

TEST REPORT

Reference No...... : WTX23X04082958W
FCC ID..... : 2ANKU-SV-CB126-AHD
Applicant : Safety Vision, LLC
Address..... : 6100 W. Sam Houston Pkwy. N. Houston, Texas, 77041-5113, United States
Manufacturer : HUIZHOU YUHONG TECH. CO., LTD.
Address..... : First Stage Plant, No.2 Xialuo Road, Zhongkai Hi-Tech Zone, Huizhou City, Guangdong Province, P.R. China
Product Name : Ultrasonic Sensor System
Model No...... : SV-CB126-AHD
Standards : FCC Part 18
Date of Receipt sample : 2023-04-18
Date of Test..... : 2023-04-18 to 2023-04-23
Date of Issue : 2023-04-23
Test Report Form No. : WTX_Part 18W
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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Approved by:



Silin Chen

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Report version

Version No.	Date of issue	Description
Rev.00	2023-04-23	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Ultrasonic Sensor System
Trade Name:	/
Model No.:	SV-CB126-AHD
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Antenna Type:	/
Rated Voltage:	DC12/24V
Ultrasonic Frequency:	58kHz \pm 2kHz
Equipment type:	Ultrasonic

1.2 Test Standards

The tests were performed according to following standards:

FCC Part 18 Subpart C: Industrial, Scientific, and medical medical equipment.

ANSI C63.4-2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014 and FCC MP-5:1986, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101)

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. 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. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark	Power Supply Mode
TM1	Normal working	Power by battery, And normal working	DC12V
TM2	Normal working	Power by battery, And normal working	DC24V

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
SENSOR CABLE	2.0	Unshielded	Without Core
DC CABLE	1.8	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
LCD MONITOR	/	/	P2210400003
Accumulator battery	GS	N100	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ± 3.74 dB
		0.15-30MHz ± 3.34 dB
Radiated Emissions	Radiated	30-200MHz ± 4.52 dB
		0.2-1GHz ± 5.56 dB
		1-6GHz ± 3.84 dB
		6-18GHz ± 3.92 dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Amplifier	HP	8447F	2805A0347 5	2023-02-25	2024-02-24
Amplifier	C&D	PAP-1G18	14918	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-20	2026-03-19
Horn Antenna	ETS	3117	00086197	2021-03-19	2024-03-18
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-22	2024-03-21
Amplifier	Agilent	8447D	2944A1017 9	2023-02-25	2024-02-24
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2023-02-25	2024-02-24

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§18.307 (b)	Conducted Emission	N/A
§18.305 (b)	Radiated Emission	Compliant

N/A: Not applicable.

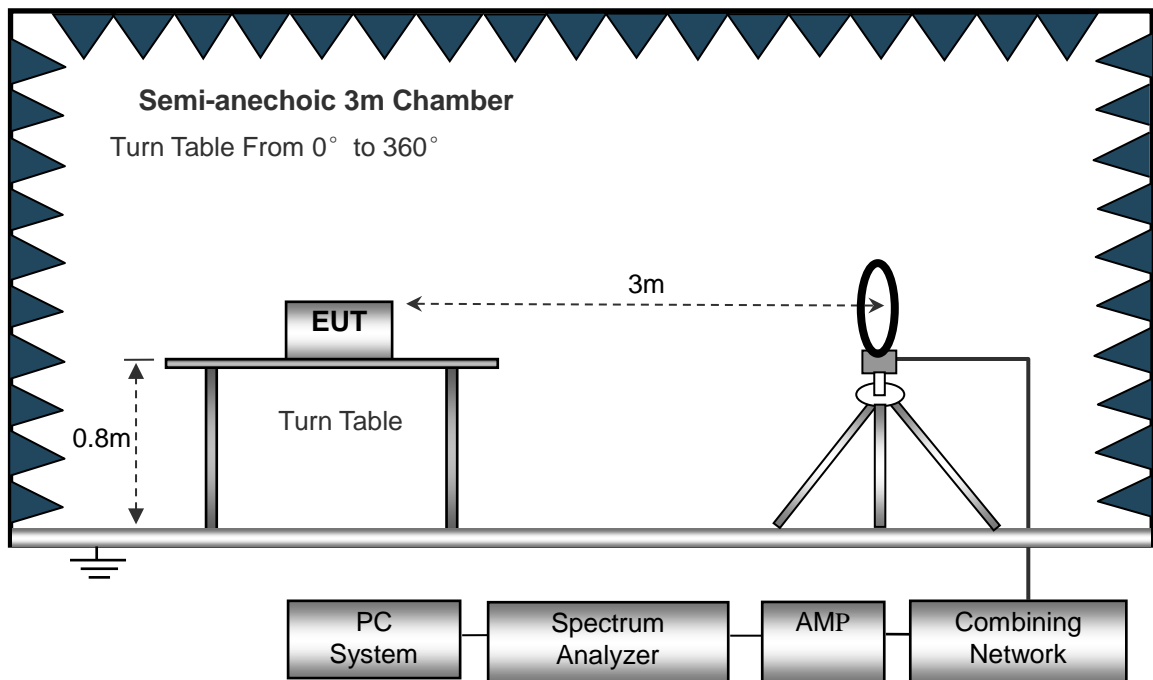
3. Radiated Emissions

3.1 Test Procedure

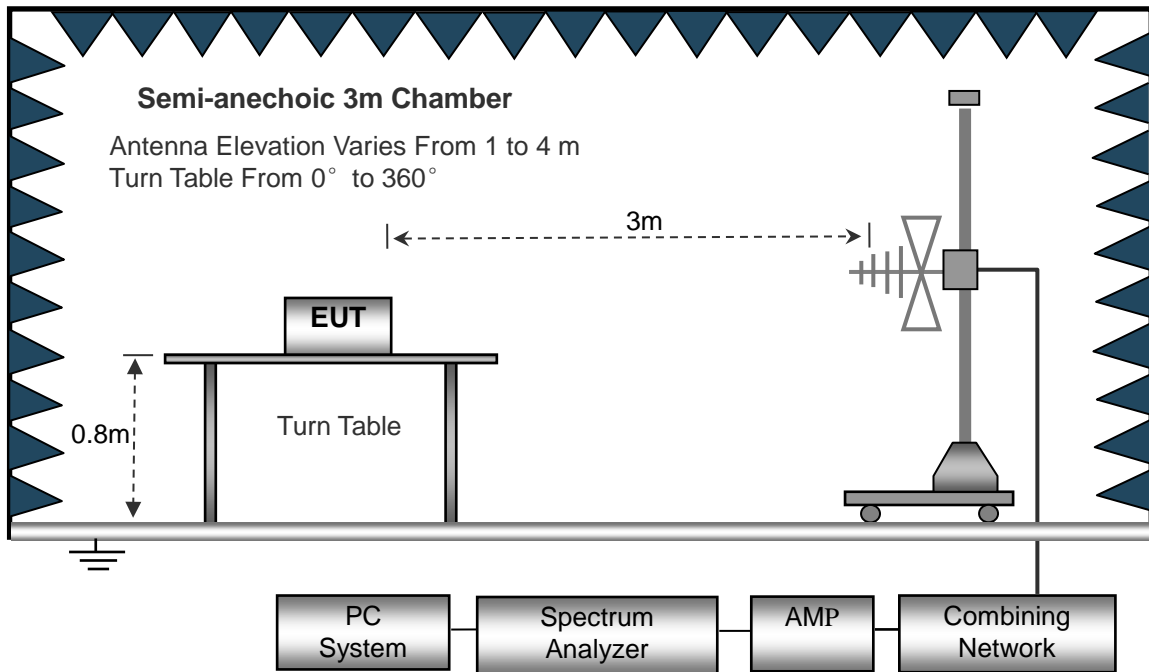
The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 18.305 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

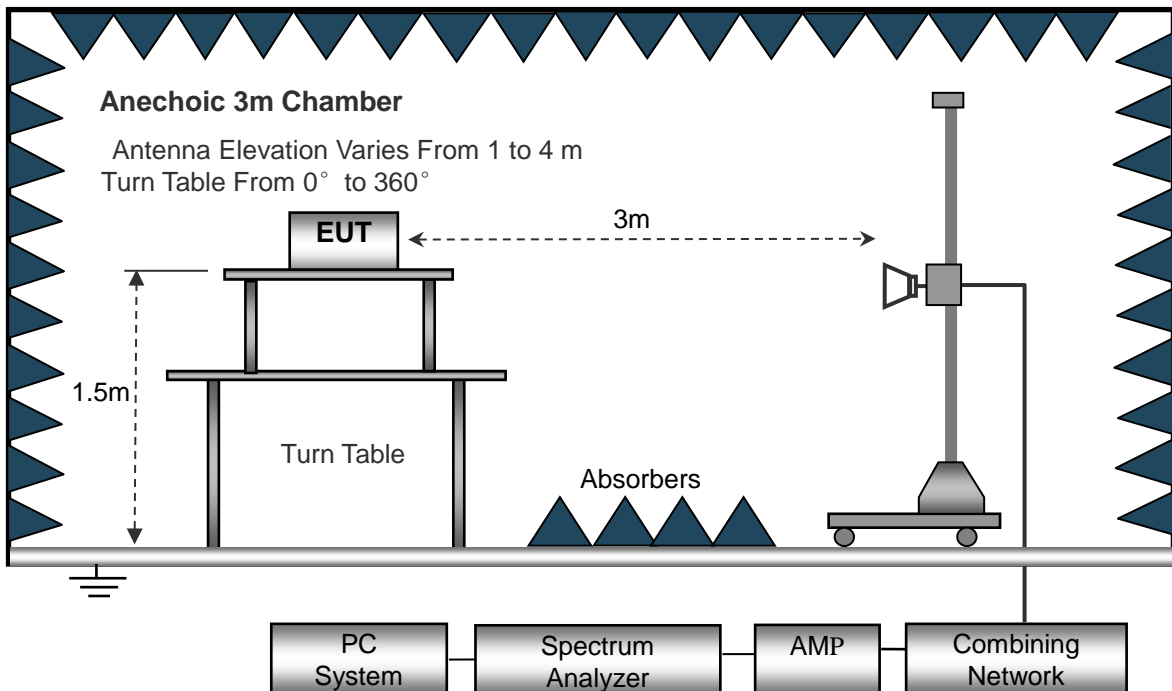
The test setup for emission measurement below 30MHz..



The test setup for emission measurement from 30 MHz to 1 GHz..



The test setup for emission measurement above 1 GHz..



3.2 Test Receiver Setup

Frequency :9kHz-30MHz
 RBW=10KHz,
 VBW =30KHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak

Frequency :30MHz-1GHz
 RBW=120KHz,
 VBW=300KHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, QP

Frequency :Above 1GHz
 RBW=1MHz,
 VBW=3MHz(Peak), 10Hz(AV)
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, AV

3.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Any non-ISM frequency device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 18.305 Limit}$$

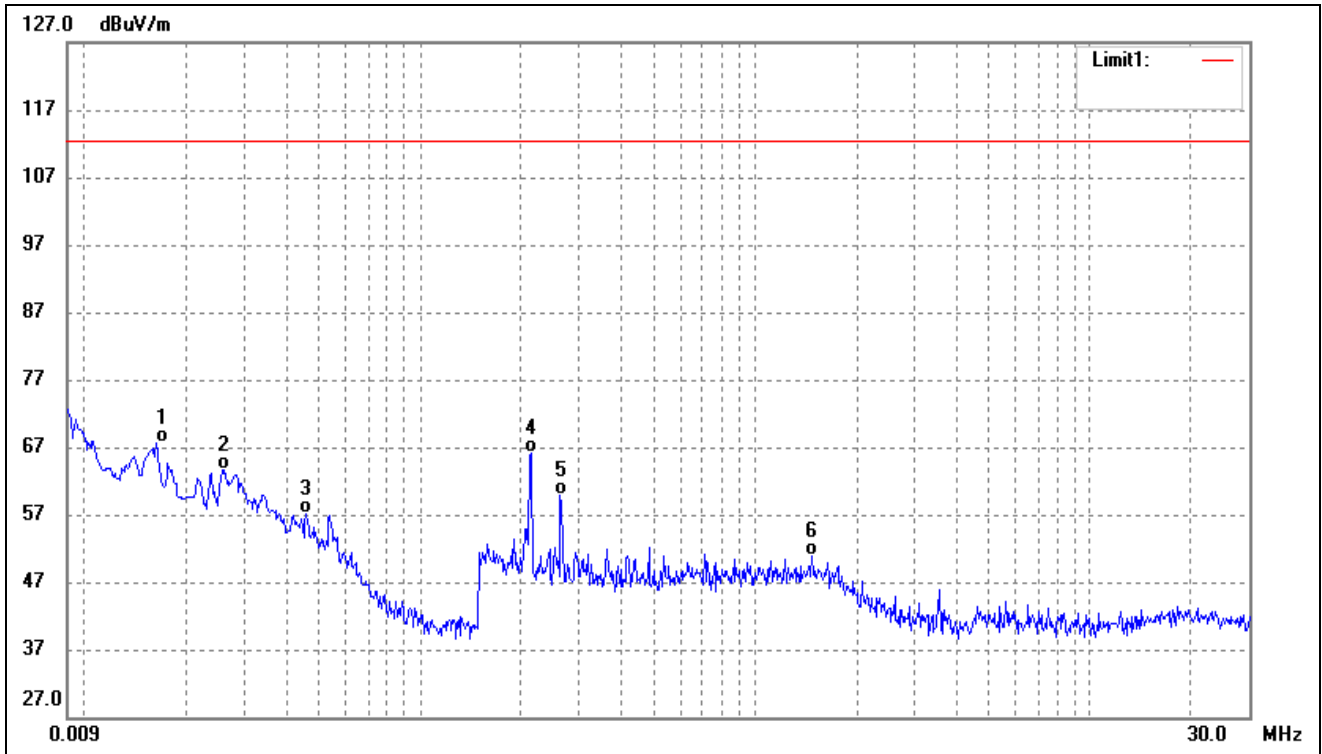
3.4 Environmental Conditions

Temperature:	22.5 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

3.5 Summary of Test Results/Plots

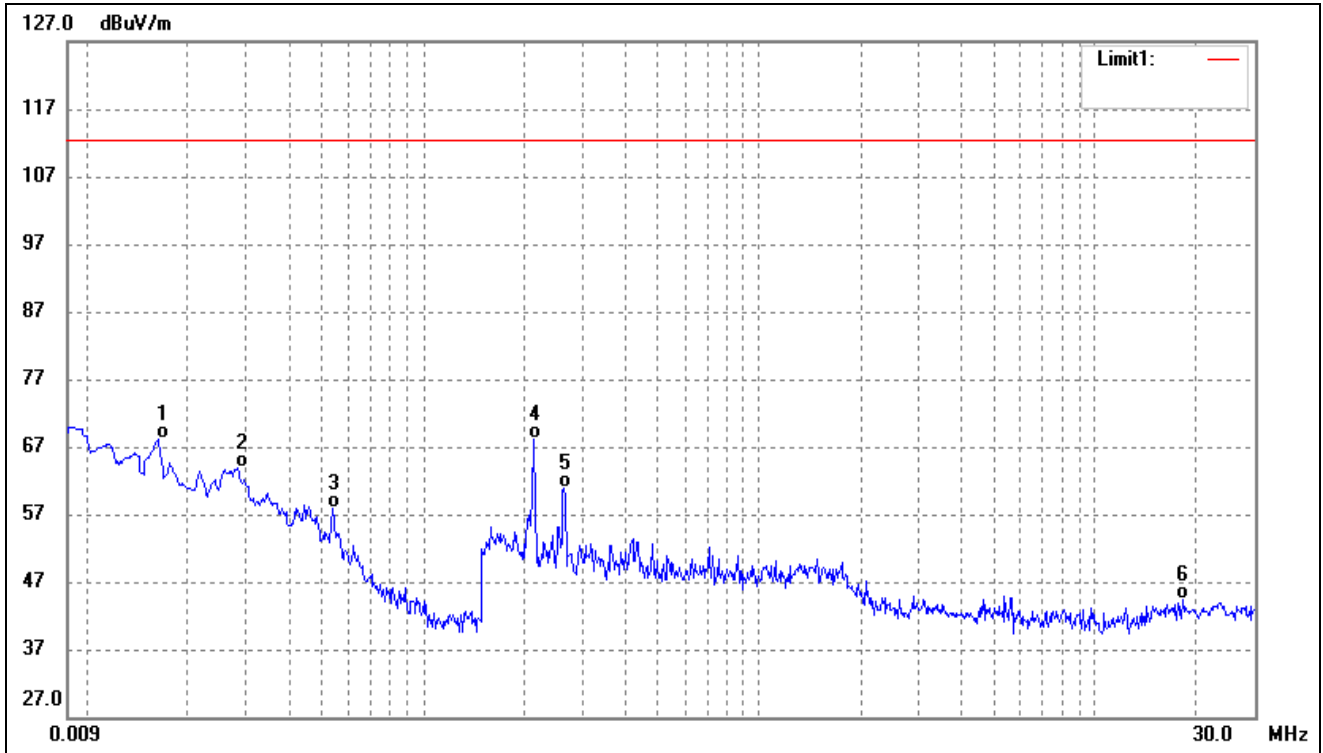
Plot of Radiated Emissions Test Data (Below 30MHz)

Test mode:	TM1	Polarity:	X(worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (□)	Height (cm)	Remark
1	0.0164	74.69	-7.02	67.67	112.34	-44.67	-	-	QP
2	0.0259	70.38	-6.73	63.65	112.34	-48.69	-	-	QP
3	0.0460	62.78	-5.66	57.12	112.34	-55.22	-	-	QP
4	0.2139	73.26	-7.19	66.07	112.34	-46.27	-	-	QP
5	0.2630	67.63	-7.71	59.92	112.34	-52.42	-	-	QP
6	1.4796	56.93	-6.12	50.81	112.34	-61.53	-	-	QP

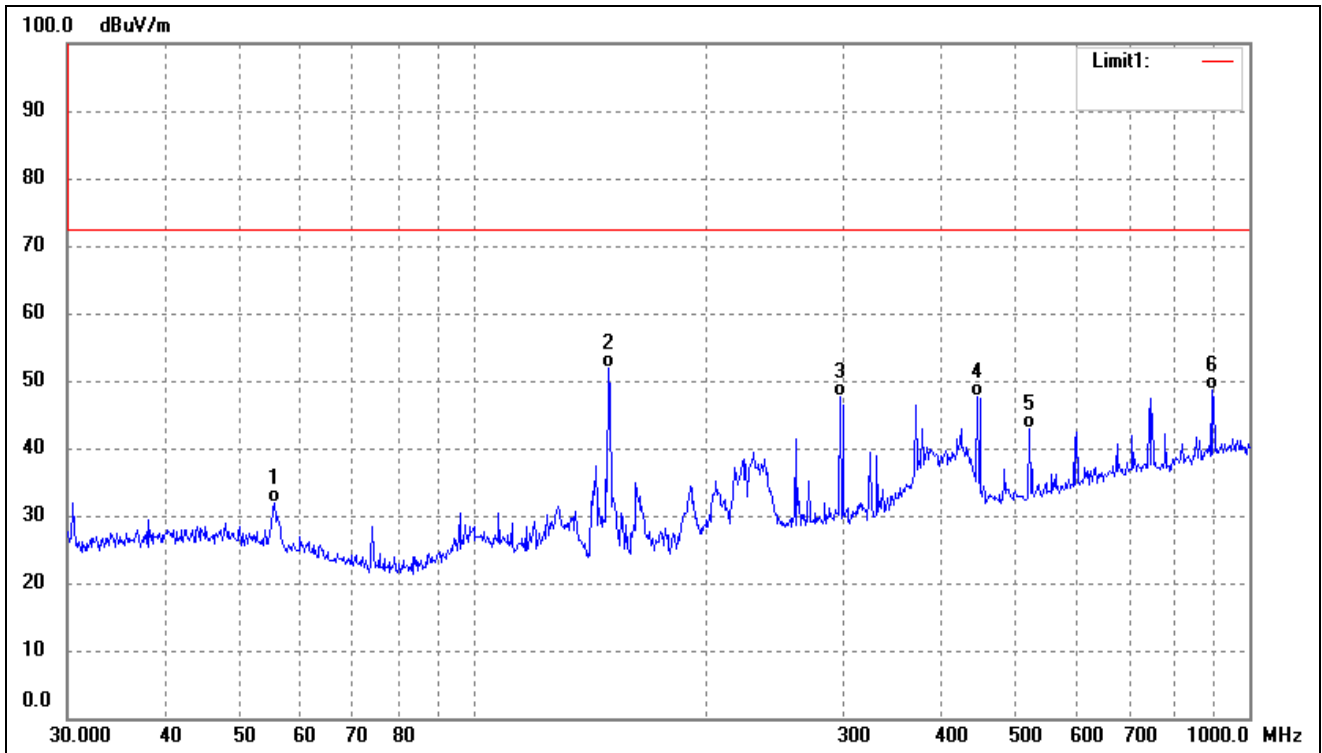
Test mode:	TM2	Polarity:	X(worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	0.0164	75.19	-7.02	68.17	112.34	-44.17	-	-	QP
2	0.0281	70.50	-6.61	63.89	112.34	-48.45	-	-	QP
3	0.0539	63.57	-5.59	57.98	112.34	-54.36	-	-	QP
4	0.2139	75.26	-7.19	68.07	112.34	-44.27	-	-	QP
5	0.2630	68.63	-7.71	60.92	112.34	-51.42	-	-	QP
6	18.2316	48.72	-4.45	44.27	112.34	-68.07	-	-	QP

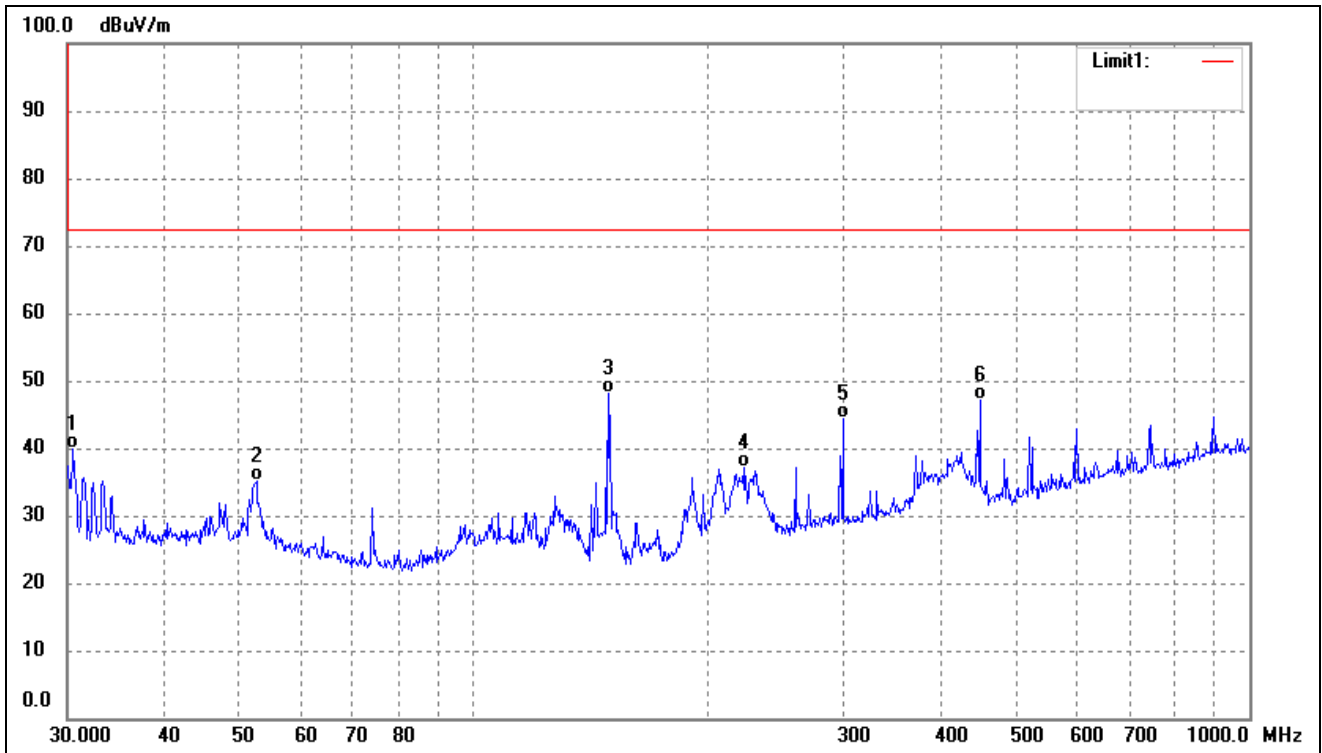
Plot of Radiated Emissions Test Data (Above 30MHz)

Test mode:	TM1	Polarity:	Horizontal
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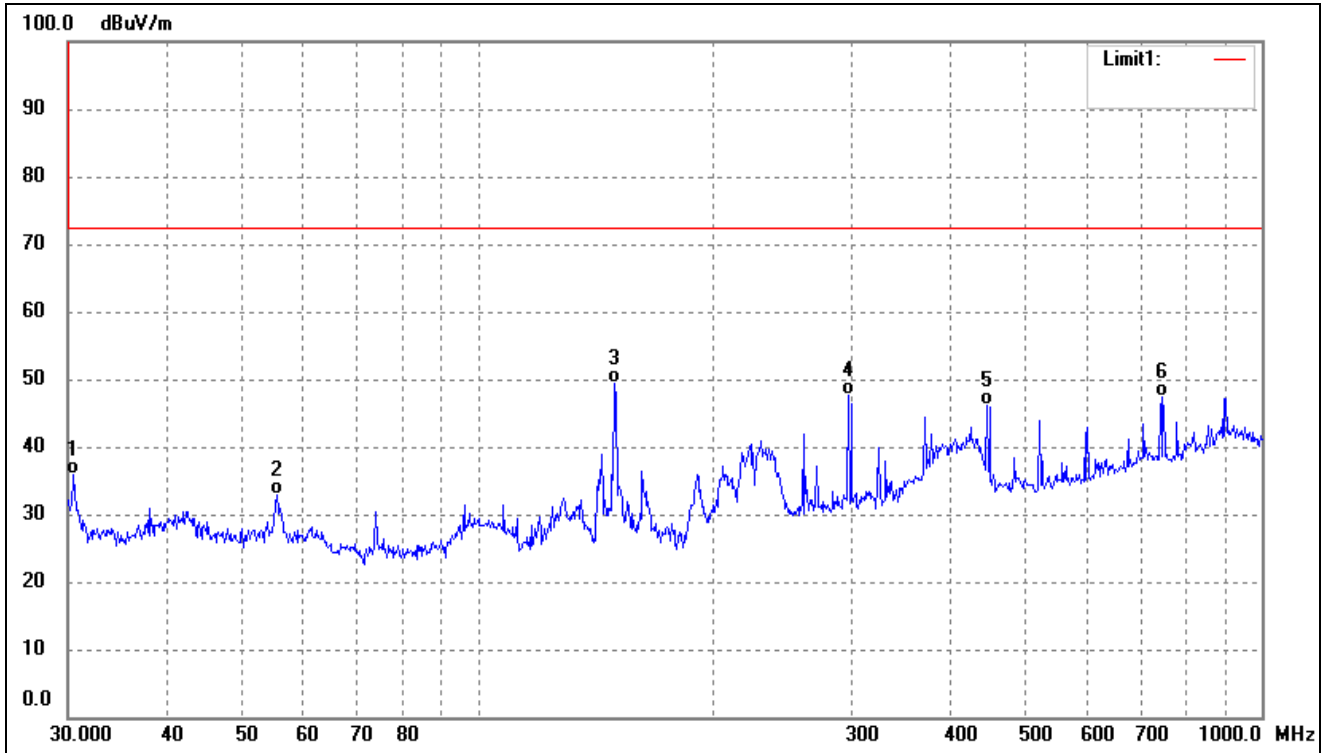
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (□)	Height (cm)	Remark
1	55.4147	40.16	-8.26	31.90	72.34	-40.44	-	-	QP
2	149.4857	63.49	-11.65	51.84	72.34	-20.50	-	-	QP
3	297.2241	52.69	-5.11	47.58	72.34	-24.76	-	-	QP
4	446.4141	50.55	-2.81	47.74	72.34	-24.60	-	-	QP
5	520.8882	44.67	-1.73	42.94	72.34	-29.40	-	-	QP
6	893.8567	44.80	3.94	48.74	72.34	-23.60	-	-	QP

Test mode:	TM1	Polarity:	Vertical
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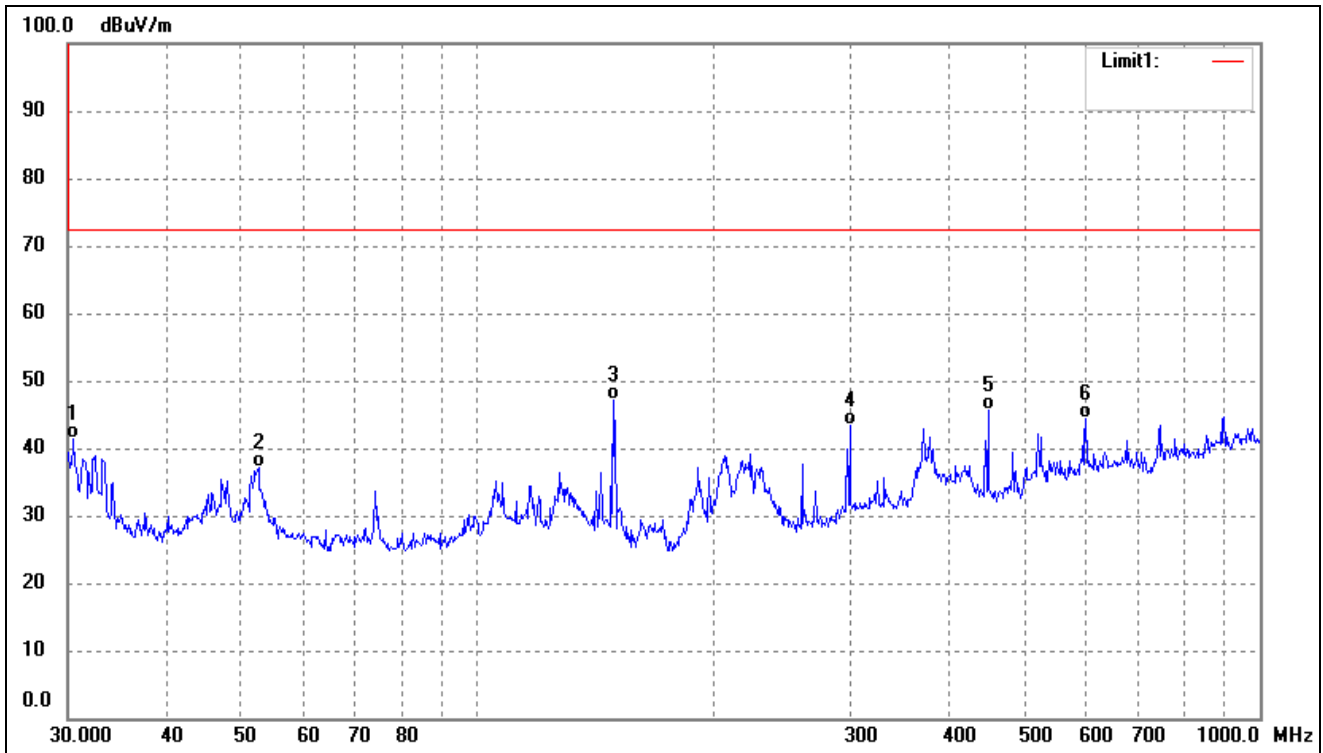
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	30.5306	49.00	-9.20	39.80	72.34	-32.54	-	-	QP
2	52.5753	42.79	-7.76	35.03	72.34	-37.31	-	-	QP
3	149.4857	59.78	-11.65	48.13	72.34	-24.21	-	-	QP
4	222.9502	44.81	-7.64	37.17	72.34	-35.17	-	-	QP
5	299.3158	49.46	-5.04	44.42	72.34	-27.92	-	-	QP
6	449.5558	49.81	-2.78	47.03	72.34	-25.31	-	-	QP

Test mode:	TM2	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	30.5305	45.19	-9.20	35.99	72.34	-36.35	-	-	QP
2	55.4147	41.16	-8.26	32.90	72.34	-39.44	-	-	QP
3	149.4857	60.99	-11.65	49.34	72.34	-23.00	-	-	QP
4	297.2241	52.69	-5.11	47.58	72.34	-24.76	-	-	QP
5	446.4141	49.05	-2.81	46.24	72.34	-26.10	-	-	QP
6	744.8660	45.52	1.76	47.28	72.34	-25.06	-	-	QP

Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	30.5305	50.50	-9.20	41.30	72.34	-31.04	-	-	QP
2	52.5752	44.79	-7.76	37.03	72.34	-35.31	-	-	QP
3	149.4857	58.78	-11.65	47.13	72.34	-25.21	-	-	QP
4	299.3158	48.46	-5.04	43.42	72.34	-28.92	-	-	QP
5	449.5557	48.31	-2.78	45.53	72.34	-26.81	-	-	QP
6	599.3212	44.50	-0.15	44.35	72.34	-27.99	-	-	QP

Remark: '-' Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

APPENDIX PHOTOGRAPHS

Please refer to "ANNEX"

**** END OF REPORT ****