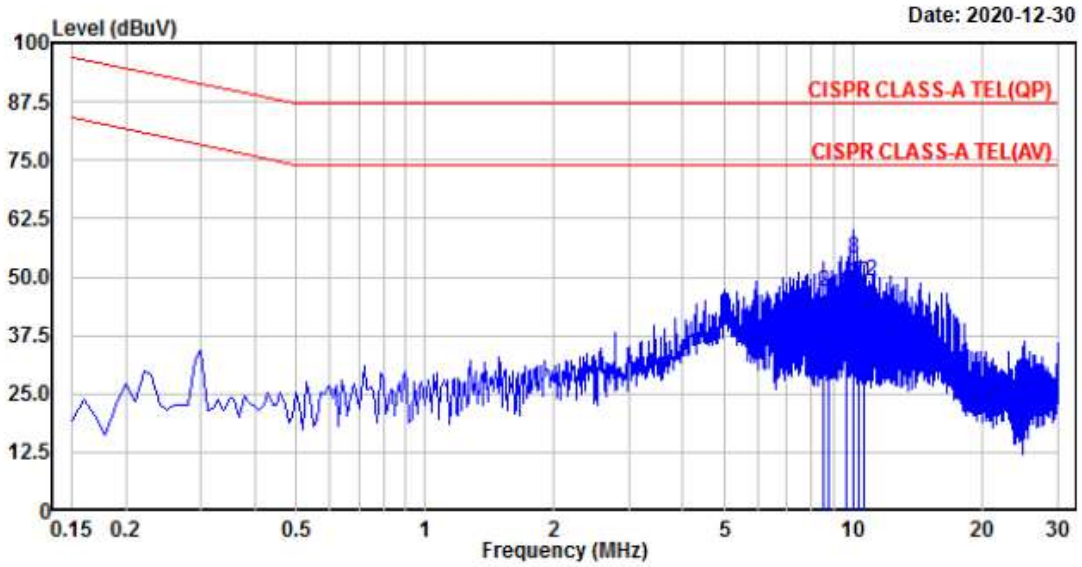
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	22.335	19.55	4.96	20.07	39.62	25.03	73.00	60.00	33.38	34.97	neutral
4.	24.365	20.94	5.99	20.11	41.05	26.10	73.00	60.00	31.95	33.90	neutral
6.	24.753	21.15	8.03	20.11	41.26	28.14	73.00	60.00	31.74	31.86	neutral
8.	27.462	21.98	5.39	20.17	42.15	25.56	73.00	60.00	30.85	34.44	neutral
10.	28.351	20.99	4.10	20.19	41.18	24.29	73.00	60.00	31.82	35.71	neutral
12.	29.990	25.97	9.56	20.22	46.19	29.78	73.00	60.00	26.81	30.22	neutral

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

Conducted Emissions (TEL_10 M) / Operating mode LAN #1

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.	: XRN-6410B2	Phase	: TEL_10M #1
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



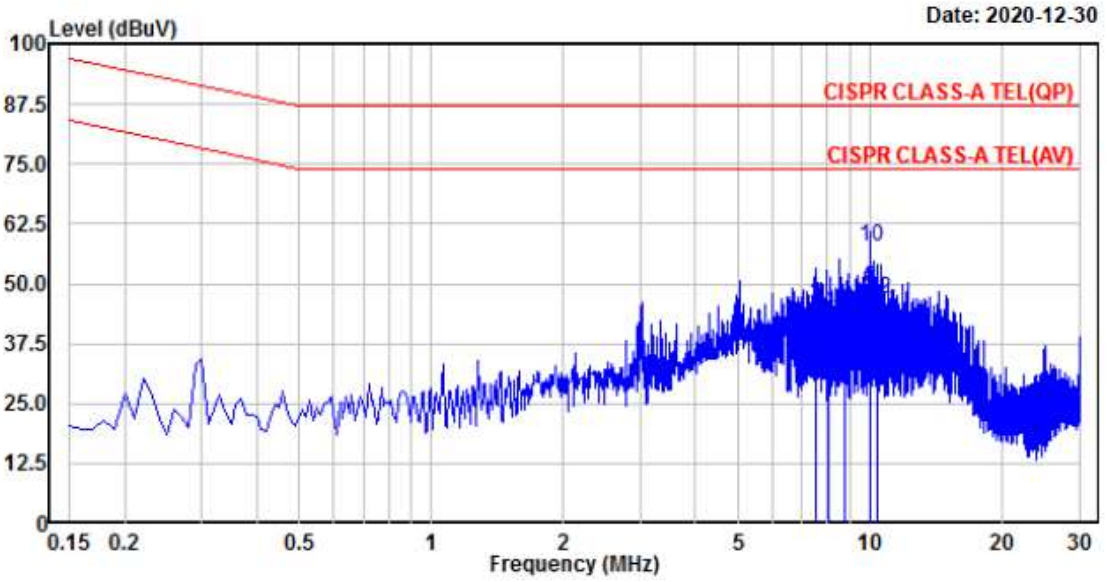
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	8.496	27.54	10.61	19.34	46.88	29.95	87.00	74.00	40.12	44.05	Line
4.	8.749	20.81	8.21	19.34	40.15	27.55	87.00	74.00	46.85	46.45	Line
6.	9.625	27.51	22.77	19.37	46.88	42.14	87.00	74.00	40.12	31.86	Line
8.	10.010	34.50	22.80	19.37	53.87	42.17	87.00	74.00	33.13	31.83	Line
10.	10.245	29.14	11.86	19.37	48.51	31.23	87.00	74.00	38.49	42.77	Line
12.	10.560	29.80	19.80	19.39	49.19	39.19	87.00	74.00	37.81	34.81	Line

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

Conducted Emissions (TEL_100 M) / Operating mode LAN #1

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.	: XRN-6410B2	Phase	: TEL_100M #1
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



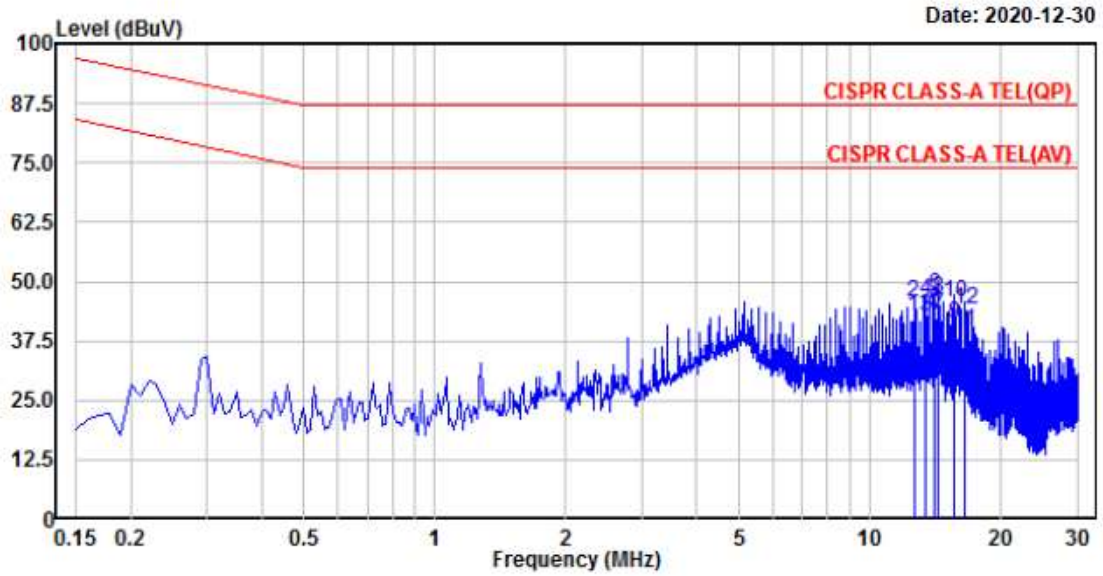
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	7.500	26.45	9.36	19.15	45.60	28.51	87.00	74.00	41.40	45.49	Line
4.	8.078	24.91	9.60	19.16	44.07	28.76	87.00	74.00	42.93	45.24	Line
6.	8.751	22.91	8.89	19.17	42.08	28.06	87.00	74.00	44.92	45.94	Line
8.	9.963	29.95	11.89	19.20	49.15	31.09	87.00	74.00	37.85	42.91	Line
10.	10.000	38.52	14.98	19.20	57.72	34.18	87.00	74.00	29.28	39.82	Line
12.	10.381	27.59	10.62	19.21	46.80	29.83	87.00	74.00	40.20	44.17	Line

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

Conducted Emissions (TEL_1000 M) / Operating mode LAN #1

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.	: XRN-6410B2	Phase	: TEL_1000M #1
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



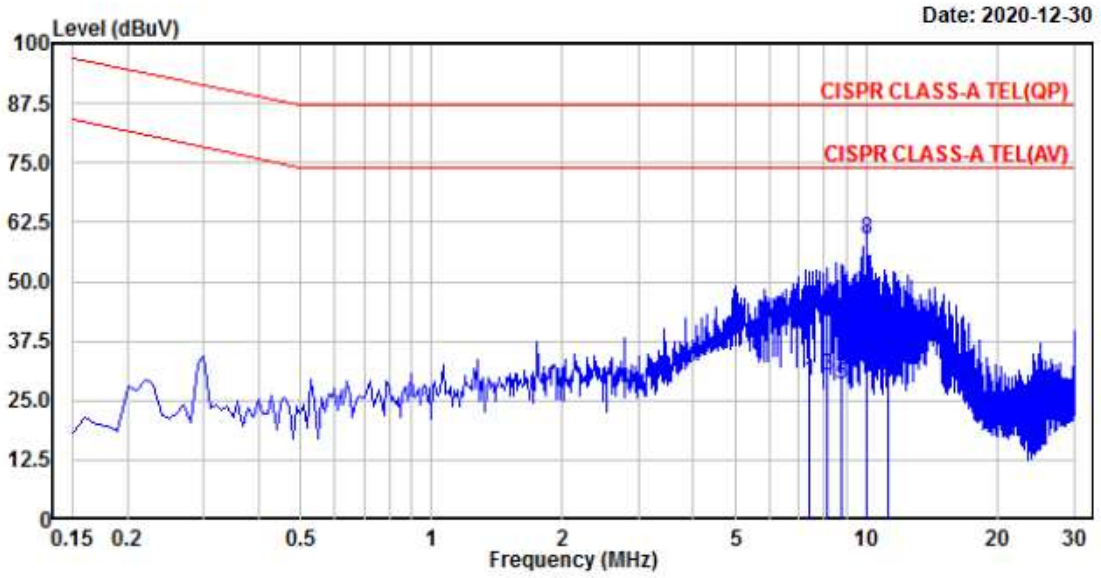
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	12.618	26.36	23.19	19.39	45.75	42.58	87.00	74.00	41.25	31.42	Line
4.	13.476	26.60	23.30	19.41	46.01	42.71	87.00	74.00	40.99	31.29	Line
6.	14.115	27.91	24.42	19.43	47.34	43.85	87.00	74.00	39.66	30.15	Line
8.	14.331	26.94	23.54	19.43	46.37	42.97	87.00	74.00	40.63	31.03	Line
10.	15.613	26.33	21.54	19.45	45.78	40.99	87.00	74.00	41.22	33.01	Line
12.	16.470	24.71	20.05	19.48	44.19	39.53	87.00	74.00	42.81	34.47	Line

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

Conducted Emissions (TEL_10 M) / Operating mode LAN #2

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.	: XRN-6410B2	Phase	: TEL_10M #2
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



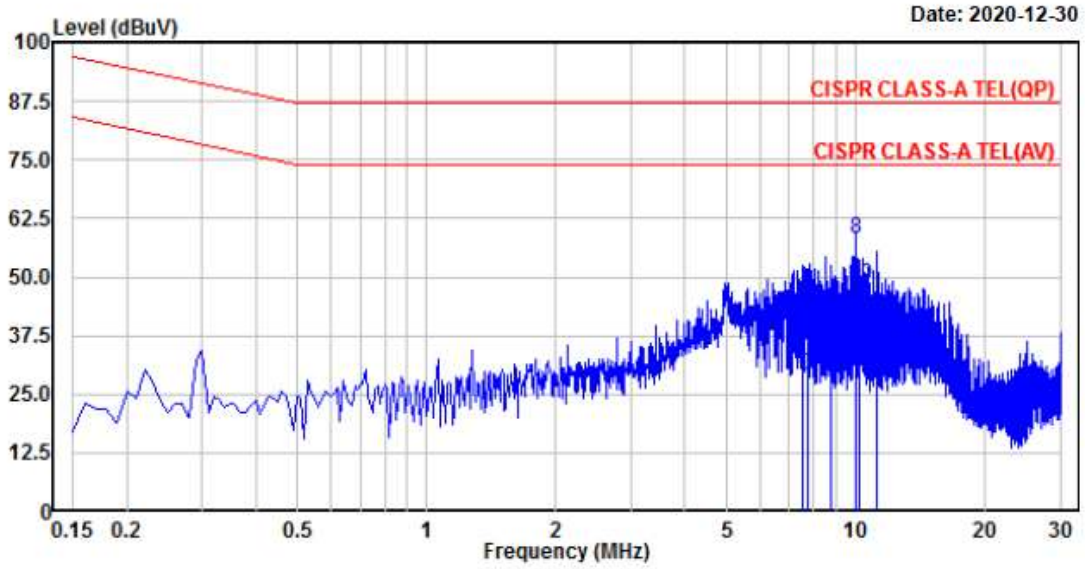
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	7.411	24.58	9.69	19.31	43.89	29.00	87.00	74.00	43.11	45.00	Line
4.	8.091	25.61	10.76	19.33	44.94	30.09	87.00	74.00	42.06	43.91	Line
6.	8.752	22.48	8.95	19.34	41.82	28.29	87.00	74.00	45.18	45.71	Line
8.	10.000	39.57	15.64	19.37	58.94	35.01	87.00	74.00	28.06	38.99	Line
10.	11.248	21.22	9.28	19.41	40.63	28.69	87.00	74.00	46.37	45.31	Line
12.	11.249	21.42	9.28	19.41	40.83	28.69	87.00	74.00	46.17	45.31	Line

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

Conducted Emissions (TEL_100 M) / Operating mode LAN #2

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.	: XRN-6410B2	Phase	: TEL_100M #2
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



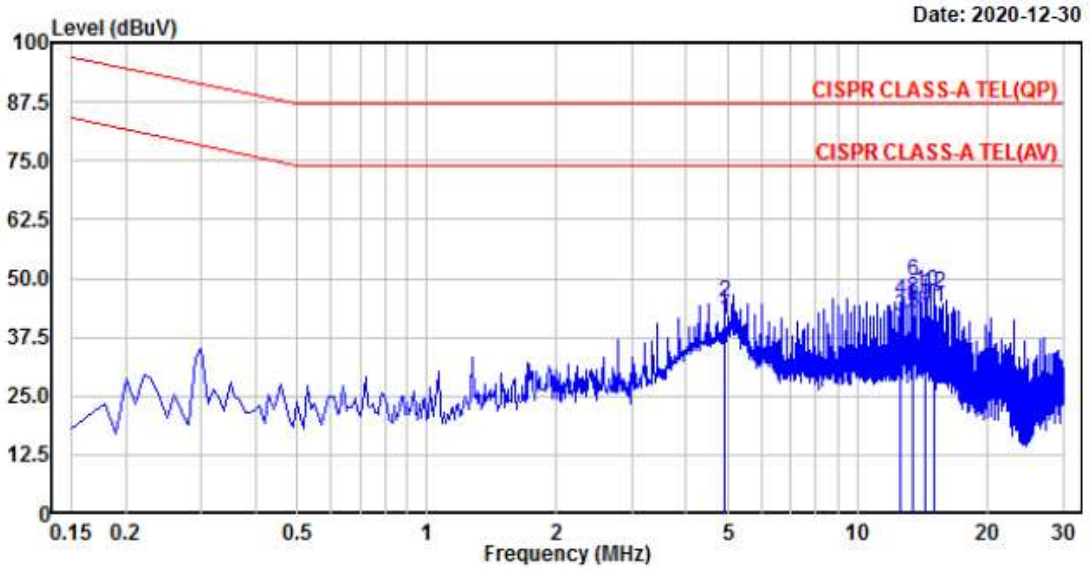
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	7.501	25.52	9.07	19.15	44.67	28.22	87.00	74.00	42.33	45.78	Line
4.	7.748	26.85	9.96	19.16	46.01	29.12	87.00	74.00	40.99	44.88	Line
6.	8.751	21.83	8.56	19.17	41.00	27.73	87.00	74.00	46.00	46.27	Line
8.	10.000	39.08	15.18	19.20	58.28	34.38	87.00	74.00	28.72	39.62	Line
10.	10.182	29.27	11.21	19.20	48.47	30.41	87.00	74.00	38.53	43.59	Line
12.	11.250	22.26	9.15	19.24	41.50	28.39	87.00	74.00	45.50	45.61	Line

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

Conducted Emissions (TEL_1000 M) / Operating mode LAN #2

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.	: XRN-6410B2	Phase	: TEL_1000M #2
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



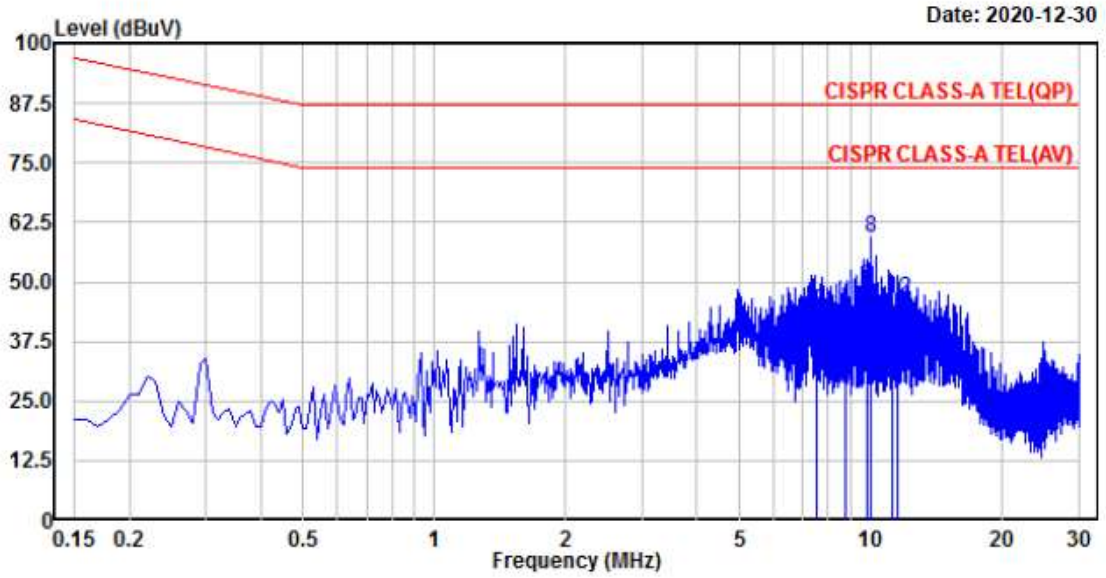
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	4.919	25.72	21.98	19.23	44.95	41.21	87.00	74.00	42.05	32.79	Line
4.	12.617	26.04	22.68	19.39	45.43	42.07	87.00	74.00	41.57	31.93	Line
6.	13.475	29.88	23.17	19.41	49.29	42.58	87.00	74.00	37.71	31.42	Line
8.	13.477	26.26	22.67	19.41	45.67	42.08	87.00	74.00	41.33	31.92	Line
10.	14.331	27.77	24.63	19.43	47.20	44.06	87.00	74.00	39.80	29.94	Line
12.	14.970	27.19	24.24	19.44	46.63	43.68	87.00	74.00	40.37	30.32	Line

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

Conducted Emissions (TEL_10 M) / Operating mode LAN #3

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.	: XRN-6410B2	Phase	: TEL_10M #3
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



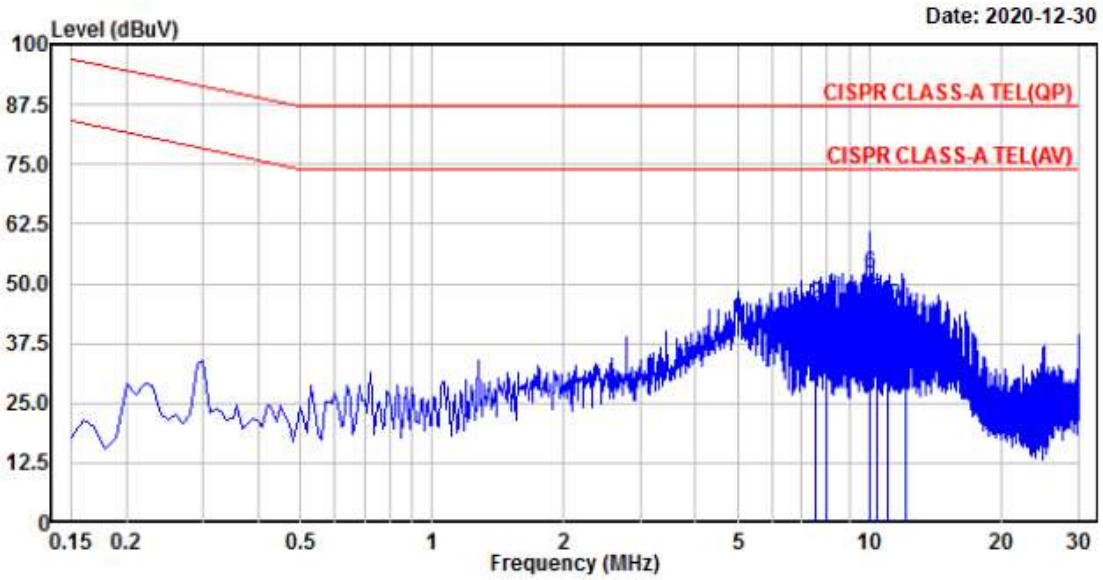
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	7.500	24.60	8.81	19.31	43.91	28.12	87.00	74.00	43.09	45.88	Line
4.	8.749	22.25	8.60	19.34	41.59	27.94	87.00	74.00	45.41	46.06	Line
6.	9.839	29.76	21.63	19.37	49.13	41.00	87.00	74.00	37.87	33.00	Line
8.	10.000	39.76	15.72	19.37	59.13	35.09	87.00	74.00	27.87	38.91	Line
10.	11.248	22.37	9.31	19.41	41.78	28.72	87.00	74.00	45.22	45.28	Line
12.	11.502	26.87	12.05	19.42	46.29	31.47	87.00	74.00	40.71	42.53	Line

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

Conducted Emissions (TEL_100 M) / Operating mode LAN #3

LTA
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.	: XRN-6410B2	Phase	: TEL_100M #3
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



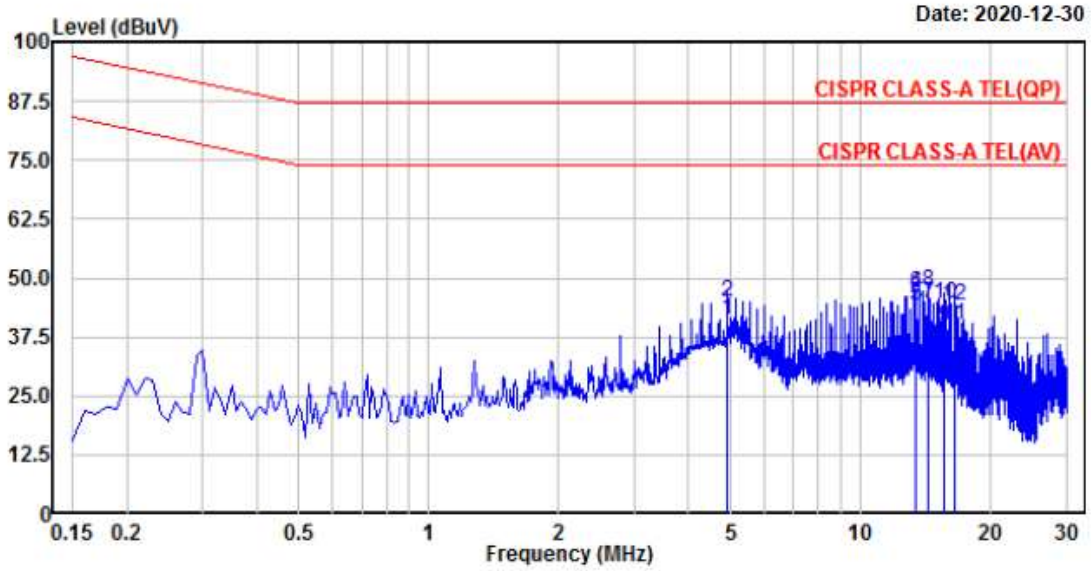
No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	7.499	26.58	9.42	19.15	45.73	28.57	87.00	74.00	41.27	45.43	Line
4.	7.932	23.88	10.59	19.16	43.04	29.75	87.00	74.00	43.96	44.25	Line
6.	10.010	32.80	27.50	19.20	52.00	46.70	87.00	74.00	35.00	27.30	Line
8.	10.380	27.25	16.80	19.21	46.46	36.01	87.00	74.00	40.54	37.99	Line
10.	11.008	26.25	9.94	19.22	45.47	29.16	87.00	74.00	41.53	44.84	Line
12.	12.068	22.17	10.19	19.25	41.42	29.44	87.00	74.00	45.58	44.56	Line

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

Conducted Emissions (TEL_1000 M) / Operating mode LAN #3

LTA
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.	: XRN-6410B2	Phase	: TEL_1000M #3
Test Mode	: Operating mode	Test Power	: 240 V / 50 Hz
Temp./ Humi.	: 21 'C / 38 % R.H.	Test Engineer	: CHEON S J



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	4.919	25.70	21.90	19.23	44.93	41.13	87.00	74.00	42.07	32.87	Line
4.	13.474	27.50	24.79	19.41	46.91	44.20	87.00	74.00	40.09	29.80	Line
6.	13.475	27.51	24.67	19.41	46.92	44.08	87.00	74.00	40.08	29.92	Line
8.	14.328	27.58	25.07	19.43	47.01	44.50	87.00	74.00	39.99	29.50	Line
10.	15.614	25.13	20.01	19.45	44.58	39.46	87.00	74.00	42.42	34.54	Line
12.	16.467	24.71	20.51	19.48	44.19	39.99	87.00	74.00	42.81	34.01	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	: AS/NZS CISPR32:2013
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	: Operating 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 : 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 below 1 GHz

CLASS A

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

CLASS B

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

Limit of 3m above 1 GHz

CLASS A

Frequency Range	Average Limit @ 3m (dBµV/m)	Peak limit @ 3m (dBµV/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 (dBµV/m)	Peak limit @ 3m (dBµV/m)
(1 000 – 3 000) MHz	50	70
(3 000 – 6 000) MHz	54	74

NOTE: The lower limit applies at the transition frequency.

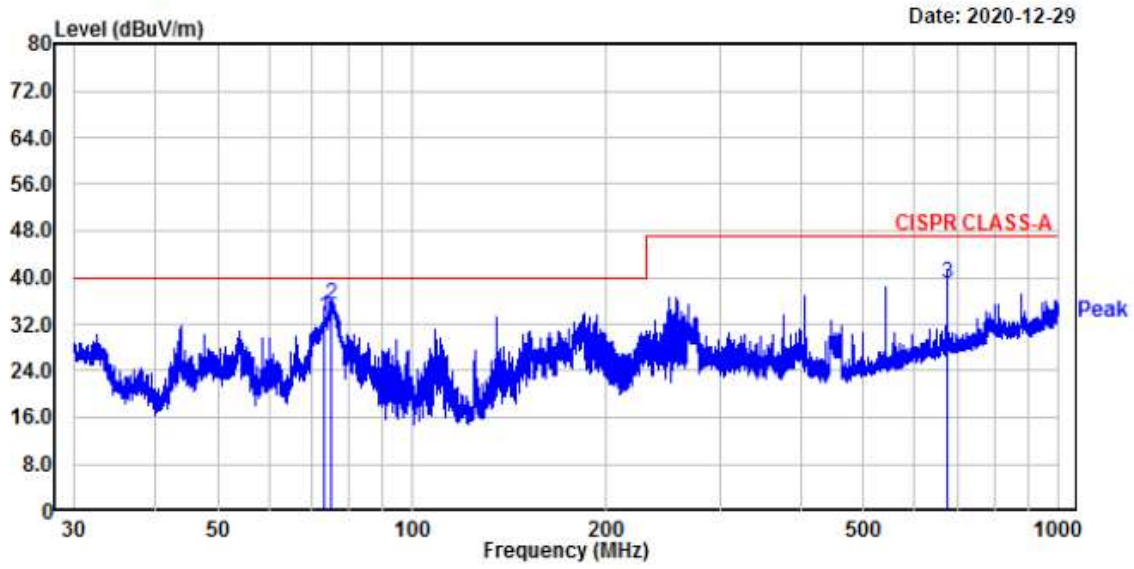
Radiated Emissions (Below 1 GHz) / V

LTA
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.: XRN-6410B2 Temp/Humi: 20 'C / 34 % R.H.

Test Mode : Operating mode Tested by: CHEON S J

Power : 240 V / 50 Hz



No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	cm	deg	
1.	73.07	49.87	-16.61	33.26	40.00	6.74	114	312	vertical
2.	75.12	52.29	-16.98	35.31	40.00	4.69	117	300	vertical
3.	675.21	42.30	-3.22	39.08	47.00	7.92	338	244	vertical

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

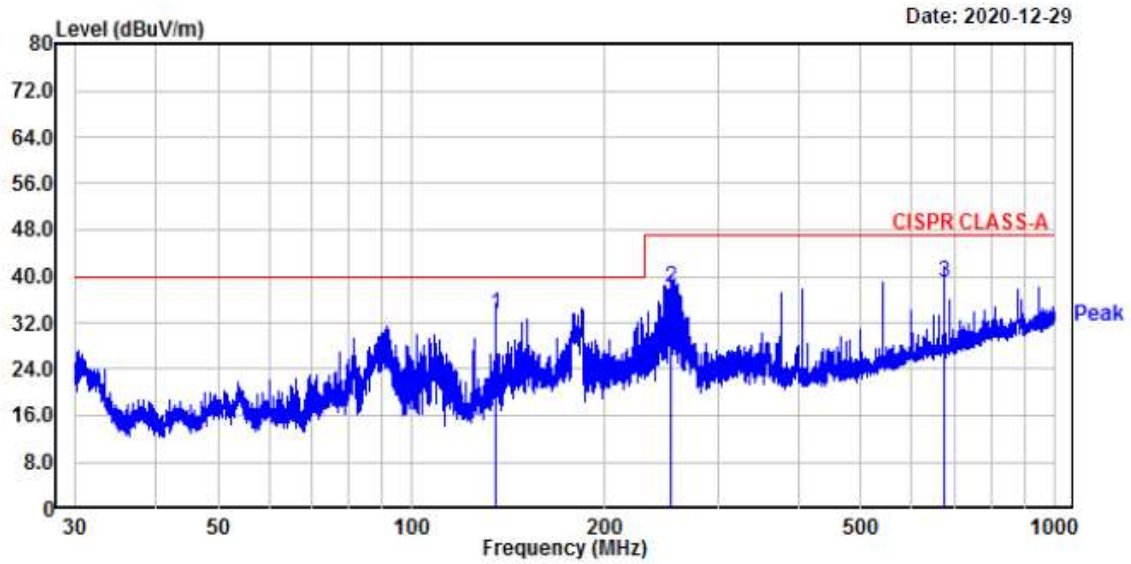
Radiated Emissions (Below 1 GHz) / H

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

EUT/Model No.: XRN-6410B2 Temp/Humi: 20 'C / 34 % R.H.

Test Mode : Operating mode Tested by: CHEON S J

Power : 240 V / 50 Hz



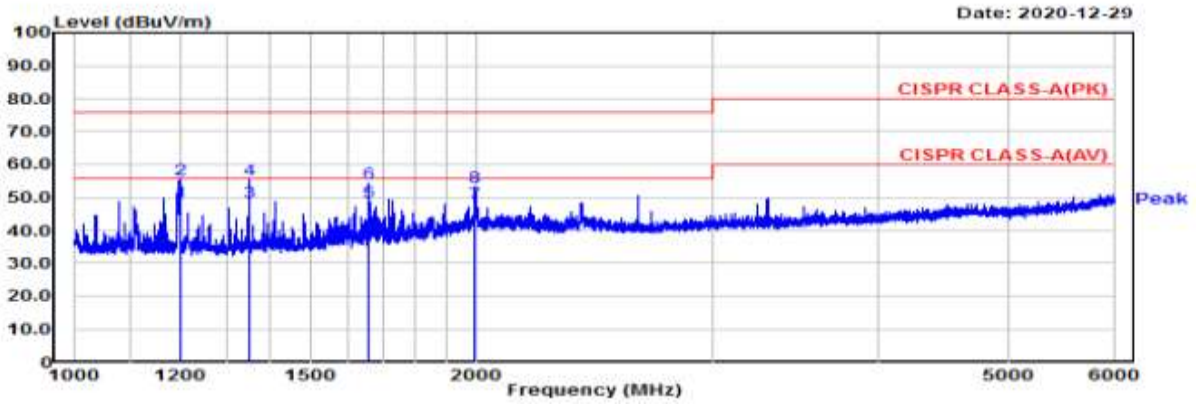
No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	cm	deg	
1.	135.03	47.51	-14.10	33.41	40.00	6.59	317	154	horizontal
2.	253.61	51.20	-13.24	37.96	47.00	9.04	317	140	horizontal
3.	675.21	42.30	-3.22	39.08	47.00	7.92	335	67	horizontal

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

Radiated Emissions

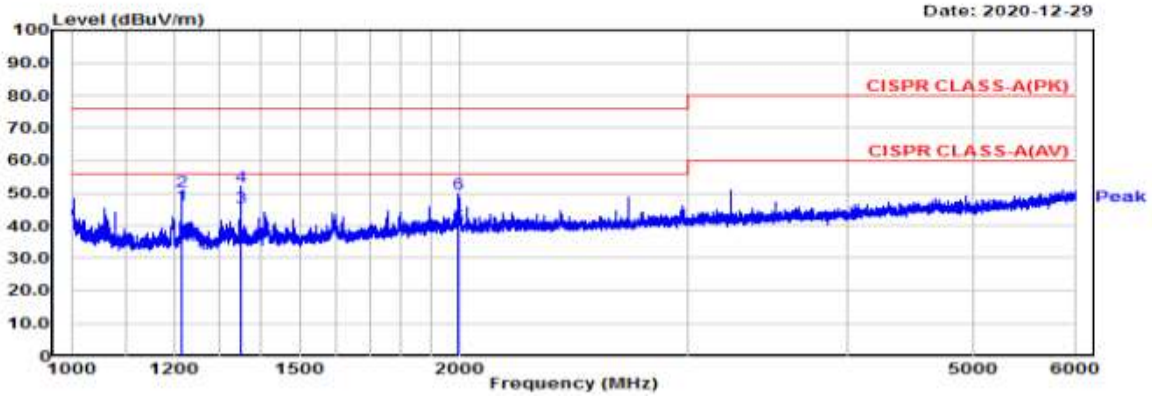
(Above 1 GHz) / V

EUT/Model No.: XRN-6410B2 Temp/Humi: 20 'C / 34 % R.H.
Test Mode : Operating mode Tested by: CHEON S J
Power : 240 V / 50 Hz



(Above 1 GHz) / H

EUT/Model No.: XRN-6410B2 Temp/Humi: 20 'C / 34 % R.H.
Test Mode : Operating mode Tested by: CHEON S J
Power : 240 V / 50 Hz



Manufacture : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
Model : XRN-6410B2
TEST mode : Operating mode

Test Date	Temp.: [℃]	Humidity : [%]	Distance (m)
2020-12-29	20.00	34.00	3.8

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
1214.86	57.89	53.64	-5.36	52.53	48.28	76.00	56.00	23.47	7.72	100	154	H
1350.02	58.82	52.25	-4.56	54.26	47.69	76.00	56.00	21.74	8.31	100	204	H
1991.14	50.40	40.65	1.35	51.75	42.00	76.00	56.00	24.25	14.00	100	322	H
1199.72	62.95	56.24	-5.45	57.50	50.79	76.00	56.00	18.50	5.21	100	278	V
1349.72	61.91	55.15	-4.56	57.35	50.59	76.00	56.00	18.65	5.41	100	157	V
1659.30	58.33	52.64	-2.03	56.30	50.61	76.00	56.00	19.70	5.39	100	253	V
1994.27	54.05	49.16	1.37	55.42	50.53	76.00	56.00	20.58	5.47	100	66	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	2021.09.07	1 year
☒	ISN	ENY81-CA6	Rohde & Schwarz	101565	2021.09.07	1 year
☐	ISN	ISN S8	Schwarzbeck	79	2021.09.04	1 year
☐	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2021.09.03	1 year
☐	CDN	TSCDN-C1-BNC-75	F.C.C	07004	2021.05.08	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	100378	2021.09.03	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	101468	2021.09.03	1 year
☒	LISN(main)	ENV216	Rohde & Schwarz	100408	2021.09.04	1 year
☒	LISN(sub)	LT32C/10	AFJ	32031518210	2021.09.03	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	2021.09.03	1 year
☒	Amplifier (25 ㏈)	8447D	HP	2944A07684	2021.11.10	1 year
☒	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.03.26 (KOLAS)	2 year
☐	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.11.12 (RRA)	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	2021.09.03	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
☐	HORN ANTENNA	3115	ETS	114105	2021.11.11 (RRA)	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

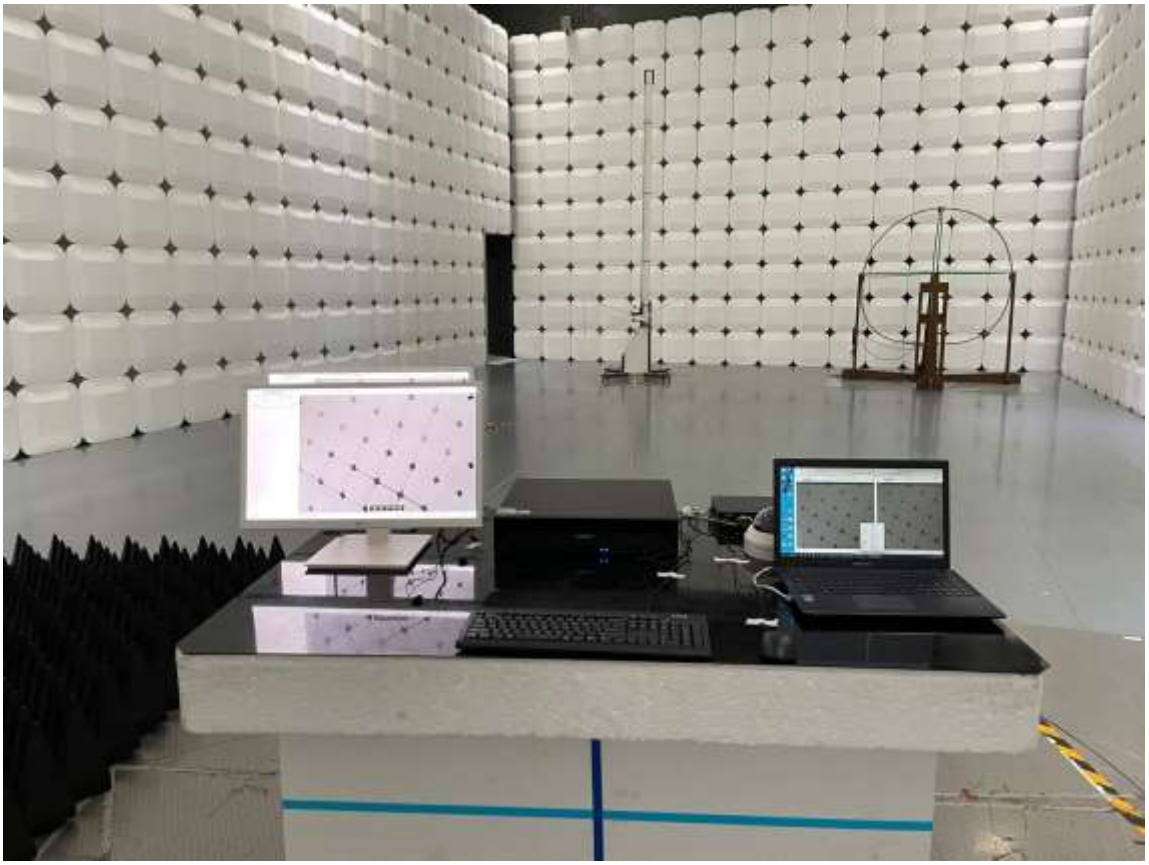
APPENDIX B

PHOTOGRAPHS

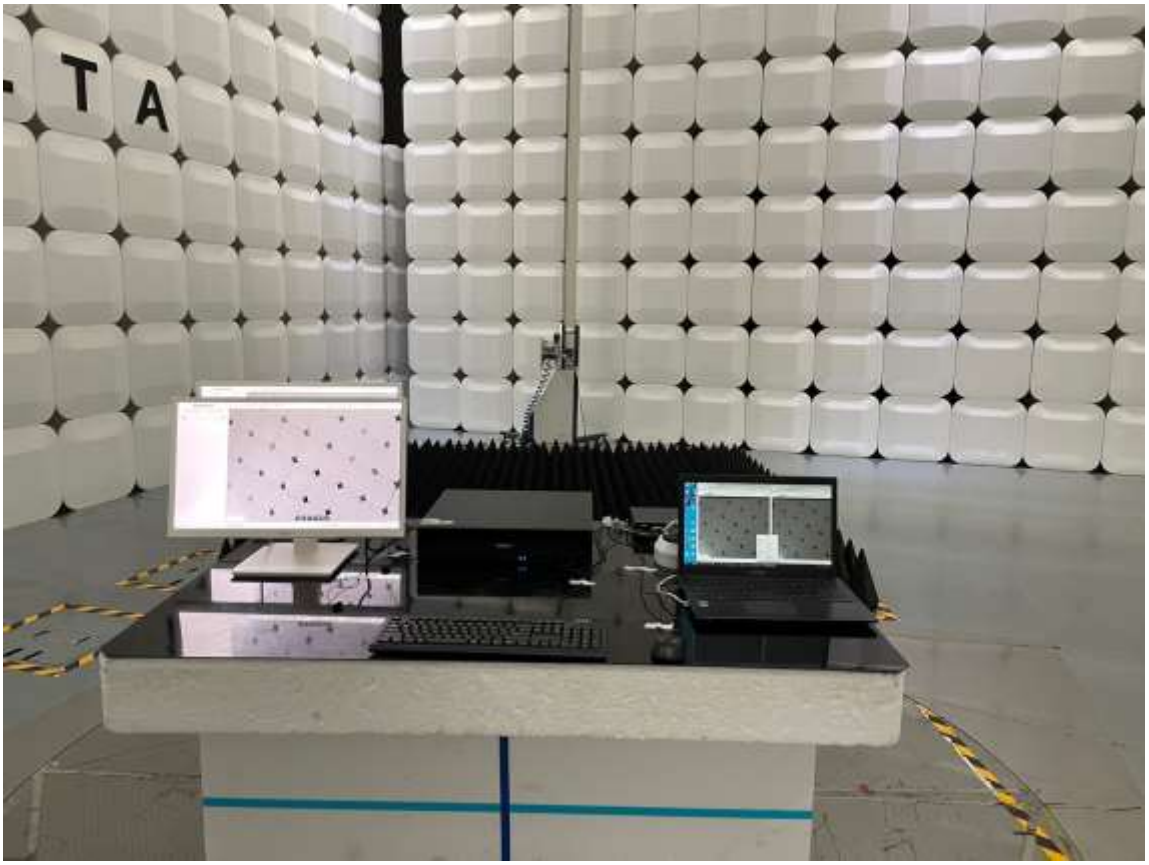
Conducted Emissions

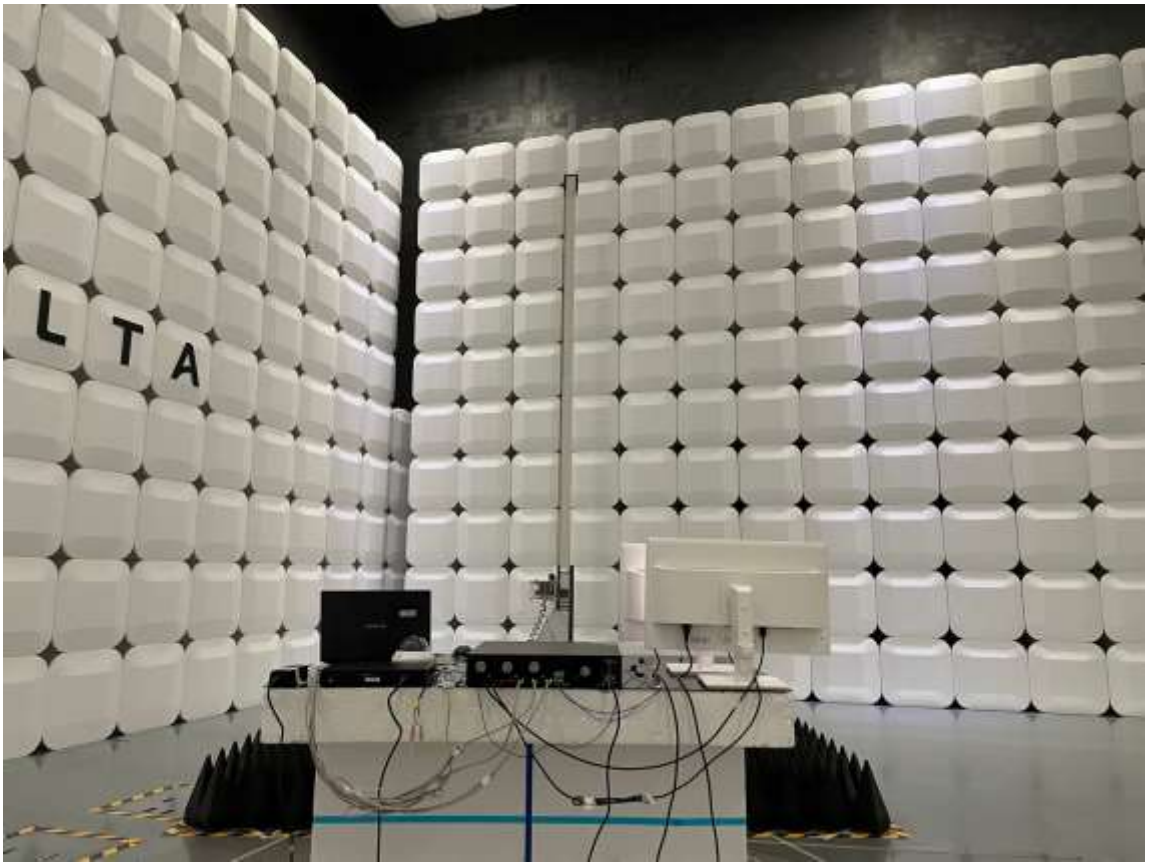
Conducted Emissions (TEL)

Radiated Emissions - Below 1 GHz



Radiated Emissions - Above 1 GHz





EUT

EUT