

FCC Test Report

Client Name : ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD

Client Address : ROOM 709,SANJIANG BUILDING, NO.170
NANYANG ROAD,HUIJI DISTRICT,
ZHENGZHOU, HENAN, China

Product Name : Tour Guide System

Report Date : Nov. 14, 2022

Shenzhen Anbotech Compliance Laboratory Limited



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Report No.: 18220WC20243501

FCC ID: 2A3NOTT111

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TEST REPORT

Applicant : ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Manufacturer : ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Product Name : Tour Guide System
Model No. : TT111
Trade Mark : RETEKESS
Rating(s) : Input: 5V $\overline{\text{=}}$ 1A (with DC 3.7V, 520mAh Battery inside)

Test Standard(s) : FCC 47 CFR Part 15 Subpart B: 2022

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 47 CFR Part 15 Subpart B 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:

Oct. 10, 2022

Date of Test:

Oct. 10~28, 2022

Prepared By:

Tu Tu Hong

(TuTu Hong)

Approved & Authorized Signer:

Kingkong Jin

(Kingkong Jin)



1. General Information

1.1. Client Information

Applicant	:	ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Address	:	ROOM 709,SANJIANG BUILDING, NO.170 NANYANG ROAD,HUIJI DISTRICT, ZHENGZHOU, HENAN, China
Manufacturer	:	ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Address	:	ROOM 709,SANJIANG BUILDING, NO.170 NANYANG ROAD,HUIJI DISTRICT, ZHENGZHOU, HENAN, China
Factory	:	Henan Eshow Electronic Commerce Co., Ltd.
Address	:	Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District,Zhengzhou, Henan, China

1.2. Description of Device (EUT)

Product Name	:	Tour Guide System
Model No.	:	TT111
Trade Mark	:	RETEKESS
Test Power Supply	:	AC 120V, 60Hz for Adapter
Test Sample No.	:	1-2-1(Normal Sample)
Adapter	:	N.A
RF Specification		
Operation Frequency	:	902.25-926.75MHz (RX only)
Modulation Type	:	FM
Antenna Type	:	Monopole antenna
Antenna Gain(Peak)	:	0.67 dBi (Provided by customer)
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		



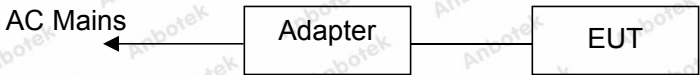
1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
Adapter	M/N: A2023 Input: AC 100-240V 0.7A 50-60Hz USB1 Output: DC 5V 2.4A USB2 Output: DC 5V 2.4A

1.4. Description of Test Mode

Pretest Mode	Description
Mode 1	Charging+working Mode

For Mode 1 Block Diagram of Test Setup



1.5. Test Summary

Standard Section	Test Items	Test Mode	Status
§15.107	Power Line Conducted Emission Test	Mode 1	P
§15.109	Radiated Emission Test (Below 1 GHz)	Mode 1	P
§15.109	Radiated Emission Test (Above 1GHz)	Mode 1	P
P) Indicates “PASS”. F) Indicates “Fail”. N) Indicates “Not applicable”.			



1.6. Test Equipment List☒ Power Line 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. 23, 2022	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	Jul. 05, 2022	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 13, 2022	1 Year
4.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 22, 2022	1 Year
5.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A

☒ Radiated Emission Test (Below 1 GHz)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 23, 2022	1 Year
2.	Pre-amplifier	SONOMA	310N	186860	Oct. 23, 2022	1 Year
3.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 23, 2022	1 Year
4.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A

☒ Radiated Emission Test (Above 1GHz)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 23, 2022	1 Year
2.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A
3.	EMI Preamplifier	SKET Electronic	LNPA-0118G- 45	SKET-PA-0 02	Oct. 13, 2022	1 Year
4.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	Oct. 16, 2022	3 Year



1.7. Measurement Uncertainty

Radiation	:	Ur = 4.46 dB (Horizontal)
Uncertainty(30MHz-1GHz)	:	Ur = 5.04 dB (Vertical)
Radiation	:	Ur = 4.92 dB (Horizontal)
Uncertainty(1GHz-6GHz)	:	Ur = 4.92 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 47 CFR Part 15 Subpart B

☐ Limits for conducted emission at the AC mains power ports of Class A equipment

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0
0.50 ~ 30.00	73.0	60.0

Remark: The lower limit shall apply at the transition frequencies.☒ Limits for conducted emission at the AC mains power ports of Class B equipment

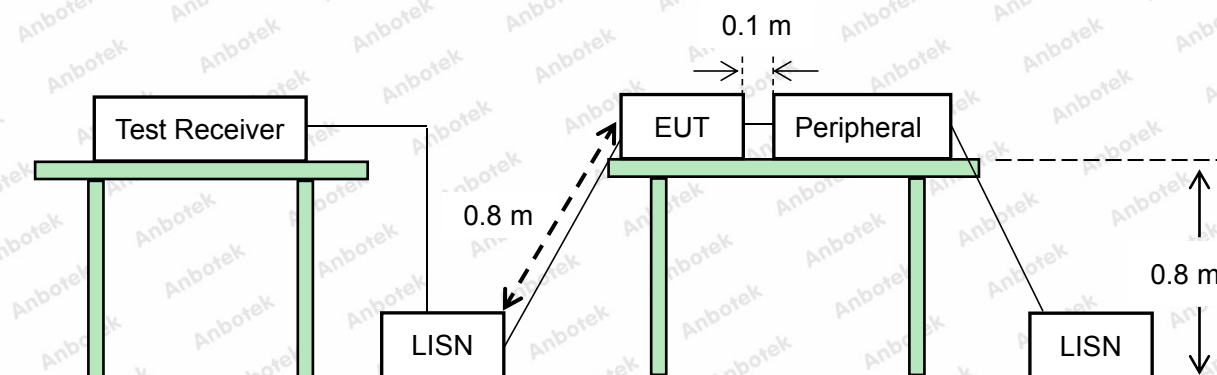
Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

Remark:

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

(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

2.2. Test Setup



2.3. Test Procedure

The table-top EUT is placed on a non-conductive table 0.8 m above the horizontal ground reference plane, and the back of the EUT is 0.4 m away from the vertical ground reference plane, and at least 0.8 m from any other metal surface or ground plane. The floor-standing EUT is placed on an insulating support 0.1 m above the horizontal ground reference plate, at least 0.8 m away from other metal objects.

Connect EUT to the power mains through an LISN. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the center into a bundle no longer than 0.4 m, so that its length is shortened to 1 m. All the peripherals are connecting to the other LISN.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest disturbance with respect to the limit was found by investigating disturbances at a number of significant frequencies. The probable frequency of maximum disturbance had been found and that the associated cable and EUT configuration and mode of operation had been identified.

Set the test-receiver to quasi peak detect function and average detect function, and to measure the conducted emissions values.

2.4. Test Results

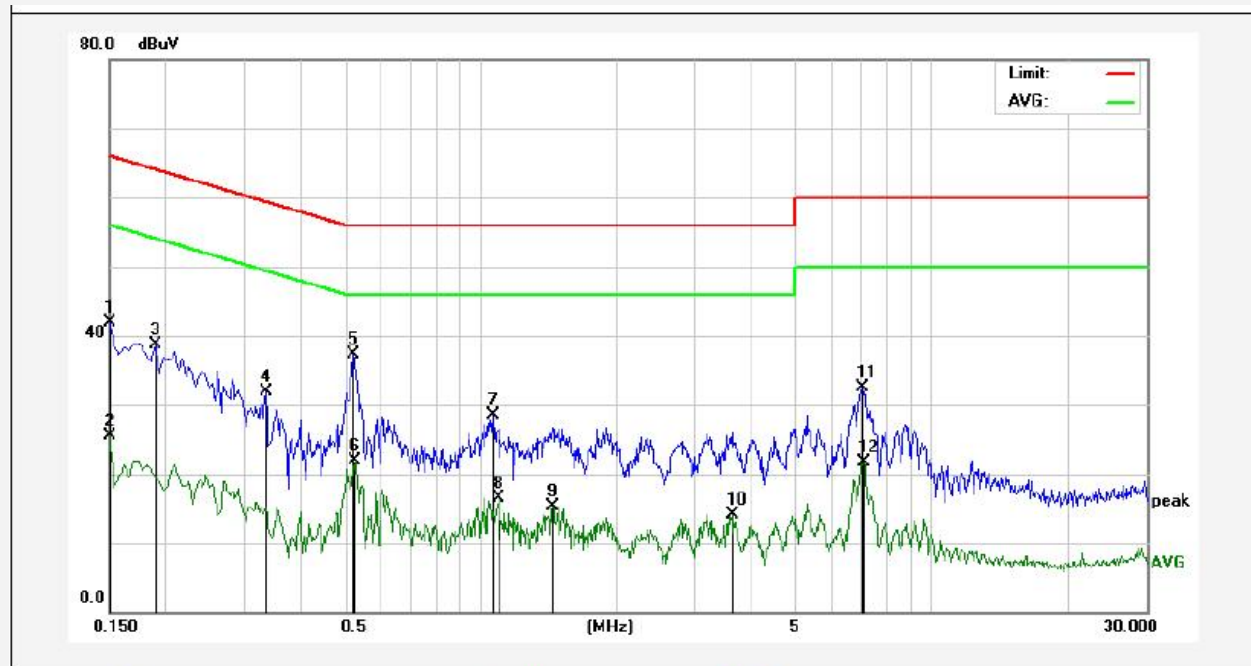
PASS

The test curves are shown in the following pages.



Power Line Conducted Test Data

Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 120V, 60Hz for Adapter
Comment: Live Line
Temp.: 22.7°C Hum.: 56%



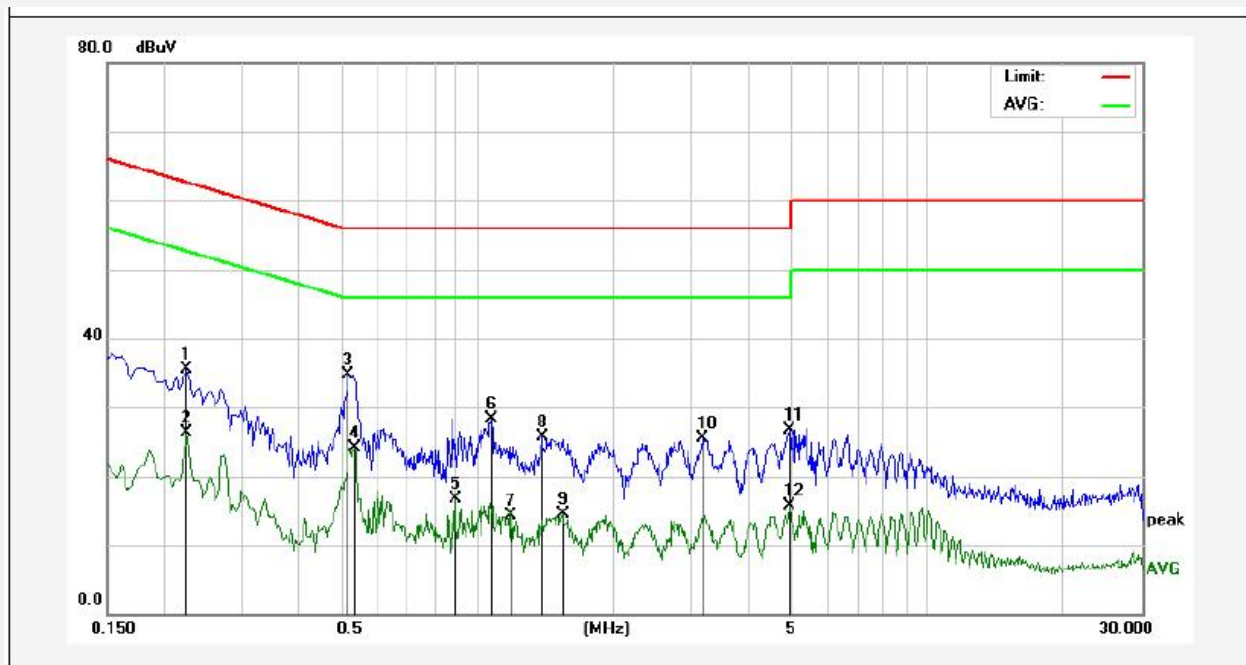
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	32.27	9.69	41.96	65.99	-24.03	QP	
2	0.1500	15.74	9.69	25.43	55.99	-30.56	AVG	
3	0.1900	29.06	9.71	38.77	64.03	-25.26	QP	
4	0.3339	22.09	9.72	31.81	59.35	-27.54	QP	
5	0.5220	27.61	9.76	37.37	56.00	-18.63	QP	
6	0.5299	12.19	9.76	21.95	46.00	-24.05	AVG	
7	1.0660	18.79	9.74	28.53	56.00	-27.47	QP	
8	1.0940	6.84	9.74	16.58	46.00	-29.42	AVG	
9	1.4420	5.48	9.73	15.21	46.00	-30.79	AVG	
10	3.6180	4.33	9.74	14.07	46.00	-31.93	AVG	
11	7.0260	22.70	9.78	32.48	60.00	-27.52	QP	
12	7.0700	11.98	9.78	21.76	50.00	-28.24	AVG	

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



Power Line Conducted Test Data

Test Site: 1# Shielded Room
Operating Condition: Mode 1
Test Specification: AC 120V, 60Hz for Adapter
Comment: Neutral Line
Temp.: 22.7°C Hum.: 56%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2260	25.74	9.71	35.45	62.59	-27.14	QP	
2	0.2260	16.54	9.71	26.25	52.59	-26.34	AVG	
3	0.5180	24.89	9.76	34.65	56.00	-21.35	QP	
4	0.5340	14.35	9.76	24.11	46.00	-21.89	AVG	
5	0.8900	7.05	9.74	16.79	46.00	-29.21	AVG	
6	1.0740	18.54	9.74	28.28	56.00	-27.72	QP	
7	1.1900	4.66	9.73	14.39	46.00	-31.61	AVG	
8	1.3940	15.93	9.73	25.66	56.00	-30.34	QP	
9	1.5460	4.74	9.73	14.47	46.00	-31.53	AVG	
10	3.1700	15.80	9.73	25.53	56.00	-30.47	QP	
11	4.9300	16.98	9.74	26.72	56.00	-29.28	QP	
12	4.9300	5.93	9.74	15.67	46.00	-30.33	AVG	

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



3. Radiated Emission Test (Below 1 GHz)

3.1. Test Standard and Limit

Test Standard	FCC 47 CFR Part 15 Subpart B
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☐ Limit for radiated emissions at frequencies up to 1 GHz for class A equipment

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

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.

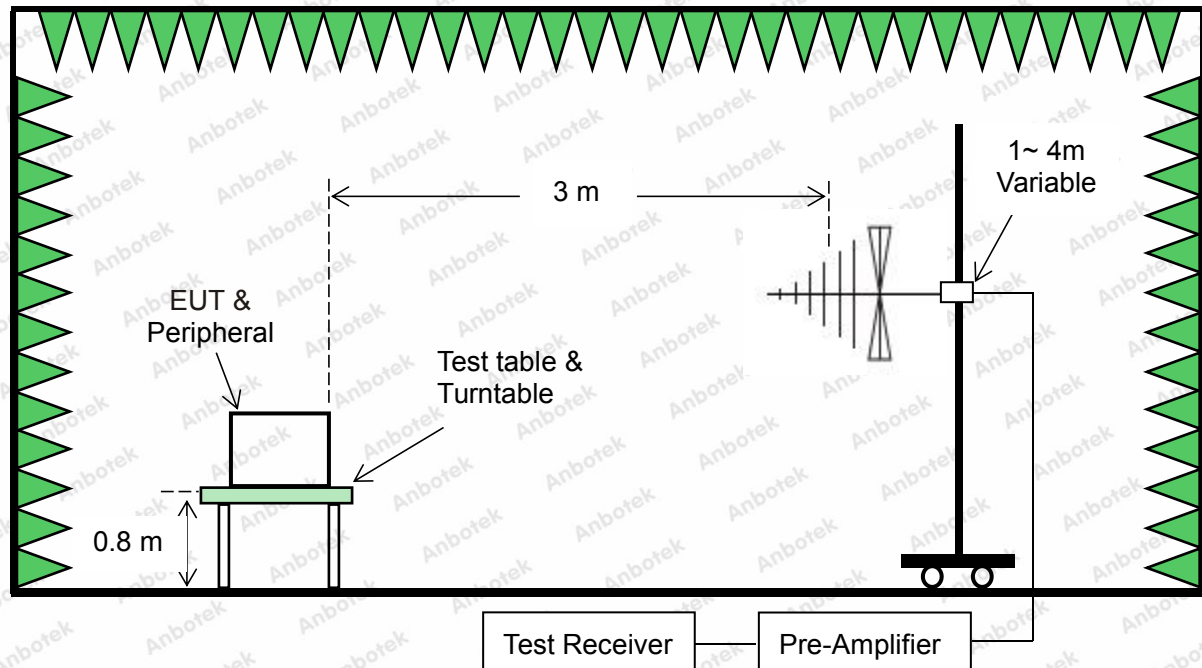
☒ Limit for radiated emissions at frequencies up to 1 GHz for class B equipment

Test Limit	Frequency (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT	
			μV/m	(dBμV/m)
	30 ~ 88	3	100	40
	88 ~ 216	3	150	43.5
	216 ~ 960	3	200	46

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.



3.2. Test Setup



3.3. Test Procedure

The table-top EUT is placed on a non-conductive table 0.8 m above the horizontal ground reference plane. The floor-standing EUT is placed on an insulating support 0.1 m above the horizontal ground reference plane.

The EUT was set 3 m away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 m to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.



3.4. Test Results**PASS**

The test curves are shown in the following pages.



Test item: Radiation Test

Polarization:

Horizontal

Standard: (RE)FCC 47 CFR Part 15
Subpart B

Power Source:

AC 120V, 60Hz for
Adapter

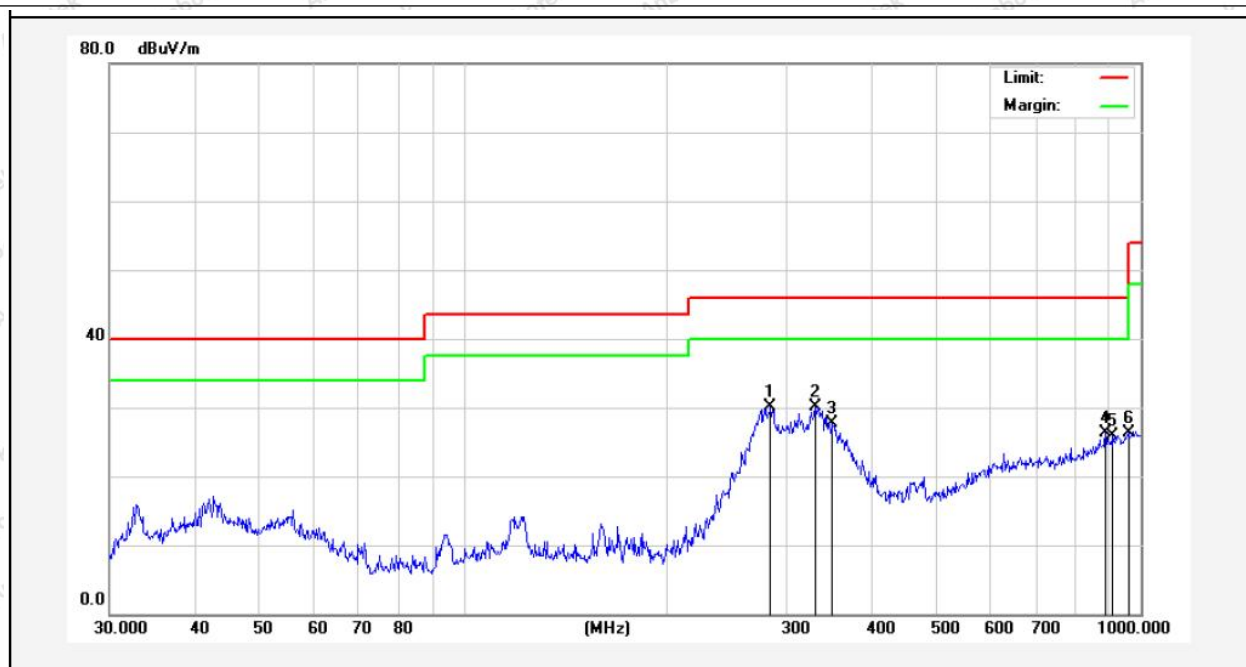
Frequency Range: 30MHz ~ 1000MHz

Temp.(°C)/Hum.(%RH): 24.2(°C)/52%RH

Distance: 3m

Test Mode:

Mode 1



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	283.9791	48.62	-18.54	30.08	46.00	-15.92	QP			
2	330.1949	46.64	-16.46	30.18	46.00	-15.82	QP			
3	350.4768	43.75	-16.00	27.75	46.00	-18.25	QP			
4	887.6099	32.80	-6.53	26.27	46.00	-19.73	QP			
5	909.6667	31.95	-6.11	25.84	46.00	-20.16	QP			
6	958.7943	31.81	-5.49	26.32	46.00	-19.68	QP			

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



Test item: Radiation Test

Polarization:

Vertical

Standard: (RE)FCC 47 CFR Part 15
Subpart B

Power Source:

AC 120V, 60Hz for
Adapter

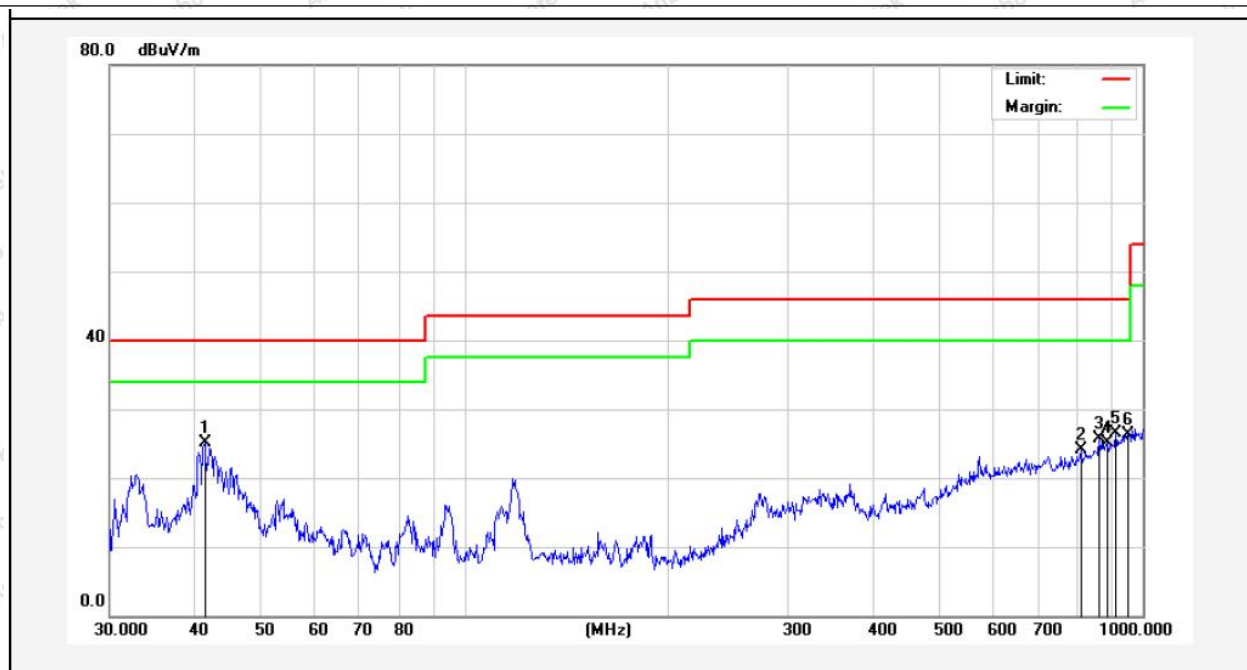
Frequency Range: 30MHz ~ 1000MHz

Temp.(°C)/Hum.(%RH): 24.2(°C)/52%RH

Distance: 3m

Test Mode:

Mode 1



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.4215	39.90	-14.70	25.20	40.00	-14.80	QP			
2	810.2654	32.17	-8.11	24.06	46.00	-21.94	QP			
3	863.0562	32.79	-7.16	25.63	46.00	-20.37	QP			
4	887.6099	31.72	-6.53	25.19	46.00	-20.81	QP			
5	912.8620	32.50	-6.08	26.42	46.00	-19.58	QP			
6	952.0937	31.86	-5.61	26.25	46.00	-19.75	QP			

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



4. Radiated Emission Test (Above 1GHz)

4.1. Test Standard and Limit

Test Standard	FCC 47 CFR Part 15 Subpart B
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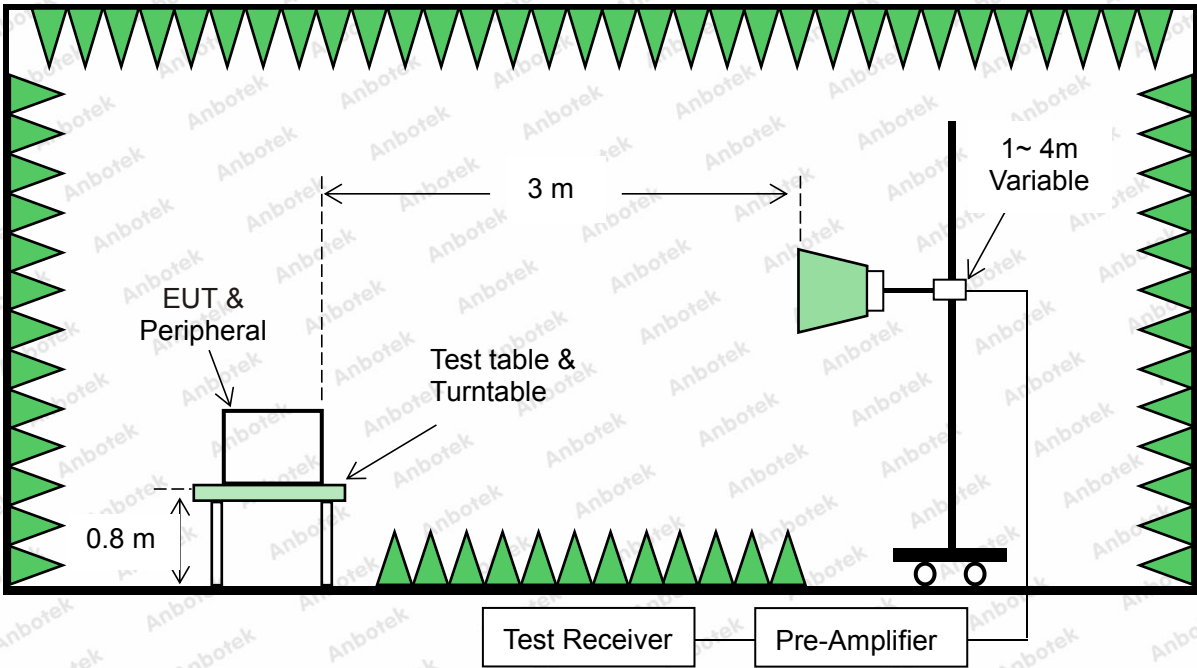
☐ Limit for radiated emissions at frequencies above 1 GHz for class A equipment

Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)	
		Peak	Average
Above 960	3	79.5	59.5
Remark: N/A			

☒ Limit for radiated emissions at frequencies above 1 GHz for class B equipment

Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)	
		Peak	Average
Above 960	3	74	54
Remark: N/A			

4.2. Test Setup



4.3. Test Procedure

The table-top EUT is placed on a non-conductive table 0.8 m above the horizontal ground reference plane. The floor-standing EUT is placed on an insulating support 0.1 m above the horizontal ground reference plane.

The EUT was set 3 m away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 m to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The test receiver is set to peak and average detects function.

The bandwidth of the test receiver is set at 1MHz.

4.4. Test Results

PASS

The test curves are shown in the following pages.



Test Frequency:		1GHz~6GHz					
Temp.(°C)/Hum.(%RH):		24.2(°C)/52%RH					
Power Source:		AC 120V, 60Hz for Adapter					
Test Mode:		Mode 1					
Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1317.65	55.39	-3.13	52.26	74.00	-21.74	H	PEAK
1845.93	48.25	-3.07	45.18	74.00	-28.82	H	PEAK
2144.36	53.20	-4.44	48.76	74.00	-25.24	H	PEAK
4112.06	48.08	-5.27	42.81	74.00	-31.19	H	PEAK
4491.25	47.91	-5.39	42.52	74.00	-31.48	H	PEAK
4943.19	48.72	-5.68	43.04	74.00	-30.96	H	PEAK
1317.65	40.88	-3.13	37.76	54.00	-16.24	H	AVG
1845.93	40.35	-3.07	37.28	54.00	-16.72	H	AVG
2144.36	41.26	-4.44	36.83	54.00	-17.17	H	AVG
4112.06	41.96	-5.27	36.70	54.00	-17.30	H	AVG
4491.25	42.99	-5.39	37.60	54.00	-16.40	H	AVG
4943.19	40.29	-5.68	34.61	54.00	-19.39	H	AVG
1428.80	52.48	-2.82	49.66	74.00	-24.34	V	PEAK
1815.59	55.99	-2.66	53.33	74.00	-20.67	V	PEAK
2036.15	55.40	-3.78	51.62	74.00	-22.38	V	PEAK
4044.62	52.55	-4.71	47.84	74.00	-26.16	V	PEAK
4446.29	47.58	-4.65	42.93	74.00	-31.07	V	PEAK
4926.55	52.41	-5.63	46.78	74.00	-27.22	V	PEAK
1428.80	41.58	-2.82	38.75	54.00	-15.25	V	AVG
1815.59	45.14	-2.66	42.48	54.00	-11.52	V	AVG
2036.15	41.53	-3.78	37.75	54.00	-16.25	V	AVG
4044.62	47.16	-4.71	42.45	54.00	-11.55	V	AVG
4446.29	41.13	-4.65	36.48	54.00	-17.52	V	AVG
4926.55	42.18	-5.63	36.55	54.00	-17.45	V	AVG
Note: Level=Read Level +Factor Over Limit=Level-Limit							



APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

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

