

TEST REPORT

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The tests reported herein have been performed in accordance with its terms of accreditation.

Test Report No. : LR500112006H
Issue Date : June 08, 2020
Applied Standard : FCC Part 15, Subpart B and ICES-003
Trade Name : Hanwha Techwin Co., Ltd.
Equipment Name : NVR
Model Name : XRN-6410DB4
Serial Number : Identification

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	08.06.2020	LR500112006H	Initial

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LTA Certification

Applicant / 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(Tianjin) Co., Ltd.
Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin, 300385, People's Republic of China

Factory #2

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 #3

Company name : D-TECH CO., LTD.
Address : 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

Equipment Under Test (EUT)

Equipment Name : NVR
Model name : XRN-6410DB4
Serial number : Identification
Intended environment : Industrial area
Date of receipt : May 14, 2020
EUT condition : Pre-production, not damaged
Test Mode : Operating mode
Interface Ports : AC IN #1 ~ #2, HDD Slot #1 ~ #4, USB Type A #1 ~ #4, Network #1 ~ #3, HDMI #1 ~ #2, AUDIO OUT, Terminal Block #1 ~ #2
Console Port is unused port.
Power rating : AC 120 V, 60 Hz
Test Voltage : AC 120 V, 60 Hz

Model Description

- NONE

Model Specification

- NONE

*** To be continued next page ***

LTA Certification –cont.-**Test Performed**

Test started & completed : May 26 – June 02, 2020
Location : LTA Co., Ltd.

Test Specification

Purpose of the test : Compliance test to the following standard
Applied standard : FCC Part 15, Subpart B and ICES-003
Classification : Class A
Deviations from Standard Test Method : N/A

Test Results

Measurement	Results*	Test method
Conducted Emissions	Complies	ANSI C 63.4-2014
Radiated Emissions	Complies	ANSI C 63.4-2014

* : The compliance statement is based on nominal value only.

Modification performed by the lab.:

- N.A

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

Laboratory's Certificate

Report number : LR500112006H
Issue date : June 08, 2020

This test report is issued under the authority of:



Young Kyu Shin, Technical Manager

The test was supervised by:



Jae Hoon Kim, Test Engineer

The results in this report apply only to the sample(s) tested.

It is not allowed to copy this report even partly without the allowance of the test laboratory.

General information's

Purpose

This document is based on the Electromagnetic Interference (EMI) tests performed on the “**XRN-6410DB4**”.

The measurements were performed according to the measurement procedure described in ANSI C 63.4-2014. The tests were carried out in order to confirm whether the electromagnetic emissions from the EUT(Equipment Under Test), are within the Class A limits defined in FCC Part 15, Subpart B- “Section 15.107- Conducted limits” and “Section 15.109-Radiated emission limits”.

Test Performed

Company name : **LTA Co., Ltd.**

Address : 34, Songju-ro 236Beon-gil, Yangji-myeon, Cheoin-gu Yongin-si, Gyeonggi-do 449-822, Korea

Telephone : +82-31-323-6008

Facsimile : +82-31-323-6010

Measurement uncertainty

Conducted Emissions (0.15 to 30 MHz) : ± 2.80 [dB] (k=2)

Radiated Emissions (30 to 1,000 MHz) : H : ± 4.84 [dB] (k=2) V : ± 4.92 [dB] (k=2)

(1 GHz to 6 GHz) : H : ± 5.97 [dB] (k=2) V : ± 5.96 [dB] (k=2)

(6 GHz to 18 GHz) : H : ± 6.20 [dB] (k=2) V : ± 6.20 [dB] (k=2)

The coverage factor k=2 yields approx. a 95% level of confidence for near-normal distribution typical of most measurement results.

Accredited agencies

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

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2020-09-30	ECT accredited Lab.
	KOREA		-	
RRA	U.S.A	KR0049	2021-04-11	RRA accredited Lab.
	CANADA		2021-06-16	
	VIETNAM		2021-04-12	
		C-14948	2023-09-10	
VCCI	JAPAN	T-12416	2023-09-10	VCCI registration
		R-14483	2023-10-15	
		G-10847	2021-12-13	
KOLAS	KOREA	KT551	2021-08-20	KOLAS accredited Lab.

1- Brief Information

1-1 Test Summary

Parameter	Applied Standard	Status (note 1)
I. Emission		
Conducted Emissions	FCC Part 15.107 / ICES-003 Clause 6.1	C
Radiated Emissions	FCC Part 15.109 / ICES-003 Clause 6.2	C
Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable * The data in this test report are traceable to the national or international standards.		

Frequency range to be scanned:

0.15 MHz - 30 MHz as conducted measurement

30 MHz to 5th harmonic of the highest frequency or 40 GHz, whichever is lower as radiated measurement.

Bandwidth:

Measured by the CISPR quasi-peak function Bandwidth is 9 kHz in the frequency 0.15 MHz to 30 MHz and 120 kHz in the frequency 30 MHz to 1,000 MHz.

Measured by the Peak function Bandwidth is 1 MHz in the frequency 1 GHz to 40 GHz.

A sample calculation:

COR. F (correction factor)= Antenna factor + Cable loss- Amp.gain- Distance correction

Emission Level= meter reading + COR.F

1-2 Test mode of the EUT

The tests have been conducted with the following operational mode(s) of the EUT.

Operating mode

1-3 Modification

- NONE

1-4 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
NVR	XRN-6410DB4	N/A	Hanwha Techwin(Tianjin) Co., Ltd. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. D-TECH CO.,LTD.	-
Mouse	MOKJUO	02T05870	Primax Electronics Ltd.	-
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
NETWORK CAMERA	QNO-6032R	ZMQZ70G0GM3 0000CA	HANWHA TECHWIN CO.,LTD.	-
Notebook	1EK14PA#AB1	5CD7150WPK	HP	-
Monitor #1	24BK550Y	902NTFA7P563	LG Electronics Nanjing New Technology Co., Ltd	-
Monitor #2	24BK550Y	902NTSU7P406	LG Electronics Nanjing New Technology Co., Ltd	-
Smart Phone	SM-G610L	R59J800TCZW	SAMSUNG	-
USB Memory Stick #1	SDCZ50-008G	N/A	SANDISK	8 GB
USB Memory Stick #2	SDCZ73	N/A	SANDISK	16 GB
USB Memory Stick #3	SDCZ73	N/A	SANDISK	16 GB
Switching Hub	IPTIMEH608	N/A	EFM-Networks	-
Power Adapter	DCP015 A050600K	E239 19070513965	ZION (VIETNAM) Co., LTD	-
Speaker	N/A	N/A	N/A	-
PoE Injector	PSE305	N/A	CT Links	-
HDD #1	WDC WD40PURX-64	N/A	Western Digital	4 TB
HDD #2	WDC WD40PURX-64	N/A	Western Digital	4 TB
HDD #3	ST4000VX007- 2DT1	N/A	SEAGATE	4 TB
HDD #4	ST4000VX007- 2DT1	N/A	SEAGATE	4 TB
ALARM Test Board	N/A	N/A	N/A	-

2-6 Cable List

Cable List						
From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	AC IN #1	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	AC IN #2	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	HDD Slot #1	HDD #1	-	-	-	-
	HDD Slot #2	HDD #2	-	-	-	-
	HDD Slot #3	HDD #3	-	-	-	-
	HDD Slot #4	HDD #4	-	-	-	-
	USB Type A #1	Mouse	USB	1.1	NO	Plastic
	USB Type A #2	USB Memory Stick #1	-	-	-	-
	USB Type A #3	USB Memory Stick #2	-	-	-	-
	USB Type A #4	USB Memory Stick #3	-	-	-	-
	Network #1	PoE Injector	DATA IN	10.4	NO	Plastic
	Network #2	Switching Hub	LAN #1	10.2	NO	Plastic
	Network #3	Switching Hub	LAN #2	10.2	NO	Plastic
	HDMI #1	Monitor #1	HDMI	0.9	YES	Plastic
	HDMI #2	Monitor #2	HDMI	0.8	YES	Plastic
	AUDIO OUT	Speaker	AUDIO IN	3.2	NO	Plastic
	Terminal Block #1	ALARM Test Board	ALARM IN	0.1	NO	Plastic
	Terminal Block #2	ALARM Test Board	ALARM OUT	0.1	NO	Plastic
PoE Injector	AC IN	AC Power Source	3 Pin AC Line	1.6	NO	Plastic
	DATA OUT	NETWORK CAMERA	PoE	3.2	NO	Plastic
Switching Hub	LAN #3	Notebook	LAN	1.2	NO	Plastic
	DC IN	Power Adapter	DC OUT	1.6	NO	Plastic
Power Adapter	AC IN	AC Power Source	2 Pin AC Line	-	-	Plastic
Monitor #1	AC IN	AC Power Source	3 Pin AC Line	1.2	NO	Plastic
Monitor #2	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
NETWORK CAMERA	AUDIO IN	Smart Phone	AUX	1.3	NO	Plastic
ALARM Test Board	USB Type B	Notebook	USB Type A	1.4	NO	Plastic

2- Test Site Description

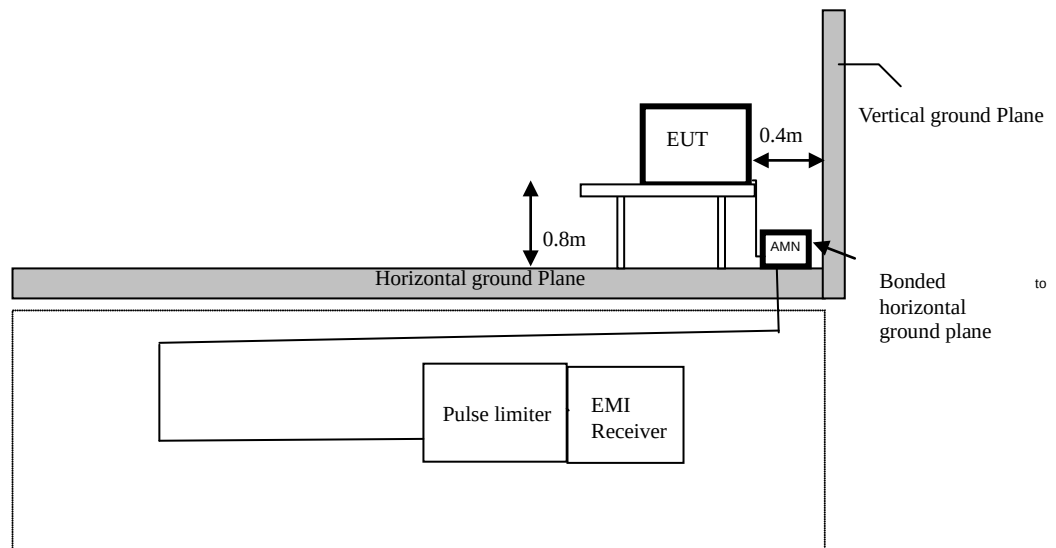
1-Facility

All the testing facilities are periodically serviced as a daily check for equipment and cables systems, an every 6 months facility check for the facilities and a monthly check and annual calibration for testing equipment according to ISO/IEC 17025. All the testing facilities are used as the same specifications shown below. There are descriptions both for radiated disturbance measurement and conducted disturbance measurement conformed by ANSI C 63.4-2014.

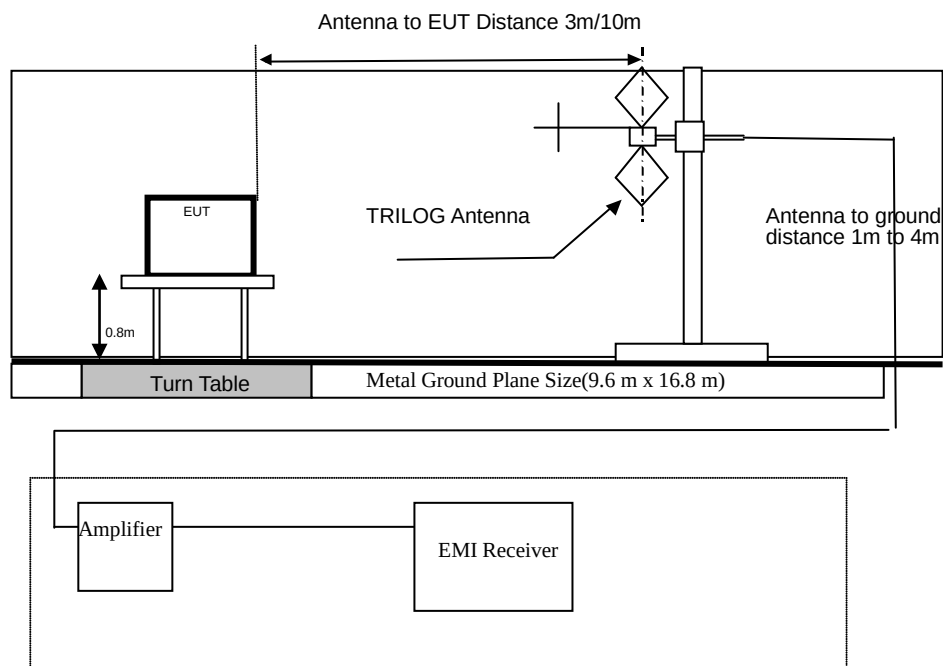
The NSA measurement of the 10 m chamber was performed on January 18, 2020 according to ANSI C 63.4:2014

The SVSWR measurement of the 10 m chamber was performed on January 18, 2020 according to ANSI C 63.4:2014

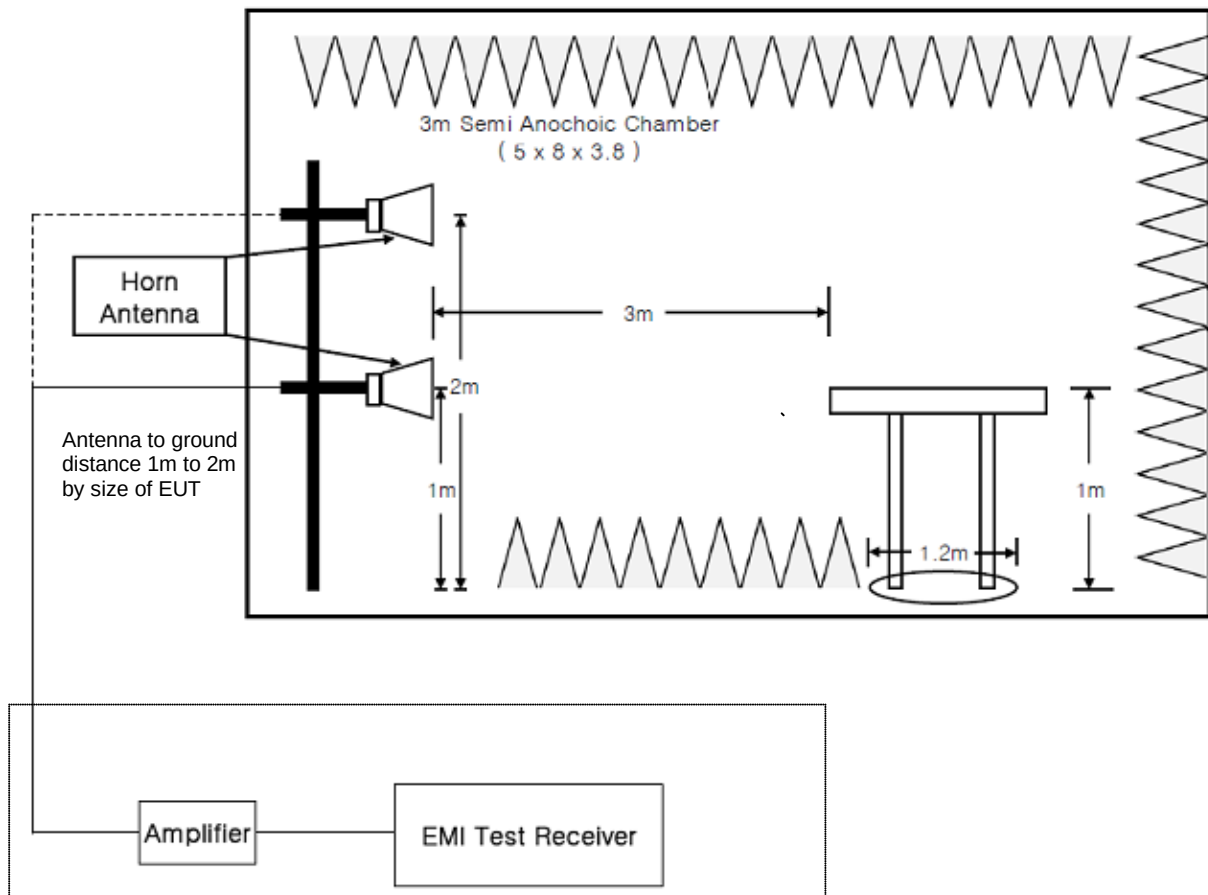
2-1 Conducted Emissions



2-2 Radiated Emissions – Below 1 GHz



2-3 Radiated Emissions – Above 1 GHz



3- Test Procedure

3-1 Conducted Emissions

- The measurement is carried out on an open site with horizontal and metallic ground plane.
- An AMN(Artificial Mains Network) with a nominal impedance ($50\ \Omega/50\ \mu\text{H}$) as defined in ANSI C 63.4-2014., shall be utilized.
- The AMN is grounded on a horizontal metal ground plane.
- Measurement is carried out using an EMI receiver with quasi-peak detectors and average detector.
(Refer to the List of test equipment used for the test.)
- The shortest distance between the EUT and the AMN is 0.8 m.
- The EUT is placed on the non-conducting table with 0.8 m height.
- Refer to "Brief Information"(page 7-9) about details of the EUT and configuration of the cables.
- Measurement is carried out as manual operation.
 - searching the maximum frequency point of the disturbance wave in each frequency range.
 - reading the disturbance level of quasi-peak, average and Line (L) and Neutral (N) in 9 kHz bandwidth by the EMI receiver.
 - calculating the measurement result with the following formula or equation.
(Result = Reading + Cor.F.(LISN Factor + Cable Loss + Pulse Limiter)
(ex) = 13.23 dB μ V + (9.63 dB + 0.01 dB + 9.86 dB)
 = 32.73 dB μ V

3-2 Radiated Emissions – Below 1 GHz

- Test site is met the requirements of ANSI C 63.4-2014 and the distance between the EUT and the antenna is adjusted 3 m or 10 m.
 - The turntable can be rotated 360 degrees.
 - The antenna can be adjusted between 1 m and 4 m in height above the ground.
 - The EUT is placed on the non-conducting table with 0.8 m height on the turntable.
 - Measurements are carried out using an EMI receiver with quasi-peak detectors (120 kHz bandwidth).
 - Refer to the list of test equipment used for the test.
 - The TRILOG antenna are used as wideband antenna.
 - The TRILOG antenna is used in the frequency range of 30 MHz to 1 000 MHz.
 - A variable attenuator is used for verifying amplifier's linearity.
 - Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
 - Refer to "Brief Information"(page 7-9) about details of the EUT and configuration of the cables.
 - Measurement is carried out by a LTA operator as manual operation.
- searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
- setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m.
- reading the disturbance level by the EMI receiver with quasi-peak detectors (120 kHz bandwidth) according to ANSI C 63.4-2014.
- measuring to vertical and horizontal polarization.
- calculating the measurement result with the following formula or equation:
(Result = Reading + Cor.F (antenna factor + cable loss – PreAmp Gain)
(ex) = 50.6 dBμV/m + (11.08 dB(1/m) + 1.31 dB - 27.32 dB)
= 35.67 dBμV/m

3-3 Radiated Emissions – Above 1 GHz

- Test site is met the requirements of ANSI C 63.4-2014 and the distance between the EUT and the antenna is adjusted 3 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1 m and 4 m in height above the ground.
- The EUT is placed on the non-conducting table with 1 m height on the turntable.
- Measurements are carried out using an EMI receiver with peak and average detectors(1 MHz bandwidth).
- Refer to the list of test equipment used for the test.
- The HORN antenna are used as wideband antenna.
- The HORN antenna is used in the frequency range of 1 GHz to 18 GHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 7-9) about details of the EUT and configuration of the cables.
- Measurement is carried out by a LTA operator as manual operation.
 - searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
 - setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m
 - reading the disturbance level by the EMI receiver with peak and average detectors (1 MHz bandwidth) according to ANSI C 63.4-2014.
 - measuring to vertical and horizontal polarization.
 - calculating the measurement result with the following formula or equation:
(Result = Reading + Cor.F (antenna factor + cable loss – PreAmp Gain)
(ex) = 35.9 dBμV/m + (23.92 dB(1/m) + 7.01 dB - 38.33 dB)
 = 28.5 dBμV/m

4- List of Equipment Used For the Tests

Conducted Emissions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	PMM9010F	NARDA	020WW40106	2021.03.16	1 year
☒	LISN(main)	ENV216	Rohde & Schwarz	100408	2020.10.15	1 year
☒	LISN(sub)	KNW-407	Kyoritsu	8-1430-1	2020.09.06	1 year
☒	TEST PROGRAM	PMM Emission Suite Rel. 2.33	NARDA	-	-	-

Radiated Emissions – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2020.09.05	1 year
☒	Amplifier (25 dB)	8447D	HP	2944A07684	2021.03.16	1 year
☐	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.03.26 (KOLAS)	2 year
☒	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2021.11.12 (RRA)	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Above 1 GHz

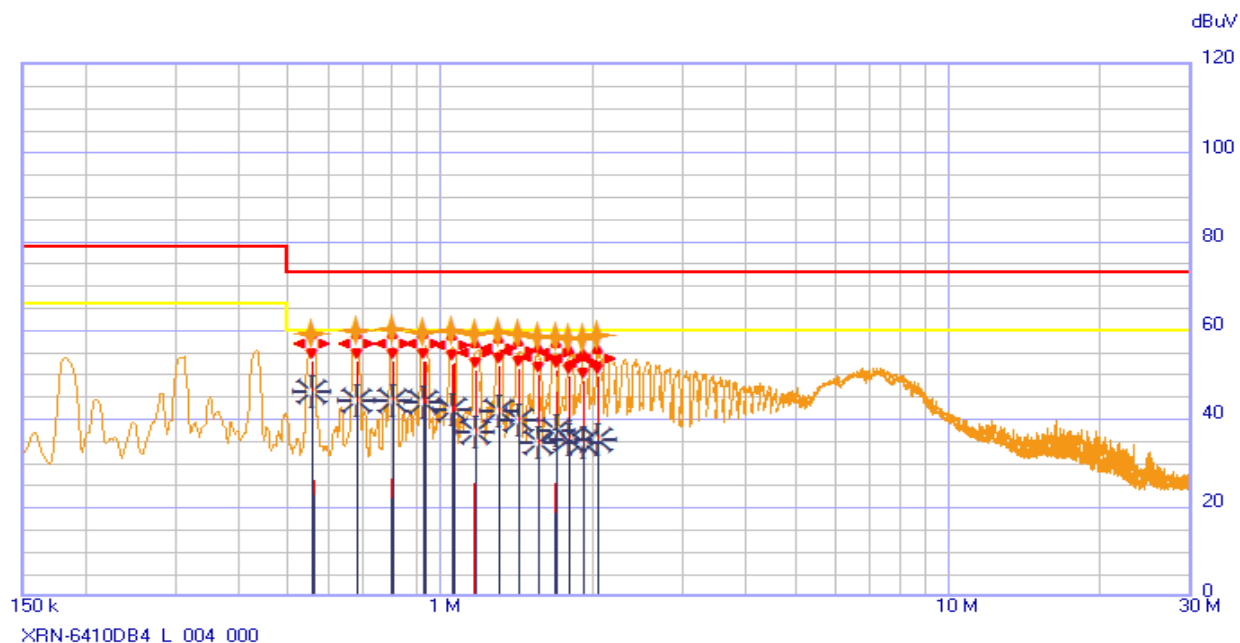
	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2020.09.05	1 year
☒	Amplifier	8449B	HP	3008A00671	2020.09.05	1 year
☐	Amplifier	PAM-840A	COM-POWER	461314	2021.03.16	1 year
☐	HORN ANTENNA	3116B	ETS	133350	2022.05.12	2 year
☐	HORN ANTENNA	3116B	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	-	-	-

5- EMISSION

5-1 Conducted Emissions

MODE : Operating mode (Pwr #1)

(LINE)



	Start [MHz]	Stop [MHz]	Step	Detector	Hold Time	RBW	Min Att	Pre Amp	Pre Sel	Prompt start	Ancillary
1	0.15	30	AUTO (2.045 kHz)	P Q C CISPR A_QP CISPR A_AV	1500 ms	9 kHz	10	ON	ON	...	L1

Pulse Limiter ON
Ancillary = General

Limits:
CISPR A_QP
CISPR A_AV

Factors:
ENV216#2_191015_L
CE_CL_200109

Peak
QPeak
C-Avg

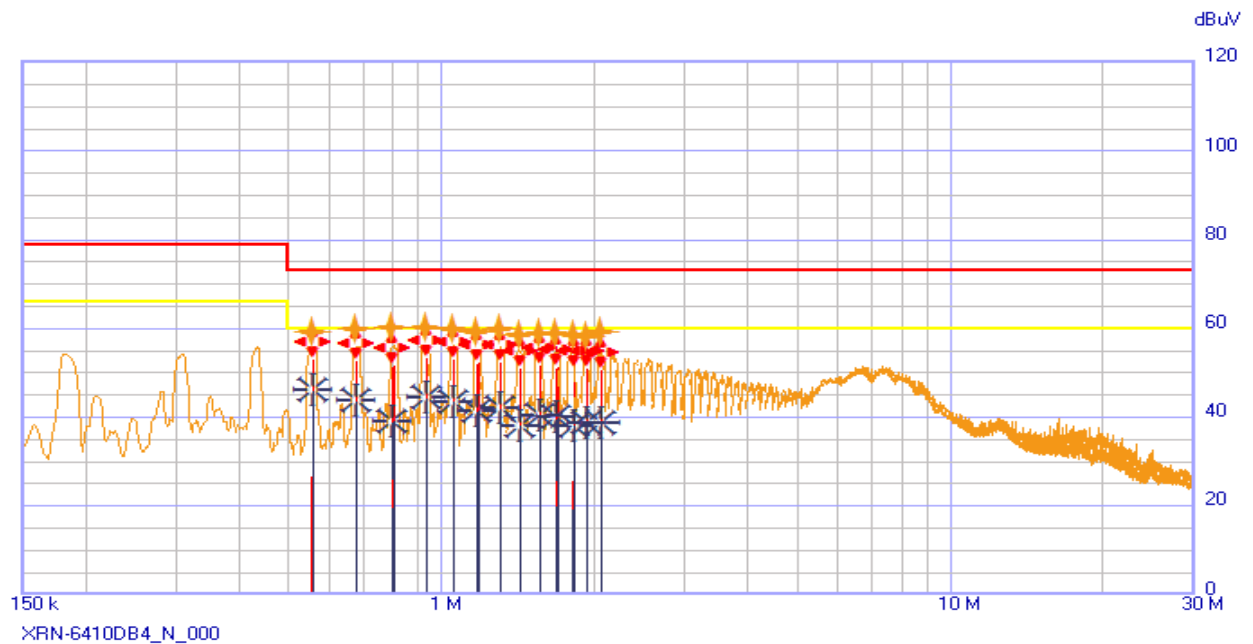
EUT / Model No. : XRN-6410DB4
Test mode : Operating mode(Pwr #1)
Temp./ Humi : 24 °C / 46 %
Date : 2020-05-28

Phase : Line
Test Power : 120 V / 60 Hz
Test Engineer : KIM J H

No.	Frequency [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]
1	0.559	43.37	36.50	9.58	52.95	46.08	73.00	60.00	20.05	13.92
2	0.686	43.36	34.17	9.58	52.94	43.75	73.00	60.00	20.06	16.25
3	0.804	43.34	34.34	9.58	52.92	43.92	73.00	60.00	20.08	16.08
4	0.929	43.27	33.81	9.58	52.85	43.39	73.00	60.00	20.15	16.61
5	1.060	42.93	32.21	9.58	52.51	41.79	73.00	60.00	20.49	18.21
6	1.170	41.34	27.13	9.59	50.93	36.72	73.00	60.00	22.07	23.28
7	1.307	42.40	31.77	9.59	51.99	41.36	73.00	60.00	21.01	18.64

No.	Frequency [MHz]	RD QP [dB/μV]	RD AV [dB/μV]	C.F [dB]	Result QP [dB/μV]	Result AV [dB/μV]	Limit QP [dB/μV]	Limit AV [dB/μV]	Margin QP [dB]	Margin AV [dB]
8	1.426	41.65	29.82	9.59	51.24	39.41	73.00	60.00	21.76	20.59
9	1.565	40.13	24.71	9.60	49.73	34.31	73.00	60.00	23.27	25.69
10	1.686	41.24	27.63	9.60	50.84	37.23	73.00	60.00	22.16	22.77
11	1.790	39.91	25.61	9.61	49.52	35.22	73.00	60.00	23.48	24.78
12	1.911	38.92	24.81	9.62	48.54	34.43	73.00	60.00	24.46	25.57
13	2.040	39.84	25.49	9.62	49.46	35.11	73.00	60.00	23.54	24.89

-Continue
(NEUTRAL)



	Start [MHz]	Stop [MHz]	Step	Detector	Hold Time	RBW	Min Att	Pre Amp	Pre Sel	Prompt start	Ancillary
1	0.15	30	AUTO (2.045 kHz)	P Q C CISPR A_QP CISPR A_AV	1500 ms	9 kHz	10	ON	ON	...	N

Pulse Limiter ON
Ancillary = General

Limits:

CISPR A_QP
CISPR A_AV

Factors:

ENV216#2_191015_N
CE_CL_200109

Peak

QPeak

C-Avg

EUT / Model No. : XRN-6410DB4
Test mode : Operating mode(Pwr #1)
Temp./ Humi : 24 °C / 46 %
Date : 2020-05-28

Phase : Neutral
Test Power : 120 V / 60 Hz
Test Enginner : KIM J H

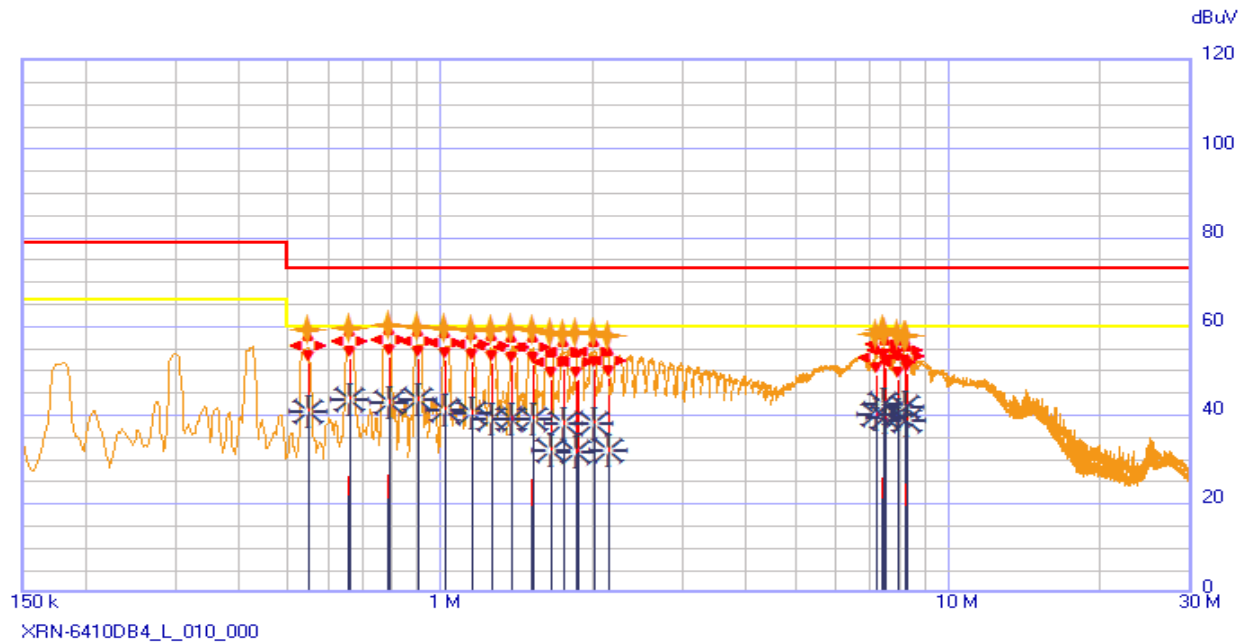
No.	Frequency [MHz]	RD QP [dBμV]	RD AV [dBμV]	C.F [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.557	43.23	36.31	9.57	52.80	45.88	73.00	60.00	20.20	14.12
2	0.680	42.97	33.95	9.58	52.55	43.53	73.00	60.00	20.45	16.47
3	0.800	41.98	29.28	9.58	51.56	38.86	73.00	60.00	21.44	21.14
4	0.933	43.69	34.59	9.58	53.27	44.17	73.00	60.00	19.73	15.83
5	1.058	43.24	33.63	9.58	52.82	43.21	73.00	60.00	20.18	16.79
6	1.179	42.53	31.73	9.59	52.12	41.32	73.00	60.00	20.88	18.68
7	1.307	42.50	32.21	9.59	52.09	41.80	73.00	60.00	20.91	18.20
8	1.424	41.14	28.38	9.59	50.73	37.97	73.00	60.00	22.27	22.03
9	1.555	42.01	30.51	9.60	51.61	40.11	73.00	60.00	21.39	19.89

No.	Frequency [MHz]	RD QP [dB/μV]	RD AV [dB/μV]	C.F [dB]	Result QP [dB/μV]	Result AV [dB/μV]	Limit QP [dB/μV]	Limit AV [dB/μV]	Margin QP [dB]	Margin AV [dB]
10	1.680	41.70	30.22	9.60	51.30	39.82	73.00	60.00	21.70	20.18
11	1.811	41.12	28.21	9.60	50.72	37.81	73.00	60.00	22.28	22.19
12	1.931	41.16	28.81	9.61	50.77	38.42	73.00	60.00	22.23	21.58
13	2.056	40.97	28.97	9.61	50.58	38.58	73.00	60.00	22.42	21.42

-Continue

MODE : Operating mode #2 (Pwr #2)

(LINE)



	Start [MHz]	Stop [MHz]	Step	Detector	Hold Time	RBW	Min Att	Pre Amp	Pre Sel	Prompt start	Ancillary
1	0.15	30	AUTO (2.045 kHz)	P Q C CISPR A_QP CISPR A_AV	1500 ms	9 kHz	10	ON	ON	---	L1

Pulse Limiter ON
Ancillary = General

Limits:
CISPR A_QP
CISPR A_AV

Factors:
ENV216#2_191015_L
CE_CL_200109

Peak
QPeak
C-Avg

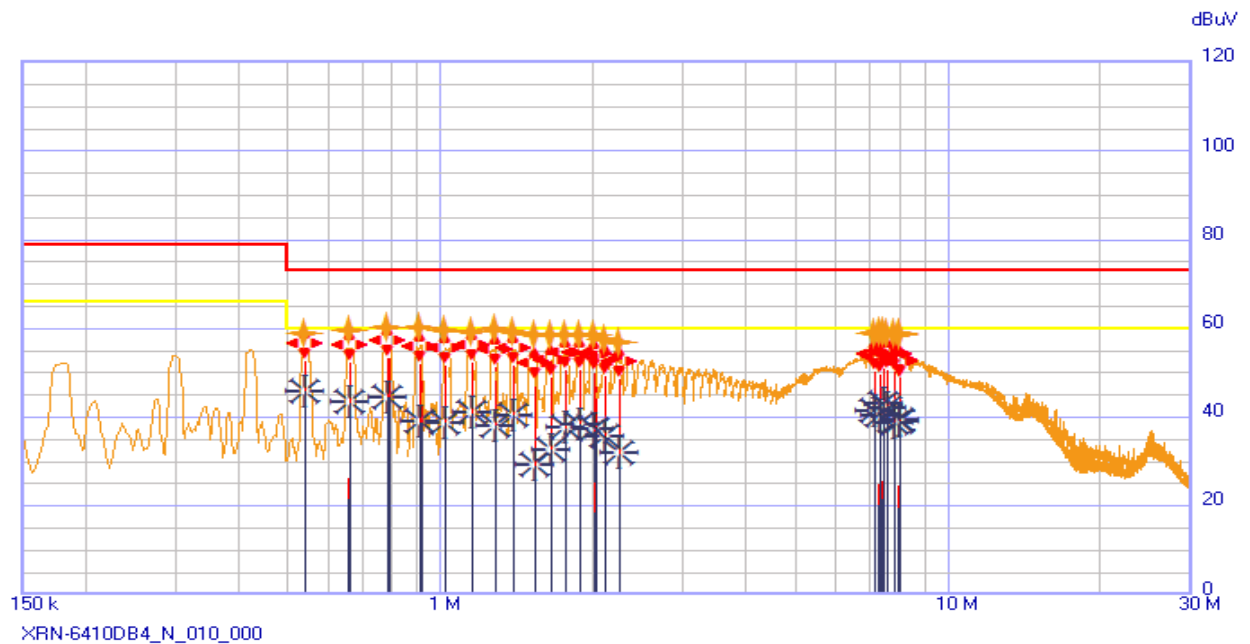
EUT / Model No. : ×RN-6410DB4
Test mode : Operating mode(Pwr #2)
Temp./ Humi : 24 °C / 46 %
Date : 2020-05-28

Phase : Line
Test Power : 120 V / 60 Hz
Test Engineer : KIM J H

No.	Frequency [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]
1	0.549	42.02	30.94	9.57	51.59	40.51	73.00	60.00	21.41	19.49
2	0.661	42.95	33.79	9.58	52.53	43.37	73.00	60.00	20.47	16.63
3	0.790	43.15	32.90	9.58	52.73	42.48	73.00	60.00	20.27	17.52
4	0.907	42.93	33.49	9.58	52.51	43.07	73.00	60.00	20.49	16.93
5	1.023	42.59	31.43	9.58	52.17	41.01	73.00	60.00	20.83	18.99
6	1.154	42.33	30.54	9.58	51.91	40.12	73.00	60.00	21.09	19.88
7	1.265	41.78	29.24	9.59	51.37	38.83	73.00	60.00	21.63	21.17
8	1.385	41.52	29.08	9.59	51.11	38.67	73.00	60.00	21.89	21.33
9	1.516	41.63	29.31	9.60	51.23	38.91	73.00	60.00	21.77	21.09

No.	Frequency [MHz]	RD QP [dB/μV]	RD AV [dB/μV]	C.F [dB]	Result QP [dB/μV]	Result AV [dB/μV]	Limit QP [dB/μV]	Limit AV [dB/μV]	Margin QP [dB]	Margin AV [dB]
10	1.651	38.28	22.14	9.60	47.88	31.74	73.00	60.00	25.12	28.26
11	1.747	40.65	28.05	9.60	50.25	37.65	73.00	60.00	22.75	22.35
12	1.856	38.26	21.86	9.62	47.88	31.48	73.00	60.00	25.12	28.52
13	2.005	40.43	28.31	9.62	50.05	37.93	73.00	60.00	22.95	22.07
14	2.136	38.48	22.10	9.62	48.10	31.72	73.00	60.00	24.90	28.28
15	7.220	38.98	29.97	9.71	48.69	39.68	73.00	60.00	24.31	20.32
16	7.422	41.95	32.60	9.71	51.66	42.31	73.00	60.00	21.34	17.69
17	7.524	40.87	29.39	9.71	50.58	39.10	73.00	60.00	22.42	20.90
18	7.935	37.97	30.22	9.71	47.68	39.93	73.00	60.00	25.32	20.07
19	8.191	40.72	31.94	9.71	50.43	41.65	73.00	60.00	22.57	18.35
20	8.222	39.53	28.86	9.71	49.24	38.57	73.00	60.00	23.76	21.43

-Continue
(NEUTRAL)



	Start [MHz]	Stop [MHz]	Step	Detector	Hold Time	RBW	Min Att	Pre Amp	Pre Sel	Prompt start	Ancillary
1	0.15	30	AUTO (2.045 kHz)	P Q C CISPR A_QP CISPR A_AV	1500 ms	9 kHz	10	ON	ON	...	N

Pulse Limiter ON
Ancillary = General
Limits:

CISPR A_QP
CISPR A_AV

Factors:
ENV216#2_191015_N
CE_CL_200109

Peak
QPeak
C-Avg

EUT / Model No. : XRN-6410DB4
Test mode : Operating mode(Pwr #2)
Temp./ Humi : 24 °C / 46 %
Date : 2020-05-28

Phase : Neutral
Test Power : 120 V / 60 Hz
Test Enginner : KIM J H

No.	Frequency [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]
1	0.543	43.03	36.05	9.56	52.59	45.61	73.00	60.00	20.41	14.39
2	0.661	42.71	33.60	9.58	52.29	43.18	73.00	60.00	20.71	16.82
3	0.788	43.47	34.69	9.58	53.05	44.27	73.00	60.00	19.95	15.73
4	0.915	42.39	29.12	9.58	51.97	38.70	73.00	60.00	21.03	21.30
5	1.021	41.85	29.05	9.58	51.43	38.63	73.00	60.00	21.57	21.37
6	1.154	42.47	31.24	9.58	52.05	40.82	73.00	60.00	20.95	19.18
7	1.281	41.59	28.24	9.59	51.18	37.83	73.00	60.00	21.82	22.17
8	1.393	41.95	30.66	9.59	51.54	40.25	73.00	60.00	21.46	19.75
9	1.530	38.43	19.30	9.60	48.03	28.90	73.00	60.00	24.97	31.10
10	1.651	39.25	22.81	9.60	48.85	32.41	73.00	60.00	24.15	27.59

No.	Frequency [MHz]	RD QP [dB/μV]	RD AV [dB/μV]	C.F [dB]	Result QP [dB/μV]	Result AV [dB/μV]	Limit QP [dB/μV]	Limit AV [dB/μV]	Margin QP [dB]	Margin AV [dB]
11	1.764	40.98	27.74	9.60	50.58	37.34	73.00	60.00	22.42	22.66
12	1.884	40.84	28.63	9.61	50.45	38.24	73.00	60.00	22.55	21.76
13	2.009	40.38	27.40	9.61	49.99	37.01	73.00	60.00	23.01	22.99
14	2.115	39.59	25.72	9.61	49.20	35.33	73.00	60.00	23.80	24.67
15	2.254	38.90	22.05	9.62	48.52	31.67	73.00	60.00	24.48	28.33
16	7.154	40.48	31.53	9.71	50.19	41.24	73.00	60.00	22.81	18.76
17	7.289	39.91	30.45	9.71	49.62	40.16	73.00	60.00	23.38	19.84
18	7.393	41.14	33.33	9.71	50.85	43.04	73.00	60.00	22.15	16.96
19	7.579	40.87	32.12	9.72	50.59	41.84	73.00	60.00	22.41	18.16
20	7.829	40.50	28.80	9.72	50.22	38.52	73.00	60.00	22.78	21.48
21	7.988	39.15	29.16	9.72	48.87	38.88	73.00	60.00	24.13	21.12
22	8.011	38.78	29.42	9.72	48.50	39.14	73.00	60.00	24.50	20.86

5-2 Radiated Emissions

(Below 1 GHz) / V



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

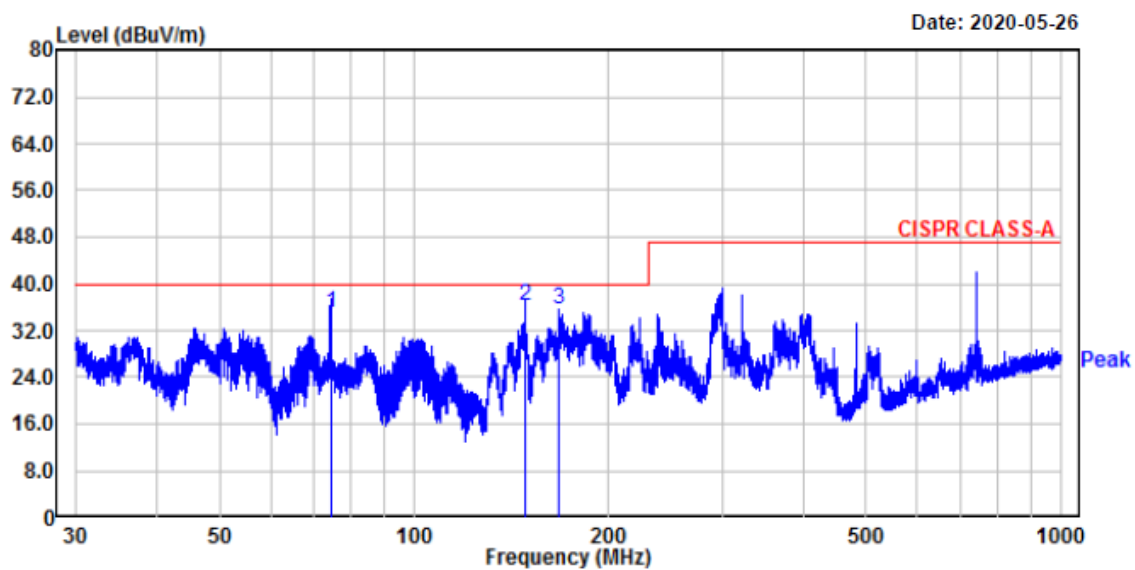
EUT/Model No.: XRN-6410DB4

Temp/Humi: 22 'C / 37 % R.H.

Test Mode : Operating mode

Tested by: KIM J H

Power : 120 V / 60 Hz



No.	Freq MHz	Reading dBuV	C.F dB	Result QP dBuV/m	Limit dBuV/m	Margin dB	Height cm	Angle deg	Polarity
1.	74.27	51.20	-16.26	34.94	40.00	5.06	100	268	vertical
2.	148.51	48.81	-12.57	36.24	40.00	3.76	104	313	vertical
3.	167.53	48.51	-12.74	35.77	40.00	4.23	100	301	vertical

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

-Continue

(Below 1 GHz) / H



4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
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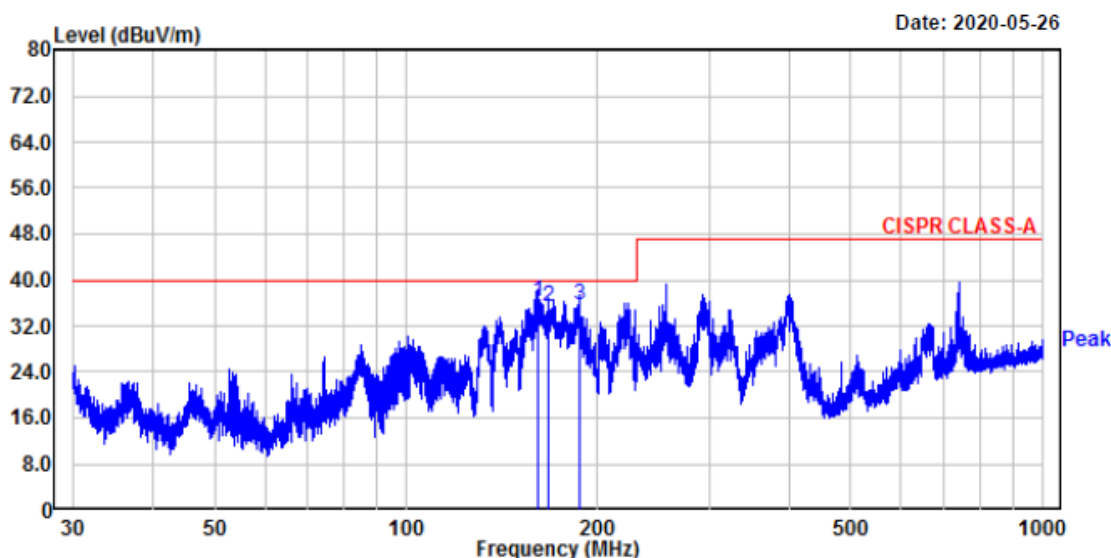
EUT/Model No.: XRN-6410DB4

Temp/Humi: 22 'C / 37 % R.H.

Test Mode : Operating mode

Tested by: KIM J H

Power : 120 V / 60 Hz



No.	Freq MHz	Reading dBuV	C.F dB	Result QP dBuV/m	Limit dBuV/m	Margin dB	Height cm	Angle deg	Polarity
1.	160.77	48.30	-12.18	36.12	40.00	3.88	358	15	horizontal
2.	167.75	48.21	-12.76	35.45	40.00	4.55	390	15	horizontal
3.	187.10	49.89	-14.24	35.65	40.00	4.35	400	135	horizontal

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

-Continue

(Above 1 GHz) / V

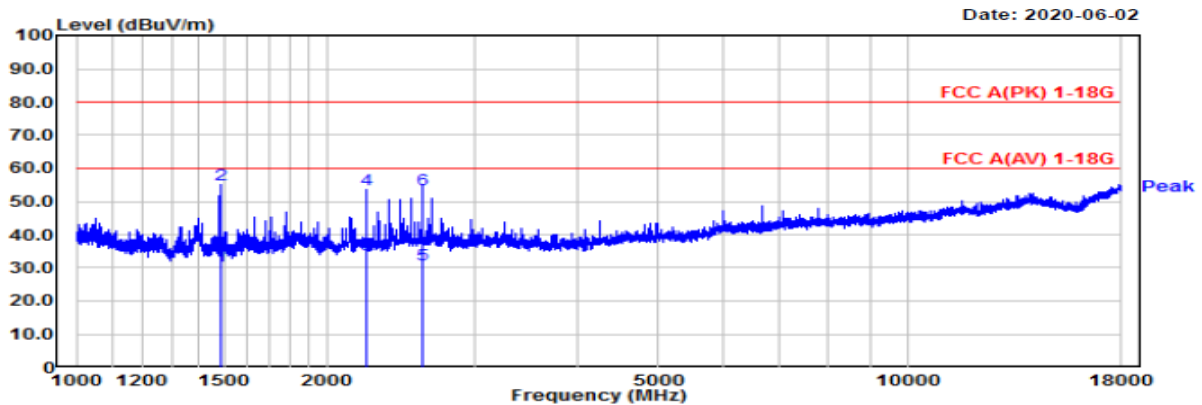
EUT/Model No.: XRN-6410DB4

Temp/Humi: 23 °C / 44 % R.H.

Test Mode : Operating mode

Tested by: KIM J H

Power : 120 V / 60 Hz



(Above 1 GHz) / H

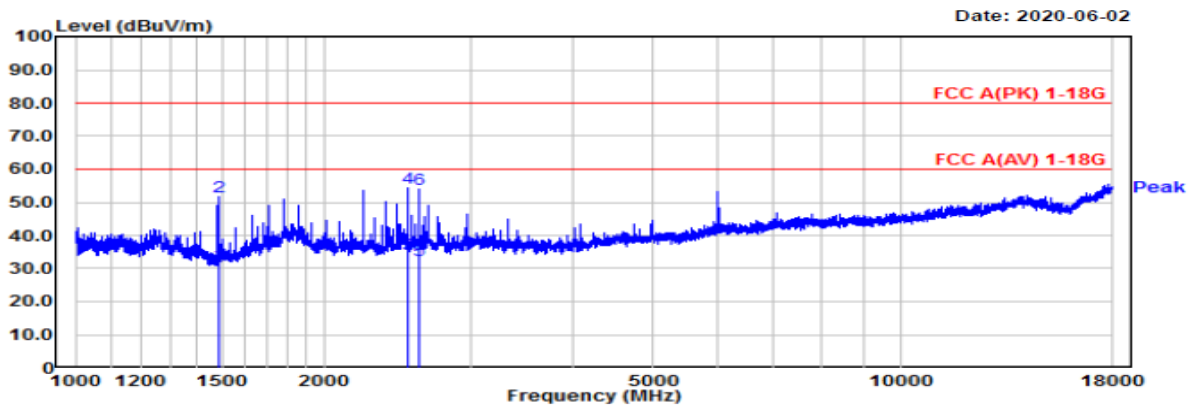
EUT/Model No.: XRN-6410DB4

Temp/Humi: 23 °C / 44 % R.H.

Test Mode : Operating mode

Tested by: KIM J H

Power : 120 V / 60 Hz



Manufacture : Hanwha Techwin(Tianjin) Co., Ltd.

Test Date

Temp.:

Humidity:

Distance

Model : XRN-6410DB4

2020-06-02

23.00

44.00

3.8

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
1484.77	63.72	43.35	-10.07	53.65	33.28	80.00	60.00	26.35	26.72	122	23	H
2524.40	61.56	41.65	-5.23	56.33	36.42	80.00	60.00	23.67	23.58	189	113	H
2598.43	60.85	39.55	-4.89	55.96	34.66	80.00	60.00	24.04	25.34	251	138	H
1484.77	67.07	42.85	-10.07	57.00	32.78	80.00	60.00	23.00	27.22	138	291	V
2226.95	61.31	41.65	-5.79	55.52	35.86	80.00	60.00	24.48	24.14	106	83	V
2598.43	60.65	37.95	-4.89	55.76	33.06	80.00	60.00	24.24	26.94	169	72	V

Conclusions

Product models "**XRN-6410DB4**" meets all of the Class A requirements of the FCC Part 15, Subpart B. Limits of radio disturbance characteristics of ITE).

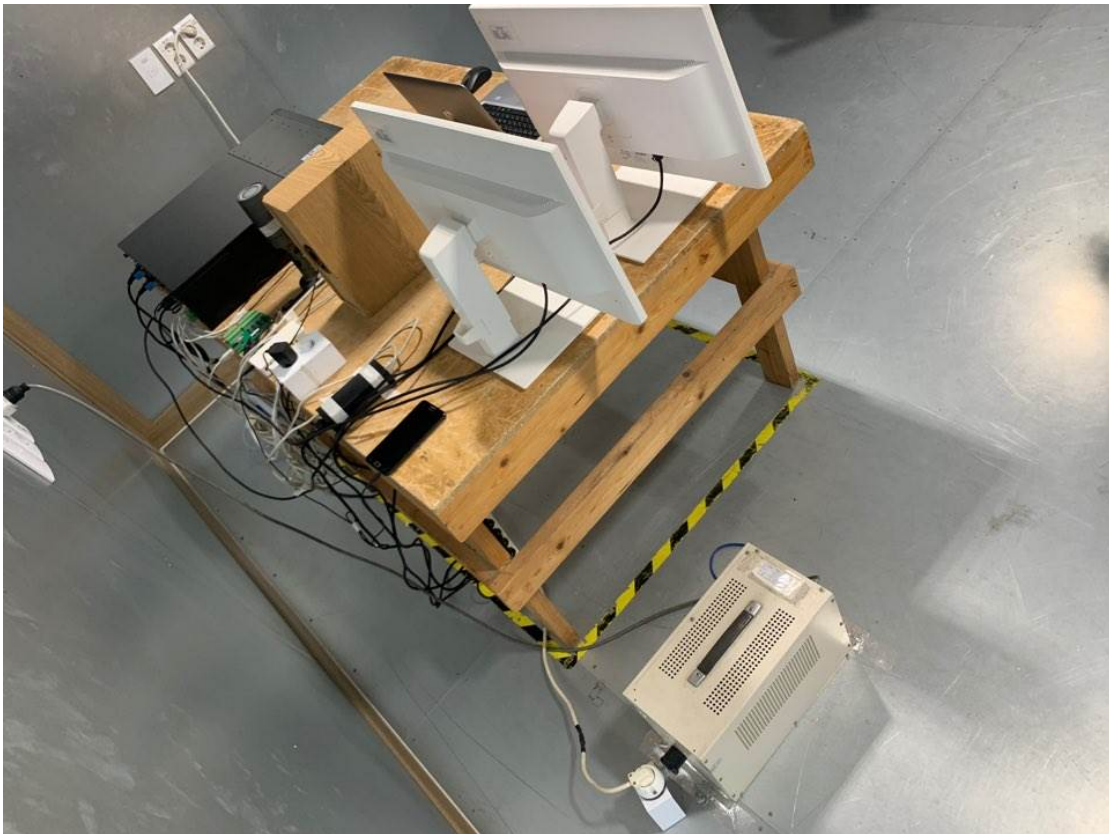
(Refer to Test Specification and Test Results in the "LTA certification", page 4 and 5)

- The highest internal source of an EUT is higher than 108 MHz, the measurement shall be made up to 18 GHz.

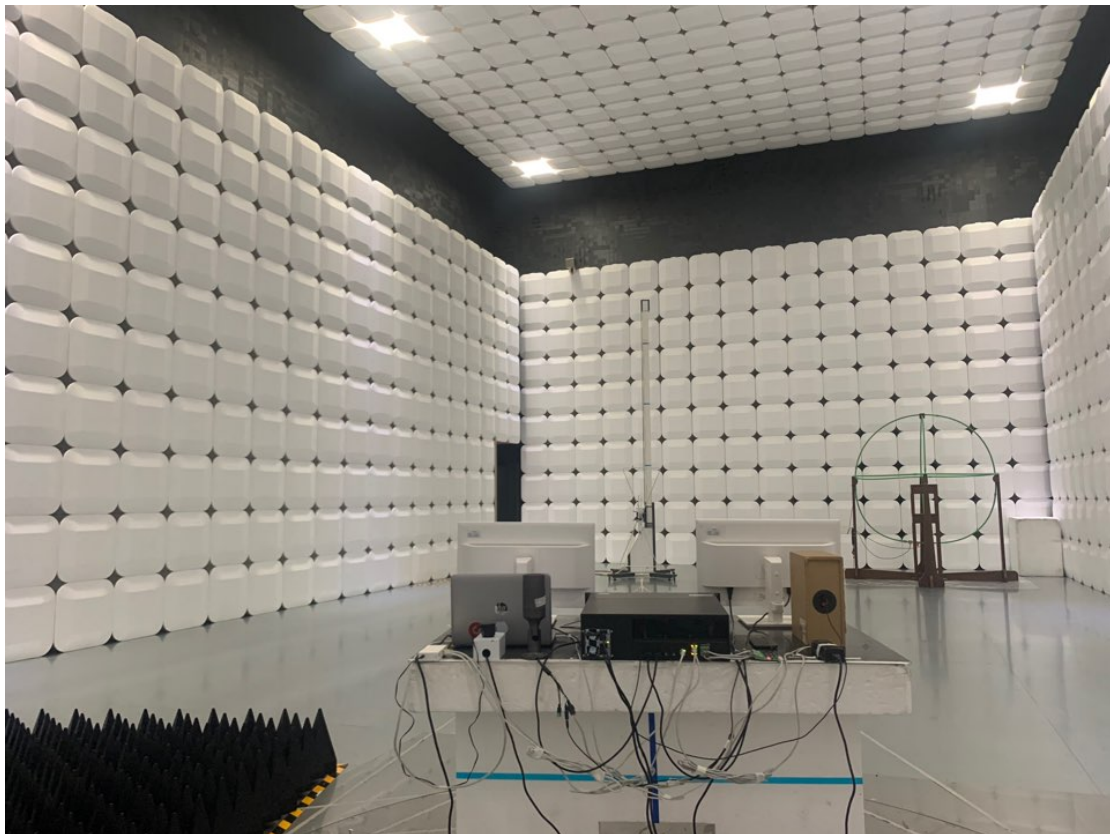
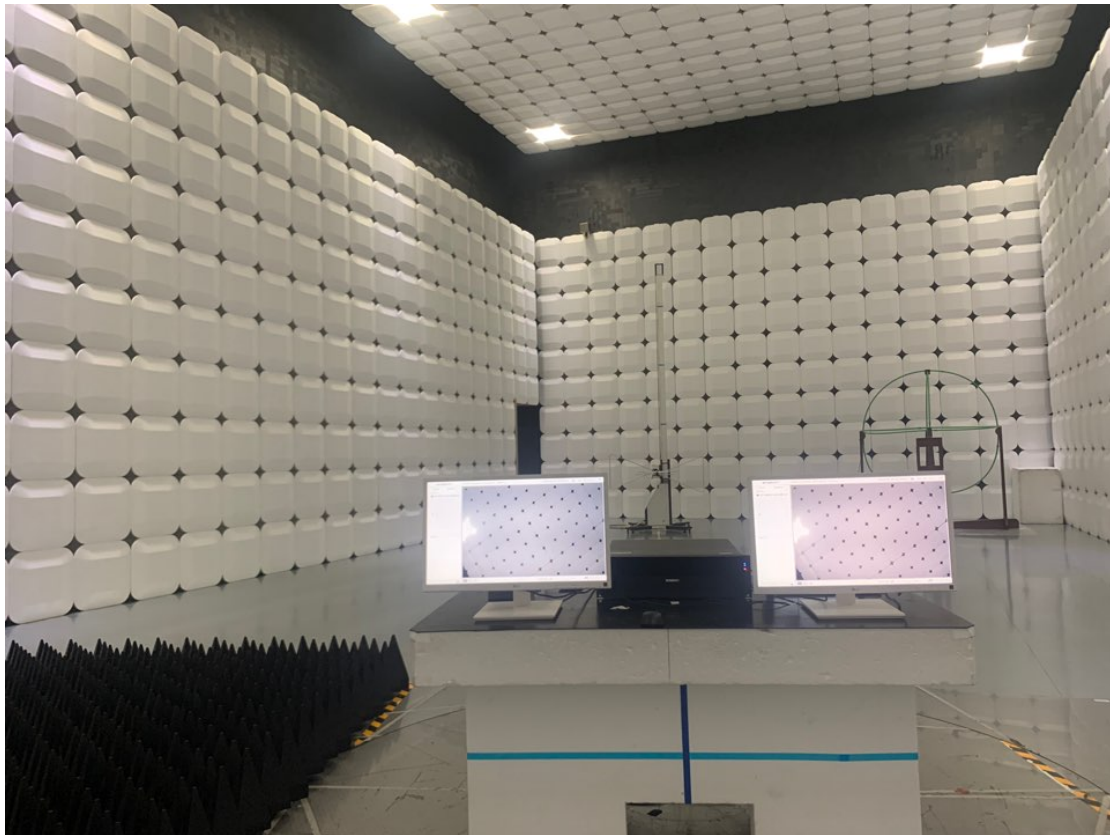
(The highest internal source of an EUT : 3.1 GHz)

Photograph of the measurements

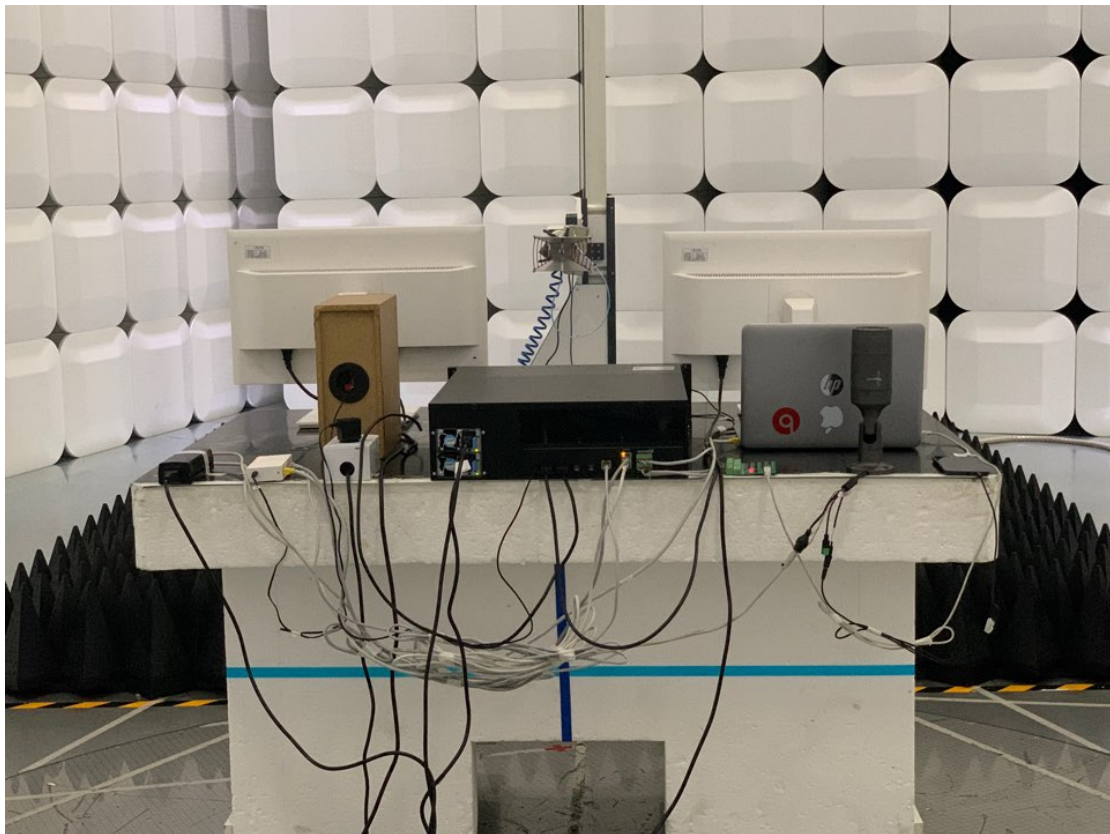
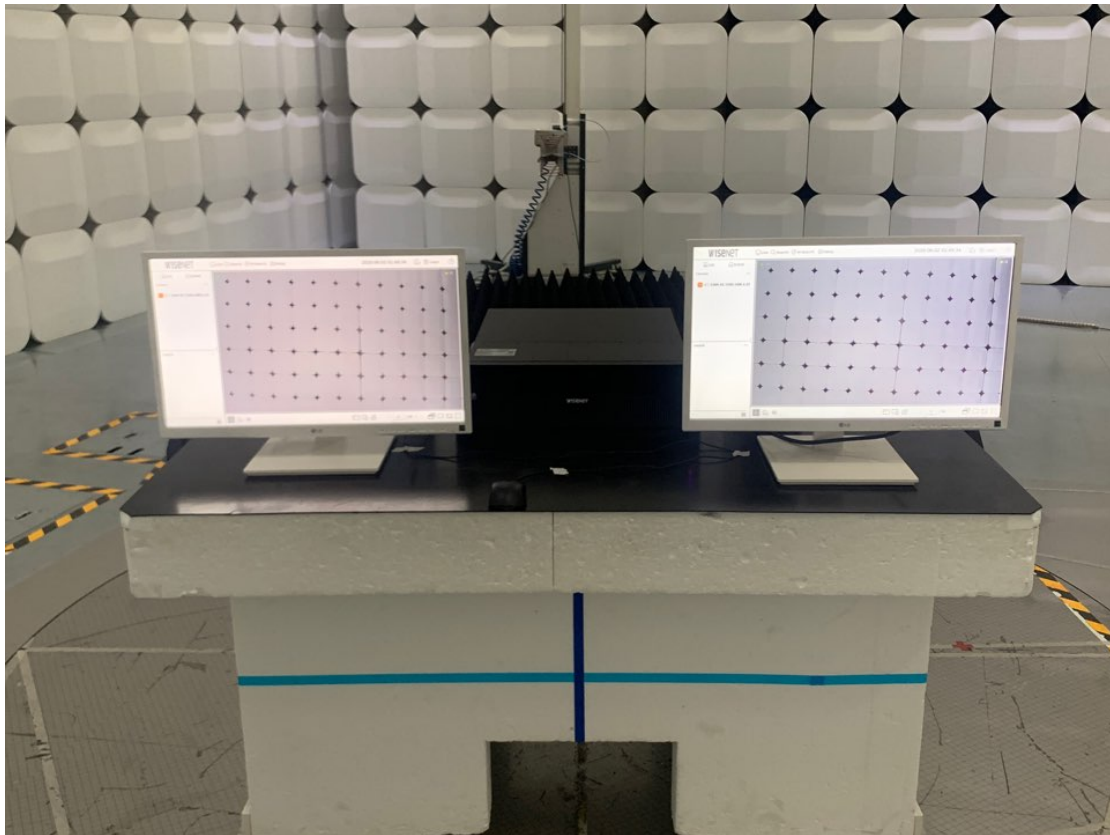
Conducted Emissions



Radiated Emissions (Below 1 GHz)



Radiated Emissions (Above 1 GHz)



Photograph of the EUT

EUT



EUT

