TEST REPORT

Report Reference No......:	**TZ0028240804ERF01**
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Supervised by (position+printed name+signature)...:	Hugo Chen (Technique principal)
Approved by (position+printed name+signature)...:	Andy Zhang (General Manager)
Date of issue.....:	2024/8/29

Testing Laboratory Name.....:	Shenzhen Tongzhou Testing Co., Ltd.
Address.....:	1st Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China
Applicant's name.....:	**Dongguan Joy2Hear Electronics Co., Ltd**
Address.....:	No.38 Chuangyeheng Road, Jiaolian Community, Wangjiang Subdistrict, Dongguan City, Guangdong Province, China (PRC)
Manufacturer's name .....:	**Dongguan Joy2Hear Electronics Co., Ltd**
Address.....:	No.38 Chuangyeheng Road, Jiaolian Community, Wangjiang Subdistrict, Dongguan City, Guangdong Province, China (PRC)
Test specification ..... **:**	
Standard .....:	**ETSI EN 301 489-1 V2.2.3 (2019-11), ETSI EN 301 489-17 V3.2.4 (2020-09), EN 55032:2015+A11:2020, EN 55035:2017+A11:2020, EN IEC 61000-3-2:2019, EN 61000-3-3:2013+A1:2019**
TRF Originator.....:	SZTZ
Master TRF.....:	Dated 2024-08

Test item description .....:	**Wireless Headphone**
Trade Mark .....:	/
Model/Type reference.....:	AC158-1, AC158-2, AC158-3, AC158-4, AC158-5, AC108-1, AC108-2, AC108-3
Ratings.....:	DC 3.7V by battery
Result.....:	**PASS**

** Report Revise Record **

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2024/8/29	Valid	Initial release

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

ETSI EN 301 489-1 V2.2.3 (2019-11)
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility

ETSI EN 301 489-17 V3.2.4 (2020-09)
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility

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
Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)

EN 61000-3-3:2013+A1:2019
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 : 2024/8/20

Testing commenced on : 2024/8/20

Testing concluded on : 2024/8/28

2.2. Product Description

The Model: AC158-1 or the “EUT” as referred to in this report; more general information as follows, for more details, refer to the user’s manual of the EUT.

Name of EUT	:	Wireless Headphone
Model/Type reference	:	AC158-1, AC158-2, AC158-3, AC158-4, AC158-5, AC108-1, AC108-2, AC108-3
Test Model	:	AC158-1
Difference description	:	All the same except for the model name
Hardware version	:	AC158-7006F-V2
Software version	:	V1.0

2.3. Equipment under Test

Power supply system utilised

Power supply voltage	:	○ 230V / 50 Hz	○ 120V / 60Hz
		○ 12 V DC	○ 24 V DC
		● Other (specified in blank below)	

DC 3.7V by battery

2.4. Short description of the Equipment under Test (EUT)

For details, refer to the user’s manual of EUT.

Serial number: Prototype

2.5. EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

Test Mode	BT	Adapter
1	■	■

NOTE: 1. ■ is function state of EUT in each operation.

Scan above all test mode, found below test mode which it was worse case mode. Test results reported represents the worst case simultaneous transmission condition.

Test item	Test mode (Worst case operation mode)
Radiated emission	Mode 1
Conducted emission	Mode 1
EMS	All Modes

2.6. EUT configuration

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

● - supplied by the manufacturer

○ - Supplied by the lab

○	Adapter	Model:	MDY-10-EH
		Input:	Input 100-240V\AC 50/60Hz 0.7A
		Output:	Output 5V 3A

2.7. Internal Identification of EUT used during the test

EUT ID **:** TZ0028240804-1#

2.8. Performance level

2.8.1. For For ETSI EN 301 489-1 V2.2.3 (2019-11)

Refer to clause 6 Performance criteria as following:

Introduction
The performance criteria are used to take a decision on whether a radio equipment passes or fails immunity tests.

For the purpose of the present document two categories of performance criteria apply:
- Performance criteria for continuous phenomena.
- Performance criteria for transient phenomena.

NOTE: Normally, the performance criteria depends upon the type of radio equipment and/or its intended application. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment.

Performance criteria for continuous phenomena applied to transmitters and receivers
During the test, the equipment shall:
- continue to operate as intended;
- not unintentionally transmit;
- not unintentionally change its operating state;
- not unintentionally change critical stored data.

Performance criteria for transient phenomena applied to transmitters and receivers
For all ports and transient phenomena with the exception described below, the following applies:
- The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data.
- After application of the transient phenomena, the equipment shall operate as intended.

For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:
- For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be otherwise restored. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.
- For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

2.8.2. For ETSI EN 301 489-17 V3.2.4 (2020-09)

Refer to clause 6 Performance criteria as following:

General performance criteria

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

Performance table

Table 2: Performance criteria

Criteria	During test	After test (i.e. as a result of the application of the test)
A	Shall operate as intended. (See note). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of critical stored data.
B	May be loss of function.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no loss of critical stored data.
C	May be loss of function.	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no loss of critical stored data.
NOTE: Operate as intended during the test allows a level of degradation in accordance with clause 6.2.2.		

Minimum performance level

For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %.

For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.

Performance criteria for Continuous phenomena

The performance criteria A shall apply.

Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur during the test.

Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur during the test.

Performance criteria for Transient phenomena

The performance criteria B shall apply, except for voltage dips greater than or equal to 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur as a result of the application of the test.

Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur as a result of the application of the test.

2.8.3. For EN 55035:2017+A11:2020

Refer to clause 8 Performance criteria as following:

General

General performance criteria are defined in Clauses 8.2, 8.3 and 8.4. These criteria shall be used during the testing of primary functions where no relevant annex is applicable

When assessing the impact of a disturbance on a function, the assessment should take into consideration the function's performance prior to the application of the disturbance and only identify as failures those changes in performance that are a result of the disturbance.

Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended

Performance criterion B

During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.

After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended.

The performance level may be replaced by a permissible loss of performance.

If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance 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. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

2.9. Monitoring EUT in Immunity Test

2.9.1. Monitoring for Continuous Phenomena Applied to the EUT

■ **BT Mode**

At the start of the test, establish a wireless link between the EUT and CMW500(integrate BT protocol Analyzer);

After the test, Check the function and critical stored date of the EUT with no degration.

In addition, when EUT working in Idle /Receiver mode, monitor whether the transmitter unintentionally operates.

■ **other Mode**

for Vedio, During and after the test, observe the Screen status by eyes or monitor to see whether there is degration of performance

for Audio, During and after the test, Listen the Audio status by ear to discover whether there is degration of performance

2.9.2. Monitoring for Transient Phenomena Applied to the EUT

■ **BT Mode**

At the start of the test, establish a wireless link between the EUT and CMW500(integrate BT protocol Analyzer);

After the test, Check the function and critical stored date of the EUT with no degration.

In addition, when EUT working in Idle /Receiver mode, monitor whether the transmitter unintentionally operates.

■ **other Mode**

for Vedio, after the test, observe the Screen status by eyes or monitor to see whether there is degration of performance

for Audio, after the test, Listen the Audio status by ear to discover whether there is degration of performance

2.10. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Tongzhou Testing Co.,Ltd.
1st Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2014) and CISPR Publication 22.

3.2. Environmental conditions

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

Temperature:	15-35 °C
Humidity:	30-60%
Atmospheric pressure:	950-1050mbar

3.3. Configuration of Tested System

Fig. 3.3.1 Configuration of Tested System

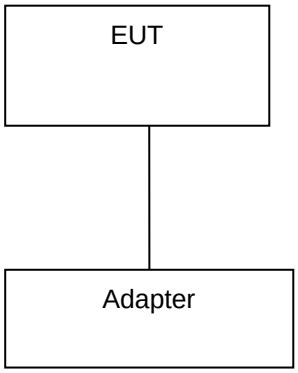


Table 3.3.1 Equipment Used in Tested System

No.	Product	Manufacturer	Model No.	FCC ID

Fig. 3.3.2 Configuration of Tested System

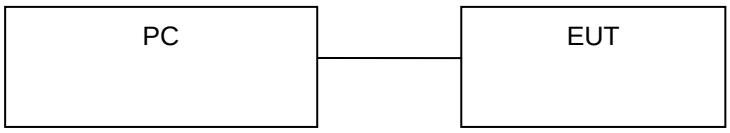


Table 3.3.1 Equipment Used in Tested System

No.	Product	Manufacturer	Model No.	FCC ID
1	PC	ASUS	K43S	--

3.4. Test Description

Requirements		
Radiated Emission	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 55032:2015+A11:2020 Annex A.2	PASS
Conducted Emission(AC Mains)	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 55032:2015+A11:2020 Annex A.3	PASS
Conducted Emission(Telcommunication Ports)	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 55032:2015+A11:2020 Annex A.3	N/A
Harmonic Current Emissions	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN IEC 61000-3-2:2019	N/A
Voltage Fluctuations and Flicker	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 61000-3-3:2013+A1:2019	PASS
Electrostatic Discharge	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
RF Electromagnetic Field	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
Fast Transients Common Mode	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
RF Common Mode 0,15 MHz to 80 MHz	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
Transients and Surges	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	N/A
Voltage Dips and Interruptions	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
Surges, Line to Line and Line to Ground	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
Power Frequency Magnetic Field Susceptibility Test	EN 55035:2017+A11:2020	PASS
Boardband impulsive conducted disturbance	EN 55035:2017+A11:2020	N/A

Remark: 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 CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Tongzhou Testing Co.,Ltd. quality system acc. to 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 Tongzhou Testing Co.,Ltd. is reported:

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.08dB	(1)
		30MHz~1000MHz	±4.42dB	(1)
		1GHz~40GHz	±4.06dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±2.23dB	(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

Conducted emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI-7	100849/003	2024/1/4	2025/1/3
2	Artificial Mains	ROHDE & SCHWARZ	ENV 216	101333-IP	2024/1/4	2025/1/3
3	EMI Test Software	ROHDE & SCHWARZ	ESK1	V1.71	N/A	N/A
4	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

Radiated emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Test Receiver	R&S	ESCI-7	100849/003	2024/1/4	2025/1/3
2	wideband Antenna	Schwarzbeck	VULB 9163	958	2022/11/13	2025/11/12
3	Horn Antenna	Schwarzbeck	BBHA 9120D	01989	2022/11/13	2025/11/12
4	Amplifier	Schwarzbeck	BBV 9743	209	2024/1/4	2025/1/3
5	Amplifier	Tonscend	TSAMP-0518SE	--	2024/1/4	2025/1/3
6	Postional Controller	MF	MF7802	--	--	--
7	RE test software	Tonscend	JS32-RE	V5.0.0.0	--	--
8	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3
9	Band Reject Filter Box	Tonscend	JS0806-F	TZRFA009	2024/1/4	2025/1/3

Voltage Fluctuation and Flicker						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Harmonic & Flicker Tester	SCHAFFNER	CCN1000-1	72046	2024/6/15	2025/6/14
2	Power Source	SCHAFFNER	NSG1007-3-240	HK54238	2024/6/15	2025/6/14
3	software	AMETEK	CTS 4	V 4.6.2		
4	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

Electrostatic Discharge						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	ESD Simulator	TESEQ	NSG 437	976	2024/1/9	2025/1/8
2	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

RF Electromagnetic Field						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Horn Antenna	COMMW	ZAB-1-18G-50	20171109	2022/7/4	2025/7/3
2	Bilog Antenna	Sunol Sciences	JB3	N/A	2022/7/3	2025/7/2
3	Power Amplifier	Micotop	MPA-80-1000-250	MPA1808208	2024/6/18	2025/6/17
4	Power Amplifier	Micotop	MPA-1000-6000-100	MPA1808210	2024/6/18	2025/6/17
5	Signal Switch	Micotop	MSW-80-6000-PA	MPA1808211	2024/6/18	2025/6/17
6	Signal generator	Agilent	N5181A	MY49060403	2024/6/18	2025/6/17
7	Power Meter	Agilent	E4419B	US392155053	2024/6/18	2025/6/17
8	Power Sensor	Agilent	E9301H	MY41495659	2024/6/18	2025/6/17
9	RS test software	Farad	EMC-RS	V:2.0.1.3	--	--
10	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3
11	Audio Analyzer	R&S	UPP200	120175	2024/1/4	2025/1/3

Fast transients common mode						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Ultra Compact Simulator	HTEC	HCOMPACT 7	162904	2024/1/4	2025/1/3
2	Coupling Clamp	H3C	HTEC	162908	2024/1/12	2025/1/11
3	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

Surges, line to line and line to ground						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Ultra Compact Simulator	HTEC	HCOMPACT 7	162904	2024/1/4	2025/1/3
2	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

PFMF						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	PFMF test system	HTEC	HPFMF 100	TZE067	2023/10/30	2024/10/29
2	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

RF common mode 0,15 MHz to 80 MHz						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	COUPLING AND DECOUPLING NETWORK	Luthi	CDN801-M3	202304/060	2024/6/18	2025/6/17
2	COUPLING AND DECOUPLING NETWORK	TESEQ	CDN T8	37213	2024/6/18	2025/6/17
3	Signal generator	R&S	SML01	102286	2024/6/18	2025/6/17
4	Power Amplifier	AR	50A220	0010230A	2024/6/18	2025/6/17
5	Attenuator	Luthi	50W3G	335625	2024/6/18	2025/6/17
6	CS Test software	Farad	CS-35	V:2.0.1.3	--	--
7	Integrating Sound Level	TES	TES-1353S	170502155	2024/6/18	2025/6/17
8	Audio Analyzer	R&S	UPP200	120175	2024/1/2	2025/1/1

Voltage Dips and Interruptions						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Ultra Compact Simulator	HTEC	HCOMPACT 7	162904	2024/1/4	2025/1/3
2	Voltage Dips and interruption Simulator	HTEC	HV1P16T	162907	2024/1/4	2025/1/3
3	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3

4. TEST CONDITIONS AND RESULTS

4.1. REQUIREMENTS

4.1.1. Radiated Emission

LIMIT

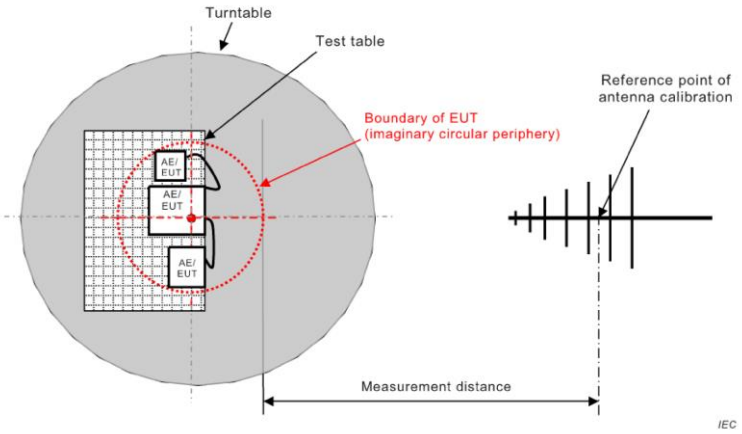
Please refer to ETSI EN 301 489-1 Clause 8.2.3

The ancillary equipment shall meet the class B limits given in CENELEC EN 55032 [1], annex A tables A.4 and A.5.

Alternatively, for ancillary equipment intended to be used exclusively in an industrial environment or telecommunication centres, the class A limits given in CENELEC EN 55032 [1], annex A tables A.2 and A.3 may be used.

If EUT is also a FM Receiver, it shall meet CENELEC EN 55032 [3], annex A tables A.6

TEST CONFIGURATION



Note: Cable on the RGP must to be insulated.

TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.2.2 and The test method shall be in accordance with CENELEC EN 55032 [1], annex A.2. for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

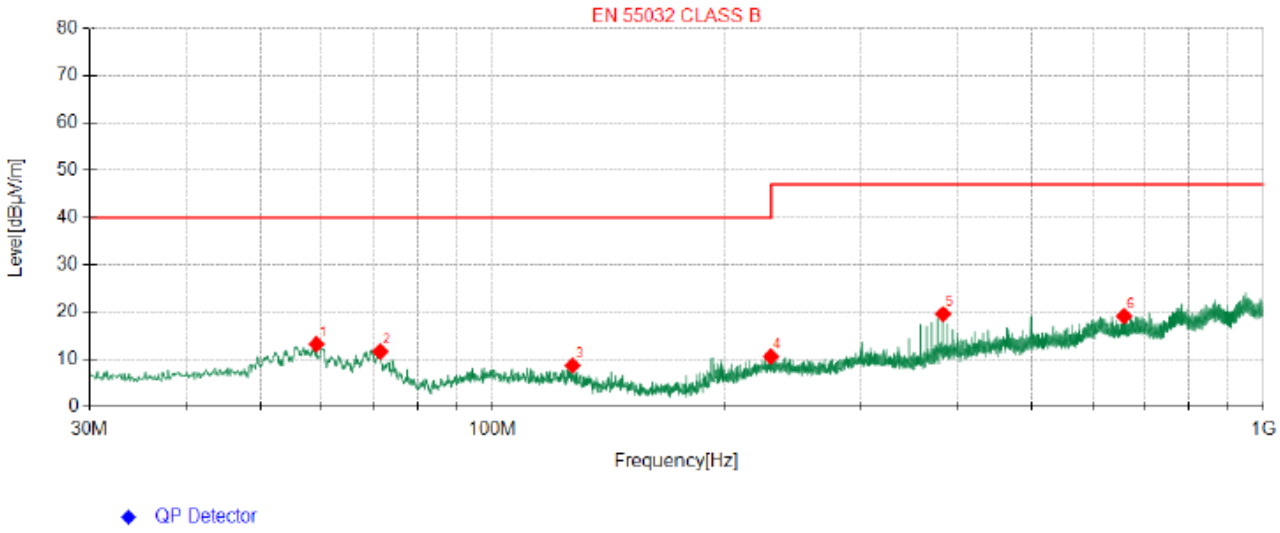
Pass

Note 1: All Modes has been tested only list the worst case in this report.

Note 2: While performing the testing, the Band Reject Filter Box is used to filter the fundamental emission for avoiding test instrument overload.

Note 3: This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position

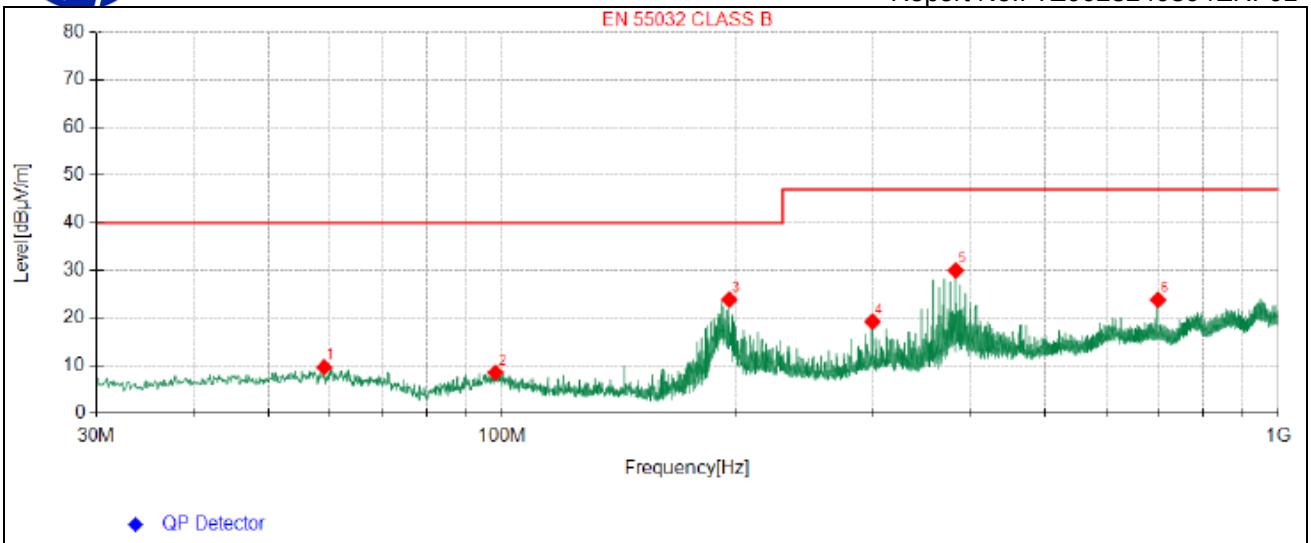
Radiated Emission Below 1000MHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	59.1	28.74	-15.51	13.23	40.00	26.77	100	222	Vertical
2	71.46	30.20	-18.49	11.71	40.00	28.29	100	298	Vertical
3	127	27.39	-18.64	8.75	40.00	31.25	100	219	Vertical
4	229.6	25.17	-14.51	10.66	40.00	29.34	100	83	Vertical
5	384.0	30.08	-10.47	19.61	47.00	27.39	100	26	Vertical
6	659.8	23.99	-4.85	19.14	47.00	27.86	100	124	Vertical

Note:
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m].
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	58.97	25.21	-15.50	9.71	40.00	30.29	100	305	Horizontal
2	98.02	24.89	-16.32	8.57	40.00	31.43	100	358	Horizontal
3	196.1	39.70	-15.83	23.87	40.00	16.13	100	35	Horizontal
4	299.9	32.05	-12.81	19.24	47.00	27.76	100	162	Horizontal
5	384.0	40.46	-10.47	29.99	47.00	17.01	100	121	Horizontal
6	700.0	28.18	-4.35	23.83	47.00	23.17	100	293	Horizontal

Note:
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m].
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission Above 1000MHz

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (KHz)	Height (cm)	Pol	Azimuth (deg)
1402.06	44.94	---	70	25.06	100	1000	100	V	151
1116.56	42.23	---	70	27.77	100	1000	100	V	312
2405.23	46.84	---	70	23.16	100	1000	100	H	124
2630.07	45.77	---	70	24.23	100	1000	100	H	300
2861.87	48.64	---	70	21.36	100	1000	100	V	150
2988.31	49.87	---	70	20.13	100	1000	100	H	289

4.1.2. Conducted Emission (AC Mains)

LIMIT

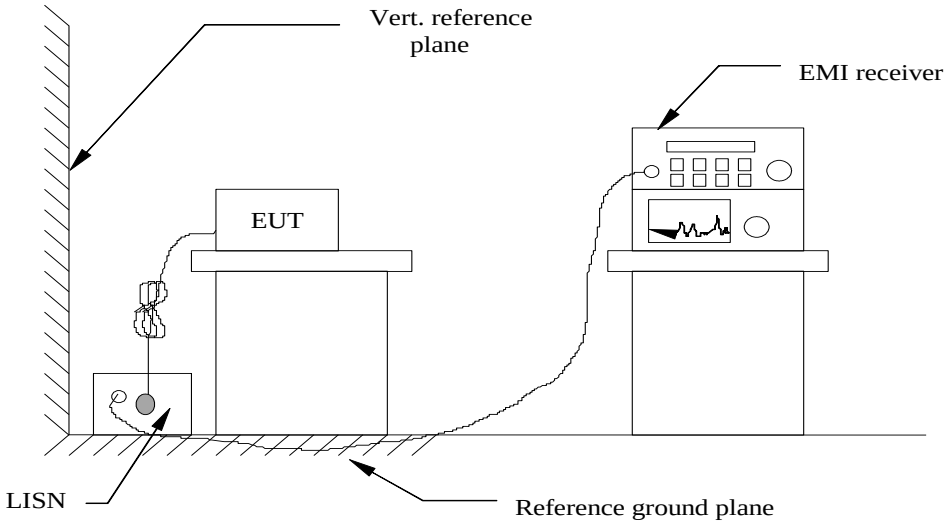
Please refer to ETSI EN 301 489-1 Clause 8.4.3

The equipment shall meet the class B limits given in CENELEC EN 55032 [1], annex A table A.10.

Alternatively, for equipment intended to be used in an industrial environment or a telecommunication centre, the class A limits given in CENELEC EN 55032 [1], annex A table A.9 can be used.

If EUT is also a FM Receiver, it shall meet CENELEC EN 55032 [3], annex A tables A.13

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.4.2 for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

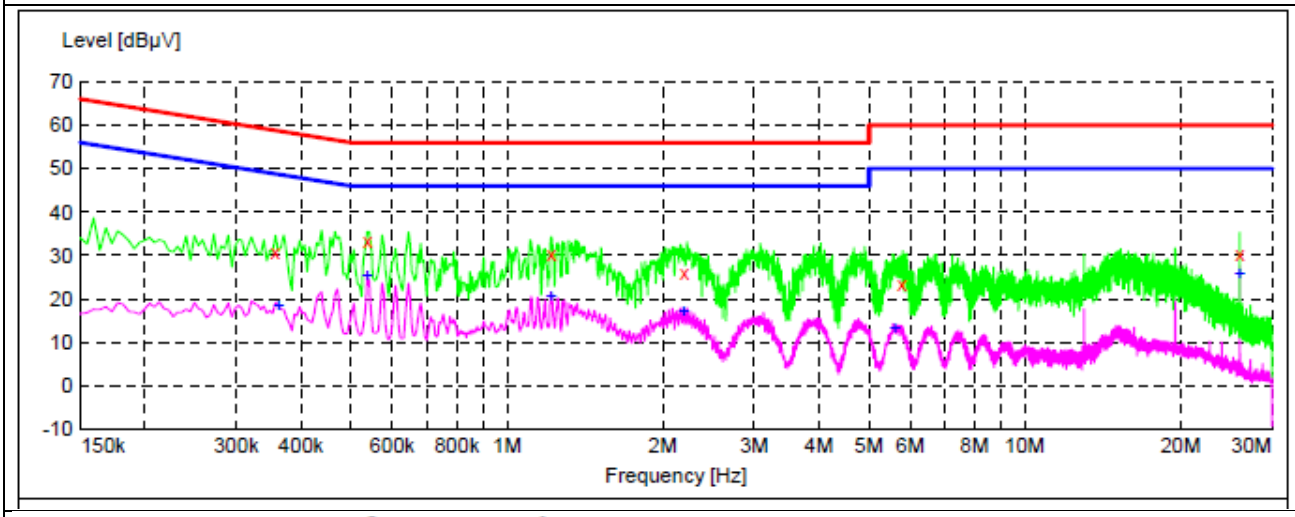
TEST RESULTS

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

Pass

Note: All Modes has been tested only list the worst case in this report.

Neutral Line

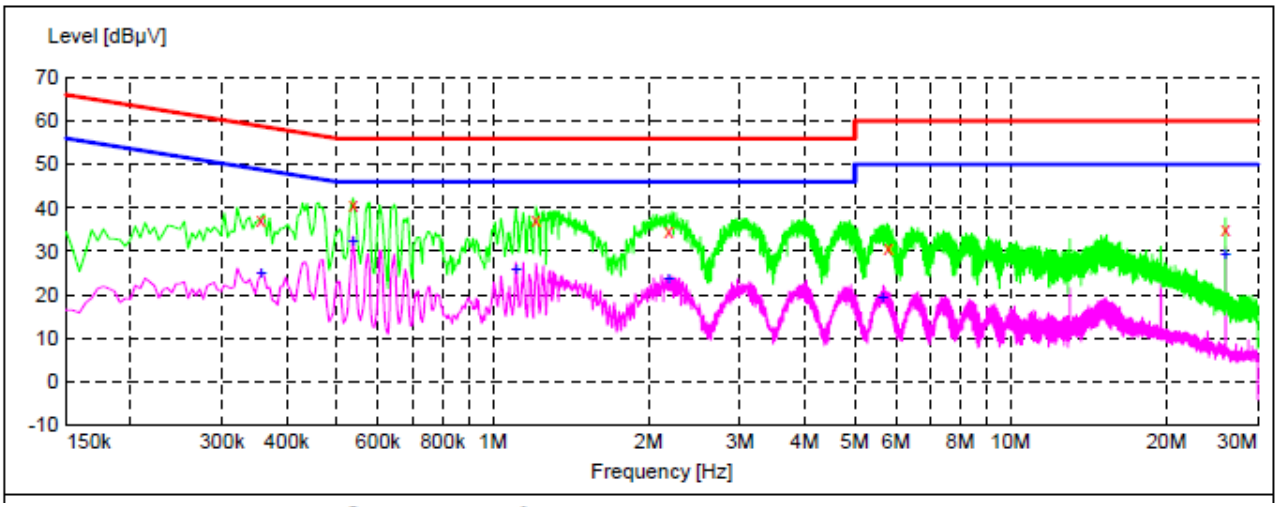


Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.357000	30.80	10.1	59	28.0	QP	N	GND
0.537000	33.50	9.9	56	22.5	QP	N	GND
1.216500	30.40	9.7	56	25.6	QP	N	GND
2.197500	26.00	9.7	56	30.0	QP	N	GND
5.788500	23.50	9.8	60	36.5	QP	N	GND
26.002500	30.40	10.1	60	29.6	QP	N	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.361500	18.80	10.1	49	29.9	AV	N	GND
0.537000	25.60	9.9	46	20.4	AV	N	GND
1.216500	20.60	9.7	46	25.4	AV	N	GND
2.188500	17.20	9.7	46	28.8	AV	N	GND
5.608500	13.30	9.8	50	36.7	AV	N	GND
26.002500	26.00	10.1	50	24.0	AV	N	GND

Note:
1. Margin(dB)= Limit(dBµV) -Level(dBµV)
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

Live Line



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.357000	37.10	10.1	59	21.7	QP	L1	GND
0.537000	40.80	9.9	56	15.2	QP	L1	GND
1.212000	37.20	9.7	56	18.8	QP	L1	GND
2.188500	34.50	9.7	56	21.5	QP	L1	GND
5.806500	30.60	9.8	60	29.4	QP	L1	GND
26.002500	35.20	10.1	60	24.8	QP	L1	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.357000	25.10	10.1	49	23.7	AV	L1	GND
0.537000	32.60	9.9	46	13.4	AV	L1	GND
1.108500	26.00	9.7	46	20.0	AV	L1	GND
2.184000	23.60	9.7	46	22.4	AV	L1	GND
5.644500	19.50	9.8	50	30.5	AV	L1	GND
26.002500	29.30	10.1	50	20.7	AV	L1	GND

Note:
1. Margin(dB)= Limit(dBµV) - Level(dBµV)
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

4.1.3. Conducted Emission (Telecommunication Ports)

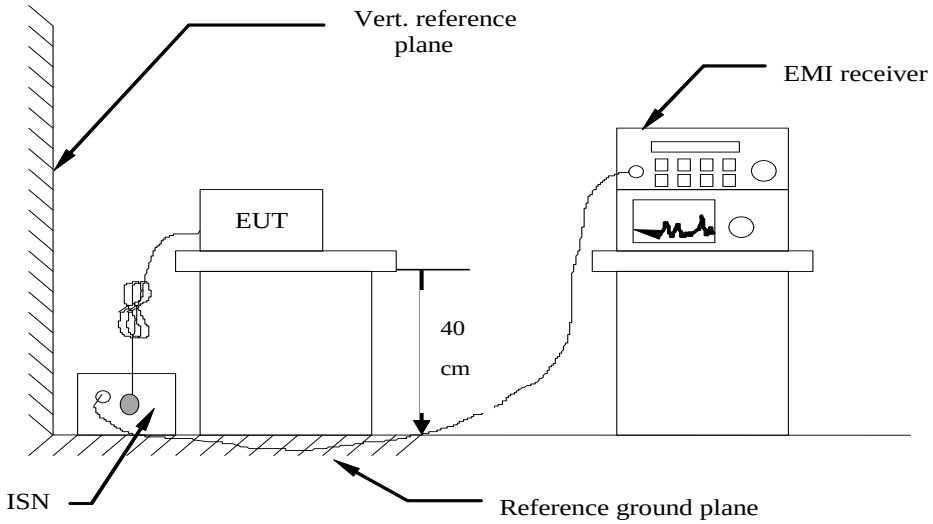
LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.7.3

The wired network ports shall meet the class B limits given in CENELEC EN 55032 [1], annex A table A.12.

Alternatively, for equipment intended to be used exclusively in an industrial environment or a telecommunication centre, the class A limits given in CENELEC EN 55032 [1] annex A table A.11 can be used.

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.7.2 and The test method shall be in accordance with CENELEC EN 55032 [1], annex A.3. for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

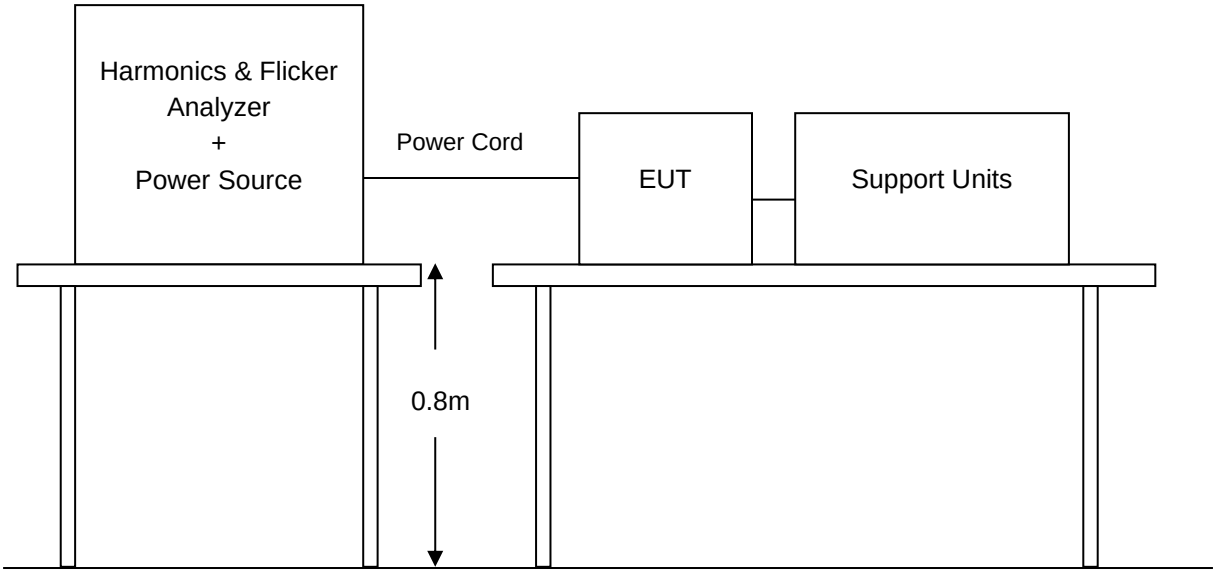
Not applicable

4.1.4. Harmonic Current Emission

LIMIT

Please refer to IEC 61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

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

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Not applicable (<75W)

4.1.5. Voltage Fluctuation and Flicker

LIMIT

Please refer to IEC 61000-3-3

TEST CONFIGURATION

Same as the configuration of the Harmonic Current Emission.

TEST PROCEDURE

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

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	120 min (12 Flicker measurements)
Customer:	Dongguan Joy2Hear Electronics Co., Ltd
Mains supply voltage:	AC 230V/50Hz
E. U. T.:	Wireless Headphone M/N: AC158-1
Date of test:	2024/8/20
Tester:	Tony Luo

Test Result	PASS

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.127	4.00	PASS
dt [s]	0.000	0.50	PASS

Detail Flicker data

Flicker measurement 1	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.127	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 2	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.093	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 3	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.093	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 4	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.091	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 5	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.092	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 6	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.095	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 7	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.091	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 8	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.094	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 9	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.093	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 10	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.094	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 11	**EUT values**	**Limit**	**Result**
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.095	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 12	**EUT values**	**Limit**	**Result**
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.093	4.00	PASS
dt [s]	0.000	0.50	PASS

4.1.6. Electrostatic Discharge

LIMIT

Please refer to IEC 61000-4-2

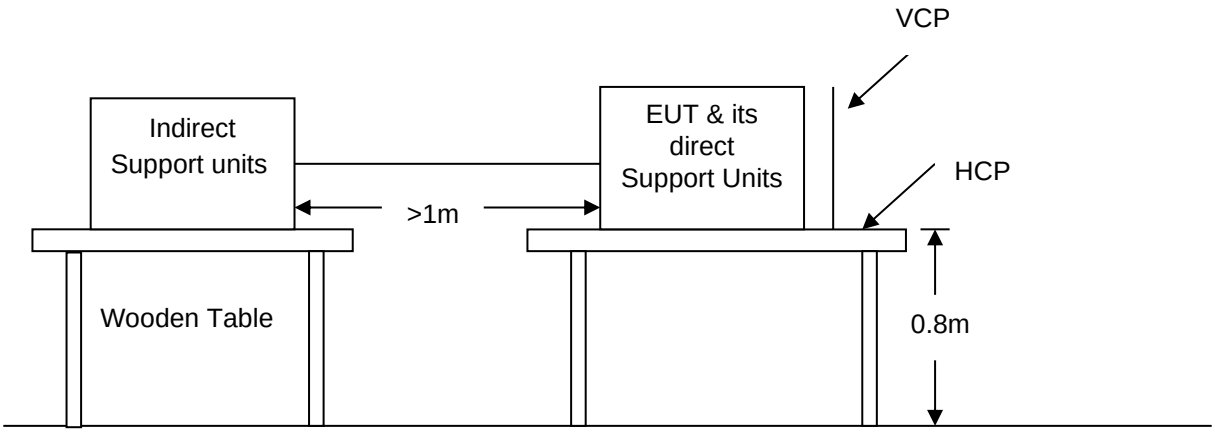
SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

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

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

Performance criterion: **B**

Test Configuration



Ground Reference Plane

Test procedure

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and IEC 61000-4-2 for the measurement methods.

Test results

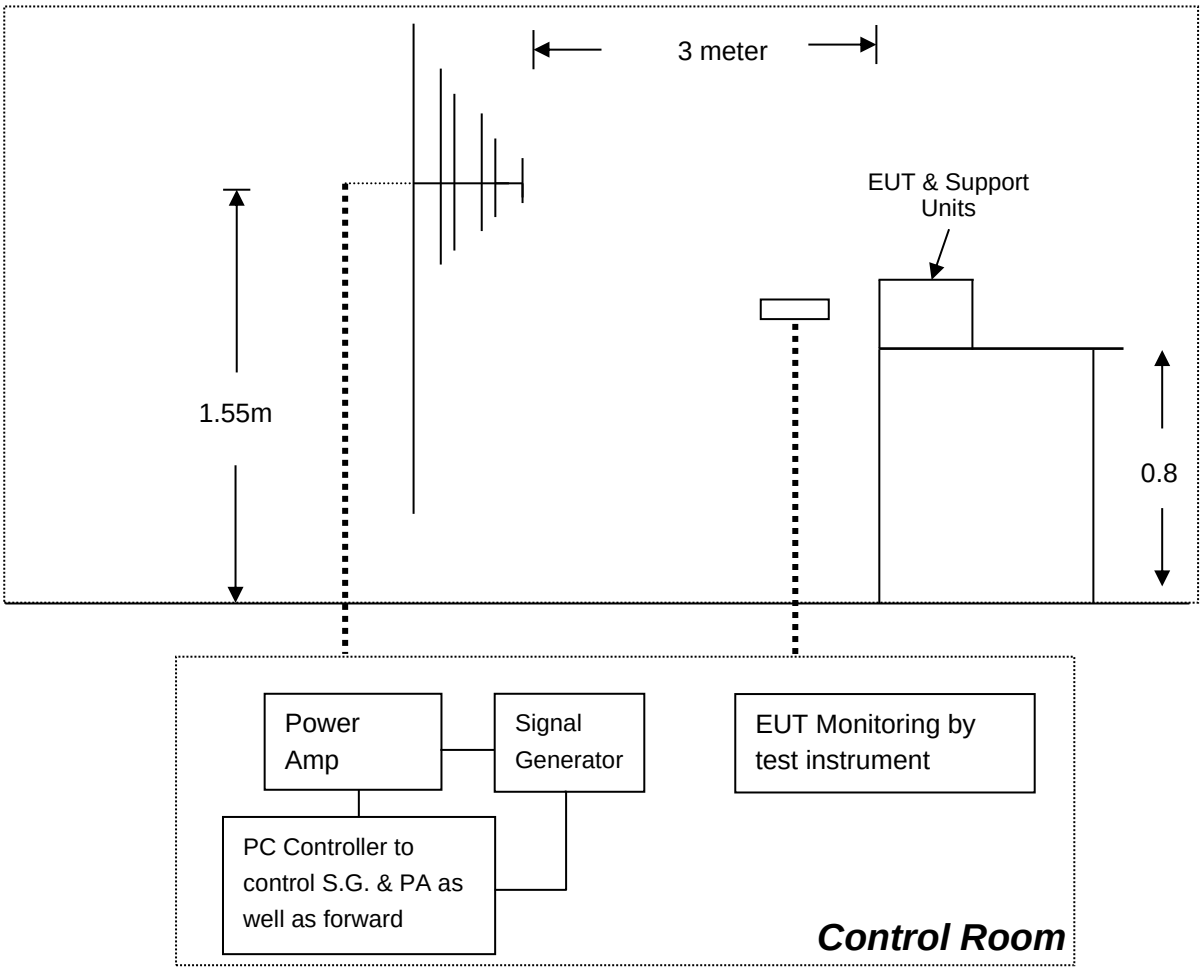
N/A

4.1.7. RF Electromagnetic Field

LIMIT

Please refer to IEC 61000-4-3

Test Configuration



Test Levels of RF Electromagnetic Field

Test level: RF Field Strength: 3V/m

Level	RF Field Strength(V/m)
1	1
2	3
3	10
X	Special

Performance criterion: **A**

TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.2.2 and IEC 61000-4-3 for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

☒ **Result of Final Tests (Operating Mode & Standby (Receiving) Mode)**

Freq. Range (MHz)	Field	Modulation	Polarity	Position
80-1000	3V/m	Yes	H / V	Front
1000-6000	3V/m	Yes	H / V	Front
80-1000	3V/m	Yes	H / V	Right
1000-6000	3V/m	Yes	H / V	Right
80-1000	3V/m	Yes	H / V	Back
1000-6000	3V/m	Yes	H / V	Back
80-1000	3V/m	Yes	H / V	Left
1000-6000	3V/m	Yes	H / V	Left

Special conditions for EMC immunity tests(Bluetooth/WiFi):

EUT operating Mode	Max PER During test	PER Limit
Bluetooth	2.5%	10%

☒**Result of Final Tests(EN 55035)**

☒ Swept Test

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Mode
80-1000	3V/m	Yes	H / V	Front	**Normal Operating**
80-1000	3V/m	Yes	H / V	Right	**Normal Operating**
80-1000	3V/m	Yes	H / V	Back	**Normal Operating**
80-1000	3V/m	Yes	H / V	Left	**Normal Operating**

☒ Spot Test

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Mode
1800, 2600, 3500, 5000	3V/m	Yes	H / V	Front	**Normal Operating**
1800, 2600, 3500, 5000	3V/m	Yes	H / V	Right	**Normal Operating**
1800, 2600, 3500, 5000	3V/m	Yes	H / V	Back	**Normal Operating**
1800, 2600, 3500, 5000	3V/m	Yes	H / V	Left	**Normal Operating**

PERFORMANCE CRITERIA	
Criteria requested	☒ **A** / ☐ **B** / ☐ **C**
Criteria meet	☒ **A** / ☐ **B** / ☐ **C**

Remarks: During the test no deviation was detected to the selected operation mode(s).

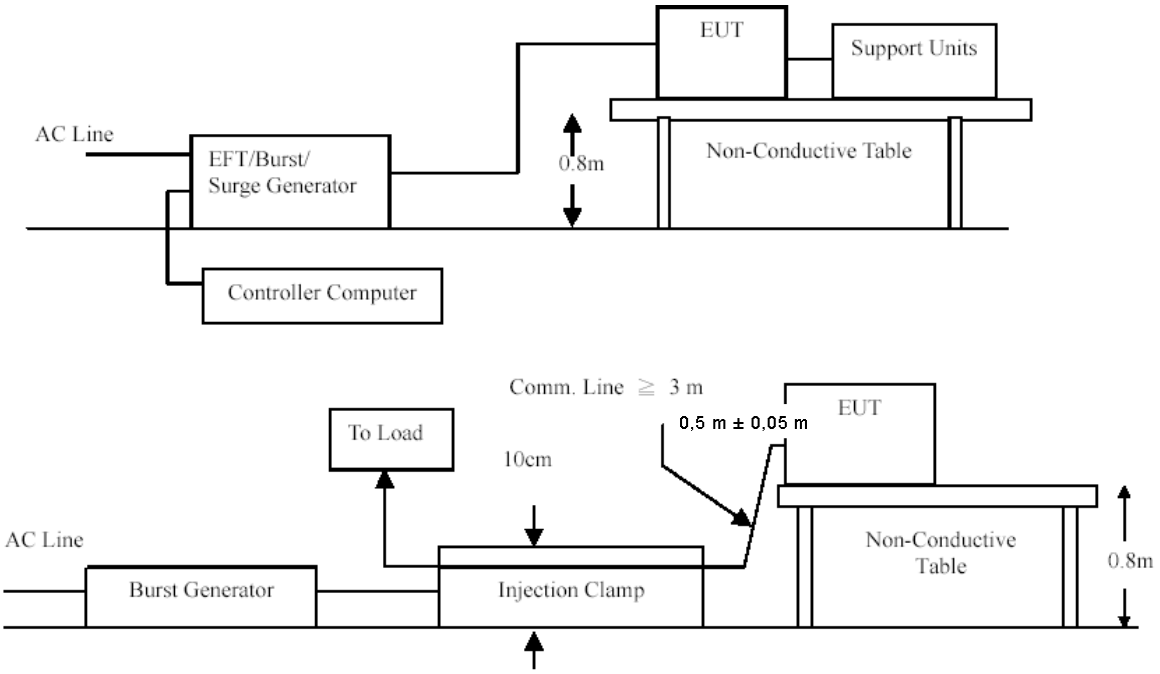
Result (Pass / Fail)
Pass

4.1.8. Fast Transients Common Mode

LIMIT

Please refer to IEC 61000-4-4

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and IEC 61000-4-4 for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

☒ **Results of Final Tests (Operating Mode)**

Impulse Frequency: 5 kHz
Tr/Th: 5/50ns
Burst Duration: 15ms
Burst Period: 300ms

Test duration: 120s

Injection Line	Voltage (kV)	Injected Method
☒ Line	±1	Direct
☒ Neutral	±1	Direct
☐ PE	± 1	Direct
☒ Line + Neutral	±1	Direct
☐ L + PE	± 1	Direct
☐ N + PE	± 1	Direct
☐ L + N + PE	± 1	Direct
☐ RJ45 port (LAN cable)	±0.5	Clamp
☐ RJ11 port (Line cable)	±0.5	Clamp

PERFORMANCE CRITERIA	
Criteria requested	☐ **A /** ☒ **B /** ☐ **C**
Criteria meet	☐ **A /** ☒ **B /** ☐ **C**

Remarks: During the test no deviation was detected to the selected operation mode(s).

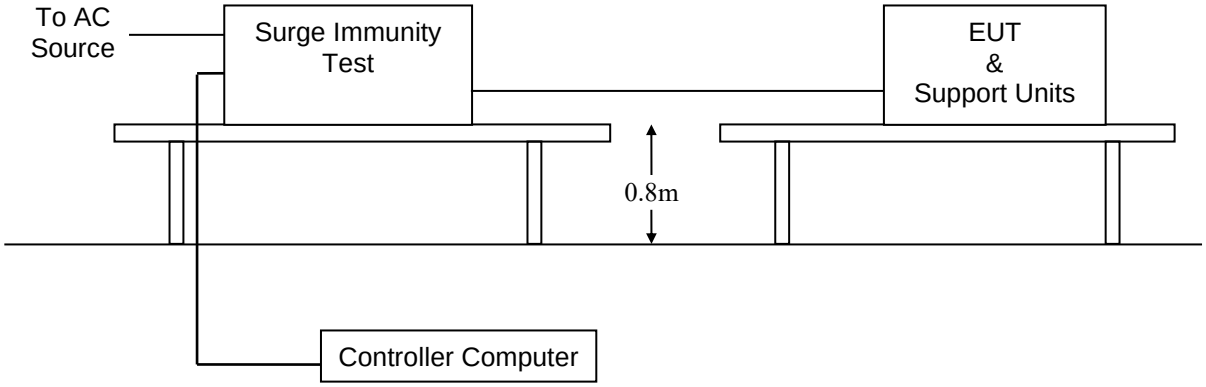
Result (Pass / Fail)
Pass

4.1.9. Surges, Line to Line and Line to Ground

LIMIT

Please refer to IEC 61000-4-5

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.8.2 and IEC 61000-4-5 for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

☒ **Results of Final Tests (Operating Mode)**
Voltage Waveform: 1.2/50 us
Current Waveform: 8/20 us
Polarity: Positive/Negative
Phase angle: 0º, 90º, 180 º, 270º

Coupling Line	Voltage (kV)	Polarity	Coupling Method
☒ Line + Neutral	1	Pos./ Neg.	Capacitive
☐ L + PE	2	Pos./ Neg.	Capacitive
☐ N + PE	2	Pos./ Neg.	Capacitive
☐ T, R-Ground	0.5	Pos./ Neg.	Capacitive
☐ RJ45 port (LAN)	0.5	Pos./ Neg.	Capacitive
☐ RJ11 port (Line cable)	0.5	Pos./ Neg.	Capacitive

PERFORMANCE CRITERIA	
Criteria requested	☐ **A /** ☒ **B /** ☐ **C**
Criteria meet	☒ **A /** ☐ **B /** ☐ **C**

Remarks: During the test no deviation was detected to the selected operation mode(s).

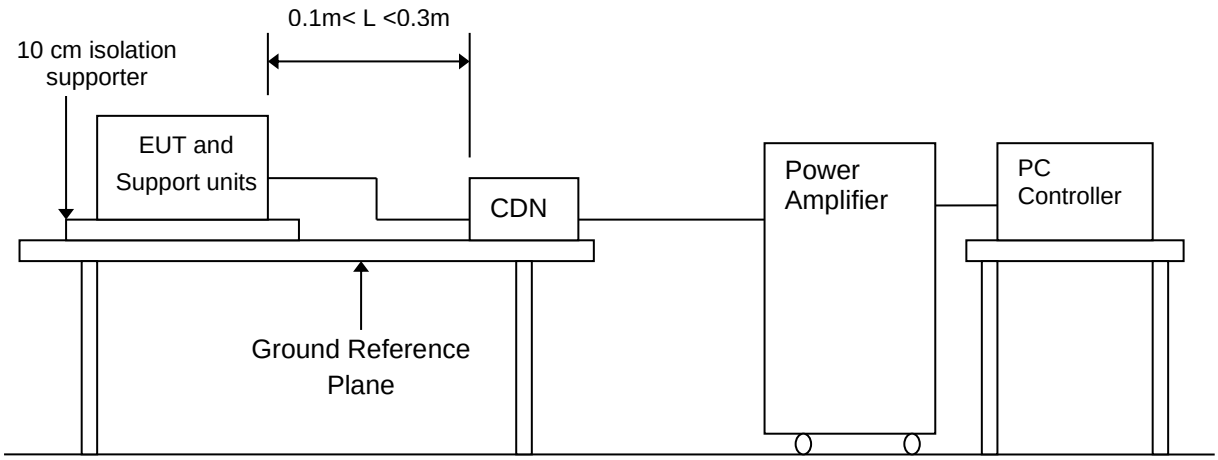
Result (Pass / Fail)
Pass

4.1.10. RF- Common Mode 0.15MHz to 80MHz

LIMIT

Please refer to IEC 61000-4-6

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.5.2 and IEC 61000-4-6 for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

Test conditions

☒ **Results of Final Tests (Operating Mode)**

Frequency Range: 0.15MHz~80MHz
Frequency Step: 1% of fundamental
Dwell time: 1 Sec.

☒ **80% A.M., 1 kHz Sine wave (Field Strength: 3 V/m)**

☒ **Coupling type:** ☒ **CDN /** ☐ **RF Current Probe/**☐ **EM CLAMP (LÜTHI)**

Range (MHz)	Field	Modulation	Injected Position
0.15-80	**3V**	Yes	**AC Main**

Special conditions for EMC immunity tests

EUT operating Mode	Max PER During test	PER Limit
Bluetooth	2.5%	10%

☒**Results of Final Tests (EN 55035)**

Range (MHz)	Field	Modulation	Injected Position
0.15-10	**3V**	Yes	**AC Main**
10-30	**3V – 1V**	Yes	**AC Main**
30-80	**1V**	Yes	**AC Main**

PERFORMANCE CRITERIA	
Criteria requested	☒ **A /** ☐ **B /** ☐ **C**
Criteria meet	☒ **A /** ☐ **B /** ☐ **C**

Remarks: During the test no deviation was detected to the selected operation mode(s).

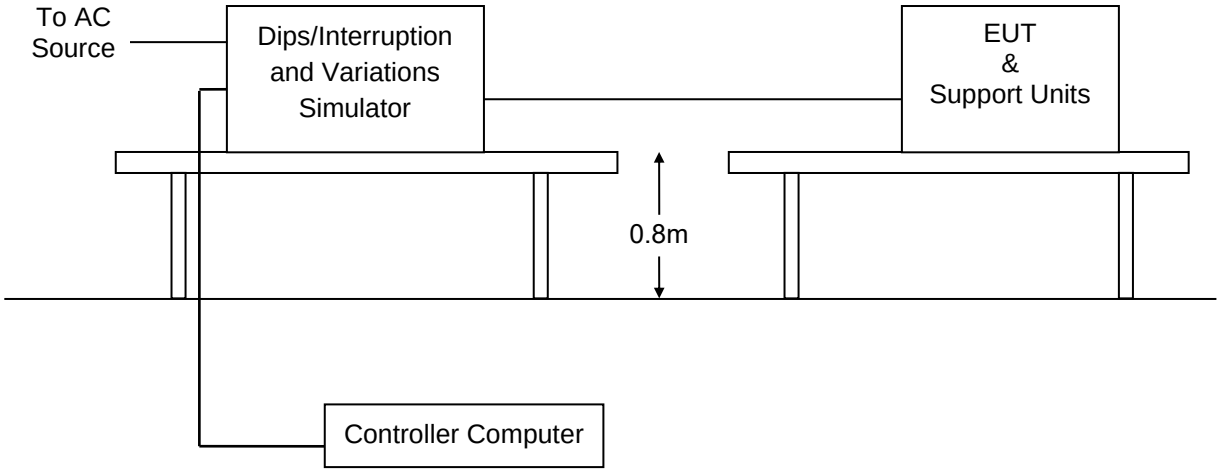
Result (Pass / Fail)
Pass

4.1.11. Voltage Dips and Interruptions

LIMIT

Please refer to IEC 61000-4-11

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.7.2 and IEC 61000-4-11 for the measurement methods.

Climatic conditions

- ambient temperature : 25 ℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Temperature:	22.8° C
Humidity:	56%
Test Engineer:	Tony Luo

Test conditions

☒ Interruption at phase angles of 0, 45, 90, 135, 180, 225, 270 and 315 degree in a 10 sec-interval.

	Test Level (% UT)	Reduction (%)	Duration		Criterion
			Peiod	ms	
Voltage Dips	**0**	**100%**	**0.5**	**10**	**B**
	0	**100%**	**1**	**20**	**B**
	70	**30%**	**25**	**500**	**B**
Voltage Interruption	**0**	**100%**	**250**	**5000**	**C**

Note: *The duration with a sequence of three dips/interruptions with a minimum interval of 10 s between each test event.The test level is U_T=100Vand U_T=240V.*

☒ **Results of Final Tests (Operating Mode)**

U_T=100V

☒ *Voltage Dips*

Test Level (% UT)	Reduction (%)	Duration		Observation	Criterion
		Peiod	ms		
0	**100%**	**0.5**	**10**	**Normal**	**A**
0	**100%**	**1**	**20**	**Normal**	**A**
70	**30%**	**25**	**500**	**Normal**	**B**

☒ *Interruptions*

Test Level (% UT)	Reduction (%)	Duration		Observation	Criterion
		Peiod	ms		
0	**100%**	**250**	**5000**	**Normal**	**B**

U_T=240V

☒ *Voltage Dips*

Test Level (% UT)	Reduction (%)	Duration		Observation	Criterion
		Peiod	ms		
0	**100%**	**0.5**	**10**	**Normal**	**A**
0	**100%**	**1**	**20**	**Normal**	**A**
70	**30%**	**25**	**500**	**Normal**	**B**

☒ *Interruptions*

Test Level (% UT)	Reduction (%)	Duration		Observation	Criterion
		Peiod	ms		
0	**100%**	**250**	**5000**	**Normal**	**B**

Remarks: During the test no deviation was detected to the selected operation mode(s) for Criterion A.

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

Result (Pass / Fail)
Pass

4.1.12. Power Frequency Magnetic Field Susceptibility Test

LIMIT

Please refer to IEC 61000-4-8

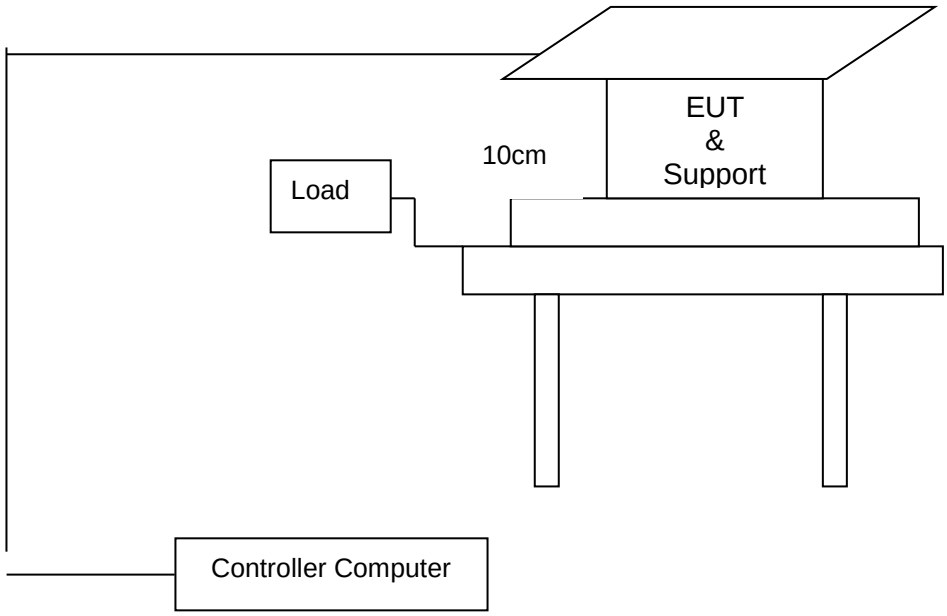
TEST LEVELS OF POWER FREQUENCY FIELD SUSCEPTIBILITY TEST

Test Level: 1A/m

Level	Magnetic Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X.	Special

Performance criterion: **A**

TEST CONFIGURATION



TEST PROCEDURE

Please IEC 61000-4-8 for the measurement methods.

TEST RESULTS

Climatic conditions

- ■ ambient temperature : 25 ℃
- ■ relative humidity: 55%
- ■ atmospheric pressure: 960 mbar

Description of the Power Frequency Magnetic Field Susceptibility Test

Test frequency:	■ 50 Hz	■ 60 Hz	
Continuous field:	■ 1 A/m		
Test duration:	■ 5 m		
Antenna factor:	0.917 A/m		
Axis:	■ x-axis	■ y-axis	■ z-axis

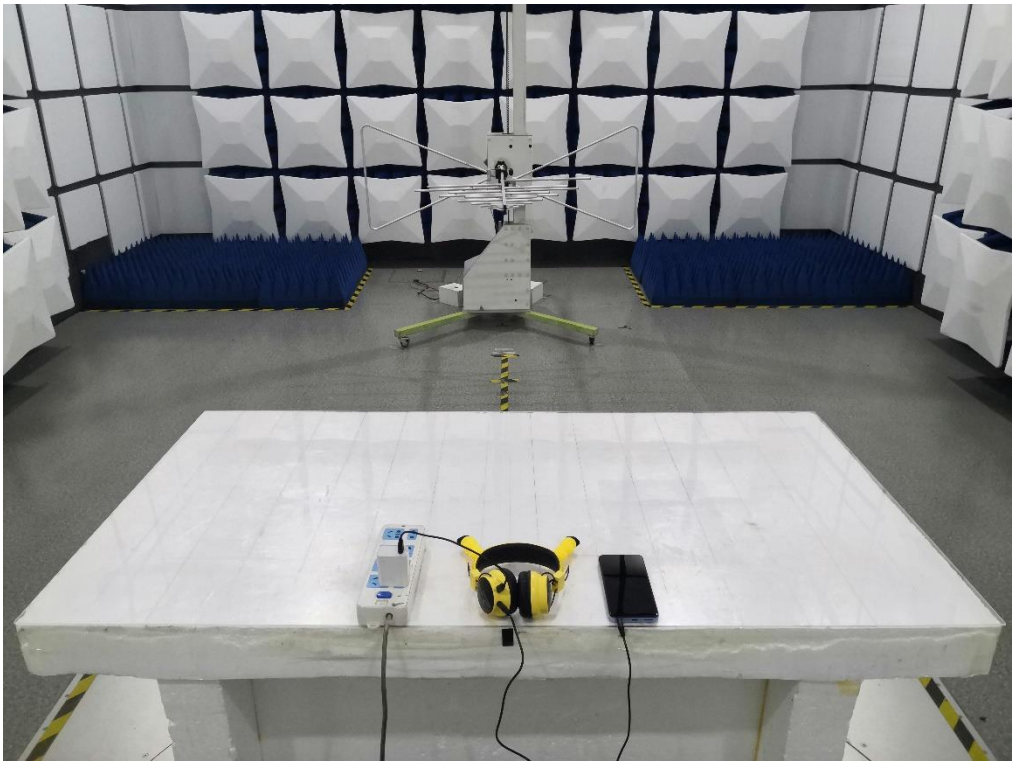
PERFORMANCE CRITERIA	
Criteria requested	☐ **A /** ☒ **B /** ☐ **C**
Criteria meet	☒ **A /** ☐ **B /** ☐ **C**

Remarks: During the test no deviation was detected to the selected operation mode(s).

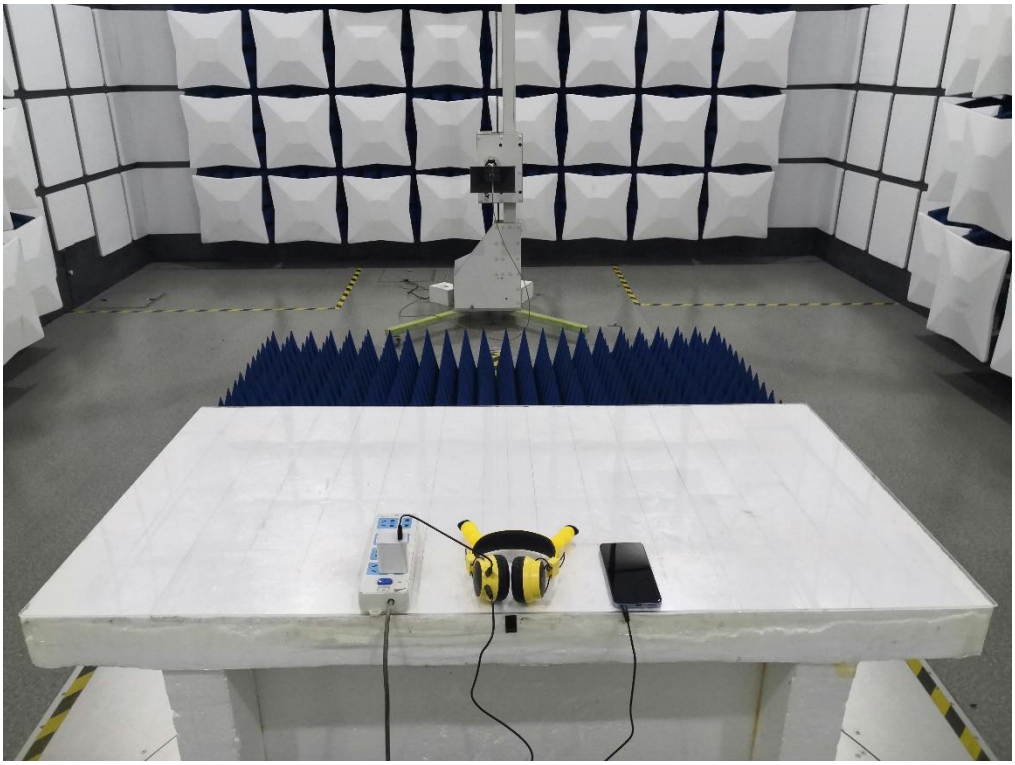
Result (Pass / Fail)
Pass

5. Test Set-up Photos of the EUT

Radiated Emission (30MHz-1GHz)



Radiated Emission (1GHz-6GHz)



Conducted Emission (AC Mains)

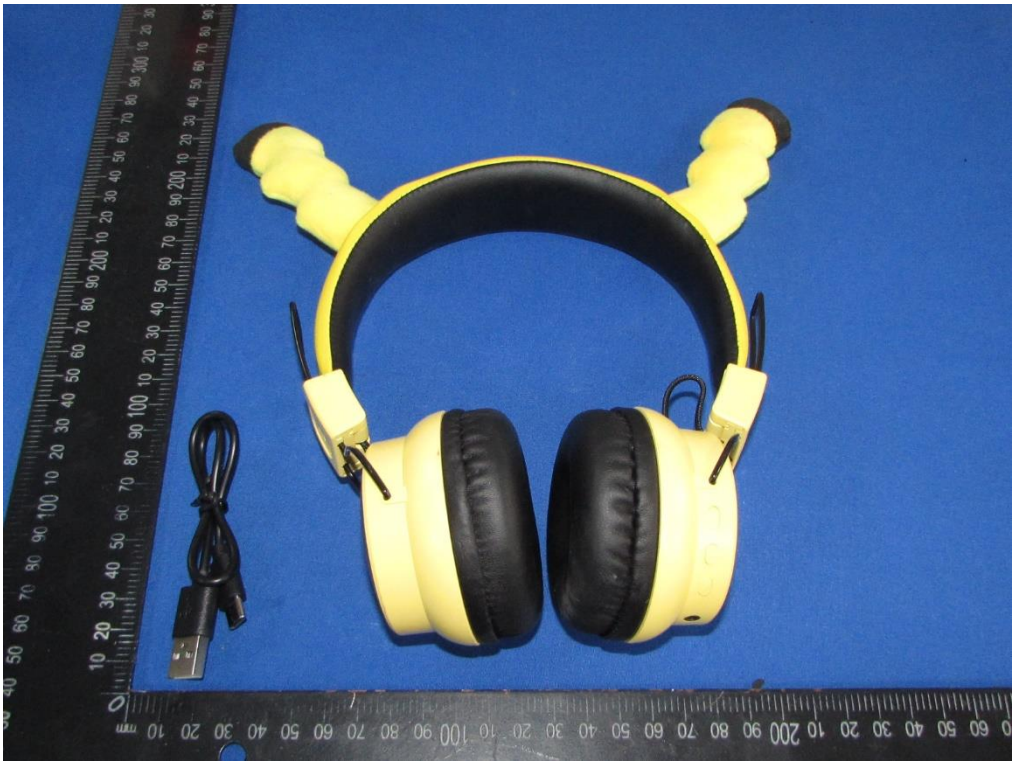
RF Electromagnetic Field

Electrostatic Discharge

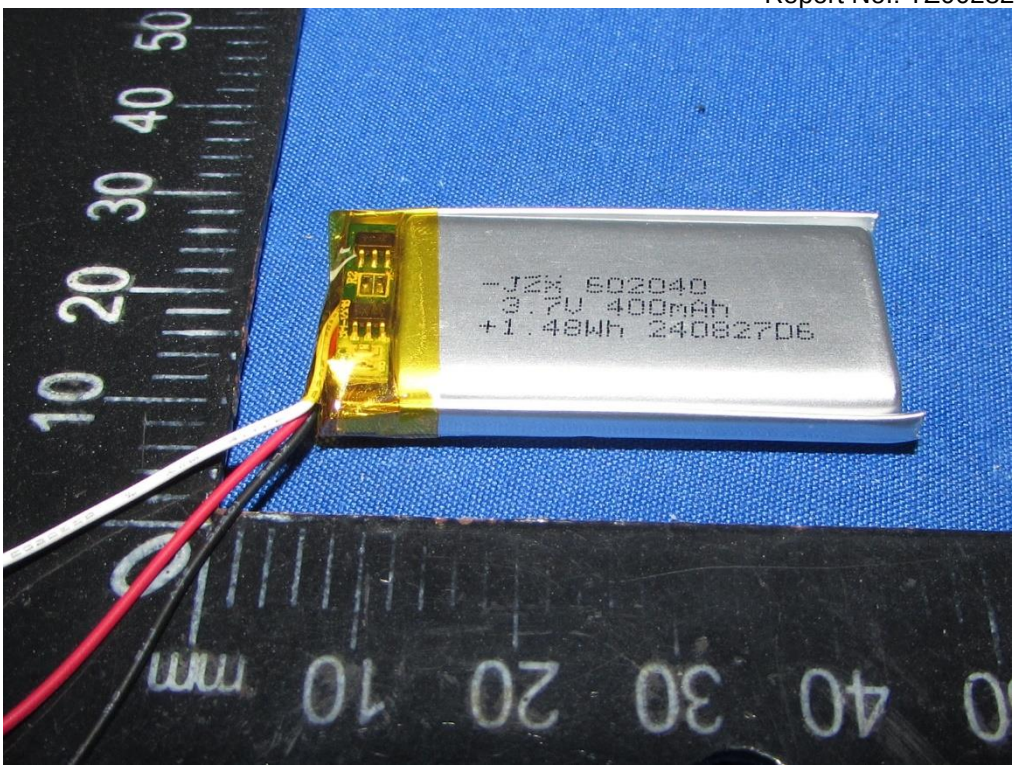
Fast Transients/Surges/ Voltage Dips and Interruptions

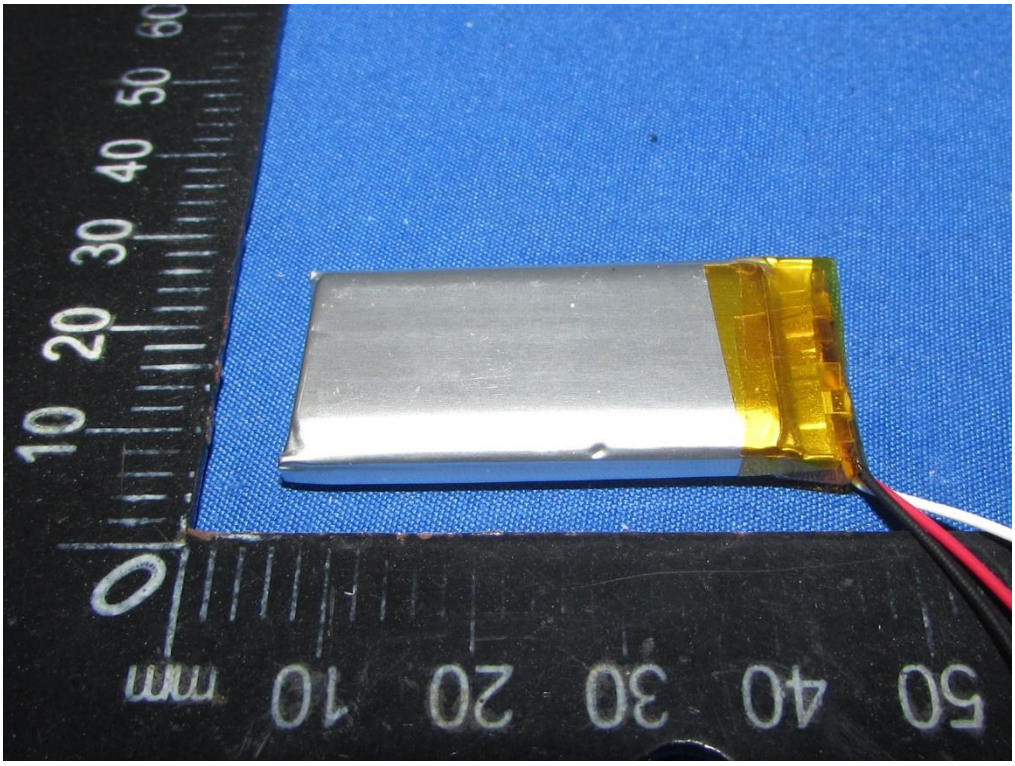
6. PHOTOS OF THE EUT

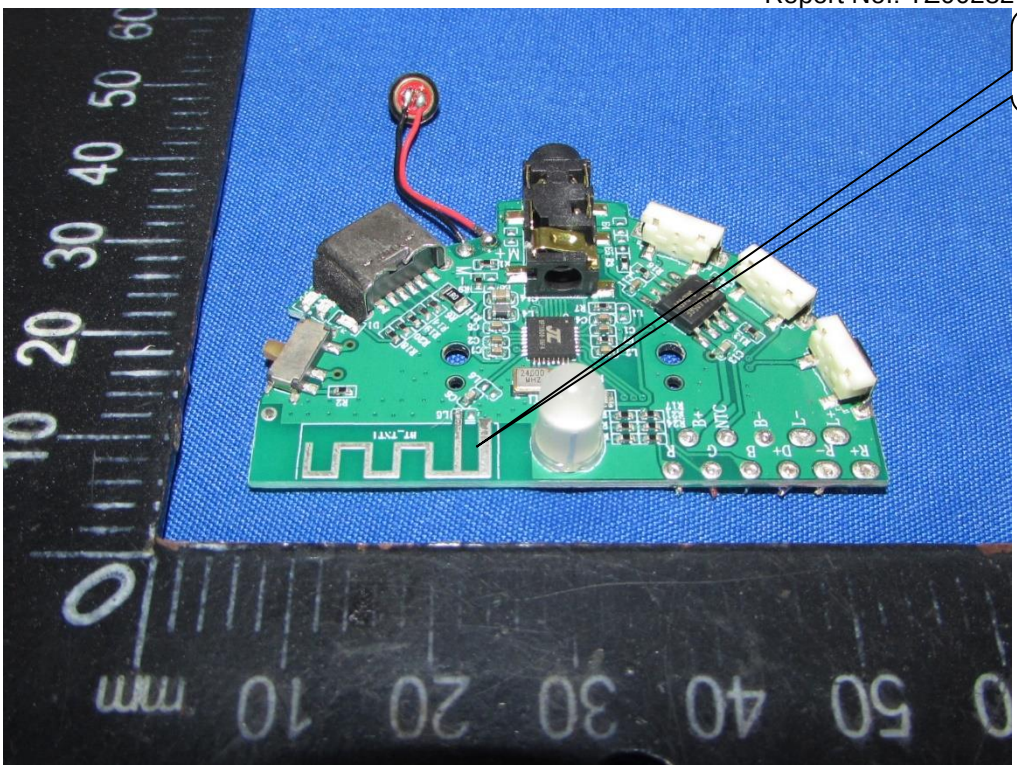
External Photos

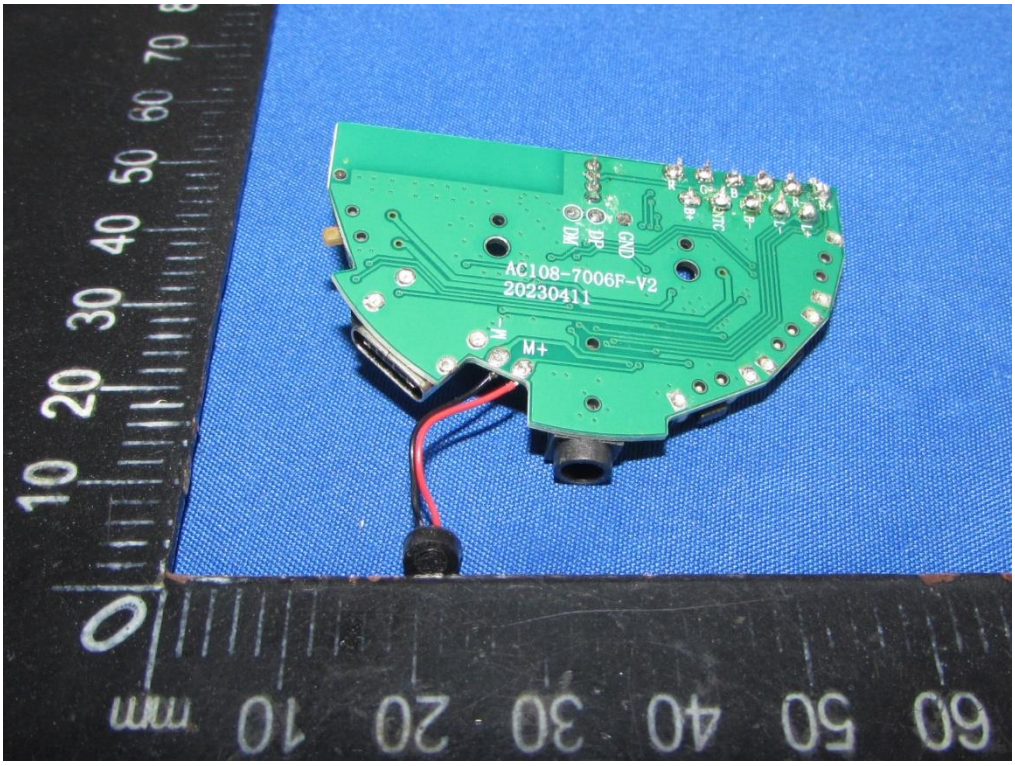


Internal Photos


-JZ 602040
3.7V 400mAh
+1.48Wh 240827D6







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