TEST REPORT
EN 55032:2015+A11:2020
EN 55035:2017+A11:2020
EN IEC 61000-3-2:2019/A2:2024
EN 61000-3-3:2013/A2:2021/AC:2022

Report Reference No.....:	**CTA24102500201**
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Supervised by (position+printed name+signature)..:	Project Engineer Zoey Cao
Approved by (position+printed name+signature)..:	RF Manager Eric Wang
Date of issue.....:	Oct. 31, 2024
Testing Laboratory Name .....:	**Shenzhen CTA Testing Technology Co., Ltd.**
Address.....:	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name.....:	**Frog-Is Co Limited**
Address.....:	UNIT 2 Intelligent manufacturing Industrial Park, YinZhou District, NingBo, China
Test specification ..... **:**	
Standard .....:	**EN 55032:2015+A11:2020** **EN 55035:2017+A11:2020** **EN IEC 61000-3-2:2019/A2:2024** **EN 61000-3-3:2013/A2:2021/AC:2022**

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Test item description .....:	**SPEAKER**
Trade Mark .....:	Frog-is
Manufacturer .....:	Frog-Is Co Limited
Model/Type reference.....:	FP8
List Model .....:	FP12, FP15, FI-SUB10A, FI-SUB12A, FI-SB300, FI-CS6BT, FI-M10S, FI-M50, FS12, FS15, FB6, FS-SUB12, FS-SUB15, FS4D, FI-CS6D, FI-CS8D
Ratings.....:	AC 220-240V, 50/60Hz
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	SPEAKER
Model /Type	:	FP8
Listed Models	:	FP12, FP15, FI-SUB10A, FI-SUB12A, FI-SB300, FI-CS6BT, FI-M10S, FI-M50, FS12, FS15, FB6, FS-SUB12, FS-SUB15, FS4D, FI-CS6D, FI-CS8D
Applicant	:	**Frog-Is Co Limited**
Address	:	UNIT 2 Intelligent manufacturing Industrial Park, YinZhou District, NingBo, China
Manufacturer	:	**Frog-Is Co Limited**
Address	:	UNIT 2 Intelligent manufacturing Industrial Park, YinZhou District, NingBo, 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:

EN 55032:2015+A11:2020- Electromagnetic compatibility of multimedia equipment - Emission Requirements

EN 55035:2017+A11:2020- Electromagnetic compatibility of multimedia equipment - Immunity requirements

EN IEC 61000-3-2:2019/A2:2024-Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)

EN 61000-3-3:2013/A2:2021/AC:2022- Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Oct. 25, 2024
Testing commenced on	:	Oct. 25, 2024
Testing concluded on	:	Oct. 31, 2024

2.2. Product Description

Product Name:	SPEAKER
Model:	FP8
Power supply:	AC 220-240V, 50/60Hz

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	Working

Test item	Test mode
Conducted emission(AC MAIN)	Mode 1
Radiated emission	Mode 1
EMS	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]	Wired microphone	/	SM58	/	/
2[Note1]	/	/	/	/	/
3[Note1]	/	/	/	/	/

Note1: This Auxiliary used during the test is provided by the 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:	25°C
Lative Humidity	55 %
Air Pressure	989 hPa

3.4. Test Description

Emission Measurement		
Radiated Emission	EN 55032:2015+A11:2020	PASS
Conducted Emission(AC Mains)	EN 55032:2015+A11:2020	PASS
Harmonic Current Emissions	EN IEC 61000-3-2:2019/A2:2024	PASS
Voltage Fluctuations and Flicker	EN 61000-3-3:2013/A2:2021/AC:2022	PASS
Immunity Measurement		
Electrostatic Discharge	EN 55035:2017+A11:2020	PASS
RF Electromagnetic Field	EN 55035:2017+A11:2020	PASS
Fast Transients Common Mode	EN 55035:2017+A11:2020	PASS
RF Common Mode 0,15 MHz to 80 MHz	EN 55035:2017+A11:2020	PASS
Voltage Dips and Interruptions	EN 55035:2017+A11:2020	PASS
Surges	EN 55035:2017+A11:2020	PASS
Power frequency magnetic field	EN 55035:2017+A11:2020	N/A

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	9KHz~30MHz	3.02 dB	(1)
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
Output Peak power	30MHz~18GHz	0.55 dB	(1)
Power spectral density	/	0.57 dB	(1)
Spectrum bandwidth	/	1.1%	(1)
Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.10 dB	(1)
Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.32 dB	(1)
Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.54 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	2023/10/17	2026/10/16
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	CTA-306	2024/08/03	2025/08/02
3	Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2023/10/13	2026/10/12
4	Universal Radio Communication	CMW500	R&S	CTA-302	2024/08/03	2025/08/02
5	Band-reject filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-DZA66	CTA-410	2024/08/03	2025/08/02
6	Band-reject filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-DZA64	CTA-411	2024/08/03	2025/08/02
7	Band-reject filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-DZA63	CTA-411	2024/08/03	2025/08/02
8	High-pass filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-GTA10	CTA-412	2024/08/03	2025/08/02
9	High-pass filter	Xi'an Xingbo Technology Co.,Ltd	XBLBQ-GTA18	CTA-402	2024/08/03	2025/08/02

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	EMI Test Receiver	R&S	ESPI	CTA-307	2024/08/03	2025/08/02
2	Artificial Mains	R&S	ENV-216	CTA-308	2024/08/03	2025/08/02
3	Artificial Mains	R&S	ENV-216	CTA-314	2024/08/03	2025/08/02
4	ISN	Schwarzbeck	NTFM8158	CTA-407	2024/08/03	2025/08/02
5	ISN	Schwarzbeck	CAT58158	CTA-408	2024/08/03	2025/08/02
6	ISN	Schwarzbeck	CAT38158	CTA-409	2024/08/03	2025/08/02
7	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

Electrical Fast Transient						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	Fast Transient Burst Simulator	Prima	EFT61004TA	CTA-316	2024/08/03	2025/08/02
2	Coupling Clamp	Prima	EFT-CLAMP	CTA-317	2024/08/03	2025/08/02
3	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

Harmonic Current/ Voltage Fluctuation and Flicker						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	Harmonic and Flicker Analyzer	Voltech	PM6000	CTA-339	2024/08/03	2025/08/02
2	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

Electrostatic Discharge						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	ESD Simulators	NOISEKEN	ESS-100L(A)	CTA-315	2024/08/03	2025/08/02
2	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

RF Field Strength Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	SIGNAL GENERATOR	Agilent	N5182A	CTA-305	2024/08/03	2025/08/02
2	POWER AMPLIFIER	AR	150W1000	CTA-413	2024/08/03	2025/08/02
3	POWER AMPLIFIER	Mictop	MPA-1000-6000-100	CTA-414	2024/08/03	2025/08/02
4	DUAL DIRECTIONAL COUPLER	AR	DC6080	CTA-415	2024/08/03	2025/08/02
5	POWER METER	Agilent	E4419B	CTA-416	2024/08/03	2025/08/02
6	Power sensor	Agilent	E9301A	CTA-417	2024/08/03	2025/08/02
7	Power sensor	Agilent	8483A	CTA-418	2024/08/03	2025/08/02
8	TRANSMITTING ANTENNA	AR	AT1080	CTA-419	2023/10/17	2026/10/16
9	TRANSMITTING ANTENNA	Schwarzbeck	STLP 9149	CTA-420	2023/10/17	2026/10/16
10	Radio Communication Tester	R&S	CMW500	CTA-302	2024/08/03	2025/08/02
11	Audio Analyzer	R&S	UPL	CTA-421	2024/08/03	2025/08/02

Conducted Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	CS Test system	Schloder	CDG 6000-75	CTA-322	2024/08/03	2025/08/02
2	CDN M2+M3	Zhinan	ZN3750	CTA-323	2024/08/03	2025/08/02
3	6dB Attenuator	Schloder	CDG60100	CTA-324	2024/08/03	2025/08/02
4	EM Clamp	Schloder	EMCL-20	CTA-325	2024/08/03	2025/08/02
5	Audio Analyzer	R&S	UPL	CTA-421	2024/08/03	2025/08/02
6	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

Surge						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	Lightning Surge Generator	Prima	SUG61005TB	CTA-318	2024/08/03	2025/08/02
2	Lightning Surge Generator	Prima	SUG10/700TA	CTA-319	2024/08/03	2025/08/02
3	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

Dips						
Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	Cycle Sag Simulator	Prima	DRP61011TA	CTA-321	2024/08/03	2025/08/02
2	Universal Radio Communication	R&S	CMW500	CTA-302	2024/08/03	2025/08/02

Item	Test Equipment	Manufacturer	Model No.	Equipment No.	Last Cal.	Cal.Due
1	EMI Test Software	Tonscend	TS®JS32-RE	5.0.0.2	N/A	N/A
2	EMI Test Software	Tonscend	TS®JS32-CE	5.0.0.1	N/A	N/A

4. TEST CONDITIONS AND RESULTS

4.1. EMISSION

4.1.1. Radiated Emission

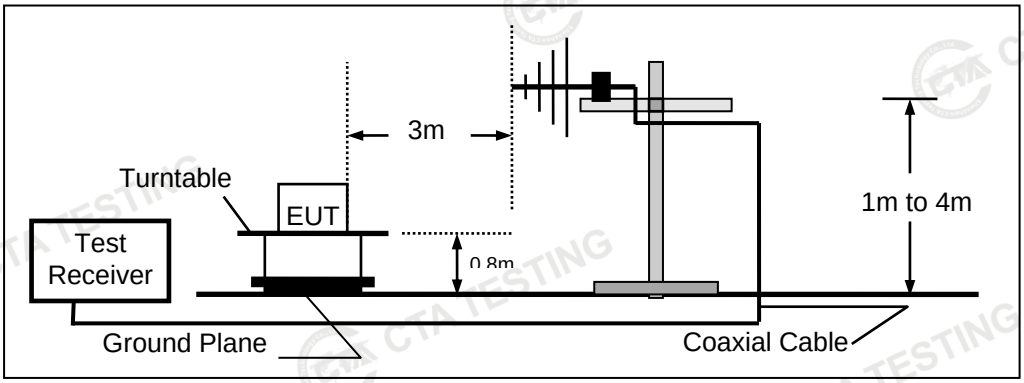
LIMIT

Please refer to EN 55032:2015+A11:2020

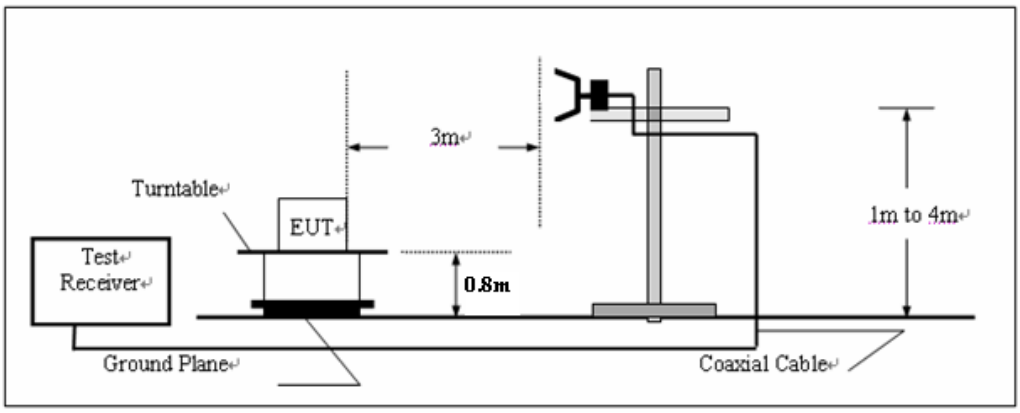
Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 230	3	40
230~1000	3	47

TEST CONFIGURATION

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



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



TEST PROCEDURE

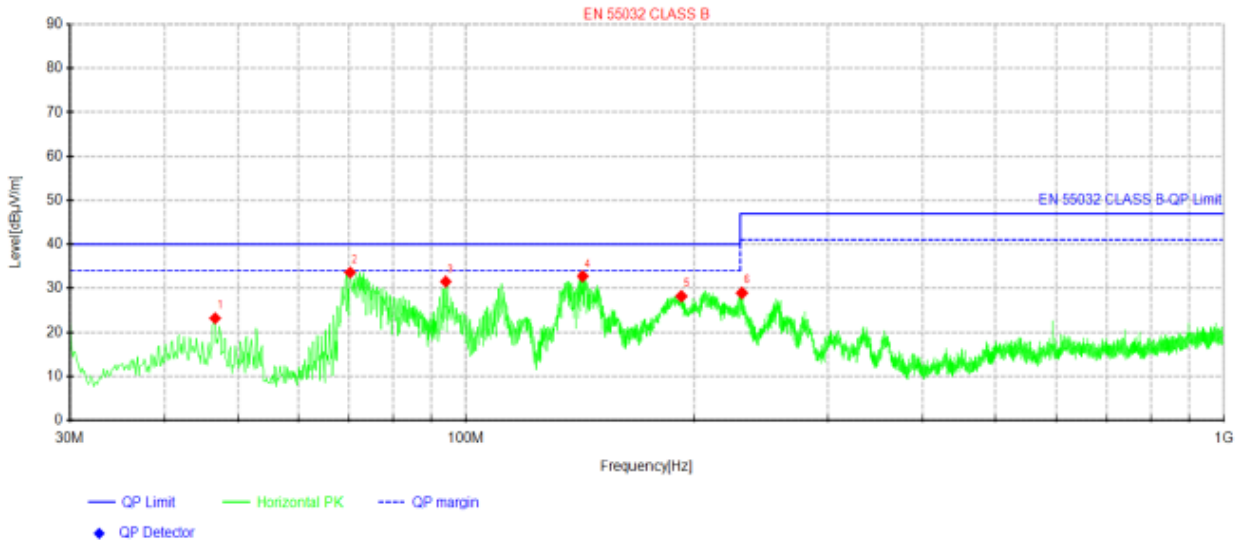
Please refer to EN 55032:2015+A11:2020 Annex A for the measurement methods

TEST RESULTS

Passed

Please refer to the below test data:

Test mode:	Mode 1	Polarization	Horizontal



Suspected Data List

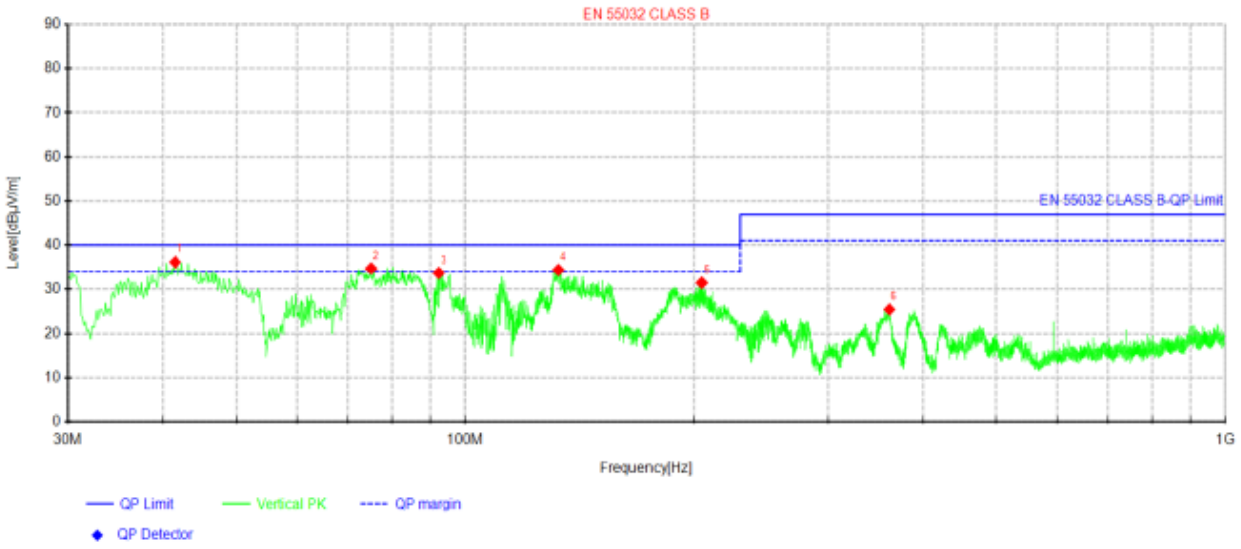
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	46.6112	34.59	23.24	-11.35	40.00	16.76	100	102	Horizontal
2	70.255	48.38	33.63	-14.75	40.00	6.37	100	90	Horizontal
3	94.02	45.53	31.49	-14.04	40.00	8.51	100	114	Horizontal
4	142.641	48.30	32.71	-15.59	40.00	7.29	100	102	Horizontal
5	192.475	41.62	28.25	-13.37	40.00	11.75	100	56	Horizontal
6	231.153	41.41	28.98	-12.43	47.00	18.02	100	56	Horizontal

Note:1).Result (dBµV/m)= Reading (dBµV/m)+ 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	Vertical



Suspected Data List

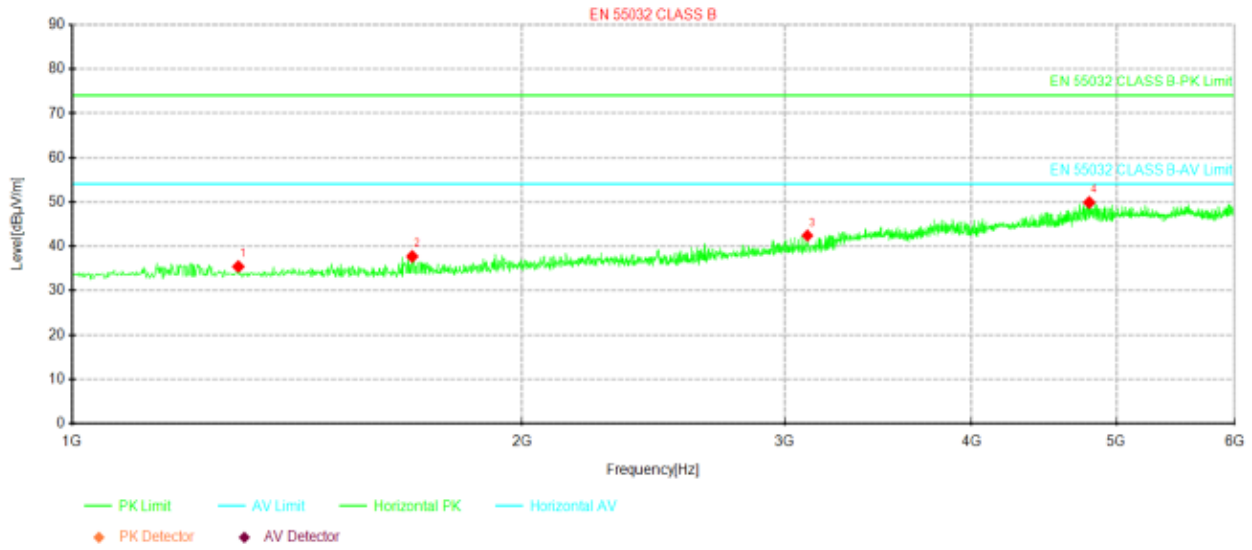
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	41.5188	48.02	36.22	-11.80	40.00	3.78	100	268	Vertical
2	75.2262	50.87	34.76	-16.11	40.00	5.24	100	199	Vertical
3	92.2012	48.06	33.73	-14.33	40.00	6.27	100	70	Vertical
4	132.577	50.69	34.41	-16.28	40.00	5.59	100	94	Vertical
5	204.6	44.26	31.48	-12.78	40.00	8.52	100	70	Vertical
6	361.497	36.09	25.54	-10.55	47.00	21.46	100	357	Vertical

Note:1).Result (dBµV/m)= Reading (dBµV/m)+ 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)

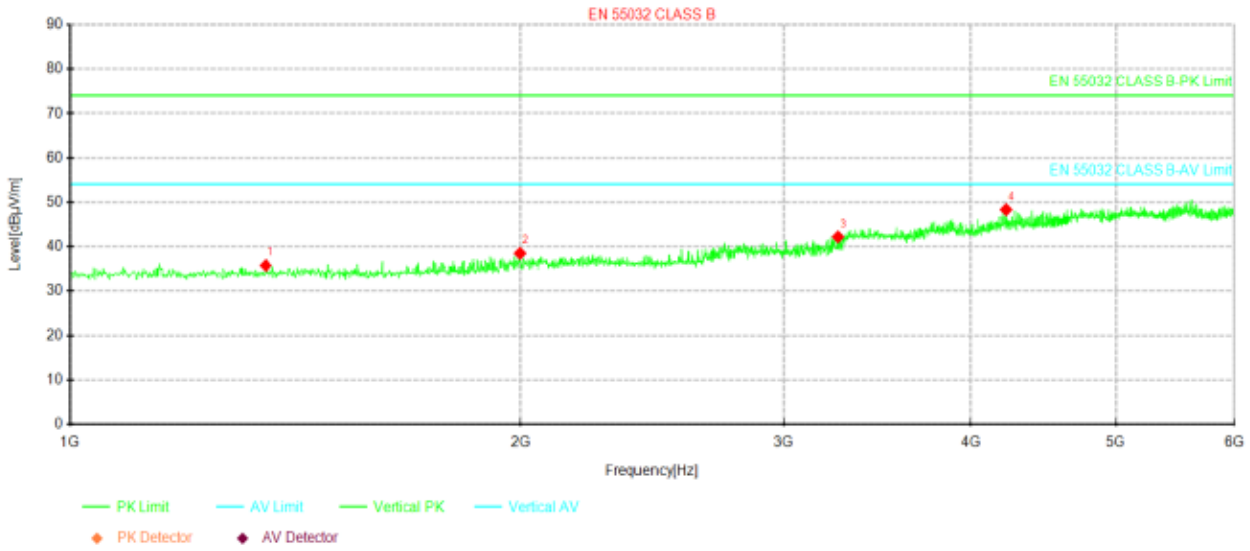
Test mode:	Mode 1	Polarization	Horizontal



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1292.5	100.33	35.52	-64.81	74.00	38.48	100	310	Horizontal
2	1690	102.15	37.77	-64.38	74.00	36.23	100	240	Horizontal
3	3106.25	102.85	42.38	-60.47	74.00	31.62	100	10	Horizontal
4	4797.5	105.58	49.89	-55.69	74.00	24.11	100	120	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	1351.25	100.57	35.85	-64.72	74.00	38.15	100	190	Vertical
2	1998.75	101.36	38.54	-62.82	74.00	35.46	100	260	Vertical
3	3260	102.64	42.16	-60.48	74.00	31.84	100	40	Vertical
4	4223.75	106.30	48.38	-57.92	74.00	25.62	100	40	Vertical

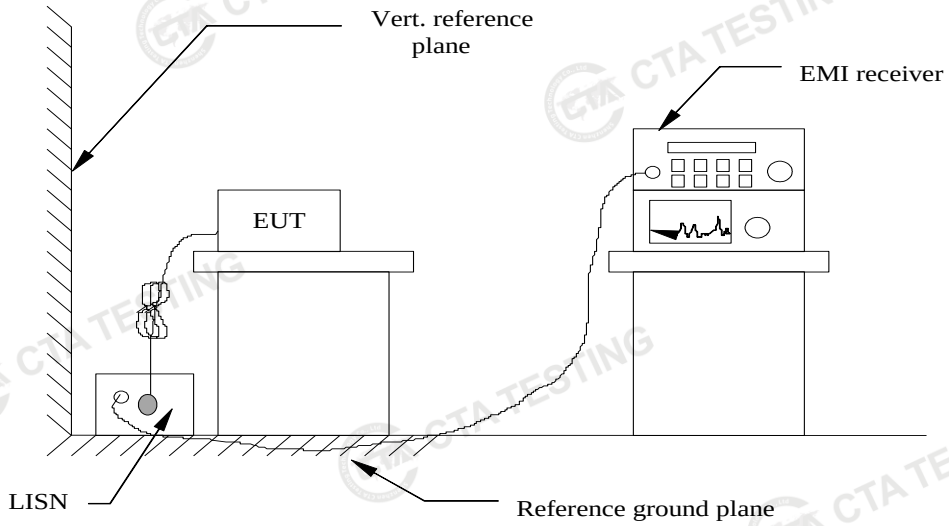
4.1.2. Conducted Emission

LIMIT

Please refer to EN 55032:2015+A11:2020

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

TEST CONFIGURATION



TEST PROCEDURE

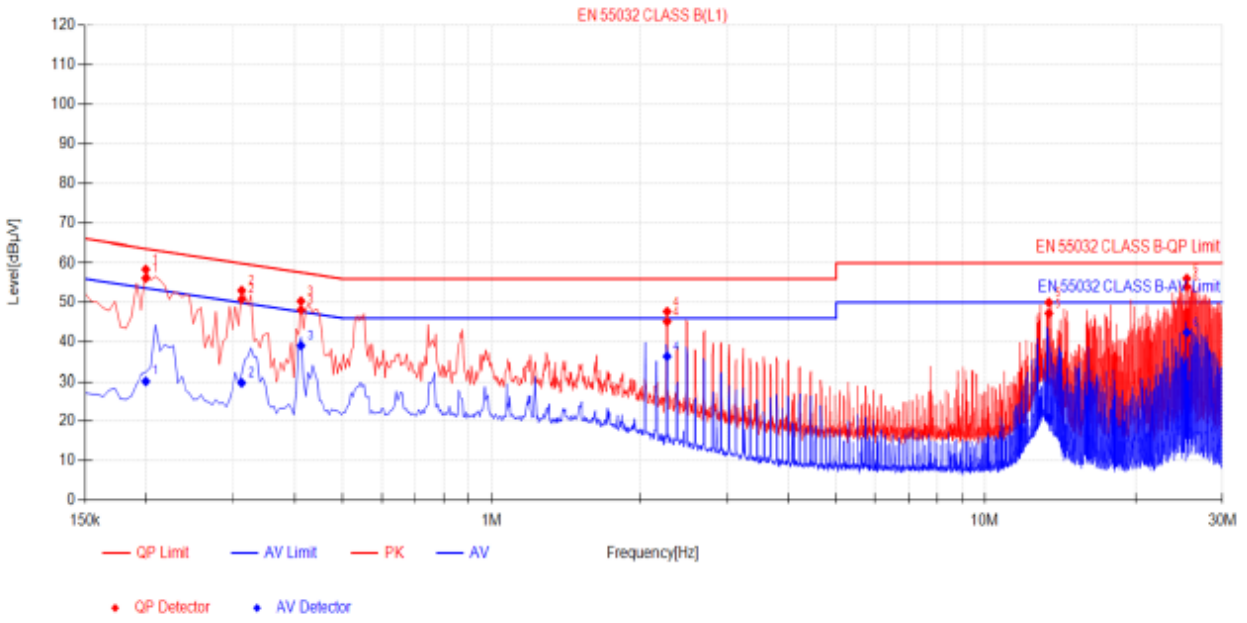
Please refer to EN 55032:2015+A11:2020 Annex A for the measurement methods.

TEST RESULTS

Passed

Please refer to the below test data:

Test mode:	Mode 1	Polarization	L



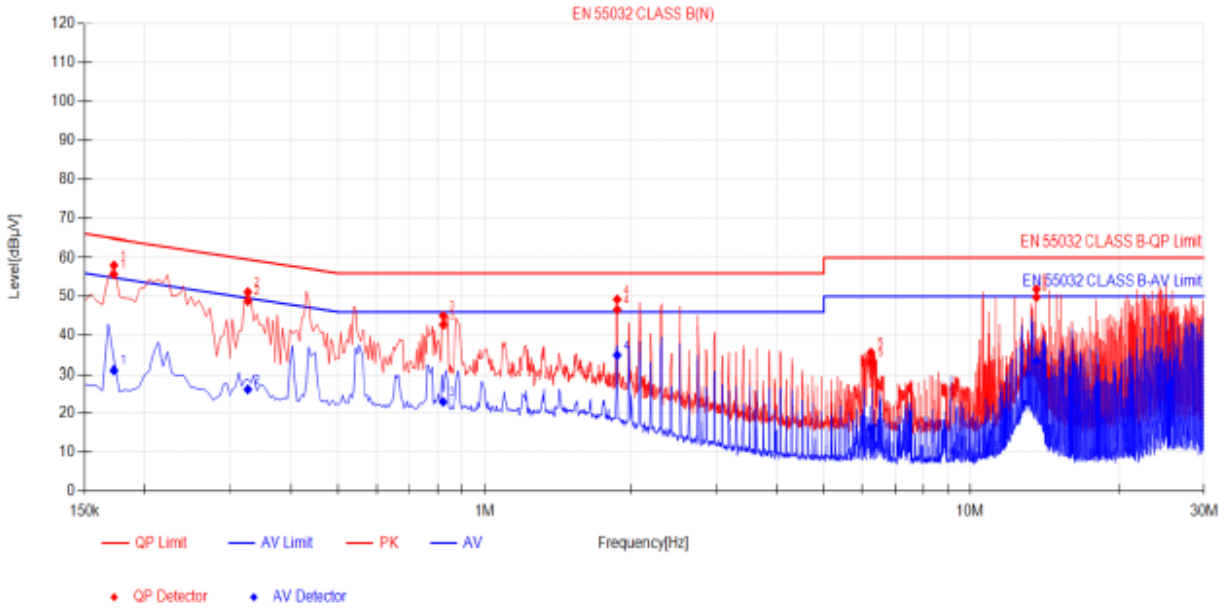
Final Data List

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	0.1995	10.10	46.08	56.18	63.63	7.45	20.05	30.15	53.63	23.48	PASS
2	0.312	9.93	40.90	50.83	59.92	9.09	19.86	29.79	49.92	20.13	PASS
3	0.411	9.89	38.22	48.11	57.63	9.52	29.12	39.01	47.63	8.62	PASS
4	2.2695	10.02	35.12	45.14	56.00	10.86	26.25	36.27	46.00	9.73	PASS
5	13.4565	10.29	36.95	47.24	60.00	12.76	10.56	20.85	50.00	29.15	PASS
6	25.386	10.51	43.51	54.02	60.00	5.98	31.86	42.37	50.00	7.63	PASS

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

2). Factor(dB/m)=Cable loss (dB) + LISN Factor (dB)

Test mode:	Mode 1	Polarization	N



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB µV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1725	10.07	45.64	55.71	64.84	9.13	21.01	31.08	54.84	23.76	PASS
2	0.3255	9.86	38.93	48.79	59.57	10.78	16.37	26.23	49.57	23.34	PASS
3	0.8205	10.14	32.56	42.70	56.00	13.30	12.84	22.98	46.00	23.02	PASS
4	1.8735	10.18	36.40	46.58	56.00	9.42	24.65	34.83	46.00	11.17	PASS
5	6.252	10.30	22.67	32.97	60.00	27.03	5.63	15.93	50.00	34.07	PASS
6	13.6635	10.41	39.42	49.83	60.00	10.17	22.89	33.30	50.00	16.70	PASS

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

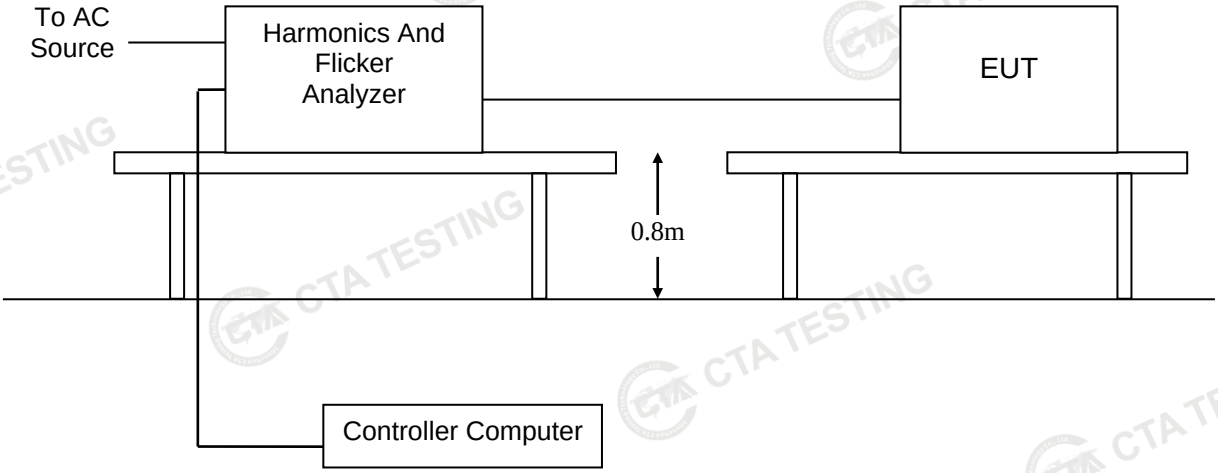
2). Factor(dB/m)=Cable loss (dB) + LISN Factor (dB)

4.1.3. Harmonic Current Emission

LIMIT

Please refer to EN 61000-3-2

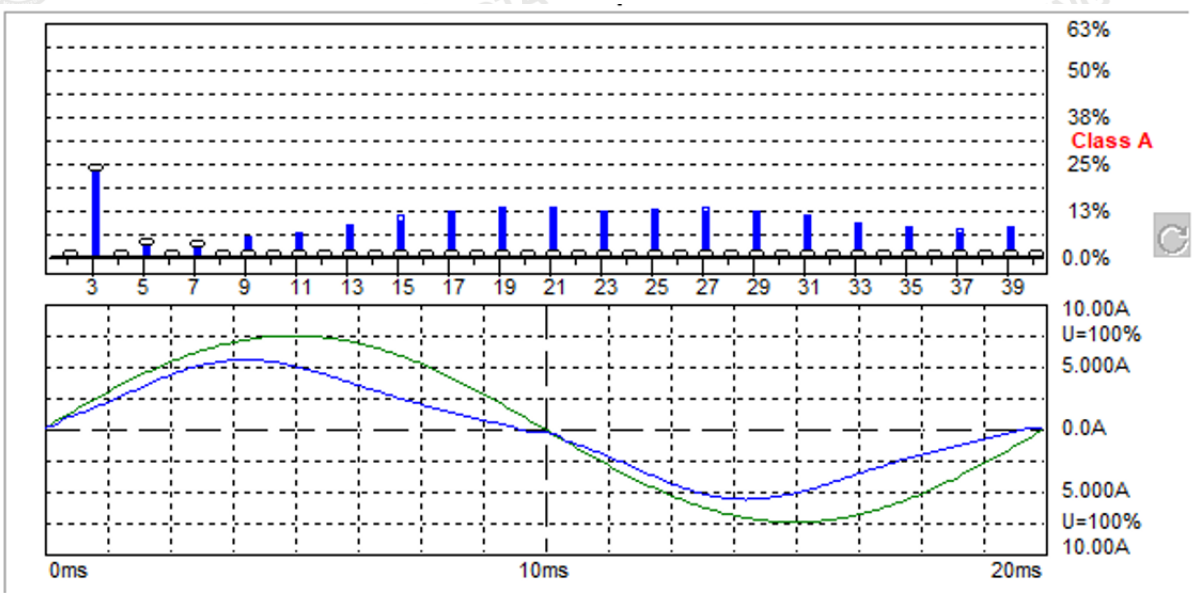
TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-2 for the measurement methods.

TEST RESULTS

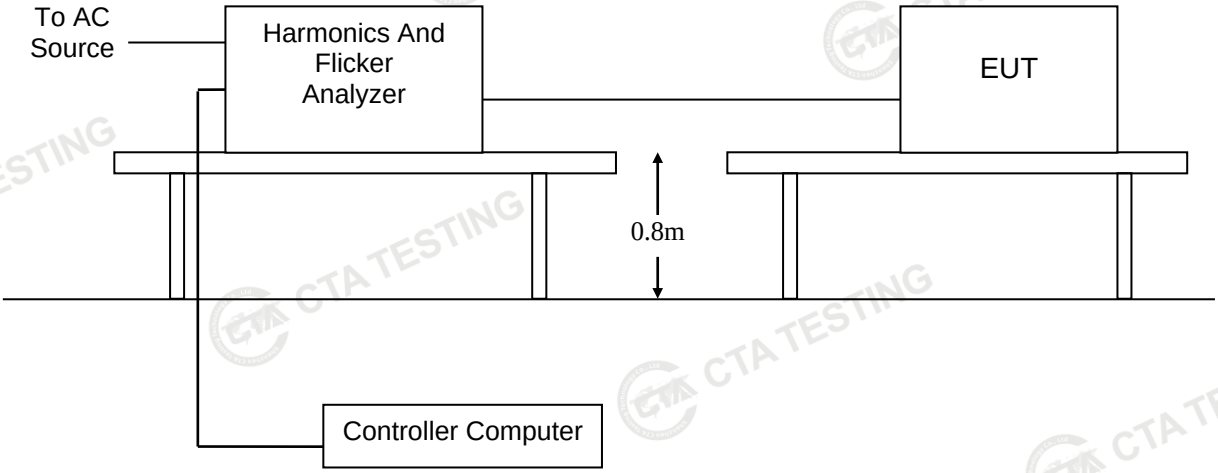


4.1.4. Voltage Fluctuation and Flicker

LIMIT

Please refer to EN 61000-3-3

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-3 for the measurement methods.

TEST RESULTS

	EUT values	Limit	Result
Pst	0.031	1.00	PASS
Plt	0.000	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.156	4.00	PASS
dt [s]	0.000	0.50	PASS

4.2. IMMUNITY

4.2.1. Performance criteria

■ **Performance Criterion of EN55035**

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance of loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

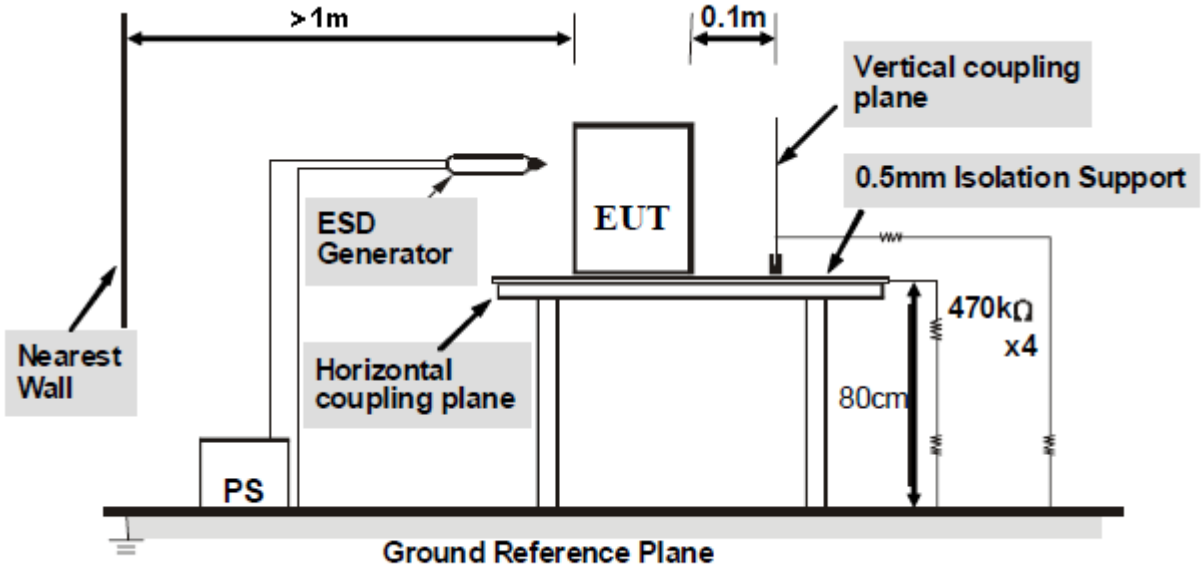
4.2.2. Electrostatic Discharge

LIMIT

SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Test level: Contact Discharge at ±2KV, ±4KV Air Discharge at ±2KV, ±4KV, ±8KV

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 55035 and EN 61000-4-2 for the measurement methods.

Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT.

Indirect discharge for vertical coupling plane:

At least 10 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Direct discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	Criteria Level	Result
Contact discharge	±2	No degradation in performance of the EUT was observed (A)	B	Pass
	±4	A	B	
Air discharge	±2	A	B	
	±4	A	B	
	±8	A	B	
Indirect discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	Criteria Level	Result
HCP (6 sides)	±2	A	B	Pass
	±4	A	B	
VCP (4 sides)	±2	A	B	
	±4	A	B	

Remark: The ancillary equipment's specification for an acceptable level of performance or degradation of performance during and/or after the ESD tests.

4.2.3. RF Electromagnetic Field

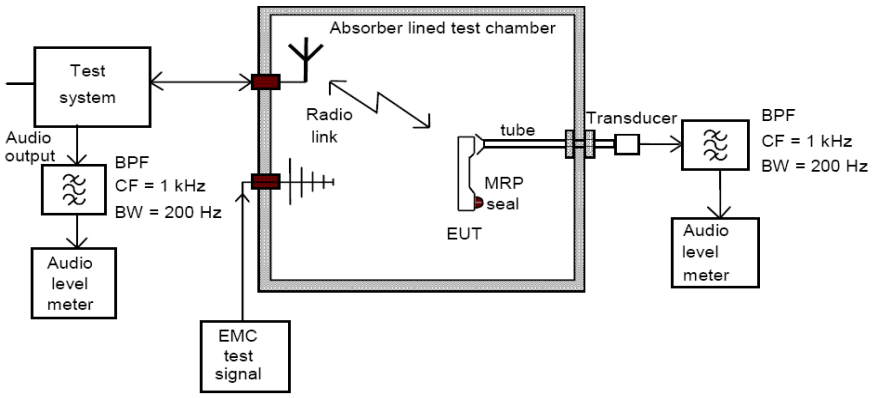
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3V/m (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-3 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80MHz-1GHz 1800MHz 2600MHz 3500MHz 5000MHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

4.2.4. Surges

PERFORMANCE CRITERION

Criteria B

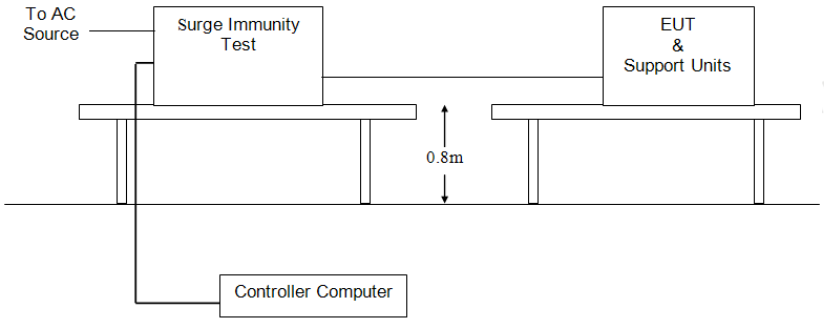
TEST LEVEL

1kV Line to Line: Differential mode

2kV Line to Ground: Common mode

(Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-5 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Location	Level(kV)	Pulse No	Surge Interval	Phase(deg)	Observations (Performance Criterion)	Result
L-N	± 1	5	60s	0°	A	Pass
				90°	A	Pass
				180°	A	Pass
				270°	A	Pass
L-PE	± 2	5	60s	0°	A	Pass
				90°	A	Pass
				180°	A	Pass
				270°	A	Pass
N-PE	± 2	5	60s	0°	A	Pass
				90°	A	Pass
				180°	A	Pass
				270°	A	Pass

Remark: A: No degradation in performance of the EUT was observed.

4.2.5. RF- Common Mode 0.15MHz to 80MHz

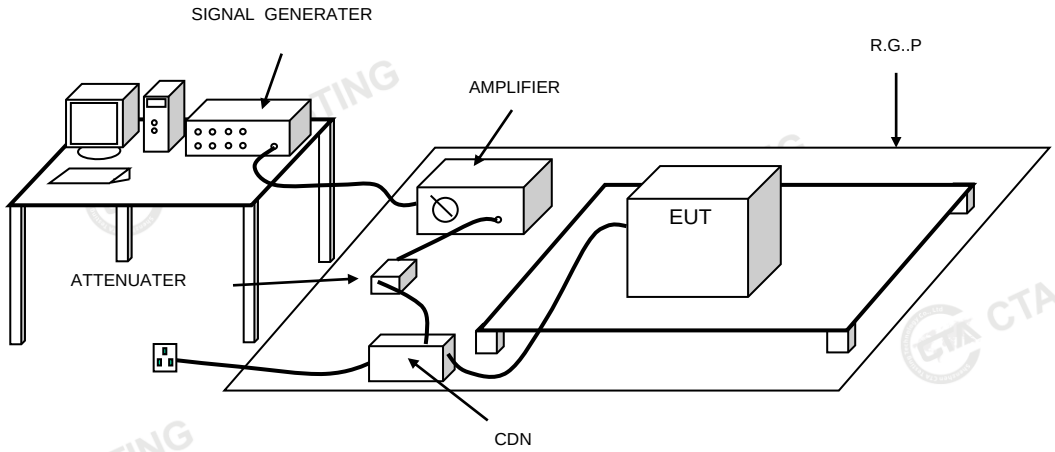
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3Vrms on AC main port (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-6 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Frequency	Injected Position	Level	Modulation	Observations (Performance Criterion)	Result
150kHz to 10MHz	AC Mains	3Vrms	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	A	Pass
10MHz to 30MHz		3 Vrms to 1 Vrms			
30MHz to 80MHz		1 Vrms			

Remark: A: No degradation in performance of the EUT was observed

4.2.6. Fast Transients Common Mode

PERFORMANCE CRITERION

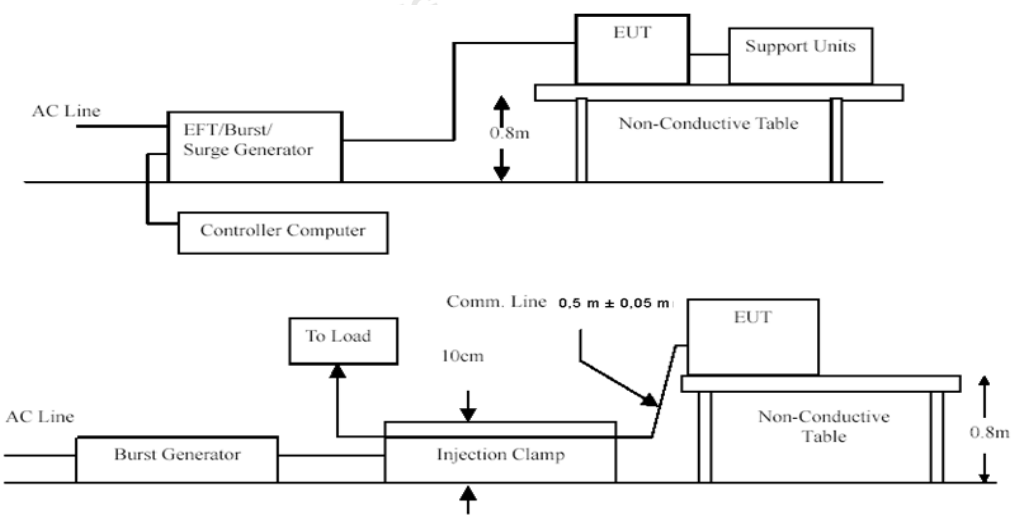
Criteria B

TEST LEVEL

1KV for AC main port

(Impulse Frequency: 5 kHz; Tr/Th: 5/50ns; Burst Duration: 15ms; Burst Period: 3Hz)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55035 and EN 61000-4-4 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Lead under Test	Level (±Kv)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	±1	Direct	A	Pass
N	±1	Direct	A	Pass
PE	±1	Direct	A	Pass
L-N	±1	Direct	A	Pass
L-PE	±1	Direct	A	Pass
N-PE	±1	Direct	A	Pass
L-N-PE	±1	Direct	A	Pass

Remark: A: No degradation in performance of the EUT was observed.

4.2.7. Voltage Dips and Interruptions

PERFORMANCE CRITERION

>95% VD, 0.5 period----Performance criterion: B

>95% VD, 1.0 period----Performance criterion: B

30% VD, 25 period----Performance criterion: C

>95% VI, 250 period----Performance criterion: C

TEST LEVEL

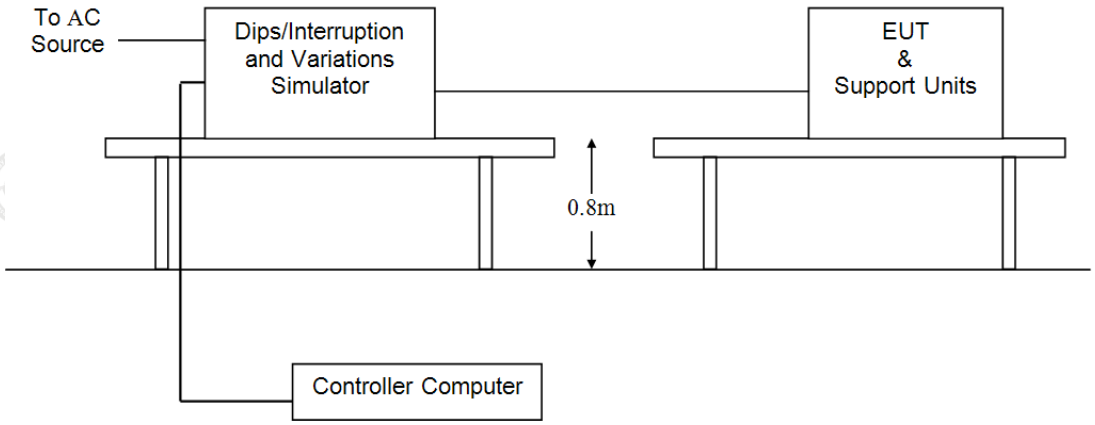
0% of VT(Supply Voltage) for 0.5 period

0% of VT(Supply Voltage) for 1.0 period

70% of VT(Supply Voltage) for 25 period

0% of VT(Supply Voltage) for 250 period

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-11 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Test Level % UT	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0°, 90°, 180°, 270°	3	10s	A	Pass
0	1.0	0°, 90°, 180°, 270°	3	10s	A	Pass
70	25	0°, 90°, 180°, 270°	3	10s	A	Pass
0	250	0°, 90°, 180°, 270°	3	10s	B	Pass

Remark :
A: No degradation in performance of the EUT was observed.
B: During the test, the power shut down, after the experiment, the function can automatically return to normal.

4.2.8. Power frequency magnetic field

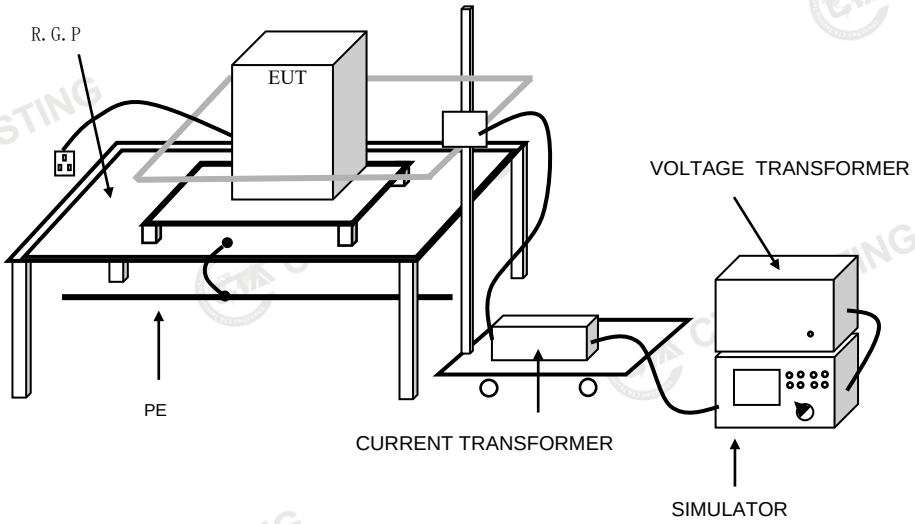
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

30A /m (X-axis, Y-axis, Z-axis)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-8 for the measurement methods.

TEST MODE

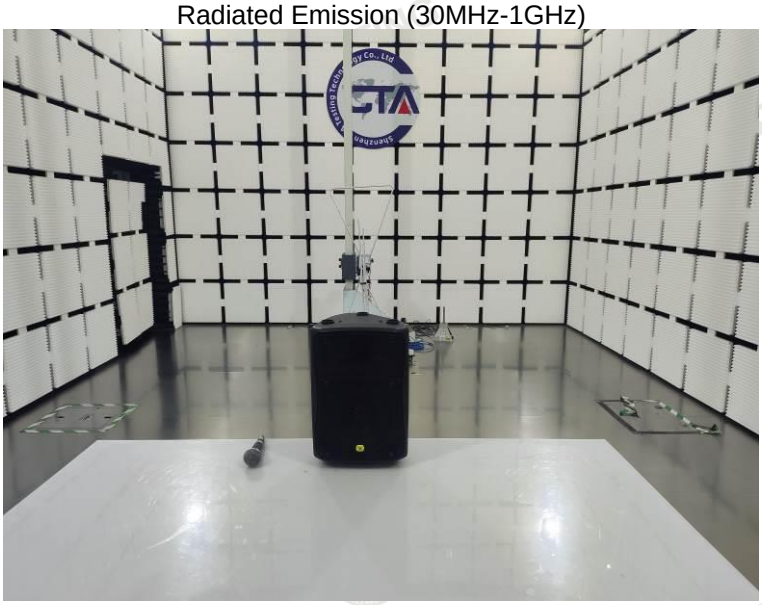
Please reference to the section 2.3

TEST RESULTS

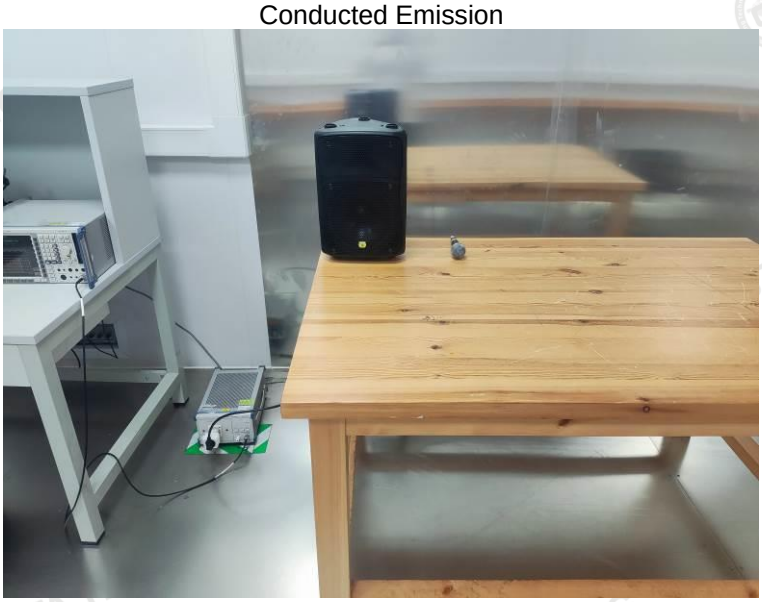
Not applicable

5. Test Set-up Photos of the EUT

Radiated Emission (30MHz-1GHz)



Conducted Emission



6. External and Internal Photos of the EUT





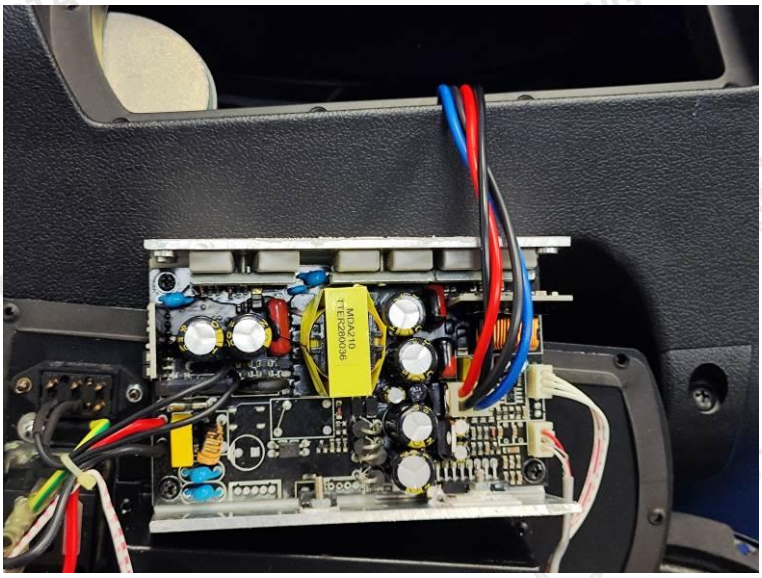




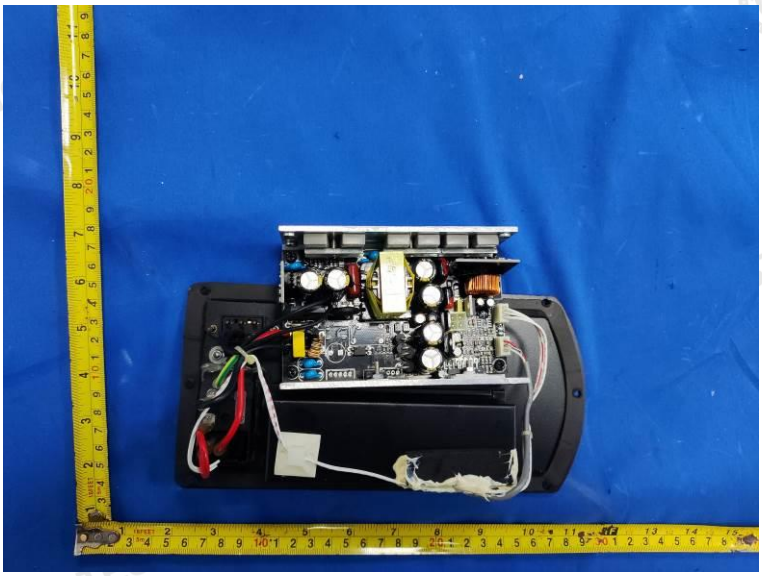




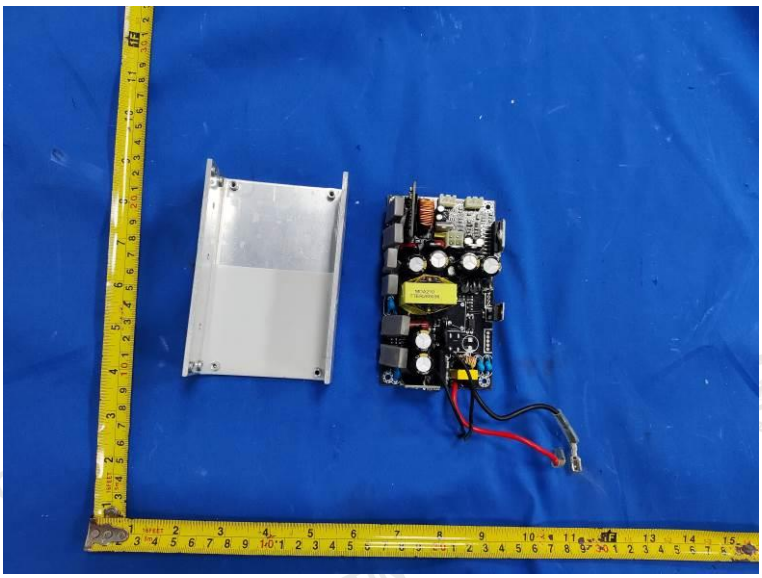


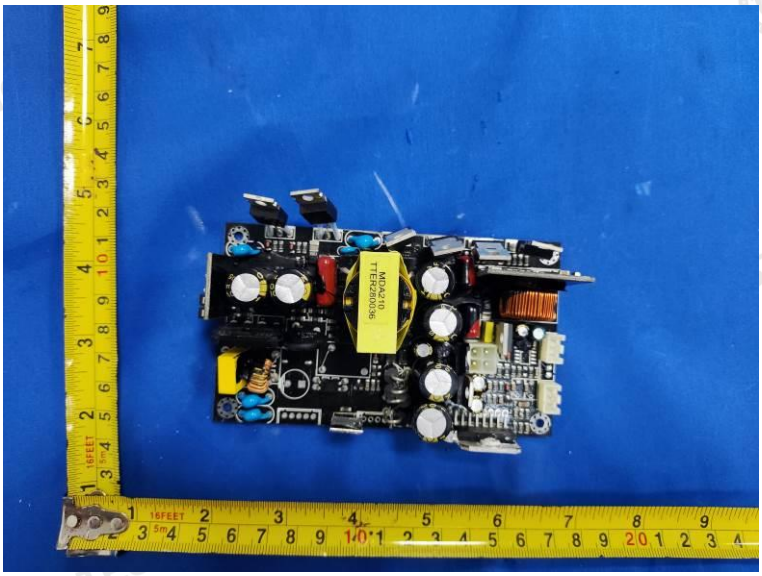


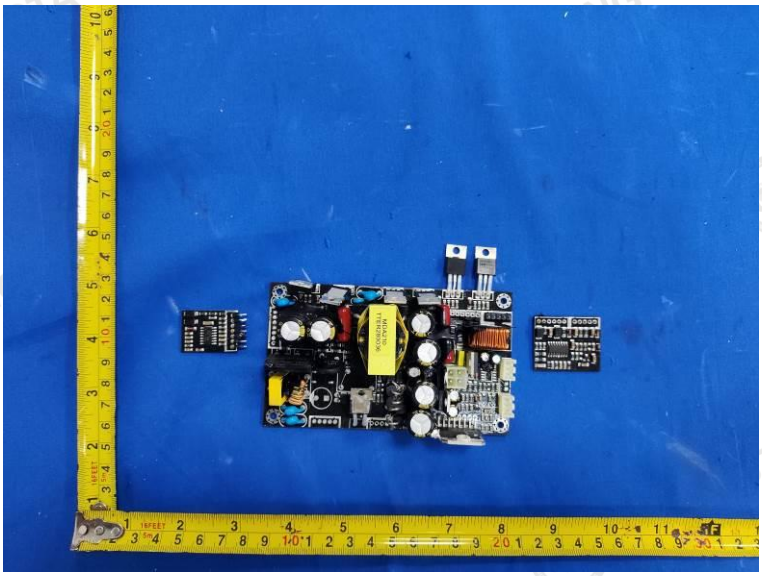


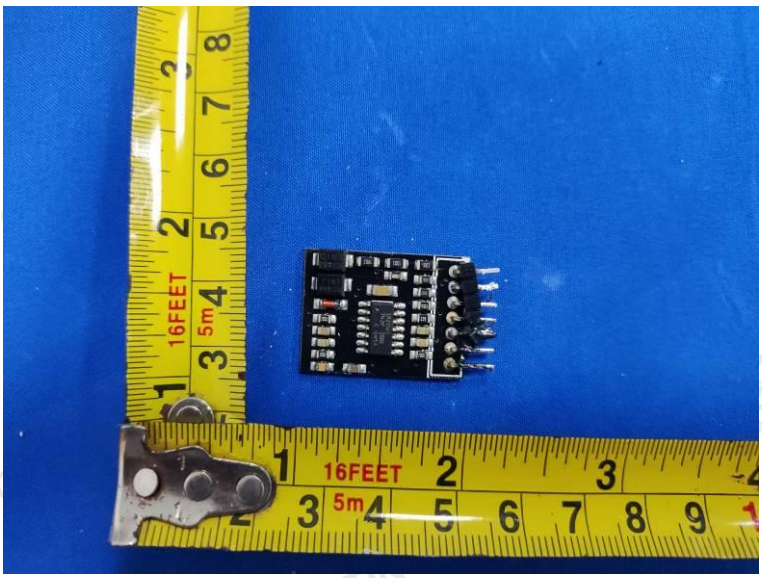






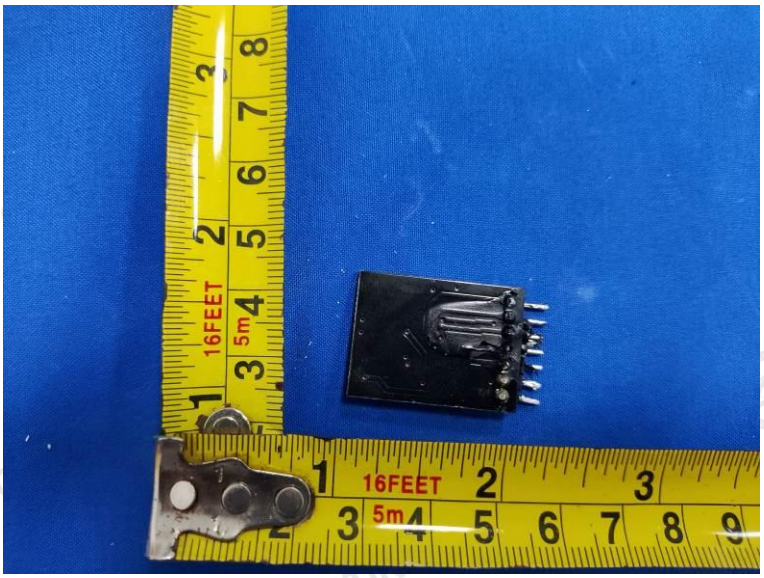


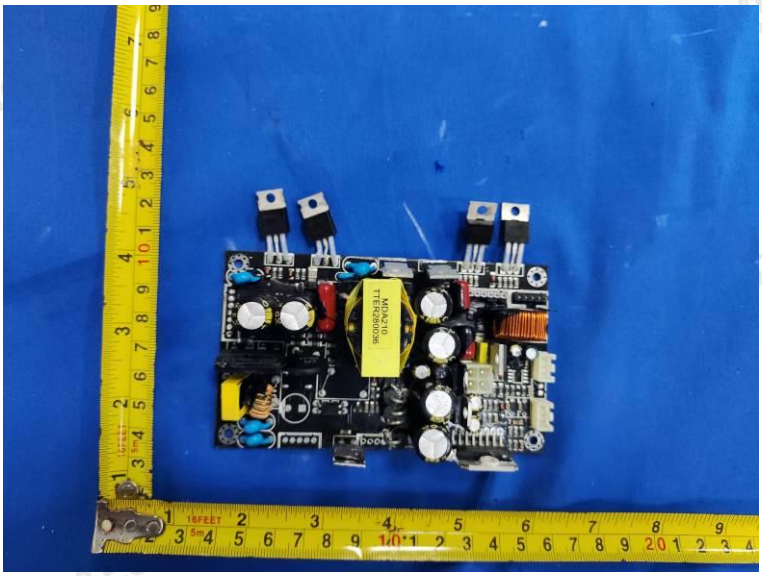


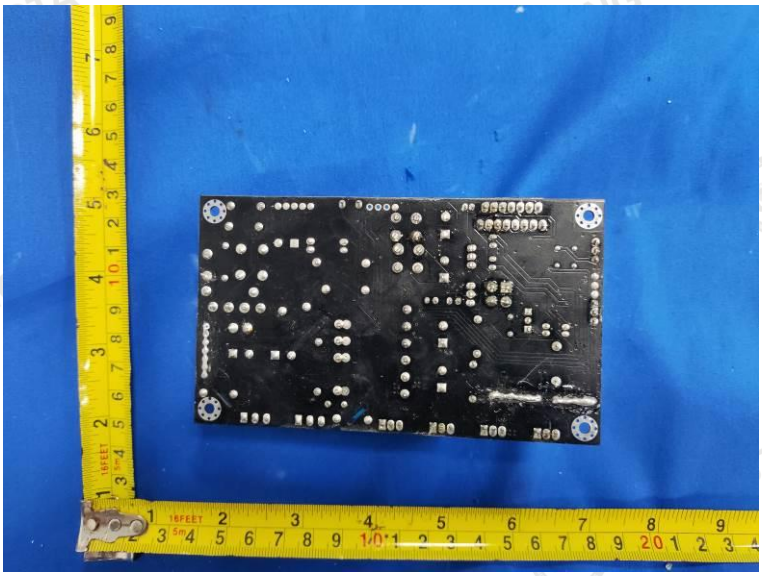



16FEET
5m


16FEET
5m


16FEET
5m

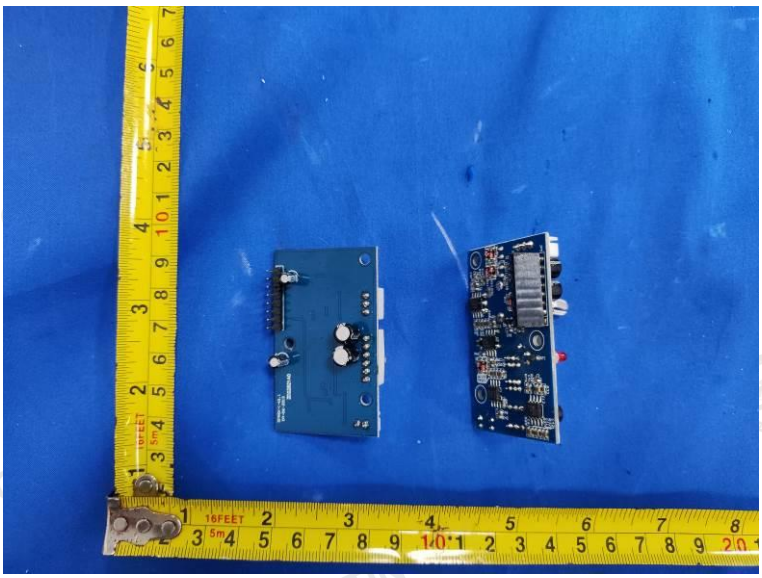


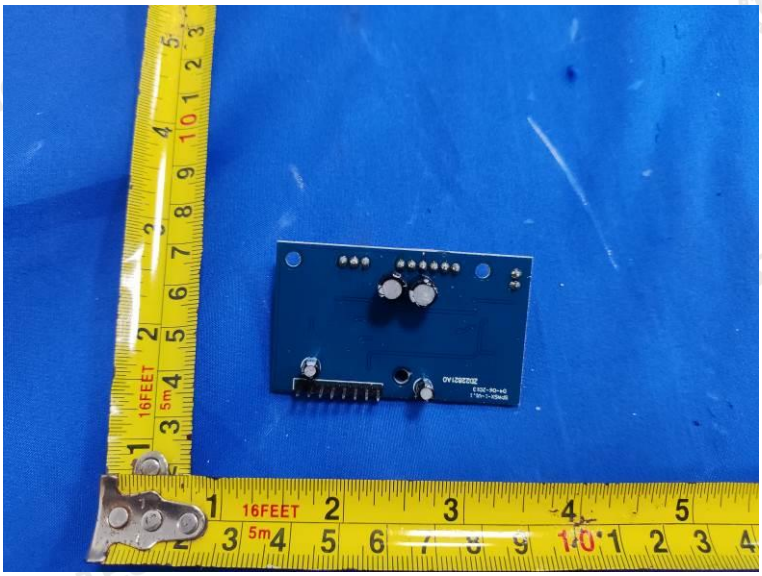


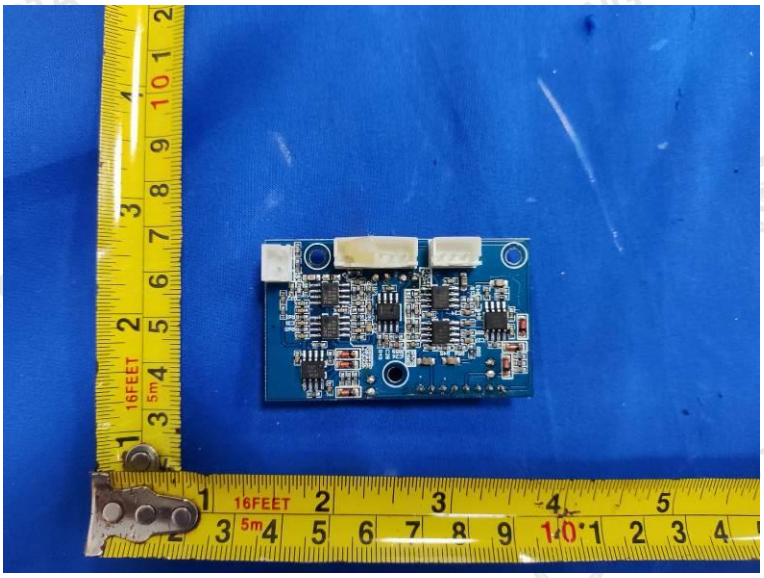


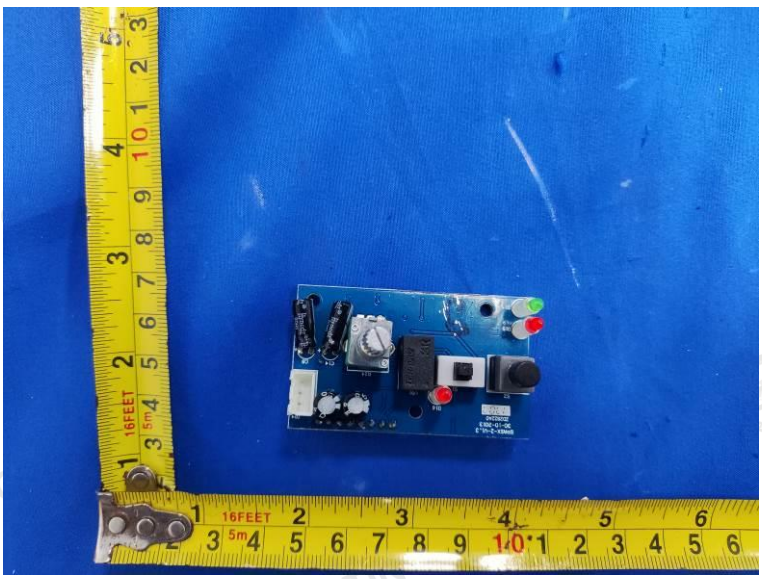


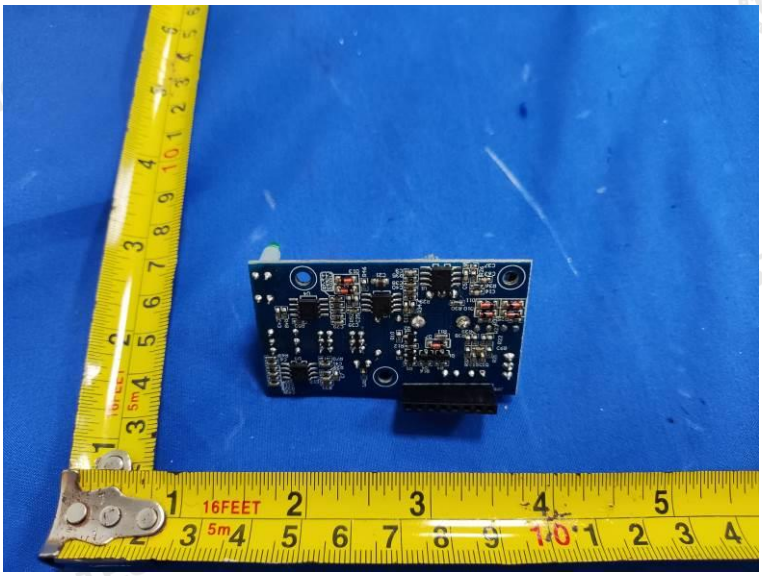












.....End of Report.....