

FCC Test Report

Client Name : Shenzhen JHC Technology Development Co., LTD

Address : B Area, 3rd floor, A Block Junxiangda Building, N0.9
Zhongshanyuan Road, Nanshan Distr., Shenzhen, China

Product Name : Edge Computing System

Date : May 06, 2022



Shenzhen Anbotech Compliance Laboratory Limited



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TEST REPORT

Applicant : Shenzhen JHC Technology Development Co., LTD

Manufacturer : Shenzhen JHC Technology Development Co., LTD

Product Name : Edge Computing System

Model No. : BRAV-7501-S001, BRAV-7501-S002, BRAV-7501-S003, BRAV-7501-S004,
BRAV-7501-T001, BRAV-7501-T002, BRAV-7501-T003, BRAV-7501-T004

Trade Mark : JHCTECH

Rating(s) :
Input: AC 110V-240V, 0.477A, 105W

Test Standard(s) : FCC Rules and Regulations Part 15 Subpart B: 2020

Test Method(s) : ANSI C63.4-2014

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class A limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited

Date of Receipt: Apr. 15, 2022

Date of Test: Apr. 15~29, 2022

Prepared By:

Yee Huang

(Yee Huang)

Approved & Authorized Signer:

KingKong Jin

(KingKong Jin)

1. General Information

1.1. Client Information

Applicant	:	Shenzhen JHC Technology Development Co., LTD
Address	:	B Area, 3rd floor, A Block Junxiangda Building, No.9 Zhongshanyuan Road, Nanshan Distr., Shenzhen, China
Manufacturer	:	Shenzhen JHC Technology Development Co., LTD
Address	:	B Area, 3rd floor, A Block Junxiangda Building, No.9 Zhongshanyuan Road, Nanshan Distr., Shenzhen, China
Factory	:	Shenzhen JHC Technology Development Co., LTD
Address	:	B Area, 3rd floor, A Block Junxiangda Building, No.9 Zhongshanyuan Road, Nanshan Distr., Shenzhen, China

1.2. Description of Device (EUT)

Product Name	:	Edge Computing System
Model No.	:	BRAV-7501-S001, BRAV-7501-S002, BRAV-7501-S003, BRAV-7501-S004, BRAV-7501-T001, BRAV-7501-T002, BRAV-7501-T003, BRAV-7501-T004 (Note: All samples are the same except the model number & CPU models, so we prepare "BRAV-7501-S001" for test only.)
Trade Mark	:	JHCTECH
Test Power Supply	:	AC 120V, 60Hz
Test Sample No.	:	1-1-1
Product Description	:	Adapter: N/A
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

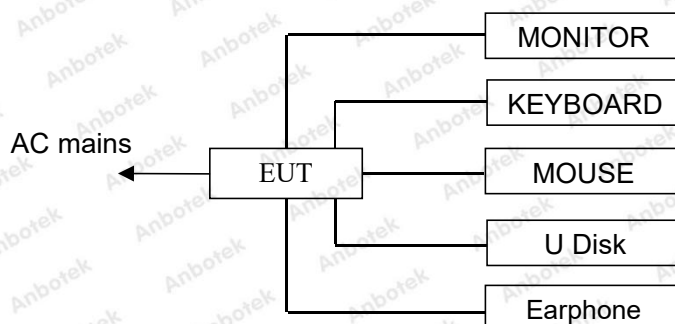
1.3. Auxiliary Equipment Used During Test

MONITOR	:	Manufacturer: DELL
		M/N: E1914Hf S/N: CN-034H2R-72872-419-AFJB Input:100V-240V, 1.5A, 50/60Hz TUV-GS, FCC, CE, KCC, VCCI
KEYBOARD	:	Manufacturer: DELL
		M/N: SK-8120 S/N: CN-0DJ365-71616-49J-0MVR-A00 Input Rating: DC 5V, 0.05A CE, FCC, VCCI, KCC, TUV-GS Cable: 1.8m, unshielded
MOUSE	:	Manufacturer: DELL
		M/N: MS111-T S/N: CN-0KW2YH-71616-488-1CBJ Input Rating: DC 5V, 0.1A Cable: 1.8m, unshielded CE, FCC, VCCI, KCC, TUV-GS

1.4. Description of Test Mode

Pretest Mode	Description
Mode 1	On

For Mode 1 Block Diagram of Test Setup



1.5. Test Summary

Test Items	Test Mode	Status
Power Line Conducted Emission Test (150KHz To 30MHz)	Mode 1	P
Radiated Emission Test (30MHz To 6GHz)	Mode 1	P
P) Indicates "PASS". N) Indicates "Not applicable".		

1.6. Test Equipment List

Conducted Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Oct. 22, 2021	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	Jul 05, 2021	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 22, 2021	1 Year
4.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 22, 2021	1 Year
5.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A



Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 22, 2021	1 Year
2.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 22, 2021	2 Year
3.	Pre-amplifier	SONOMA	310N	186860	Oct. 22, 2021	1 Year
4.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A
5.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Oct. 22, 2021	1 Year
6.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Oct. 22, 2021	2 Year

1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB
Disturbance Uncertainty	:	Ud = 3.4 dB

1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission.

The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518128



2. Power Line Conducted Emission Test

2.1. Test Standard and Limit

Test Standard	FCC Part 15 Subpart B
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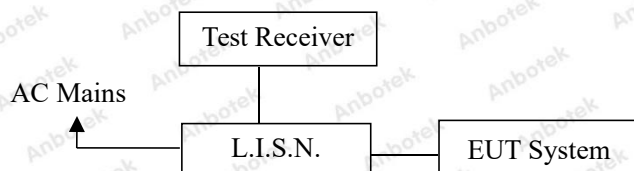
Power Line Conducted Emission Measurement Limits (FCC Part 15 Class A)

Test Limit	Frequency (MHz)	At mains terminals (dBμV)	
		Quasi-peak Level	Average Level
	0.15 ~ 0.50	79 *	66 *
	0.50 ~ 30.00	73	60

Remark: (1) The lower limit shall apply at the transition frequencies.

(2) * Decreasing linearly with logarithm of frequency.

2.2. Test Setup



2.3. EUT Configuration on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

2.4. Operating Condition of EUT

2.4.1. Setup the EUT as shown in Section 2.2.

2.4.2. Turn on the power of all equipments.

2.4.3. Let the EUT work in test mode and measure it.

2.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

All the test results are listed in Section 2.6.

2.6. Test Results

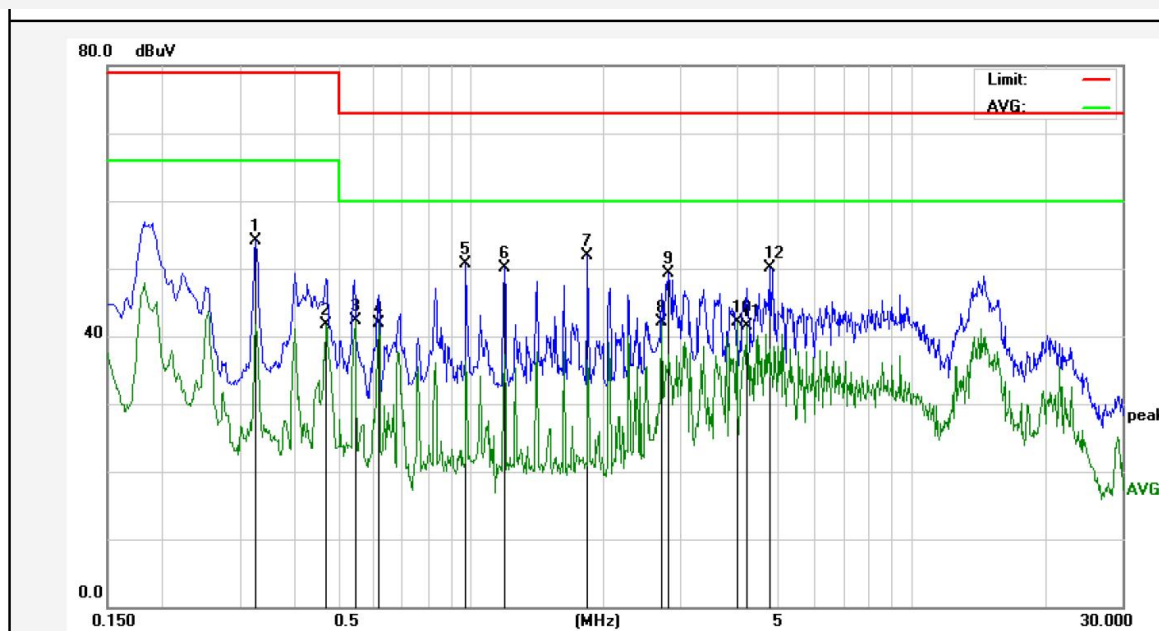
PASS

The test curves are shown in the following pages.



Conducted Emission Test Data

Test Site: 1# Shielded Room
Test Specification: AC 120V, 60Hz
Comment: Live Line
Temp.: 23.3°C Hum.: 47%

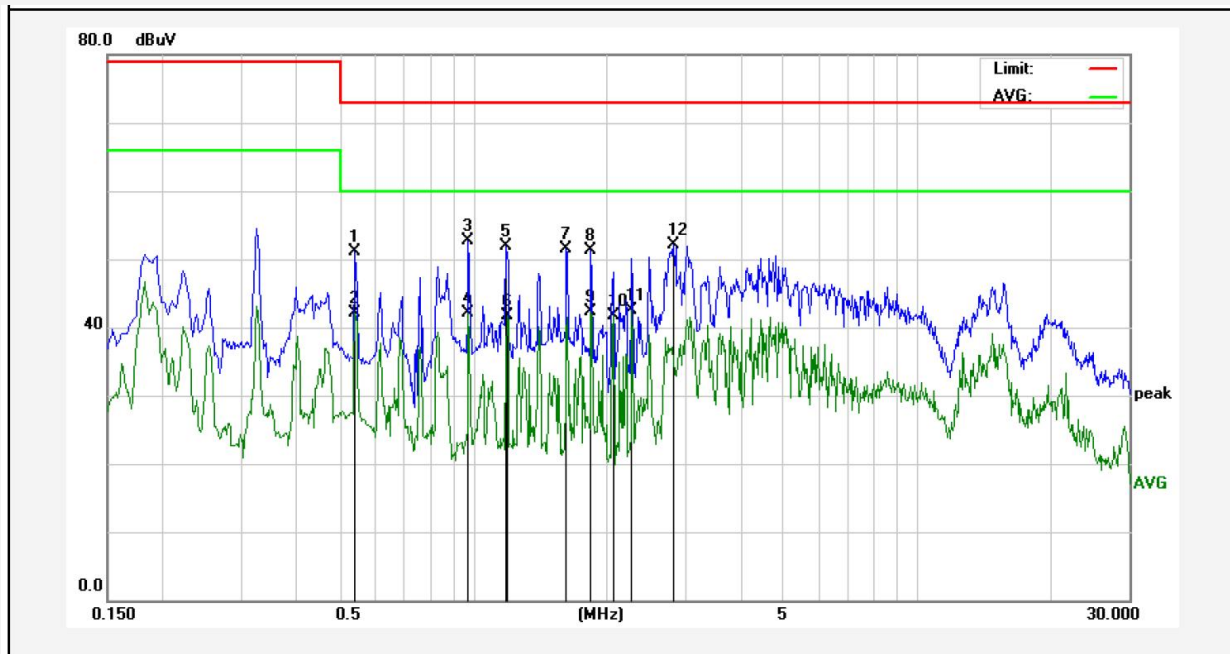


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.3260	53.89	0.12	54.01	79.00	-24.99	QP	
2	0.4700	41.62	0.14	41.76	66.00	-24.24	AVG	
3	0.5463	42.19	0.15	42.34	60.00	-17.66	AVG	
4	0.6180	41.75	0.15	41.90	60.00	-18.10	AVG	
5	0.9780	50.54	0.15	50.69	73.00	-22.31	QP	
6	1.1940	49.97	0.14	50.11	73.00	-22.89	QP	
7	1.8460	51.77	0.12	51.89	73.00	-21.11	QP	
8	2.7139	42.05	0.12	42.17	60.00	-17.83	AVG	
9	2.7980	49.25	0.12	49.37	73.00	-23.63	QP	
10	4.0220	41.98	0.11	42.09	60.00	-17.91	AVG	
11	4.2379	41.40	0.11	41.51	60.00	-18.49	AVG	
12	4.7499	50.07	0.11	50.18	73.00	-22.82	QP	

Note: Result=Reading+Factor Over Limit=Result-Limit

Conducted Emission Test Data

Test Site: 1# Shielded Room
Test Specification: AC 120V, 60Hz
Comment: Neutral Line
Temp.: 23.3°C Hum.: 47%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.5420	51.00	0.15	51.15	73.00	-21.85	QP	
2	0.5420	41.94	0.15	42.09	60.00	-17.91	AVG	
3	0.9780	52.63	0.15	52.78	73.00	-20.22	QP	
4	0.9780	41.99	0.15	42.14	60.00	-17.86	AVG	
5	1.1900	51.83	0.14	51.97	73.00	-21.03	QP	
6	1.1940	41.62	0.14	41.76	60.00	-18.24	AVG	
7	1.6260	51.42	0.13	51.55	73.00	-21.45	QP	
8	1.8460	51.23	0.12	51.35	73.00	-21.65	QP	
9	1.8460	42.17	0.12	42.29	60.00	-17.71	AVG	
10	2.0660	41.58	0.12	41.70	60.00	-18.30	AVG	
11	2.2820	42.38	0.12	42.50	60.00	-17.50	AVG	
12	2.8260	51.91	0.12	52.03	73.00	-20.97	QP	

Note: Result=Reading+Factor Over Limit=Result-Limit

3. Radiated Emission Test

3.1. Test Standard and Limit

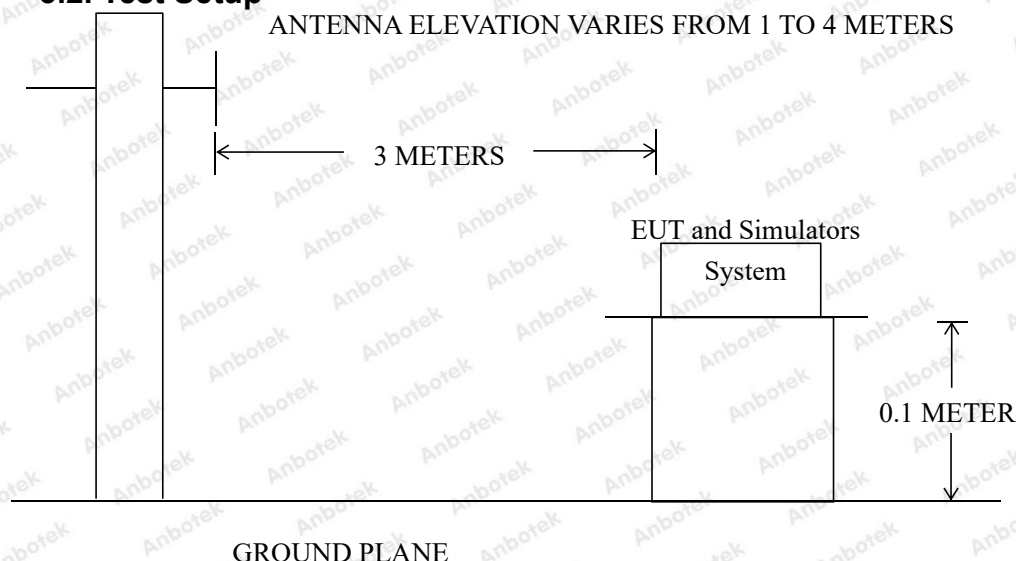
Test Standard	FCC Part 15 Subpart B
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Radiated Emission Test Limit (Subpart B Class A)

30~1000 MHz				
Test Limit	Frequency (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT	
			μV/m	(dBμV/m)
	30 ~ 88	3	300	49.5
	88 ~ 216	3	500	54.0
	216 ~ 960	3	700	56.9
	960 ~ 1000	3	1000	60.0
1~6 GHz				
Test Limit	Frequency (GHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT	
			Average (μV/m)	Peak (dBμV/m)
	1 ~ 6	3	59.5	79.5

Remark: (1) Emission level (dB)μV = 20 log Emission level μV/m
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
 (4) $3M \text{ Limit} = 10M \text{ Limit} + k$ $k = 20 \log(D1/D2) = 10$
 $3M \text{ Limit} = 10M \text{ Limit} + 10$
 (D1= 10M D2=3M)

3.2. Test Setup



3.3. EUT Configuration on Measurement

The following equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT as shown in Section 3.2.

3.4.2. Turn on the power of all equipments.

3.4.3. Let the EUT work in test mode and measure it.

3.5. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.1 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (Trilog Broadband Antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

The test receiver/spectrum was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.

Note:

The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak/ Average detection at frequency above 1GHz.

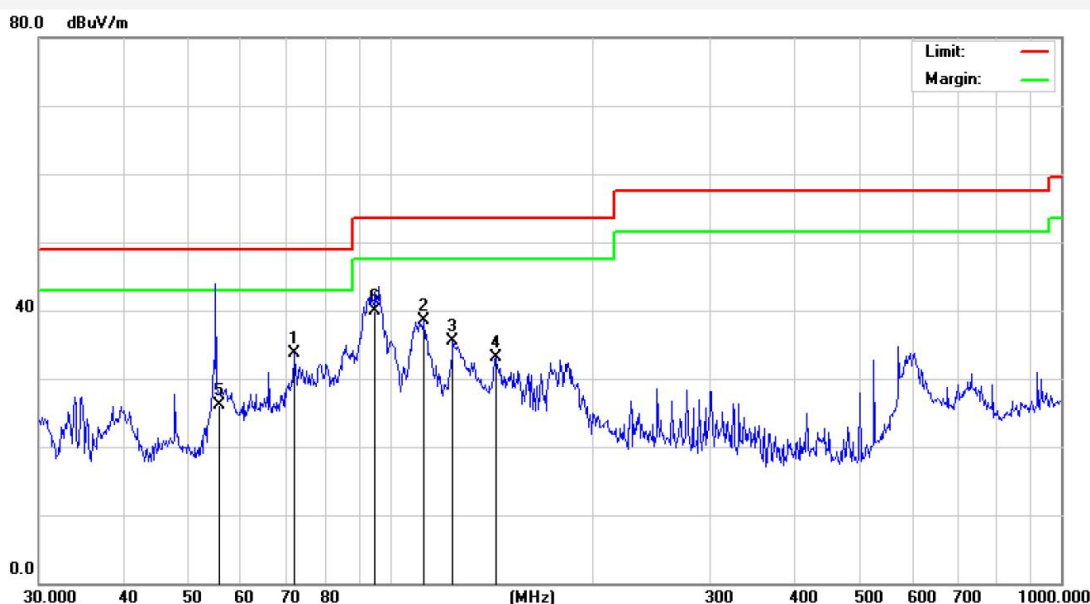
The frequency range from 30MHz to 6GHz is checked.

The test results are listed in Section 3.6.

3.6. Test Results

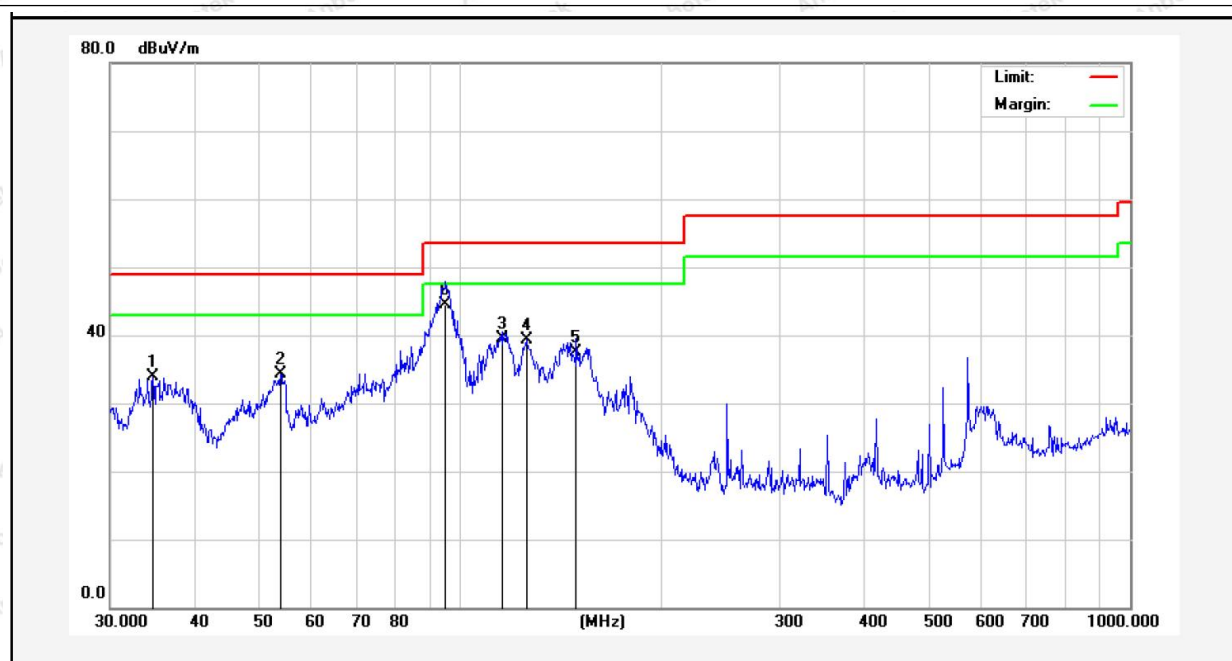
PASS

The test curves are shown in the following pages.

Test item: Radiation Test**Polarization:****Horizontal****Standard:** (RE)FCC Part 15 Subpart B(Class A)
30~1000MHz**Power Source:****AC 120V, 60Hz****Distance:** 3m**Temp.(°C)/Hum.(%RH):** 23.6(°C)/47%RH

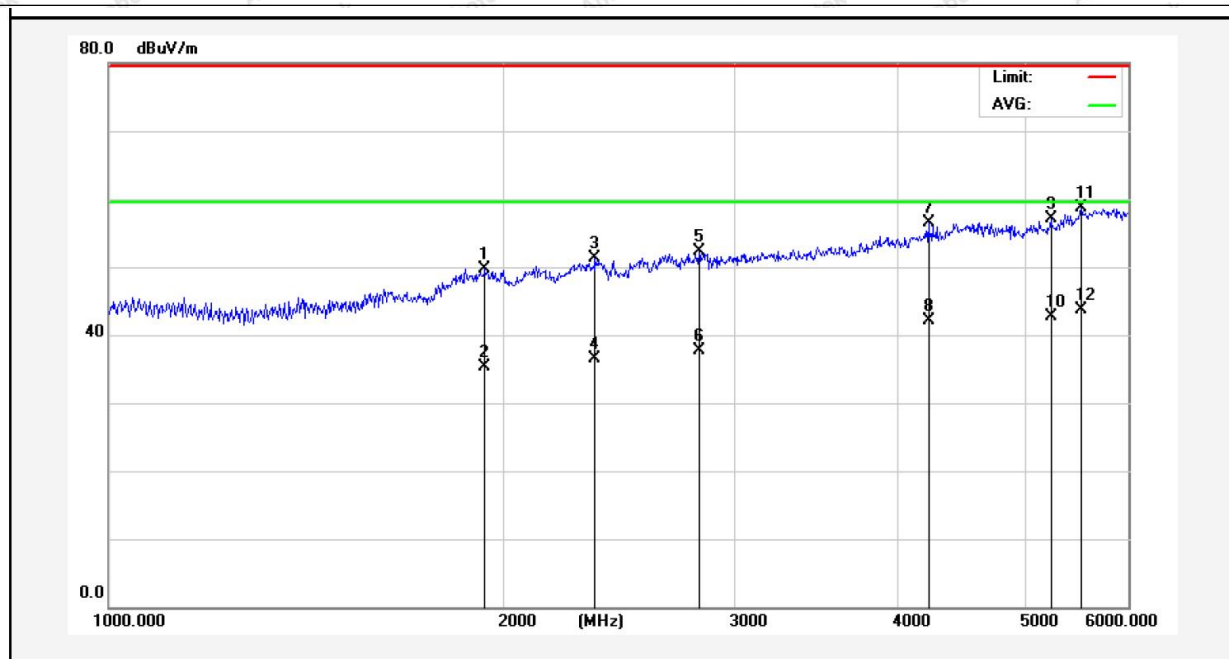
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	72.0843	55.76	-22.15	33.61	49.00	-15.39	QP			
2	112.5244	61.80	-23.39	38.41	53.50	-15.09	QP			
3	124.1330	58.83	-23.36	35.47	53.50	-18.03	QP			
4	143.8295	56.09	-22.99	33.10	53.50	-20.40	QP			
5	55.6964	43.68	-17.61	26.07	49.00	-22.93	QP			
6	95.1472	61.53	-21.71	39.82	53.50	-13.68	QP			

Note: Result=Reading+Factor Over Limit=Result-Limit

Test item: Radiation Test**Polarization:****Vertical****Standard:** (RE)FCC Part 15 Subpart B(Class A)
30~1000MHz**Power Source:** AC 120V, 60Hz**Distance:** 3m**Temp.(°C)/Hum.(%RH):** 23.6(°C)/47%RH

No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	34.7602	51.17	-17.19	33.98	49.00	-15.02	QP			
2	53.8818	51.56	-17.21	34.35	49.00	-14.65	QP			
3	115.3205	58.68	-19.12	39.56	53.50	-13.94	QP			
4	125.4457	60.08	-20.77	39.31	53.50	-14.19	QP			
5	148.9625	59.62	-22.10	37.52	53.50	-15.98	QP			
6	94.8530	61.78	-17.23	44.55	53.50	-8.95	QP			

Note: Result=Reading+Factor Over Limit=Result-Limit

Test item: Radiation Test**Polarization:****Horizontal****Standard:** (RE)FCC Part 15 Subpart B(Class A)
1~6GHz**Power Source:****AC 120V, 60Hz****Distance:** 3m**Temp.(°C)/Hum.(%RH):** 24.1(°C)/48%RH

No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1937.036	41.34	8.46	49.80	79.50	-29.70	peak			
2	1937.036	26.88	8.46	35.34	59.50	-24.16	AVG			
3	2350.597	41.68	9.66	51.34	79.50	-28.16	peak			
4	2350.597	26.94	9.66	36.60	59.50	-22.90	AVG			
5	2821.952	41.10	11.15	52.25	79.50	-27.25	peak			
6	2821.952	26.60	11.15	37.75	59.50	-21.75	AVG			
7	4223.122	43.02	13.57	56.59	79.50	-22.91	peak			
8	4223.122	28.60	13.57	42.17	59.50	-17.33	AVG			
9	5236.146	40.98	16.18	57.16	79.50	-22.34	peak			
10	5236.146	26.59	16.18	42.77	59.50	-16.73	AVG			
11	5525.306	41.94	16.79	58.73	79.50	-20.77	peak			
12	5525.306	26.87	16.79	43.66	59.50	-15.84	AVG			

Note: Result=Reading+Factor Over Limit=Result-Limit

Test item: Radiation Test

Polarization:

Vertical

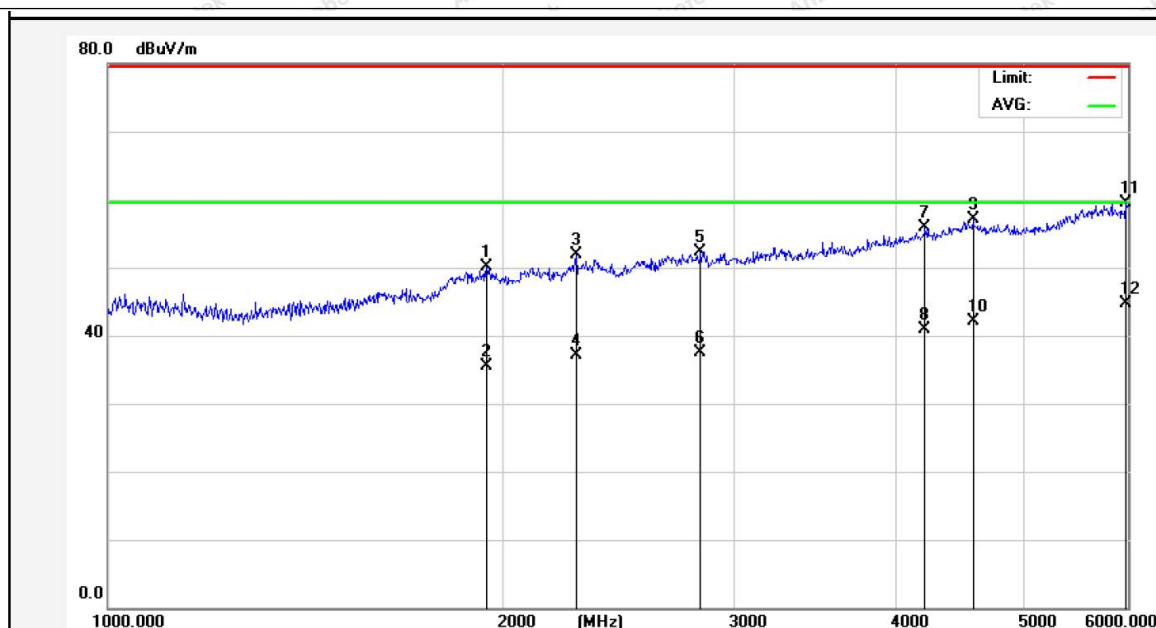
Standard: (RE)FCC Part 15 Subpart B(Class A)
1~6GHz

Power Source:

AC 120V, 60Hz

Distance: 3m

Temp.(°C)/Hum.(%RH): 24.1(°C)/48%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1943.990	41.49	8.52	50.01	79.50	-29.49	peak			
2	1943.990	27.00	8.52	35.52	59.50	-23.98	AVG			
3	2275.996	42.47	9.52	51.99	79.50	-27.51	peak			
4	2275.996	27.49	9.52	37.01	59.50	-22.49	AVG			
5	2832.082	41.21	11.17	52.38	79.50	-27.12	peak			
6	2832.082	26.33	11.17	37.50	59.50	-22.00	AVG			
7	4200.482	42.41	13.48	55.89	79.50	-23.61	peak			
8	4200.482	27.45	13.48	40.93	59.50	-18.57	AVG			
9	4569.538	42.25	14.81	57.06	79.50	-22.44	peak			
10	4569.538	27.33	14.81	42.14	59.50	-17.36	AVG			
11	5978.537	42.17	17.38	59.55	79.50	-19.95	peak			
12	5978.537	27.36	17.38	44.74	59.50	-14.76	AVG			

Note: Result=Reading+Factor Over Limit=Result-Limit

APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Power Line Conducted Emission Test



Photo of Radiated Emission Test



APPENDIX II -- Photo documentation

Photo 1**Photo 2**

Photo 3



Photo 4



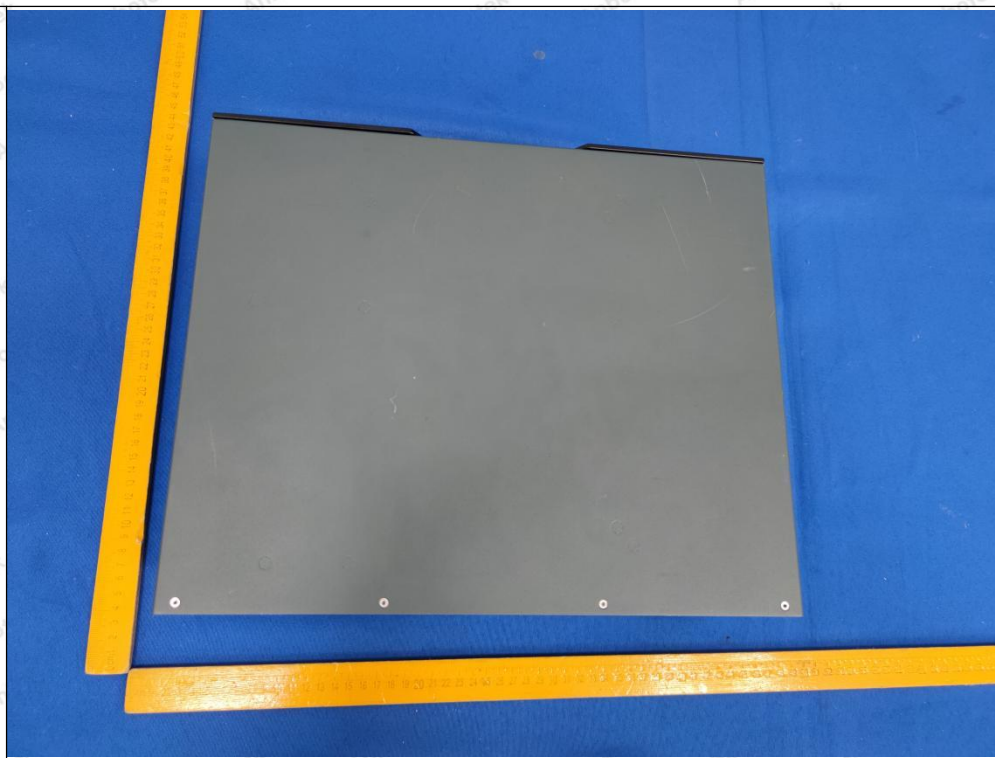
Photo 5**Photo 6**

Photo 7

----- End of Report -----