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<http://www.ltalab.com>

## EMC TEST REPORT

Dates of Tests: December 23 - 28, 2020  
Test Report S/N: LR500172101A  
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  
**Additional Model name** : XRN-3210RB2  
**Test Device Serial No.** : Identification  
**Rule Part(s)** : VCCI-CISPR 32:2016

**Date of issue** : January 05, 2021

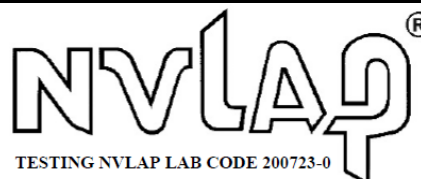
This test report is issued under the authority of:

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	LR500172101A	Initial

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## 1. General information's

### 1-1 Test Performed

Company name : **LTA Co., Ltd**  
 Address : 4, Songju-ro 236beon-gil, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, 17159, Korea  
 Web site : <http://www.ltalab.com>  
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 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	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 100 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 100 V, 50 Hz

**2-5 List of EUT and ACCESSORY**

<b>EUT</b>				
<b>Equipment Name</b>	<b>Model Name</b>	<b>Serial No.</b>	<b>Manufacturer</b>	<b>Remarks</b>
NVR	XRN-6410RB2	N/A	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. D-TECH CO.,LTD.	-
Mouse	MOKJUO	N/A	N/A	-
<b>ACCESSORY</b>				
<b>Equipment Name</b>	<b>Model Name</b>	<b>Serial No.</b>	<b>Manufacturer</b>	<b>Remarks</b>
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
<b>I. Emission</b>		
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	:	Operating mode
Result	:	<b>Complies</b>

#### 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 $\mu$ V	66 dB $\mu$ V
(0.5 – 30) MHz	73 dB $\mu$ V	60 dB $\mu$ 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 $\mu$ V	(56 - 46) dB $\mu$ V
(0.5 – 5) MHz	56 dB $\mu$ V	46 dB $\mu$ V
(5 – 30) MHz	60 dB $\mu$ V	50 dB $\mu$ 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 $\mu$ V	(84 – 74) dB $\mu$ V	(53 – 43) dB $\mu$ V	(40 – 30) dB $\mu$ V
(0.5 – 30) MHz	87 dB $\mu$ V	74 dB $\mu$ V	43 dB $\mu$ V	30 dB $\mu$ 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  $\Omega$  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 $\mu$ V	(74 – 64) dB $\mu$ V	(40 – 30) dB $\mu$ V	(30 – 20) dB $\mu$ V
(0.5 – 30) MHz	74 dB $\mu$ V	64 dB $\mu$ V	30 dB $\mu$ V	20 dB $\mu$ V

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

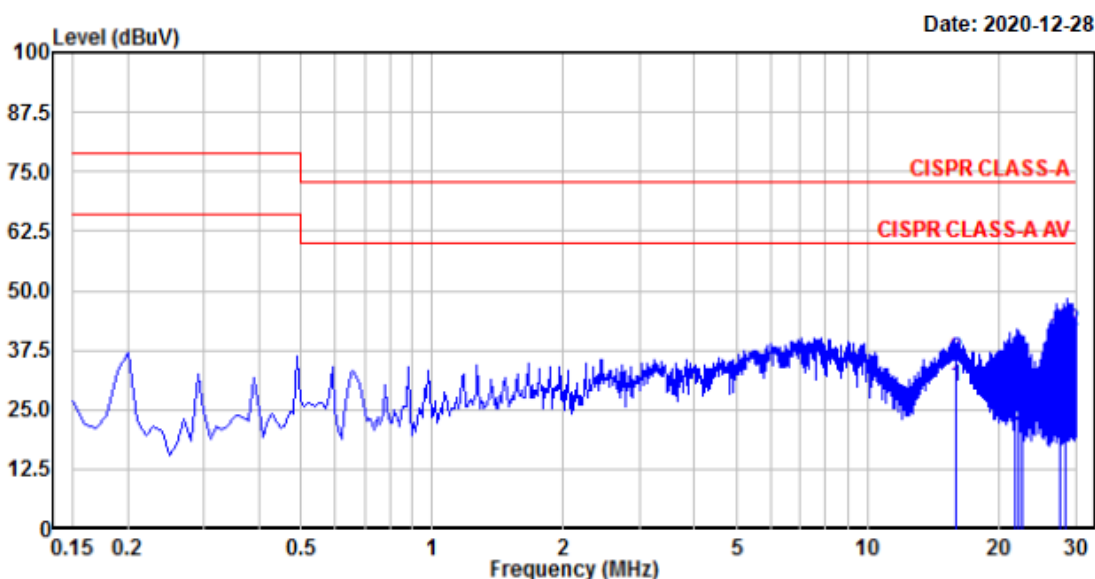
Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150  $\Omega$  to the telecommunication port under test (conversion factor is  $20 \log_{10} 150/I = 44$  dB)

Conducted Emissions (LINE)



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EUT /Model No. : XRN-6410RB2	Phase : Line
Test Mode : Operating mode	Test Power : 100 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.	15.924	15.42	9.77	19.91	35.33	29.68	73.00	60.00	37.67	30.32	Line
4.	21.739	14.78	1.95	20.01	34.79	21.96	73.00	60.00	38.21	38.04	Line
6.	22.237	15.22	1.41	20.02	35.24	21.43	73.00	60.00	37.76	38.57	Line
8.	22.565	14.71	1.12	20.02	34.73	21.14	73.00	60.00	38.27	38.86	Line
10.	27.640	19.79	5.72	20.09	39.88	25.81	73.00	60.00	33.12	34.19	Line
12.	28.438	21.24	6.23	20.11	41.35	26.34	73.00	60.00	31.65	33.66	Line

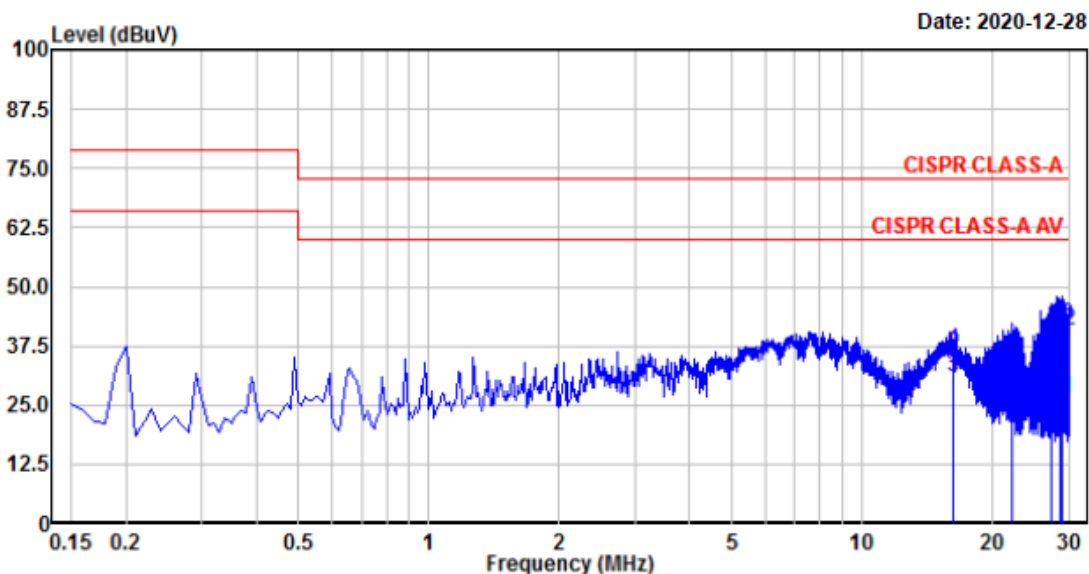
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (NEUTRAL)



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EUT /Model No. : XRN-6410RB2	Phase : Neutral
Test Mode : Operating mode	Test Power : 100 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.	16.168	15.96	10.45	19.95	35.91	30.40	73.00	60.00	37.09	29.60	neutral
4.	16.228	16.59	11.16	19.95	36.54	31.11	73.00	60.00	36.46	28.89	neutral
6.	22.092	14.50	0.49	20.06	34.56	20.55	73.00	60.00	38.44	39.45	neutral
8.	27.440	18.97	4.87	20.17	39.14	25.04	73.00	60.00	33.86	34.96	neutral
10.	28.697	21.79	7.08	20.20	41.99	27.28	73.00	60.00	31.01	32.72	neutral
12.	28.869	20.48	6.32	20.20	40.68	26.52	73.00	60.00	32.32	33.48	neutral

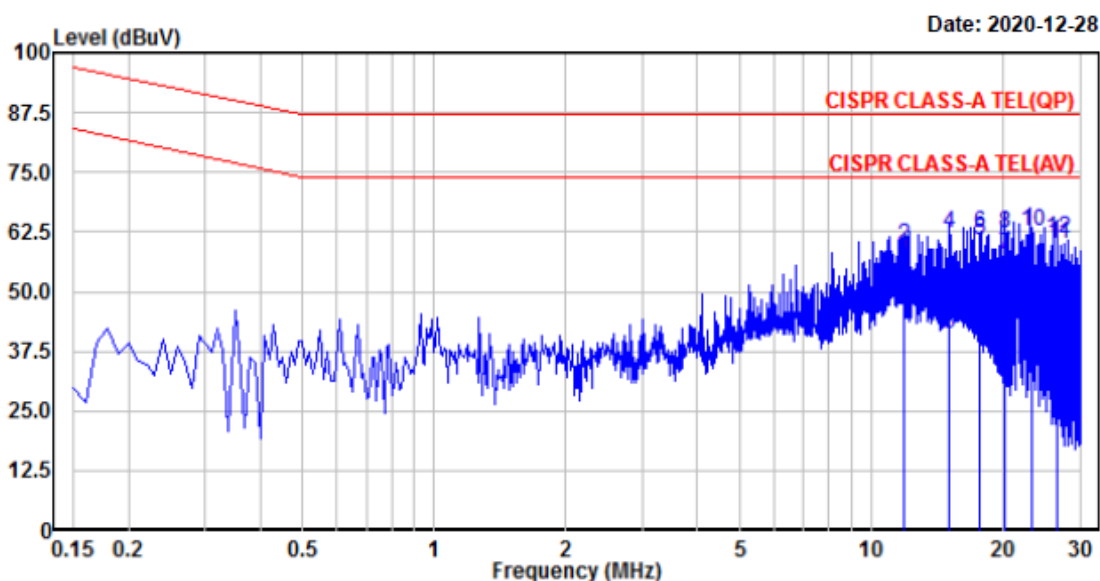
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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 : 100 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.	11.893	40.30	38.01	19.43	59.73	57.44	87.00	74.00	27.27	16.56	Line
4.	15.021	42.59	21.47	19.52	62.11	40.99	87.00	74.00	24.89	33.01	Line
6.	17.694	42.67	41.28	19.63	62.30	60.91	87.00	74.00	24.70	13.09	Line
8.	20.257	42.51	38.06	19.74	62.25	57.80	87.00	74.00	24.75	16.20	Line
10.	23.325	42.61	17.11	19.91	62.52	37.02	87.00	74.00	24.48	36.98	Line
12.	26.610	40.87	40.04	20.10	60.97	60.14	87.00	74.00	26.03	13.86	Line

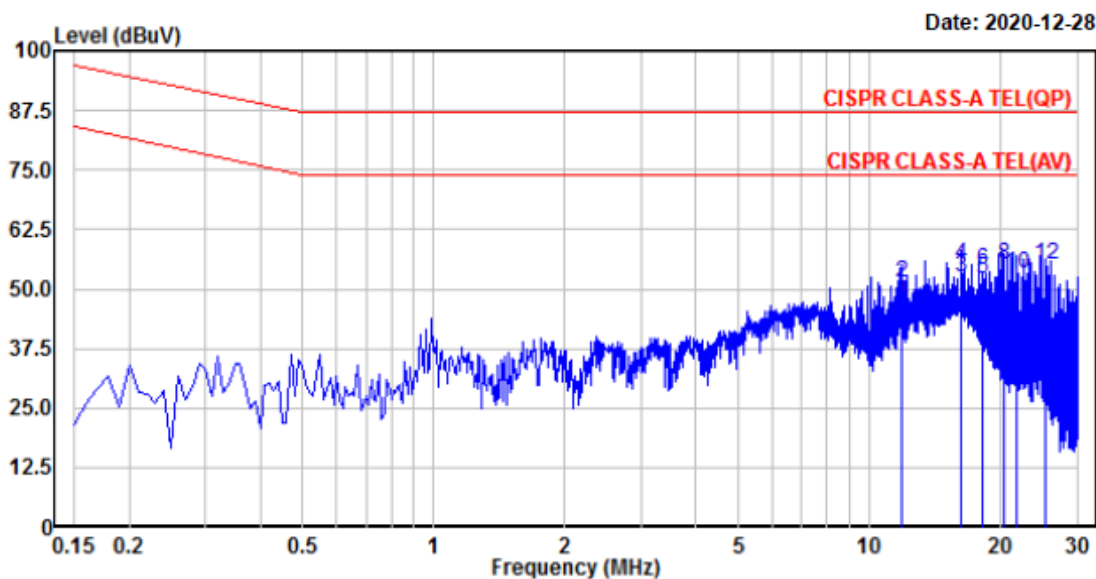
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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 : 100 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	32.09	28.00	19.25	51.34	47.25	87.00	74.00	35.66	26.75	Line
4.	16.229	35.55	33.14	19.37	54.92	52.51	87.00	74.00	32.08	21.49	Line
6.	18.243	34.56	32.71	19.43	53.99	52.14	87.00	74.00	33.01	21.86	Line
8.	20.455	35.49	12.09	19.52	55.01	31.61	87.00	74.00	31.99	42.39	Line
10.	21.862	33.69	10.19	19.58	53.27	29.77	87.00	74.00	33.73	44.23	Line
12.	25.342	35.41	12.54	19.74	55.15	32.28	87.00	74.00	31.85	41.72	Line

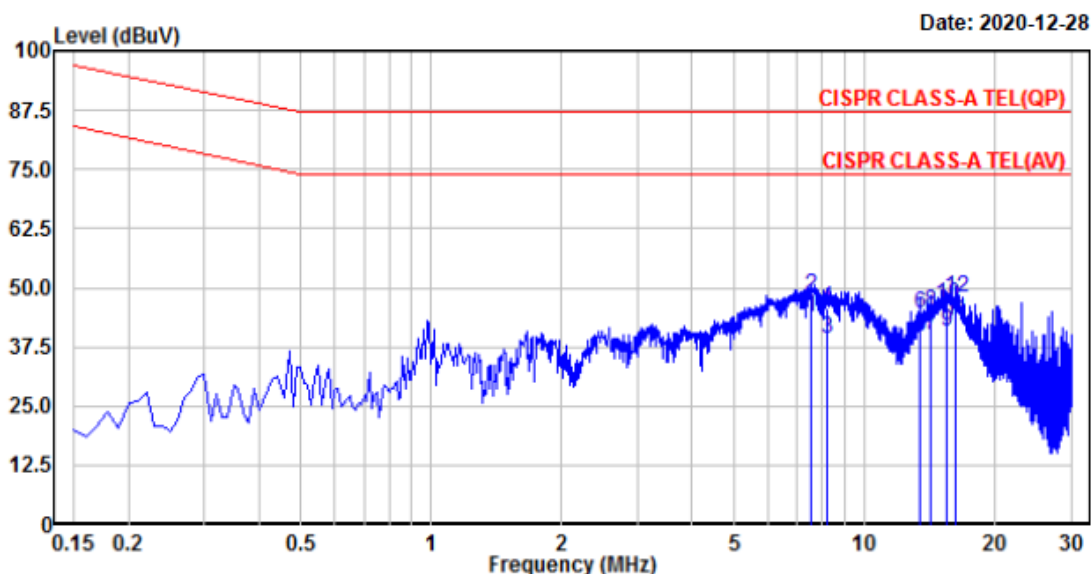
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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 : 100 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.	7.528	29.16	24.50	19.28	48.44	43.78	87.00	74.00	38.56	30.22	Line
4.	8.233	26.18	19.84	19.30	45.48	39.14	87.00	74.00	41.52	34.86	Line
6.	13.419	25.27	20.40	19.41	44.68	39.81	87.00	74.00	42.32	34.19	Line
8.	14.153	25.61	20.43	19.43	45.04	39.86	87.00	74.00	41.96	34.14	Line
10.	15.435	26.87	21.27	19.45	46.32	40.72	87.00	74.00	40.68	33.28	Line
12.	16.229	28.34	23.43	19.47	47.81	42.90	87.00	74.00	39.19	31.10	Line

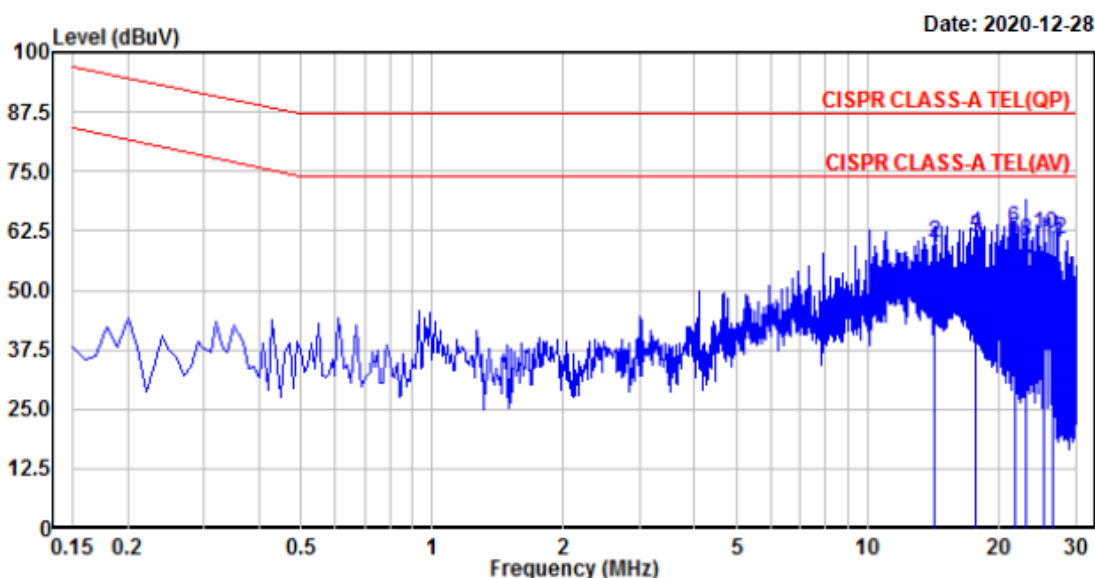
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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 : 100 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.	14.214	40.67	39.36	19.50	60.17	58.86	87.00	74.00	26.83	15.14	Line
4.	17.695	42.35	41.34	19.63	61.98	60.97	87.00	74.00	25.02	13.03	Line
6.	21.664	43.20	41.02	19.83	63.03	60.85	87.00	74.00	23.97	13.15	Line
8.	23.124	40.50	34.13	19.90	60.40	54.03	87.00	74.00	26.60	19.97	Line
10.	25.342	42.00	16.57	20.02	62.02	36.59	87.00	74.00	24.98	37.41	Line
12.	26.488	40.57	39.92	20.09	60.66	60.01	87.00	74.00	26.34	13.99	Line

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

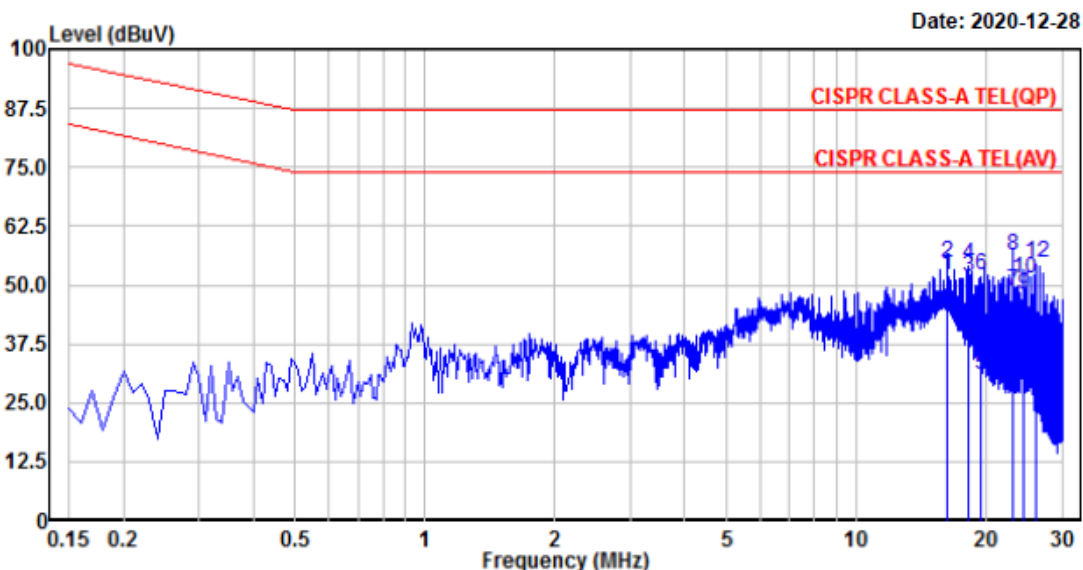


Conducted Emissions (TEL\_100 M) / Operating mode LAN #2



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EUT /Model No. : XRN-6410RB2	Phase : TEL_100M
Test Mode : Operating mode LAN#2	Test Power : 100 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.	16.229	35.40	32.78	19.37	54.77	52.15	87.00	74.00	32.23	21.85	Line
4.	18.243	34.77	32.08	19.43	54.20	51.51	87.00	74.00	32.80	22.49	Line
6.	19.357	32.45	11.51	19.47	51.92	30.98	87.00	74.00	35.08	43.02	Line
8.	23.126	36.59	28.85	19.64	56.23	48.49	87.00	74.00	30.77	25.51	Line
10.	24.352	31.69	28.10	19.69	51.38	47.79	87.00	74.00	35.62	26.21	Line
12.	26.014	35.12	12.13	19.78	54.90	31.91	87.00	74.00	32.10	42.09	Line

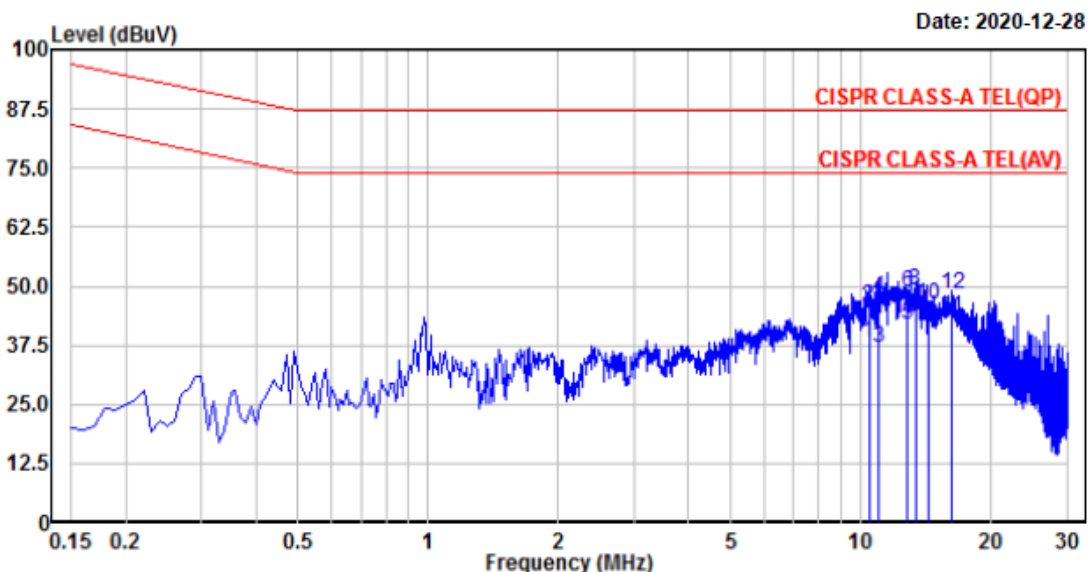
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL\_1000 M) / Operating mode LAN #2



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 Fax:+82-31-3236010

EUT /Model No. : XRN-6410RB2	Phase : TEL_1000M
Test Mode : Operating mode LAN#2	Test Power : 100 V / 50 Hz
Temp./ Humi. : 21 'C / 38 % R.H.	Test Engineer : KIM C B



No.	Freq MHz	RD QP dBµV	RD AV dBµV	C.F dB	Result QP dBµV	Result AV dBµV	Limit QP dBµV	Limit AV dBµV	Margin QP dB	Margin AV dB	Phase
2.	10.440	26.26	18.74	19.21	45.47	37.95	87.00	74.00	41.53	36.05	Line
4.	10.992	28.17	17.68	19.22	47.39	36.90	87.00	74.00	39.61	37.10	Line
6.	12.808	29.31	22.48	19.27	48.58	41.75	87.00	74.00	38.42	32.25	Line
8.	13.358	29.77	24.12	19.28	49.05	43.40	87.00	74.00	37.95	30.60	Line
10.	14.274	26.78	22.19	19.31	46.09	41.50	87.00	74.00	40.91	32.50	Line
12.	16.229	28.84	24.12	19.37	48.21	43.49	87.00	74.00	38.79	30.51	Line

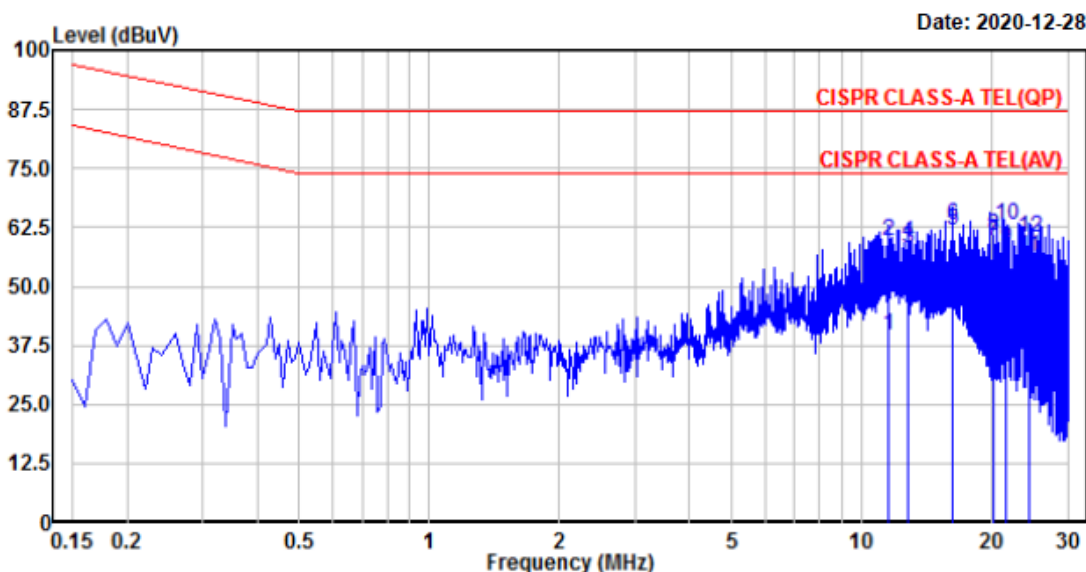
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

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  
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 Fax:+82-31-3236010

EUT /Model No. : XRN-6410RB2	Phase : TEL_10M
Test Mode : Operating mode LAN#3	Test Power : 100 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.	11.541	40.02	20.04	19.42	59.44	39.46	87.00	74.00	27.56	34.54	Line
4.	12.748	39.89	38.61	19.45	59.34	58.06	87.00	74.00	27.66	15.94	Line
6.	16.229	43.36	42.19	19.57	62.93	61.76	87.00	74.00	24.07	12.24	Line
8.	20.261	41.13	39.71	19.74	60.87	59.45	87.00	74.00	26.13	14.55	Line
10.	21.661	43.08	38.47	19.83	62.91	58.30	87.00	74.00	24.09	15.70	Line
12.	24.348	40.58	36.35	19.97	60.55	56.32	87.00	74.00	26.45	17.68	Line

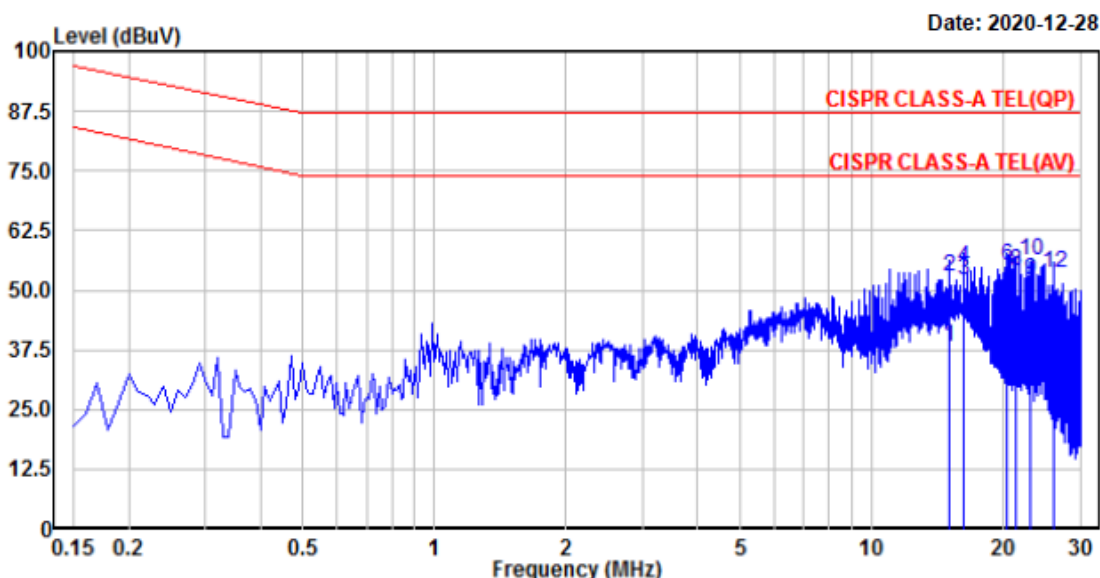
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL\_100 M) / Operating mode LAN #3



4, Songjuro 236 Beon-gil, Yangji-myeon  
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 Fax:+82-31-3236010

EUT /Model No. : XRN-6410RB2	Phase : TEL_100M
Test Mode : Operating mode LAN#3	Test Power : 100 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	33.40	18.94	19.32	52.72	38.26	87.00	74.00	34.28	35.74	Line
4.	16.229	35.35	32.81	19.37	54.72	52.18	87.00	74.00	32.28	21.82	Line
6.	20.458	35.48	12.04	19.52	55.00	31.56	87.00	74.00	32.00	42.44	Line
8.	21.311	34.51	11.31	19.56	54.07	30.87	87.00	74.00	32.93	43.13	Line
10.	23.129	36.70	32.57	19.64	56.34	52.21	87.00	74.00	30.66	21.79	Line
12.	26.011	33.85	11.43	19.78	53.63	31.21	87.00	74.00	33.37	42.79	Line

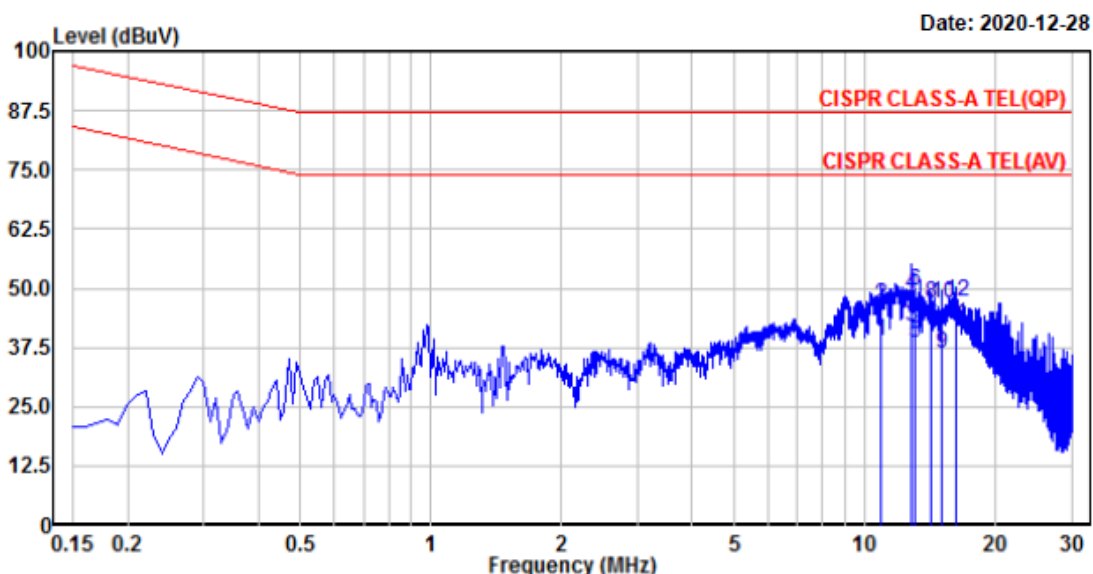
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL\_1000 M) / Operating mode LAN #3



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 Fax:+82-31-3236010

EUT /Model No. : XRN-6410RB2	Phase : TEL_1000M
Test Mode : Operating mode LAN#3	Test Power : 100 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.	10.931	27.17	19.71	19.22	46.39	38.93	87.00	74.00	40.61	35.07	Line
4.	12.747	29.53	22.77	19.27	48.80	42.04	87.00	74.00	38.20	31.96	Line
6.	13.007	30.16	19.03	19.28	49.44	38.31	87.00	74.00	37.56	35.69	Line
8.	14.152	27.57	22.77	19.30	46.87	42.07	87.00	74.00	40.13	31.93	Line
10.	15.021	27.30	16.88	19.32	46.62	36.20	87.00	74.00	40.38	37.80	Line
12.	16.168	27.74	22.99	19.36	47.10	42.35	87.00	74.00	39.90	31.65	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	: Operating mode
Result	: <b>Complies</b>

### 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 $\mu$ V/m
(230 – 1 000) MHz	47 dB $\mu$ V/m

## CLASS B

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

**Limit of 3m above 1 GHz**

## CLASS A

Frequency Range	Average Limit @ 3m (dB $\mu$ V/m)	Peak limit @ 3m (dB $\mu$ 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 $\mu$ V/m)	Peak limit @ 3m (dB $\mu$ 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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www.ltalab.com

EUT/Model No.: XRN-6410RB2

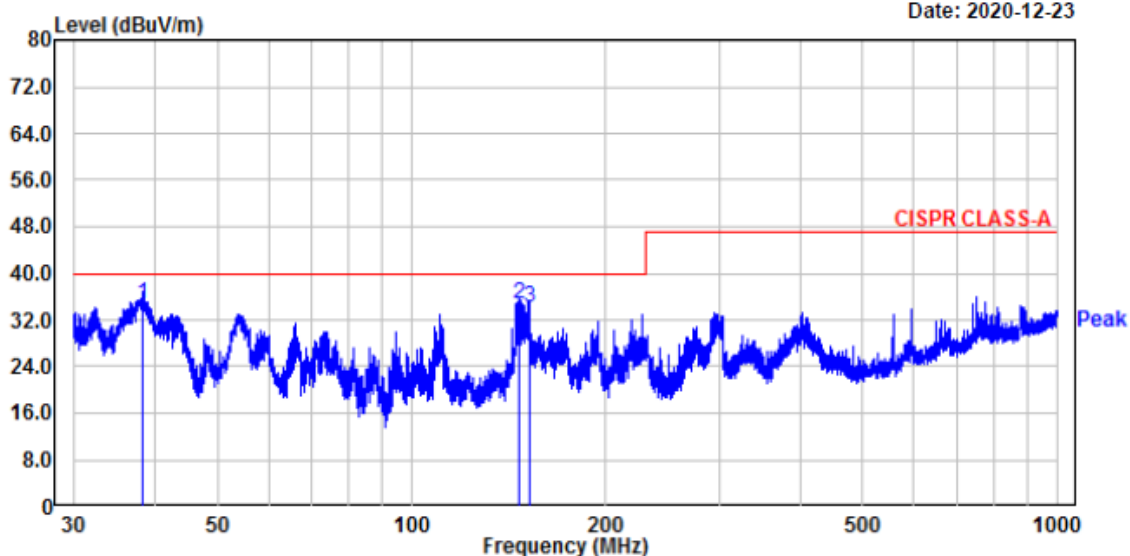
Temp/Humi: 21 'C / 35 % R.H.

Test Mode : Operating mode

Tested by: KIM C B

Power : 100 V / 50 Hz

Date: 2020-12-23



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	38.28	49.90	-15.17	34.73	40.00	5.27	146	266	vertical
2.	146.69	47.79	-13.21	34.58	40.00	5.42	133	278	vertical
3.	152.00	47.20	-13.04	34.16	40.00	5.84	129	220	vertical

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







**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**

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**Conducted Emissions**

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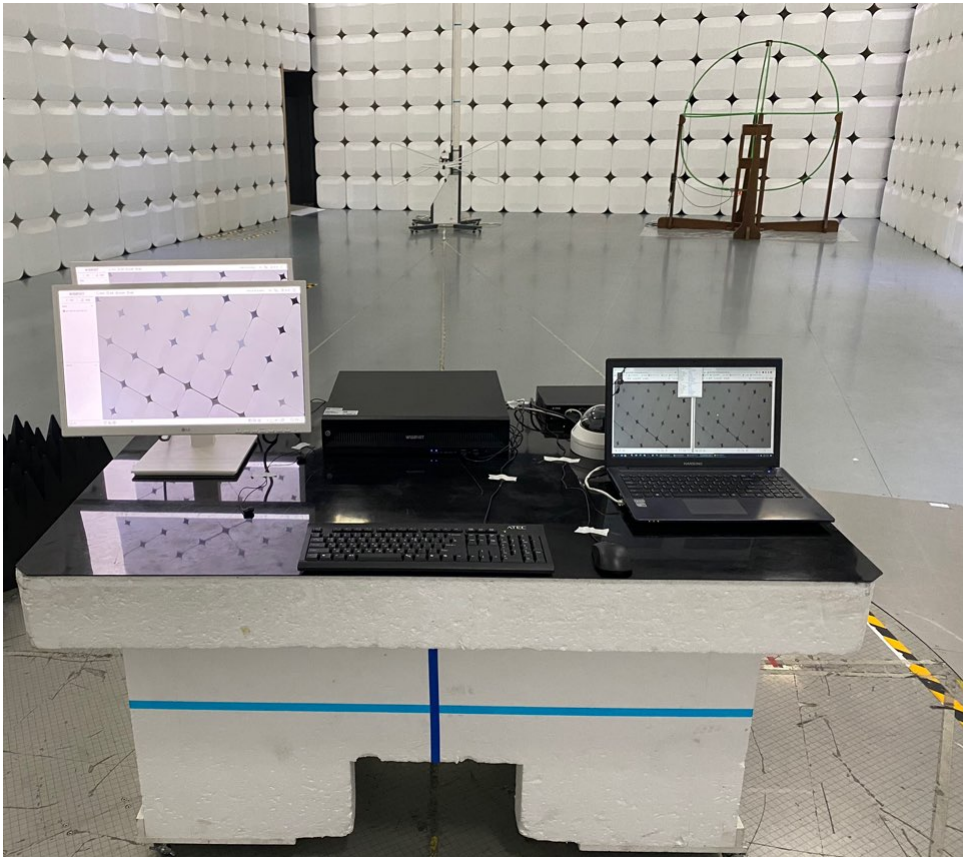
**Conducted Emissions (TEL)**

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**Radiated Emissions - Below 1 GHz**





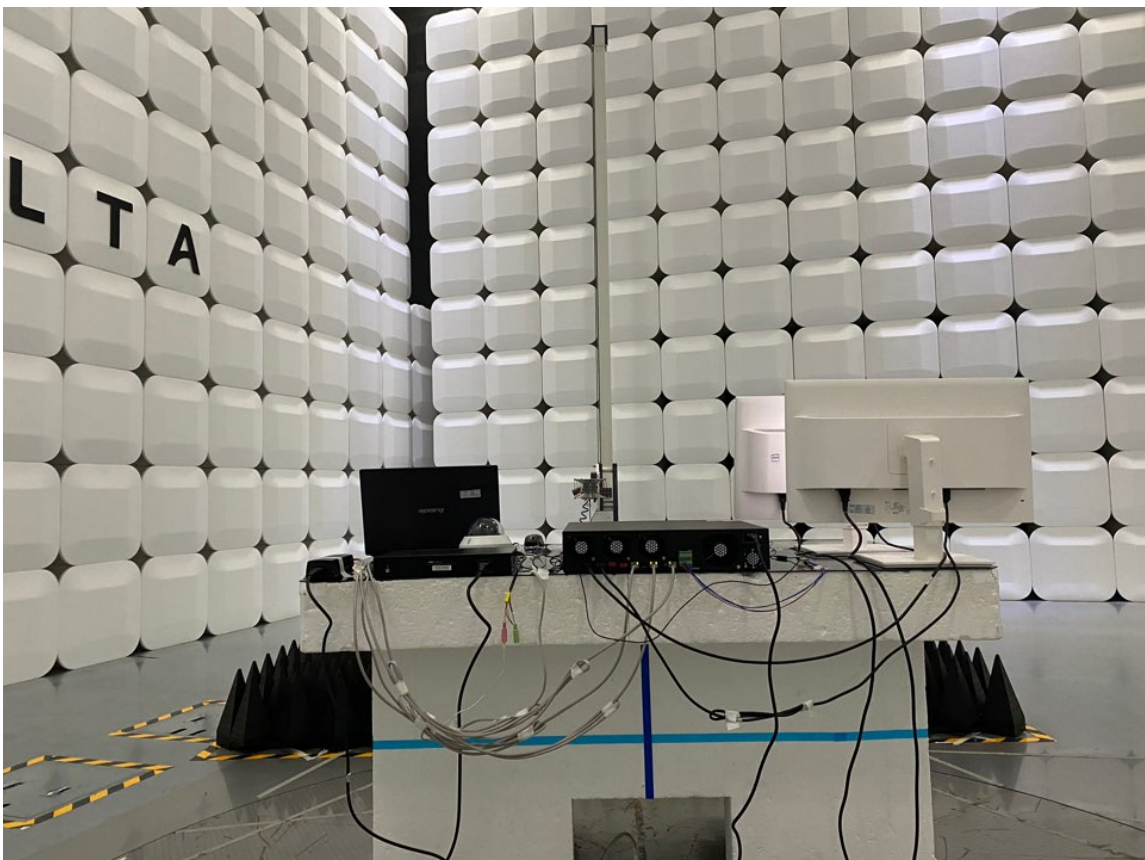
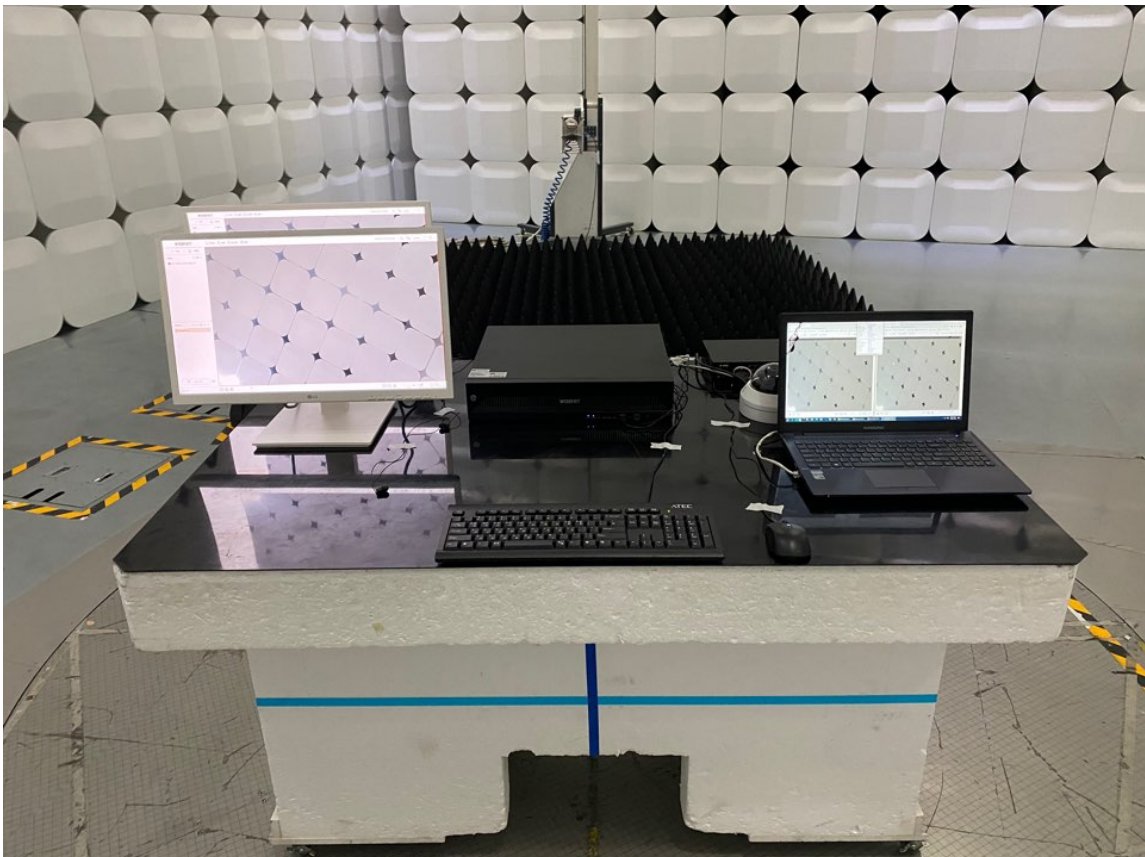
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**Radiated Emissions - Above 1 GHz**

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**EUT**

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**EUT**

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