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EMC TEST REPORT

Dates of Tests: December 23 - 28, 2020
Test Report S/N: LR500122101C
Test Site : LTA Co., Ltd.

Model No.

XRN-6410RB2

APPLICANT

Hanwha Techwin Co., Ltd.

Equipment Name : NVR
Manufacturer : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
Model name : XRN-6410RB2
Model name : XRN-3210RB2
Test Device Serial No. : Identification
Rule Part(s) : AS/NZS CISPR 32:2015
CISPR 32 Ed2.0

Date of issue : January 05, 2021

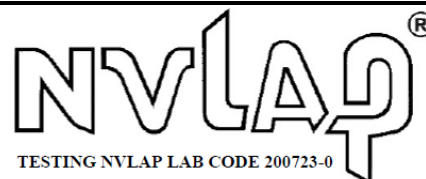
This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, Technical Manager

Chan Bum Kim, 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	05.01.2021	LR500122101C	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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 E-mail : chahn@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	2021-09-30	ECT accredited Lab.
	KOREA		-	
RRA	U.S.A	KR0049	2021-04-11	RRA accredited Lab.
	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-6410RB2
Additional Model name : XRN-3210RB2
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 ~ #3, USB #1 ~ #4, HDMI #1 ~ #2, Audio OUT, Alarm IN / OUT
Power rating : AC 240 V, 50 Hz

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure : (21) °C / (35 - 38) % R.H.
Tested Model : XRN-6410RB2
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-6410RB2	N/A	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	-
Earphone	N/A	N/A	N/A	-
Alarm	N/A	N/A	N/A	-
USB Memory Stick	N/A	N/A	N/A	2 EA
HDD #1	WD40PURX-64NN96Y0	N/A	Western Digital	3 EA
HDD #2	WD20PURX-64P6ZY0	N/A	Western Digital	-

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	1.6	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	NO	Plastic
	HDMI #2	Monitor #2	HDMI	1.4	NO	Plastic
	Audio OUT	Earphone	-	1.5	NO	Plastic
	Alarm IN / OUT	Alarm	Alarm IN / OUT	1.0	NO	Plastic
	HDD Slot #1	HDD #1	-	-	-	-
	HDD Slot #2	HDD #1	-	-	-	-
	HDD Slot #3	HDD #1	-	-	-	-
	HDD Slot #4	HDD #2	-	-	-	-
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
Network Camera	Audio IN	Smart Phone	-	1.4	NO	Plastic
Notebook	DC IN	Battery	DC OUT	-	-	-
HUB	AC IN	AC Power Source	3 Pin AC Line	1.6	NO	Plastic
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 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 0.15 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) 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.

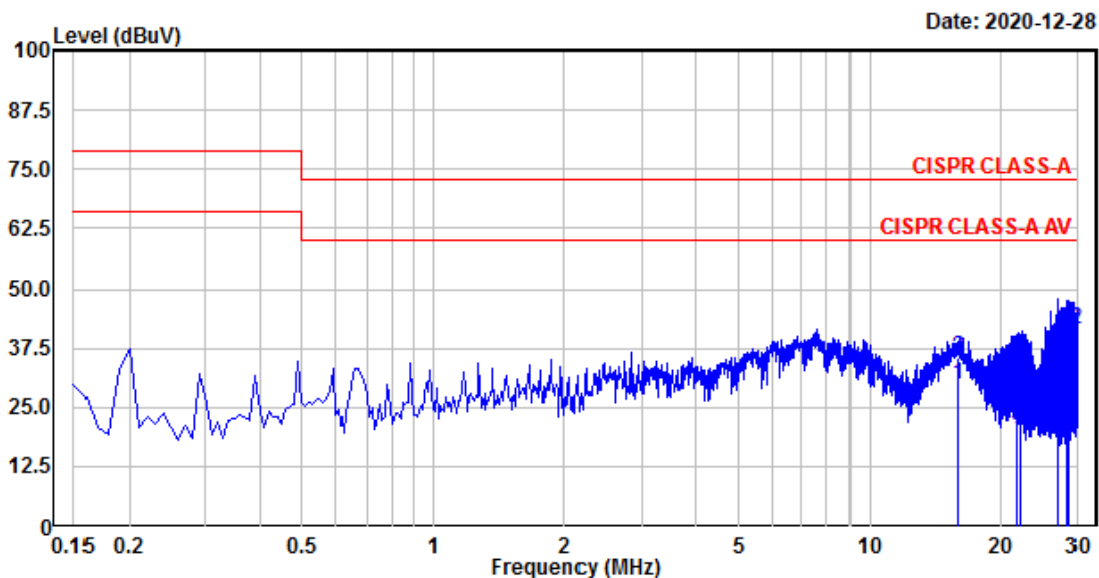
Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Conducted Emissions (LINE)



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 449-822 Korea
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EUT /Model No. : XRN-6410RB2	Phase : Line
Test Mode : Operating mode	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 °C / 38 % R.H.	Test Engineer : KIM C B



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.	15.923	15.46	9.79	19.91	35.37	29.70	73.00	60.00	37.63	30.30	Line
4.	21.803	14.21	1.27	20.01	34.22	21.28	73.00	60.00	38.78	38.72	Line
6.	22.289	14.35	-0.02	20.02	34.37	20.00	73.00	60.00	38.63	40.00	Line
8.	27.185	16.66	3.28	20.09	36.75	23.37	73.00	60.00	36.25	36.63	Line
10.	28.308	21.40	6.84	20.11	41.51	26.95	73.00	60.00	31.49	33.05	Line
12.	28.610	21.29	7.25	20.11	41.40	27.36	73.00	60.00	31.60	32.64	Line

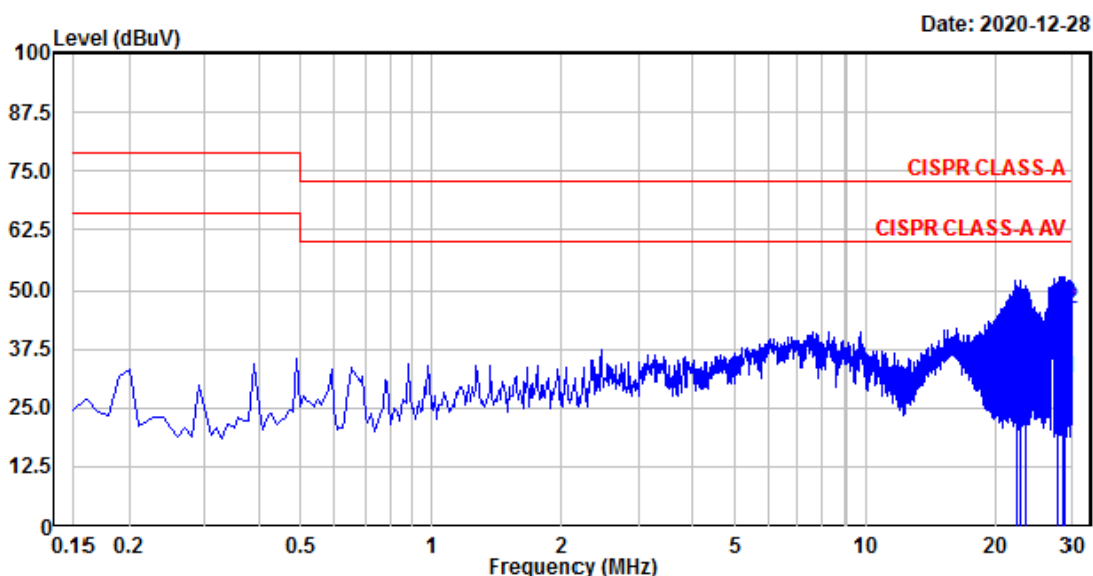
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (NEUTRAL)



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EUT /Model No. : XRN-6410RB2	Phase : Neutral
Test Mode : Operating mode	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 °C / 38 % R.H.	Test Engineer : KIM C B



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.	22.387	24.26	8.91	20.07	44.33	28.98	73.00	60.00	28.67	31.02	neutral
4.	22.886	24.36	9.72	20.07	44.43	29.79	73.00	60.00	28.57	30.21	neutral
6.	23.592	24.48	9.55	20.09	44.57	29.64	73.00	60.00	28.43	30.36	neutral
8.	27.914	25.13	11.32	20.17	45.30	31.49	73.00	60.00	27.70	28.51	neutral
10.	28.791	27.01	13.05	20.20	47.21	33.25	73.00	60.00	25.79	26.75	neutral
12.	28.956	25.97	11.15	20.20	46.17	31.35	73.00	60.00	26.83	28.65	neutral

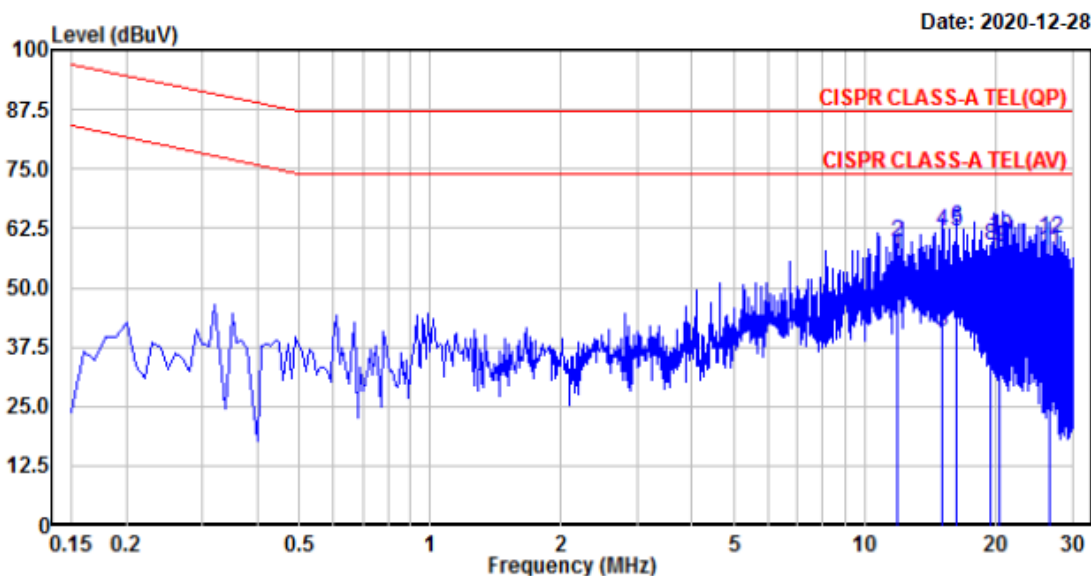
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_10M
Test Mode : Operating mode LAN#1	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	11.892	40.16	37.52	19.43	59.59	56.95	87.00	74.00	27.41	17.05	Line
4.	15.021	42.52	21.39	19.52	62.04	40.91	87.00	74.00	24.96	33.09	Line
6.	16.229	43.20	42.13	19.57	62.77	61.70	87.00	74.00	24.23	12.30	Line
8.	19.357	39.03	15.20	19.70	58.73	34.90	87.00	74.00	28.27	39.10	Line
10.	20.320	41.08	38.58	19.74	60.82	58.32	87.00	74.00	26.18	15.68	Line
12.	26.486	40.17	37.54	20.09	60.26	57.63	87.00	74.00	26.74	16.37	Line

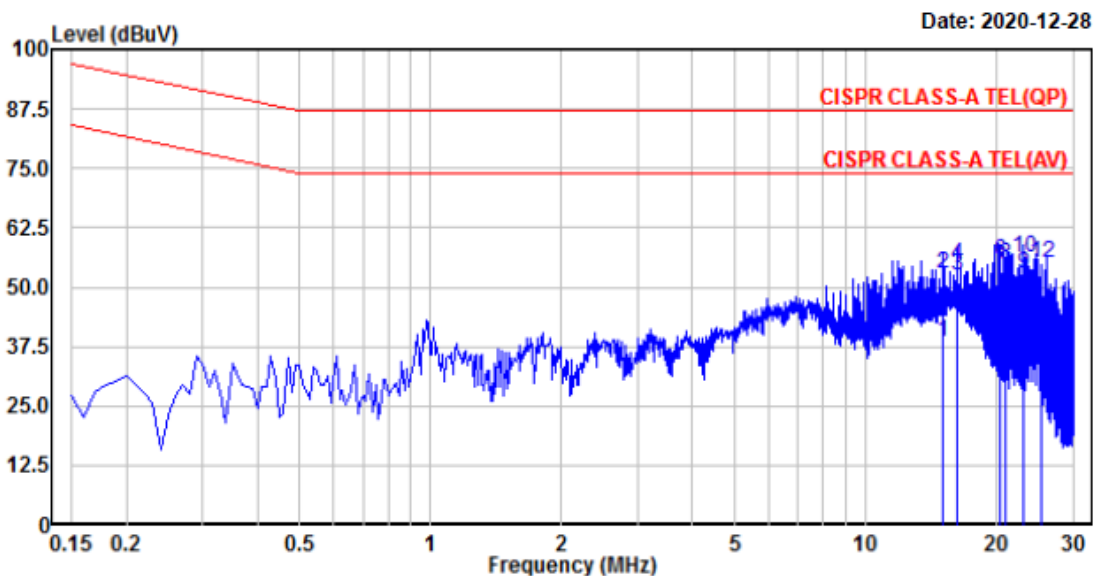
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_100M
Test Mode : Operating mode LAN#1	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	15.021	33.65	19.15	19.32	52.97	38.47	87.00	74.00	34.03	35.53	Line
4.	16.229	35.49	33.16	19.37	54.86	52.53	87.00	74.00	32.14	21.47	Line
6.	20.457	35.82	12.19	19.52	55.34	31.71	87.00	74.00	31.66	42.29	Line
8.	21.006	35.13	11.27	19.53	54.66	30.80	87.00	74.00	32.34	43.20	Line
10.	23.130	36.58	33.10	19.64	56.22	52.74	87.00	74.00	30.78	21.26	Line
12.	25.342	35.46	12.72	19.74	55.20	32.46	87.00	74.00	31.80	41.54	Line

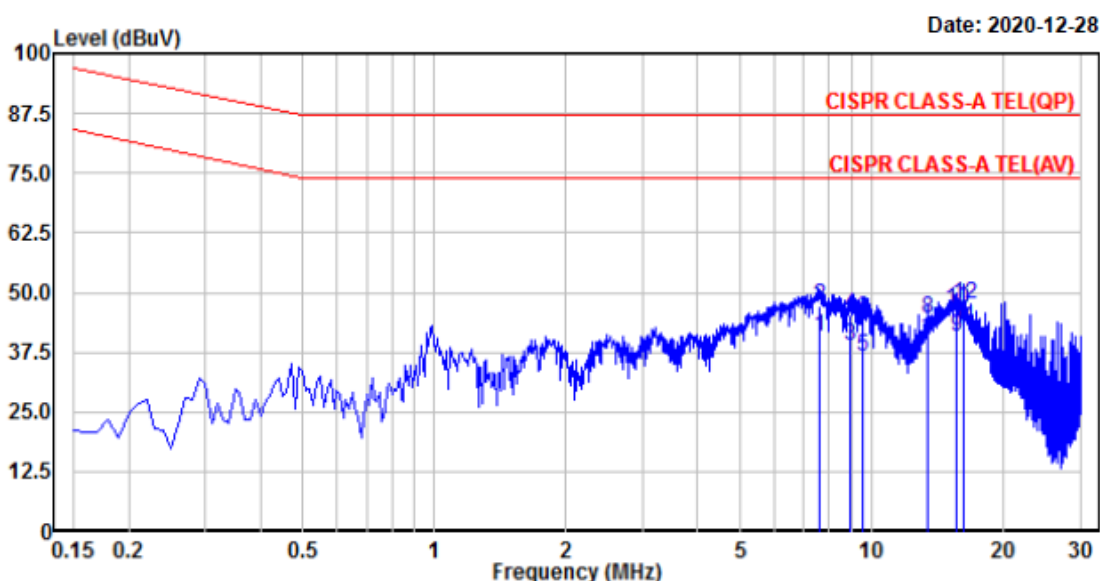
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_1000M
Test Mode : Operating mode LAN#1	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	7.608	27.78	21.31	19.28	47.06	40.59	87.00	74.00	39.94	33.41	Line
4.	8.931	26.08	19.60	19.31	45.39	38.91	87.00	74.00	41.61	35.09	Line
6.	9.576	25.30	17.27	19.33	44.63	36.60	87.00	74.00	42.37	37.40	Line
8.	13.420	25.21	20.40	19.41	44.62	39.81	87.00	74.00	42.38	34.19	Line
10.	15.618	26.96	21.46	19.45	46.41	40.91	87.00	74.00	40.59	33.09	Line
12.	16.229	28.22	23.32	19.47	47.69	42.79	87.00	74.00	39.31	31.21	Line

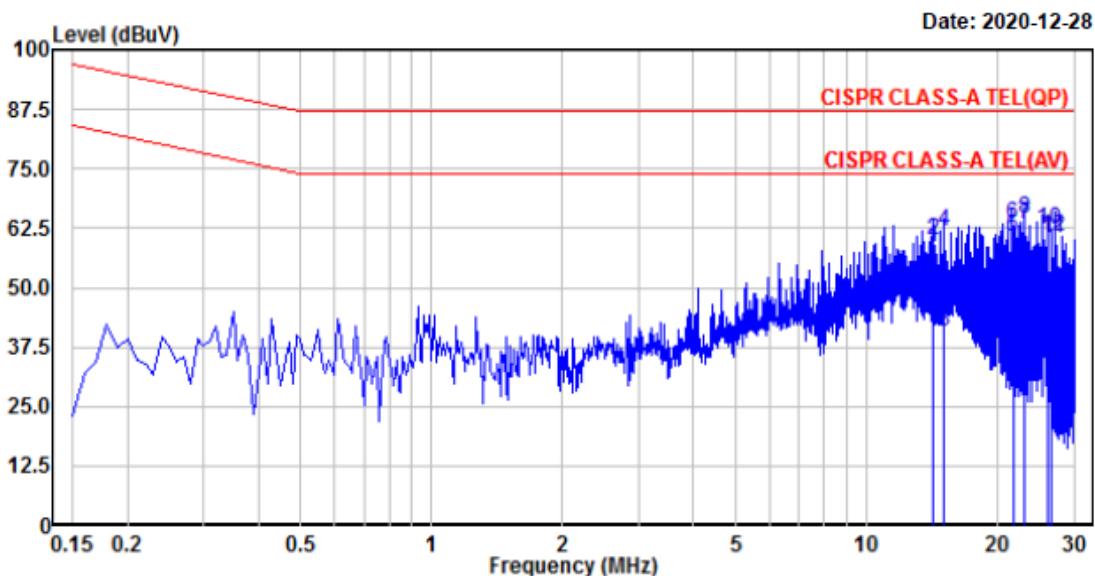
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_10M
Test Mode : Operating mode LAN#2	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	14.213	40.45	39.06	19.50	59.95	58.56	87.00	74.00	27.05	15.44	Line
4.	15.021	42.49	21.28	19.52	62.01	40.80	87.00	74.00	24.99	33.20	Line
6.	21.664	43.52	41.04	19.83	63.35	60.87	87.00	74.00	23.65	13.13	Line
8.	23.130	44.70	43.35	19.90	64.60	63.25	87.00	74.00	22.40	10.75	Line
10.	26.013	42.33	16.98	20.06	62.39	37.04	87.00	74.00	24.61	36.96	Line
12.	26.611	40.77	40.29	20.10	60.87	60.39	87.00	74.00	26.13	13.61	Line

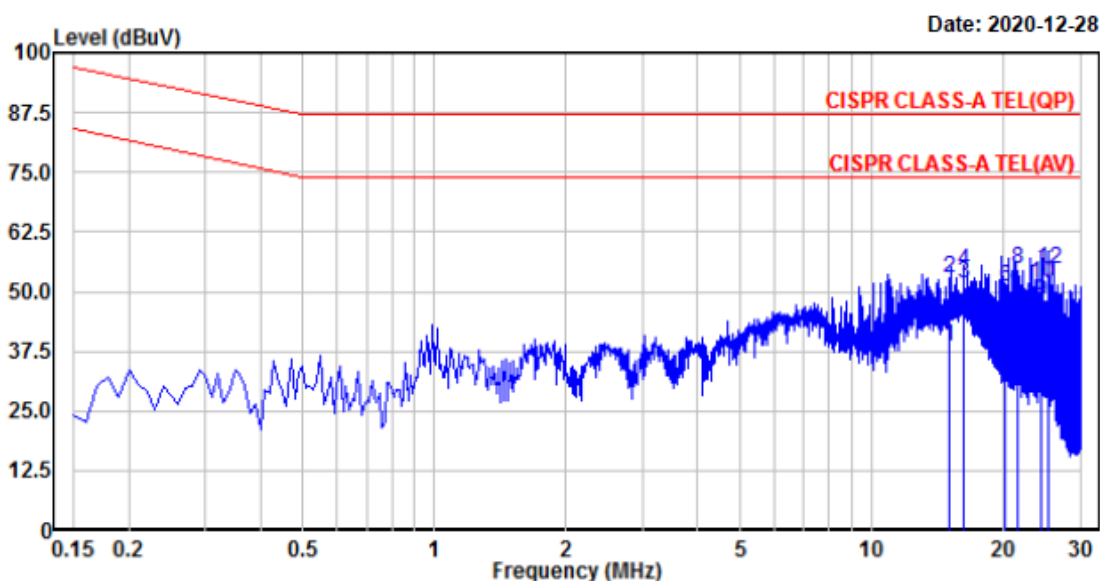
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_100M
Test Mode : Operating mode LAN#2	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	15.022	33.63	19.20	19.32	52.95	38.52	87.00	74.00	34.05	35.48	Line
4.	16.228	34.89	32.24	19.37	54.26	51.61	87.00	74.00	32.74	22.39	Line
6.	20.198	31.62	24.43	19.50	51.12	43.93	87.00	74.00	35.88	30.07	Line
8.	21.661	35.27	27.16	19.57	54.84	46.73	87.00	74.00	32.16	27.27	Line
10.	24.352	31.99	28.11	19.69	51.68	47.80	87.00	74.00	35.32	26.20	Line
12.	25.340	35.06	12.81	19.74	54.80	32.55	87.00	74.00	32.20	41.45	Line

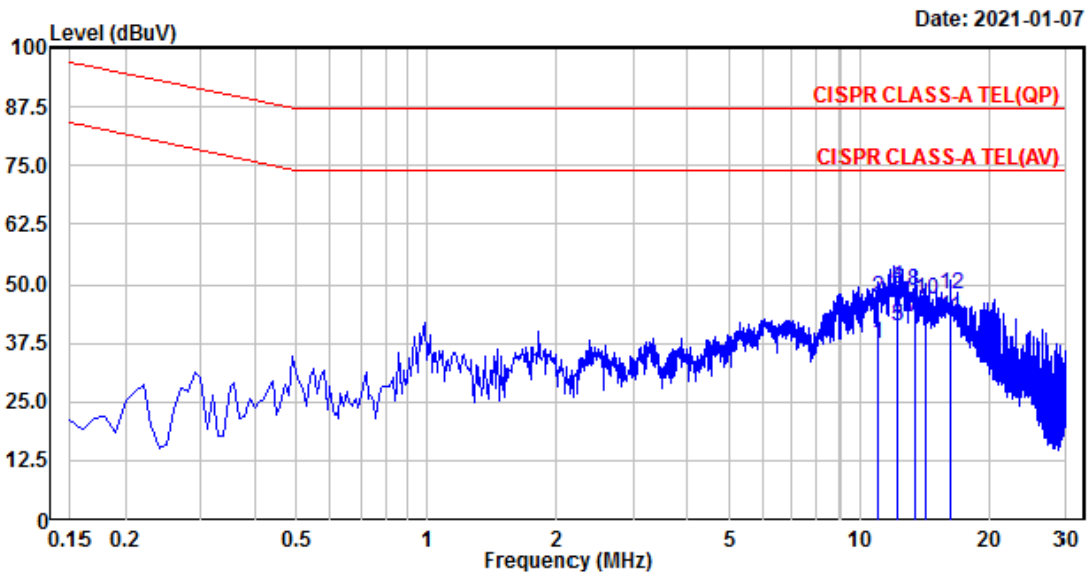
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_1000M
Test Mode : Operating mode LAN#2	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	10.992	28.14	18.04	19.22	47.36	37.26	87.00	74.00	39.64	36.74	Line
4.	12.197	30.01	21.91	19.25	49.26	41.16	87.00	74.00	37.74	32.84	Line
6.	12.198	29.86	21.95	19.25	49.11	41.20	87.00	74.00	37.89	32.80	Line
8.	13.357	29.54	23.60	19.28	48.82	42.88	87.00	74.00	38.18	31.12	Line
10.	14.214	27.67	22.86	19.31	46.98	42.17	87.00	74.00	40.02	31.83	Line
12.	16.228	28.60	23.70	19.37	47.97	43.07	87.00	74.00	39.03	30.93	Line

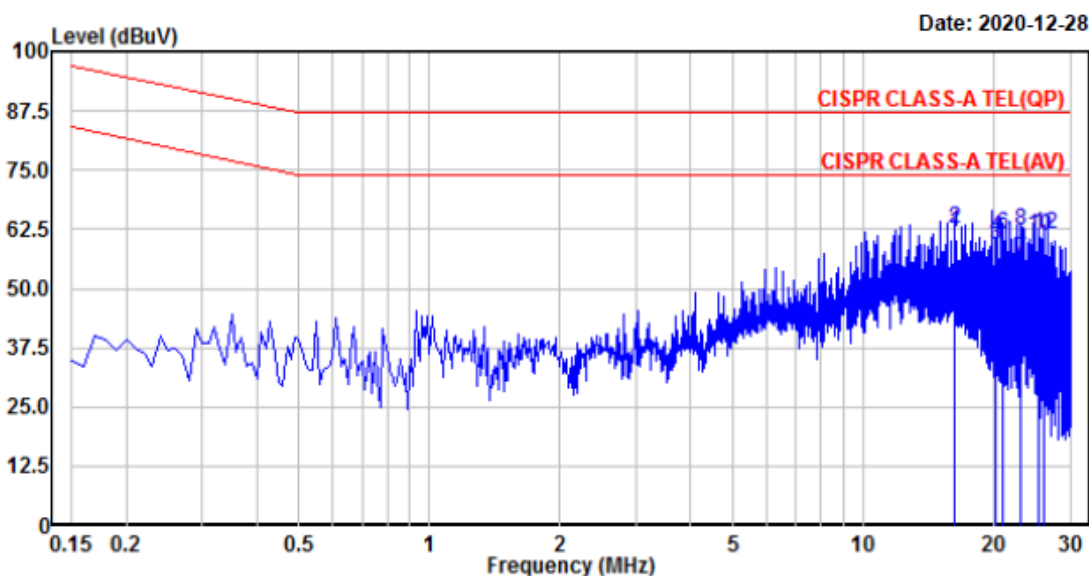
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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 449-822 Korea
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 Fax:+82-31-3236010

EUT /Model No. : XRN-6410RB2	Phase : TEL_10M
Test Mode : Operating mode LAN#3	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



Date: 2020-12-28

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.	16.229	43.14	42.14	19.57	62.71	61.71	87.00	74.00	24.29	12.29	Line
4.	20.261	41.01	39.64	19.74	60.75	59.38	87.00	74.00	26.25	14.62	Line
6.	21.007	41.71	16.44	19.78	61.49	36.22	87.00	74.00	25.51	37.78	Line
8.	23.125	42.49	36.34	19.90	62.39	56.24	87.00	74.00	24.61	17.76	Line
10.	25.340	41.21	16.56	20.02	61.23	36.58	87.00	74.00	25.77	37.42	Line
12.	26.012	41.59	16.56	20.06	61.65	36.62	87.00	74.00	25.35	37.38	Line

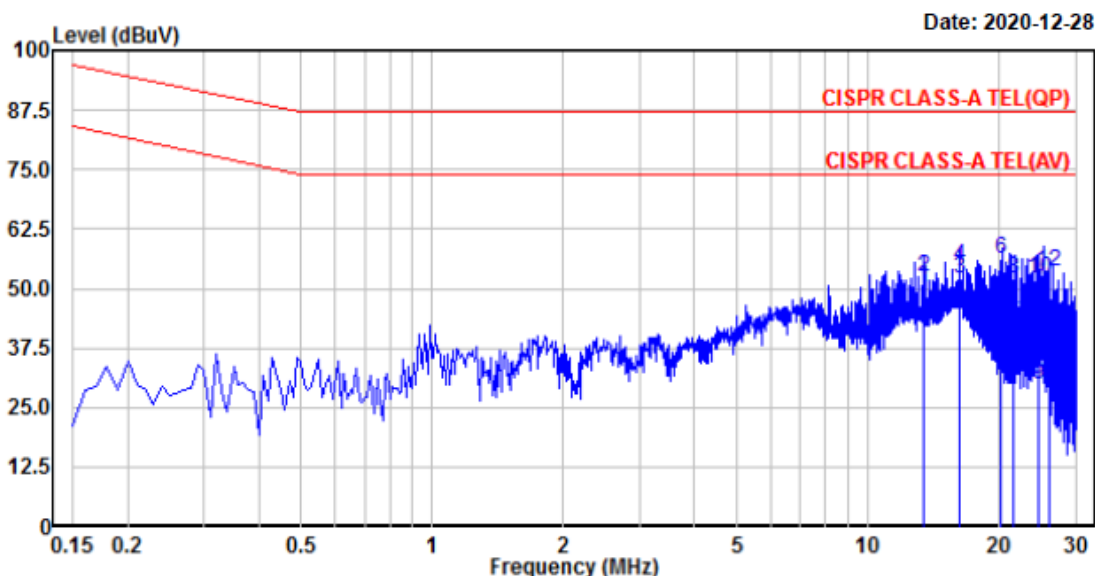
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_100M
Test Mode : Operating mode LAN#3	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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.	13.419	33.04	30.89	19.28	52.32	50.17	87.00	74.00	34.68	23.83	Line
4.	16.229	35.31	32.76	19.37	54.68	52.13	87.00	74.00	32.32	21.87	Line
6.	20.258	36.57	27.62	19.50	56.07	47.12	87.00	74.00	30.93	26.88	Line
8.	21.659	32.69	23.12	19.57	52.26	42.69	87.00	74.00	34.74	31.31	Line
10.	24.547	32.37	10.05	19.70	52.07	29.75	87.00	74.00	34.93	44.25	Line
12.	25.952	33.81	10.21	19.78	53.59	29.99	87.00	74.00	33.41	44.01	Line

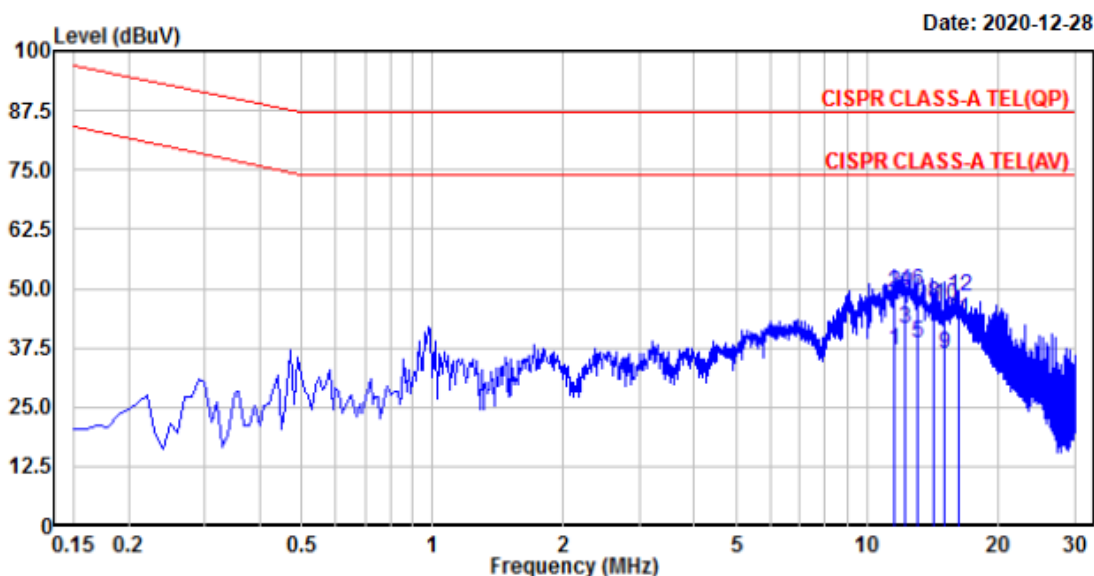
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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



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EUT /Model No. : XRN-6410RB2	Phase : TEL_1000M
Test Mode : Operating mode LAN#3	Test Power : 240 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



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	29.70	17.83	19.24	48.94	37.07	87.00	74.00	38.06	36.93	Line
4.	12.197	30.10	22.08	19.25	49.35	41.33	87.00	74.00	37.65	32.67	Line
6.	13.007	30.30	19.39	19.28	49.58	38.67	87.00	74.00	37.42	35.33	Line
8.	14.152	27.56	22.52	19.30	46.86	41.82	87.00	74.00	40.14	32.18	Line
10.	15.023	27.15	16.88	19.32	46.47	36.20	87.00	74.00	40.53	37.80	Line
12.	16.229	28.82	23.97	19.37	48.19	43.34	87.00	74.00	38.81	30.66	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 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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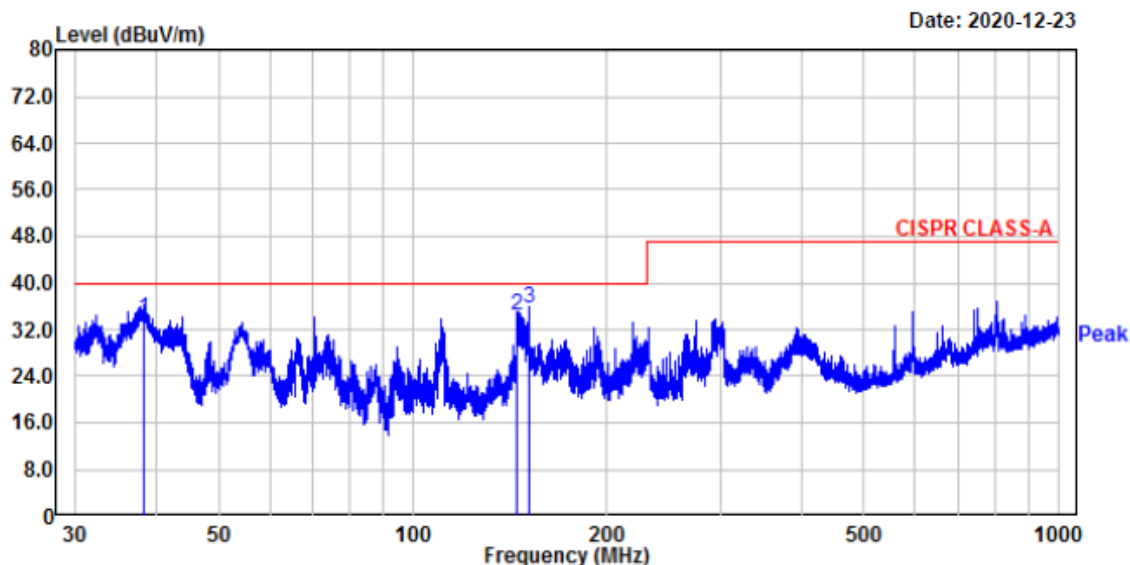
EUT/Model No.: XRN-6410RB2

Temp/Humi: 21 'C / 35 % R.H.

Test Mode : Operating mode

Tested by: KIM C B

Power : 240 V / 50 Hz



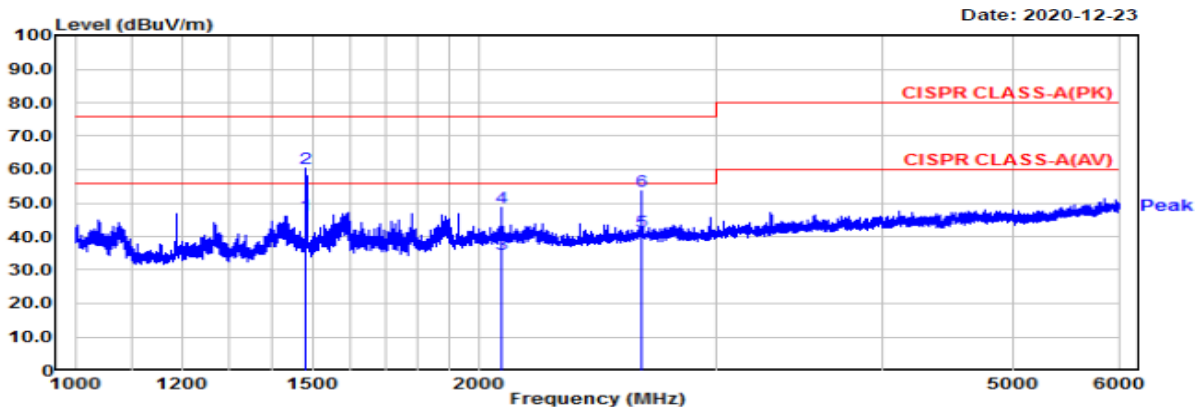
No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	38.21	49.10	-15.18	33.92	40.00	6.08	142	336	vertical
2.	145.29	47.60	-13.31	34.29	40.00	5.71	162	302	vertical
3.	150.93	48.69	-13.05	35.64	40.00	4.36	199	173	vertical

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

Radiated Emissions

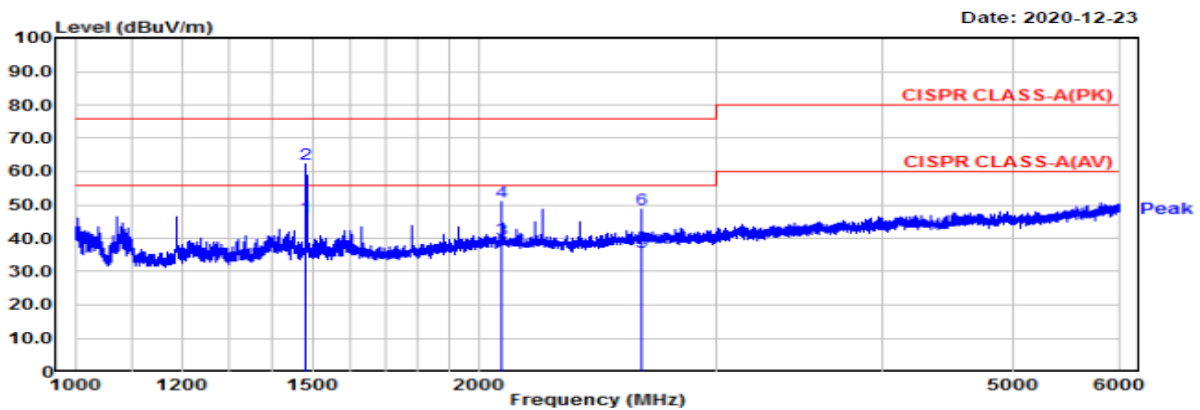
(Above 1 GHz) / V

EUT/Model No.: XRN-6410RB2 Temp/Humi: 21 °C / 35 % R.H.
 Test Mode : Operating mode Tested by: KIM C B
 Power : 240 V / 50 Hz



(Above 1 GHz) / H

EUT/Model No.: XRN-6410RB2 Temp/Humi: 21 °C / 35 % R.H.
 Test Mode : Operating mode Tested by: KIM C B
 Power : 240 V / 50 Hz



Manufacture : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. Test Date 2020-12-23 Temp.: 21 °C Humidity: 35 % Distance (m) 3.8
 Model : XRN-6410RB2
 TEST mode : Operating 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	68.24	52.22	-3.77	64.47	48.45	76.00	56.00	11.53	7.55	100	61	H
2079.10	51.17	39.66	1.93	53.10	41.59	76.00	56.00	22.90	14.41	100	357	H
2640.35	47.21	34.18	3.60	50.81	37.78	76.00	56.00	25.19	18.22	100	143	H
1485.17	66.06	52.37	-3.77	62.29	48.60	76.00	56.00	13.71	7.40	100	86	V
2079.10	48.65	35.00	1.93	50.58	36.93	76.00	56.00	25.42	19.07	100	322	V
2640.35	51.93	39.84	3.60	55.53	43.44	76.00	56.00	20.47	12.56	100	28	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
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2021.07.02	1 year
<input checked="" type="checkbox"/>	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2021.03.16	1 year
<input checked="" type="checkbox"/>	ISN	ISN T800	TESEQ	27109	2021.09.07	1 year
<input checked="" type="checkbox"/>	ISN	ENY81-CA6	Rohde & Schwarz	101565	2021.09.07	1 year
<input checked="" type="checkbox"/>	ISN	ISN S8	Schwarzbeck	79	2021.09.04	1 year
<input type="checkbox"/>	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2021.09.03	1 year
<input type="checkbox"/>	CDN	TSCDN-C1-BNC-75	F.C.C	07004	2021.05.08	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	100378	2021.09.03	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	101468	2021.09.03	1 year
<input checked="" type="checkbox"/>	LISN(main)	ENV216	Rohde & Schwarz	100408	2021.09.04	1 year
<input checked="" type="checkbox"/>	LISN(sub)	LT32C/10	AFJ	32031518210	2021.09.03	1 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2021.09.03	1 year
<input checked="" type="checkbox"/>	Amplifier (25 dB)	8447D	HP	2944A07684	2021.11.10	1 year
<input checked="" type="checkbox"/>	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.03.26 (KOLAS)	2 year
<input type="checkbox"/>	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.11.12 (RRA)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Above 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2021.09.03	1 year
<input checked="" type="checkbox"/>	Amplifier	8449B	Agilent	3008A02126	2021.03.17	1 year
<input type="checkbox"/>	Amplifier	PAM-840A	COM-POWER	461314	2021.03.16	1 year
<input type="checkbox"/>	HORN ANTENNA	3116B	ETS	133350	2022.05.12	2 year
<input type="checkbox"/>	HORN ANTENNA	3116B	ETS	81109	2022.05.12	2 year
<input checked="" type="checkbox"/>	HORN ANTENNA	3115	ETS	114105	2021.09.17 (KOLAS)	2 year
<input type="checkbox"/>	HORN ANTENNA	3115	ETS	114105	2021.11.11 (RRA)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

APPENDIX B

PHOTOGRAPHS

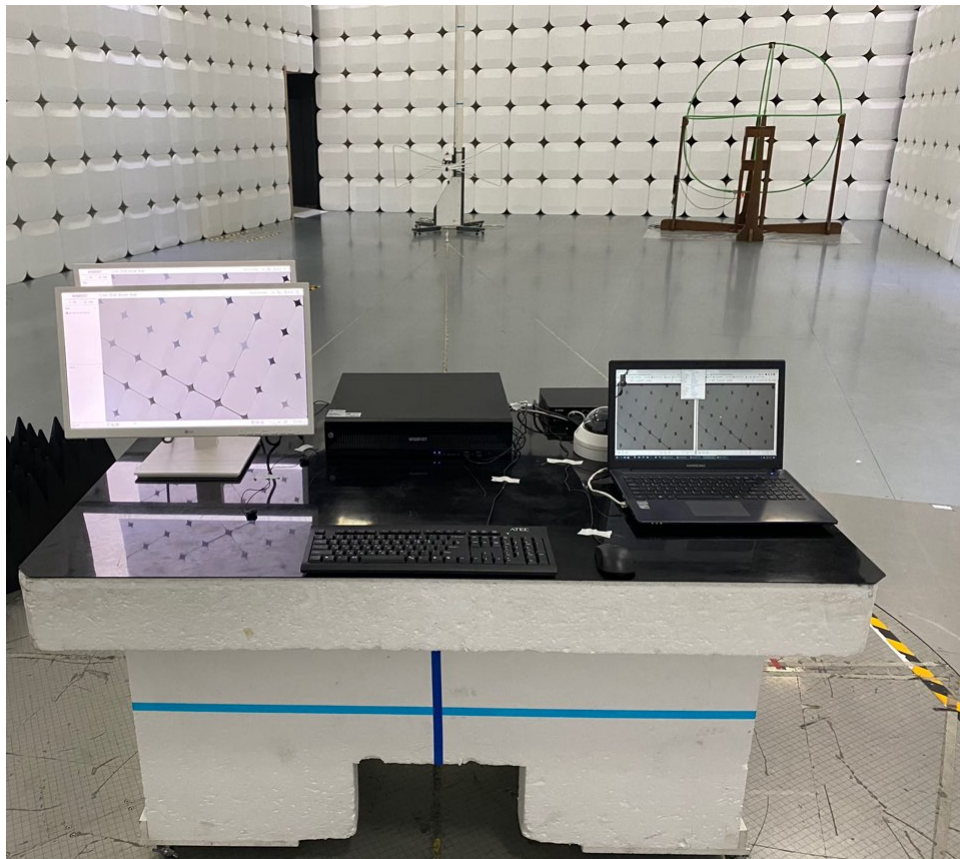
Conducted Emissions



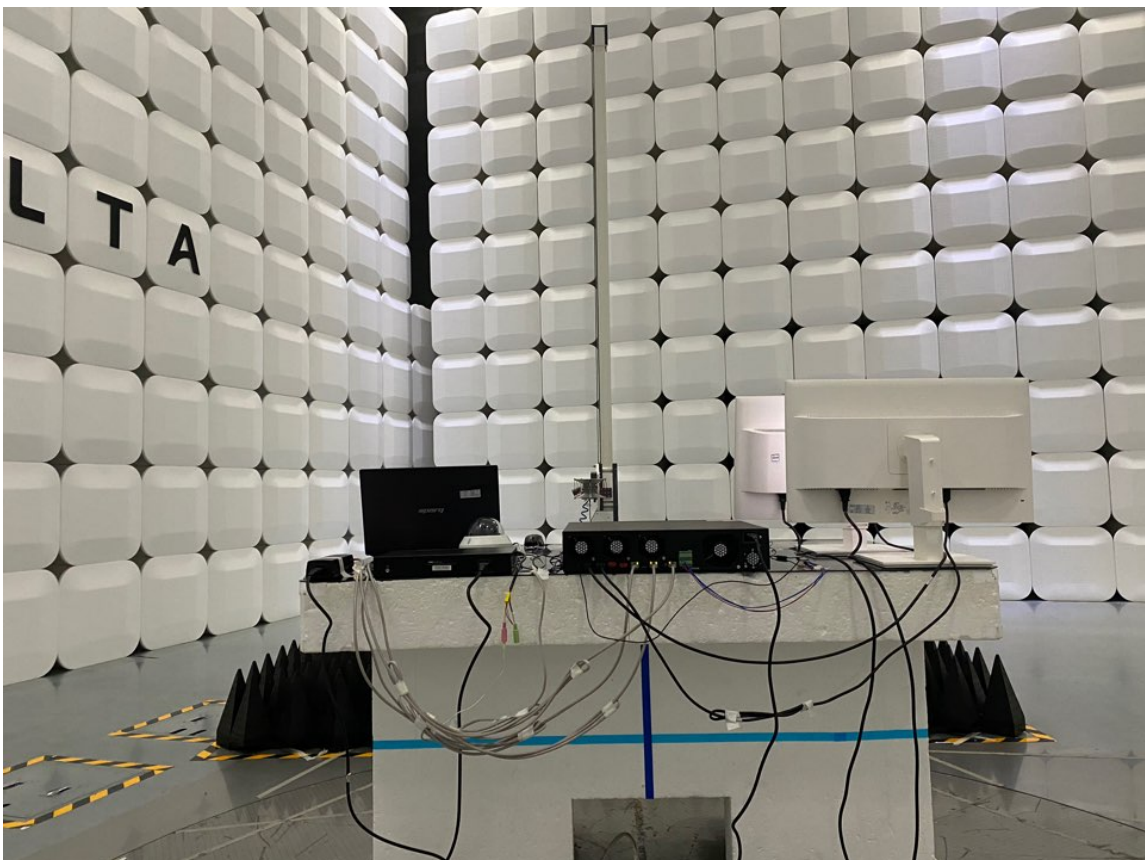
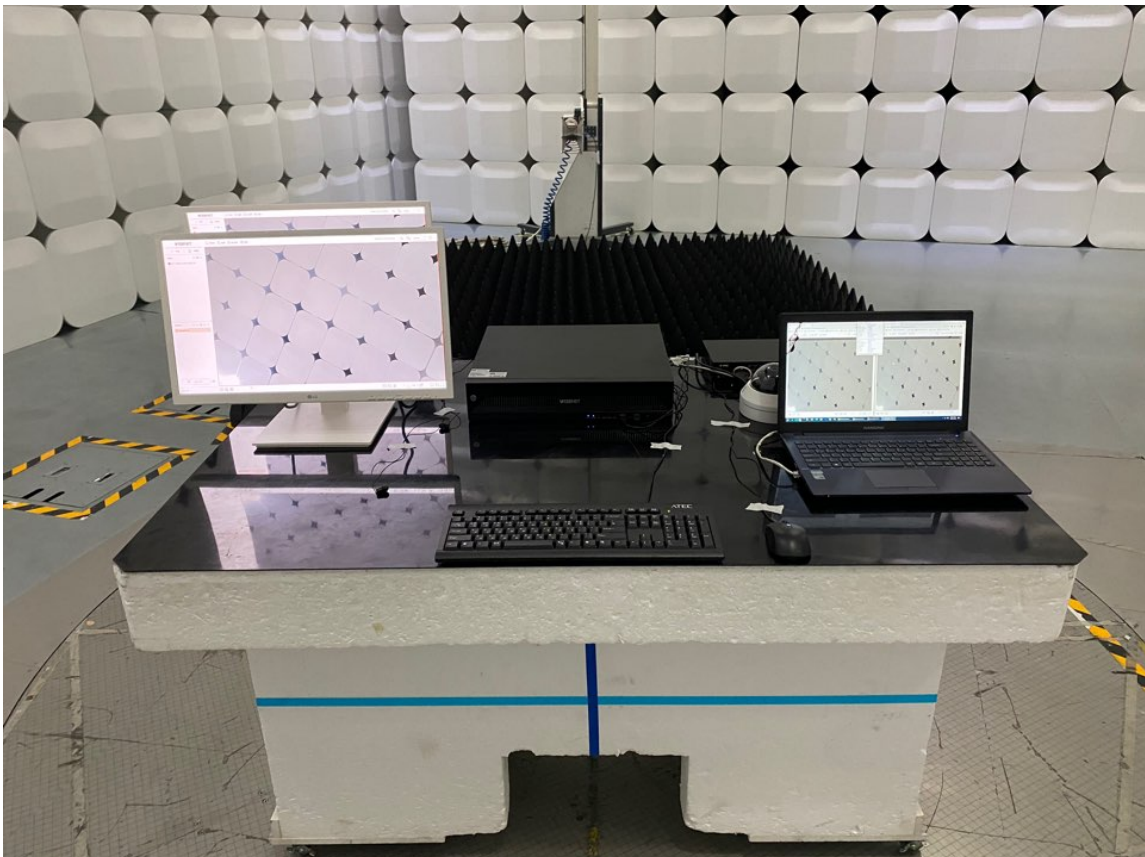
Conducted Emissions (TEL)



Radiated Emissions - Below 1 GHz



Radiated Emissions - Above 1 GHz



EUT



EUT

