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EMC TEST REPORT

Dates of Tests: October 29 – November 3, 2020
Test Report S/N: LR500172011W
Test Site : LTA Co., Ltd.

Model No.

XRN-1620SB1

APPLICANT

Hanwha Techwin Co., Ltd.

Equipment Name : NVR
Manufacturer : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
Model name : XRN-1620SB1
Test Device Serial No.: Identification
Rule Part(s) : VCCI-CISPR 32:2016

Date of issue : November 06, 2020

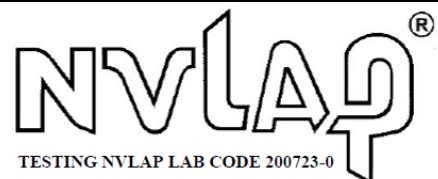
This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, 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 history

Revision	Date of issue	Test report No.	Description
0	06.11.2020	LR500172011W	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
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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	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-1620SB1
Serial number : Identification
Date of receipt : October 13, 2020
EUT condition : Pre-production, not damaged
Interface Ports : AC IN, LAN #1 ~ #16, NETWORK 1, NETWORK 2, AUDIO OUT, USB #1 ~ #3, VGA, HDMI, ALARM IN, ALARM OUT, Ground
Console port is engineer port.
Power rating : AC 100 V, 50 Hz

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure : (21 - 23) °C / (43) % R.H.
Tested Model : XRN-1620SB1
Test mode : Rec mode
Test Voltage : AC 100 V, 50 Hz

2-5 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
NVR	XRN-1620SB1	N/A	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. D-TECH CO.,LTD.	-
Mouse	MOKJUO	08F03698	Primax Electronics Ltd	-
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Monitor #1	24BK550Y	902NTSU7P406	LG	-
Monitor #2	24BK550Y	902NTLE7P384	LG	-
NETWORK CAMERA	QND-8021	N/A	HANWHA TECHWIN CO.,LTD	-
Switch Hub	ipTIME SW1600-mini	N/A	EFM NETWORKS	-
Notebook	P56	N/A	HANSUNG	-
Notebook Adapter	A10-090P3A	N/A	Chicony	-
USB Memory #1	USB Memory HOLDER	N/A	AXXEN	32 GB
USB Memory #2	USB Memory HOLDER	N/A	AXXEN	32 GB
JIG Board	N/A	N/A	N/A	-
Earphone	N/A	N/A	N/A	-
HDD	WD20PURX-64P6ZY0	WCC4M2ZDF293	WD	2.0 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	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	LAN #1	NETWORK CAMERA	LAN	3.0	NO	Plastic
	LAN #2 ~ LAN #16	Switch Hub (terminated)	LAN #2 ~ LAN #16	1.0	NO	Plastic
	NETWORK1	Switch Hub (terminated)	LAN #1	1.0	NO	Plastic
	NETWORK2	Notebook	LAN	3.0	NO	Plastic
	ALARM IN	JIG Board	ALARM IN	0.4	NO	Plastic
	ALARM OUT	JIG Board	ALARM OUT	0.4	NO	Plastic
	ALARM Ground	JIG Board	Ground	0.4	NO	Plastic
	VGA	Monitor#1	VGA	1.6	YES	Metal
	HDMI	Monitor#2	HDMI	1.5	YES	Metal
	USB #1	Mouse	-	1.0	NO	Plastic
	USB #2	USB Memory #1	-	-	-	-
	USB #3	USB Memory #2	-	-	-	-
	AUDIO OUT	Earphone	AUX	1.0	NO	Plastic
	DC OUT	HDD	DC IN	0.4	NO	Plastic
	SATA	HDD	SATA	0.4	NO	Plastic
Monitor#1	AC IN	AC Power Source	3 Pin AC Line	1.6	NO	Plastic
Monitor#2	AC IN	AC Power Source	3 Pin AC Line	1.6	NO	Plastic
Notebook	DC IN	Notebook Adapter	DC OUT	1.6	NO	Plastic
Notebook 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		
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)



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EUT /Model No. : XRN-1620SB1

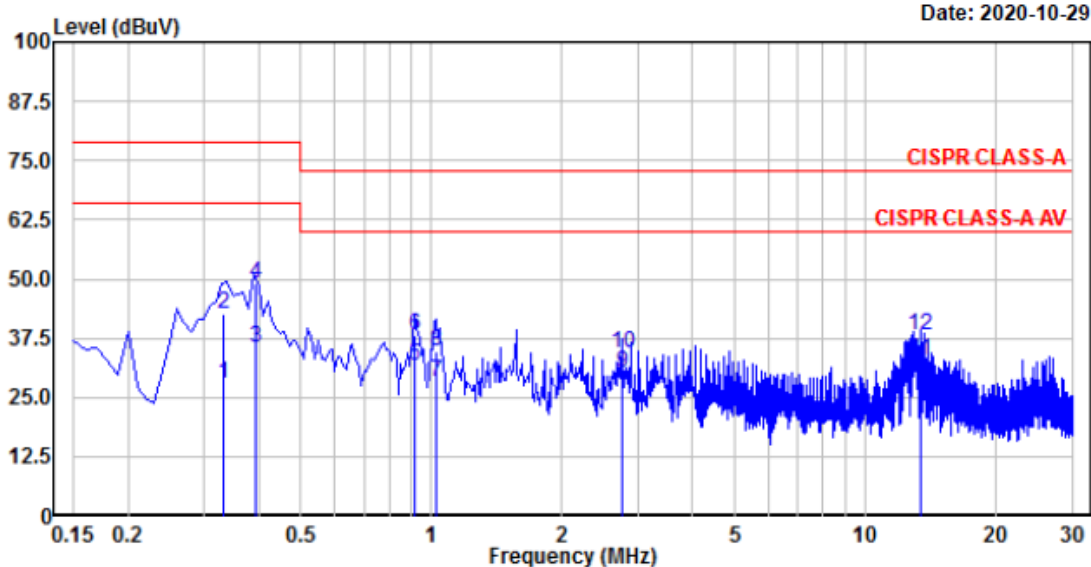
Phase : Line

Test Mode : Rec mode

Test Power : 100 V / 50 Hz

Temp. / Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	0.332	23.18	8.26	19.48	42.66	27.74	79.00	66.00	36.34	38.26	Line
4.	0.393	29.74	16.05	19.49	49.23	35.54	79.00	66.00	29.77	30.46	Line
6.	0.917	18.43	11.99	19.53	37.96	31.52	73.00	60.00	35.04	28.48	Line
8.	1.027	15.16	8.70	19.53	34.69	28.23	73.00	60.00	38.31	31.77	Line
10.	2.750	14.81	10.75	19.60	34.41	30.35	73.00	60.00	38.59	29.65	Line
12.	13.359	18.02	12.87	19.92	37.94	32.79	73.00	60.00	35.06	27.21	Line

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

Conducted Emissions (NEUTRAL)



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EUT /Model No. : XRN-1620SB1

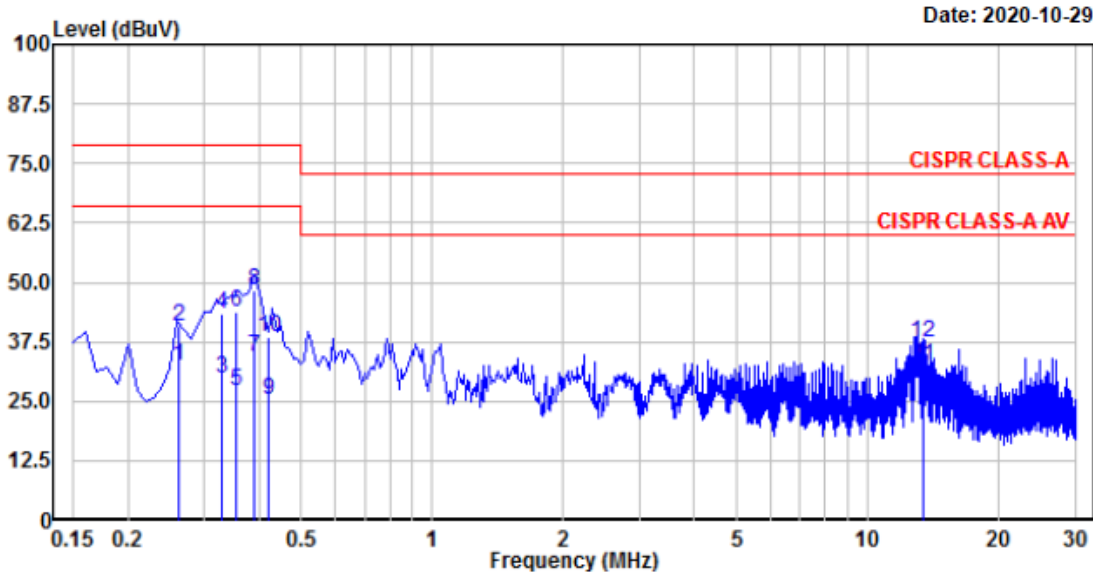
Phase : Neutral

Test Mode : Rec mode

Test Power : 100 V / 50 Hz

Temp. / Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	0.261	21.15	13.18	19.46	40.61	32.64	79.00	66.00	38.39	33.36	neutral
4.	0.329	24.01	10.18	19.48	43.49	29.66	79.00	66.00	35.51	36.34	neutral
6.	0.356	24.40	7.72	19.48	43.88	27.20	79.00	66.00	35.12	38.80	neutral
8.	0.391	28.64	14.70	19.49	48.13	34.19	79.00	66.00	30.87	31.81	neutral
10.	0.420	18.88	5.64	19.49	38.37	25.13	79.00	66.00	40.63	40.87	neutral
12.	13.358	17.40	12.51	19.94	37.34	32.45	73.00	60.00	35.66	27.55	neutral

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

Conducted Emissions (TEL_10 M) / LAN #1)



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EUT /Model No. : XRN-1620SB1

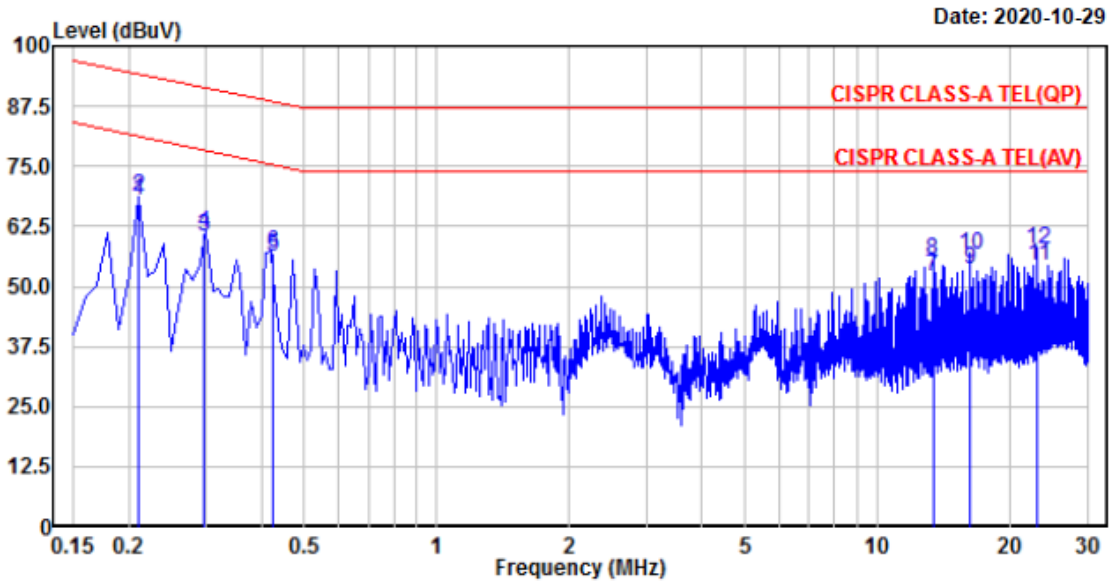
Phase : TEL_10M

Test Mode : Rec mode (LAN #1)

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	0.211	48.94	48.23	19.59	68.53	67.82	94.16	81.16	25.63	13.34	Line
4.	0.295	41.75	41.07	19.48	61.23	60.55	91.37	78.37	30.14	17.82	Line
6.	0.423	37.48	36.71	19.41	56.89	56.12	88.38	75.38	31.49	19.26	Line
8.	13.358	35.91	32.62	19.53	55.44	52.15	87.00	74.00	31.56	21.85	Line
10.	16.229	36.83	34.07	19.63	56.46	53.70	87.00	74.00	30.54	20.30	Line
12.	23.128	37.79	34.42	19.95	57.74	54.37	87.00	74.00	29.26	19.63	Line

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

Conducted Emissions (TEL_1000 M) / LAN #1)



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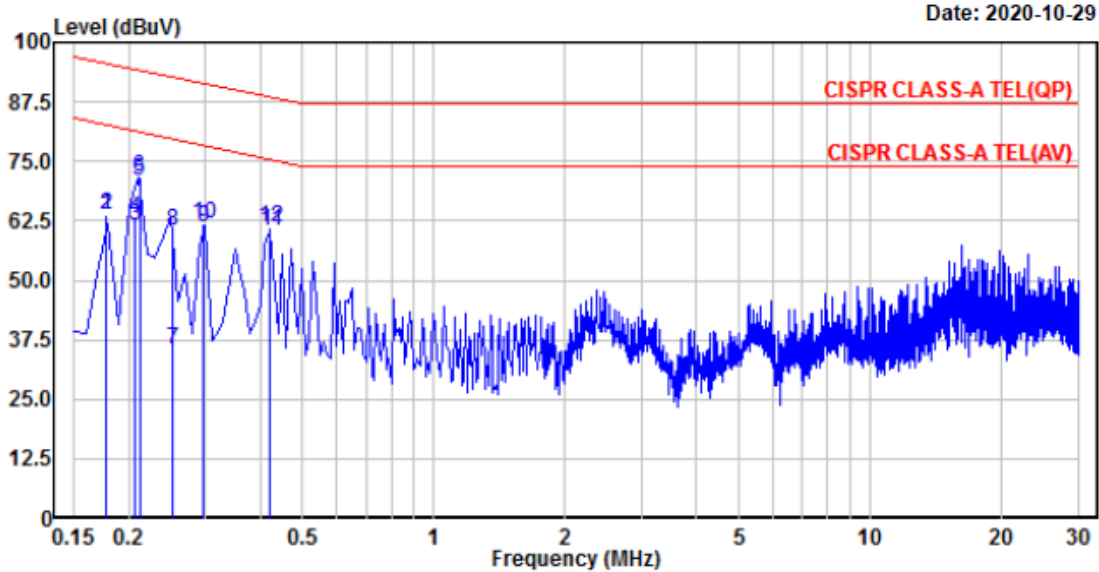
Phase : TEL_1000M

Test Mode : Rec mode (LAN #1)

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	0.177	44.17	44.15	19.58	63.75	63.73	95.62	82.62	31.87	18.89	Line
4.	0.206	43.63	41.94	19.57	63.20	61.51	94.37	81.37	31.17	19.86	Line
6.	0.212	52.28	51.55	19.57	71.85	71.12	94.14	81.14	22.29	10.02	Line
8.	0.251	40.75	16.01	19.56	60.31	35.57	92.71	79.71	32.40	44.14	Line
10.	0.295	42.33	41.70	19.55	61.88	61.25	91.37	78.37	29.49	17.12	Line
12.	0.423	41.47	40.74	19.55	61.02	60.29	88.39	75.39	27.37	15.10	Line

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

Conducted Emissions (TEL_10 M) / LAN #2)



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EUT /Model No. : XRN-1620SB1

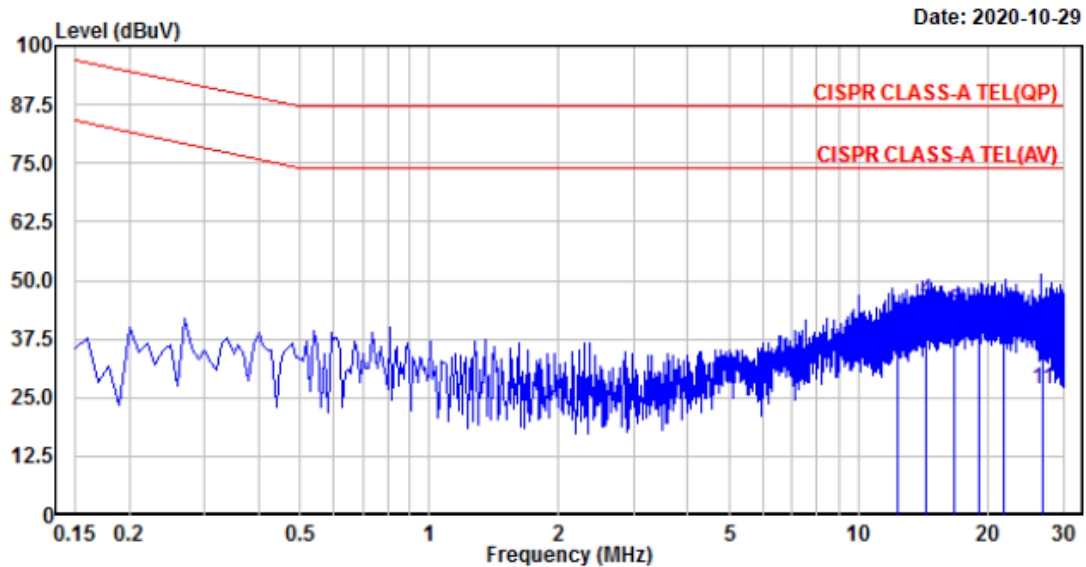
Phase : TEL_10M

Test Mode : Rec mode (LAN #2)

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	12.286	21.44	14.99	19.50	40.94	34.49	87.00	74.00	46.06	39.51	Line
4.	14.378	25.97	21.04	19.56	45.53	40.60	87.00	74.00	41.47	33.40	Line
6.	16.642	23.73	19.22	19.65	43.38	38.87	87.00	74.00	43.62	35.13	Line
8.	19.038	22.72	17.93	19.75	42.47	37.68	87.00	74.00	44.53	36.32	Line
10.	21.768	20.70	15.65	19.89	40.59	35.54	87.00	74.00	46.41	38.46	Line
12.	26.844	17.09	6.77	20.18	37.27	26.95	87.00	74.00	49.73	47.05	Line

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

Conducted Emissions (TEL_1000 M) / LAN #2)



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EUT /Model No. : XRN-1620SB1

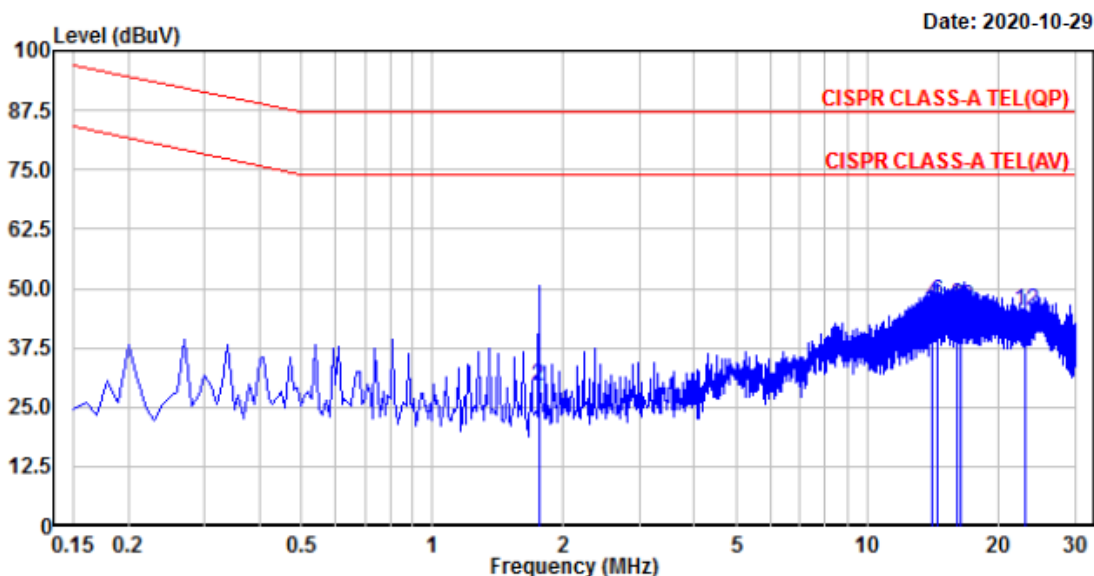
Phase : TEL_1000M

Test Mode : Rec mode (LAN #2)

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	1.755	10.03	8.00	19.54	29.57	27.54	87.00	74.00	57.43	46.46	Line
4.	14.108	26.74	21.81	19.98	46.72	41.79	87.00	74.00	40.28	32.21	Line
6.	14.513	27.09	22.13	19.99	47.08	42.12	87.00	74.00	39.92	31.88	Line
8.	16.065	26.29	19.84	20.04	46.33	39.88	87.00	74.00	40.67	34.12	Line
10.	16.335	25.99	19.29	20.05	46.04	39.34	87.00	74.00	40.96	34.66	Line
12.	23.126	25.22	20.80	20.21	45.43	41.01	87.00	74.00	41.57	32.99	Line

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

Conducted Emissions (TEL_10 M) / LAN #3)



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EUT /Model No. : XRN-1620SB1

Phase : TEL_10M

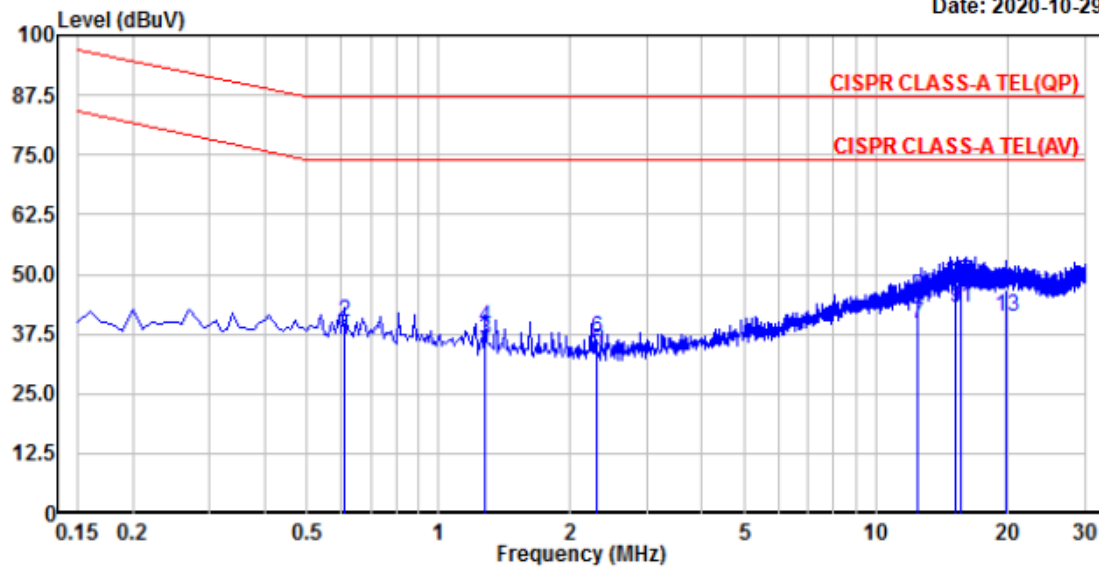
Test Mode : Rec mode (LAN #3)

Test Power : 100 V / 50 Hz

Temp. / Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S H

Date: 2020-10-29



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.	0.608	20.80	16.89	19.34	40.14	36.23	87.00	74.00	46.86	37.77	Line
4.	1.282	19.66	17.04	19.27	38.93	36.31	87.00	74.00	48.07	37.69	Line
6.	2.294	17.47	14.57	19.24	36.71	33.81	87.00	74.00	50.29	40.19	Line
8.	12.388	25.82	20.26	19.51	45.33	39.77	87.00	74.00	41.67	34.23	Line
10.	15.186	28.82	23.48	19.58	48.40	43.06	87.00	74.00	38.60	30.94	Line
12.	15.590	28.76	23.22	19.61	48.37	42.83	87.00	74.00	38.63	31.17	Line
14.	19.842	27.12	21.52	19.79	46.91	41.31	87.00	74.00	40.09	32.69	Line

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

Conducted Emissions (TEL_1000 M) / LAN #3)



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EUT /Model No. : XRN-1620SB1

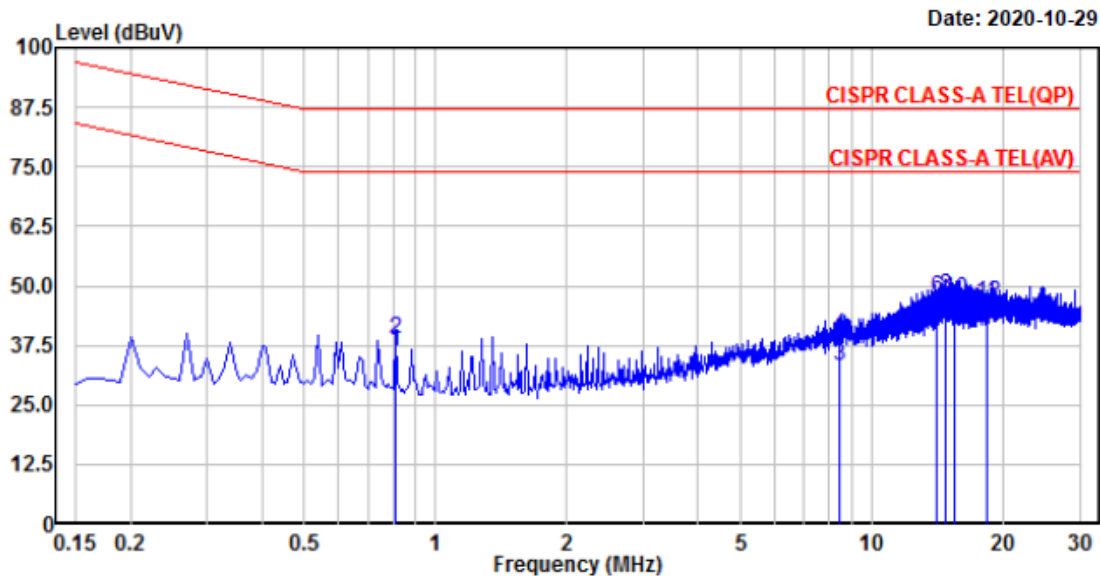
Phase : TEL_1000M

Test Mode : Rec mode (LAN #3)

Test Power : 100 V / 50 Hz

Temp./ Humi. : 23 'C / 43 % R.H.

Test Engineer : SHIN S 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.	0.810	19.20	16.70	19.52	38.72	36.22	87.00	74.00	48.28	37.78	Line
4.	8.469	19.73	13.41	19.75	39.48	33.16	87.00	74.00	47.52	40.84	Line
6.	14.107	27.57	22.51	19.98	47.55	42.49	87.00	74.00	39.45	31.51	Line
8.	14.781	27.81	22.67	20.01	47.82	42.68	87.00	74.00	39.18	31.32	Line
10.	15.457	27.31	21.81	20.03	47.34	41.84	87.00	74.00	39.66	32.16	Line
12.	18.363	26.24	21.15	20.11	46.35	41.26	87.00	74.00	40.65	32.74	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 : 1.9 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



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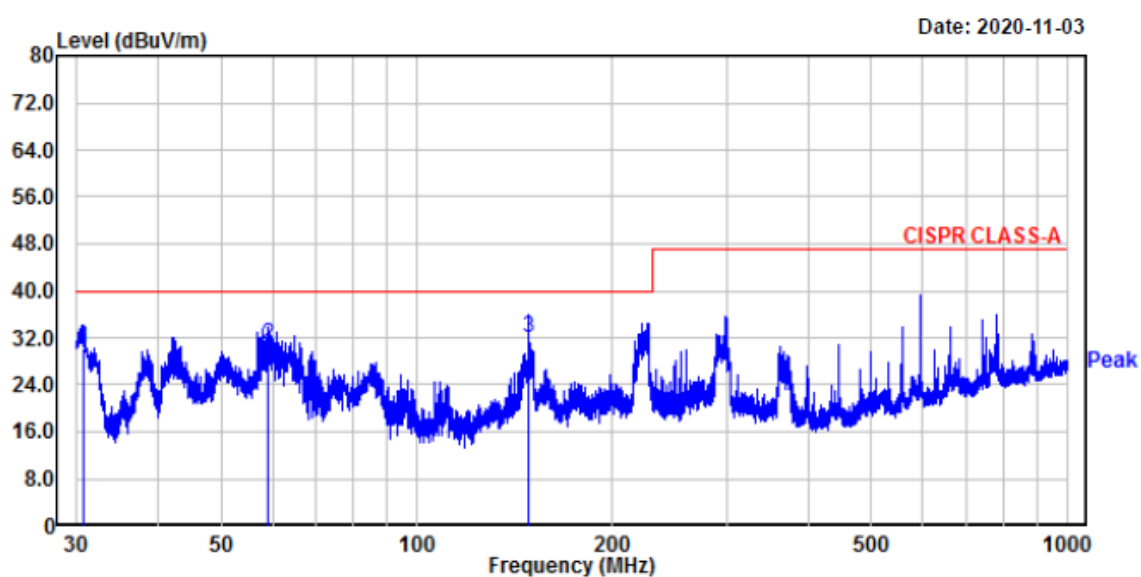
EUT/Model No.: XRN-1620SB1

Temp/Humi: 21 'C / 43 % R.H.

Test Mode : Rec mode

Tested by: SHIN S H

Power : 100 V / 50 Hz



No.	Freq MHz	Reading dBuV	C.F dB	Result QP dBuV/m	Limit dBuV/m	Margin dB	Height cm	Angle deg	Polarity
1.	30.72	45.31	-15.19	30.12	40.00	9.88	103	211	vertical
2.	59.13	44.56	-13.70	30.86	40.00	9.14	100	174	vertical
3.	148.51	44.44	-12.57	31.87	40.00	8.13	107	179	vertical

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

Radiated Emissions (Below 1 GHz) / H



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EUT/Model No.: XRN-1620SB1

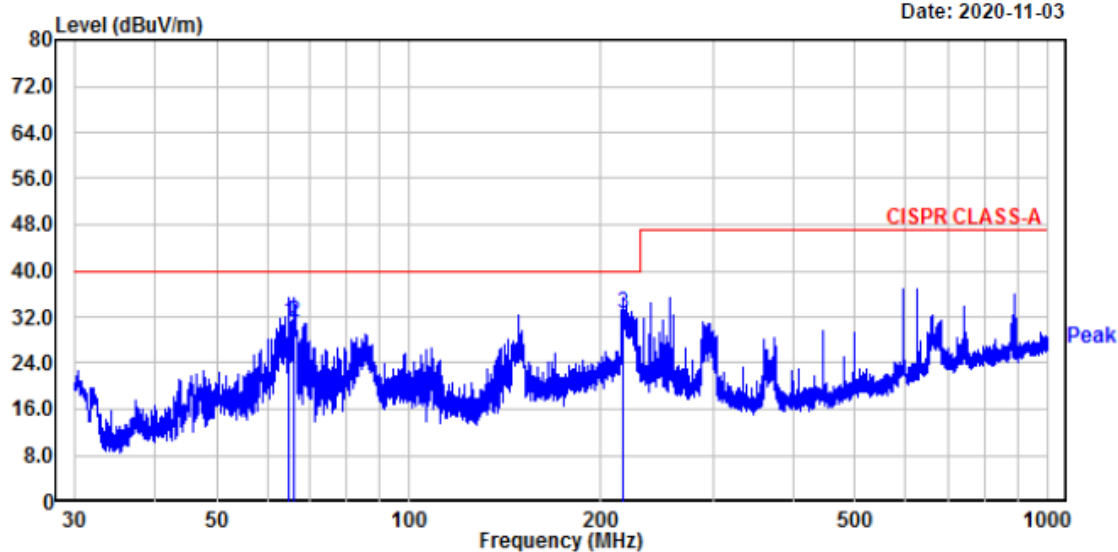
Temp/Humi: 21 'C / 43 % R.H.

Test Mode : Rec mode

Tested by: SHIN S H

Power : 100 V / 50 Hz

Date: 2020-11-03



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	64.77	45.66	-14.48	31.18	40.00	8.82	322	333	horizontal
2.	66.30	45.92	-14.71	31.21	40.00	8.79	314	299	horizontal
3.	216.12	46.79	-14.33	32.46	40.00	7.54	317	349	horizontal

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

Radiated Emissions

(Above 1 GHz) / V

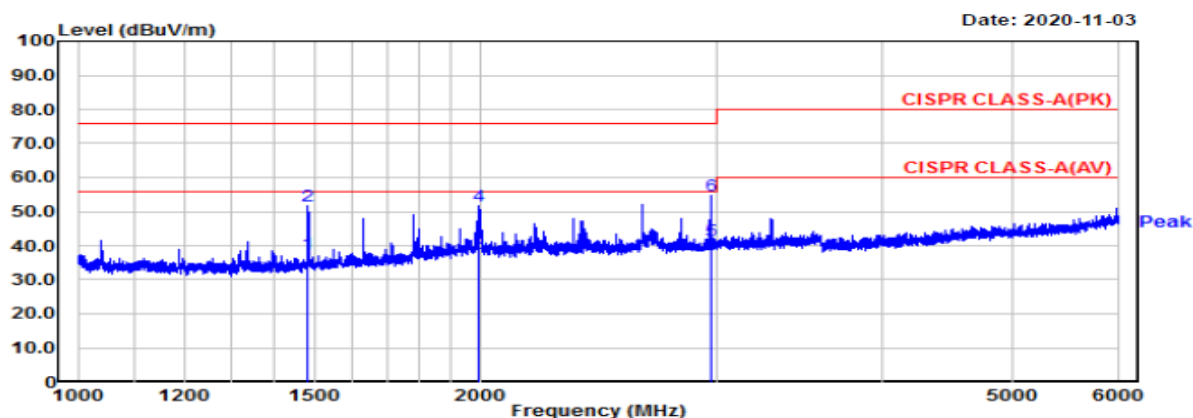
EUT/Model No.: XRN-1620SB1

Temp/Humi: 21 °C / 43 % R.H.

Test Mode : Rec mode

Tested by: SHIN S H

Power : 100 V / 50 Hz



(Above 1 GHz) / H

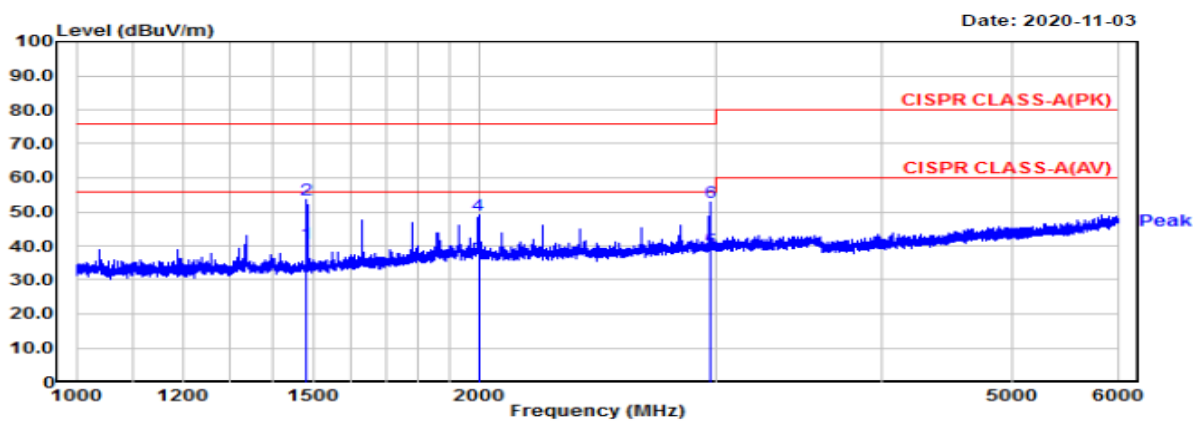
EUT/Model No.: XRN-1620SB1

Temp/Humi: 21 °C / 43 % R.H.

Test Mode : Rec mode

Tested by: SHIN S H

Power : 100 V / 50 Hz



Manufacture : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
D-TECH CO.,LTD.

Test Date

Temp.:
[°C]Humidity:
[%]Distance
(m)

Model : XRN-1620SB1

2020-11-03

21.00

43.00

3.8

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
1484.84	59.67	46.78	-4.01	55.66	42.77	76.00	56.00	20.34	13.23	100	137	H
1995.16	50.21	37.35	0.94	51.15	38.29	76.00	56.00	24.85	17.71	100	349	H
2970.46	50.05	36.26	4.80	54.85	41.06	76.00	56.00	21.15	14.94	100	90	H
1485.17	57.85	43.77	-4.01	53.84	39.76	76.00	56.00	22.16	16.24	100	106	V
1992.48	52.97	38.92	0.90	53.87	39.82	76.00	56.00	22.13	16.18	100	330	V
2970.46	51.79	38.91	4.80	56.59	43.71	76.00	56.00	19.41	12.29	100	95	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 dB)	8447D	HP	2944A07684	2021.03.16	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

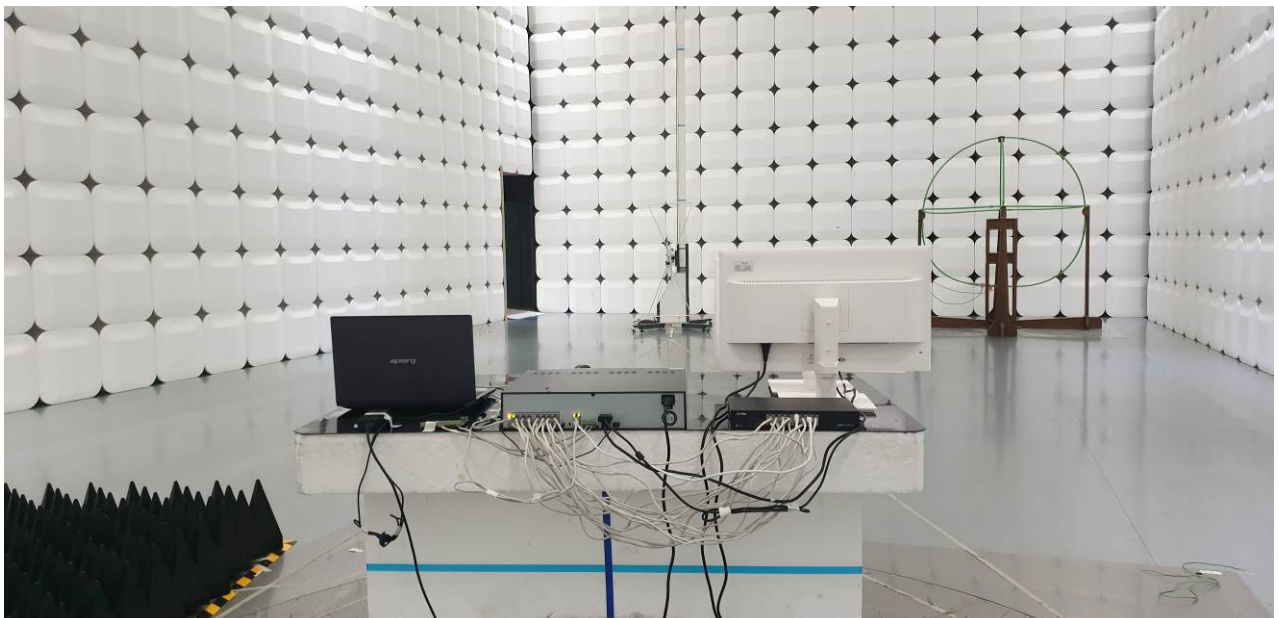
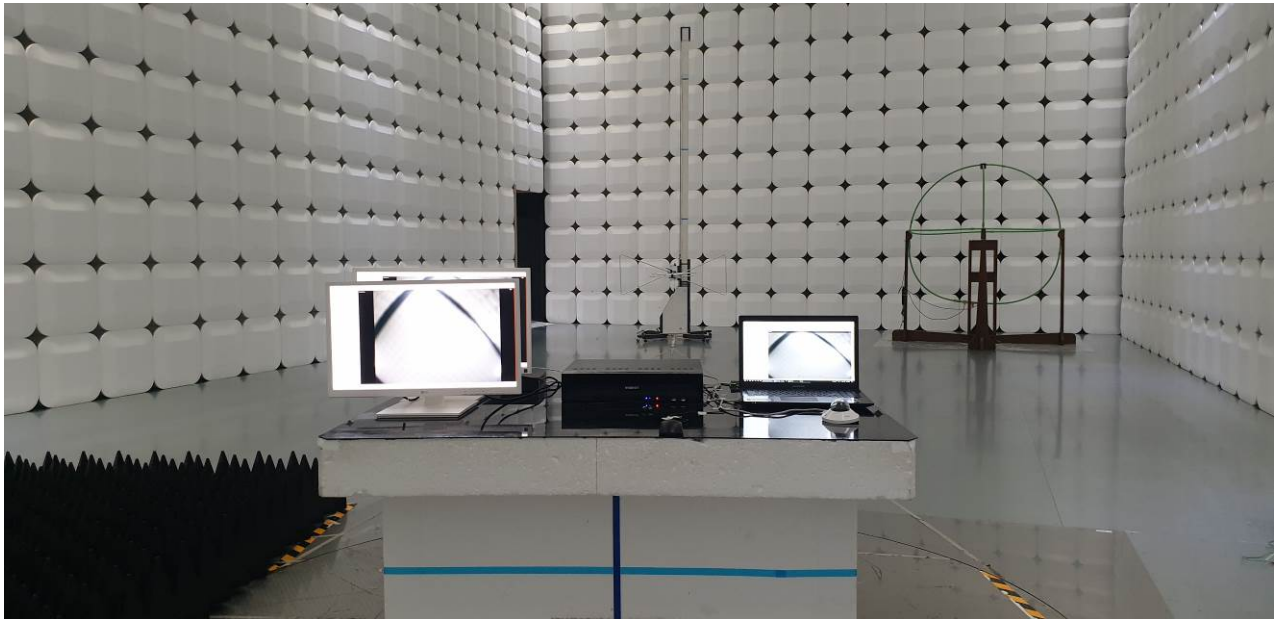
Conducted Emissions



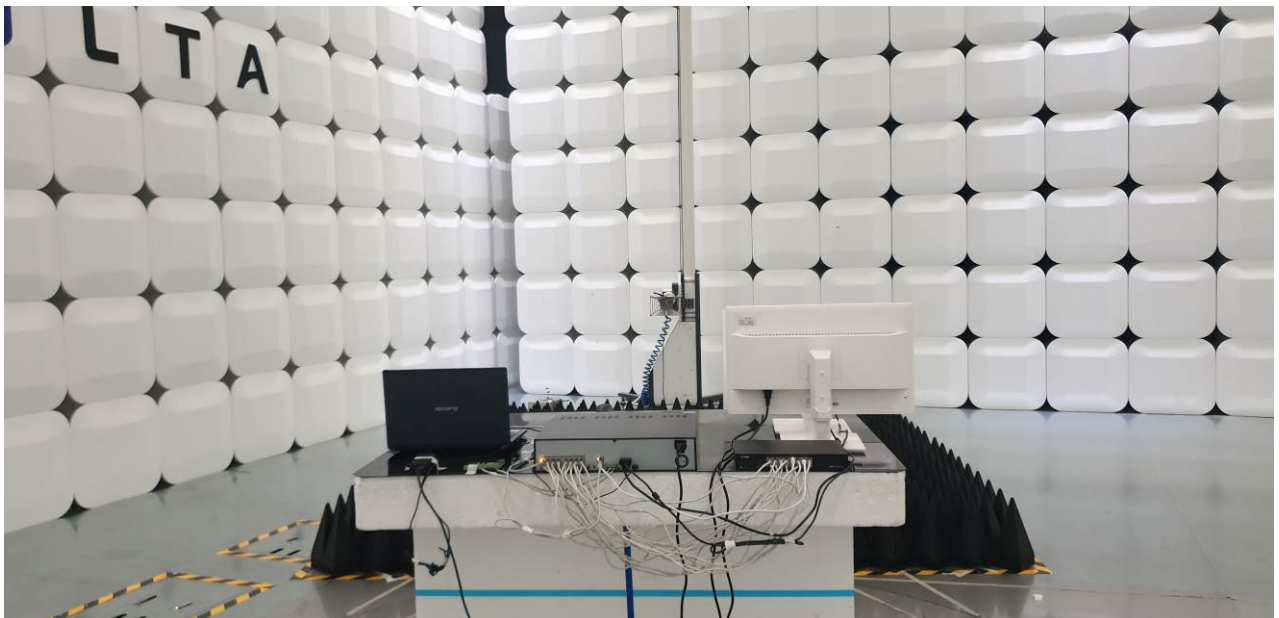
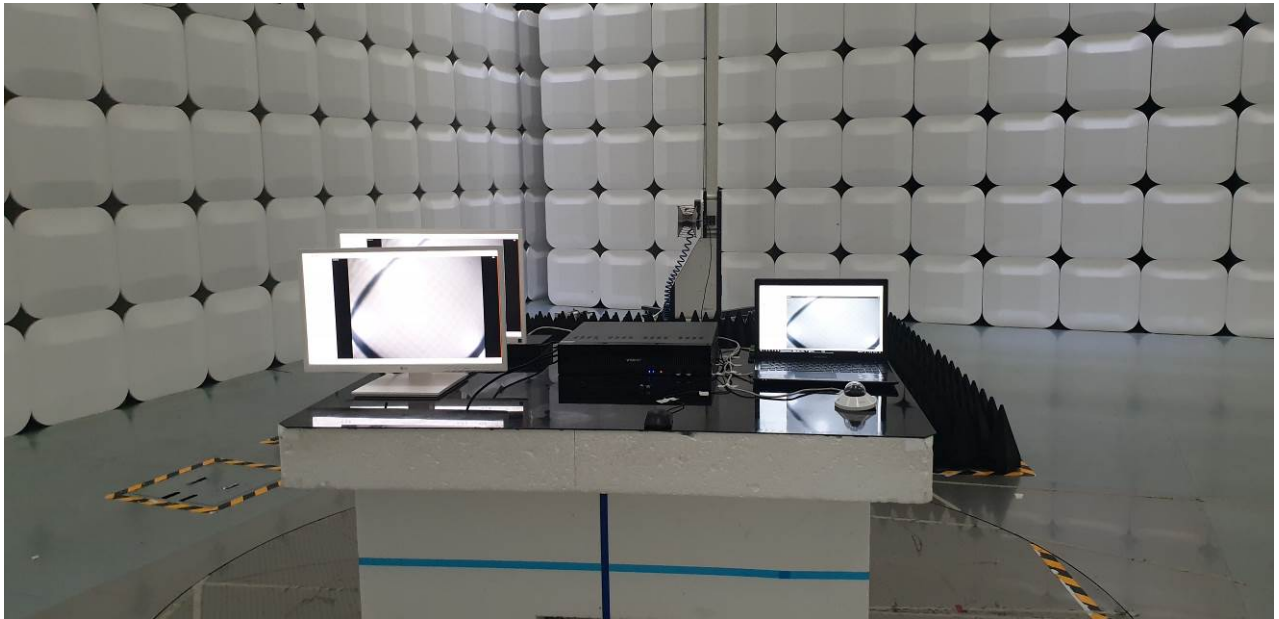
Conducted Emissions (TEL)



Radiated Emissions - Below 1 GHz



Radiated Emissions – Above 1 GHz



EUT



EUT

