TEST REPORT

47 CFR FCC Part 15 Subpart B (Class B)

Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement

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

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Address.....:	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao' an District, Shenzhen, China
Applicant's name.....:	**YIWU HANMAO E-COMMERCE FIRMS**
Address.....:	Room 305, No.3, Building 8, Futian District 4, Futian Street, Yiwu City, Jinhua City, Zhejiang Province, China
Test specification ..... :	
Standard .....:	**47 CFR FCC Part 15 Subpart B (Class B)** **ANSI C63.4: 2014**

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Equipment description.....:	**Tesla Coil**
Trade Mark .....:	Joytech
Manufacturer .....:	YIWU HANMAO E-COMMERCE FIRMS
Model/Type reference.....:	YS05 Music Tesla
List Model .....:	Referring to page 2
Ratings.....:	DC 24V From the external circuit
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	Tesla Coil
Model /Type	:	YS05 Music Tesla
Listed Models	:	SS01,SS02,SS03,SS06,SS07,SS08,SS09,SS10, SS11,SS12, SS13,SS14,SS15,SS16,SS17,SS18,SS19,SS20,XX01 Music Tesla,XX03,XX04,XX05,XX06,XX07,XX08,XX09,XX10,XX11, XX12,XX13,XX14,XX15,XX16,XX17,XX18,SS19,YS01,YS01B, M322 YS03,YS03B,YS04 Tesla Model,YS04B,YS06,YS07, YS08,YS09, YS09B, YS10, YS11, YS01S, YS08S-1, JX17 Music Tesla, YS12, YS13, YS14, YS15, YS16, YS17, YS18, YS19, YS20, YS21, YS22, YS23, YS24, YS25, YS26, YS27, YS28, YS29, YS30, YS31, YS32, JX18 Tesla Coil, M341 QD01, QD01A, QD02, QD03, QD04, QD05, QD06, QD07, QD08, QD09, 5V Mini Tesla Coil JX01, Loudspeaker Tesla JX03, Tesla WH12, YL02, TSL002, TSL003
Applicant	:	**YIWU HANMAO E-COMMERCE FIRMS**
Address	:	Room 305, No.3, Building 8, Futian District 4, Futian Street, Yiwu City, Jinhua City, Zhejiang Province, China
Manufacturer	:	**YIWU HANMAO E-COMMERCE FIRMS**
Address	:	Room 305, No.3, Building 8, Futian District 4, Futian Street, Yiwu City, Jinhua City, Zhejiang Province, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

47 CFR FCC Part 15 Subpart B (Class B) Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement
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.

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Feb. 25, 2022
Testing commenced on	:	Feb. 25, 2022
Testing concluded on	:	Mar. 03, 2022

2.2. Product Description

Product Name:	Tesla Coil
Model/Type reference:	YS05 Music Tesla
Power supply:	DC 24V From the external circuit
Adapter information:	Model: LVER-2430 Input:AC 100-240V 50/60Hz Output:DC 24V 3A

2.3. EUT operation mode

As the function of the EUT, test mode selected to test as below to conform this standard:

Operation mode	Description
Mode 1	Light
Mode 2	Audio in

We tested all modes and recorded the wost case at the Mode 1.

Test item	Test mode
Conducted emission	Mode 1
Radiated emission	Mode 1

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

Item	Name	Description	Model	Certificate	Note
1 Note1	/	/	/	/	/
2 Note1	/	/	/	/	/

Note1: This Auxiliary used during the test is provided by the test laboratory.

2.5. Modifications

No modifications were implemented to meet testing criteria

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,Fuhai Street, Bao' an District, Shenzhen, China

3.2. Test Facility

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

FCC-Registration No.: 517856 Designation Number: CN1318
Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01
Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	15-35 ° C
Lative Humidity	30-60 %
Air Pressure	950-1050mbar

3.4. Test Description

Emission Measurement		
Radiated Emission	47 CFR FCC Part 15 Subpart B Class B ANSI C63.4 2014	PASS
Conducted Emission	47 CFR FCC Part 15 Subpart B Class B ANSI C63.4 2014	PASS

Remark:1. N/A means "not applicable".
2.The measurement uncertainty is not included in the test result.

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Radiated Emission						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	ULTRA-BROADBAND ANTENNA	Schwarzbeck	VULB9163	CTA-310	2021/08/07	2022/08/06
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	CTA-306	2021/08/06	2022/08/05
3	Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2021/08/07	2022/08/06
4	Universal Radio Communication	CMW500	R&S	CTA-302	2021/08/06	2022/08/05
5	Band-reject filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-DZA66	CTA-410	2021/08/06	2022/08/05
6	Band-reject filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-DZA64	CTA-411	2021/08/06	2022/08/05
7	Band-reject filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-DZA63	CTA-411	2021/08/06	2022/08/05
8	High-pass filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-GTA10	CTA-412	2021/08/06	2022/08/05
9	High-pass filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-GTA18	CTA-402	2021/08/06	2022/08/05
10	EMI Test Software	Tonscend	TS®JS32-RE	N/A	N/A	N/A

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	EMI Test Receiver	R&S	ESPI	CTA-307	2021/08/06	2022/08/05
2	Artificial Mains	R&S	ENV-216	CTA-308	2021/08/06	2022/08/05
3	Artificial Mains	R&S	ENV-216	CTA-314	2021/08/06	2022/08/05
4	ISN	Schwarzbeck	NTFM8158	CTA-407	2021/08/06	2022/08/05
5	ISN	Schwarzbeck	CAT58158	CTA-408	2021/08/06	2022/08/05
6	ISN	Schwarzbeck	CAT38158	CTA-409	2021/08/06	2022/08/05
7	Universal Radio Communication	R&S	CMW500	CTA-302	2021/08/06	2022/08/05
8	EMI Test Software	Tonscend	TS®JS32-CE	N/A	N/A	N/A

4. TEST CONDITIONS AND RESULTS

4.1. EMISSION

4.1.1. LIMITS OF DISTURBANCE (CLASS B)

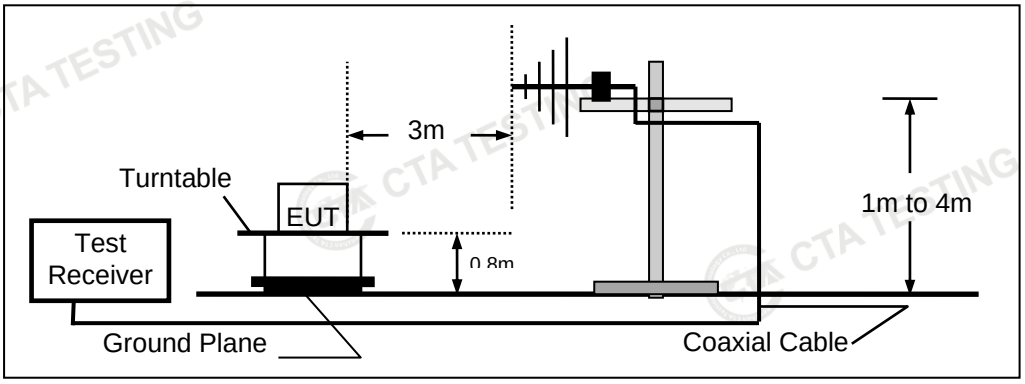
Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
Above 960(AV)	3	54
Above 960(PK)	3	74

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

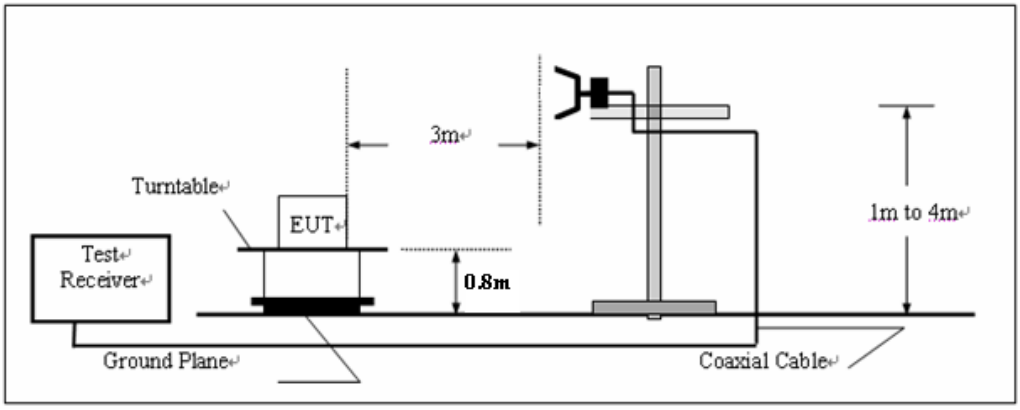
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.1.2. TEST CONFIGURATION

a) Radiated emission test set-up, frequency below 1000MHz:



b) Radiated emission test set-up, frequency above 1000MHz



4.1.3. TEST PROCEDURE

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna. The antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test.

4.1.4. TEST RESULTS

Passed

Please refer to the below test data:

Polarization:	Horizontal	Test mode:	Mode 1

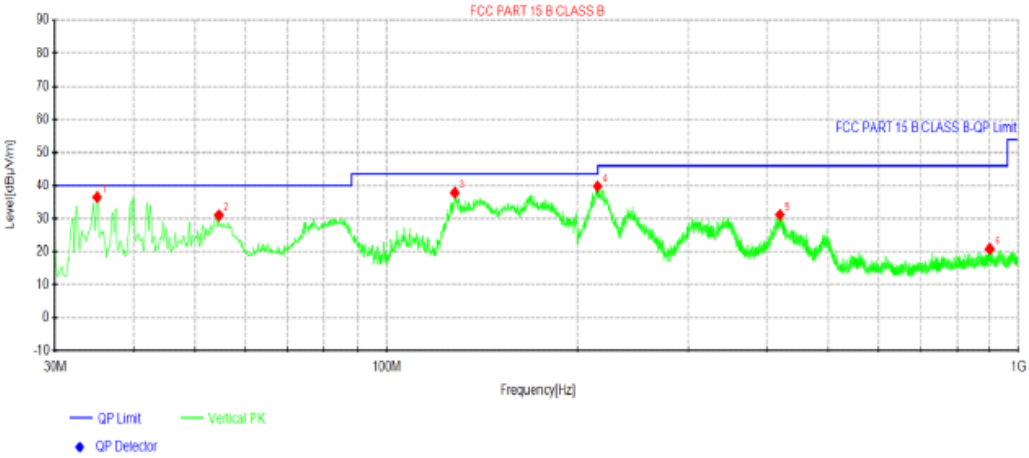
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	32.425	53.52	35.20	-18.32	40.00	4.80	100	0	Horizontal
2	83.9562	53.80	33.02	-20.78	40.00	6.98	100	33	Horizontal
3	109.055	52.58	33.78	-18.80	43.50	9.72	100	264	Horizontal
4	216.24	58.78	39.86	-18.92	46.00	6.14	100	112	Horizontal
5	312.512	51.33	34.20	-17.13	46.00	11.80	100	358	Horizontal
6	976.841	29.45	20.79	-8.66	54.00	33.21	100	272	Horizontal

Note:1).Level(dBµV/m)= Reading (dBµV)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBµV/m) - Level (dBµV/m)

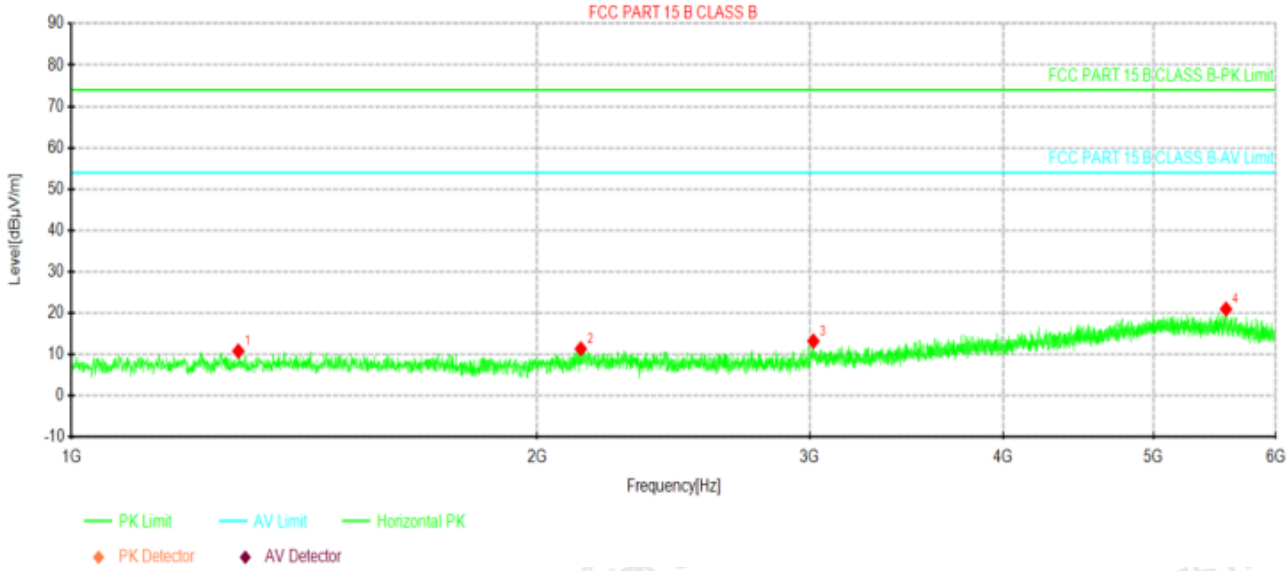
Polarization:	Vertical	Test mode:	Mode 1



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.9712	54.35	36.50	-17.85	40.00	3.50	100	59	Vertical
2	54.4925	48.06	31.03	-17.03	40.00	8.97	100	305	Vertical
3	128.091	58.95	37.83	-21.12	43.50	5.67	100	275	Vertical
4	215.512	58.74	39.80	-18.94	43.50	3.70	100	3	Vertical
5	418.97	46.51	31.15	-15.36	46.00	14.85	100	350	Vertical
6	900.453	30.04	20.86	-9.18	46.00	25.14	100	83	Vertical

Note:1).Result (dBμV/m)= Reading (dBμV)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

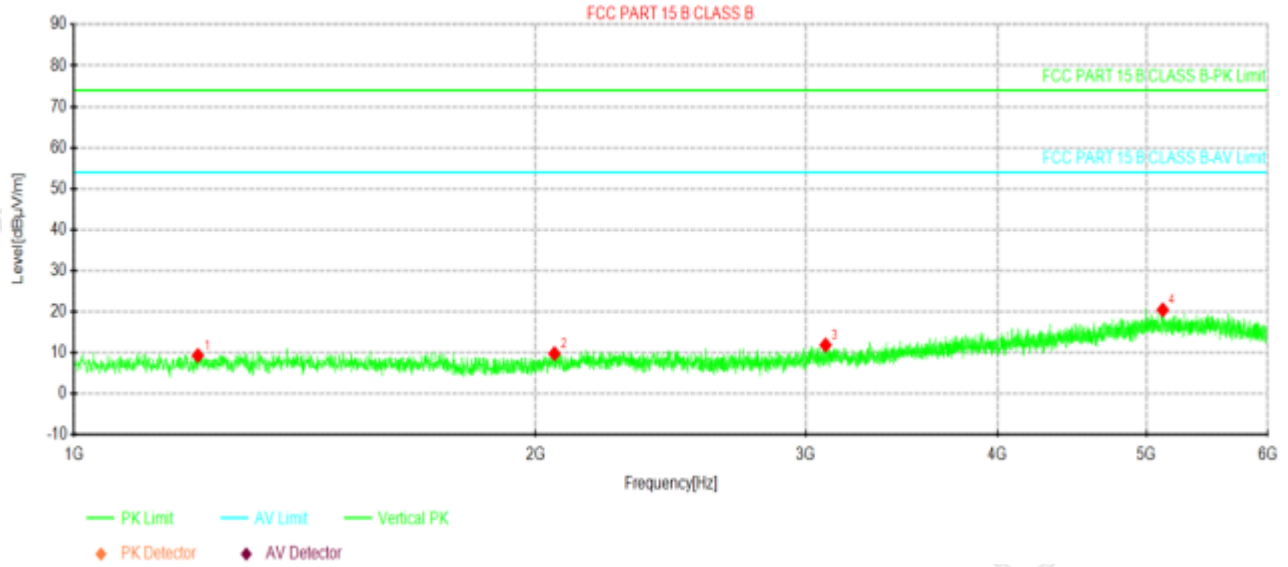
Test mode:	Mode 1	Polarization	Horizontal



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1281.87	36.21	10.84	-25.37	74.00	63.16	100	90	Horizontal
2	2133.75	33.83	11.38	-22.45	74.00	62.62	100	70	Horizontal
3	3015.62	33.27	13.26	-20.01	74.00	60.74	100	90	Horizontal
4	5571.87	35.17	21.01	-14.16	74.00	52.99	100	70	Horizontal

Test mode:	Mode 1	Polarization	Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1204.37	35.03	9.36	-25.67	74.00	64.64	100	60	Vertical
2	2056.87	32.79	9.82	-22.97	74.00	64.18	100	10	Vertical
3	3090	31.96	11.91	-20.05	74.00	62.09	100	20	Vertical
4	5125.62	34.35	20.48	-13.87	74.00	53.52	100	70	Vertical

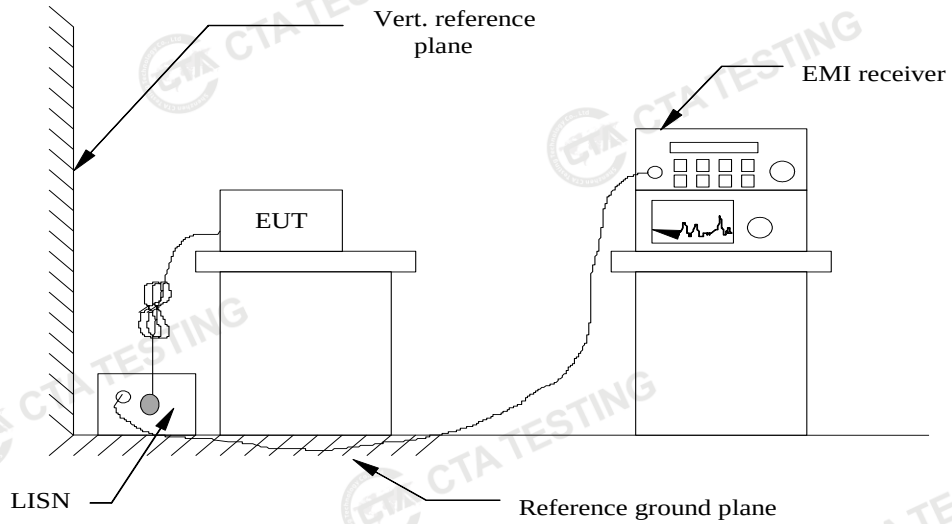
4.2. Conducted Emission

4.2.1. LIMITS OF DISTURBANCE (CLASS B)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66~56	56~46
0.500～5.000	56	46
5.000~30.000	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

4.2.2. TEST CONFIGURATION



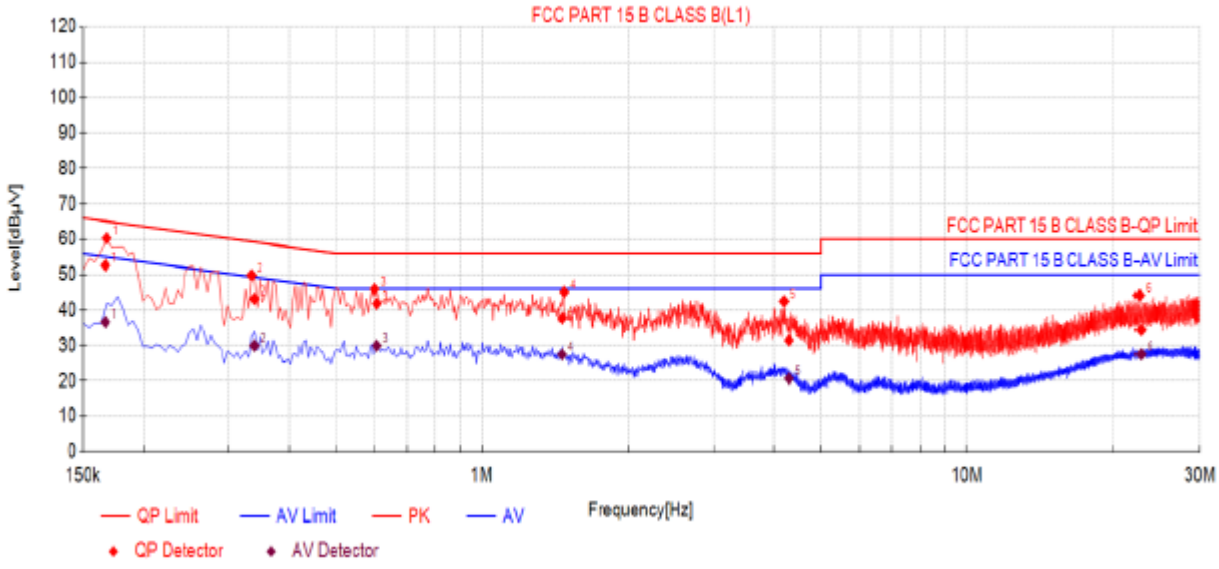
4.2.3. TEST PROCEDURE

EUT is placed on a nonmetal table which is 0.8 meter (or 0.1 meter for floor-stood equipments) above the grounded reference plane. Connect the power line of the EUT to the LISN. Voltage of the power supply is varied over a range of 0.9 to 1.1 times of the rated voltage in order to check whether the level of disturbance varies considerably with the supply voltage at the selected frequency about 160KHz. Perform an initial measurement on each line with peak detector to identify the frequencies where the maximum disturbances may occur. Then measure and record the maximum disturbances with quasi-peak and average detector.

4.2.4. TEST RESULTS

Passed

Line:	L	Test mode:	Mode 1

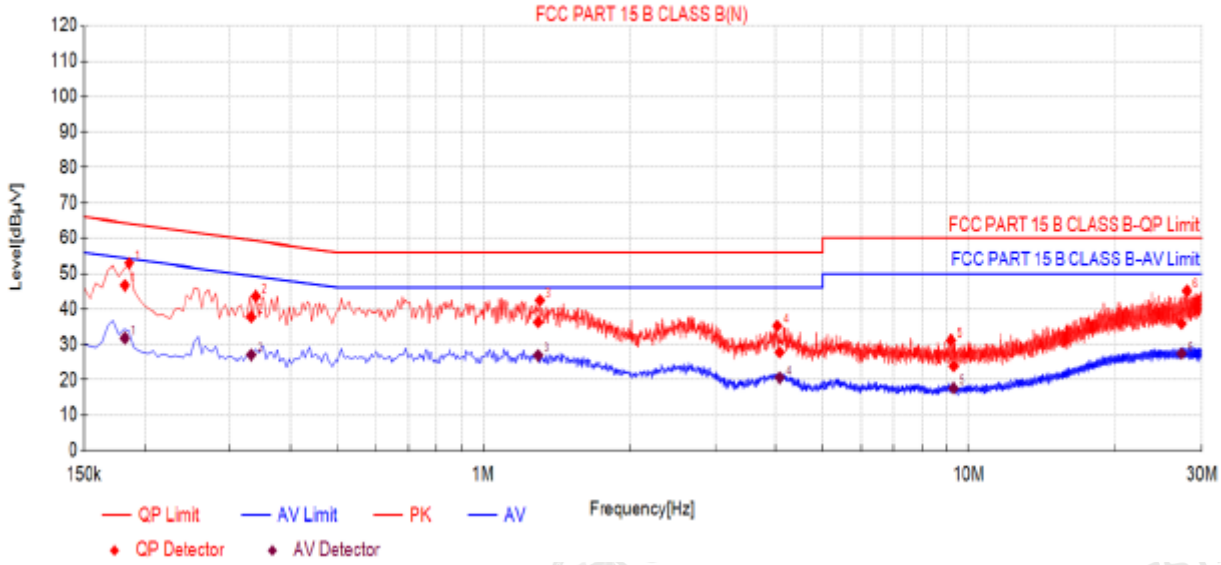


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading[dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1670	10.50	42.17	52.67	65.11	12.44	26.15	36.65	55.11	18.46	PASS
2	0.3388	10.50	32.67	43.17	59.23	16.06	19.46	29.96	49.23	19.27	PASS
3	0.6061	10.50	31.29	41.79	56.00	14.21	19.46	29.96	46.00	16.04	PASS
4	1.4632	10.50	27.20	37.70	56.00	18.30	16.92	27.42	46.00	18.58	PASS
5	4.2987	10.50	20.99	31.49	56.00	24.51	10.17	20.67	46.00	25.33	PASS
6	22.7179	10.50	23.85	34.35	60.00	25.65	16.98	27.48	50.00	22.52	PASS

Note:1).Result (dBµV/m)= Reading (dBµV/m)+ Factor (dB/m)
2). Factor(dB/m)=Cable loss (dB) + LISN Factor (dB)

Line:	N	Test mode:	Mode 1



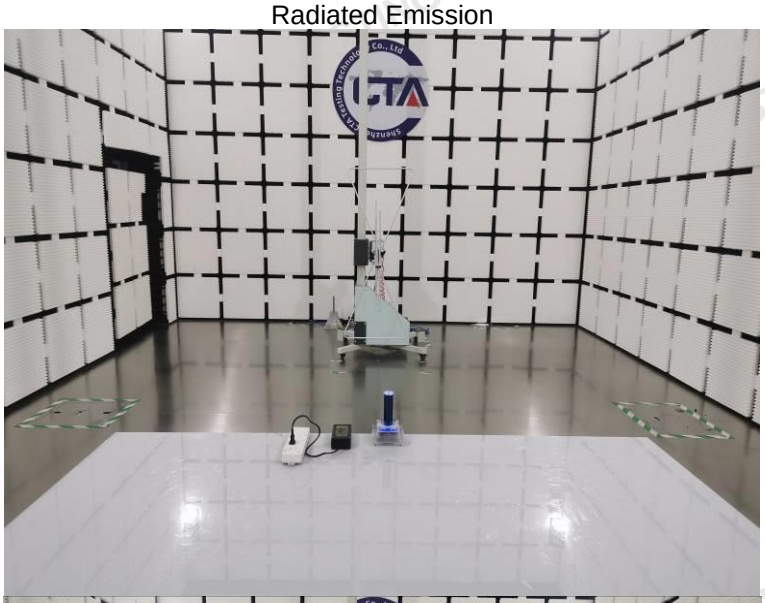
Final Data List

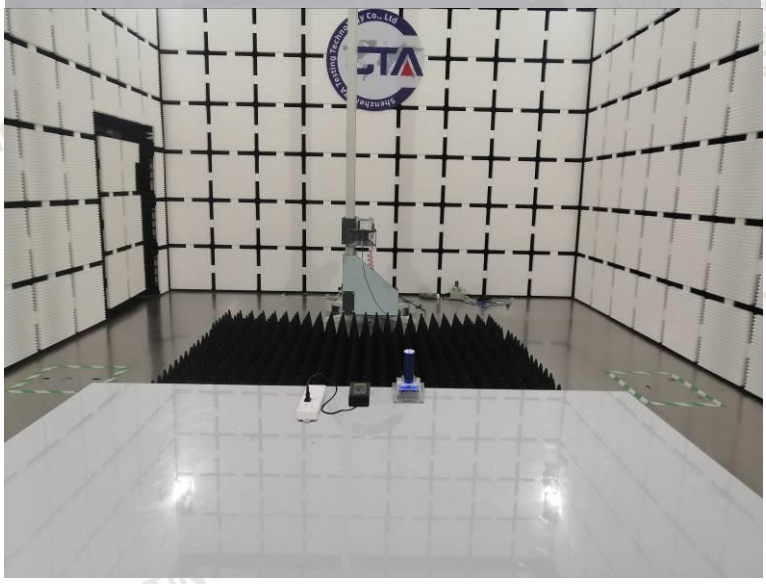
NO.	Freq. [MHz]	Factor [dB]	QP Reading[dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1821	10.50	36.18	46.68	64.39	17.71	21.29	31.79	54.39	22.60	PASS
2	0.3321	10.50	27.31	37.81	59.40	21.59	16.52	27.02	49.40	22.38	PASS
3	1.2960	10.50	25.84	36.34	56.00	19.66	16.38	26.88	46.00	19.12	PASS
4	4.0824	10.50	17.25	27.75	56.00	28.25	10.11	20.61	46.00	25.39	PASS
5	9.3172	10.50	13.46	23.96	60.00	36.04	7.20	17.70	50.00	32.30	PASS
6	27.2435	10.50	25.41	35.91	60.00	24.09	16.87	27.37	50.00	22.63	PASS

Note:1).Result (dBµV/m)= Reading (dBµV/m)+ Factor (dB/m)
2). Factor(dB/m)=Cable loss (dB) + LISN Factor (dB)

5. Test Set-up Photos of the EUT

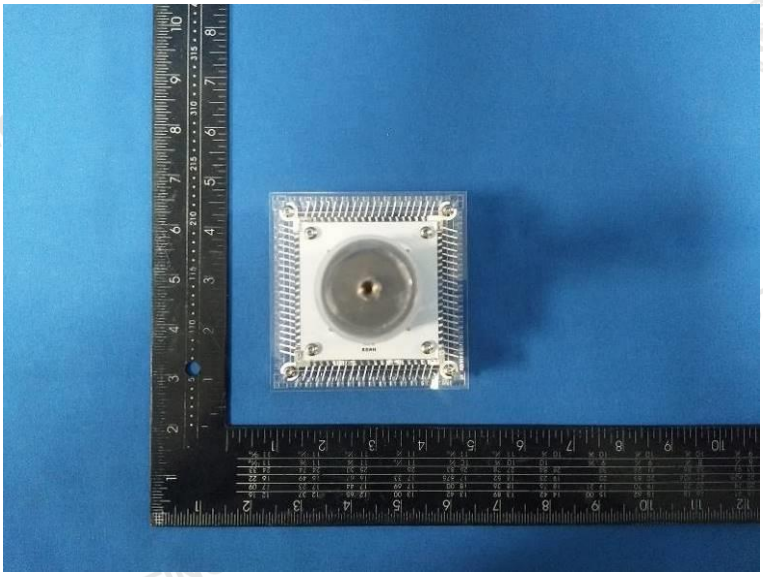
Radiated Emission

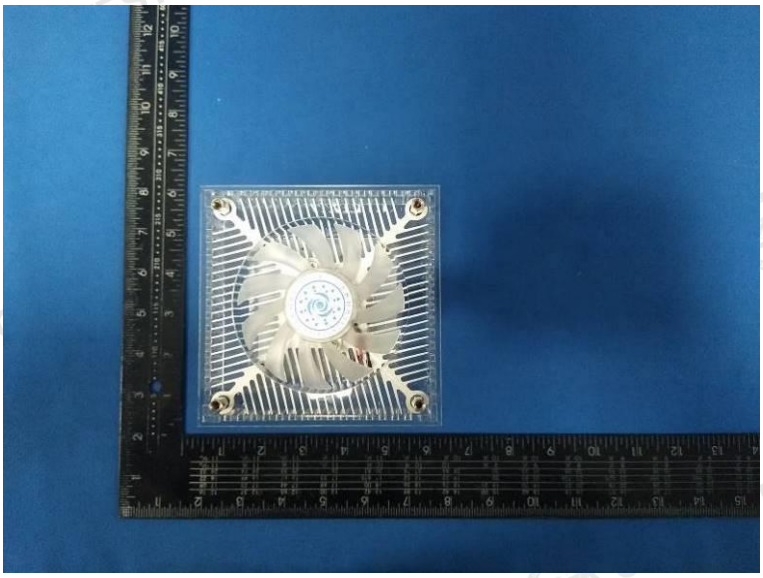


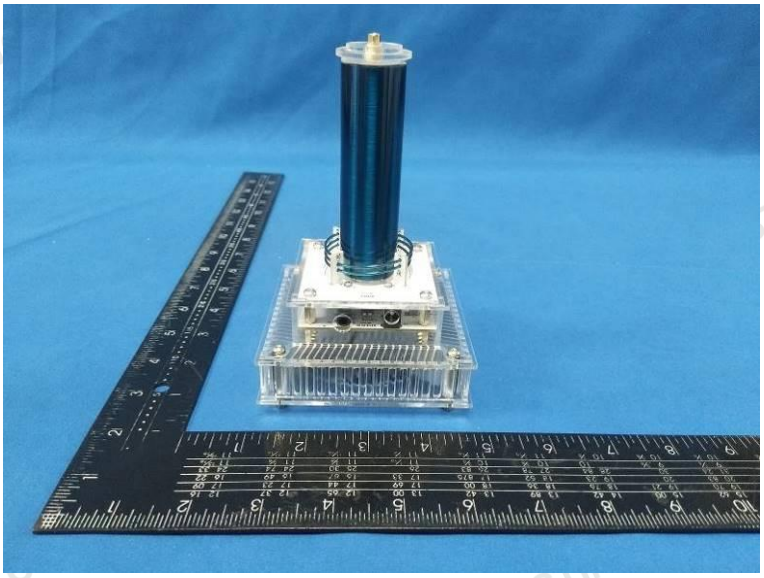


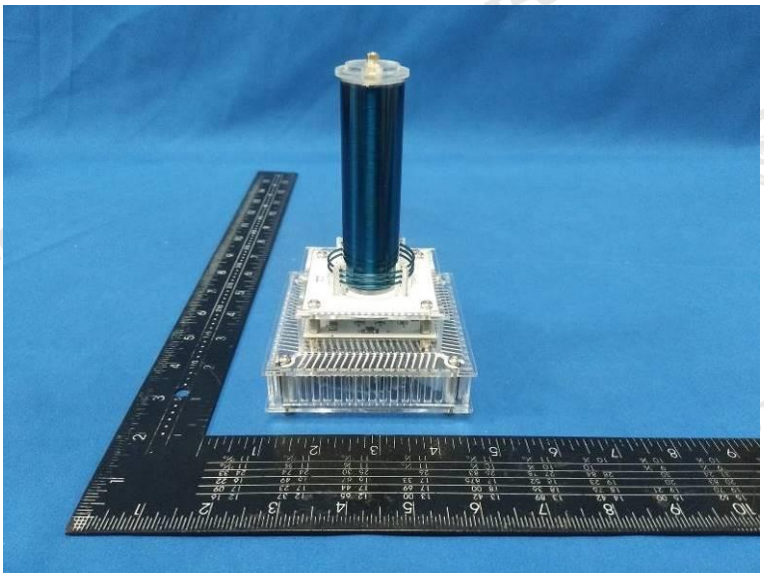
Conducted Disturbance

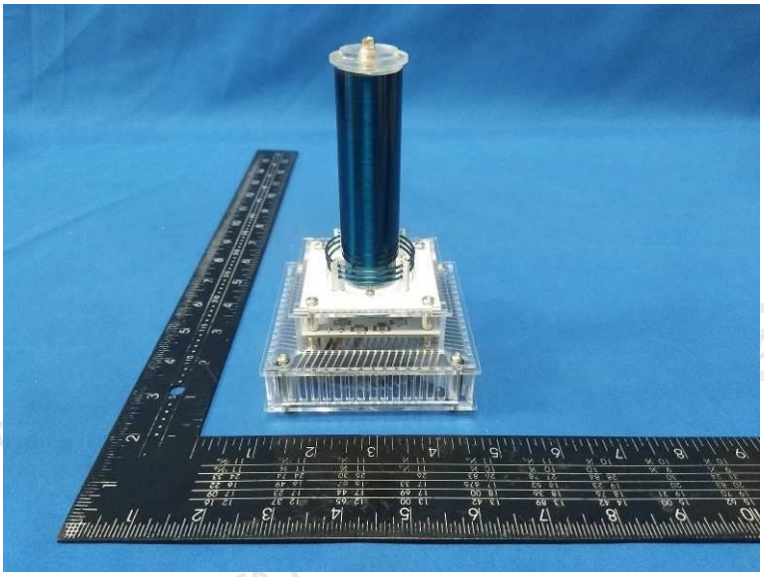
6. External and Internal Photos of the EUT

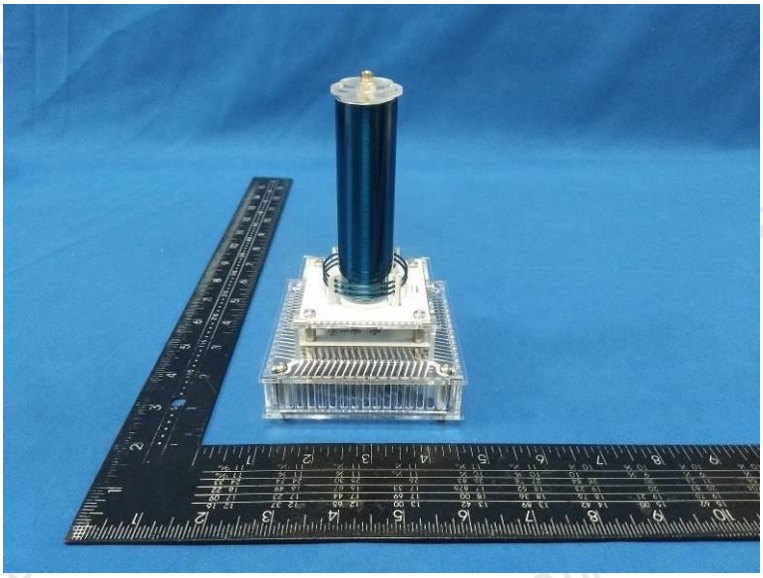


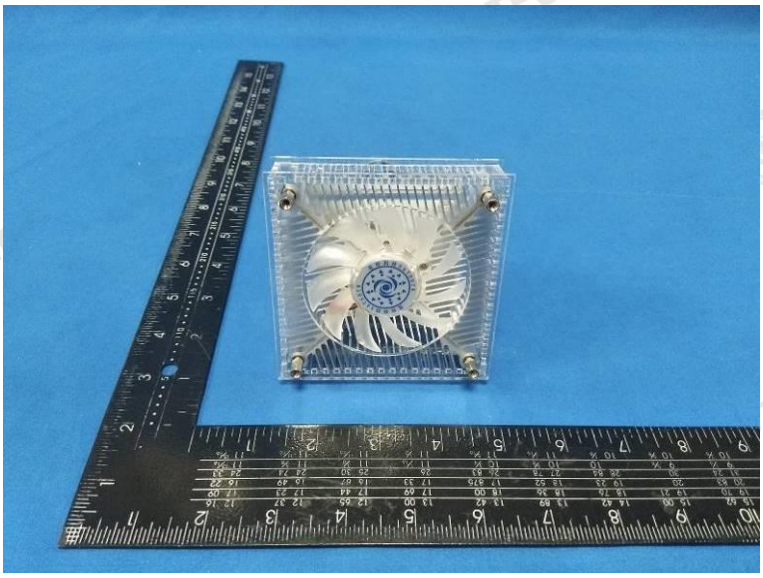


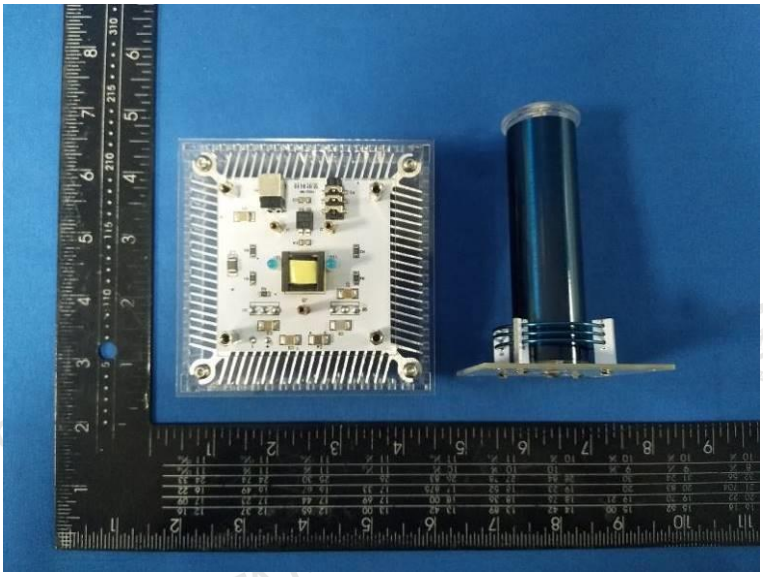


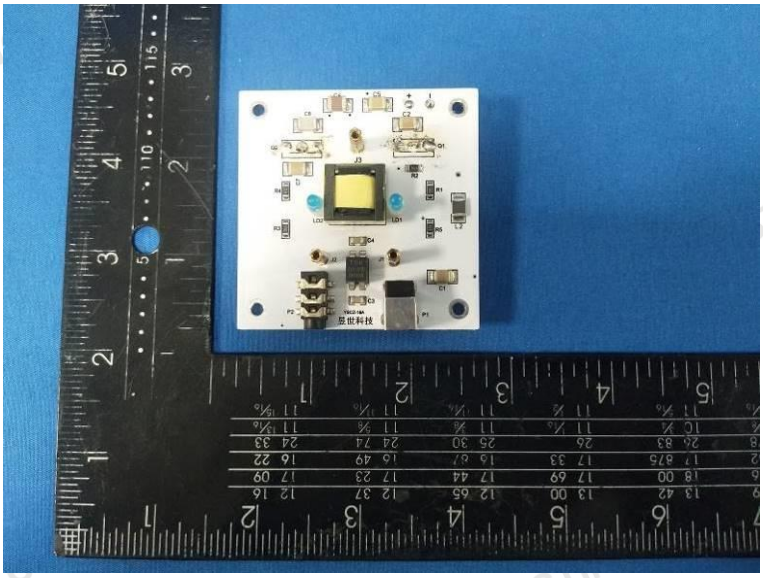


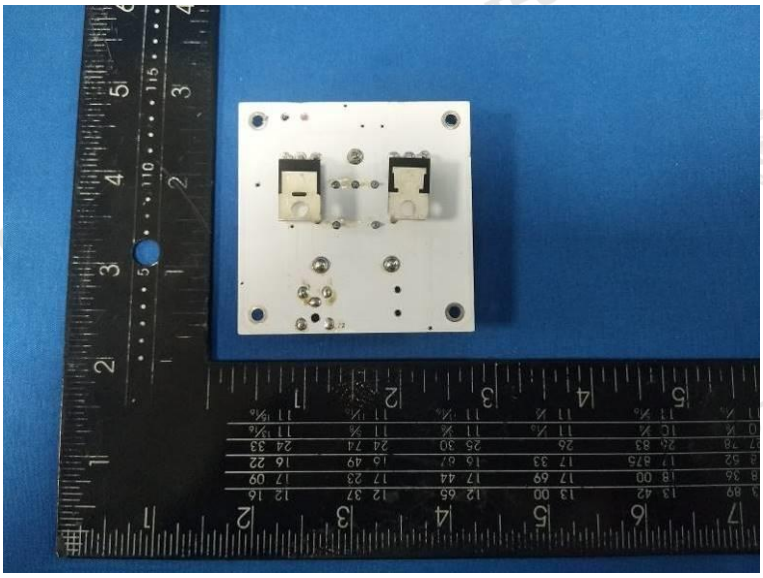


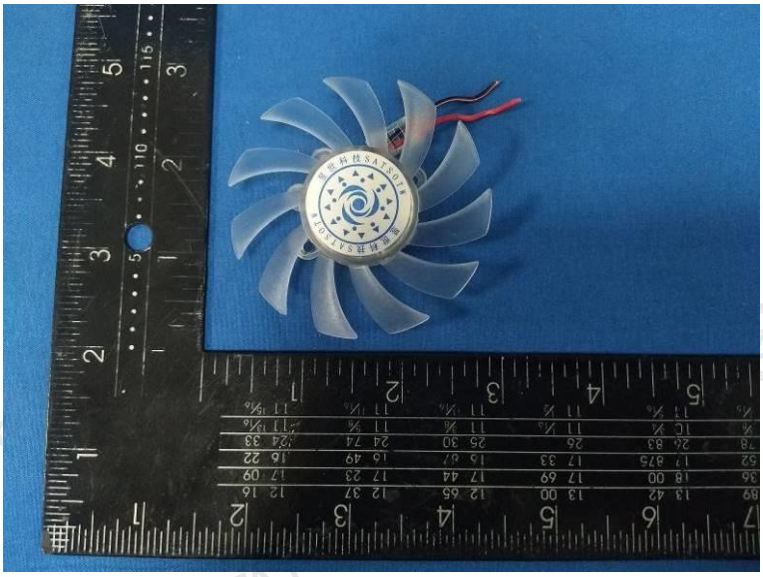


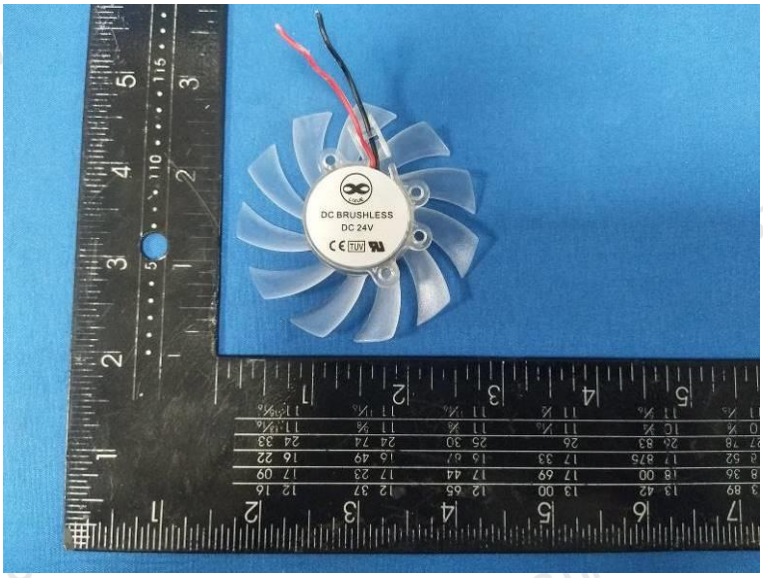








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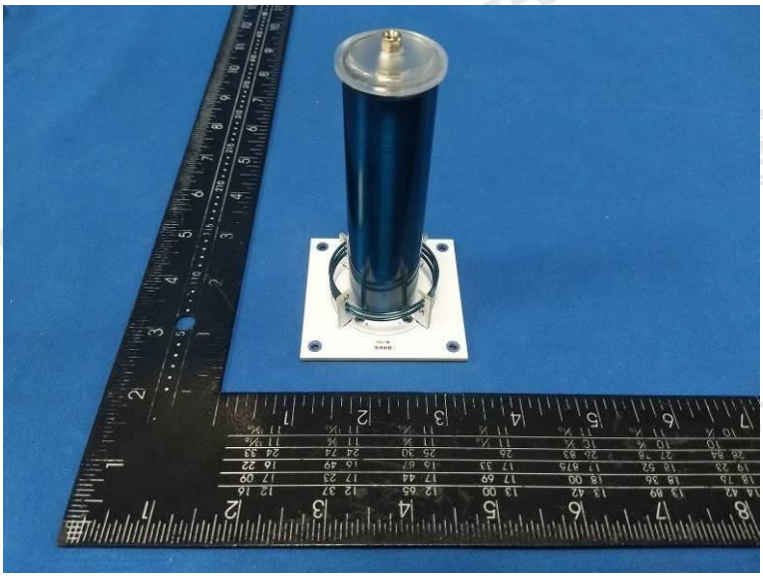
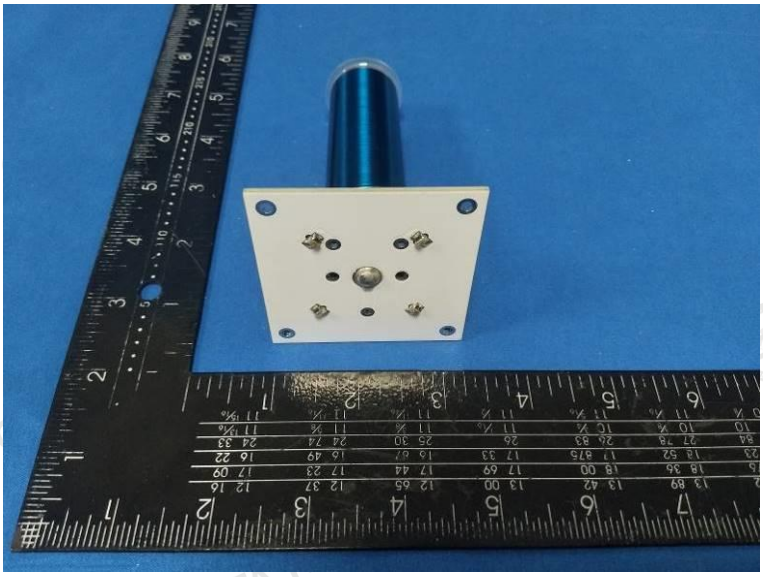
DC 24V





**********End of Report**********