



EMC TEST REPORT

For

Woan Technology (Shenzhen) Co., Ltd.

SwitchBot Air Purifier Table

Test Model: W5302310

Additional Model No.: Please Refer to Page 6

Prepared for : Woan Technology (Shenzhen) Co., Ltd.
Address : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
Bao'an District, Shenzhen, Guangdong, P.R.China,
518100

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Date of receipt of test sample : July 30, 2024
Number of tested samples : 2
Sample No. : A240726086-1, A240726086-2
Serial number : Prototype
Date of Test : July 30, 2024 ~ August 09, 2024
Date of Report : August 12, 2024



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EMC TEST REPORT	
ETSI EN 301 489-1 V2.2.3 (2019-11) & ETSI EN 301 489-3 V2.3.2 (2023-01) & ETSI EN 301 489-17 V3.2.4 (2020-09)	
Report Reference No.	LCSA07264213EA
Date Of Issue	August 12, 2024
Testing Laboratory Name	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ...	Full application of Harmonised standards ☒ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name	Woan Technology (Shenzhen) Co., Ltd.
Address	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Test Specification	
Standard	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-3 V2.3.2 (2023-01) ETSI EN 301 489-17 V3.2.4 (2020-09)
Test Report Form No.	TRF-4-E-132 A/0
TRF Originator	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	Dated 2017-06
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Test Item Description.	
SwitchBot Air Purifier Table	
Trade Mark	SwitchBot
Test Model	W5302310
Ratings	Please Refer to Page 6
Result	Positive

Compiled by:

Jack Liu/Administrator

Supervised by:

Cary Luo/ Technique principal

Approved by:

Gavin Liang/ Manager



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EMC -- TEST REPORT

Test Report No. : LCSA07264213EA	<u>August 12, 2024</u> Date of issue
---	---

Test Model.....	: W5302310
EUT.....	: SwitchBot Air Purifier Table
Applicant.....	: Woan Technology (Shenzhen) Co., Ltd.
Address.....	: Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: Woan Technology (Shenzhen) Co., Ltd.
Address.....	: Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Telephone.....	: /
Fax.....	: /
Factory.....	: Wo'an Technology (Shenzhen) Co., Ltd. Huizhou Branch
Address.....	: Building 2, 2nd Floor, Baidi Zhigu Science and Technology Innovation Park, No.263 Chang'an Avenue, Shatian Town, Huiyang District, Huizhou City, Guangdong, China
Telephone.....	: /
Fax.....	: /

Test Result	Positive
--------------------	-----------------

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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Revision History

Report Version	Issue Date	Revision Content	Revised By
000	August 12, 2024	Initial Issue	--





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1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	: SwitchBot Air Purifier Table
Test Model	: W5302310
Additional Model No.	: W5302311, W5302312, W5302313, W5302314, W5302315
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: For Adapter Model: CZH072240300EUWV For Adapter: Input:100-240V~, 50/60Hz, 1.5A Max Output: 24.0V=3.0A, 72.0W For Adapter Model: HA072240300EUW Input:100-240V~, 50/60Hz, 2.0A Max Output: 24.0V=3.0A, 72.0W
Hardware Version	: /
Software Version	: /
Bluetooth	:
Frequency Range	: 2402MHz ~ 2480MHz
Channel Number	: 40 channels for Bluetooth V4.2 (BT LE)
Channel Spacing	: 2MHz for Bluetooth V4.2 (BT LE)
Modulation Type	: GFSK for Bluetooth V4.2 (BT LE)
Bluetooth Version	: V4.2
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
WIFI(2.4G Band)	:
Frequency Range	: 2412MHz ~ 2472MHz
Channel Spacing	: 5MHz
Channel Number	: 13 Channel for 20MHz bandwidth(2412~2472MHz) 9 channels for 40MHz bandwidth(2422~2462MHz)
Modulation Type	: 802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
Wireless Charging	:
Operating Frequency	: 110.0~205.0KHz
Modulation Type	: ASK
Antenna Type	: Coil Antenna



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1.2. Objective

ETSI EN 301 489-1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility
ETSI EN 301 489-3	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard for ElectroMagnetic Compatibility
ETSI EN 301 489-17	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility

The objective is to determine compliance with ETSI EN 301 489-1 V2.2.3 (2019-11), ETSI EN 301 489-3 V2.3.2 (2023-01), ETSI EN 301 489-17 V3.2.4 (2020-09).

1.3. Related Submittal(s)/Grant(s)

No Related Submittals.

1.4. Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 489-1 V2.2.3 (2019-11), ETSI EN 301 489-3 V2.3.2 (2023-01), ETSI EN 301 489-17 V3.2.4 (2020-09).

1.5. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

1.6. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen CHANZEHO Technology Co.,Limited.	SWITCHING ADAPTER	CZH07224030 0EUWV	--	CE
Zhejiang Huaguan Power Technology Co.,Ltd.	SWITCHING POWER SUPPLY	HA072240300 EUW	--	CE
Huawei	Mobile phone	FRD-AL10	FRD-AL10C0 0B373	CE

Note: The Mobile phone is supplied by lab and only use tested.

1.7. External I/O

I/O Port Description	Quantity	Cable
Power Port	1	N/A



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1.8. Measurement Uncertainty

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	0.01ppm	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.2°C	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

1.9. Description of Test Modes

There was 4 test Modes. TM1 to TM4 were shown below:

- TM1 : Operate in Bluetooth mode;
- TM2 : Operate in 2.4G WIFI Link mode;
- TM3 : Operate Wireless Charging Mode;
- TM4 : Idle mode

***Note:

1. All test modes were tested, but we only recorded the worst case in this report.



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2. SUMMARY OF TEST RESULTS

Rule	Description of Test Items	Result
§7.1	Reference to clause 8.4 of ETSI EN 301 489-1 Conducted Emission (AC mains input/output port)	Compliant
§7.1	Reference to clause 8.3 of ETSI EN 301 489-1 Conducted Emission (DC power input/output port)	N/A*
§7.1	Reference to clause 8.7 of ETSI EN 301 489-1 Conducted Emission (Wired network port)	N/A*
§7.1	Reference to clause 8.2 of ETSI EN 301 489-1 Radiated Emission (Enclosure of ancillary equipment)	Compliant
§7.1	Reference to clause 8.5 of ETSI EN 301 489-1 Harmonic current emissions (AC mains input port)	N/A*
§7.1	Reference to clause 8.6 of ETSI EN 301 489-1 Voltage fluctuations and flicker (AC mains input port)	Compliant
§7.2	Reference to clause 9.3 of ETSI EN 301 489-1 Electrostatic discharge (Enclosure port) (EN 61000-4-2)	Compliant
§7.2	Reference to clause 9.2 of ETSI EN 301 489-1 RF electromagnetic field (80MHz to 6000MHz) (Enclosure port) (EN 61000-4-3)	Compliant
§7.2	Reference to clause 9.4 of ETSI EN 301 489-1 Fast transients common mode (signal, wired network and control ports, DC and AC power ports) (EN 61000-4-4)	Compliant
§7.2	Reference to clause 9.8 of ETSI EN 301 489-1 Surges, line to line and line to ground (AC mains power input ports, wired network ports) (EN 61000-4-5)	Compliant
§7.2	Reference to clause 9.5 of ETSI EN 301 489-1 RF common mode 0.15MHz to 80MHz (signal, wired network and control ports, DC and AC power ports) (EN 61000-4-6)	Compliant
§7.2	Reference to clause 9.6 of ETSI EN 301 489-1 Transients and surges in the vehicular environment (ISO 7637-2)	N/A*
§7.2	Reference to clause 9.7 of ETSI EN 301 489-1 Voltage dips and interruptions (AC mains power input ports) (EN 61000-4-11)	Compliant

*** Note: We tested the adapter models CZH072240300EUWV and HA072240300EUW, but we only recorded the worst case in this report.



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3. TEST RESULTS

3.1. Line Conducted Emission

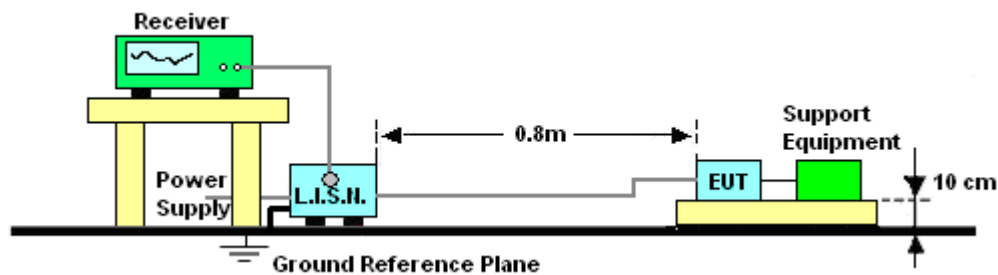
3.1.1 Conducted Emission Limit

Relevant Standard(s): ETSI EN 301 489-1 V2.2.3 (2019-11) / EN 55032:2015/A11:2020
Class B

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

NOTE1-The lower limit shall apply at the transition frequencies.
NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.1.2 Test Configuration



The setup of EUT is according with per ETSI EN 301 489-1 measurement procedure. The specification used was with the ETSI EN 301 489-1 limits.

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

The spacing between the peripherals was 10 cm.

The EUT received charging power from the charger which received power through a LISN supplying power of AC 230V/50Hz.





3.1.3 EMI Test Receiver Setup

During the conducted emission test, the EMI test receiver was set with the following configurations:

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	150KHz ~ 30MHz
(IF)RBW	9kHz

All data was recorded in the Quasi-peak and average detection mode.

3.1.4 Test Procedure

Power on the EUT, the EUT begins to work. Make sure the EUT operates normally during the test.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

3.1.5 Test Results

PASS

Please refer to Appendix A.1 for Emission and Immunity test results.



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3.2. Conducted Emission (Wired Network Port)

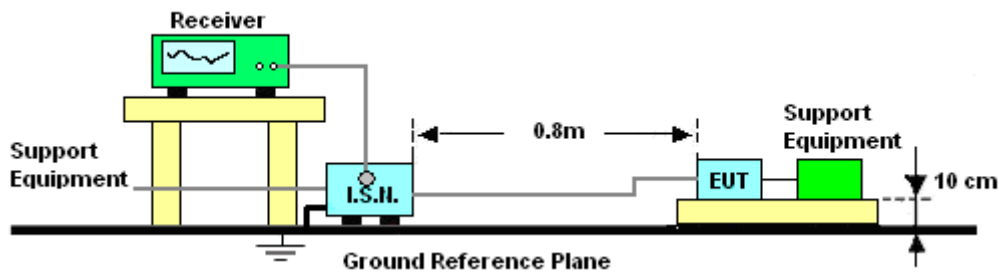
3.2.1 Conducted Emission Limit(Wired Network Port)

Limits for asymmetric mode conducted emissions				
Frequency (MHz)	Class B voltage limits (dBμV)		Class B current limits (dBμA)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	84.0~74.0	74.0~64.0	40.0~30.0	30.0~20.0
0.50 ~ 30.00	74.0	64.0	30.0	20.0

NOTE 1-The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz.

NOTE 2-The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150 / I = 44 \text{ dB}$).

3.2.2 Test Configuration



3.2.3 EMI Test Receiver Setup

During the conducted emission test, the EMI test receiver was set with the following configurations:

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	150KHz ~ 30MHz
(IF)RBW	9kHz

All data was recorded in the Quasi-peak and average detection mode.

3.2.4 Test Procedure

Please refer to ETSI EN 301 489-1 Clause 8.7.2 and EN 55032 Clause 6 for the measurement methods.

3.2.5 Test Results

Not applicable.





3.3. Radiated Disturbance

3.3.1 Radiated Emission Limit

Relevant Standard(s): ETSI EN 301 489-1 V2.2.3 (2019-11) / EN 55032:2015/A11:2020
Class B

Limits for Radiated Disturbance Below 1GHz			
Frequency (MHz)	Facility	Distance (Meters)	Field Strengths Limit (dB μ V/m)
30 ~ 230	FAR	3	42-35
230 ~ 1000	FAR	3	42
***Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.			
Limits for Radiated Disturbance Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)
1000 ~ 3000	3	70	50
3000 ~ 6000	3	74	54
***Note: The lower limit applies at the transition frequency.			

Limits for Radiated Disturbance Below 1GHz (For FM Receivers)			
Frequency (MHz)	Distance (Meters)	Class B Limit (dBμV/m)	
		Fundamental	Harmonics
30 ~ 230	3	60	52
230 ~ 300	3		52
300 ~ 1000	3		56
***Note: These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the LO. Signals at all other frequencies shall be compliant with the limits given in above Table.			
Limits for Radiated Disturbance Above 1GHz (For FM Receivers)			
1000 ~ 3000	3	70	50
3000 ~ 6000	3	74	54
***Note: The lower limit applies at the transition frequency.			





3.3.2 Test Configuration

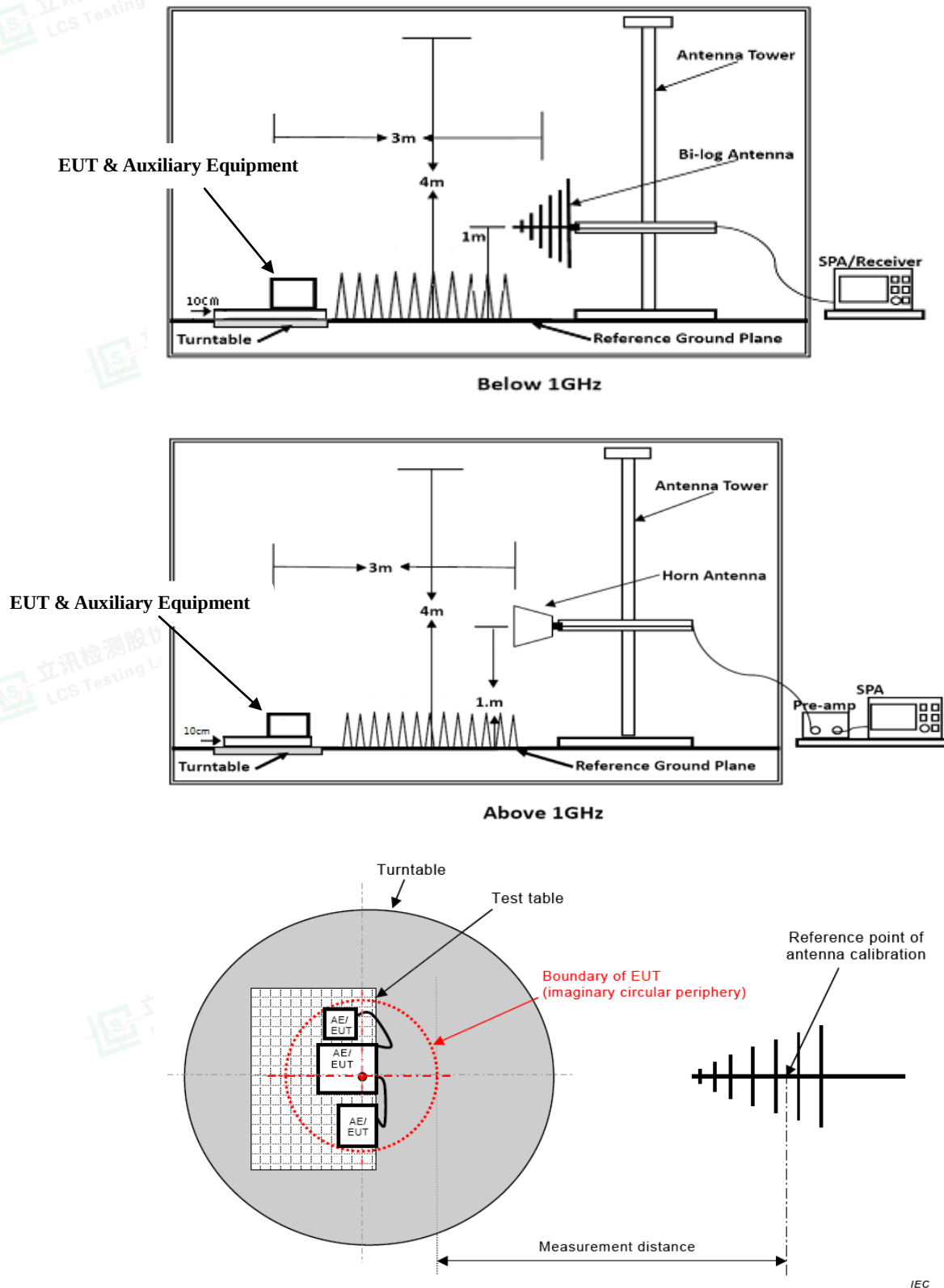


Figure C.1 – Measurement distance
Test Setup for FM Receiver



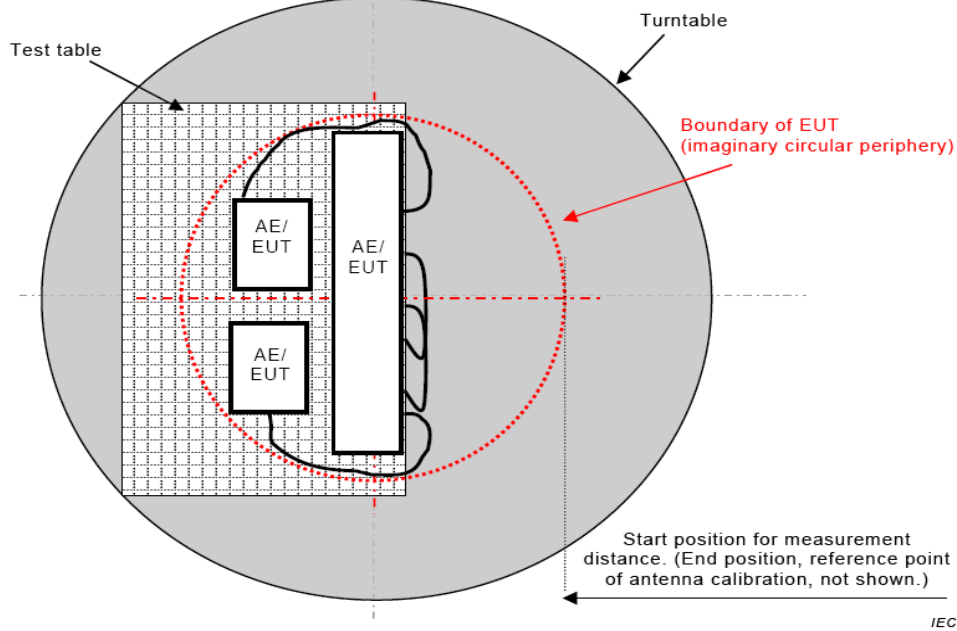


Figure C.2 – Boundary of EUT, Local AE and associated cabling

Test Setup for FM Receiver

3.3.3 Test Procedure

The test method shall be in accordance with CENELEC EN 55032 [1], annex A.3.

3.3.4 Test Results

PASS

The worst test mode of the EUT was TM1, and its test data please refer to Appendix A.3 for Emission and Immunity test results.



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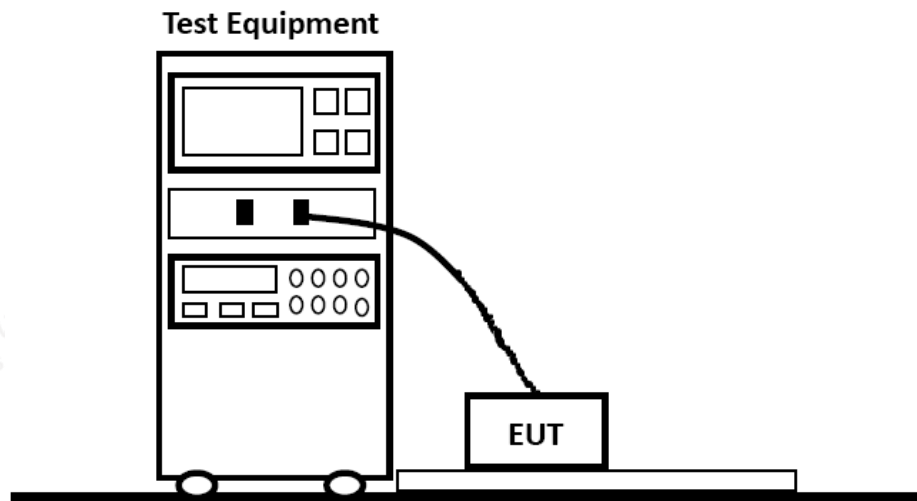
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3.4. Harmonic Current Emissions

3.4.1 Test Configuration



3.4.2 Test Standard

According to ETSI EN 301 489-1 V2.2.3 (2019-11) & EN 61000-3-2: 2014

3.4.3 Test Results

N/A

Please refer to Appendix A.4 for Emission and Immunity test results.



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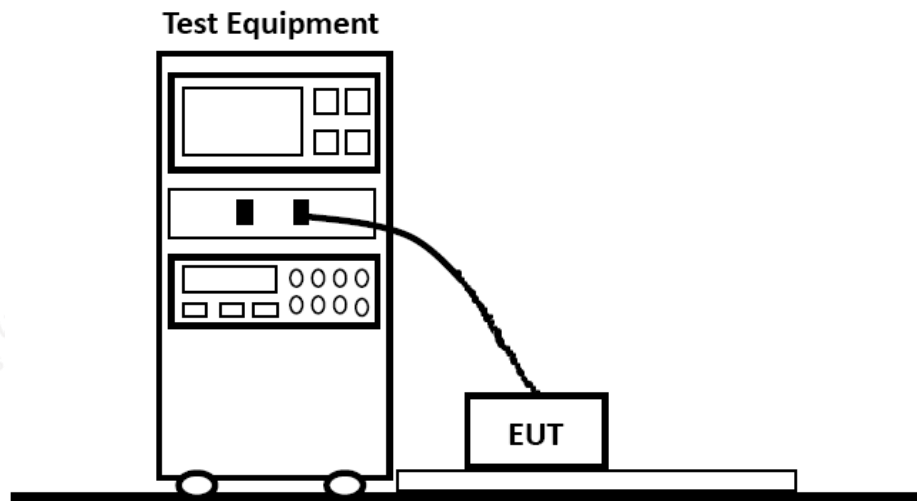
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3.5. Voltage Fluctuation and Flicker

3.5.1 Test Configuration



3.5.2 Test Standard

According to ETSI EN 301 489-1 V2.2.3 (2019-11) & EN 61000-3-3: 2013

3.5.3 Test Results

PASS

Please refer to Appendix A.5 for Emission and Immunity test results.



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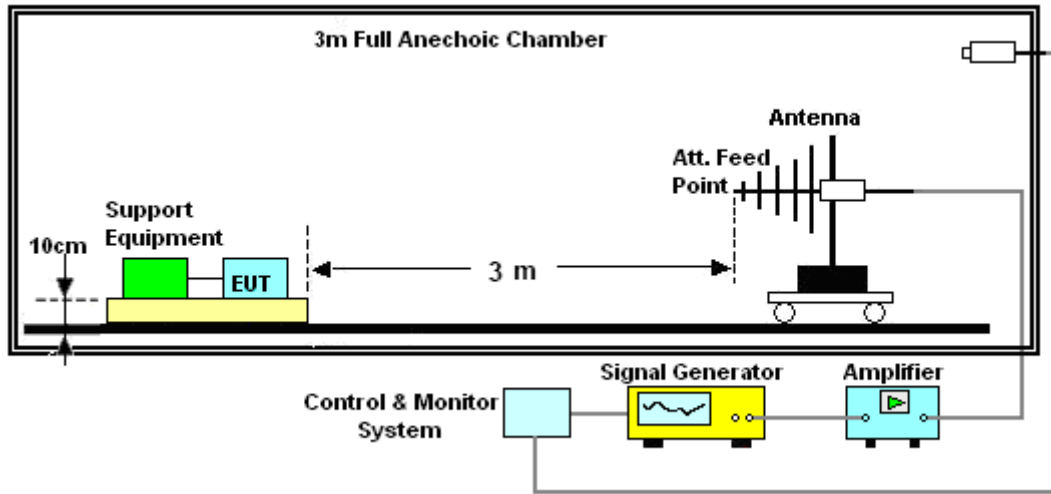
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3.6. RF Electromagnetic Field (80 MHz - 6000 MHz)

3.6.1 Test Configuration



3.6.2 Test Standard

ETSI EN 301 489-1, ETSI EN 301 489-3, ETSI EN 301 489-17 (EN 61000-4-3: 2006+A2: 2010)

Test level 2 at 3V/m.

3.6.3 Severity Level

Level	Field Strength (V/m)
1	1
2	3
3	10
X	Special
Performance Criterion: A	

3.6.4 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.1 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows:

Condition of Test	Remark
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Unmodulated
Scanning Frequency	80-6000MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	3 Sec.

3.6.5 Test Results

PASS

Please refer to Appendix A.6 for Emission and Immunity test results.

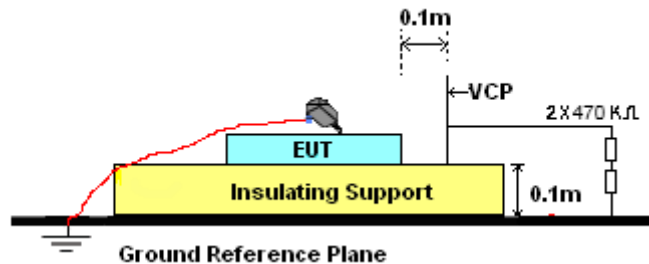


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3.7. Electrostatic Discharge

3.7.1 Test Configuration



EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

3.7.2 Test Procedure

ETSI EN 301 489-1 V2.2.3 (2019-11) / EN 61000-4-2: 2009

Test level 3 for Air Discharge at ± 8 kV

Test level 2 for Contact Discharge at ± 4 kV

3.7.2.1 Air Discharge

This test is done on a non-conductive surface. 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 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

3.7.2.2 Contact Discharge

All the procedure shall be same as Section 3.7.2.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

3.7.2.3 Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.



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3.7.2.4 Indirect Discharge For Vertical Coupling Plane

At least 10 single discharges (in the most sensitive polarity) 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.

3.7.3 Test Results

PASS

Please refer to Appendix A.7 for Emission and Immunity test results.



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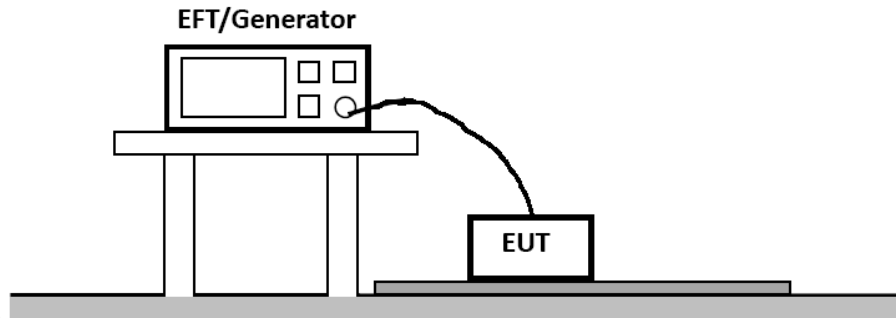
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3.8. Electrical Fast Transient Immunity

3.8.1 Test Configuration



3.8.2 Test Standard

ETSI EN 301 489-1 V2.2.3 (2019-11)/ EN61000-4-4: 2012

Test level 2 at 1 kV

Test Level		
Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special
Performance Criterion: B		

3.8.3 Test Procedure

The EUT is put on the table, which is 0.1 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

3.8.3.1 For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

3.8.3.2 For signal lines and control lines ports: No I/O ports. It's unnecessary to test.

3.8.3.3 For DC output line ports: It's unnecessary to test.

3.8.4 Test Results

PASS

Please refer to Appendix A.8 for Emission and Immunity test results.



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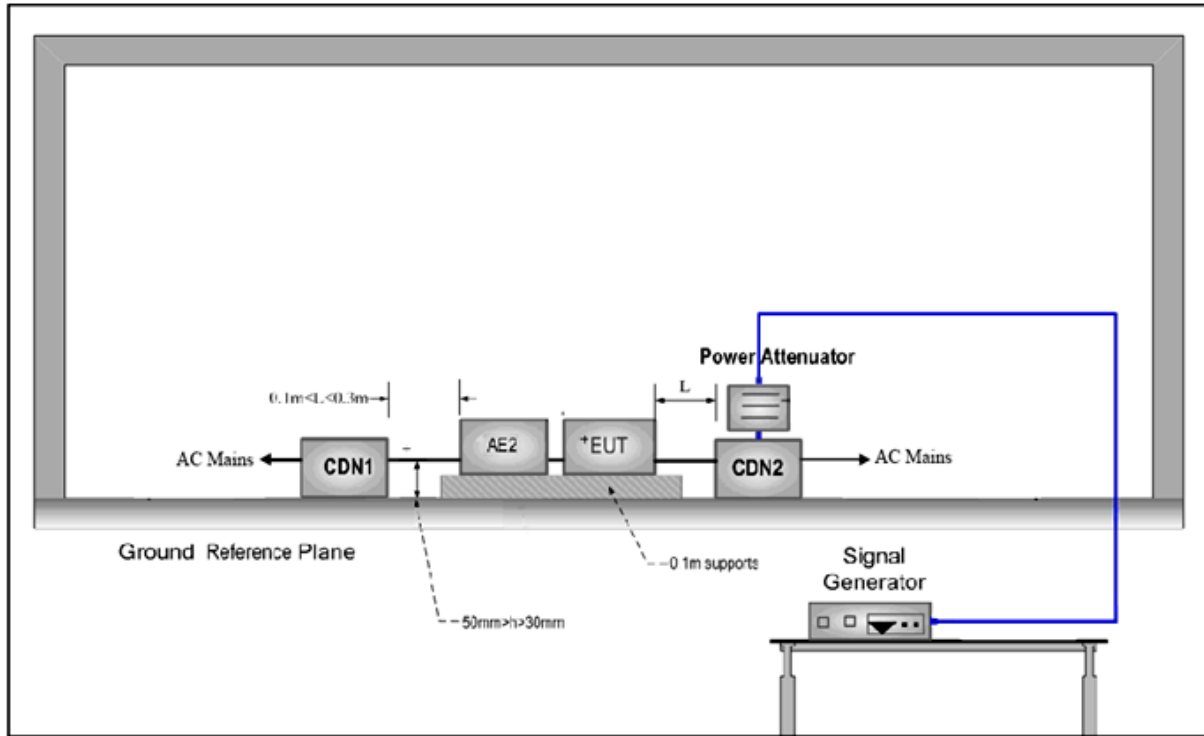
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3.9. RF Common Mode

3.9.1 Test Configuration



3.9.2 Test Standard

ETSI EN 301 489-1 V2.2.3 (2019-11)/ EN 61000-4-6: 2014

Test level: 3V (r.m.s.) for 0.15MHz ~ 10MHz; 3V (r.m.s.) to 1V (r.m.s.) for 10MHz ~ 30MHz; 1V (r.m.s.) for 30MHz ~ 80MHz

Modulation type: AM

Modulation depth: 80%

Modulation signal: 1 kHz

Test Level	
Level	Voltage Level (r.m.s.) (V)
1	1
2	3
3	10
X	Special
Performance Criterion: A	



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3.9.3 Test Procedure

3.9.3.1 Let the EUT work in test mode and test it.

3.9.3.2 The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50mm (where possible).

3.9.3.3 The disturbance signal described below is injected to EUT through CDN.

3.9.3.4 The EUT operates within its operational mode(s) under intended climatic conditions after power on.

3.9.3.5 The frequency range is swept from 150kHz to 10MHz using 3V signal level, 10MHz to 30MHz using 3V to 1V signal level, 30MHz to 80MHz using 1V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

3.9.3.6 The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

3.9.3.7 Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

3.9.4 Test Results

PASS

Please refer to Appendix A.9 for Emission and Immunity test results.



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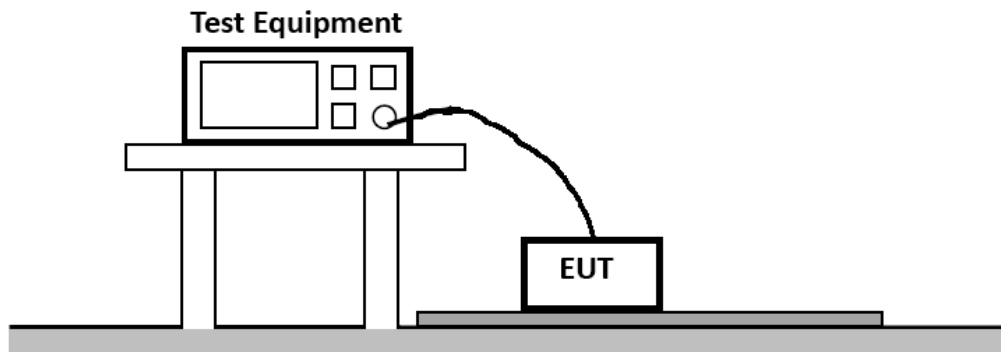
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3.10. Surges, Line to Line and Line to Ground

3.10.1 Test Configuration



3.10.2 Test Standard

ETSI EN 301 489-1 V2.2.3 (2019-11) / EN 61000-4-5: 2014+A1:2017

L-N: Test level 2 at 1 kV

L-PE, N-PE Test Level 3 at 2kV

Test Level		
Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special
Performance Criterion: B		

3.10.3 Test Procedure

3.10.3.1 For line to line coupling mode, provide a 0.5 kV 1.2/50us voltage surge (at open-circuit condition).

3.10.3.2 At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

3.10.3.3 Different phase angles are done individually.

3.10.3.4 Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

3.10.4 Test Results

PASS

Please refer to Appendix A.10 for Emission and Immunity test results.



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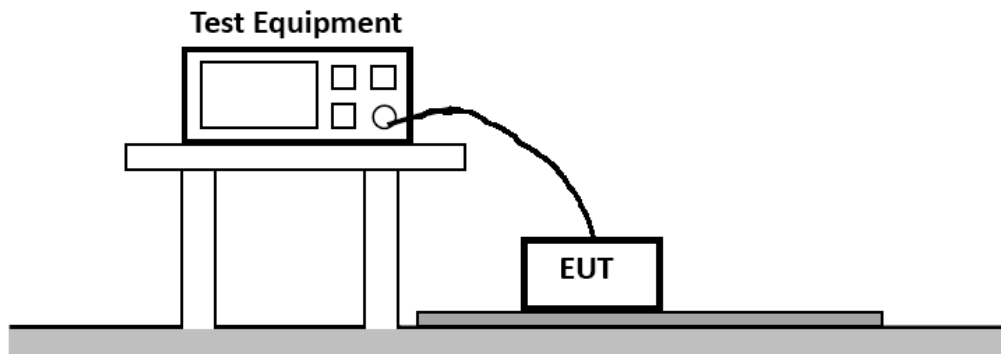
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3.11. Voltage Dips/Interruptions Immunity Test

3.11.1 Test Configuration



3.11.2 Test Standard

ETSI EN 301 489-1 V2.2.3 (2019-11)/ EN 61000-4-11: 2004

Test levels and Performance Criterion

Test Level		
Voltage Reduction $\%U_T$	Voltage Dips $\%U_T$	Duration (in Period)
100	0	0.5
100	0	1
30	70	5
Voltage Reduction $\%U_T$	Voltage Dips $\%U_T$	Duration (in Period)
100	0	250
Performance Criterion: B&C		

3.11.3 Test Procedure

3.11.3.1 The interruption is introduced at selected phase angles with specified duration.

3.11.3.2 Record any degradation of performance.

3.11.4 Test Results

PASS

Please refer to Appendix A.11 for Emission and Immunity test results.



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4. GENERAL PERFORMANCE CRITERIA FOR IMMUNITY TEST

4.1. Performance criteria for Continuous phenomena applied to Transmitter (CT)

For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

4.2. Performance criteria for Transient phenomena applied to Transmitter (TT)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

4.3. Performance criteria for Continuous phenomena applied to Receiver (CR)

For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

4.4. Performance criteria for Transient phenomena applied to Receiver (TR)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.



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**Performance criteria for ETSI EN 301 489-3 V2.3.2 (2023-01)****1) Introduction**

The performance criteria are used to make an assessment whether a radio equipment passes or fails immunity tests.

Only the performance criteria specified in the present document or in ETSI EN 301 489-1 [1] where referenced shall apply.

The provisions of ETSI EN 301 489-1 [1], clause 6, shall apply together with the following.

2) Continuous and non-continuous operation

Latency is the time delay between the initiation and the completion of operation of the EUT. Correct functioning requires completing the relevant operation within the maximum latency time.

Where the maximum latency is specified in the applicable harmonised radio standard (in the wanted performance

criterion, or an acknowledge requirement), that value shall be used.

Where this is not the case, then the maximum latency is that required by the intended use of the EUT.

3) Operating modes

Where the EUT has more than one mode of operation (see clause 4.4.1), an unplanned transition from one mode to another is considered as an unintentional response. The EUT shall be tested in all modes to confirm there are no such unintentional responses.

Performance criteria for ETSI EN 301 489-17 V3.2.4 (2020-09)

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.		



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5. LIST OF MEASURING EQUIPMENT

LINE CONDUCTED EMISSION

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2024-03-02	2025-03-01
3	Artificial Mains	R&S	ENV216	101288	2024-06-06	2025-06-05
4	Pulse Limiter	R&S	ESH3-Z2	102750-NB	2024-06-06	2025-06-05
5	Impedance Stabilization Network	TESEQ	ISN T800	45130	2023-10-18	2024-10-17
6	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

RADIATED DISTURBANCE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2022-08-17	2025-08-16
3	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
4	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
5	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
6	EMI Test Receiver	R&S	ESPI	101940	2024-06-06	2025-06-05
7	Low-frequency amplifier	SchwarzZBECK	BBV9745	00253	2023-10-18	2024-10-17
8	High-frequency amplifier	JS Denki Pte	PA0118-43	JSPA21009	2023-10-18	2024-10-17
9	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2023-10-18	2024-10-17
10	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2024-06-06	2025-06-05
11	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

VOLTAGE FLUCTUATION AND FLICKER/HARMONIC CURRENT EMISSIONS

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	HARMONICS&FLICKER MEASUREMENT SYSTEM	EVERFINE	HFM-3000	P630850CD1411116	2024-03-02	2025-03-01
2	HARMONICS&FLICKER TESTING POWER SOURCE	EVERFINE	HFS-4000	P624486CD1411124	2024-03-02	2025-03-01
3	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

RF ELECTROMAGNETIC FIELD

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	RS Test Software	Tonscend	/	/	N/A	N/A
2	MXG Vector Signal Generator	Agilent	E4438C	MY42081396(6G)	2023-10-18	2024-10-17
3	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2022-08-17	2025-08-16
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	2024-06-06	2025-06-05
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	2024-06-06	2025-06-05
6	RF POWER AMPLIFIER	SKET	HAP_0306G-50W	/	2024-06-06	2025-06-05
7	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2023-07-14	2026-07-13
8	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-482	2024-07-20	2027-07-19
9	RS Electric field probe	narda	EP601	611WX80208	2024-06-25	2025-06-24
10	Sound Level meter	BK Precision	735	73500873100100	2024-06-06	2025-06-05



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Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
				20		
11	Audio Analyzer	R&S	UPV	1146.2003K02-10 1721-UW	2023-10-18	2024-10-17
12	Mouse Simulation	Bruel & Kjaer	4227	A0304216	2024-06-06	2025-06-05
13	Ear Simulation and supply	Bruel & Kjaer	2669.4182.5 935	A0305284	2024-06-06	2025-06-05
14	Acoustical Calibrators	Bruel & Kjaer	4231	A0304215	2024-06-06	2025-06-05
15	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

ELECTROSTATIC DISCHARGE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ESD Simulator	SCHLODER	SESD 230	604035	2024-07-15	2025-07-14
2	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

ELECTRICAL FAST TRANSIENT IMMUNITY

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2024-06-06	2025-06-05
2	Electric fast pulse group generator	3ctest	EFT-4001G	EC0461044	2023-10-18	2024-10-17
3	Capacitive coupling clamp	3CTEST	EFTC	EC0441098	2024-06-06	2025-06-05
4	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

RF COMMON MODE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Simulator	FRANKONIA	CIT-10/75	A126A1195	2024-06-06	2025-06-05
2	CDN	FRANKONIA	CDN-M2+M3	A2210177	2024-06-06	2025-06-05
3	6dB Attenuator	FRANKONIA	DAM25W	1172040	2024-06-06	2025-06-05
4	Electromagnetic coupling injection clamp	ZHINAN	ZN23203	14017	2024-06-06	2025-06-05
5	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

SURGES, LINE TO LINE AND LINE TO GROUND

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2024-06-06	2025-06-05
2	Communication wave lightning generator	HTEC	HTSG 70	181701	2023-10-18	2024-10-17
3	Symmetrical data line coupling network	HTEC	HCN 8	182701	2023-10-18	2024-10-17
4	Data line decoupling network	HTEC	HDEC 8	182702	2023-10-18	2024-10-17
5	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

VOLTAGE DIPS/INTERRUPTIONS IMMUNITY TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2024-06-06	2025-06-05
2	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05

Note: N/A means no calibration requirement



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6. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files Appendix B for Photographs of Test Setup_EMC

7. PHOTOGRAPHS OF THE EUT

Please refer to separated files Appendix C for Photographs of The EUT.

-----THE END OF REPORT-----





RADIO TEST REPORT

For

Woan Technology (Shenzhen) Co., Ltd.

SwitchBot Air Purifier Table

Test Model: W5302310

Additional Model No.: Please Refer to Page 6

Prepared for	: Woan Technology (Shenzhen) Co., Ltd.
Address	: Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Prepared by	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel	: (+86)755-82591330
Fax	: (+86)755-82591332
Web	: www.LCS-cert.com
Mail	: webmaster@LCS-cert.com
Date of receipt of test sample	: July 30, 2024
Number of tested samples	: 2
Sample No.	: A240726086-1, A240726086-2
Serial number	: Prototype
Date of Test	: July 30, 2024 ~ August 09, 2024
Date of Report	: August 12, 2024





RADIO TEST REPORT ETSI EN 300 328 V2.2.2 (2019-07) Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum	
Report Reference No.	: LCSA07264213EB
Date of Issue	: August 12, 2024
Testing Laboratory Name	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure	: Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	: Woan Technology (Shenzhen) Co., Ltd.
Address	: Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Test Specification	
Standard	: ETSI EN 300 328 V2.2.2 (2019-07)
Test Report Form No.	: TRF-4-E-134 A/0
TRF Originator	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	: Dated 2017-06
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Test Item Description	: SwitchBot Air Purifier Table
Trade Mark	: SwitchBot
Test Model	: W5302310
Ratings	: Please Refer to Page 6
Result	: Positive

Compiled by:

Jack Liu/Administrator

Supervised by:

Cary Luo/ Technique principal

Approved by:

Gavin Liang/ Manager



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RADIO -- TEST REPORT

Test Report No. : LCSA07264213EB	August 12, 2024 Date of issue
----------------------------------	----------------------------------

Test Model.....	: W5302310
EUT.....	: SwitchBot Air Purifier Table
Applicant.....	: Woan Technology (Shenzhen) Co., Ltd.
Address.....	: Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: Woan Technology (Shenzhen) Co., Ltd.
Address.....	: Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Telephone.....	: /
Fax.....	: /
Factory.....	: Wo'an Technology (Shenzhen) Co., Ltd. Huizhou Branch
Address.....	: Building 2, 2nd Floor, Baidi Zhigu Science and Technology Innovation Park, No.263 Chang'an Avenue, Shatian Town, Huiyang District, Huizhou City, Guangdong, China
Telephone.....	: /
Fax.....	: /

Test Result:	Positive
---------------------	-----------------

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.





Revision History

Report Version	Issue Date	Revision Content	Revised By
000	August 12, 2024	Initial Issue	--





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1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	: SwitchBot Air Purifier Table
Test Model	: W5302310
Additional Model No.	: W5302311, W5302312, W5302313, W5302314, W5302315
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: For Adapter Model: CZH072240300EUWV For Adapter: Input:100-240V~, 50/60Hz, 1.5A Max Output: 24.0V=3.0A, 72.0W For Adapter Model: HA072240300EUW Input:100-240V~, 50/60Hz, 2.0A Max Output: 24.0V=3.0A, 72.0W
Hardware Version	: /
Software Version	: /
Bluetooth	:
Frequency Range	: 2402MHz ~ 2480MHz
Channel Number	: 40 channels for Bluetooth V4.2 (BT LE)
Channel Spacing	: 2MHz for Bluetooth V4.2 (BT LE)
Modulation Type	: GFSK for Bluetooth V4.2 (BT LE)
Bluetooth Version	: V4.2
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
WIFI(2.4G Band)	:
Frequency Range	: 2412MHz ~ 2472MHz
Channel Spacing	: 5MHz
Channel Number	: 13 Channel for 20MHz bandwidth(2412~2472MHz) 9 channels for 40MHz bandwidth(2422~2462MHz)
Modulation Type	: 802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
Wireless Charging	:
Operating Frequency	: 110.0~205.0KHz
Modulation Type	: ASK
Antenna Type	: Coil Antenna



**Product Information**

a) The type of modulation used by the equipment:

☐ FHSS

☒ other forms of modulation

b) In case of FHSS modulation:

• In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies:

• In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies:

The minimum number of Hopping Frequencies:

The Dwell Time:

The Minimum Channel Occupation Time:

c) Adaptive / non-adaptive equipment:

☐ non-adaptive Equipment

☒ adaptive Equipment without the possibility to switch to a non-adaptive mode

☐ adaptive Equipment which can also operate in a non-adaptive mode

d) In case of adaptive equipment:

The Channel Occupancy Time implemented by the equipment:

☐ The equipment has implemented an LBT based DAA mechanism

• In case of equipment using modulation different from FHSS:

☐ The equipment is Frame Based equipment

☐ The equipment is Load Based equipment

☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: μ s

The value q as referred to in clause 4.3.2.5.2.2.2

☒ The equipment has implemented an non-LBT based DAA mechanism

☐ The equipment can operate in more than one adaptive mode

e) In case of non-adaptive Equipment:

The maximum RF Output Power (e.i.r.p.): 1.65dBm

The maximum (corresponding) Duty Cycle: 100%

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

f) The worst case operational mode for each of the following tests:

• RF Output Power

GFSK

• Power Spectral Density

GFSK

• Duty cycle, Tx-Sequence, Tx-gap

.....



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- Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment)
.....
- Hopping Frequency Separation (only for FHSS equipment)
.....
- Medium Utilisation
.....
- Adaptivity & Receiver Blocking
.....
- Occupied Channel Bandwidth
GFSK
- Transmitter unwanted emissions in the OOB domain
GFSK
- Transmitter unwanted emissions in the spurious domain
GFSK
- Receiver spurious emissions
GFSK

g) The different transmit operating modes (tick all that apply):

- ☒ Operating mode 1: Single Antenna Equipment
- ☒ Equipment with only 1 antenna
- ☐ Equipment with 2 diversity antennas but only 1 antenna active at any moment in time
- ☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)
- ☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming
- ☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)
- ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1
- ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2
- NOTE: Add more lines if more channel bandwidths are supported.
- ☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming
- ☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)
- ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1
- ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2
- NOTE: Add more lines if more channel bandwidths are supported.

h) In case of Smart Antenna Systems:

- The number of Receive chains:
- The number of Transmit chains:
- ☐ symmetrical power distribution
- ☐ asymmetrical power distribution

In case of beam forming, the maximum beam forming gain:

NOTE: Beam forming gain does not include the basic gain of a single antenna.

i) Operating Frequency Range(s) of the equipment:

- Operating Frequency Range 1: 2402 MHz to 2480 MHz





- Operating Frequency Range 2: MHz to MHz

NOTE: Add more lines if more Frequency Ranges are supported.

j) Occupied Channel Bandwidth(s):

- Occupied Channel Bandwidth: 1.014MHz

NOTE: Add more lines if more channel bandwidths are supported.

k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

☒ Stand-alone

☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☐ Plug-in radio device (Equipment intended for a variety of host systems)

Other

l) The extreme operating conditions that apply to the equipment:

Operating temperature range: -20° C to 45° C

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:

- Antenna Type

☒ PCB Antenna

Antenna Gain: 2.22dBi

If applicable, additional beamforming gain (excluding basic antenna gain): dB

☐ Temporary RF connector provided

☐ No temporary RF connector provided

☐ Dedicated Antennas (equipment with antenna connector)

☐ Single power level with corresponding antenna(s)

☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels:

Power Level 1: dBm

Power Level 2: dBm

Power Level 3: dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

Supply Voltage ☒ AC mains State AC voltage: 230V

☐ DC State DC voltage:V



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In case of DC, indicate the type of power source

- ☐ Internal Power Supply
☐ External Power Supply or AC/DC adapter
☐ Battery:V
☒ Other:

o) Describe the test modes available which can facilitate testing:

The EUT can transmit in engineering mode.

p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):

Bluetooth®





1.2. Objective

This Type approval report is prepared on behalf of **Woan Technology (Shenzhen) Co., Ltd.** in accordance with ETSI EN 300 328 V2.2.2 (2019-07), Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum.

The objective is to determine compliance with ETSI EN 300 328 V2.2.2 (2019-07).

1.3. Related Submittal(s)/Grant(s)

No Related Submittals.

1.4. Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 328 V2.2.2 (2019-07).

1.5. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

1.6. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen CHANZEHO Technology Co.,Limited.	SWITCHING ADAPTER	CZH07224030 0EUWV	--	CE
Zhejiang Huaguan Power Technology Co.,Ltd.	SWITCHING POWER SUPPLY	HA072240300 EUW	--	CE
Huawei	Mobile phone	FRD-AL10	FRD-AL10C0 0B373	CE

Note: The Mobile phone is supplied by lab and only use tested.

1.7. External I/O

I/O Port Description	Quantity	Cable
Power Port	1	N/A





1.8. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Occupied Channel Bandwidth	5 %
RF output power, conducted	1,5 dB
Power Spectral Density, conducted	3 dB
Unwanted Emissions, conducted	3 dB
All emissions, radiated	6 dB
Temperature	1 °C
Humidity	5 %
DC and low frequency voltages	3 %
Time	5 %
Duty Cycle	5 %

1.9. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23.6
Humidity (%RH)	25-75	53.7
Barometric pressure (mbar)	860-1060	950-1000

1.10. Description of Test Modes

LCS has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by BLE
Mode 2: Receive by BLE

Note:

- (1) For portable device, radiated spurious emission was verified over X, Y, Z Axis, and shown the worst case on this report.
- (2) Regard to the frequency band operation for systems using Wide Band modulation: the lowest, middle, highest frequency channel for conducted test, and the lowest, highest frequency channel for radiation spurious test.
- (3) The extreme test condition for voltage and temperature were declared by the manufacturer.
- (4) All test modes were tested, but we only recorded the worst case in this report.





2. SYSTEM TEST CONFIGURATION

2.1. Justification

The system was configured for testing in engineering mode.

2.2. EUT Exercise Software

N/A.

2.3. Special Accessories

N/A.

2.4. Block Diagram/Schematics

Please refer to the related document.

2.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

2.6. Configuration of Test Setup

Please refer to the test setup photo.





3. SUMMARY OF TEST RESULT

- ☒ No deviations from the test standards
☐ Deviations from the test standards as below description:

Technical requirements for the equipment using wide band modulations other than FHSS:

Performed Test Item	Normative References	Test Performed	Deviation
RF Output Power & Receiver Category	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Power Spectral Density	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Duty cycle, Tx-Sequence, Tx-gap	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Medium Utilisation (MU) factor	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Adaptivity	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Occupied Channel Bandwidth	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Transmitter unwanted emissions in the out-of-band domain	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Transmitter unwanted emissions in the spurious domain	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Receiver Spurious Emissions	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Receiver Blocking	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No

Note: The EUT can operate in an adaptive mode, and can't operate in a non-adaptive mode which is stated by the supplier.





4. TEST RESULTS

4.1. RF Output Power

4.1.1 Limit

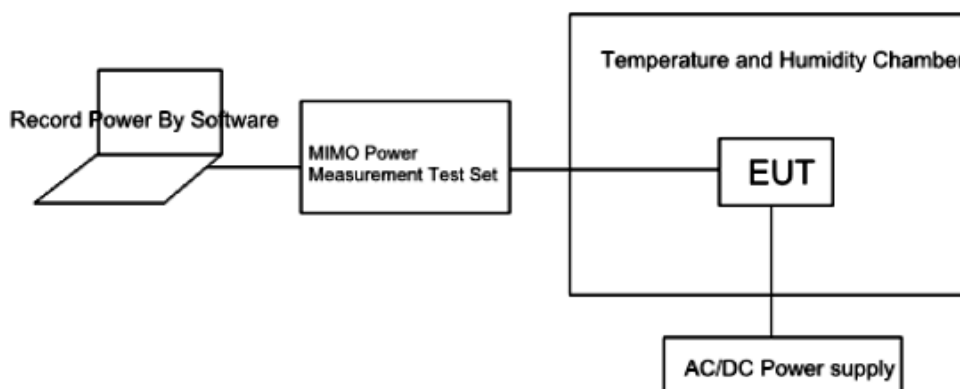
For adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be 20 dBm.

The maximum RF output power for non-adaptive equipment shall be declared by the supplier and shall not exceed 20 dBm. For non-adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be equal to or less than the value declared by the supplier.

This limit shall apply for any combination of power level and intended antenna assembly.

4.1.2 Test Setup

For Conducted Measurement





4.1.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.2

Step 1:

- The fast power sensor use the following setting: Sample speed 1 MS/s.

Step 2:

- Connect the power sensor to the transmit port, sample the transmit signal and store the raw data. Use these stored samples in all following steps.

Step 3:

- Find the start and stop times of each burst in the stored measurement samples.

Step 4:

- Between the start and stop times of each individual burst calculate the RMS power over the burst. Save these Pburst values, as well as the start and stop times for each burst.

Step 5:

- The highest of all Pburst values (value "A" in dBm) will be used for maximum e.i.r.p. calculations.

Step 6:

- Add the (stated) antenna assembly gain "G" in dBi of the individual antenna.
- If applicable, add the additional beamforming gain "Y" in dB.

The RF Output Power (P) shall be calculated using the formula below:

$$P = A + G + Y$$

4.1.4 Test Result

Please refer to the Appendix E.1 for BT LE RF Test Data.

4.1.5 Receiver Category

Receiver Category 1: Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p. shall be considered as receiver category 1 equipment.

Receiver Category 2: Non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % or equipment (adaptive or non-adaptive) with a maximum RF output power greater than 0 dBm e.i.r.p. and less than or equal to 10 dBm e.i.r.p. shall be considered as receiver category 2 equipment.

Receiver Category 3: Non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % or equipment (adaptive or non-adaptive) with a maximum RF output power of 0 dBm e.i.r.p. shall be considered as receiver category 3 equipment.

As this is an adaptivity device with a maximum power of 1.65dBm, **it belongs to receiver category 2.**



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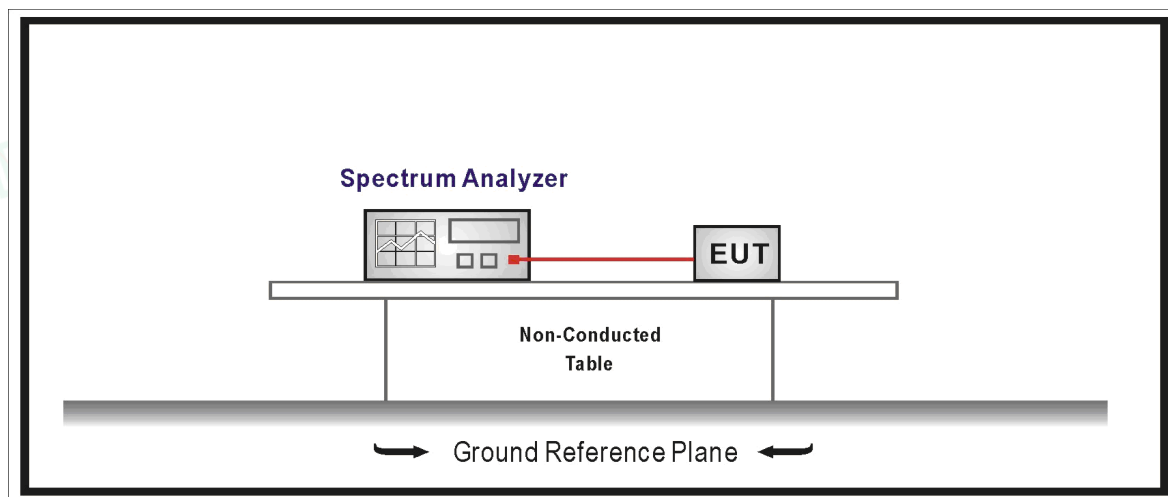


4.2. Power Spectral Density

4.2.1 Limit

For equipment using wide band modulations other than FHSS, the maximum Power Spectral Density is limited to 10dBm per MHz.

4.2.2 Test Setup



4.2.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.3

Step 1:

Connect the UUT to the spectrum analyzer and use the following settings:

- Start Frequency: 2 400 MHz
- Stop Frequency: 2 483,5 MHz
- Resolution BW: 10 kHz
- Video BW: 30 kHz
- Sweep Points: > 8 350
- Detector: RMS
- Trace Mode: Max Hold
- Sweep time: Auto

For non-continuous signals, wait for the trace to be completed. Save the (trace) data set to a file.

Step 2:

For each frequency point, add up the amplitude (power) values for the different transmit chains and use this as the new data set.

Step 3:

Add up the values for amplitude (power) for all the samples in the file.



**Step 4:**

Normalize the individual values for amplitude so that the sum is equal to the RF Output Power (e.i.r.p.).

Step 5:

Starting from the first sample in the file (lowest frequency), add up the power of the following samples representing a 1 MHz segment and record the results for power and position (i.e. sample #1 to #100). This is the Power Spectral Density (e.i.r.p.) for the first 1 MHz segment which shall be recorded.

Step 6:

Shift the start point of the samples added up in step 5 by 1 sample and repeat the procedure in step 5 (i.e. sample #2 to #101).

Step 7:

Repeat step 6 until the end of the data set and record the radiated Power Spectral Density values for each of the 1 MHz segments. From all the recorded results, the highest value is the maximum Power Spectral Density for the UUT.

4.2.4 Test Result

Please refer to the Appendix E.2 for BT LE RF Test Data.

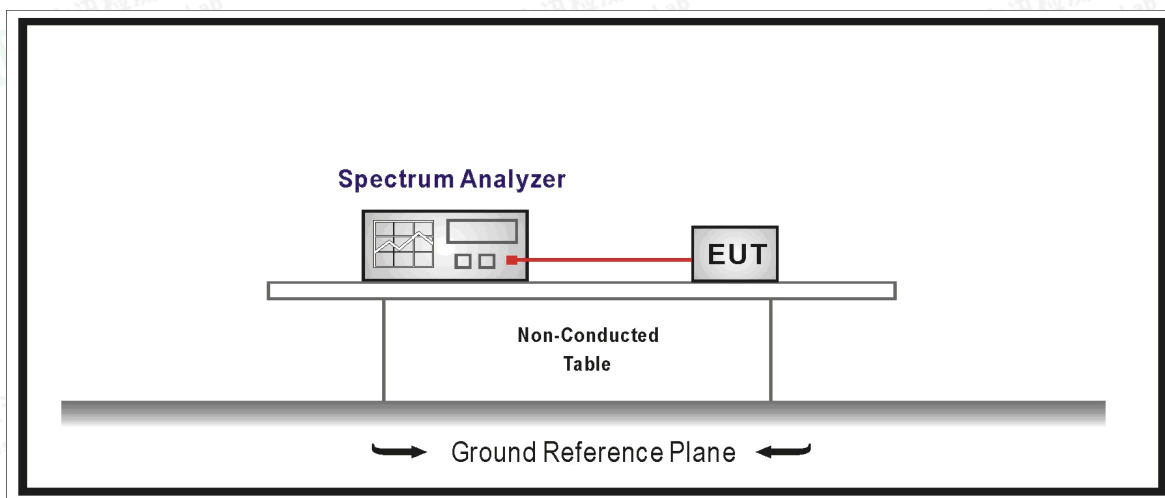


4.3. Duty Cycle, TX-Sequence, TX-Gap

4.3.1 Limit

The Duty Cycle shall be equal to or less than the maximum value declared by the supplier. The maximum Tx-sequence Time and the minimum Tx-gap Time shall be according to the formula below: Maximum Tx-Sequence Time = Minimum Tx-gap Time = M where M is in the range of 3,5 ms to 10 ms.

4.3.2 Test Setup



4.3.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.2

4.3.4 Test Result

These requirements apply to non-adaptive frequency hopping equipment or to adaptive frequency hopping equipment operating in a non-adaptive mode.

These requirements do not apply for equipment with a maximum declared RF Output power of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.

No applicable.





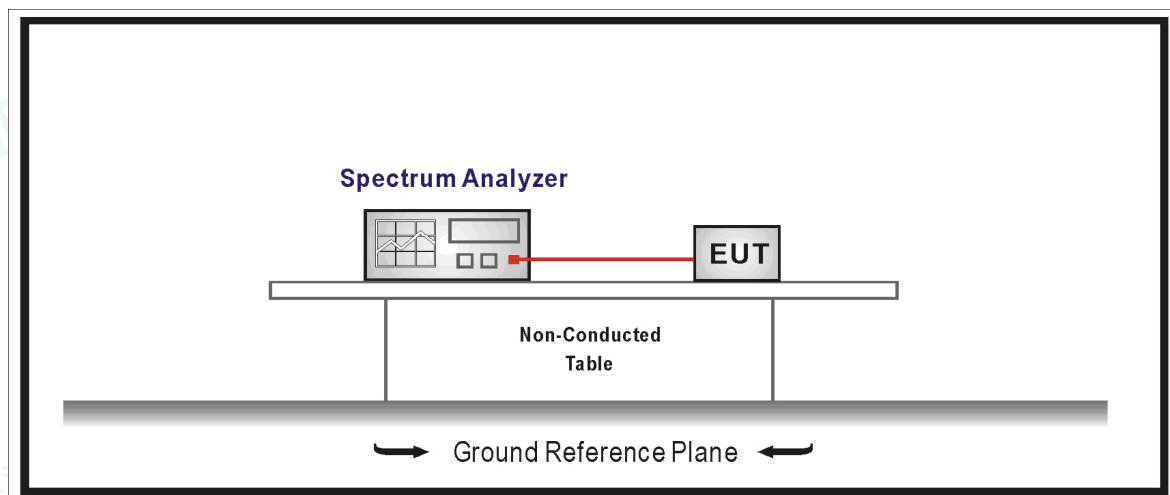
4.4. Medium Utilisation (MU) Factor

4.4.1 Limit

For non-adaptive equipment

The maximum Medium Utilisation factor for non-adaptive Frequency Hopping equipment shall be 10 %.

4.4.2 Test Setup



4.4.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.2

4.4.4 Test Result

This requirement does not apply to adaptive equipment unless operating in a non-adaptive mode.

In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.

No applicable.





4.5. Adaptivity (Adaptive Equipment Using Modulations Other than FHSS)

4.5.1 Limit

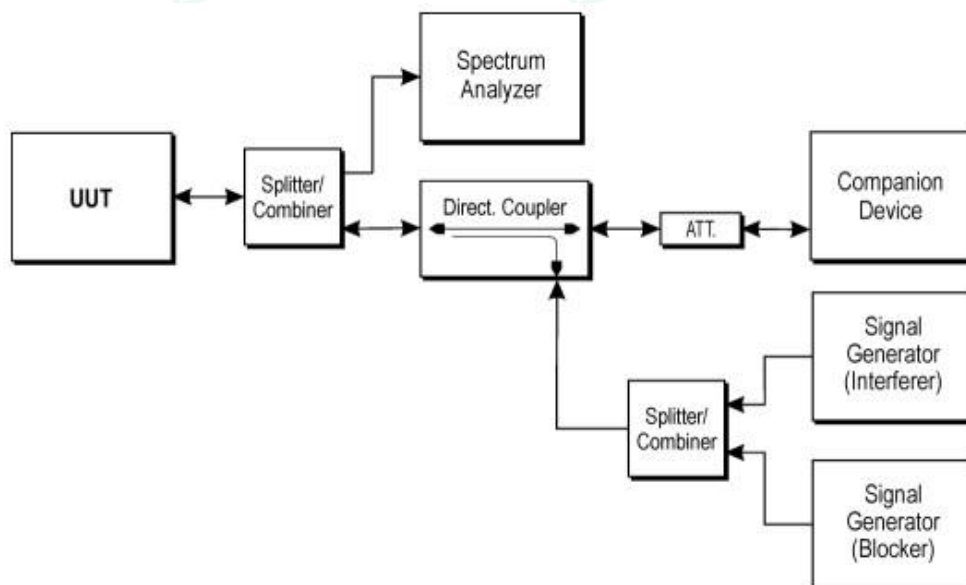
Adaptivity Limit
☐ Non-LBT based Detect and Avoid --- The channel shall remain unavailable for a minimum time equal to 1 s after which the channel may be considered again as an 'available' channel; --- $COT \leq 40 \text{ ms}$; --- $COT \leq 60 \text{ ms}$; --- Idle Period shall be minimum 5% of COT with a minimum of 100us; --- Detection threshold level = $-70\text{dBm/MHz} + 20 - P_{out \text{ E.I.R.P}}$ (P_{out} in dBm);
☐ LBT based Detect and Avoid(Frame Based Equipment) --- The CCA observation time shall be not less than 20 us; --- The CCA time used by the equipment shall be declared by the supplier; --- $COT = 1\text{-}10 \text{ ms}$; --- Idle Period = 5% of COT; --- Detection threshold level = $-70\text{dBm/MHz} + 20 - P_{out \text{ E.I.R.P}}$ (P_{out} in dBm);
☐ LBT based Detect and Avoid(Load Based Equipment) --- The CCA observation time shall be not less than 20 us; --- The CCA time used by the equipment shall be declared by the supplier; --- $COT \leq (13 / 32) * q \text{ ms}$; $q = [4\sim32]$; 1.625ms~13ms; --- R = number of clear idle slots are randomly $[1\sim q]$. Every time an Extended CCA is required and the 'R' value stored in a counter. --- Detection threshold level = $-70\text{dBm/MHz} + 20 - P_{out \text{ E.I.R.P}}$ (P_{out} in dBm);
☐ Short Control Signalling Transmissions: --- Short Control Signalling Transmissions shall have a maximum duty cycle of 10% within an observation period of 50ms.





4.5.2 Test Setup

Conducted measurements



4.5.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.6

4.5.4 Test Result

This requirement does not apply to non-adaptive equipment or adaptive equipment operating in a non-adaptive mode providing the equipment complies with the requirements and/or restrictions applicable to non-adaptive equipment.

In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.

No applicable.



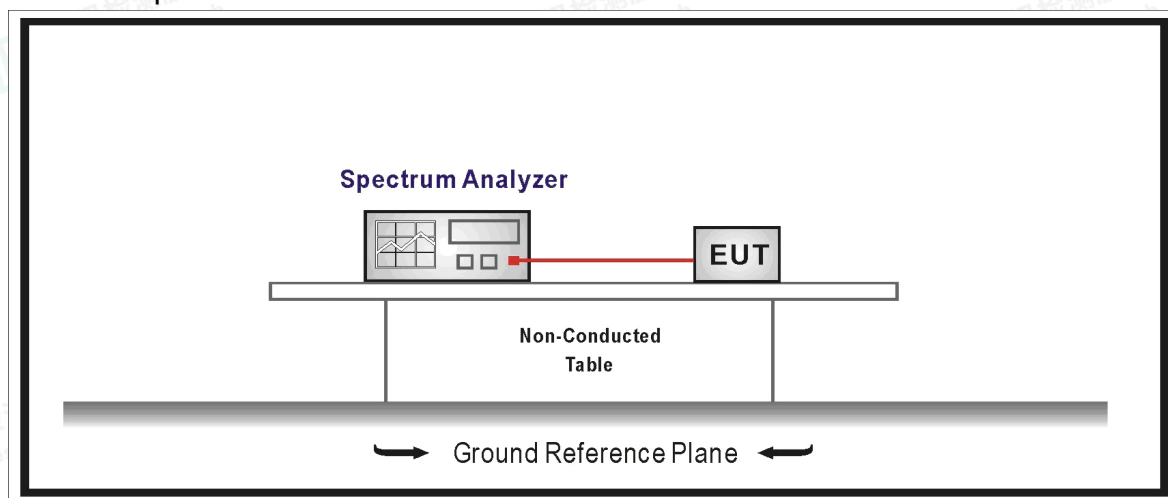
4.6. Occupied Channel Bandwidth

4.6.1 Limit

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band given in 2.4GHz to 2.4835GHz.

For non-adaptive Frequency Hopping equipment with E.I.R.P greater than 10dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than the value declared by the supplier. This declared value shall not be greater than 5 MHz.

4.6.2 Test Setup



4.6.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.7

Step 1:

Connect the UUT to the spectrum analyser and use the following settings:

- Centre Frequency: The centre frequency of the channel under test
- Resolution BW: ~ 1 % of the span without going below 1 % (We set RBW= 43KHz)
- Video BW: 3 × RBW
- Frequency Span: 2 × Occupied Channel Bandwidth (e.g. 40 MHz for a 20 MHz channel)
- Detector Mode: RMS
- Trace Mode: Max Hold

Step 2:

Wait until the trace is completed. Find the peak value of the trace and place the analyzer marker on this peak.

Step 3:

Use the 99 % bandwidth function of the spectrum analyzer to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.

4.6.4 Test Result

Please refer to the Appendix E.3 for BT LE RF Test Data.



4.7. Transmitter Unwanted Emissions in the Out-of-band Domain

4.7.1 Limit

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 3.

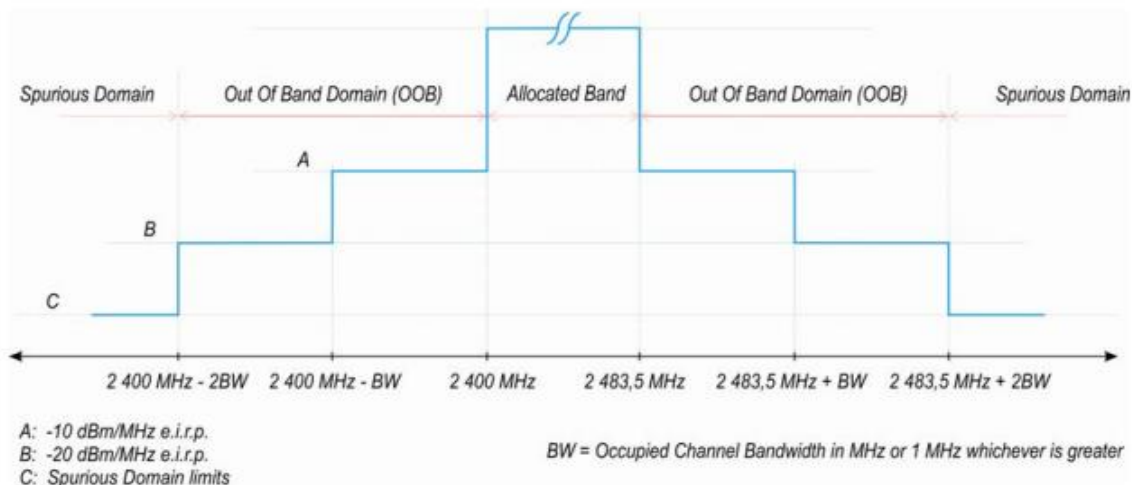
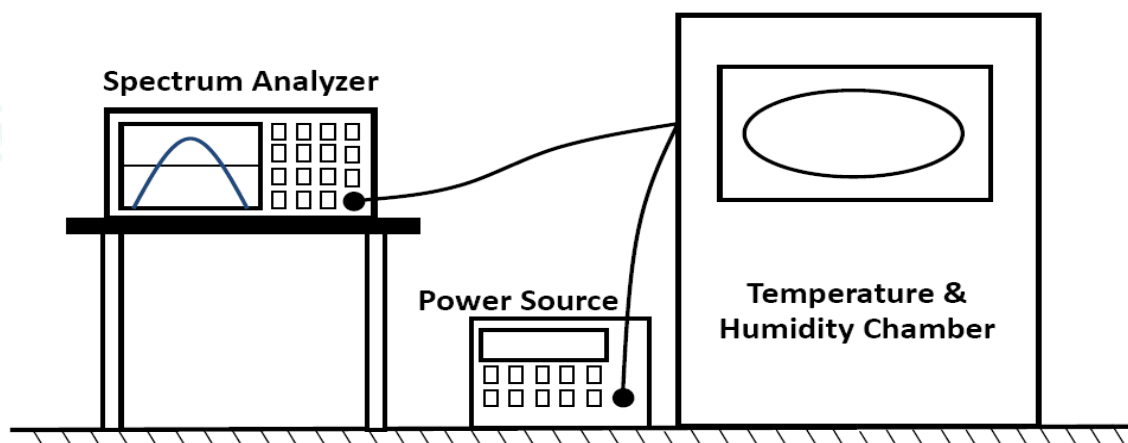


Figure 3: Transmit mask

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.7.2 Test Setup

For Conducted Measurement





4.7.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.8

Step 1:

- Connect the UUT to the spectrum analyzer and use the following settings:

- Centre Frequency: 2 484 MHz
- Span: 0 Hz
- Resolution BW: 1 MHz
- Filter mode: Channel filter
- Video BW: 3 MHz
- Detector Mode: RMS
- Trace Mode: Clear / Write
- Sweep Mode: Continuous
- Sweep Points: 5 000
- Trigger Mode: Video trigger

NOTE 1: In case video triggering is not possible, an external trigger source may be used.

- Sweep Time: Suitable to capture one transmission burst

Step 2: (segment 2 483,5 MHz to 2 483,5 MHz + BW)

- Adjust the trigger level to select the transmissions with the highest power level.
- For frequency hopping equipment operating in a normal hopping mode, the different hops will result in signal bursts with different power levels. In this case the burst with the highest power level shall be selected.
- Set a window (start and stop lines) to match with the start and end of the burst and in which the RMS power shall be measured using the Time Domain Power function.
- Select RMS power to be measured within the selected window and note the result which is the RMS power within this 1 MHz segment (2 483,5 MHz to 2 484,5 MHz). Compare this value with the applicable limit provided by the mask.
- Increase the centre frequency in steps of 1 MHz and repeat this measurement for every 1 MHz segment within the range 2 483,5 MHz to 2 483,5 MHz + BW. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 3: (segment 2 483,5 MHz + BW to 2 483,5 MHz + 2BW)

- Change the centre frequency of the analyzer to 2 484 MHz + BW and perform the measurement for the first 1 MHz segment within range 2 483,5 MHz + BW to 2 483,5 MHz + 2BW. Increase the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + 2 BW - 0,5 MHz.

Step 4: (segment 2 400 MHz - BW to 2 400 MHz)

- Change the centre frequency of the analyzer to 2 399,5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz. Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0,5 MHz.



**Step 5:** (segment 2 400 MHz - 2BW to 2 400 MHz - BW)

- Change the centre frequency of the analyzer to 2 399,5 MHz - BW and perform the measurement for the first 1 MHz segment within range 2 400 MHz - 2BW to 2 400 MHz - BW. Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0,5 MHz.

Step 6:

- In case of conducted measurements on equipment with a single transmit chain, the declared antenna assembly gain "G" in dBi shall be added to the results for each of the 1 MHz segments and compared with the limits provided by the mask given in figures 1 or 3. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered.
 - In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), the measurements need to be repeated for each of the active transmit chains. The declared antenna assembly gain "G" in dBi for a single antenna shall be added to these results. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered. Comparison with the applicable limits shall be done using any of the options given below:
 - Option 1: the results for each of the transmit chains for the corresponding 1 MHz segments shall be added. The additional beamforming gain "Y" in dB shall be added as well and the resulting values compared with the limits provided by the mask given in figures 1 or 3.
 - Option 2: the limits provided by the mask given in figures 1 or 3 shall be reduced by $10 \times \log_{10}(A_{ch})$ and the additional beamforming gain "Y" in dB. The results for each of the transmit chains shall be individually compared with these reduced limits.
- NOTE 2: A_{ch} refers to the number of active transmit chains.
- It shall be recorded whether the equipment complies with the mask provided in figures 1 or 3.

4.7.4 Test Result

Please refer to the Appendix E.4 for BT LE RF Test Data.



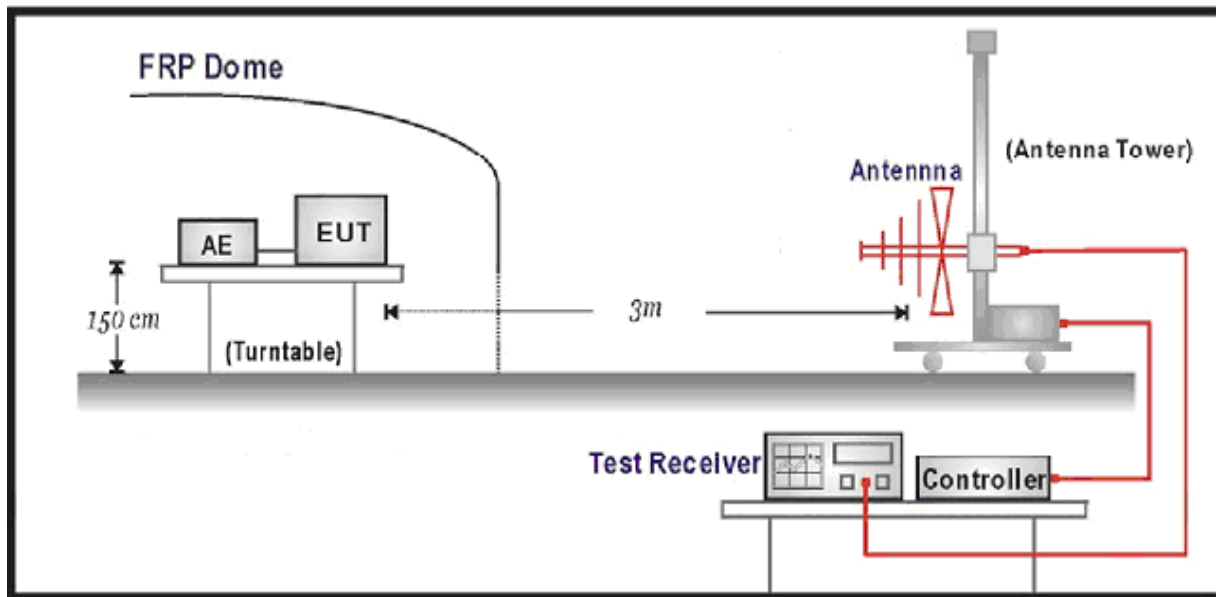
4.8. Transmitter Unwanted Emissions in the Spurious Domain

4.8.1 Limit

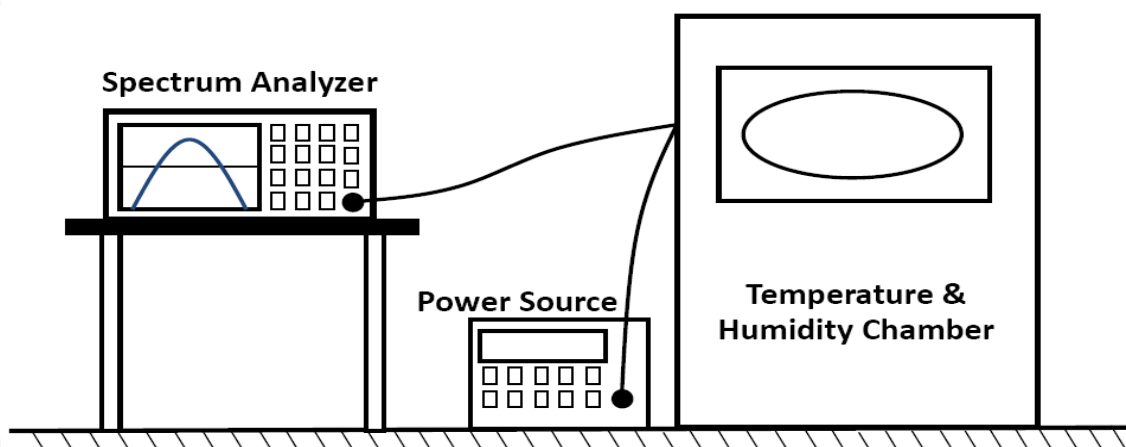
Transmitter Limits for Spurious Emissions		
Frequency Range	Maximum power E.R.P. ($\leq 1\text{GHz}$) E.I.R.P. ($> 1\text{GHz}$)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

4.8.2 Test Setup

For Radiated Measurement



For Conducted Measurement



4.8.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.9

Step 1:

The sensitivity of the spectrum analyser should be such that the noise floor is at least 12 dB below the limits given in tables 1 or 4.

Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 100 kHz
- Video bandwidth: 300 kHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 9\,970$

NOTE 1: For spectrum analysers not supporting this high number of sweep points, the frequency band may need to be segmented.

• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 100 kHz frequency step, the measurement time is greater than two transmissions of the UUT. For Frequency Hopping equipment operating in a normal operating (hopping not disabled) mode, the sweep time shall be further increased to capture multiple transmissions on the same hopping frequency in different hopping sequences. Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.10.2.1.2 and compared to the limits given in tables 1 or 4.

Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 1 MHz





- Video bandwidth: 3 MHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 11\,750$

NOTE 2: For spectrum analysers not supporting this high number of sweep points, the frequency band may need to be segmented.

- Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 1 MHz frequency step, the measurement time is greater than two transmissions of the UUT.

4.8.4 Test Result

Please refer to the Appendix E.5 for BT LE RF Test Data.





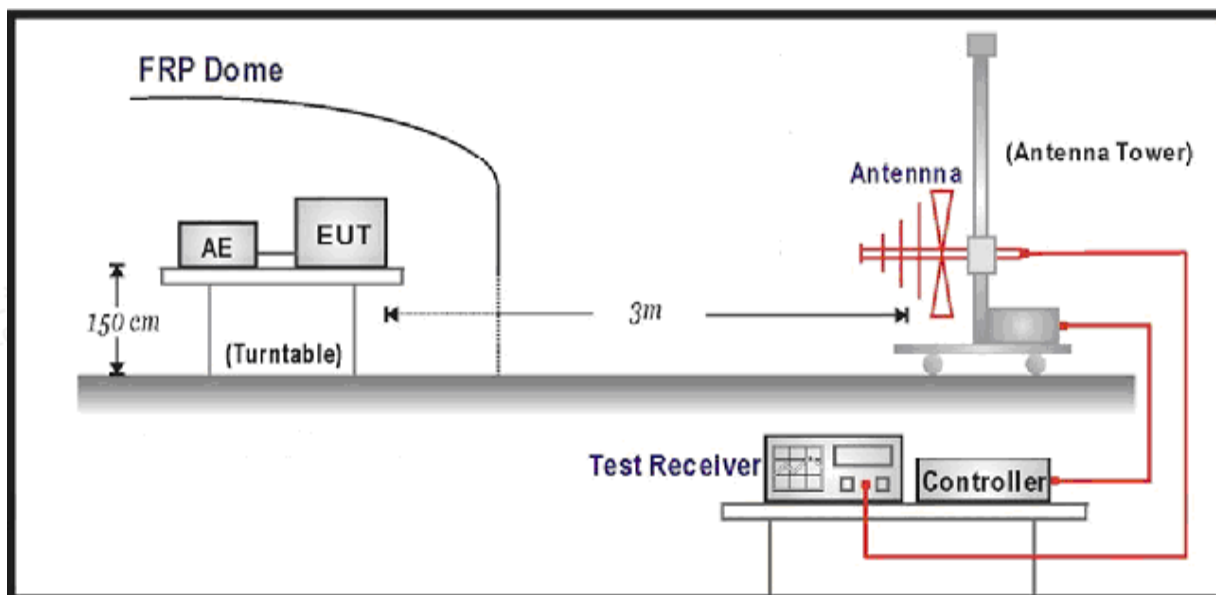
4.9. Receiver Spurious Emissions

4.9.1 Limit

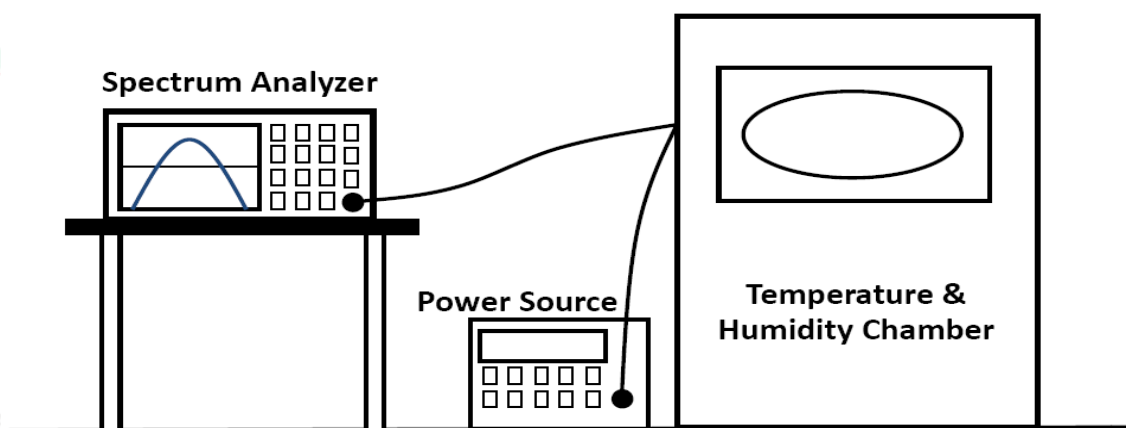
Spurious emissions limits for receivers		
Frequency Range	Maximum power E.R.P. ($\leq 1\text{GHz}$) E.I.R.P. ($> 1\text{GHz}$)	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12.75 GHz	-47 dBm	1 MHz

4.9.2 Test Setup

For Radiated Measurement



For Conducted Measurement





4.9.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.10

Step 1:

The sensitivity of the spectrum analyzer should be such that the noise floor is at least 12 dB below the limits given in tables 2 or 5.

Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyzer settings:

- Resolution bandwidth: 100 kHz
- Video bandwidth: 300 kHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 9\,970$
- Sweep time: Auto

Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.11.2.1.2 and compared to the limits given in tables 2 or 5.

Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyzer settings:

- Resolution bandwidth: 1 MHz
- Video bandwidth: 3 MHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 11\,750$
- Sweep time: Auto

Allow the trace to stabilize. Any emissions identified during the sweeps above that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.11.2.1.2 and compared to the limits given in tables 2 or 5. Frequency Hopping equipment may generate a block (or several blocks) of spurious emissions anywhere within the spurious domain. If this is the case, only the highest peak of each block of emissions shall be measured using the procedure in clause 5.3.11.2.1.2.

Step 4:

- In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), the steps 2 and 3 need to be repeated for each of the active receive chains (Ach). The limits used to identify emissions during this pre-scan need to be reduced with $10 \times \log_{10}(\text{Ach})$ (number of active receive chains).

4.9.4 Test Result

Please refer to the Appendix E.6 for BT LE RF Test Data.





4.10. Receiver Blocking

4.10.1 Limit

Equipment shall comply with the requirements defined in clause 4.3.1.12.4

Table 6: Receiver Blocking parameters for Receiver Category 1 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × log ₁₀ (OCBW)) or -68 dBm whichever is less (see note 2)	2 380 2 504	-34	CW
(-139 dBm + 10 × log ₁₀ (OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		
NOTE 1: OCBW is in Hz.			
NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P _{min} + 26 dB where P _{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P _{min} + 20 dB where P _{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Table 7: Receiver Blocking parameters receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 10 \text{ dB})$ or $(-74 \text{ dBm} + 10 \text{ dB})$ whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{\min} + 26 \text{ dB}$ where $P_{\min}$ is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

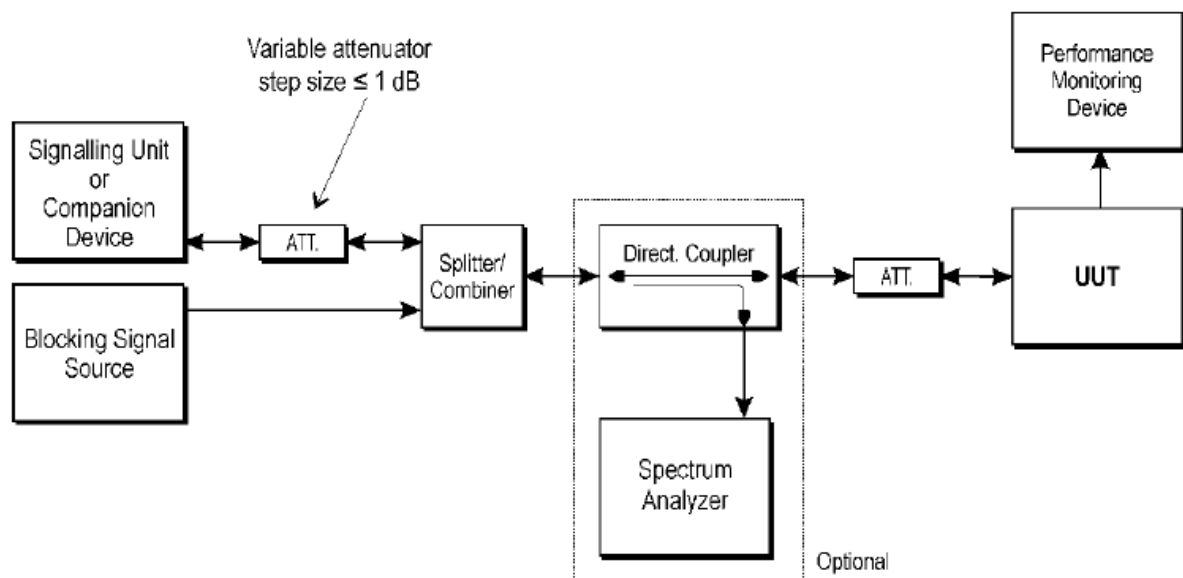


**Table 8: Receiver Blocking parameters receiver Category 3 equipment**

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 20 \text{ dB})$ or $(-74 \text{ dBm} + 20 \text{ dB})$ whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{\min} + 30 \text{ dB}$ where $P_{\min}$ is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

4.10.2 Test Setup

Conducted measurements



4.10.3 Test Procedure

Step 1:

- For non-frequency hopping equipment, the UUT shall be set to the lowest operating channel.

Step 2:

- The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.

Step 3:

- With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup shown in figure 6. The attenuation of the variable attenuator shall be increased in 1 dB steps to a value at which the





minimum performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is still met. The resulting level for the wanted signal at the input of the UUT is P_{min} .

- This signal level (P_{min}) is increased by the value provided in the table corresponding to the receiver category and type of equipment.

Step 4:

- The blocking signal at the UUT is set to the level provided in the table corresponding to the receiver category and type of equipment. It shall be verified and recorded in the test report that the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is met.

Step 5:

- Repeat step 4 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.

Step 6:

- For non-frequency hopping equipment, repeat step 2 to step 5 with the UUT operating at the highest operating channel.

4.10.4 Test Result

Please refer to the Appendix E.7 for BT LE RF Test Data.





5. LIST OF MEASURING EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	X-series USB Peak and Average Power Sensor Agilent	Agilent	U2021XA	MY54080022	2023-10-20	2024-10-19
2	4 CH. Simultaneous Sampling 14 Bits 2MS/s	Agilent	U2531A	MY54080016	2023-10-20	2024-10-19
3	Test Software	Ascentest	AT890-SW	20160630	N/A	N/A
4	RF Control Unit	Ascentest	AT890-RFB	N/A	2024-06-06	2025-06-05
5	MXA Signal Analyzer	Agilent	N9020A	MY49061051	2024-06-06	2025-06-05
6	DC Power Supply	Agilent	E3642A	N/A	2023-10-18	2024-10-17
7	MXG Vector Signal Generator	Agilent	N5182A	MY47071151	2024-06-06	2025-06-05
8	ESG Vector Signal Generator	Agilent	E4438C	MY49072627(3 G)	2024-06-06	2025-06-05
9	PSG Analog Signal Generator	Agilent	E8257D	MY4520521	2024-06-06	2025-06-05
10	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2023-10-05	2024-10-04
11	EMI Test Software	Farad	EZ	/	N/A	N/A
12	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2022-08-17	2025-08-16
13	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
14	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2024-07-13	2027-07-12
15	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
16	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
17	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2021-08-29	2024-08-28
18	Broadband Preamplifier	SCHWARZBECK	BBV9719	9719-025	2021-08-29	2024-08-28
19	EMI Test Receiver	R&S	ESR7	101181	2024-06-06	2025-06-05
20	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2024-06-06	2025-06-05
21	Low-frequency amplifier	SchwarzZBECK	BBV9745	00253	2023-10-18	2024-10-17
22	High-frequency amplifier	JS Denki Pte	PA0118-43	JSPA21009	2023-10-18	2024-10-17
23	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05
24	6dB Attenuator	/	100W/6dB	1172040	2024-06-06	2025-06-05
25	3dB Attenuator	/	2N-3dB	/	2023-10-18	2024-10-17





6. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files Appendix D for Photographs of Test Setup_RF.

7. PHOTOGRAPHS OF THE EUT

Please refer to separated files Appendix C for Photographs of The EUT.

-----THE END OF REPORT-----



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Scan code to check authenticity



RADIO TEST REPORT

For

Woan Technology (Shenzhen) Co., Ltd.

SwitchBot Air Purifier Table

Test Model: W5302310

Additional Model No.: Please Refer to Page 6

Prepared for : Woan Technology (Shenzhen) Co., Ltd.
Address : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
Bao'an District, Shenzhen, Guangdong, P.R.China, 518100

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Tel : (+86)755-82591330
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Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : July 30, 2024
Number of tested samples : 2
Sample No. : A240726086-1, A240726086-2
Serial number : Prototype
Date of Test : July 30, 2024 ~ August 09, 2024
Date of Report : August 12, 2024



Shenzhen LCS Compliance Testing Laboratory Ltd.

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RADIO TEST REPORT ETSI EN 300 328 V2.2.2 (2019-07) Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum	
Report Reference No.	LCSA07264213EC
Date of Issue	August 12, 2024
Testing Laboratory Name	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure	Full application of Harmonised standards ☒ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name	Woan Technology (Shenzhen) Co., Ltd.
Address	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Test Specification Standard..... : ETSI EN 300 328 V2.2.2 (2019-07) Test Report Form No. : TRF-4-E-135 A/0 TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd. Master TRF : Dated 2017-06	
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Test Item Description : SwitchBot Air Purifier Table Trade Mark..... : SwitchBot Test Model..... : W5302310 Ratings : Please Refer to Page 6 Result : Positive	

Compiled by:

Jack Liu/Administrator

Supervised by:

Cary Luo/ Technique principal

Approved by:

Gavin Liang/ Manager



Shenzhen LCS Compliance Testing Laboratory Ltd.

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RADIO -- TEST REPORT

Test Report No. : LCSA07264213ECAugust 12, 2024

Date of issue

Test Model..... : W5302310

EUT..... : SwitchBot Air Purifier Table

Applicant..... : Woan Technology (Shenzhen) Co., Ltd.Address..... : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
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Telephone..... : /

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Manufacturer..... : Woan Technology (Shenzhen) Co., Ltd.Address..... : Room 1101, Qiancheng Commercial Center, No. 5
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Telephone..... : /

Fax..... : /

Factory..... : Wo'an Technology (Shenzhen) Co., Ltd. Huizhou BranchAddress..... : Building 2, 2nd Floor, Baidi Zhigu Science and Technology
Innovation Park, No.263 Chang'an Avenue, Shatian Town,
Huiyang District, Huizhou City, Guangdong, China

Telephone..... : /

Fax..... : /

Test Result**Positive**

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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Revision History

Report Version	Issue Date	Revision Content	Revised By
000	August 12, 2024	Initial Issue	--



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1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	: SwitchBot Air Purifier Table
Test Model	: W5302310
Additional Model No.	: W5302311, W5302312, W5302313, W5302314, W5302315
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: For Adapter Model: CZH072240300EUWV For Adapter: Input:100-240V~, 50/60Hz, 1.5A Max Output: 24.0V=3.0A, 72.0W For Adapter Model: HA072240300EUW Input:100-240V~, 50/60Hz, 2.0A Max Output: 24.0V=3.0A, 72.0W
Hardware Version	: /
Software Version	: /
Bluetooth	:
Frequency Range	: 2402MHz ~ 2480MHz
Channel Number	: 40 channels for Bluetooth V4.2 (BT LE)
Channel Spacing	: 2MHz for Bluetooth V4.2 (BT LE)
Modulation Type	: GFSK for Bluetooth V4.2 (BT LE)
Bluetooth Version	: V4.2
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
WIFI(2.4G Band)	:
Frequency Range	: 2412MHz ~ 2472MHz
Channel Spacing	: 5MHz
Channel Number	: 13 Channel for 20MHz bandwidth(2412~2472MHz) 9 channels for 40MHz bandwidth(2422~2462MHz)
Modulation Type	: 802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
Wireless Charging	:
Operating Frequency	: 110.0~205.0KHz
Modulation Type	: ASK
Antenna Type	: Coil Antenna



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**Product Information**

a) The type of modulation used by the equipment:

☐ FHSS

☒ other forms of modulation

b) In case of FHSS modulation:

• In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies:

• In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies:

The minimum number of Hopping Frequencies:

The Dwell Time:

The Minimum Channel Occupation Time:

c) Adaptive / non-adaptive equipment:

☐ non-adaptive Equipment

☒ adaptive Equipment without the possibility to switch to a non-adaptive mode

☐ adaptive Equipment which can also operate in a non-adaptive mode

d) In case of adaptive equipment:

The Channel Occupancy Time implemented by the equipment:

☒ The equipment has implemented an LBT based DAA mechanism

• In case of equipment using modulation different from FHSS:

☐ The equipment is Frame Based equipment

☒ The equipment is Load Based equipment

☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment:20μs

The value q as referred to in clause 4.3.2.5.2.2.2

☐ The equipment has implemented an non-LBT based DAA mechanism

☐ The equipment can operate in more than one adaptive mode

e) In case of non-adaptive Equipment:

The maximum RF Output Power (e.i.r.p.): 15.72dBm

The maximum (corresponding) Duty Cycle: 100 %

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

f) The worst case operational mode for each of the following tests:

• RF Output Power

DSSS, OFDM

• Power Spectral Density

DSSS, OFDM

• Duty cycle, Tx-Sequence, Tx-gap

.....



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- Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment)

- Hopping Frequency Separation (only for FHSS equipment)

- Medium Utilisation

- Adaptivity & Receiver Blocking

DSSS, OFDM

- Occupied Channel Bandwidth

DSSS, OFDM

- Transmitter unwanted emissions in the OOB domain

DSSS, OFDM

- Transmitter unwanted emissions in the spurious domain

DSSS, OFDM

- Receiver spurious emissions

DSSS, OFDM

g) The different transmit operating modes (tick all that apply):

☒ Operating mode 1: Single Antenna Equipment

☒ Equipment with only 1 antenna

☐ Equipment with 2 diversity antennas but only 1 antenna active at any moment in time

☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)

☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming

☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming

☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

h) In case of Smart Antenna Systems:

- The number of Receive chains:

- The number of Transmit chains:

☐ symmetrical power distribution

☐ asymmetrical power distribution

In case of beam forming, the maximum beam forming gain:

NOTE: Beam forming gain does not include the basic gain of a single antenna.

i) Operating Frequency Range(s) of the equipment:

- Operating Frequency Range 1: 2412MHz to 2472MHz



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- Operating Frequency Range 2: 2422MHz to 2462MHz

NOTE: Add more lines if more Frequency Ranges are supported.

j) Occupied Channel Bandwidth(s):

- Occupied Channel Bandwidth 1: 17.692MHz
- Occupied Channel Bandwidth 1: 36.248MHz

NOTE: Add more lines if more channel bandwidths are supported.

k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

☒ Stand-alone

☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☐ Plug-in radio device (Equipment intended for a variety of host systems)

Other

l) The extreme operating conditions that apply to the equipment:

Operating temperature range: -20° C to 45° C

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:

- Antenna Type

☒ PCB Antenna,

Antenna Gain: 2.22dBi

If applicable, additional beamforming gain (excluding basic antenna gain): dB

☐ Temporary RF connector provided

☐ No temporary RF connector provided

☐ Dedicated Antennas (equipment with antenna connector)

☐ Single power level with corresponding antenna(s)

☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels:

Power Level 1:dBm

Power Level 2: dBm

Power Level 3: dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

Supply Voltage ☒ AC mains State AC voltage: 230V



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☐ DC State DC voltage:V

In case of DC, indicate the type of power source

☐ Internal Power Supply

☐ External Power Supply or AC/DC adapter

☐ Battery:V

☒ Other:

o) Describe the test modes available which can facilitate testing:

The EUT can transmit in engineering mode.

p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):

IEEE 802.11™



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1.2. Objective

This Type approval report is prepared on behalf of **Woan Technology (Shenzhen) Co., Ltd.** in accordance with ETSI EN 300 328 V2.2.2 (2019-07), Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum.

The objective is to determine compliance with ETSI EN 300 328 V2.2.2 (2019-07).

1.3. Related Submittal(s)/Grant(s)

No Related Submittals.

1.4. Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 328 V2.2.2 (2019-07).

1.5. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

1.6. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen CHANZEHO Technology Co.,Limited.	SWITCHING ADAPTER	CZH07224030 0EUWV	--	CE
Zhejiang Huaguan Power Technology Co.,Ltd.	SWITCHING POWER SUPPLY	HA072240300 EUW	--	CE
Huawei	Mobile phone	FRD-AL10	FRD-AL10C0 0B373	CE

Note: The Mobile phone is supplied by lab and only use tested.

1.7. External I/O

I/O Port Description	Quantity	Cable
Power Port	1	N/A





1.8. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Occupied Channel Bandwidth	5 %
RF output power, conducted	1,5 dB
Power Spectral Density, conducted	3 dB
Unwanted Emissions, conducted	3 dB
All emissions, radiated	6 dB
Temperature	1 °C
Humidity	5 %
DC and low frequency voltages	3 %
Time	5 %
Duty Cycle	5 %

1.9. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23.6
Humidity (%RH)	25-75	53.7
Barometric pressure (mbar)	860-1060	950-1000

1.10. Description of Test Modes

LCS has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11b
Mode 2: Transmit by 802.11g
Mode 3: Transmit by 802.11n(20MHz)
Mode 4: Transmit by 802.11n(40MHz)
Mode 5: Receive by 802.11b
Mode 6: Receive by 802.11g
Mode 7: Receive by 802.11n(20MHz)
Mode 8: Receive by 802.11n(40MHz)

Note:

- (1) For portable device, radiated spurious emission was verified over X, Y, Z Axis, and shown the worst case on this report.
- (2) Regard to the frequency band operation for systems using Wide Band modulation: the lowest, middle, highest frequency channel for conducted test, and the lowest, highest frequency channel for radiation spurious test.
- (3) The extreme test condition for voltage and temperature were declared by the manufacturer.
- (4) All test modes were tested, but we only recorded the worst case in this report.





2. SYSTEM TEST CONFIGURATION

2.1. Justification

The system was configured for testing in engineering mode.

2.2. EUT Exercise Software

N/A.

2.3. Special Accessories

N/A.

2.4. Block Diagram/Schematics

Please refer to the related document.

2.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

2.6. Configuration of Test Setup

Please refer to the test setup photo.





3. SUMMARY OF TEST RESULT

- ☒ No deviations from the test standards
☐ Deviations from the test standards as below description:

Technical requirements for the equipment using wide band modulations other than FHSS:

Performed Test Item	Normative References	Test Performed	Deviation
RF Output Power & Receiver Category	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Power Spectral Density	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Duty cycle, Tx-Sequence, Tx-gap	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Medium Utilisation (MU) factor	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Adaptivity	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Occupied Channel Bandwidth	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Transmitter unwanted emissions in the out-of-band domain	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Transmitter unwanted emissions in the spurious domain	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Receiver Spurious Emissions	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Receiver Blocking	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No

Note:

1. The EUT can operate in an adaptive mode, and can't operate in a non-adaptive mode which is stated by the supplier.
2. The EUT is equipment which using wide band modulations other than FHSS. It is an adaptive equipment which can't operate in non-adaptive mode.



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4. TEST RESULTS

4.1. RF Output Power

4.1.1 Limit

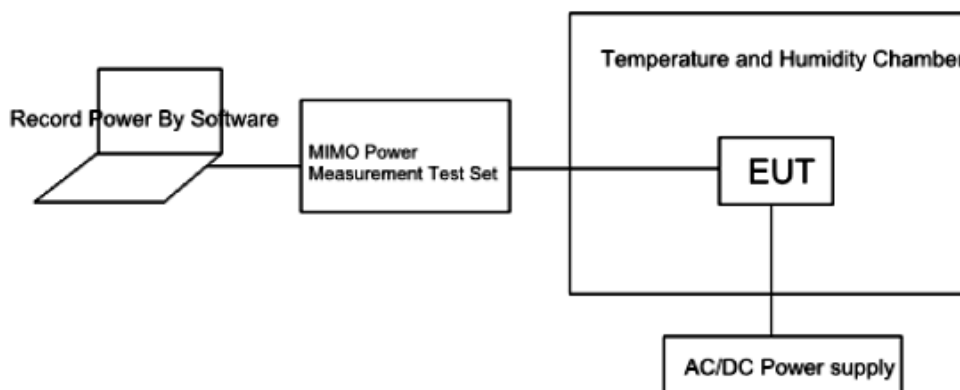
For adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be 20 dBm.

The maximum RF output power for non-adaptive equipment shall be declared by the supplier and shall not exceed 20 dBm. For non-adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be equal to or less than the value declared by the supplier.

This limit shall apply for any combination of power level and intended antenna assembly.

4.1.2 Test Setup

For Conducted Measurement





4.1.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.2

Step 1:

- The fast power sensor use the following setting: Sample speed 1 MS/s.

Step 2:

- Connect the power sensor to the transmit port, sample the transmit signal and store the raw data. Use these stored samples in all following steps.

Step 3:

- Find the start and stop times of each burst in the stored measurement samples.

Step 4:

- Between the start and stop times of each individual burst calculate the RMS power over the burst. Save these Pburst values, as well as the start and stop times for each burst.

Step 5:

- The highest of all Pburst values (value "A" in dBm) will be used for maximum e.i.r.p. calculations.

Step 6:

- Add the (stated) antenna assembly gain "G" in dBi of the individual antenna.
- If applicable, add the additional beamforming gain "Y" in dB.

The RF Output Power (P) shall be calculated using the formula below:

$$P = A + G + Y$$

4.1.4 Test Result

Please refer to the Appendix F.1 for 2.4G WIFI RF Test Data.

4.1.5 Receiver Category

Receiver Category 1: Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p. shall be considered as receiver category 1 equipment.

Receiver Category 2: Non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % or equipment (adaptive or non-adaptive) with a maximum RF output power greater than 0 dBm e.i.r.p. and less than or equal to 10 dBm e.i.r.p. shall be considered as receiver category 2 equipment.

Receiver Category 3: Non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % or equipment (adaptive or non-adaptive) with a maximum RF output power of 0 dBm e.i.r.p. shall be considered as receiver category 3 equipment.

As this an adaptivity device with a maximum power of 15.72dBm, **it belongs to receiver category 1.**



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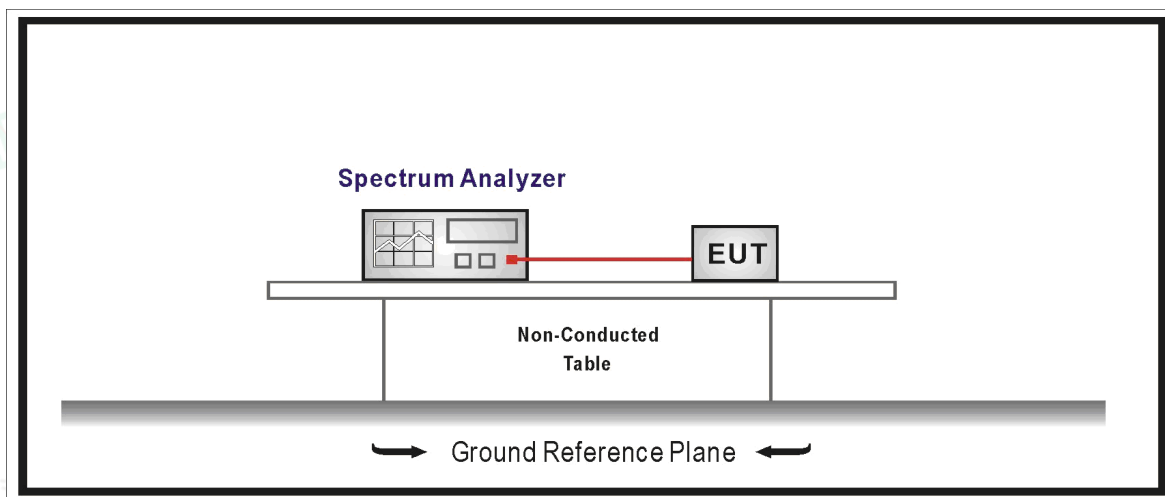
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4.2. Power Spectral Density

4.2.1 Limit

For equipment using wide band modulations other than FHSS, the maximum Power Spectral Density is limited to 10dBm per MHz.

4.2.2 Test Setup



4.2.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.3

Step 1:

Connect the UUT to the spectrum analyzer and use the following settings:

- Start Frequency: 2 400 MHz
- Stop Frequency: 2 483,5 MHz
- Resolution BW: 10 kHz
- Video BW: 30 kHz
- Sweep Points: > 8 350
- Detector: RMS
- Trace Mode: Max Hold
- Sweep time: Auto

For non-continuous signals, wait for the trace to be completed. Save the (trace) data set to a file.

Step 2:

For each frequency point, add up the amplitude (power) values for the different transmit chains and use this as the new data set.

Step 3:

Add up the values for amplitude (power) for all the samples in the file.



**Step 4:**

Normalize the individual values for amplitude so that the sum is equal to the RF Output Power (e.i.r.p.).

Step 5:

Starting from the first sample in the file (lowest frequency), add up the power of the following samples representing a 1 MHz segment and record the results for power and position (i.e. sample #1 to #100). This is the Power Spectral Density (e.i.r.p.) for the first 1 MHz segment which shall be recorded.

Step 6:

Shift the start point of the samples added up in step 5 by 1 sample and repeat the procedure in step 5 (i.e. sample #2 to #101).

Step 7:

Repeat step 6 until the end of the data set and record the radiated Power Spectral Density values for each of the 1 MHz segments. From all the recorded results, the highest value is the maximum Power Spectral Density for the UUT.

4.2.4 Test Result

Please refer to the Appendix F.2 for 2.4G WIFI RF Test Data.



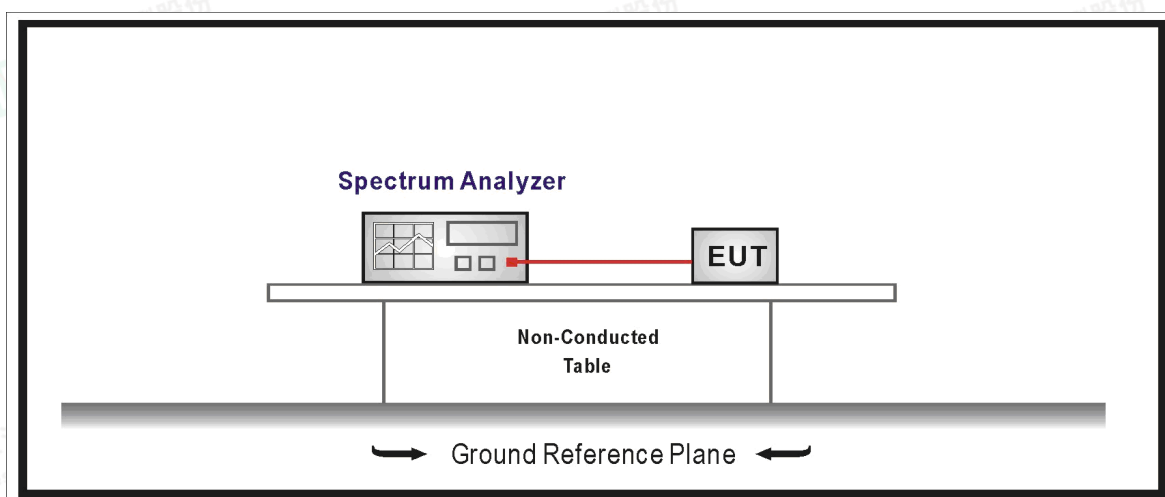


4.3. Duty Cycle, TX-Sequence, TX-Gap

4.3.1 Limit

The Duty Cycle shall be equal to or less than the maximum value declared by the supplier. The maximum Tx-sequence Time and the minimum Tx-gap Time shall be according to the formula below: Maximum Tx-Sequence Time = Minimum Tx-gap Time = M where M is in the range of 3,5 ms to 10 ms.

4.3.2 Test Setup



4.3.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.2

4.3.4 Test Result

These requirements apply to non-adaptive frequency hopping equipment or to adaptive frequency hopping equipment operating in a non-adaptive mode.

These requirements do not apply for equipment with a maximum declared RF Output power of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.

No applicable.





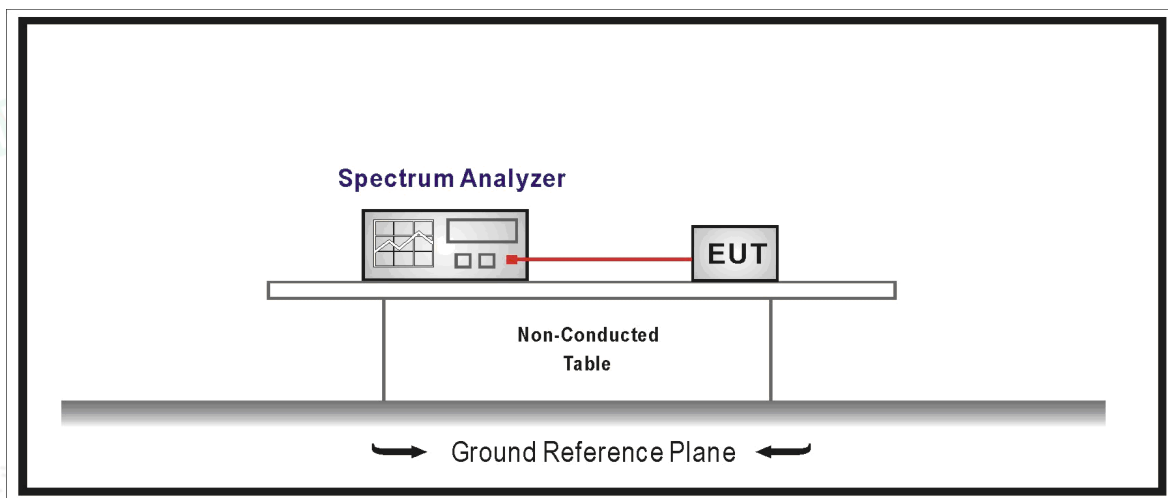
4.4. Medium Utilisation (MU) Factor

4.4.1 Limit

For non-adaptive equipment

The maximum Medium Utilisation factor for non-adaptive Frequency Hopping equipment shall be 10 %.

4.4.2 Test Setup



4.4.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.2

4.4.4 Test Result

This requirement does not apply to adaptive equipment unless operating in a non-adaptive mode.

In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.

No applicable.





4.5. Adaptivity

4.5.1 Limit

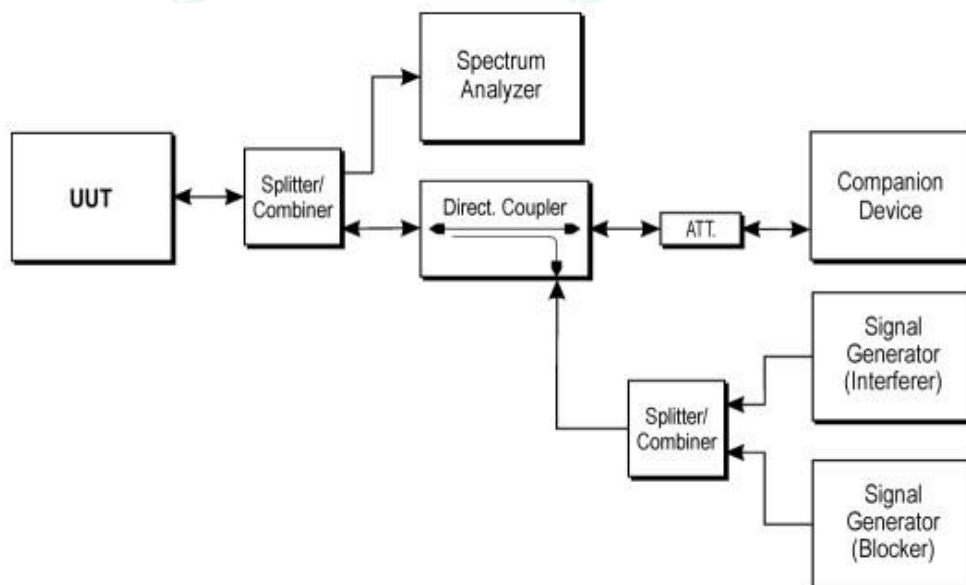
Adaptivity Limit
☐ Non-LBT based Detect and Avoid --- The channel shall remain unavailable for a minimum time equal to 1 s after which the channel may be considered again as an 'available' channel; --- $COT \leq 40$ ms; --- $COT \leq 60$ ms; --- Idle Period shall be minimum 5% of COT with a minimum of 100us; --- Detection threshold level = $-70\text{dBm/MHz} + 20 - P_{out}$ E.I.R.P (Pout in dBm);
☐ LBT based Detect and Avoid(Frame Based Equipment) --- The CCA observation time shall be not less than 20 us; --- The CCA time used by the equipment shall be declared by the supplier; --- $COT = 1-10$ ms; --- Idle Period = 5% of COT; --- Detection threshold level = $-70\text{dBm/MHz} + 20 - P_{out}$ E.I.R.P (Pout in dBm);
☒ LBT based Detect and Avoid(Load Based Equipment) --- The CCA observation time shall be not less than 20 us; --- The CCA time used by the equipment shall be declared by the supplier; --- $COT \leq (13 / 32) * q$ ms; $q = [4 \sim 32]$; 1.625ms~13ms; --- R = number of clear idle slots are randomly $[1 \sim q]$. Every time an Extended CCA is required and the 'R' value stored in a counter. --- Detection threshold level = $-70\text{dBm/MHz} + 20 - P_{out}$ E.I.R.P (Pout in dBm);
☐ Short Control Signalling Transmissions: --- Short Control Signalling Transmissions shall have a maximum duty cycle of 10% within an observation period of 50ms.





4.5.2 Test Setup

Conducted measurements



4.5.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.6

- 1) The EUT connect to a companion device during the test. Adjust the received signal level at the EUT to the value defined in table 6 of ETSI EN 300 328 V2.2.2 Clause 4.3.2.10.2
- 2) the analyzer shall be set as below: RBW=8MHz and VBW=28MHz.
- 3) Configure the EUT for normal transmission with a sufficiently high payload to allow demonstration of compliance of the adaptive mechanism on the channel being tested.
- 4) Adding the interference signal and blocking signal.
- 5) Record the data.

4.5.4 Test Result

Please refer to the Appendix F.3 for 2.4G WIFI RF Test Data.



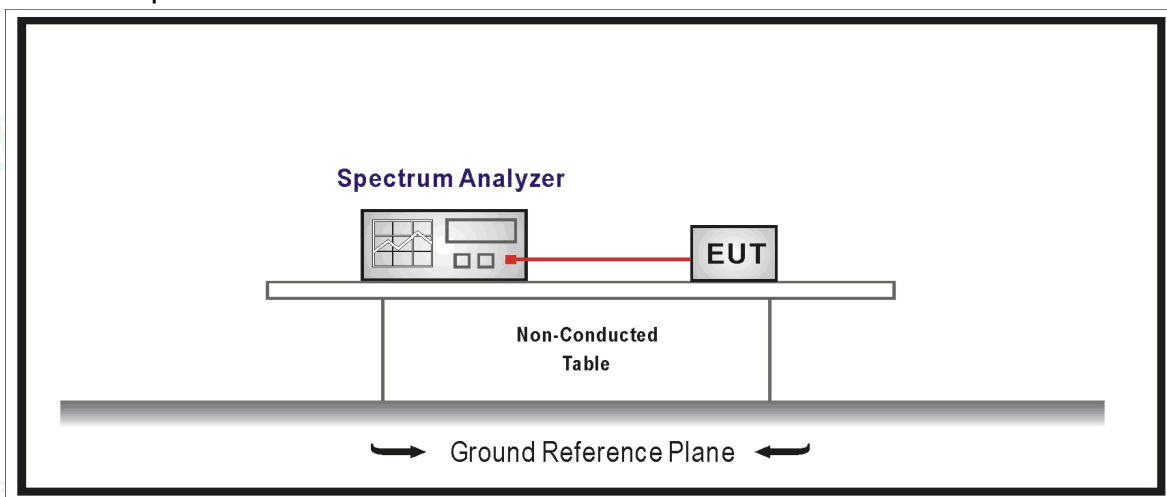
4.6. Occupied Channel Bandwidth

4.6.1 Limit

The Occupied Channel Bandwidth shall fall completely within the band given in 2.4GHz to 2.4835GHz.

In addition, for non-adaptive systems using wide band modulations other than FHSS and with e.i.r.p greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.

4.6.2 Test Setup



4.6.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.7

Step 1:

Connect the UUT to the spectrum analyzer and use the following settings:

- Centre Frequency: The centre frequency of the channel under test
- Resolution BW: ~ 1 % of the span without going below 1 %
(we set RBW=400KHz for 802.11b/g/n20 and 820KHz for 802.11n40)
- Video BW: 3 × RBW (we set VBW=1.2MHz for 802.11b/g/n20 and 2.4MHz for 802.11n40)
- Frequency Span: 2 × Occupied Channel Bandwidth
(we set Span=40MHz(for 802.11b/g/n20) & 80MHz(for 802.11n40))
- Detector Mode: RMS
- Trace Mode: Max Hold

Step 2:

Wait until the trace is completed. Find the peak value of the trace and place the analyzer marker on this peak.

Step 3:

Use the 99 % bandwidth function of the spectrum analyzer to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.

4.6.4 Test Result

Please refer to the Appendix F.4 for 2.4G WIFI RF Test Data.



4.7. Transmitter Unwanted Emissions in the Out-of-band Domain

4.7.1 Limit

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 3.

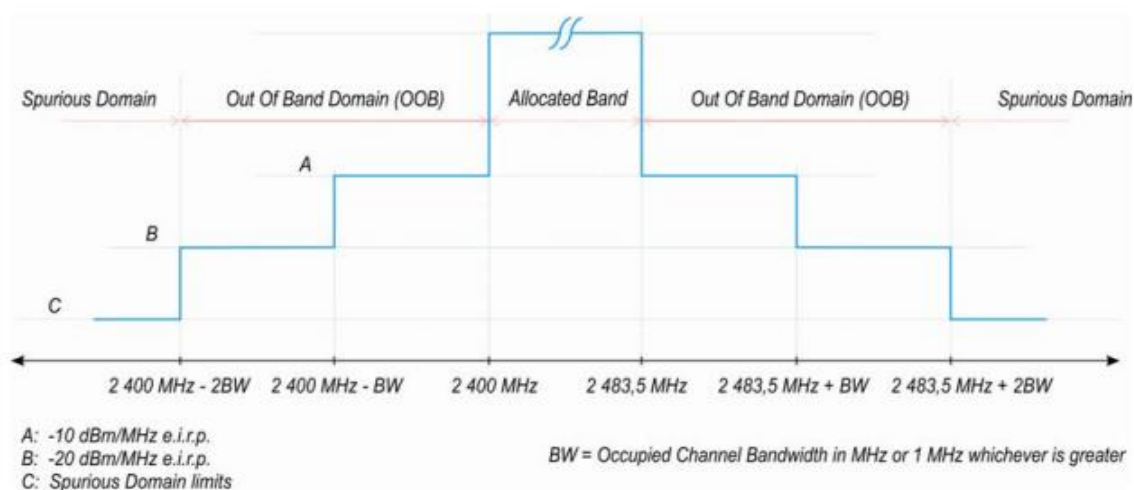
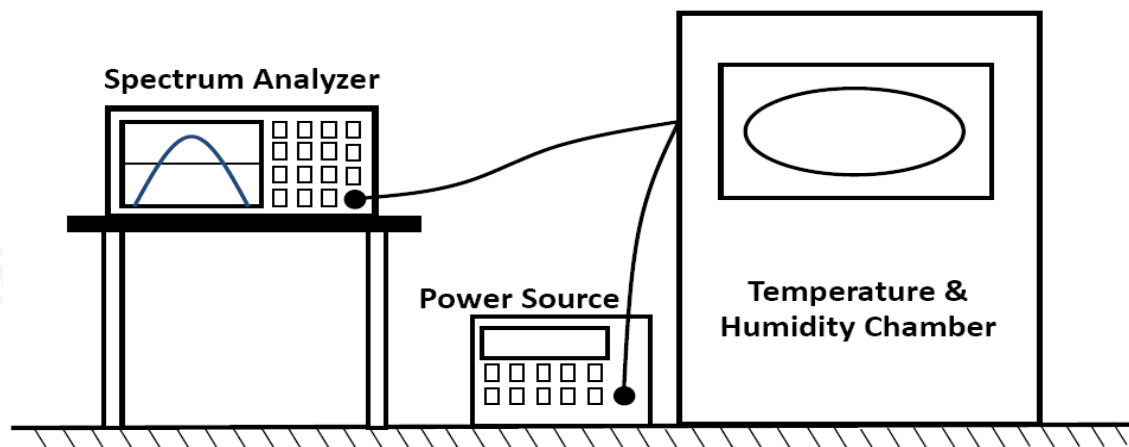


Figure 3: Transmit mask

4.7.2 Test Setup

For Conducted Measurement





4.7.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.8

Step 1:

- Connect the UUT to the spectrum analyzer and use the following settings:

- Centre Frequency: 2 484 MHz
- Span: 0 Hz
- Resolution BW: 1 MHz
- Filter mode: Channel filter
- Video BW: 3 MHz
- Detector Mode: RMS
- Trace Mode: Clear / Write
- Sweep Mode: Continuous
- Sweep Points: 5 000
- Trigger Mode: Video trigger

NOTE 1: In case video triggering is not possible, an external trigger source may be used.

- Sweep Time: Suitable to capture one transmission burst

Step 2: (segment 2 483,5 MHz to 2 483,5 MHz + BW)

- Adjust the trigger level to select the transmissions with the highest power level.
- For frequency hopping equipment operating in a normal hopping mode, the different hops will result in signal bursts with different power levels. In this case the burst with the highest power level shall be selected.
- Set a window (start and stop lines) to match with the start and end of the burst and in which the RMS power shall be measured using the Time Domain Power function.
- Select RMS power to be measured within the selected window and note the result which is the RMS power within this 1 MHz segment (2 483,5 MHz to 2 484,5 MHz). Compare this value with the applicable limit provided by the mask.
- Increase the centre frequency in steps of 1 MHz and repeat this measurement for every 1 MHz segment within the range 2 483,5 MHz to 2 483,5 MHz + BW. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 3: (segment 2 483,5 MHz + BW to 2 483,5 MHz + 2BW)

- Change the centre frequency of the analyzer to 2 484 MHz + BW and perform the measurement for the first 1 MHz segment within range 2 483,5 MHz + BW to 2 483,5 MHz + 2BW. Increase the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + 2 BW - 0,5 MHz.

Step 4: (segment 2 400 MHz - BW to 2 400 MHz)

- Change the centre frequency of the analyzer to 2 399,5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz Reduce the centre





frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to $2\,400\text{ MHz} - 2\text{BW} + 0,5\text{ MHz}$.

Step 5: (segment $2\,400\text{ MHz} - 2\text{BW}$ to $2\,400\text{ MHz} - \text{BW}$)

- Change the centre frequency of the analyzer to $2\,399,5\text{ MHz} - \text{BW}$ and perform the measurement for the first 1 MHz segment within range $2\,400\text{ MHz} - 2\text{BW}$ to $2\,400\text{ MHz} - \text{BW}$. Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to $2\,400\text{ MHz} - 2\text{BW} + 0,5\text{ MHz}$.

Step 6:

- In case of conducted measurements on equipment with a single transmit chain, the declared antenna assembly gain "G" in dBi shall be added to the results for each of the 1 MHz segments and compared with the limits provided by the mask given in figures 1 or 3. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered.
 - In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), the measurements need to be repeated for each of the active transmit chains. The declared antenna assembly gain "G" in dBi for a single antenna shall be added to these results. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered. Comparison with the applicable limits shall be done using any of the options given below:
 - Option 1: the results for each of the transmit chains for the corresponding 1 MHz segments shall be added. The additional beamforming gain "Y" in dB shall be added as well and the resulting values compared with the limits provided by the mask given in figures 1 or 3.
 - Option 2: the limits provided by the mask given in figures 1 or 3 shall be reduced by $10 \times \log_{10}(\text{Ach})$ and the additional beamforming gain "Y" in dB. The results for each of the transmit chains shall be individually compared with these reduced limits.
- NOTE 2: Ach refers to the number of active transmit chains.
- It shall be recorded whether the equipment complies with the mask provided in figures 1 or 3.

4.7.4 Test Result

Please refer to the Appendix F.5 for 2.4G WIFI RF Test Data.



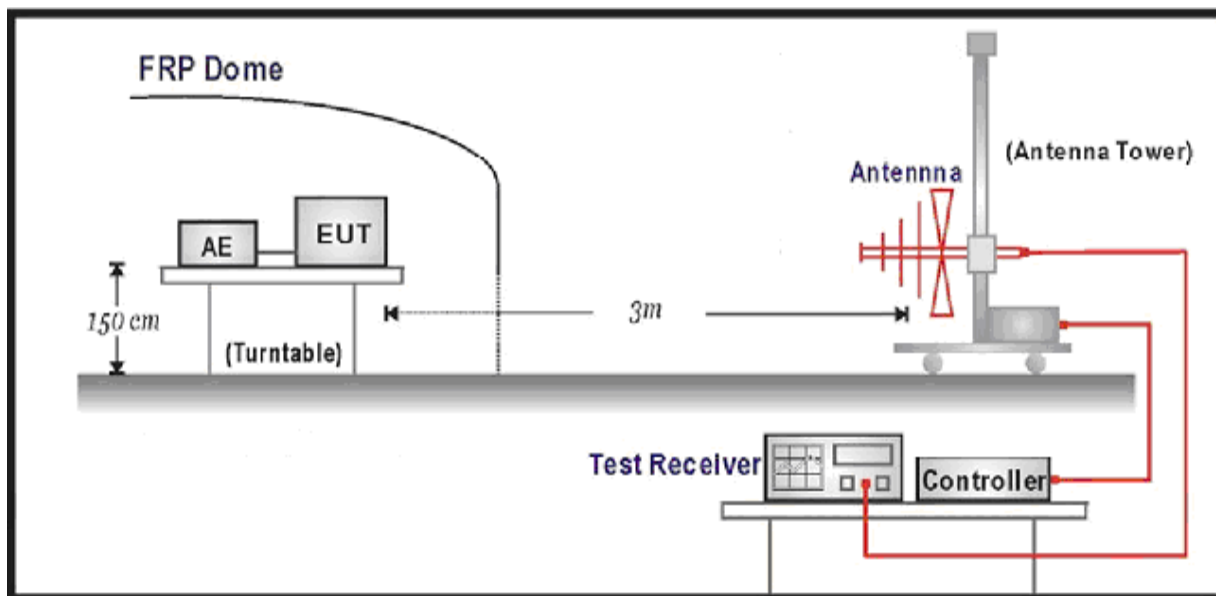
4.8. Transmitter Unwanted Emissions in the Spurious Domain

4.8.1 Limit

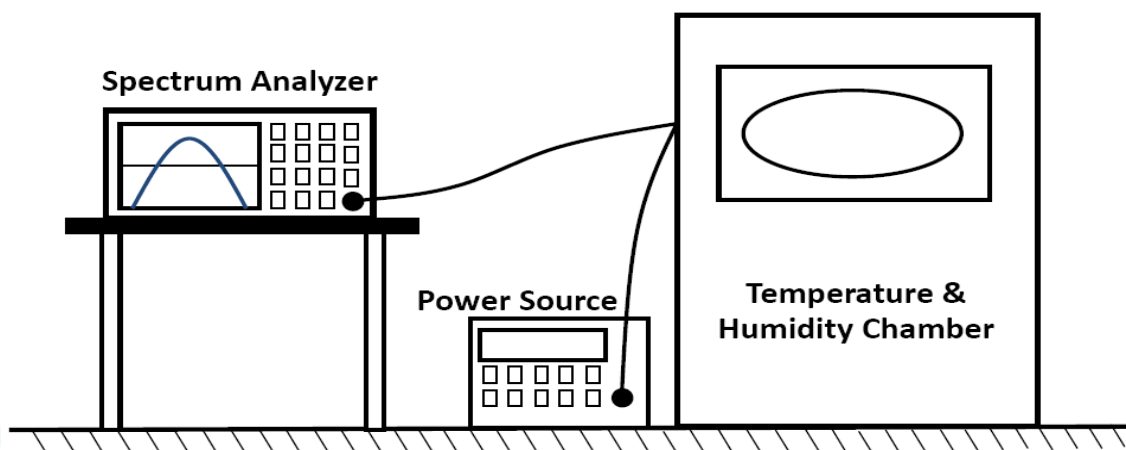
Transmitter Limits for Spurious Emissions		
Frequency Range	Maximum power E.R.P. ($\leq 1\text{GHz}$) E.I.R.P. ($> 1\text{GHz}$)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

4.8.2 Test Setup

For Radiated Measurement



For Conducted Measurement



4.8.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.9

Step 1:

The sensitivity of the spectrum analyzer should be such that the noise floor is at least 12 dB below the limits given in tables 1 or 4.

Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyzer settings:

- Resolution bandwidth: 100 kHz
- Video bandwidth: 300 kHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 9\,970$

NOTE 1: For spectrum analyzers not supporting this high number of sweep points, the frequency band may need to be segmented.

• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 100 kHz frequency step, the measurement time is greater than two transmissions of the UUT. For Frequency Hopping equipment operating in a normal operating (hopping not disabled) mode, the sweep time shall be further increased to capture multiple transmissions on the same hopping frequency in different hopping sequences. Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.10.2.1.2 and compared to the limits given in tables 1 or 4.

Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyzer settings:

- Resolution bandwidth: 1 MHz





- Video bandwidth: 3 MHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 11\,750$

NOTE 2: For spectrum analyzers not supporting this high number of sweep points, the frequency band may need to be segmented.

- Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 1 MHz frequency step, the measurement time is greater than two transmissions of the UUT.

4.8.4 Test Result

Please refer to the Appendix F.6 for 2.4G WIFI RF Test Data.





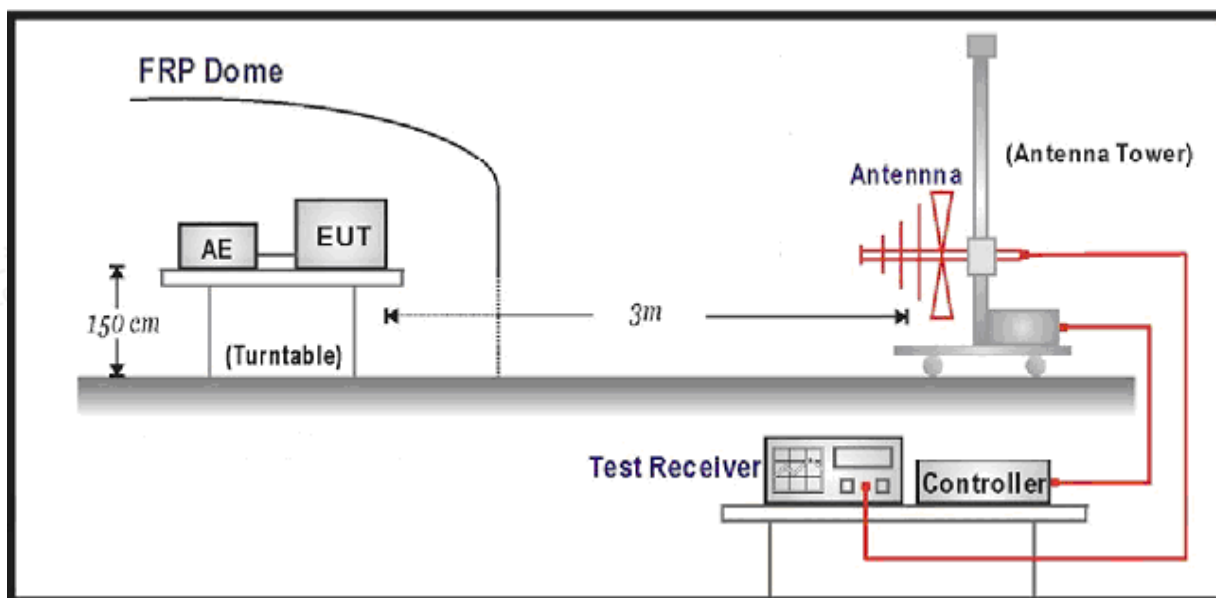
4.9. Receiver Spurious Emissions

4.9.1 Limit

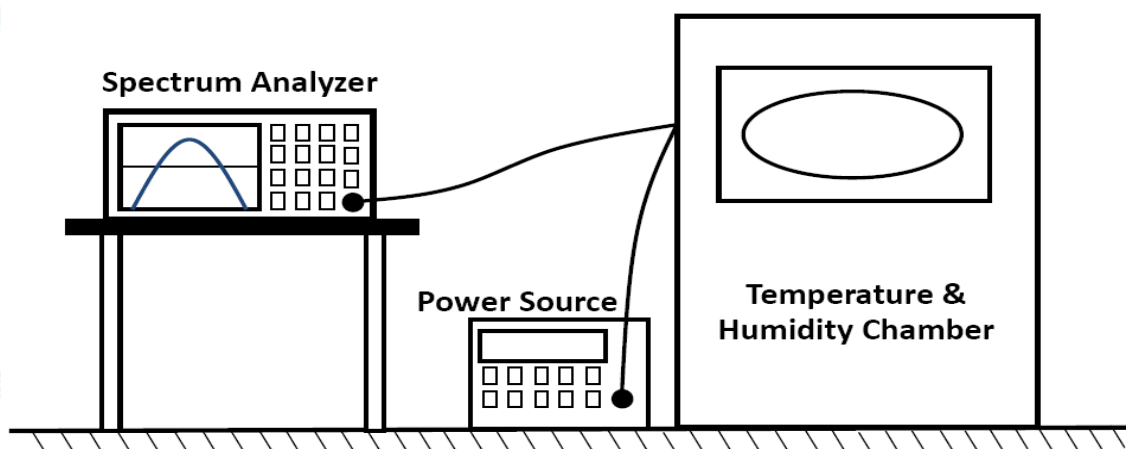
Spurious emissions limits for receivers		
Frequency Range	Maximum power E.R.P. ($\leq 1\text{GHz}$) E.I.R.P. ($> 1\text{GHz}$)	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12.75 GHz	-47 dBm	1 MHz

4.9.2 Test Setup

For Radiated Measurement



For Conducted Measurement





4.9.3 Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07) Clause 5.4.10

Step 1:

The sensitivity of the spectrum analyzer should be such that the noise floor is at least 12 dB below the limits given in tables 2 or 5.

Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyzer settings:

- Resolution bandwidth: 100 kHz
- Video bandwidth: 300 kHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 9\,970$
- Sweep time: Auto

Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.11.2.1.2 and compared to the limits given in tables 2 or 5.

Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyzer settings:

- Resolution bandwidth: 1 MHz
- Video bandwidth: 3 MHz
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 11\,750$
- Sweep time: Auto

Allow the trace to stabilize. Any emissions identified during the sweeps above that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.11.2.1.2 and compared to the limits given in tables 2 or 5. Frequency Hopping equipment may generate a block (or several blocks) of spurious emissions anywhere within the spurious domain. If this is the case, only the highest peak of each block of emissions shall be measured using the procedure in clause 5.3.11.2.1.2.

Step 4:

- In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), the steps 2 and 3 need to be repeated for each of the active receive chains (Ach). The limits used to identify emissions during this pre-scan need to be reduced with $10 \times \log_{10}(\text{Ach})$ (number of active receive chains).

4.9.4 Test Result

Please refer to the Appendix F.7 for 2.4G WIFI RF Test Data.





4.10. Receiver Blocking

4.10.1 Limit

Equipment shall comply with the requirements defined in clause 4.3.1.12.4

Table 6: Receiver Blocking parameters for Receiver Category 1 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × log ₁₀ (OCBW)) or -68 dBm whichever is less (see note 2)	2 380 2 504	-34	CW
(-139 dBm + 10 × log ₁₀ (OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		
NOTE 1: OCBW is in Hz.			
NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P _{min} + 26 dB where P _{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P _{min} + 20 dB where P _{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Table 7: Receiver Blocking parameters receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 10 \text{ dB})$ or $(-74 \text{ dBm} + 10 \text{ dB})$ whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{\min} + 26 \text{ dB}$ where $P_{\min}$ is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			



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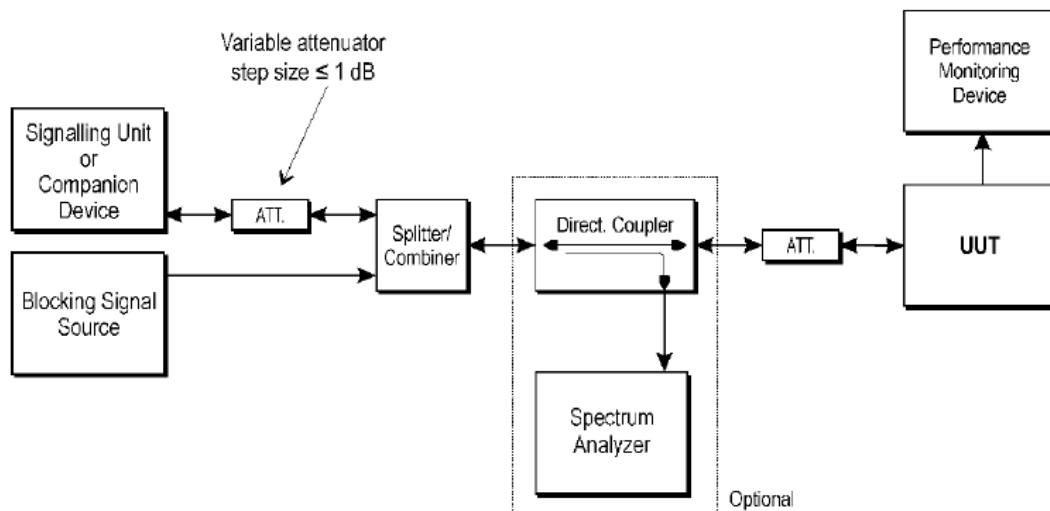
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**Table 8: Receiver Blocking parameters receiver Category 3 equipment**

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 20 \text{ dB})$ or $(-74 \text{ dBm} + 20 \text{ dB})$ whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{\min} + 30 \text{ dB}$ where $P_{\min}$ is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

4.10.2 Test Setup

Conducted measurements



4.10.3 Test Procedure

Step 1:

- For non-frequency hopping equipment, the UUT shall be set to the lowest operating channel.

Step 2:

- The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.

Step 3:

- With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup shown in figure 6. The attenuation of the variable attenuator shall be increased in 1 dB steps to a value at which the minimum performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is still met.



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The resulting level for the wanted signal at the input of the UUT is P_{min} .

- This signal level (P_{min}) is increased by the value provided in the table corresponding to the receiver category and type of equipment.

Step 4:

- The blocking signal at the UUT is set to the level provided in the table corresponding to the receiver category and type of equipment. It shall be verified and recorded in the test report that the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is met.

Step 5:

- Repeat step 4 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.

Step 6:

- For non-frequency hopping equipment, repeat step 2 to step 5 with the UUT operating at the highest operating channel.

4.10.4 Test Result

Please refer to the Appendix F.8 for 2.4G WIFI RF Test Data.





5. LIST OF MEASURING EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	X-series USB Peak and Average Power Sensor Agilent	Agilent	U2021XA	MY54080022	2023-10-20	2024-10-19
2	4 CH. Simultaneous Sampling 14 Bits 2MS/s	Agilent	U2531A	MY54080016	2023-10-20	2024-10-19
3	Test Software	Ascentest	AT890-SW	20160630	N/A	N/A
4	RF Control Unit	Ascentest	AT890-RFB	N/A	2024-06-06	2025-06-05
5	MXA Signal Analyzer	Agilent	N9020A	MY49061051	2024-06-06	2025-06-05
6	DC Power Supply	Agilent	E3642A	N/A	2023-10-18	2024-10-17
7	MXG Vector Signal Generator	Agilent	N5182A	MY47071151	2024-06-06	2025-06-05
8	ESG Vector Signal Generator	Agilent	E4438C	MY49072627(3 G)	2024-06-06	2025-06-05
9	PSG Analog Signal Generator	Agilent	E8257D	MY4520521	2024-06-06	2025-06-05
10	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2023-10-05	2024-10-04
11	EMI Test Software	Farad	EZ	/	N/A	N/A
12	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2022-08-17	2025-08-16
13	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
14	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2024-07-13	2027-07-12
15	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
16	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
17	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2021-08-29	2024-08-28
18	Broadband Preamplifier	SCHWARZBECK	BBV9719	9719-025	2021-08-29	2024-08-28
19	EMI Test Receiver	R&S	ESR7	101181	2024-06-06	2025-06-05
20	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2024-06-06	2025-06-05
21	Low-frequency amplifier	SchwarzZBECK	BBV9745	00253	2023-10-18	2024-10-17
22	High-frequency amplifier	JS Denki Pte	PA0118-43	JSPA21009	2023-10-18	2024-10-17
23	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	103818	2024-06-06	2025-06-05
24	6dB Attenuator	/	100W/6dB	1172040	2024-06-06	2025-06-05
25	3dB Attenuator	/	2N-3dB	/	2023-10-18	2024-10-17





6. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files Appendix D for Photographs of Test Setup_RF.

7. PHOTOGRAPHS OF THE EUT

Please refer to separated files Appendix C for Photographs of The EUT.

-----THE END OF REPORT-----





RADIO TEST REPORT

For

Woan Technology (Shenzhen) Co., Ltd.

SwitchBot Air Purifier Table

Test Model: W5302310

Additional Model No.: Please Refer to Page 7

Prepared for : Woan Technology (Shenzhen) Co., Ltd.
Address : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
Bao'an District, Shenzhen, Guangdong, P.R.China,
518100

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Tel : (+86)755-82591330
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Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : July 30, 2024
Number of tested samples : 2
Sample No. : A240726086-1, A240726086-2
Serial number : Prototype
Date of Test : July 30, 2024 ~ August 09, 2024
Date of Report : August 12, 2024



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RADIO TEST REPORT
ETSI EN 303 417 V1.1.1 (2017-09)

Wireless power transmission systems, using technologies other than radio frequency beam in the 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz ranges; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

Report Reference No. : LCSA07264213ED

Date Of Issue : August 12, 2024

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

**Testing Location/Procedure : Full application of Harmonised standards ■
Partial application of Harmonised standards □
Other standard testing method □**

Applicant's Name : Woan Technology (Shenzhen) Co., Ltd.

Address..... : Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100

Test Specification

Standard : ETSI EN 303 417 V1.1.1 (2017-09)

Test Report Form No. : TRF-4-E-161 A/0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description..... : SwitchBot Air Purifier Table

Trade Mark..... : SwitchBot

Test Model : W5302310

Ratings..... : Please Refer to Page 7

Result : Positive

Compiled by:

Jack Liu/Administrator

Supervised by:

Cary Luo/ Technique principal

Approved by:

Gavin Liang/ Manager



Shenzhen LCS Compliance Testing Laboratory Ltd.

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RADIO -- TEST REPORT

Test Report No. : LCSA07264213EDAugust 12, 2024

Date of issue

Test Model..... : W5302310

EUT..... : SwitchBot Air Purifier Table

Applicant..... : Woan Technology (Shenzhen) Co., Ltd.Address..... : Room 1101, Qiancheng Commercial Center, No. 5
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Factory..... : Wo'an Technology (Shenzhen) Co., Ltd. Huizhou BranchAddress..... : Building 2, 2nd Floor, Baidi Zhigu Science and Technology
Innovation Park, No.263 Chang'an Avenue, Shatian Town,
Huiyang District, Huizhou City, Guangdong, China

Telephone..... : /

Fax..... : /

Test Result**Positive**

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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Revision History

Report Version	Issue Date	Revision Content	Revised By
000	August 12, 2024	Initial Issue	--





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1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT : SwitchBot Air Purifier Table

Test Model : W5302310

Additional Model No. : W5302311, W5302312, W5302313, W5302314, W5302315

Model Declaration : PCB board, structure and internal of these model(s) are the same, So no additional models were tested

Power Supply : For Adapter Model: CZH072240300EUWV
For Adapter: Input:100-240V~, 50/60Hz, 1.5A Max
Output: 24.0V—3.0A, 72.0W
For Adapter Model: HA072240300EUW
Input:100-240V~, 50/60Hz, 2.0A Max
Output: 24.0V—3.0A, 72.0W

Hardware Version : /

Software Version : /

Bluetooth :

Frequency Range : 2402MHz ~ 2480MHz

Channel Number : 40 channels for Bluetooth V4.2 (BT LE)

Channel Spacing : 2MHz for Bluetooth V4.2 (BT LE)

Modulation Type : GFSK for Bluetooth V4.2 (BT LE)

Bluetooth Version : V4.2

Antenna Description : PCB Antenna, 2.22dBi(Max.)

WIFI(2.4G Band) :

Frequency Range : 2412MHz ~ 2472MHz

Channel Spacing : 5MHz

Channel Number : 13 Channel for 20MHz bandwidth(2412~2472MHz)
9 channels for 40MHz bandwidth(2422~2462MHz)

Modulation Type : 802.11b: DSSS; 802.11g/n: OFDM

Antenna Description : PCB Antenna, 2.22dBi(Max.)

Wireless Charging :

Operating Frequency : 110.0~205.0KHz

Modulation Type : ASK

Antenna Type : Coil Antenna





1.2. Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen CHANZEHO Technology Co.,Limited.	SWITCHING ADAPTER	CZH07224030 0EUWV	--	CE
Zhejiang Huaguan Power Technology Co.,Ltd.	SWITCHING POWER SUPPLY	HA072240300 EUW	--	CE
Huawei	Mobile phone	FRD-AL10	FRD-AL10C0 0B373	CE

Note: The Mobile phone is supplied by lab and only use tested.

1.3. External I/O

I/O Port Description	Quantity	Cable
Power Port	1	N/A

1.4. Objective

The following report of is prepared on behalf of the **Woan Technology (Shenzhen) Co., Ltd.** in accordance with ETSI EN 303 417 V1.1.1 (2017-09): Wireless power transmission systems, using technologies other than radio frequency beam in the 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz ranges; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

The objective is to determine compliance with ETSI EN 303 417 V1.1.1 (2017-09).

1.5. Test Methodology

All measurements contained in this report were conducted with ETSI EN 303 417 V1.1.1 (2017-09).

1.6. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Radio Frequency	0.9×10^{-4}
Total RF Power, Conducted	1.0 dB
RF Power Density, Conducted	1.8 dB
Spurious Emissions, Conducted	1.8 dB
All Emissions, Radiated	3.1 dB
Temperature	0.5°C
Humidity	1 %
DC And Low Frequency Voltages	1 %





1.7. Description of Test Facility

NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.

1.8. Description Of Test Mode

The EUT has been tested under typical operating condition. No software used to control the EUT for staying in transmitting mode for testing.

***Note: The EUT has been tested under normal condition in this report , and only recorded the worst test data in the report.

	charging mode/power transmission/system in resonance;	Inductive coupled
	communication mode (data transmission from and to the mobile device);	AFK
	determination of the charging action e.g. to find the resonance frequency of the system or optimal charging parameters of the WPT systems.	100 kHz WPC resonance operating frequency 110–205KHz as per WPC1.1, 1 MHz parallel resonance for analogue pig
Additional declarations to establish the appropriate test conditions:		
	the mechanical setup/alignment;	Geometrical centre of the device to geometrical centre of the device
	the maximum allowed values for the x-y-z offset within the alignment (worst-case alignment);	Z <5 mm -> on the surface X-Y within a 5 cm circle in the centre of the device
	the mechanical orientation;	Flat on the table
	the permitted range of frequencies;	110–205KHz
	the range of operating conditions including the duty cycle or pulsing operational parameter;	----
	power requirements;	Input: 24.0V—3.0A, 72.0W
	information about which part of the WPT System can be interpreted as transmitter (mode dependent).	Information is pinged / exchanged through open loop / close loop modulation of charger magnetic field





2. SYSTEM TEST CONFIGURATION

2.1. Justification

The system was configured for testing in engineering mode.

2.2. EUT Exercise Software

N/A.

2.3. Special Accessories

N/A.

2.4. Block Diagram/Schematics

Please refer to the related document.

2.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

2.6. Configuration of Test Setup

Please refer to the test setup photo.



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3. SUMMARY OF TEST RESULTS

Reference Clause No.	Description Of Test Item	Result
§4.3.2	Permitted range of operating frequencies	Compliant
§4.3.3	Operating frequency range(s) (OFR)	Compliant
§4.3.4	H-field requirements	Compliant
§4.3.5	Transmitter spurious emissions	Compliant
§4.3.6	Transmitter out of band (OOB) emissions	Compliant
§4.3.7	WPT system unwanted conducted emissions	N/A
§4.4.2	Receiver blocking	Compliant

Note: N/A means not applicable

Test Conditions

Conditions	Temperature	Voltage
Normal	21-25℃	DC 24V
Low extreme Temperature/Low extreme Voltage (TL/VL);	-20℃	DC 21.6V
Low extreme Temperature/High extreme Voltage (TL/VH);	-20℃	DC 26.4V
High extreme Temperature/Low extreme Voltage (TH/VL);	45℃	DC 21.6V
High extreme Temperature/High extreme Voltage (TH/VH).	45℃	DC 26.4V

Note1: For all conditions, the humidity range is:40-75%, the pressure range is 86-106kPa. The High Voltage DC 26.4V and Low Voltage DC 21.6V was declared by manufacturer





4. PERMITTED RANGE OF OPERATING FREQUENCIES

4.1. Definition

The permitted range of operating frequencies denotes the frequency ranges set out in Table 1. It likewise denotes the respective frequency range for accommodation of the fundamental WPT frequency of the EUT within its operating frequency range (OFR).

Table 1: WPT systems within the permitted frequency bands below 30MHz

	WPT frequency range	Frequency Bands	WPT systems
Transmit and Receive	1	19 kHz to 21 kHz	WPT systems
Transmit and Receive	2	59 kHz to 61 kHz	WPT systems
Transmit and Receive	3	79 kHz to 90 kHz	WPT systems
Transmit and Receive	4	100 kHz to 119 kHz	WPT systems
Transmit and Receive		119 kHz to 140 kHz	WPT systems
Transmit and Receive		140 kHz to 148,5 kHz	WPT systems
Transmit and Receive		148.5 kHz to 300 kHz	WPT systems
Transmit and Receive	5	6765kHz to 6795 kHz	WPT systems

4.2. Limit

The permitted range of operating frequency range(s) for intentional emissions shall be within 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz.

Table 2: Overview of operational modes within a WPT system

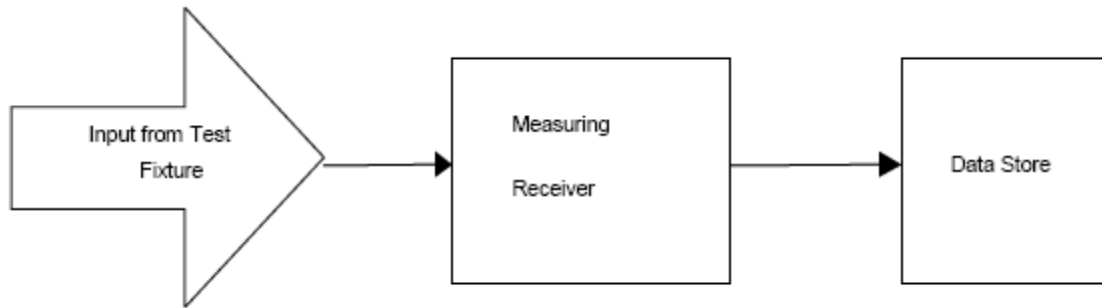
Operational Mode	Set-up	Function of base station	Function of mobile device	Test scenario	Conformance Requirements
Mode 1: base station in stand-by, idle mode	Single device	Transmitter	Not applicable	Single radiation test (TX) with the base station/charging pad. The test set-up as described in clause 6.1.2 shall be used.	• Operating frequency range (clause 4.3.3) • H-Field emission (clause 4.3.4) • TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) • Performance criteria test (RX test) (clause 4.4)
Mode 2: Communication before charging, adjustment charging mode / position	In combination	TX and RX	TX and RX	Specific test setup, declared by the manufacturer. Manufacturer shall declare the maximal distance between base station and mobile device the WPT system is able to communicate (distance D). The test setup- up shall be performed with the largest communication distance. The test set-up as described in clause 6.1.3 shall be used.	• Operating frequency range (clause 4.3.3) • H-Field emission (clause 4.3.4) • TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) • Performance criteria test (RX test) (clause 4.4) • Wanted performance criteria test (RX test) (clause 4.4)
Mode 3: Communication	WPT system alignment	TX and RX	TX and RX	Worst case alignment	• Operating frequency range (clause 4.3.3) • H-Field emission (clause 4.3.4) • TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) • Performance criteria test (RX test) (clause 4.4) • Wanted performance criteria test (RX test) (clause 4.4)
Mode 4: energy transmission	WPT system alignment	TX and RX	TX and RX	Both tests can be performed within one set-up, worst-case alignment. The test set-up as described in clause 6.1.4 shall be used.	• Operating frequency range (clause 4.3.3) • H-Field emission (clause 4.3.4) • TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) • Performance criteria test (RX test) (clause 4.4) • Wanted performance criteria test (RX test) (clause 4.4)





4.3. Test Procedure

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6 for the measurement method.



4.4. Test Result

The manufacturer declared that the WPT system is designed to operate in the frequency ranges 110KHz~205KHz. The justification/test shall be performed for Operating frequency ranges(OFR).





5. OPERATING FREQUENCY RANGE(S) (OFR)

5.1. Definition

The operating frequency range is the frequency range over which the WPT system is intentionally transmitting (all operational modes, see clause 4.2.3, Table 2).

The operating frequency range(s) of the WPT system are determined by the lowest (f_L) and highest frequency (f_H) as occupied by the power envelope.

The WPT system could have more than one operating frequency range.

For a single frequency systems the OFR is equal to the occupied bandwidth (OBW) of the WPT system.

For multi-frequency systems the OFR is described in figures 2 and 3.

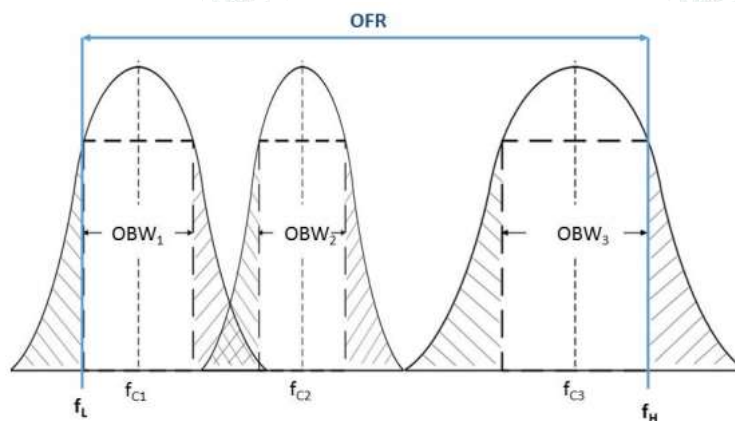


Figure 2: OFR of a multi - frequency WPT system within one frequency range of Table 2 and within one WPT system cycle time

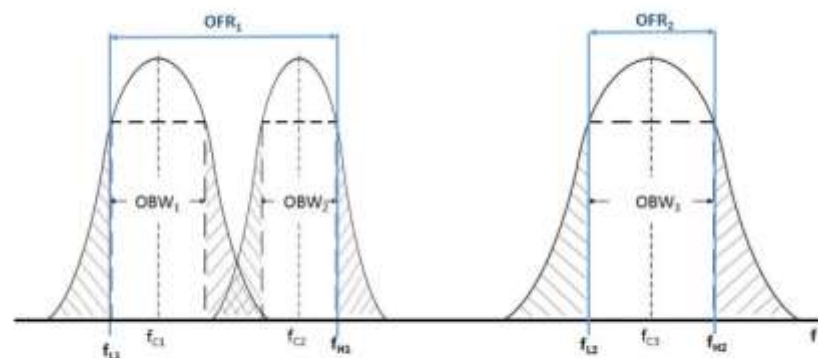


Figure 3: OFR of a multi - frequency WPT system within two frequency ranges of Table 2 and within one WPT system cycle time

5.2. Limit

The operating frequency range for emissions shall be within one of the following limits: 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz.





5.3. Test Procedure

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6 for the measurement method.

5.4. Test Result

Pass

Test Voltage: DC 24V (All voltages are tested and only recorded the worst cast which voltage is DC 24V)

Test Mode: Mode 3&4 (Worst Case)

Test Result				
Test Environmental Conditions	Test Voltage (Vdc)	Lower Frequency (KHz)	Upper Frequency (KHz)	Limit
23.2℃, 53.5%	24	116.43	205.25	100KHz<f<300KHz





6. H-FIELD REQUIREMENTS

6.1. Definition

The radiated H-field is defined in the direction of maximum field strength under specified conditions of measurement.

6.2. Limit

The H-field limits are provided in Table 3.

They have been specified for control of any radiated emissions within the OFR originating from the WPT system (power transmission and accompanying data communication).

The H-field limits in Table 3 are EU wide harmonised according to EC Decision 2013/752/EU [i.2]. Further information is available in ERC/REC 70-03 [i.1].

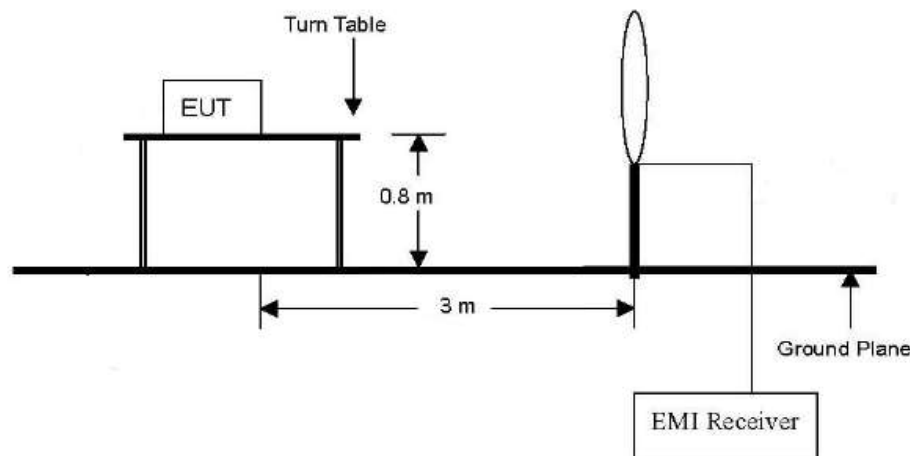
Table 3 H-field limits at 10 m

Frequency range [MHz]	H-field strength limit [dBμA/m at 10 m]	Comments
$0,019 \leq f < 0,021$	72	
$0,059 \leq f < 0,061$	69,1 descending 10 dB/dec above 0,059 MHz	See note 1
$0,079 \leq f < 0,090$	67,8 descending 10 dB/dec above 0,079 MHz	See note 2
$0,100 \leq f < 0,119$	42	
$0,119 \leq f < 0,135$	66 descending 10 dB/dec above 0,119 MHz	See note 1
$0,135 \leq f < 0,140$	42	
$0,140 \leq f < 0,1485$	37,7	
$0,1485 \leq f < 0,30$	-5	
$6,765 \leq f < 6,795$	42	

NOTE 1: Limit is 42 dBμA/m for the following spot frequencies: 60 kHz ± 250 Hz and 129,1 kHz ± 500 Hz.

NOTE 2: At the time of preparation of the present document the feasibility of increased limits for high power wireless power transmission systems to charge vehicles [i.4] was prepared. New specific requirements for such systems (e.g. higher H-field emission limits in the 79 - 90 kHz band) will be reflected within a future revision of the present document.

6.3. Test Setup





6.4. Test Procedure

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6.1&6.2 for the measurement method.

6.5. Test Result

Pass

Test Voltage: DC 24V (All voltages are tested and only recorded the worst cast which voltage is DC 24V)

Normal Condition

Test Mode: Mode 2 (Worst Case: TX 165.0KHz)

Frequency (KHz)	Antenna Polarity	Measure Level At 3m (dBuA/m)	Calculated Factor (dB, -C ₃)	Result At 10m (dBuA/m)	Limit At 10m (dBuA/m)
110.00	--	-5.70	-31.4	-37.10	42.0
113.00	--	-7.17	-31.4	-38.57	42.0
117.00	--	5.99	-31.4	-25.41	42.0
121.00	--	5.72	-31.4	-25.68	42.0
125.00	--	4.27	-31.4	-27.13	66 descending 3 dB/oct above 0,119 MHz
130.00	--	8.71	-31.4	-22.69	66 descending 3 dB/oct above 0,119 MHz
133.00	--	4.19	-31.4	-27.21	66 descending 3 dB/oct above 0,119 MHz
134.50	--	5.99	-31.4	-25.41	66 descending 3 dB/oct above 0,119 MHz
139.00	--	4.13	-31.4	-27.27	42.0
144.00	--	6.08	-31.4	-25.32	37.7
147.50	--	3.75	-31.4	-27.65	37.7
150.00	--	9.04	-31.4	-22.36	-5.0
165.00	--	9.19	-31.4	-22.21	-5.0
205.00	--	7.93	-31.4	-23.47	-5.0

***Note:

$$H_{10m}=H_{3m}-C_3$$

The correct factor C₃ is equal to or approximately equal to 31.4dB

All test modes have been tested and only record the worst result.



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**Extreme Condition: Lower Temperature -20°C**

Test Mode: Mode 2 (Worst Case: TX 165.0KHz)

Frequency (KHz)	Measure Level by Probe at 10cm (dBuA/m)	Calculated Factor (dB)	Result At 10m (dBuA/m)	Limit At 10m (dBuA/m)
110.00	33.08	-60.94	-27.86	42.0
113.00	32.47	-60.94	-28.47	42.0
117.00	30.34	-60.94	-30.60	42.0
121.00	29.56	-60.94	-31.38	42.0
125.00	27.13	-60.94	-33.81	66 descending 3 dB/oct above 0,119 MHz
130.00	27.14	-60.94	-33.80	66 descending 3 dB/oct above 0,119 MHz
133.00	30.36	-60.94	-30.58	66 descending 3 dB/oct above 0,119 MHz
134.50	26.42	-60.94	-34.52	66 descending 3 dB/oct above 0,119 MHz
139.00	32.12	-60.94	-28.82	42.0
144.00	27.98	-60.94	-32.96	37.7
147.50	33.13	-60.94	-27.81	37.7
150.00	31.59	-60.94	-29.35	-5.0
165.00	35.92	-60.94	-25.02	-5.0
205.00	24.98	-60.94	-35.96	-5.0

***Note:

The correct factor is -60.94dB which is calculated by the reference level measured by probe in normal condition.

All test modes have been tested and only record the worst result.



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**Extreme Condition: Lower Temperature +45°C**

Test Mode: Mode 2 (Worst Case: TX 165.0KHz)

Frequency (KHz)	Measure Level by Probe at 10cm (dBuA/m)	Calculated Factor (dB)	Result At 10m (dBuA/m)	Limit At 10m (dBuA/m)
110.00	33.04	-60.94	-27.90	42.0
113.00	32.53	-60.94	-28.41	42.0
117.00	30.40	-60.94	-30.54	42.0
121.00	29.61	-60.94	-31.33	42.0
125.00	27.14	-60.94	-33.80	66 descending 3 dB/oct above 0,119 MHz
130.00	27.15	-60.94	-33.79	66 descending 3 dB/oct above 0,119 MHz
133.00	30.37	-60.94	-30.57	66 descending 3 dB/oct above 0,119 MHz
134.50	26.45	-60.94	-34.49	66 descending 3 dB/oct above 0,119 MHz
139.00	32.09	-60.94	-28.85	42.0
144.00	28.06	-60.94	-32.88	37.7
147.50	33.08	-60.94	-27.86	37.7
150.00	31.61	-60.94	-29.33	-5.0
165.00	35.93	-60.94	-25.01	-5.0
205.00	24.96	-60.94	-35.98	-5.0

*****Note:**

The correct factor is -60.94dB which is calculated by the reference level measured by probe in normal condition.

All test modes have been tested and only record the worst result.



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7. TRANSMITTER SPURIOUS EMISSIONS

7.1. Definition

The transmitter spurious emissions for a single frequency system are to be considered in frequency ranges defined in Figure 4 ($f < f_{SL}$ and $f > f_{SH}$).

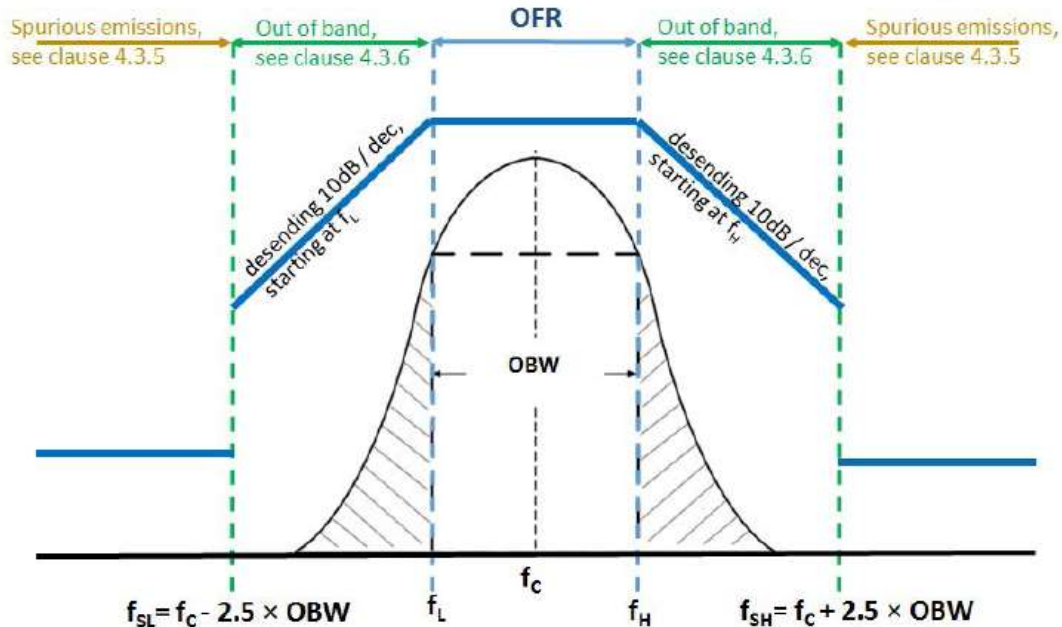


Figure 4

7.2. Limit

The radiated field strength of spurious emissions below 30 MHz shall not exceed the generated H-field given in Table 4.

Table 4

State (see note)	Frequency $9 \text{ kHz} \leq f < 10 \text{ MHz}$	Frequency $10 \text{ MHz} \leq f < 30 \text{ MHz}$
Operating	27 dB μ A/m at 9 kHz descending 10 dB/dec	-3,5 dB μ A/m
Standby	5,5 dB μ A/m at 9 kHz descending 10 dB/dec	-25 dB μ A/m

NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.

The power of any radiated spurious emission between 30 MHz and 1 GHz shall not exceed the values given in Table 5.

Table 5

State (see note)	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW

NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.





7.3. Test Setup

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6.

7.4. Test Procedure

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6.1&6.2 for the measurement method.

7.5. Test Result

The Worst Test Result for Mode 1 (TX 165.0KHz; 9KHz~30MHz)			
Frequency (MHz)	Measure Level (dBuA/m)	Limit (dBuA/m)	Margin (dB)
0.20	7.52	27 dBμA/m at 9 kHz descending 3 dB/oct (9KHz – 10MHz)	-6.06
0.82	0.85		-6.62
14.75	-16.77	-3,5 dBμA/m (10MHz – 30MHz)	-13.27
21.29	-14.83		-11.33
Test Result for Mode 1 (Standby; 9KHz~30MHz)			
Frequency (MHz)	Measure Level (dBuA/m)	Limit (dBuA/m)	Margin (dB)
0.23	-15.32	5.5 dBμA/m at 9 kHz descending 3 dB/oct (9KHz – 10MHz)	-6.79
0.42	-17.54		-6.41
11.13	-36.75	-25 dBμA/m (10MHz – 30MHz)	-11.75
22.77	-40.12		-15.12

Remark:

Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. Measured in frequency range from 9k~10th harmonic or 1GHz(which is greater).

Test Voltage: DC 24V (All voltages are tested and only recorded the worst cast which voltage is DC 24V)

The Worst Test Result for Mode 1 (TX 165.0KHz; Above 30MHz)					
Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Pol./Phase	Remark
170.10	-47.07	-36.00	-11.07	Horizontal	Peak
299.54	-48.12	-36.00	-12.12	Horizontal	Peak
736.62	-64.17	-54.00	-10.17	Horizontal	Peak
114.50	-68.18	-54.00	-14.18	Vertical	Peak
362.44	-52.32	-36.00	-16.32	Vertical	Peak
651.23	-68.81	-54.00	-14.81	Vertical	Peak

Note: We have test all modes and only record the worst result.





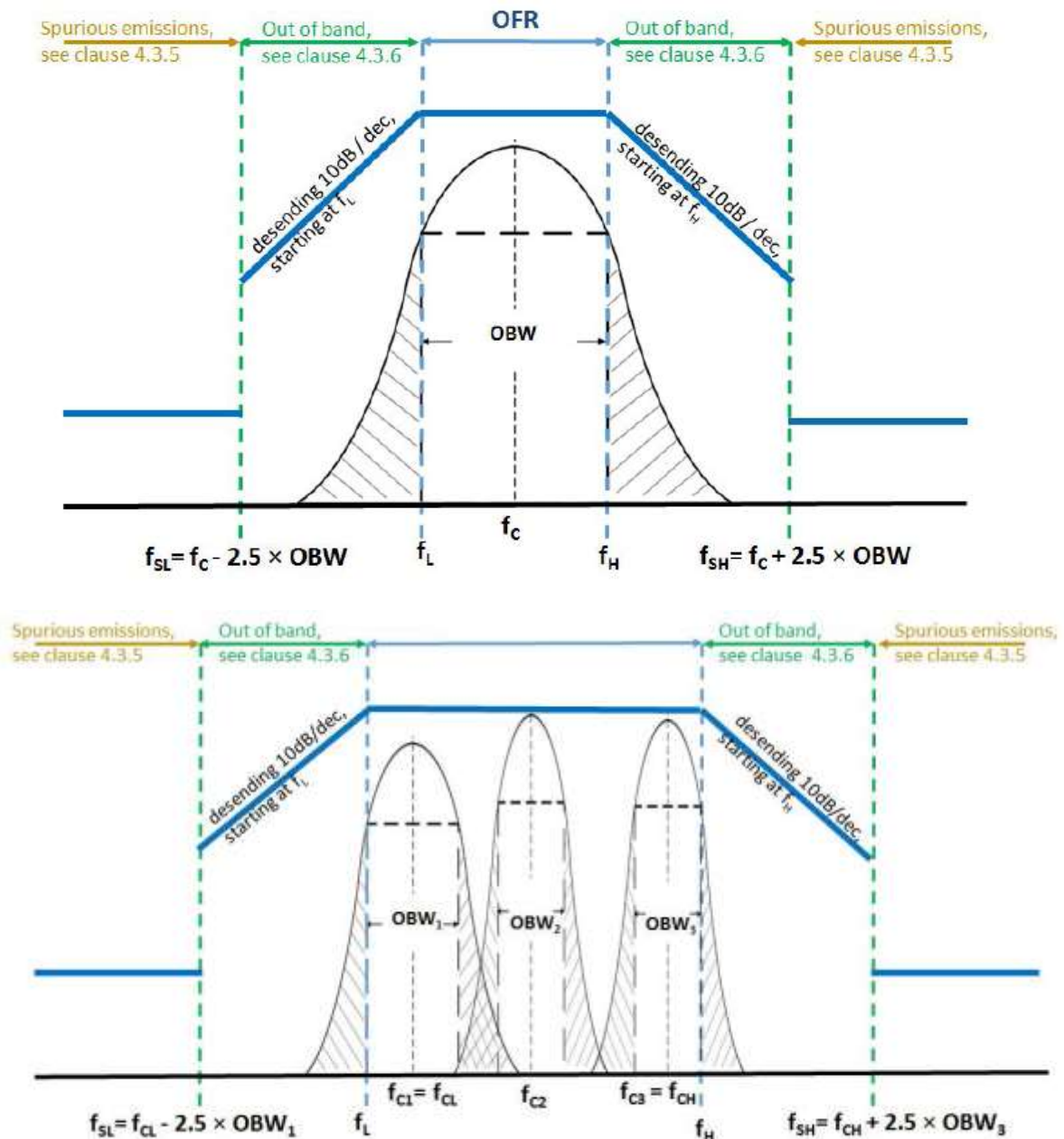
8. TRANSMITTER OUT OF BAND (OOB) EMISSIONS

8.1. Definition

The WPT system out of band emissions are to be considered in frequency ranges defined in Figure 4 and Figure 5 (between f_{SL} and f_L and between f_H and f_{SH}).

8.2. Limit

The OOB limits are visualized in figures 4 and 5; they are descending from the intentional limits from Table 3 at f_H/f_L with 10 dB/decade.





8.3. Test Procedure

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6.1&6.2 for the measurement method.

8.4. Test Result

PASS

Test Voltage: DC 24V (All voltages are tested and only recorded the worst cast which voltage is DC 24V)

Mode 1:

F_C (KHz)	$2.5*OBW$ (KHz)	$F_{sl}=F_c-2.5*OBW$ $F_{sh}=F_c+2.5*OBW$ (KHz)	Limit at F_{sl} & F_{sh}	Result
165.0	2.5*2.48	$F_{sl}=158.8$	$69-10lg(F_l/F_{sl})=68.8$	Pass
		$F_{sh}=171.2$	$69-10lg(F_h/F_{sh})=68.8$	Pass

Mode 3+4:

F_C (KHz)	$2.5*OBW$ (KHz)	$F_{sl}=F_c-2.5*OBW$ $F_{sh}=F_c+2.5*OBW$ (KHz)	Limit at F_{sl} & F_{sh}	Result
136.2	2.5*0.91	$F_{sl}=133.925$	$65.5-10lg(F_l/F_{sl})=65.4$	Pass
		$F_{sh}=138.475$	$65.5-10lg(F_h/F_{sl})=65.4$	Pass

For other modes, as the test data of H-Filed transmitter below the limit of transmitter spurious emissions, the equipment met the requirement of this clause.

All test modes have been tested and only record the worst result.





9. WPT SYSTEM UNWANTED CONDUCTED EMISSIONS

9.1. Applicability

This applies to all WPT systems where the cable to the primary coil exceeds a length of 3 m and where the cable is not installed in the ground or any metallic structures.

9.2. Definition

WPT system unwanted conducted emissions are based on the emissions of the unwanted common mode current on the cable between the off board power supply and the primary coil seen as a monopole radiator driven against the power supply.

9.3. Limit

The common mode current (ICM) between 1 MHz and 30 MHz shall not exceed the following limit:

$$ICM = 47 - 8 \times \log(f) \text{ dB}\mu\text{A}$$

NOTE: f is the frequency in MHz.

9.4. Test Procedure

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) clause 6.2.4 for the measurement method.

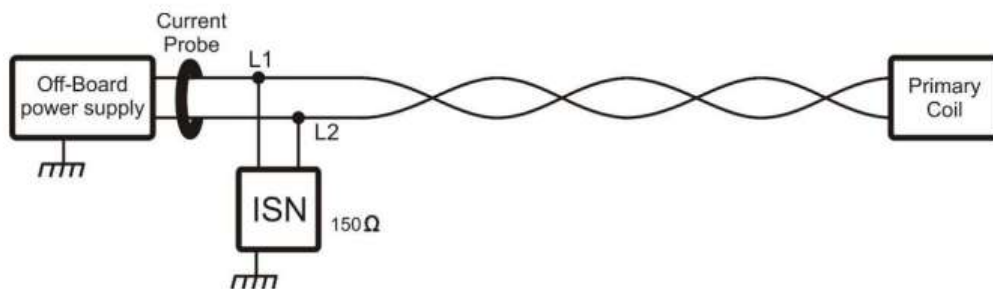


Figure 9: Measurement setup for unwanted conducted emissions

9.5. Test Result

NOT Applicable.

Note: The EUT cable to the primary coil is less than a length of 3 m.





10. RECEIVER BLOCKING

10.1. Definition

Blocking is a measure of the capability of the receiver to receive a wanted signal without exceeding a given degradation due to the presence of an unwanted input signal at any frequencies other than those of the receiver spurious responses.

The test shall be performed in the relevant operational modes (see clause 4.2.3).

The wanted performance criteria from clause 4.2.2 shall be used as criterion for the receiver blocking tests.

10.2. Limit

Table 6: Receiver blocking limits

	In-band signal	OOB signal	Remote-band signal
Frequency	Centre frequency (f_c) of the WPT system (see clause 4.3.3)	$f = f_c \pm F$ (see note)	$f = f_c \pm 10 \times F$ (see note)
Signal level field strength at the EUT	72 dB μ A/m	72 dB μ A/m	82 dB μ A/m
NOTE: $F = \text{OFR}$ see clause 4.3.3.			



10.3. Test Setup

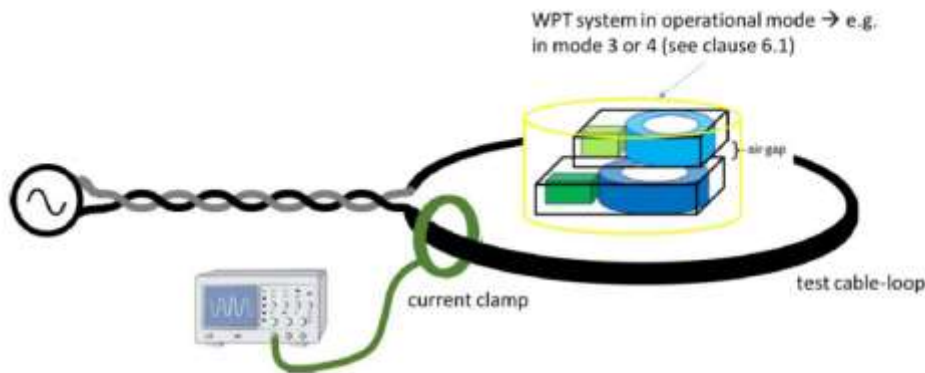


Figure 11: Schematic test set-up for the RX-blocking test

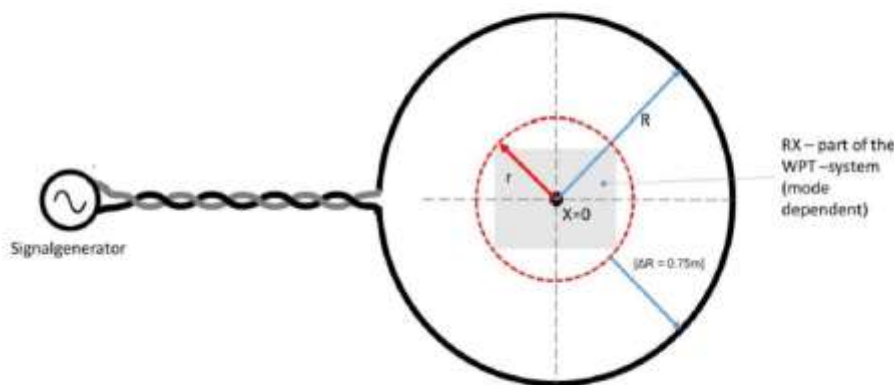


Figure 12: Schematic test set-up for the RX-blocking test

10.4. Test Procedure

- The fulfilment of the WPT system performance criterion in all possible operational modes (see clause 4.2.3) shall be tested in presence of the inference signals according to Table 6.
- The manufacturer shall declare in which device orientation(s) (worst case) the test shall be performed.
- The WPT system shall initially operate without interference according to its specified sensitivity (detecting an specific object in the maximum depth as declared by the manufacturer (see clause 4.2.2 on wanted performance criteria)).
- The test setup is visualized in the following Figures 11 and 12.
- The tool shall be operated as intended (e.g. some tools might require to be moved across the object, some tool can be used stationary).
- The test shall be carried out inside a test chamber according to clauses C.1.1 and C.1.2 in ETSI EN 300 330 [1].
- A test loop with a radius r shall be used to create the magnetic field; the test loop shall lie on a non-metallic ground and the minimum distance to metallic objects (e.g. ground plane) shall be 0,75 m.
- The EUT shall be placed to the centre of the test-loop (e.g. see Figures 11 and 12).
- The test loop shall be sufficiently large so that the test loop itself does not influence the



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WPT system; The radius R of the test-loop shall be in minimum $\Delta R = 0,75$ m larger than the maximum dimension r of the EUT.

- j) (See Figure 12): $R \geq r + \Delta R$.
- k) The maximum H-Field can be calculated from the loop current I (into the test-loop) with the following formula:
- l) The required output current to achieve the required magnetic field from Table 12 at the WPT system shall be generated with a signal generator (unmodulated signal) at the test frequencies from Table 6.
- m) For each test frequency the "reaction" of the device shall be recorded and checked against the performance criterion from clause 4.2.2.
- n)

10.5. Test Result

PASS.

EUT Operational Mode	Interference			Conclusion
	Unwanted Input Signal Type	Test Frequency (KHz)	Unwanted Input Signal Level (dB μ A/m)	
Mode 3& Mode 4 (worst case)	In-band signal	fc=165.0KHz	72	PASS
	OOB signal	fc - OFR	72	PASS
		fc + OFR	72	PASS
	Remote-band signal	fc - 10*OFR	82	PASS
		fc + 10*OFR	82	PASS

Note: F = OFR





11. LIST OF MEASURING EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2022-08-17	2025-08-16
3	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
4	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2024-07-13	2027-07-12
5	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
6	EMI Test Receiver	R&S	ESR 7	101181	2024-06-06	2025-06-05
7	Exposure Level Tester	Narda	ELT-400	N-0713	2023-10-18	2024-10-17
8	B-Field Probe	Narda	ELT-400	M-1154	2023-10-18	2024-10-17





12. TEST SETUP PHOTOGRAPHS

Please refer to separated files Appendix D for Photographs of Test Setup_RF.

13. PHOTOGRAPHS OF THE EUT

Please refer to separated files Appendix C for Photographs of The EUT.

-----THE END OF REPORT-----





HEALTH TEST REPORT

For

Woan Technology (Shenzhen) Co., Ltd.

SwitchBot Air Purifier Table

Test Model: W5302310

Additional Model No.: Please Refer to Page 5

Prepared for : Woan Technology (Shenzhen) Co., Ltd.
Address : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
Bao'an District, Shenzhen, Guangdong, P.R.China,
518100

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C, Juji
Industrial Park, Yabianxueziwei, Shajing Street, Bao'an
District, Shenzhen, Guangdong, China

Tel : (+86)755-82591330
Fax : (+86)755-82591332
Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : July 30, 2024
Number of tested samples : 2
Sample No. : A240726086-1, A240726086-2
Serial number : Prototype
Date of Test : July 30, 2024 ~ August 09, 2024
Date of Report : August 12, 2024



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**HEALTHTEST REPORT****EN IEC 62311: 2020**

Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

Report Reference No. : LCSA07264213EE

Date of Issue : August 12, 2024

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

**Testing Location/Procedure : Full application of Harmonised standards ■
Partial application of Harmonised standards □
Other standard testing method □**

Applicant's Name : Woan Technology (Shenzhen) Co., Ltd.

Address..... : Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao' an District, Shenzhen, Guangdong, P.R.China, 518100

Test Specification

**Standard : EN 62311:2008
EN IEC 62311: 2020**

Test Report Form No. : TRF-4-E-156 A/0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description..... : SwitchBot Air Purifier Table

Trade Mark..... : SwitchBot

Test Model..... : W5302310

Ratings : Please Refer to Page 5

Result..... : Positive

Compiled by:

Jack Liu/Administrator

Supervised by:

Cary Luo/ Technique principal

Approved by:

Gavin Liang / Manager



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HEALTH--TEST REPORT

Test Report No. : LCSA07264213EEAugust 12, 2024
Date of issue

Test Model..... : W5302310

EUT..... : SwitchBot Air Purifier Table

Applicant..... : Woan Technology (Shenzhen) Co., Ltd.Address..... : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
Bao'an District, Shenzhen, Guangdong, P.R.China,
518100

Telephone..... : /

Fax..... : /

Manufacturer..... : Woan Technology (Shenzhen) Co., Ltd.Address..... : Room 1101, Qiancheng Commercial Center, No. 5
Haicheng Road, Mabu Community, Xixiang Sub-district,
Bao'an District, Shenzhen, Guangdong, P.R.China,

Telephone..... : /

Fax..... : /

Factory..... : Wo'an Technology (Shenzhen) Co., Ltd. Huizhou BranchAddress..... : Building 2, 2nd Floor, Baidi Zhigu Science and Technology
Innovation Park, No.263 Chang'an Avenue, Shatian Town,
Huiyang District, Huizhou City, Guangdong, China

Telephone..... : /

Fax..... : /

Test Result**Positive**

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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Revision History

Revision	Issue Date	Revision Content	Revised By
000	August 12, 2024	Initial Issue	--





1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	: SwitchBot Air Purifier Table
Test Model	: W5302310
Additional Model No.	: W5302311, W5302312, W5302313, W5302314, W5302315
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: For Adapter Model: CZH072240300EUWV For Adapter: Input:100-240V~, 50/60Hz, 1.5A Max Output: 24.0V=3.0A, 72.0W For Adapter Model: HA072240300EUW Input:100-240V~, 50/60Hz, 2.0A Max Output: 24.0V=3.0A, 72.0W
Hardware Version	: /
Software Version	: /
Bluetooth	:
Frequency Range	: 2402MHz ~ 2480MHz
Channel Number	: 40 channels for Bluetooth V4.2 (BT LE)
Channel Spacing	: 2MHz for Bluetooth V4.2 (BT LE)
Modulation Type	: GFSK for Bluetooth V4.2 (BT LE)
Bluetooth Version	: V4.2
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
WIFI(2.4G Band)	:
Frequency Range	: 2412MHz ~ 2472MHz
Channel Spacing	: 5MHz
Channel Number	: 13 Channel for 20MHz bandwidth(2412~2472MHz) 9 channels for 40MHz bandwidth(2422~2462MHz)
Modulation Type	: 802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	: PCB Antenna, 2.22dBi(Max.)
Wireless Charging	:
Operating Frequency	: 110.0~205.0KHz
Modulation Type	: ASK
Antenna Type	: Coil Antenna



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1.2. Objective

According to its specifications, the EUT must comply with the requirements of the following standards:

EN IEC 62311: 2020–Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

1.3. Test Methodology

All measurements contained in this report were conducted with EN IEC 62311: 2020.

1.4. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

1.5. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen CHANZEHO Technology Co.,Limited.	SWITCHING ADAPTER	CZH07224030 0EUWV	--	CE
Zhejiang Huaguan Power Technology Co.,Ltd.	SWITCHING POWER SUPPLY	HA072240300 EUW	--	CE
Huawei	Mobile phone	FRD-AL10	FRD-AL10C0 0B373	CE

Note: The Mobile phone is supplied by lab and only use tested.

1.6. External I/O

I/O Port Description	Quantity	Cable
Power Port	1	N/A



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1.7. Equipment

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

1.8. Measurement Uncertainty (95% confidence levels, k=2)

Test Item		Uncertainty
Radio Frequency	:	0.9×10^{-4}
Total RF Power, Conducted	:	1.0 dB
RF Power Density, Conducted	:	1.8 dB
Spurious Emissions, Conducted	:	1.8 dB
All Emissions, Radiated	:	3.1 dB
Temperature	:	0.5°C
Humidity	:	1 %
DC And Low Frequency Voltages	:	1 %



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2.HUMAN EXPOSURE TO THE ELECTROMAGNETIC FIELDS

2.1 Basic Restrictions Reference levels

Council Recommendation 1999/519/EC Annex III

Basic restrictions for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	Magnetic flux density (mT)	Current density (Ma/m ²) (rms)	Whole body average SAR (W/kg)	Localised SAR (head and trunk) (W/kg)	Localised SAR (limbs) (W/kg)	Power density (W/m ²)
0Hz	40	-	-	-	-	-
>0-1Hz	-	8	-	-	-	-
1-4Hz	-	8/f	-	-	-	-
4-1000Hz	-	2	-	-	-	-
1000Hz-100kHz	-	f/500	-	-	-	-
100kHz-10MHz	-	f/500	0.08	2	4	-
10MHz-10GHz	-	-	0.08	2	4	-
10-300GHz	-	-	-	-	-	10

Note:

1. f is the frequency in Hz.
2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.
3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1cm² perpendicular to the current direction.
4. For frequencies up to 100 kHz, peak current density values can be obtained by multiplying the rms value by $\sqrt{2}$ (=1.414). For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as $f=1/(2tp)$.
5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.
6. All SAR values are to be averaged over any six-minute period.
7. Localised SAR averaging mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a contiguous mass of tissue, it is recognised that this concept can be used in computational dosimetry but may present difficulties for direct physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dosimetric quantities have conservation values relative to the exposure guidelines.



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8. For pulses of duration t_p the equivalent frequency to apply in the basic restrictions should be calculated as $f=1/(2t_p)$. Additionally, for pulsed exposures, in the frequency range 0,3 to 10GHz and for localised exposure of the head, in order to limit and avoid auditory effects caused by thermoelastic expansion, an additional basic restriction is recommended. This is that SA should not exceed 2mJ kg⁻¹ averaged over 10g of tissue.

2.2 Reference Levels

Council Recommendation 1999/519/EC Annex III

Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m ²)
0-1Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8Hz	1000	$3,2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25Hz	1000	$4000 / f$	$5000 / f$	-
0.025Hz-0,8kHz	$250 / f$	$4 / f$	$5 / f$	-
0,8-3kHz	$250 / f$	5	6,25	-
3-150kHz	87	5	6,25	-
0,15-1MHz	87	$0,73 / f$	$0,92 / f$	-
1-10MHz	$87 / f^{1/2}$	$0,73 / f$	$0,92 / f$	-
10-400MHz	28	0,073	0,092	2
400-2000MHz	$1,375 f^{1/2}$	$0,0037 f^{1/2}$	$0,0046 f^{1/2}$	$f / 200$
2-300GHz	61	0,16	0,20	10

Note:

1. As indicated in the frequency range column.
2. For frequencies between 100kHz and 10GHz, Seq, E2, H2 and B2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10GHz, Seq, E2, H2 and B2 are to be averaged over any 68/1.05-minute period (.in GHz).
4. No E-field value is provided for frequencies <1Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 20kV/m. Spark discharges causing stress or annoyance should be avoided.



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Council Recommendation 1999/519/EC Annex II

Basic restrictions for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μ T)	Equivalent plane wave power density Seq (W/m ²)
0-1Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8Hz	1000	$3,2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25Hz	1000	$4000/f$	$5000/f$	-
0.025Hz-0,8kHz	$250/f$	$4/f$	$5/f$	-
0,8-3kHz	$250/f$	5	6,25	-
3-150kHz	87	5	6,25	-
0,15-1MHz	87	$0.73/f$	$0.92/f$	-
1-10MHz	$87/f^{1/2}$	$0.73/f$	$0.92/f$	-
10-400MHz	28	0.073	0.092	2
400-2000MHz	$1,375 f^{1/2}$	$0,0037 f^{1/2}$	$0,0046 f^{1/2}$	$f/200$
2-300GHz	61	0,16	0,20	10

Note:

1. f is the frequency in Hz.
2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.
3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1cm² perpendicular to the current direction.
4. For frequencies up to 100 kHz, peak current density values can be obtained by multiplying the rms value by $\sqrt{2}$ (=1.414). For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as $f=1/(2tp)$
5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.
6. All SAR values are to be averaged over any six-minute period.
7. Localised SAR averaging mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a contiguous mass of tissue, it is recognised that this concept can be used in computational dosimetry but may present difficulties for direct physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dosimetric quantities have conservation values relative to the exposure guidelines.



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8. For pulses of duration t_p the equivalent frequency to apply in the basic restrictions should be calculated as $f = 1/(2t_p)$. Additionally, for pulsed exposures, in the frequency range 0,3 to 10GHz and for localised exposure of the head, in order to limit and avoid auditory effects caused by thermoelastic expansion, an additional basic restriction is recommended. This is that SA should not exceed 2mJ kg⁻¹ averaged over 10g of tissue.

Classification of the assessment methods

The antenna of the product, under normal use condition is at least 20cm away from the body of the user. Warning statement on the user for keeping 20cm separation distance and the prohibition of operating to a person has been printed on the user manual. So, this product under normal use is located on electromagnetic far field between the human body.

Far Field Calculation Formula

$$E = \frac{\sqrt{30 \times G \times TP}}{D}$$

Where

G: numerical gain of transmitting antenna;

TP: Transmitted power in watt;

D: distance from the transmitting antenna in meter.



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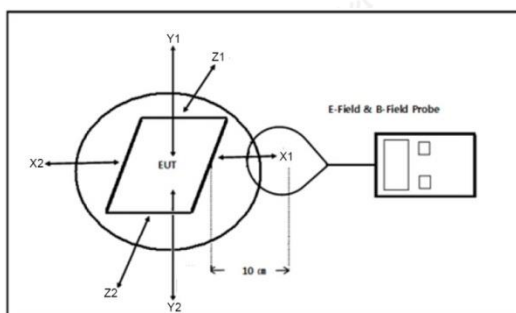
3. RF EXPOSURE EVALUATION

3.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
1	Exposure Level Tester	Narda	ELT-400	N-0713	2023-10-18	2024-10-17
2	B-Field Probe	Narda	ELT-400	M-1154	2023-10-18	2024-10-17

3.2. Block Diagram of Test Setup



*Note:

Position A: Back Side of the EUT

Position B: Left Side of the EUT

Position C: Front Side of the EUT

Position D: Right Side of the EUT

Position E: Top Side of the EUT

Position F: Bottom Side of the EUT

3.3. Test Results

According to the radio test report (LCSA07264213EB; LCSA07264213EC):

Mode	Output Power To Antenna (dBm)	Antenna Gain (dBi)	Minimum Distance in Meter (m)	E-field Strength (V/m)	E-field Strength Limit (V/m)	Result
BT LE	1.65	2.22	0.2	1.35	61.00	Pass
2.4GWIFI	15.72	2.22	0.2	6.83	61.00	Pass

Note:

1. Only record worst case data.

2. All other emissions are too low to read.

This proves that the unit complies with the EN 62311 for RF exposure requirement.



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**H-field Strength Test Result:**

Test condition: Wireless Charging mode

Frequency Range(KHz)	Probe Position Hx1 (A/m)	Probe Position Hx2 (A/m)	Probe Position Hy1 (A/m)	Probe Position Hy2 (A/m)	Probe Position Hz1 (A/m)	Probe Position Hz2 (A/m)	ResultH (A/m)	Limit (A/m)
165.0	0.07	0.08	0.07	0.08	0.06	0.07	0.133	4.242

$$H = \sqrt{H_X^2 + H_Y^2 + H_Z^2} = \sqrt{0.08^2 + 0.08^2 + 0.07^2} \text{ A/m} = 0.133 \text{ A/m}$$

$$\text{Limit} = 0.73 / 0.165 \text{ A/m} = 4.242 \text{ A/m}$$

Note: All test modes have been tested and only record the worst result.

-----THE END OFREPORT-----



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TEST REPORT IEC 60335-2-65 Safety of household and similar electrical appliances Part 2 : Particular requirements for air-cleaning appliances	
Report Number.:	LCSA07294231S
Date of issue	August 20, 2024
Total number of pages.....:	125
Name of Testing Laboratory preparing the Report:	Shenzhen LCS Compliance Testing Laboratory Ltd. Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Applicant's name:	Woan Technology (Shenzhen) Co., Ltd.
Address:	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Test specification:	
Standard:	IEC 60335-2-65:2002, COR1:2004, AMD1:2008, AMD2:2015 in conjunction with IEC 60335-1:2010, COR1:2010, COR2:2011, AMD1:2013, COR1:2014, AMD2:2016, COR1:2016
Test procedure:	Type test
Non-standard test method:	N/A
Test Report Form No.:	IEC60335_2_65L
Test Report Form(s) Originator:	DEKRA Certification B.V.
Master TRF:	Dated 2019-09-24
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General disclaimer: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	





Test item description	SwitchBot Air Purifier Table	
Trade Mark	SwitchBot	
Manufacturer.....	Same as the Applicant	
Model/Type reference.....	W5302310, W5302311, W5302312, W5302313, W5302314, W5302315	
Ratings	For power supply unit1: Input: 100-240V~, 50/60Hz, 1.5A; Output: 24.0V $\overline{\sim}$, 3.0A, 72.0W For power supply unit2: Input: 100-240V~, 50/60Hz, 2.0A; Output: 24.0V $\overline{\sim}$, 3.0A, 72.0W For SwitchBot Air Purifier Table: Input: 24V $\overline{\sim}$, 3A	
Testing procedure and testing location(s):		
Testing Laboratory:	Shenzhen LCS Compliance Testing Laboratory Ltd.	
Testing location/ address:	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China	
Tested by:	Lotus Lin / Test Engineer	
Reviewed by:	Markson Lu / Project Engineer	
Approved by:	Hart Qiu / Technical Manager	
List of Attachments (including a total number of pages in each attachment): Attachment No.1: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Attachment No.2: Product photos		
Summary of testing:		
Tests performed (name of test and test clause): ➤ Electrical safety IEC 60335-2-65:2002, COR1:2004, AMD1:2008, AMD2:2015 in conjunction with IEC 60335-1:2010, COR1:2010, COR2:2011, AMD1:2013, COR1:2014, AMD2:2016, COR1:2016; EN 60335-1: 2012+A11: 2014+A13: 2017+A1: 2019+A14: 2019+A2: 2019+A15: 2021+ A16:2023; EN 60335-2-65:2003+A1: 2008+A11: 2012+A2: 2022+A12: 2022; EN 62233:2008		Testing location: Shenzhen LCS Compliance Testing Laboratory Ltd. Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China



**Summary of compliance with National Differences (List of countries addressed):**

List of countries addressed: National Differences and Group Differences as per CB bulletin. See attachment of National and Group Differences for details

☒ The product fulfils the requirements of EN 60335-1: 2012+A11: 2014+A13: 2017+A1: 2019+A14: 2019+A2: 2019+A15: 2021+ A16:2023; EN 60335-2-65:2003+A1: 2008+A11: 2012+A2: 2022+A12: 2022; EN 62233:2008



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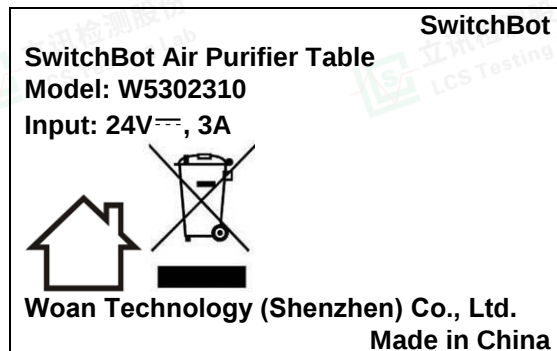
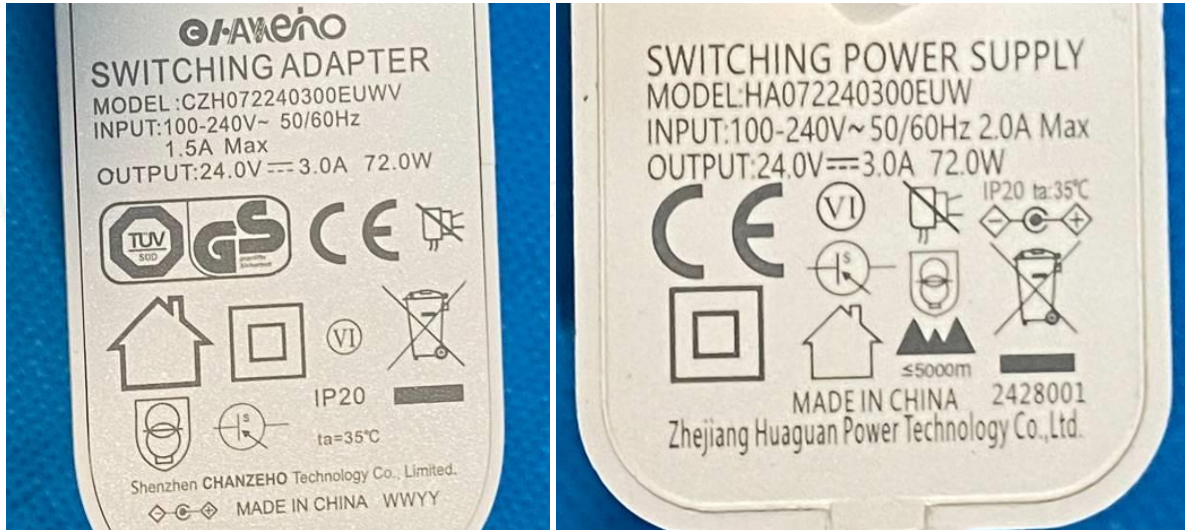
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**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

**Remarks:**

1. The height dimension of CE symbol should not less than 5mm, the height dimension of WEEE symbol should not less than 7mm.
2. All labels are identical except the model name.



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Test item particulars	
Classification of installation and use	Portable appliance, Class II appliance with class III construction
Supply Connection	Direct-in plug (for power supply unit) and DC inlet (for SwitchBot Air Purifier Table)
.....	
Possible test case verdicts:	
- test case does not apply to the test object.....: N/A	
- test object does meet the requirement: P (Pass)	
- test object does not meet the requirement.....: F (Fail)	
Testing	
Date of receipt of test item: 2024-07-29	
Date (s) of performance of tests: From 2024-07-29 to 2024-08-14	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
These marked "*"test clauses are not within the scope of CNAS recognition.	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	Wo'an Technology (Shenzhen) Co., Ltd. Huizhou Branch Building 2, 2nd Floor, Baidi Zhigu Science and Technology Innovation Park, No.263 Chang'an Avenue, Shatian Town, Huiyang District, Huizhou City, Guangdong, China
General product information and other remarks:	
1. The appliance is designed for household and indoor use only. 2. All models are identical except the model name.	



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.101	Appliances are tested as motor-operated appliances. (IEC 60335-2-65)		P
6	CLASSIFICATION		
6.1	Protection against electric shock: Class 0, 0I, I, II, III..... :	Class II appliance with class III construction	P
	For a class III construction with a detachable power supply part the appliance is classified according to the detachable power supply part	Class II appliance with class III construction	P
6.2	Protection against harmful ingress of water	IPX0	N/A
7	MARKING AND INSTRUCTIONS		
7.1	Rated voltage or voltage range (V)..... :	See labels	P
	Symbol for nature of supply, or..... :	See labels	P
	Rated frequency (Hz)..... :	See labels	P
	Rated power input (W), or..... :	See labels	P
	Rated current (A)..... :	See labels	P
	Manufacturer's or responsible vendor's name, trademark or identification mark..... :	See labels	P
	Model or type reference..... :	See labels	P
	Symbol IEC 60417-5172, for class II appliances	 for power supply unit	P
	IP number, other than IPX0..... :	IPX0	N/A
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only, or		N/A
	for appliances powered by rechargeable batteries recharged in the appliance		N/A
	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth		N/A
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	UV radiation air-cleaning appliances containing replaceable UV-C emitters be marked with the type reference of the emitter and with the substance of the following warning: WARNING: UV radiation is dangerous for the eyes and skin. Do not operate the UV-C emitter outside the appliance. (IEC 60335-2-65/A2)		N/A
	If it is intended that replacement of the UV-C emitter can be carried out by the user, the appliance be marked with "Read the instructions" or with symbol ISO 7000-0790 (2004-01). (IEC 60335-2-65/A2)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	100-240V	P
	Different rated values marked with the values separated by an oblique stroke	50/60Hz	P
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		P
	the power input or current are related to the arithmetic mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		P
7.6	Correct symbols used		P
	Symbol for nature of supply placed next to rated voltage		P
	Symbol for class II appliances placed unlikely to be confused with other marking	For power supply unit	P
	Units of physical quantities and their symbols according to international standardized system		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		N/A
	correct mode of connection is obvious		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		--
	- marking of terminals exclusively for the neutral conductor (letter N)		N/A
	- marking of protective earthing terminals (symbol IEC 60417-5019)		N/A
	- marking of functional earthing terminals (symbol IEC 60417-5018)		N/A
	- marking not placed on removable parts		N/A
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means		P
	This applies also to switches which are part of a control		P
	If figures are used, the off position indicated by the figure 0		N/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that:		--
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
	- children being supervised not to play with the appliance		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		P
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A
	it is a battery-operated appliance, the battery being charged outside the appliance		N/A
	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated :		N/A
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only		N/A
	The instructions for UV radiation air-cleaning appliances give details concerning:		--
	– the method, frequency of cleaning, and necessary precautions to be taken (IEC 60335-2-65/A2)		P
	– precautions to be taken when replacing UV-C emitters and starters, if applicable (IEC 60335-2-65/A2)		N/A
	The instructions of appliances containing UV-C emitters contain the substance of the following:		--
	– This appliance contains a UV-C emitter		P
	– Unintended use of the appliance or damage to the housing may result in the escape of dangerous UV-C radiation. UV-C radiation may, even in little doses, cause harm to the eyes and skin (IEC 60335-2-65/A2)		P
	– Appliances that are obviously damaged must not be operated (IEC 60335-2-65/A2)		P
	– If the replacement of the UV-C emitter by the user is not allowed, this must be clearly stated (IEC 60335-2-65/A2)		P
	The instructions of appliances containing replaceable UV-C emitters also contain the substance of the following:		--
	– Read the maintenance instructions before opening the appliance; (IEC 60335-2-65/A2)		N/A
	– The appliance must be disconnected from the supply before replacing the UV-C emitter. (IEC 60335-2-65/A2)		N/A
7.12.1	Sufficient details for installation supplied		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		--
	- dimensions of space		N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		N/A
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		N/A
7.12.8	Instructions for appliances connected to the water mains:		--



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- max. inlet water pressure (Pa) :		N/A
	- min. inlet water pressure, if necessary (Pa) :		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.12.9	Instructions specified in 7.12 and from 7.12.1 to 7.12.8 appear together before any other instructions supplied with the appliance		P
	These instructions may be supplied with the appliance separately from any functional use booklet		N/A
	They may follow the description of the appliance that identifies parts, or follow the drawings/sketches		N/A
	In addition, instructions are also available in an alternative format such as on a website or on request from the user in a format such as a DVD		P
	In addition, instructions are also available in an alternative format such as on a website or in a format such as a DVD :		P
7.13	Instructions and other texts in an official language	English language	P
7.14	Markings clearly legible and durable:		P
	Signal words WARNING, CAUTION, DANGER in uppercase having a height as specified :		N/A
	Uppercase letter of the text explaining the signal word not smaller than 1,6 mm :		N/A
	Moulded in, engraved, or stamped markings either raised above or have a depth below the surface of at least 0,25 mm, unless		N/A
	contrasting colours are used		N/A
	Markings checked by inspection, measurement and rubbing test as specified		P
7.15	Markings on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool		P
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		P
	The symbol IEC 60417-5018 placed next to the symbol IEC 60417-5172 or IEC 60417-5180		N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
8.1	Adequate protection against accidental contact with live parts	For power supply unit	P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Lamps behind a detachable cover not removed, if conditions met		N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
	Use of test probe B of IEC 61032 through openings, with a force of 20N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements or supporting parts		N/A
	For a single switching action obtained by a switching device, requirements as specified		N/A
	For appliances with a supply cord and without a switching device, the single switching action may be obtained by the withdrawal of the plug		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.4	Accessible part not considered live if:		--
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		P
	- or separated from live parts by protective impedance		P
	If protective impedance: d.c. current not exceeding 2 mA, and		P
	a.c. peak value not exceeding 0.7 mA		P
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μ F		P
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μ C		N/A
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
	- The discharge from parts that are only accessible after the removal of a cover for cleaning or other user maintenance is measured 2 s after the cover has been removed. (IEC 60335-2-65/A2)		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		--
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	STARTING OF MOTOR-OPERATED APPLIANCES		
	Requirements and tests are specified in part 2 when necessary		N/A
10	POWER INPUT AND CURRENT		
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 . :	(see appended table)	N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the power input is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated power input is related to the arithmetic mean value		N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 :	(see appended table)	P
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the current is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		P
	the rated current is related to the arithmetic mean value of the range		N/A
11	HEATING		
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described :		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections		P
11.4	Heating appliances operated under normal operation at 1.15 times rated power input (W) :		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V)		P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V)		N/A
11.7	Appliances are operated until steady conditions are established. (IEC 60335-2-65)		P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of Annex C are carried out		N/A
	Sealing compound does not flow out		N/A
	Protective devices do not operate, except		N/A
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
	Addition: NOTE 101 Operation of a current-limiting device in a high-voltage circuit is allowed. (IEC 60335-2-65)		N/A
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times the rated power input (W).....		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times the rated voltage (V)		P
	Protective impedance and radio interference filters disconnected before carrying out the tests	For approved power supply unit	P
13.2	The leakage current is measured by means of the circuit described in Figure 4 of IEC 60990:1999		P
	For class 0I appliances and class I appliances, except parts of class II construction, C may be replaced by a low impedance ammeter		N/A
	Leakage current measurements.....	(see appended table)	P





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4..... :	(see appended table)	P
	No breakdown during the tests		P
*14	TRANSIENT OVERVOLTAGES		
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6..... :	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	MOISTURE RESISTANCE		
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX0	N/A
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		N/A
	No trace of water on insulation which can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529..... :		N/A
	Water valves containing live parts in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N/A
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube, and		N/A
	for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support, and		N/A
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts subjected to the relevant treatment with the main part		N/A
	However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Spillage solution comprising water containing approximately 1 % NaCl and 0,6 % rinsing agent		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts are removed		N/A
	Overfilling test with additional amount of the solution, over a period of 1 min (I)..... :		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
15.3	Appliances proof against humid conditions		P
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part		N/A
	Humidity test for 48 h in a humidity cabinet	93%,30°C,48h	P
	Reassembly of those parts that may have been removed		N/A
	The appliance withstands the tests of clause 16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests	For approved power supply unit	P
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V)		P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by $\sqrt{3}$ (V)		N/A
	Leakage current measurements.....	(see appended table)	P
	Limit values doubled if:		--
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified.....	(see appended table)	P
16.3	Electric strength tests according to table 7	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified.....	(see appended table)	N/A
	No breakdown during the tests		P





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
*16.101	High-voltage transformers must have adequate internal insulation. The duration of the test is ... sec. (IEC 60335-2-65)		N/A
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	(see appended table)	N/A
	Appliance supplied with 1.06 or 0.94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V).....		N/A
	Basic insulation is not short-circuited		N/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
	Temperature of the winding not exceeding the value specified in table 8		N/A
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
*18	ENDURANCE		
	Requirements and tests are specified in part 2 when necessary		N/A
19	ABNORMAL OPERATION		
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe	(see appended table)	P
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		N/A
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N/A
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		P
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N/A
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W) :		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W) :		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures (V)..... :		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		N/A
	locking moving parts of other appliances		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	the capacitor is of class S2 or S3 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed..... :		N/A
	An electronic timer or programmer that operates to ensure compliance with the test before the maximum period under the conditions of Clause 11 is reached, is a protective electronic circuit		N/A
	Other appliances supplied with rated voltage for a period as specified..... :		P
	Winding temperatures not exceeding values specified in table 8..... :	(see appended table)	P
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
	Motor-operated and combined appliances for which 30.2.3 is applicable and that use overload protective devices relying on electronic circuits to protect the motor windings, are also subjected to the test		N/A
	Winding temperatures not exceeding values as specified..... :	(see appended table)	N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V)..... :		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless		P
	they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		N/A
	restarting does not result in a hazard		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		P
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		N/A
	During and after each test the following is checked:		--
	- the temperature of the windings do not exceed the values specified in table 8		P
	- the appliance complies with the conditions specified in 19.13		P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		--
	- the base material of the printed circuit board withstands the test of Annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		--
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		--
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		P
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	they comply with IEC 60384-14		N/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		P
	This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		P
	f) failure of microprocessors and integrated circuits		N/A
	g) failure of an electronic power switching device		N/A
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N/A
19.11.3	If the appliance incorporates a protective electronic circuit that operates to ensure compliance with clause 19, the appliance is tested as specified		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		P
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		P
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		P
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, at frequency ranges specified		P
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		P





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		P
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode		P
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling		N/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		P
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		P
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		P
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N/A
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)..... :		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9	(see appended table)	P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		--
	- basic insulation (V)		N/A
	- supplementary insulation (V)		N/A
	- reinforced insulation (V)	3000V (for power supply unit)	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		N/A
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		--
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		--
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		N/A
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N/A
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		N/A
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
20	STABILITY AND MECHANICAL HAZARDS		
20.1	Appliances having adequate stability		P
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn		P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		P
	Protective enclosures, guards and similar parts are non-detachable, and		P
	have adequate mechanical strength		P
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		N/A
	Not possible to touch dangerous moving parts with the test probe described		P
21	MECHANICAL STRENGTH		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J	(see appended table)	P
	The appliance shows no damage impairing compliance with this standard, and		P
	compliance with 8.1, 15.1 and clause 29 not impaired		P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
	If necessary, repetition of groups of three blows on a new sample		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		P
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		N/A
22	CONSTRUCTION		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX0	N/A
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		--
	- a supply cord fitted with a plug, or		N/A
	- a switch complying with 24.3, or		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		N/A
	- an appliance inlet		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating, unless		N/A
	rotating does not impair compliance with this standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
22.5	No risk of electric shock when touching pins, for appliances having a capacitor with rated capacitance equal to or greater than 0,1 μ F, the appliance being disconnected from the supply at the instant of voltage peak		P
	Voltage not exceeding 34 V (V)		P
	If compliance relies on the operation of an electronic circuit, the electromagnetic phenomena tests of 19.11.4.3 and 19.11.4.4 are applied		N/A
	The discharge test is then repeated three times, voltage not exceeding 34 V (V).....		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		N/A
	Electrical insulation of Class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		N/A
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner, if loosening result in a hazard		N/A
	Removing or fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible, if resulting in a hazard		N/A
	A choking hazard does not apply to appliances for commercial use		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
	If the part is removed and can be contained within the small parts cylinder, it is considered to be a choking hazard		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded	No storage hooks	N/A
*22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts	No automatic cord	N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No such spacers	N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion		P
22.19	Driving belts not relied upon to provide the required level of insulation, unless		N/A
	constructed to prevent inappropriate replacement		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		N/A
	material used is non-corrosive, non-hygroscopic and non-combustible		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless		P
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		P
22.27	Parts connected by protective impedance separated by double or reinforced insulation	For approved power supply unit	P





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or	For approved power supply unit	N/A
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		N/A
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear	For approved power supply unit	N/A
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		N/A
*22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29	For approved power supply unit	N/A
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	unearthed metal parts separated from live parts by basic insulation only		N/A
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		N/A
	the shaft is not accessible when the part is removed		N/A
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances and cordless appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N/A
	the capacitors comply with 22.42		P
22.38	Capacitors not connected between the contacts of a thermal cut-out	For power supply unit	P
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N/A
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components	For approved power supply unit	P
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		P
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		P
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		P
*22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N/A
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N/A
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N/A
	No leakage from any part, including any inlet water hose		N/A
*22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		--
	- continuously, or		N/A
	- automatically, or		N/A
	- remotely		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.53	Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts		N/A
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless		N/A
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously		N/A
22.55	Devices operated to stop the intended function of the appliance, if any, are to be distinguished from other manual devices by means of shape, size, surface texture or position		P
	The requirement concerning position does not preclude use of a push on push off switch		P
	An indication when the device has been operated is given by:		--
	– tactile feedback from the actuator or from the appliance, or		P
	– reduction in heat output; or		N/A
	– audible and visible feedback		P
22.56	Detachable power supply part provided with the part of class III construction		P
22.57	The properties of non-metallic materials do not degrade from exposure to UV-C radiation, as specified in Annex T		N/A
	This requirement does not apply to glass, ceramics or similar materials		N/A
22.101	Appliance has no openings on the underside that would allow small items to penetrate and touch live parts. (IEC 60335-2-65)		P
22.102	Interlock switches preventing access to live parts during user maintenance are connected in the input circuit and preventing unintentional operation. (IEC 60335-2-65)		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
22.103	UV radiation air-cleaning appliances not emit UV radiation in hazardous amounts: – before, during or after installation; – during operation; – during maintenance; – during cleaning; – during replacement of the UV-C emitter. (IEC 60335-2-65/A2)		P
22.104	If the replacement of the UV-C emitter is allowed by the user, the appliance be constructed so that: – the replacement of the UV-C emitter is easily possible; – if screws or components are omitted or incorrectly positioned or fastened, the appliance is rendered inoperable or manifestly incomplete; – the UV-C emitter is deactivated by an interlock actuated by opening or removing of a part to gain access. (IEC 60335-2-65/A2)		N/A
22.105	If the replacement of the UV-C emitter by the user is not intended, this be prevented by the construction of the appliance. (IEC 60335-2-65/A2)		P
22.106	Parts of organic material that are exposed to direct or reflected UV-C radiation be UV-C resistant. (IEC 60335-2-65/A2)		P
23	INTERNAL WIRING		
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well-rounded or provided with bushings		N/A
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use, or		N/A
	100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10% of the strands of any conductor broken, and		N/A
	not more than 30% for wiring supplying circuits that consume no more than 15W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N/A
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,		N/A
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.		N/A
	A single layer of internal wiring insulation does not provide reinforced insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		N/A
	be such that it can only be removed by breaking or cutting		N/A
23.7	The colour combination green/yellow only used for earthing conductors		N/A
23.8	Aluminium wires not used for internal wiring		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A
24	COMPONENTS		
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components :	(see appended table)	P
	Motors not required to comply with IEC 60034-1, they are tested as part of the appliance		P
	Relays tested as part of the appliance, or		N/A
	alternatively acc. to IEC 60730-1, and meeting the additional requirements in IEC 60335-1		N/A
	The requirements of Clause 29 apply between live parts of components and accessible parts of the appliance		P
	Components can comply with the requirements for clearances and creepage distances for functional insulation in the relevant component standard		P
	30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections		P
	Components that have not been previously tested to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2		P
	Components that have been previously tested to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided the specified conditions are met		P
	If these conditions are not satisfied, the component is tested as part of the appliance.		P
	Power electronic converter circuits not required to comply with IEC 62477-1, they are tested as part of the appliance		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		N/A
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, comply with IEC 60384-14	Certified power supply unit used.	P
	If the capacitors have to be tested, they are tested according to Annex F		N/A
24.1.2	Transformers in associated switch mode power supplies comply with Annex BB of IEC 61558-2-16	Certified power supply unit used.	P
	Safety isolating transformers comply with IEC 61558-2-6		N/A
	If they have to be tested, they are tested according to Annex G		N/A
24.1.3	Switches comply with IEC 61058-1, the number of cycles of operation being at least 10 000		N/A
	If they have to be tested, they are tested according to Annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	If the switch only operates a motor starting relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested		N/A
*	Interlock switches are operated 1 000 times. (IEC 60335-2-65)		N/A
24.1.4	Automatic controls comply with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		--
	- thermostats:	10 000	N/A
	- temperature limiters:	1 000	N/A
	- self-resetting thermal cut-outs:	300	N/A
	- voltage maintained non-self-resetting thermal cut-outs:	1 000	N/A
	- other non-self-resetting thermal cut-outs:	30	N/A
	- timers:	3 000	N/A
	- energy regulators:	10 000	N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N/A
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N/A
	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9		N/A
24.1.5	Appliance couplers comply with IEC 60320-1		N/A
	However, for class II appliances classified higher than IPX0, the appliance couplers comply with IEC 60320-2-3		N/A
	Interconnection couplers comply with IEC 60320-2-2		N/A
24.1.6	Small lamp holders similar to E10 lampholders comply with IEC 60238, the requirements for E10 lampholders being applicable		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		N/A
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance		N/A
24.2	Appliances not fitted with:		--
	- switches, automatic controls or power supplies in flexible cords		P
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	- thermal cut-outs that can be reset by soldering, unless		P
	the solder has a melting point of at least 230 °C		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		N/A
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of Annex I		N/A
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		N/A
	One or more of the following conditions are to be met:		--
	- the capacitors are of class S2 or S3 according to IEC 60252-1		N/A
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
24.101	Interlock switches that prevent access to live parts during user maintenance: (IEC 60335-2-65)		--
	– disconnect all poles, unless the secondary circuit is supplied through an isolating transformer;		N/A
	– have a contact separation that provides full disconnection in accordance with IEC 61058-1.		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		--
	- supply cord fitted with a plug, the current rating and voltage rating of the plug being not less than the corresponding ratings of its associated appliance		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N/A
	- pins for insertion into socket-outlets	For approved power supply unit	P
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		--
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm)		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N/A
25.5	Method for assembling the supply cord to the appliance:		--



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- type X attachment		N/A
	- type Y attachment		N/A
	type Z attachment is allowed for appliances not exceeding 3 kg. (IEC 60335-2-65)		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord		N/A
25.7	Supply cords, other than for class III appliances, being one of the following types:		--
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		--
	light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg		N/A
	ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		--
	heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg		N/A
	heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances		N/A
	- halogen-free, low smoke, thermoplastic insulated and sheathed		--
	light duty halogen-free low smoke flexible cable (62821 IEC 101) for circular cable and (62821 IEC 101f) for flat cable		N/A
	Ordinary duty halogen-free low smoke flexible cable (62821 IEC 102) for circular cable and (62821 IEC 102f) for flat cable		N/A
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm ²)..... :		N/A
25.9	Supply cords not in contact with sharp points or edges		N/A
25.10	Supply cord of class I appliances have a green/yellow core for earthing		N/A
	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue		N/A
	Where additional neutral conductors are provided in the supply cord:		--
	– other colours may be used for these additional neutral conductors;		N/A
	– all of the neutral conductors and line conductors are identified by marking using the alpha numeric notation specified in IEC 60445		N/A
	– the supply cord is fitted to the appliance		N/A
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N/A
25.13	Inlet openings so constructed as to prevent damage to the supply cord		N/A
	If it is not evident that the supply cord can be introduced without risk of damage, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Flexing test, as described:		--
	- applied force (N)..... :		N/A
	- number of flexings..... :		N/A
	The test does not result in:		--



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		N/A
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		N/A
	Pull and torque test of supply cord:		--
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm)..... :		N/A
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)..... :		N/A
	Cord not damaged and max. 2 mm displacement of the cord		N/A
25.16	Cord anchorages for type X attachments constructed and located so that:		--
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of supply cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N/A
	they are separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	it is part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N/A
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N/A
	failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for class II appliances they are of insulating material, or		N/A
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance		N/A
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	Constructed so that the cord can only be fitted with the aid of a tool		N/A
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts		N/A
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		--
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N/A
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets:		--
	- live parts not accessible during insertion or removal		N/A
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		--
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		N/A
	- the thickness of the insulation may be reduced		N/A
	- for class I or class II appliance with class III construction, the cross sectional areas of the conductors need not comply with 25.8 if specified conditions are met		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N/A
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminals only accessible after removal of a non-detachable cover, except		P
	for class III appliances that do not contain live parts		N/A
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N/A
26.2	Appliances with type X attachment and appliances for the connection of cables of fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless		N/A
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		N/A
	Terminals fixed so that when the clamping means is tightened or loosened:		--
	- the terminal does not become loose		N/A
	- internal wiring is not subjected to stress		N/A
	- neither clearances nor creepage distances are reduced below the values in clause 29		N/A
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm)..... :		N/A
	No deep or sharp indentations of the conductors		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N/A
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²)..... :		N/A
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless		N/A
	conductors ends fitted with means suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	For Class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	PROVISION FOR EARTHING		
27.1	Accessible metal parts of Class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		N/A
	Earthing terminals and earthing contacts not connected to the neutral terminal		N/A
	Class 0, II and III appliances have no provision for protective earthing	Class II appliance.	P
	Class II appliances and class III appliances can incorporate an earth for functional purposes		N/A
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits		N/A
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		N/A
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm ² , and		N/A
	- do not provide earthing continuity between different parts of the appliance, and		N/A
	- conductors cannot be loosened without the aid of a tool		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part		N/A
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		N/A
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		N/A
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 μm		N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		N/A
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω)		N/A
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
28	SCREWS AND CONNECTIONS		
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		N/A
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		N/A
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
	This requirement does not apply to electrical connections in circuits of appliances for which:		--
	30.2.2 is applicable and that carry a current not exceeding 0,5 A		N/A
	30.2.3 is applicable and that carry a current not exceeding 0,2 A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		--
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N/A
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		N/A
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies		N/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation		P





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless	(see appended table)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		P
	For appliances intended for use at altitudes exceeding 2 000 m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1		N/A
	Impulse voltage test is not applicable:		--
	- when the microenvironment is pollution degree 3, or		P
	- for basic insulation of class 0 and class 01 appliances, or		N/A
	- to appliances intended for use at altitudes exceeding 2 000 m		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		N/A
	The values of table 16 or the impulse voltage test of clause 14 are applicable	(see appended table)	N/A
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		N/A
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16	(see appended table)	N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage..... :	(see appended table)	N/A
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		N/A
29.1.4	Clearances for functional insulation are the largest values determined from:		P
	- table 16 based on the rated impulse voltage..... :	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N/A
	the microenvironment is pollution degree 3, or		N/A
	the distances can be affected by wear, distortion, movement of the parts or during assembly		N/A
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Lacquered conductors of windings considered to be bare conductors		P
	However, clearances at crossover points are not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		--
	- table 16 based on the rated impulse voltage..... :		N/A
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or Clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree	(see appended table)	P
	Pollution degree 2 applies, unless		N/A
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		P
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		N/A
29.2.1	Creepage distances of basic insulation not less than specified in table 17	(see appended table)	N/A
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or.....	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or.....	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		N/A
	Compliance checked:		--
	- by measurement, in accordance with 29.3.1, or	For approved power supply unit	N/A
	- by an electric strength test in accordance with 29.3.2, or	For approved power supply unit	N/A
	- for insulation, other than single layer internal wiring insulation, by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
29.3.1	Supplementary insulation have a thickness of at least 1 mm		N/A
	Reinforced insulation have a thickness of at least 2 mm		N/A
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19		N/A
30	RESISTANCE TO HEAT AND FIRE		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		N/A
	parts of thermoplastic material providing supplementary or reinforced insulation		N/A
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)	(see appended table 30.1)	P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Parts supporting live parts tested at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C)..... :	(see appended table 30.1)	N/A
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)..... :	(see appended table 30.1)	N/A
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to:		--
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		P
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		P
	Compliance checked by the test of 30.2.1, and in addition:		P
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P
	For appliances for remote operation, 30.2.3 applies		N/A
	For base material of printed circuit boards, 30.2.4 applies		P
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550°C	(see appended table 30.2)	P
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.2	Appliances operated while attended. Not applicable. (IEC 60335-2-65)		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	The tests are not applicable to conditions as specified..... :		N/A
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C	(see appended table 30.2)	P
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C		N/A
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with appropriate severity level:	(see appended table 30.2)	--
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		P
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications:		--
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	• 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	• 675 °C, for other connections		N/A
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		N/A
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		--





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The consequential needle-flame test of Annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		--
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N/A
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of Annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		--
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of Annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E	(see appended table 30.2/30.2.4)	N/A
	Test not applicable to conditions as specified :	PCB: V-0	P
31	RESISTANCE TO RUSTING		





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Relevant ferrous parts adequately protected against rusting		P
	Tests specified in part 2 when necessary		N/A
*32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
32.101	The ozone concentration produced by air-cleaning appliances is not excessive and does not exceed 5×10^{-6} percent (IEC 60335-2-65/A2)		N/A
	Highest ozone percentage measured..... :		N/A
32.102	Appliances do not emit radiation in hazardous amount (IEC 60335-2-65/A2)		N/A
	Total irradiance measured for wavelength 200 – 280 nm..... :		N/A
	Spectral irradiance measured..... :		N/A
	Total irradiance measured for wavelength 250 – 400 nm..... :		N/A
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		
	Description of routine tests to be carried out by the manufacturer		P
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE		
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	Three forms of construction covered:		--
	a) Appliance supplied directly from the supply mains or a renewable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance		N/A
	b) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery		N/A
	c) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit		N/A
3.1.9	Appliance operated under the following conditions:		--





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage (V) and polarity of the terminals..... :		N/A
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N/A
	Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181 and its type reference along with symbol ISO 7000-0790 (2004-01), or		N/A
	use only with <model designation> supply unit :		N/A
7.6	Additional symbols		N/A
7.12	The instructions give information regarding charging		N/A
	Instructions for appliances incorporating batteries intended to be replaced by the user include required information		N/A
	Instructions for appliances containing non-user-replaceable batteries state the substance of the following:		--
	This appliance contains batteries that are only replaceable by skilled persons		N/A
	Instructions for appliances containing non-replaceable batteries shall state the substance of the following:		--



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	This appliance contains batteries that are non-replaceable		N/A
	For appliances intending to be supplied from a detachable supply unit for the purposes of recharging the battery, the type reference of the detachable supply unit is stated along with the following:		--
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		N/A
	If the symbol for detachable supply unit is used, its meaning is explained		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
	The type reference of the detachable supply unit is placed in close proximity to the symbol		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period stated in the instructions or 24 h		N/A
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K)		N/A
	If no limit specified, the temperature rise does not exceed 20 K; measured (K)		N/A
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		N/A
19.10	Not applicable		N/A
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N/A
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A
19.13	The battery does not rupture or ignite		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		--
	- 100, if the mass of the part does not exceed 250 g (g)		N/A
	- 50, if the mass of the part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
	Test conditions as specified		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard		N/A
	Test conditions as specified		N/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		--
7	Severities		--
	The duration of application of the test flame is 30 s ± 1 s		N/A
9	Test procedure		--





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1		N/A
9.2	The first paragraph does not apply		N/A
	If possible, the flame is applied at least 10 mm from a corner		N/A
9.3	The test is carried out on one specimen		N/A
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		--
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A
F	ANNEX F (NORMATIVE) CAPACITORS		
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		--
1.5	Terms and definitions		--
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		--
	Items a) and b) are applicable		N/A
3.4	Approval testing		--
3.4.3.2	Table 3 is applicable as described		N/A
4.1	Visual examination and check of dimensions		--
	This subclause is applicable		N/A
4.2	Electrical tests		--
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table 11 is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
4.12	Damp heat, steady state		--
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		--
	This subclause is applicable		N/A
4.14	Endurance		--
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 are applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	No visible damage		N/A
4.17	Passive flammability test		--
	This subclause is applicable		N/A
4.18	Active flammability test		--
	This subclause is applicable		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		
	The following modifications to this standard are applicable for safety isolating transformers:		--
7	Marking and instructions		--
7.1	Transformers for specific use marked with:		--
	-name, trademark or identification mark of the manufacturer or responsible vendor..... :		N/A
	-model or type reference :		N/A
17	Overload protection of transformers and associated circuits		--
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		--
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		--
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		N/A
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		N/A
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		N/A
H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified below:		--
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		--
	Switches are not required to be marked		N/A
	However, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		--
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		N/A
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		--
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless		N/A
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335..... :		N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Switches for operation under no load and which can be operated only by a tool, and		N/A
	switches operated by hand that are interlocked so that they cannot be operated under load,		N/A
	are not subjected to the tests		N/A
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N/A
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K)..... :		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		--
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection		N/A
	It is also applicable to creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in Table 24		N/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		--
8	Protection against access to live parts		--
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		--
11.3	The temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
11.8	The temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		--



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
16.3	Insulation between live parts of the motor and its other metal parts is not subjected to the test		N/A
19	Abnormal operation		--
19.1	The tests of 19.7 to 19.9 are not carried out		N/A
19.1.101	Appliance operated at rated voltage with each of the following fault conditions:		--
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		--
22.1.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		--
5.7	Conditioning of the test specimens		--
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		--
	The test is carried out at -25 °C		N/A
5.7.3	Rapid change of temperature		--
	Severity 1 is specified		N/A
5.9	Additional tests		--
	This subclause is not applicable		N/A
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		
	Information for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		--
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		--





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		N/A
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		P
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		P
7	Test apparatus		--
7.3	Test solutions		--
	Test solution A is used		P
10	Determination of proof tracking index (PTI)		--
10.1	Procedure		--
	The proof voltage is 100V, 175V, 400V or 600V .. :	175V	P
	The test is carried out on five specimens		P
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		P
10.2	Report		--
	The report states if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N/A
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN TROPICAL CLIMATES		



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332		--
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332, if liable to be connected to a supply mains that excludes the protective earthing conductor		--
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N/A
7.1	The appliance marked with symbol IEC 60417-6332		N/A
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a tropical climate, but may also be used in other countries		N/A
	If symbol IEC 60417-6332 is used, its meaning is explained		N/A
11.8	The values of Table 3 are reduced by 15 K		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15.3	The value of t is 37 °C		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA (mA):		N/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		
	Description of tests for appliances incorporating electronic circuits		P
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex		--
R.1	Programmable electronic circuits using software		--



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Clause	Requirement + Test	Result - Remark	Verdict
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 constructed so that the software does not impair compliance with the requirements of this standard		N/A
R.2	Requirements for the architecture		--
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 use measures to control and avoid software-related faults/errors in safety-related data and safety-related segments of the software		N/A
R.2.1.1	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.2 have one of the following structures:		--
	- single channel with periodic self-test and monitoring		N/A
	- dual channel (homogenous) with comparison		N/A
	- dual channel (diverse) with comparison		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 have one of the following structures:		--
	- single channel with functional test		N/A
	- single channel with periodic self-test		N/A
	- dual channel without comparison		N/A
R.2.2	Measures to control faults/errors		--
R.2.2.1	When redundant memory with comparison is provided on two areas of the same component, the data in one area is stored in a different format from that in the other area		N/A
R.2.2.2	Programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.2 and that use dual channel structures with comparison, have additional fault/error detection means for any fault/errors not detected by the comparison		N/A
R.2.2.3	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, means are provided for the recognition and control of errors in transmissions to external safety-related data paths		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate		N/A
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, detection of a fault/error occur before compliance with clause 19 is impaired		N/A
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions		N/A
R.2.2.7	Labels used for memory locations are unique		N/A
R.2.2.8	The software is protected from user alteration of safety-related segments and data		N/A
R.2.2.9	Software and safety-related hardware under its control is initialized and terminates before compliance with clause 19 is impaired		N/A
R.3	Measures to avoid errors		--
R.3.1	General		--
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		--
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1		N/A
R.3.2	Specification		--
R.3.2.1	Software safety requirements:	Software Id:	N/A
	The specification of the software safety requirements includes the descriptions listed		N/A
R.3.2.2	Software architecture		--



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Clause	Requirement + Test	Result - Remark	Verdict
R.3.2.2.1	The specification of the software architecture includes the aspects listed - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data	Document ref. No:	N/A
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis		N/A
R.3.2.3	Module design and coding		--
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules		N/A
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements		N/A
R.3.2.3.2	Software code is structured		N/A
R.3.2.3.3	Coded software is validated against the module specification by static analysis		N/A
	The module specification is validated against the architecture specification by static analysis		N/A
R.3.3.3	Software validation		--
	The software is validated with reference to the requirements of the software safety requirements specification		N/A
	Compliance is checked by simulation of:		--
	- input signals present during normal operation		N/A
	- anticipated occurrences		N/A
	- undesired conditions requiring system action		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE R.1 ^e – GENERAL FAULT/ERROR CONDITIONS						
Component ^a	Fault/error	Acceptable measures ^{b, c}	Definitions	Document reference for applied measure	Document reference for applied test	Verdict
1 CPU						N/A
1.1 Registers	Stuck at	Functional test, or periodic self-test using either: - static memory test, or - word protection with single bit redundancy	H.2.16.5 H.2.16.6 H.2.19.6 H.2.19.8.2			N/A
1.2 VOID						N/A
1.3 Programme counter	Stuck at	Functional test, or Periodic self-test, or Independent time-slot monitoring, or Logical monitoring of the programme sequence	H.2.16.5 H.2.16.6 H.2.18.10.4 H.2.18.10.2			N/A
2 Interrupt handling and execution	No interrupt or too frequent interrupt	Functional test, or time-slot monitoring	H.2.16.5 H.2.18.10.4			N/A
3 Clock	Wrong frequency (for quartz synchronized clock: harmonics/sub-harmonics only)	Frequency monitoring, or time slot monitoring	H.2.18.10.1 H.2.18.10.4			N/A
4. Memory						N/A
4.1 Invariable memory	All single bit faults	Periodic modified checksum, or multiple checksum, or word protection with single bit redundancy	H.2.19.3.1 H.2.19.3.2 H.2.19.8.2			N/A



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Clause	Requirement + Test		Result - Remark			Verdict
4.2 Variable memory	DC fault	Periodic static memory test, or word protection with single bit redundancy	H.2.19.6 H.2.19.8.2			N/A
4.3 Addressing (relevant to variable and invariable memory)	Stuck at	Word protection with single bit redundancy including the address	H.2.19.8.2			N/A
5 Internal data path	Stuck at	Word protection with single bit redundancy	H.2.19.8.2			N/A
5.1 VOID						N/A
5.2 Addressing	Wrong address	Word protection with single bit redundancy including the address	H.2.19.8.2			N/A
6 External communicat ion	Hamming distance 3	Word protection with multi-bit redundancy, or CRC – single work, or Transfer redundancy, or Protocol test	H.2.19.8.1 H.2.19.4.1 H.2.18.2.2 H.2.18.14			N/A
6.1 VOID						N/A
6.2 VOID						N/A
6.3 Timing	Wrong point in time Wrong sequence	Time-slot monitoring, or scheduled transmission Time-slot and logical monitoring, or comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator Logical monitoring, or time-slot monitoring, or Scheduled transmission	H.2.18.10.4 H.2.18.18 H.2.18.10.3 H.2.18.15 H.2.18.3 H.2.18.10.2 H.2.18.10.4 H.2.18.18			N/A



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IEC 60335-2-65						
Clause	Requirement + Test			Result - Remark		Verdict
7 Input/output periphery	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N/A
7.1 VOID						N/A
7.2 Analog I/O						N/A
7.2.1 A/D and D/A- converter	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N/A
7.2.2 Analog multiplexer	Wrong addressing	Plausibility check	H.2.18.13			N/A
8 VOID						N/A
9 Custom chips ^d e.g. ASIC, GAL, gate array	Any output outside the static and dynamic functional specificatio n	Periodic self-test	H.2.16.6			N/A

NOTE A Stuck-at fault model denotes a fault model representing an open circuit or a non-varying signal level. A DC fault model denotes a stuck-at fault model incorporating short circuit between signal lines.

- a) For fault/error assessment, some components are divided into their sub-functions.
b) For each sub-function in the table, the Table R.2 measure will cover the software fault/error.
c) Where more than one measure is given for a sub-function, these are alternatives.
d) To be divided as necessary by the manufacturer into sub-functions.
e) Table R.1 is applied according to the requirements of R.1 to R.2.2.9 inclusive.

S	ANNEX S (NORMATIVE) BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE			
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or			N/A
	rechargeable batteries (secondary batteries) that are not recharged in the appliance			N/A
5.8.1	If the supply terminals for the connection of the battery have no indication of polarity, the more unfavourable polarity is applied			N/A



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IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
5.S.101	Appliances intended for use with a battery box are tested with the battery box supplied with the appliance or with the battery box recommended in the instructions		N/A
5.S.102	Appliances are tested as motor-operated appliances.		N/A
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless :		N/A
	the polarity is irrelevant		N/A
	Appliances also marked with:		--
	– name, trade mark or identification mark of the manufacturer or responsible vendor..... :		N/A
	– model or type reference..... :		N/A
	– IP number according to degree of protection against ingress of water, other than IPX0... :		N/A
	– type reference of battery or batteries..... :		N/A
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		N/A
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		N/A
7.6	Additional symbols		N/A
7.12	The instructions contain the following, as applicable:		--
	– the types of batteries that may be used... :		N/A
	– how to remove and insert the batteries		N/A
	– non-rechargeable batteries are not to be recharged		N/A
	– rechargeable batteries are to be removed from the appliance before being charged		N/A
	– different types of batteries or new and used batteries are not to be mixed		N/A
	– batteries are to be inserted with the correct polarity		N/A
	– exhausted batteries are to be removed from the appliance and safely disposed of		N/A
	– if the appliance is to be stored unused for a long period, the batteries are removed		N/A





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
	– the supply terminals are not to be short-circuited		N/A
11.5	Appliances are supplied with the most unfavourable supply voltage between		--
	– 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		N/A
	– 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		N/A
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		N/A
19.1	The tests are carried out with the battery fully charged unless otherwise specified		N/A
19.13	The battery does not rupture or ignite		N/A
19.S.101	Appliances are supplied with the voltage specified in 11.5. The supply terminals having an indication of polarity are connected to the opposite polarity, unless		N/A
	such a connection is unlikely to occur due to the construction of the appliance		N/A
19.S.102	For appliances with provision for multiple batteries, one or more of the batteries are reversed and the appliance is operated, if reversal of batteries is allowed by the construction		N/A
25.5	The flexible leads or flexible cord used to connect an external battery or battery box in is connected to the appliance by a type X attachment		N/A
25.13	This requirement is not applicable to the flexible leads or flexible cord connecting external batteries or a battery box with an appliance		N/A
25.S.101	Appliances have suitable means for connection of the battery. If the type of battery is marked on the appliance, the means of connection is suitable for this type of battery		N/A
26.5	Terminal devices in an appliance for the connection of the flexible leads or flexible cord connecting an external battery or battery box are so located or shielded that there is no risk of accidental connection between supply terminals		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		N/A
	the battery is shielded by a barrier that meets the needle flame test of Annex E, or		N/A
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
T	ANNEX T (NORMATIVE) UV-C RADIATION EFFECT ON NON-METALLIC MATERIALS		
	Requirements for non-metallic materials subject to direct or reflected UV-C radiation exposure and whose mechanical and electrical properties are relied upon for compliance with the		N/A
	Does not apply to glass, ceramic and similar materials		N/A
	Tested as specified in ISO 4892-1 and ISO 4892-2, with the following modifications:		--
	Modifications to ISO 4892-1:		--
5.1.6	The UV-C emitter is a low pressure mercury lamp with a quartz envelope having a continuous spectral irradiance of 10 W/m ² at 254 nm		N/A
	Subclause 5.1.6.1 and Table 1 are not applicable		N/A
5.2.4	The black-panel temperature shall be 63 °C +/- 3 °C		N/A
5.3.1	Humidification of the chamber air is specified in part 2 when necessary		N/A
9	This clause is not applicable		N/A
	Modifications to ISO 4892-2:		--
7.1	At least three test specimens are tested		N/A
	Ten samples of internal wiring is tested		N/A
7.2	The specimens are attached to the specimen holders such that they are not subject to any stress		N/A
7.3	Apparatus prepared as specified		N/A
	The test specimens and, if used, the irradiance-measuring instrument are exposed for 1 000 h		N/A
7.4	If used, a radiometer is mounted and calibrated such that it measures the irradiance at the exposed surface of the test specimen		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
7.5	Material properties and test methods for parts providing mechanical support or impact resistance as specified in Table T.1		N/A
	Material properties and test method for electrical insulation of internal wiring as specified in Table T.2		N/A
8	This clause is not applicable		N/A
AA	ANNEX AA (NORMATIVE) UV radiation conditioning		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation					N/A
Input deviation of/at:	P rated (W)	P measured (W)	ΔP	Required ΔP	Remark	
--	--	--	--	--	--	--
Supplementary information:						

10.2	TABLE: Current deviation					P
Current deviation of/at:	I rated (A)	I measured (A)	ΔI	Required ΔI	Remark	
100Vac, 50Hz	1.5	0.54	-64.0%	+20%	Test with power supply unit (for power supply unit model CZH07224030 0EUWV)	
240Vac, 50Hz	1.5	0.28	-81.3%	+20%		
100Vac, 60Hz	1.5	0.54	-64.0%	+20%		
240Vac, 60Hz	1.5	0.28	-81.3%	+20%		
100Vac, 50Hz	2.0	0.60	-70.0%	+15%	Test with power supply unit (for power supply unit model HA072240300 EUW)	
240Vac, 50Hz	2.0	0.60	-70.0%	+15%		
100Vac, 60Hz	2.0	0.29	-85.5%	+15%		
240Vac, 60Hz	2.0	0.29	-85.5%	+15%		
24Vdc	3.0	1.2	-60.0%	+15%		
Supplementary information: Recorded the most unfavorable value						

11.8	TABLE: Heating test			P
	Test voltage (V)..... :	1.06x240V		—
	Ambient (°C)..... :	t1=23.1°C, t2=23.4°C		—
Thermocouple locations:		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)	
Power supply unit enclosure		9.1	50	
Pins of appliances for insertion into socket-outlets		6.4	45	
DC inlet		6.1	Cl.30	



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Clause	Requirement + Test	Result - Remark	Verdict
DC motor		22.4	65
Control panel		2.9	60
Internal wire		10.1	T80-25=60
PCB		17.3	T130-25=105
Plastic enclosure, inside		8.6	Cl.30
Plastic enclosure, outside		3.6	65
Test corner		2.2	65
Supplementary information:			

11.8	TABLE: Heating test, resistance method					N/A
	Test voltage (V)..... :		--			—
	Ambient, t1 (°C)..... :		--			—
	Ambient, t2 (°C)..... :		--			—
Temperature rise of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)	Insulation class
--		--	--	--	--	--
Supplementary information:						

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input (W)....:	--	—
	Motor-operated and combined appliances: 1.06 x rated voltage (V):	1.06x240V	—
Leakage current between:		I (mA)	Max. allowed I (mA)
L/N to accessible part of SwitchBot Air Purifier Table / control panel / adapter enclosure		0.005 / 0.005	0.35mA peak
L/N to output terminal		0.142 / 0.144	0.35mA peak
Supplementary information:			

13.3	TABLE: Dielectric strength			P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)	





IEC 60335-2-65			
Clause	Requirement + Test	Result - Remark	Verdict
Live parts to accessible part of SwitchBot Air Purifier Table / control panel / adapter enclosure		3000	No
Live parts to output terminal		3000	No
Supplementary information:			

14	TABLE: Transient overvoltages					N/A
Clearance between:		CI (mm)	Required CI (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)
--		--	--	--	--	--
Supplementary information:						

16.2	TABLE: Leakage current		P
	Single phase appliances: 1.06 x rated voltage (V).....:	1.06x240V	—
	Three phase appliances 1.06 x rated voltage divided by $\sqrt{3}$ (V).....:	--	—
Leakage current between:		I (mA)	Max. allowed I (mA)
L/N to accessible part of SwitchBot Air Purifier Table / control panel / adapter enclosure		0.005	0.25 rms
L/N to output terminal		0.129	0.25 rms
Supplementary information:			

16.3	TABLE: Dielectric strength			P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)	
Live parts to accessible part of SwitchBot Air Purifier Table / control panel / adapter enclosure		3000	No	
Live parts to output terminal		3000	No	
Supplementary information:				

17	TABLE: Overload protection			N/A
Thermocouple locations:		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)	





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Clause	Requirement + Test	Result - Remark	Verdict
--	--	--	--
Supplementary information:			

17	TABLE: Overload protection, resistance method					N/A
	Test voltage (V)..... :	--				—
	Ambient, t1 (°C)..... :	--				—
	Ambient, t2 (°C)..... :	--				—
Temperature of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)
--		--	--	--	--	--
Supplementary information:						

19	Abnormal operation conditions						P
Operational characteristics		YES/NO	Operational conditions				
Are there electronic circuits to control the appliance operation?		Yes	--				
Are there “off” or “stand-by” position?		Yes	--				
The unintended operation of the appliance results in dangerous malfunction?		No	--				
Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result
19.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.7	Lock fan rotor	Pass	N/A	N/A	N/A	N/A	Pass
19.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.11.2	Electronic circuit	No hazard	N/A	N/A	N/A	N/A	Pass



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Clause	Requirement + Test			Result - Remark			Verdict
	abnormality						
19.11.4.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.10X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:							

19.7	TABLE: Abnormal operation, locked rotor/moving parts.					P
	Test voltage (V)..... :	240				—
	Ambient, t1 (°C)..... :	22.5				—
	Ambient, t2 (°C)..... :	22.8				—
Temperature of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)
DC Motor		--	--	26.9	49.7	200
Test corner		--	--	2.3	25.1	150K
Supplementary information:						

19.9	TABLE: Abnormal operation, running overload					N/A
	Test voltage (V)..... :	--				—
	Ambient, t1 (°C)..... :	--				—
	Ambient, t2 (°C)..... :	--				—
Temperature of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)
--		--	--	--	--	--
Supplementary information:						

19.13	TABLE: Abnormal operation, temperature rises			P
Thermocouple locations:		Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)	
See cl.19.7				
Supplementary information:				

21.1	TABLE: Impact resistance			P
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
Three times		Plastic enclosure	0.5	No damage
Supplementary information:				





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Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Power supply unit	Shenzhen Chanzehe Technology Co., Limited	CZH07224030 0EUWV	Input: 100-240V~, 50/60Hz, 1.5A Max; Output: 24.0VDC; 3.0A, 72.0W;	IEC/EN 61558-1 IEC/EN 61558-2-16	SG PSB-SE-00998	
Alt.	Zhejiang Huaguan Power Technology Co., Ltd	HA072240300 EUW	Input: 100-240V~, 50/60Hz, 2.0A Max; Output: 24.0VDC; 3.0A, 72.0W;	IEC/EN 61558-1 IEC/EN 61558-2-16	DE 2-042200	
DC inlet	GD BBJ Electronics. co., Ltd	DC-005 2.5	DC30V 2A, ≤30mΩ	IEC/EN 60335-2-65 IEC/EN 60335-1	Tested with appliance	
PCB	Shenzhen Keshijia Electronics Co Ltd	KSJ-A01, KSJ-A02	V-0, 130°C	UL 796	UL E464917	
Connector on PCB	Wenzhou JKUN Connector Co Ltd	GH, ZH PH, XH, VH	A12501 A1501 A1506 A2001 A2501	UL1977	UL E473017	
Connector on wire	Wenzhou JKUN Connector Co Ltd	GH, ZH PH, XH, VH	A12501 A1501 A1506 A2001 A2501	UL1977	UL E473017	
Internal wire	Xin Sheng Terminal Mfg Ltd	1571 1061	VW-1 80°C 30V 20AWG 22AWG 24AWG 26AWG 28AWG	UL 758	UL E328303	
(Alternative)	Interchangeable	1571 1061	VW-1 80°C 30V 20AWG 22AWG 24AWG 26AWG 28AWG	UL 758	UL	
(Alternative)	Xin Sheng Terminal Mfg Ltd	1007	VW-1 80°C 300V 20AWG 22AWG 24AWG 26AWG 28AWG	UL 758	UL E328303	



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Clause	Requirement + Test		Result - Remark		Verdict
(Alternative)	Interchangeable	1007	VW-1 80°C 300V 20AWG 22AWG 24AWG 26AWG 28AWG	UL 758	UL
Motor	ZHONG SHAN GCHIMAY ELECTRIC APPLIANCE CO.,LTD	G0655KHV 09	1.Phases Poles:3Phases 10Poles 2.Rated voltage: DC24V 3.Rated load torque: 70.16mN·m	IEC/EN 60335-2- 65 IEC/EN 60335-1	Tested with appliance
Wireless charger module	SHENZHEN TOPACE TECHNOLOGY CO.,LTD.	TP-01344A	Input Voltage:9V±10% Output Power:Qi- 5W, Qi-10W,Qi- 15W, Apple 7.5W,Samsung 10W.	IEC/EN 60335-2- 65 IEC/EN 60335-1	Tested with appliance
Plastic enclosure	NINGBO LG YONGXING CHEMICAL CO LTD	HI-121H	ABS; HB	UL 746	UL E203955
Plastic enclosure of platform	LG Chem (Guangzhou) Engineering Plastics Co Ltd	HEMICA	ABS; HB	UL 746	UL E248280
Lamp Cover	CHI MEI CORPORATION	PA-758	ABS; HB	UL 746	UL E56070
Plastic material supporting connector	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AC310(+)	PC/ABS; V-0	UL 746 series	UL E162823
Plastic material supporting motor	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AC310(+)	PC/ABS; V-0	UL 746 series	UL E162823
LED	DONG GUAN GUANGYU INDUSTRY CO.,LTD	GY-5050	Vdd: 5V, FPWM:1.5KHz Iled01: 12mA	EN 62471	BCT0001006 05JN



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Supplementary information:

¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

28.1	TABLE: Threaded part torque test			P
Threaded part identification:		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Fixed enclosure		2.9	II	0.5
Supplementary information:				

29.1	TABLE: Clearances					P
	Overvoltage category : II					—
		Type of insulation:				Verdict / Remark
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	
330	0,2* / 0,5 / 0,8**	--	--	--	--	N/A
500	0,2* / <u>0,5</u> / 0,8**	--	--	--	>1.0mm	P
800	0,2* / 0,5 / 0,8**	--	--	--	--	N/A
1 500	0,5 / 0,8** / 1,0***	--	--	--	--	N/A
2 500	<u>1,5</u> / 2,0***	--	--	--	>1.5	P
4 000	<u>3,0</u> / 3,5***	--	--	>3.0	--	P
6 000	5,5 / 6,0***	--	--	--	--	N/A
8 000	8,0 / 8,5***	--	--	--	--	N/A
10 000	11,0 / 11,5***	--	--	--	--	N/A

Supplementary information:

*) For tracks on printed circuit boards if pollution degree 1 and 2

**) For pollution degree 3

***) If the construction is affected by wear, distortion, movement of the parts or during assembly

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation		N/A
Working voltage (V):	Creepage distance (mm) Pollution degree		



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Clause	Requirement + Test	Result - Remark	Verdict

	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	Verdict
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	N/A
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	N/A
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	N/A
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		N/A
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0		—	—	N/A
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—		—	N/A
250	1,12	2,5	3,6	<u>5,0</u>	6,4	7,2	8,0	—	—		P
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A



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>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	N/A
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	N/A
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A
Supplementary information:											
*) Material group IIIb is allowed if the working voltage does not exceed 50 V											
**) B = Basic insulation, S = Supplementary insulation, R = Reinforced insulation											



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29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V):	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	Verdict / Remark
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	N/A
50	0,16	0,56	0,8	1,1	1,4	1,6	<u>1,8</u>	P
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	N/A
250	0,42	1,0	1,4	<u>2,0</u>	2,5	2,8	3,2	P
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	N/A
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A
Supplementary information:								
*) Material group IIIb is allowed if the working voltage does not exceed 50 V								

30.1	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm)		≤2.0mm	—



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Clause	Requirement + Test	Result - Remark	Verdict
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Plastic enclosure	See table 24.1	75	1.2
DC inlet	See table 24.1	75	1.4
Supplementary information:			

30.2	TABLE: Resistance to heat and fire - Glow wire tests							P
Object/ Part No./ Material	Manufacturer / trademark	Glow wire test (GWT); (°C)						Verdict
		550	650		750		850	
			te	ti	te	ti		
Plastic enclosure	See table 24.1	X No flame	--	--	--	--	--	Pass
DC inlet	See table 24.1	--	--	--	0s	0s	X No flame	Pass
Object/ Part No./ Material	Manufacturer / trademark	Glow-wire flammability index (GWFI), °C				GW ignition temp. (GWIT), °C		Verdict
		550	650	750	850	675	775	
--	--	--	--	--	--	--	--	--
The test specimen passed the glow wire test (GWT) with no ignition [(te – ti) ≤ 2s] (Yes/No) :								Yes
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No).....:								No
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)?								Yes
Ignition of the specified layer placed underneath the test specimen (Yes/No).....:								No
Supplementary information:								
- 550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF								
- The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances								

30.2/30.2.4	TABLE: Needle- flame test (NFT)				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
--	--	--	--	--	--



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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

- NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1
- NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0



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**Attachment No.1****EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

Clause	Requirement + Test	Result - Remark	Verdict
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ATTACHMENT TO TEST REPORT IEC 60335-2-65**EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

Differences according to: EN 60335-1: 2012+A11: 2014+A13: 2017+A1: 2019+A14: 2019+A2: 2019+A15: 2021+ A16:2023; EN 60335-2-65:2003+A1: 2008+A11: 2012+A2: 2022+A12: 2022; EN 62233:2008

Attachment Form No.: IEC60335_2_65L

Attachment Originator: DEKRA Certification B.V.

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	CENELEC COMMON MODIFICATIONS (EN)		
6.1	Delete "class 0" and "class 01"	Class II	P
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered	100-240V~	P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.12	The instructions include the substance of the following:		P
	- this appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P
8.1.1	Also test probe 18 of EN 61032 is applied	For approved power supply unit	P
	The appliance being in every possible position during the test except that		P
	appliances normally used on the floor and having a mass exceeding 40 kg are not tilted		N/A
	The force on the probe in the straight position is increased to 10 N when probe 18 is used		P



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Clause	Requirement + Test	Result - Remark	Verdict
	When using test probe 18 the appliance is fully assembled as in normal use without any parts removed, and		P
	parts intended to be removed for user maintenance are also not removed		P
8.1.3	Instead of test probe B, test probe 18 and test probe 13, for appliances other than those of class II, test probe 41 of IEC 61032 is applied with a force not exceeding 1 N to live parts of visibly glowing heating elements, all poles of which can be disconnected by a single switching action		P
8.2	Compliance is checked by applying the test probes of EN 61032		P
	For built-in appliances and fixed appliances, the test probe B and probe 18 of EN 61032 are applied only after installation		N/A
15.1.2	Appliances with an automatic cord reel tested with the cord in the most unfavourable position so that the reeling of the wet cord may affect electrical insulation during operation, the cord not being dried before reeling		N/A
20.2	For appliances having with hazardous moving parts, due to their working function, e.g. the needle of a sewing machine, tools of kitchen machines or the blade of an electrical knife, full protection is not possible for performing their intended use		P
	When using a test probe similar to test probe B of EN 61032, having a circular stop face and applied with a force of 5N, the accessories and detachable covers are removed		P
	When using test probe 18 it is applied with a force of 2,5N on the appliance fully assembled		P
22.12	Other parts intended to be detached during use, maintenance or cleaning (e.g. batteries, battery covers, lids, attachments, steam nozzles) are not considered as parts providing a similar function as handles, knobs, grips, levers		P
22.17	The requirement is not applicable to built-in appliances		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
22.44	In sub Clause 22.44, replace the text by the following: An appliance is child-appealing if one of the following criteria is present:		N/A
	-appliance decorated using faces, cartoon like characters, or similar images		N/A
	-appliance using shapes representing animals, characters, persons or scale models.		N/A
	An appliance is child-appealing if more than one of the following criteria are present		N/A
	-using non-functional light (functional light is e.g.illumination of an object or area, signal indicating status of an appliance) ;		N/A
	—using non-functional sound (e.g.music) ;		N/A
	—using non-functional movement.		N/A
	If the appliance is child-appealing, has a mass less than 4 kg or is mounted or normally intended for use at a height less than 850 mm, the following conditions shall be met:		N/A
	-No surface (both functional surfaces and non-functional) that are accessible by means of test probe 19 of IEC 61032 located at a height less than 850 mm shall exceed the temperature rises stated below:		N/A
	-of bare metal: 38K		N/A
	-of coated metal: 42K		N/A
	-of glass and ceramic: 51K		N/A
	-of plastic having a thickness exceeding 0,4 mm: 58K		N/A
	-Hazardous moving parts shall not be accessible by means of test probe 19 of IEC 61032 under the conditions specified for test probe 18 in Clause 20.2.		N/A
	-Live parts shall not be accessible by means of test probe 19 of IEC 61032 under the conditions specified for test probe 18 in Clause 8.1.1.		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	-Liquid in the appliance shall not exceed 38 C in normal use when it is accessible by means of test probe 19 under the conditions specified for test probe 18 in Clause 20.2 or can get out of the appliance when positioned in different positions.Vessels in which two independent and sequential actions are needed to access the liquid are considered to meet the requirement.		N/A
	-The requirement of 22.12 is applicable for all accessible parts of the appliance.		N/A
	The requirement is not applicable to appliances where there is a toy shaped like the appliance.		N/A
	NOTE Z1 An example of a toy shaped like an appliance is a toy refrigerator		N/A
	Compliance is checked by inspection and appropriate tests.		N/A
24.1	Components comply with the safety requirements specified in the relevant EN standards as far as they reasonably apply		P
	Motors are not required to comply with EN 60034-1, but tested as part of the appliance according to this standard		P
	Relays are tested as part of the appliance according to this standard		N/A
	Relays may be alternatively tested to EN 60730-1 and the additional requirements in EN 60335-1		N/A
	The requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance.		P
	Components may comply with the requirements for clearances and creepage distances for functional insulation as specified in the relevant component standard		P
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P
	Components that have not been previously tested or do not comply with the standard for the relevant component are tested according to the requirements of 30.2		P



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	Components that have been previously tested and shown to comply with the resistance to fire requirements in the standard for the relevant component need not be retested provided that:		N/A
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		N/A
	- the test report for the component states the values of t_e and t_i acc. to EN 60695-2-11		N/A
	If the above two conditions are not satisfied, the component is tested as part of the appliance		N/A
	Power electronic converter circuits are not required to comply with EN 62477-1, but tested as part of the appliance according to this standard		N/A
	Unless components have been previously tested and found to comply with the relevant standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		N/A
	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been separately tested and found to comply with the relevant standard, and		P
	components that are not marked or not used in accordance with their marking,		N/A
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P
	Lamp holders and starter holders that have not been previously tested and found to comply with the relevant standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant standard under the conditions occurring in the appliance		N/A
	Where the relevant standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used		P



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Clause	Requirement + Test	Result - Remark	Verdict
	There are no additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of EN 60320-1 and EN 60309, unless they are specifically mentioned in the text of this standard		N/A
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of IEC 60320-1,		N/A
	direct supply to these parts from the supply mains gives rise to a hazard		N/A
	For plugs used in CENELEC countries Annex ZH applies		N/A
	In the note, replace the word "NOTE Z3" with "NOTE Z1"		P
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151.		N/A
24.21	Type S2 and S3 capacitors according to EN 60252-1 are not required to undergo the testing as required by 30.2.2 and 30.2.3.1		N/A
25.1	Plugs and pins for insertion into socket outlets follow the relevant standards sheets in Annex ZH		N/A
25.7	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors, or		N/A
	when they are liable to be exposed to significant amount of ultraviolet radiation		N/A
25.25	Instead of IEC/TR 60083, dimensions of the pins and engagement face of plugs of appliances that are inserted into socket-outlets are in accordance with the dimensions of the relevant plug standard		N/A
	Common plugs and socket-outlets types in CENELEC countries as shown in Annex ZH		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
26.11	Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position unless they are held in place near the terminals independently of the solder		N/A
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P
Annex I, 19.1.101	The appliance is supplied at rated voltage and operated under normal operation with each of the fault conditions specified		N/A
	The duration of the test is as specified in 19.7		N/A

ZA	ANNEX ZA (NORMATIVE) SPECIAL NATIONAL CONDITIONS		P
	Denmark, Sweden, Norway and Finland		N/A
7.12.8	The maximum inlet water pressure is at least 1,0 MPa		N/A
	Norway		N/A
19.5	The test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
	Norway		N/A
22.2	The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		N/A
	Denmark		N/A
22.47	The maximum inlet water pressure is at least 1,0 MPa		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Ireland and United Kingdom		P
25.8	In the table, the lines for 10 A and 16 A are replaced by:		P
	> 10 and ≤ 13 1,25 (1,0) ^b		P
	> 13 and ≤ 16 1,5 (1,0) ^b		N/A
ZB	ANNEX ZB (INFORMATIVE) A-DEVIATIONS		N/A
	Ireland		N/A
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A
	United Kingdom		P
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances.		P
	It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		N/A
ZC	ANNEX ZC (NORMATIVE) NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		P
	A list of documents referred to in the text of this standard in such a way that some or all of their content constitutes requirements of this document		P
ZD	ANNEX ZD (INFORMATIVE) IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS		P
	A table with IEC and CENELEC code designations for flexible cords		P



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Clause	Requirement + Test	Result - Remark	Verdict
ZE	ANNEX ZE (INFORMATIVE) SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE		N/A
7.1	Business name and full address of the manufacturer and, where applicable, his authorized representative.....:		N/A
	Model or type reference		N/A
	Serial number, if any		N/A
	Production year		N/A
	Designation of the appliance		N/A
7.12	Instructions provided with the appliance so that the appliance can be used safely		N/A
	The instructions contain at least the following information:		N/A
	- the business name and full address of the manufacturer and, where applicable, his authorized representative		N/A
	- model or type reference of the appliance as marked on the appliance itself, except for the serial number		N/A
	- the designation of the appliance together with its explanation in case it is given by a combination of letters and/or numbers		N/A
	- the general description of the appliance, when needed due to the complexity of the appliance		N/A
	- specific precautions if required during installation, operation, adjusting, user maintenance, cleaning, repairing or moving		N/A
	- when needed drawings, diagrams, descriptions and explanations necessary for the safe use and user maintenance of the appliance		N/A
	- the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the appliance		N/A
	The words "Original instructions" appear on the language version(s) verified by the manufacturer or by the authorized representative		N/A



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	When a translation of the original instructions has been provided by a person introducing the appliance on the market; the meaning of the sentence "Translation of the original instructions" appear in the relevant instructions delivered with the appliance		N/A
	The instructions for maintenance/service to be done by specialized personnel, mandated by the manufacturer or the authorized representative may be supplied in only one Community language which the specialized personnel understand		N/A
	The instructions indicate the type and frequency of inspections and maintenance required for safe operation including the preventive maintenance measures		N/A
7.12.ZE1	If needed for specific appliances, the following information to be given:		N/A
	- on use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns, if these operations have consequences on stability of the appliance in order to avoid overturning, falling or uncontrolled movements of the appliance or of its component parts		N/A
	- on how to maintain adequate mechanical stability when in use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
	- on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided		N/A
	- on the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur the operating method to safely unblock the appliance		N/A
	- on the specifications on the spare parts to be used, when these affect the health and safety of the operator		N/A
	- on airborne noise emissions, determined and declared in accordance with the relevant Part 2, which includes:		N/A
	- the A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A)		N/A



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	- where this level does not exceed 70 dB(A), this fact is indicated		N/A
	- the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 µPa)		N/A
	- the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A).....		N/A
7.12.ZE2	The instructions includes a warning to disconnect the appliance from its power source during service and when replacing parts		N/A
	If the removal of the plug is foreseen, it is clearly indicated that the removal of the plug has to be such that an operator can check from any of the points to which he has access that the plug remains removed		N/A
	If this is not possible, due to the construction of the appliance or its installation, a disconnection with a locking system in the isolated position is provided		N/A
19.11.4.8	The appliance continues to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage fluctuation occurred, or		N/A
	a manual operation is required to restart it		N/A
20.1	Appliances and their components and fittings have adequate mechanical stability during transportation, assembly, dismantling and any other action involving the appliance		N/A
20.2	Dangerous moving transmission parts safeguarded either by design or guards		N/A
	When guards are used, they are fixed guards, interlocking movable guards or protective devices		N/A
	Moving parts directly involved in the function of the appliance which cannot be made completely inaccessible fitted with:		N/A
	- fixed guards or interlocking movable guards preventing access to those sections of the parts that are not used in the work, and		N/A



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	- adjustable guards restricting access to those sections of the moving parts where access is necessary		N/A
	Interlocking movable guards used where frequent access is required		N/A
21.1	Appliances and their components and fittings have adequate mechanical strength and is constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
22.ZE.1	For appliances provided with a seat, the seat gives adequate stability		N/A
	The distance between the seat and the control devices capable of being adapted to the operator		N/A
22.ZE.2	For appliances provided with separate devices for the start and the stop functions, the stop function is unambiguously identifiable and does always override the start function		N/A
	For appliances provided with one device performing the start and the stop function, the stop function is unambiguously identifiable and does always override the start function		N/A
22.ZE.3	Appliances designed in such a way that incorrect mounting is avoided, if this can lead to an unsafe situation		N/A
	If this is not possible, information on the correct mounting is given directly on the part and/or the enclosure		N/A
22.ZE.4	Where the weight, size or shape prevents appliances from being moved manually, they are fitted with attachments for lifting gear, or		N/A
	so designed that they can be fitted with such attachments, or		N/A
	be shaped in such a way that standard lifting gear can easily be used		N/A
	Appliances to be moved manually are constructed or equipped so that they can be moved easily and safely		N/A



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22.ZE.5	The fixing systems of fixed guards which prevent access to dangerous moving transmission parts only removable with the use of tools		N/A
	If such guards have to be removed by the user for routine cleaning or maintenance their fixing systems remain attached to the fixed guards or to the machine after removal		N/A
	Where possible, guards are incapable of remaining in place without their fixings		N/A
	This does not apply if, after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative		N/A
	Movable guards are interlocked		N/A
	The interlocking devices prevent the start of hazardous appliance functions until the guards are fixed in their position, and give a stop command whenever they are no longer closed		N/A
	Where it is possible for an operator to reach the danger zone before the risk due to hazardous appliance functions has ceased, movable guards associated with a guard locking device in addition to an interlocking device that:		N/A
	- prevents the start of hazardous appliance functions until the guard is closed and locked, and		N/A
	- keeps the guard closed and locked until the risk of injury from the hazardous appliance functions has ceased		N/A
	Interlocking movable guards remain attached to the appliance when open, and		N/A
	they are designed and constructed in such a way that they can be adjusted only by means of an intentional action		N/A
22.ZE.6	Interlocking movable guards designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous appliance functions		N/A
	The guard is opened to the extent needed to cause the interlocking to operate and is then closed, the number of operations being defined in the specific Part 2.....:		N/A



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	After this test any defect that may be expected in normal use is applied to the interlock system, including interruption of the supply, only one defect being simulated at a time		N/A
	After these tests the interlock system is fit for further use		N/A
22.ZE.7	Adjustable guards restricting access to areas of the moving parts strictly necessary for the work are:		N/A
	- adjustable manually or automatically, depending on the type of work involved, and		N/A
	- readily adjustable without the use of tools		N/A
22.ZE.8	In case of interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply, the appliance does not restart		N/A
	However, automatic restarting of the operation is allowed if the appliance may continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage interruption or fluctuation occurred		N/A
22.ZE.9	Appliances fitted with means to isolate them from all energy sources		N/A
	Such isolators are clearly identified, and		N/A
	they are capable of being locked if reconnection endanger persons		N/A
	After the energy source is disconnected, it is possible to dissipate any energy remaining or stored in the circuits of the appliance without risk to persons		N/A
ZF	ANNEX ZF (INFORMATIVE) CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD		P
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive)		P
ZG	ANNEX ZG (NORMATIVE) UV APPLIANCES		--
	The following modifications to this standard apply to appliances having UV emitters		P



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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
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**Attachment No.1****EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

Clause	Requirement + Test	Result - Remark	Verdict
	This annex is not applicable to appliances covered by the scopes of IEC 60335-2-27, IEC 60335-2-59 or IEC 60335-2-109		P
7.12.ZG	The instructions for appliances incorporating UVC emitters include the substance of the following: WARNING — This appliance contains a UV emitter. Do not stare at the light source		P
32	For appliances incorporating UV emitters the manufacturer delivers a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		P
ZH	ANNEX ZH (INFORMATIVE) Common plug and socket-outlet types in CENELEC countries		N/A
	In general, supply cords of single-phase appliances having a rated current not exceeding 16 A are fitted with a plug complying with the following standard sheets:		N/A
	- for class I appliances or class II appliances with functional earth, standard sheet EU2, EU3 or EU4:		N/A
	- for class II appliances, standard sheet EU5, EU6 or EU7		N/A
	There are exemptions or differences in certain CENELEC countries		N/A
ZZA	ANNEX ZZA (INFORMATIVE) RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE SAFETY OBJECTIVES OF DIRECTIVE 2014/35/EU [2014 OJ L96] AIMED TO BE COVERED		P
	This standard provides one means of conforming to safety objectives of Directive 2014/35/EU		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZA.1 confers a presumption of conformity with the safety objectives of that Directive and associated EFTA regulations		P
	Compliance with this Part 1 when used together with the relevant Part 2 provides one means of conformity with the safety objectives		P



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**Attachment No.1****EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

Clause	Requirement + Test	Result - Remark	Verdict
ZZB	ANNEX ZZB (INFORMATIVE) RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ESSENTIAL REQUIREMENTS OF DIRECTIVE 2006/42/EC AIMED TO BE COVERED		P
	This standard provides one means of conforming to essential requirements of EU Directive 2006/42/EC		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZB.1 confers a presumption of conformity with the essential requirements of that Directive and associated EFTA regulations		P
	Compliance with this Part 1 when used together with the relevant Part 2 provides one means of conformity with the essential health and safety requirements		P

Annex EN 62233:2008

Clause	Requirement + Test	Result - Remark	Verdict
EMF- ELECTROMAGNETICS FIELDS			
	The tested product also complies with the requirements of EN 62233:2008		P
	Limit100%	Measured max. : 1.352%	P

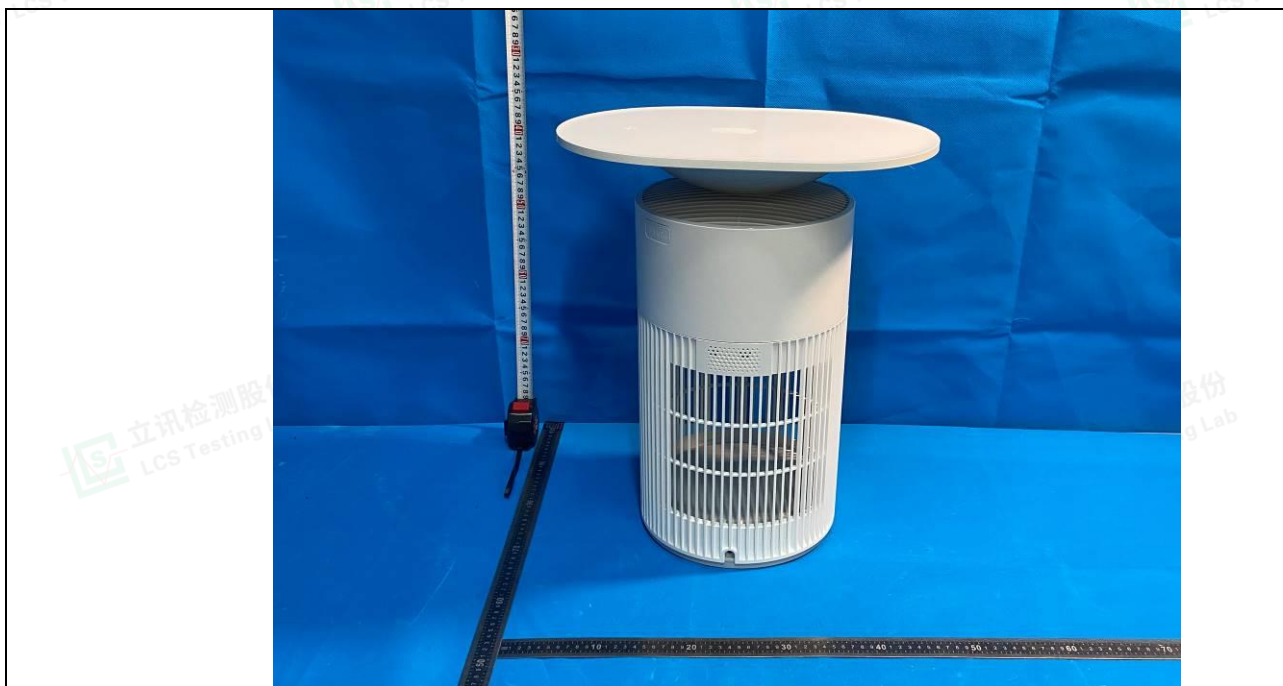


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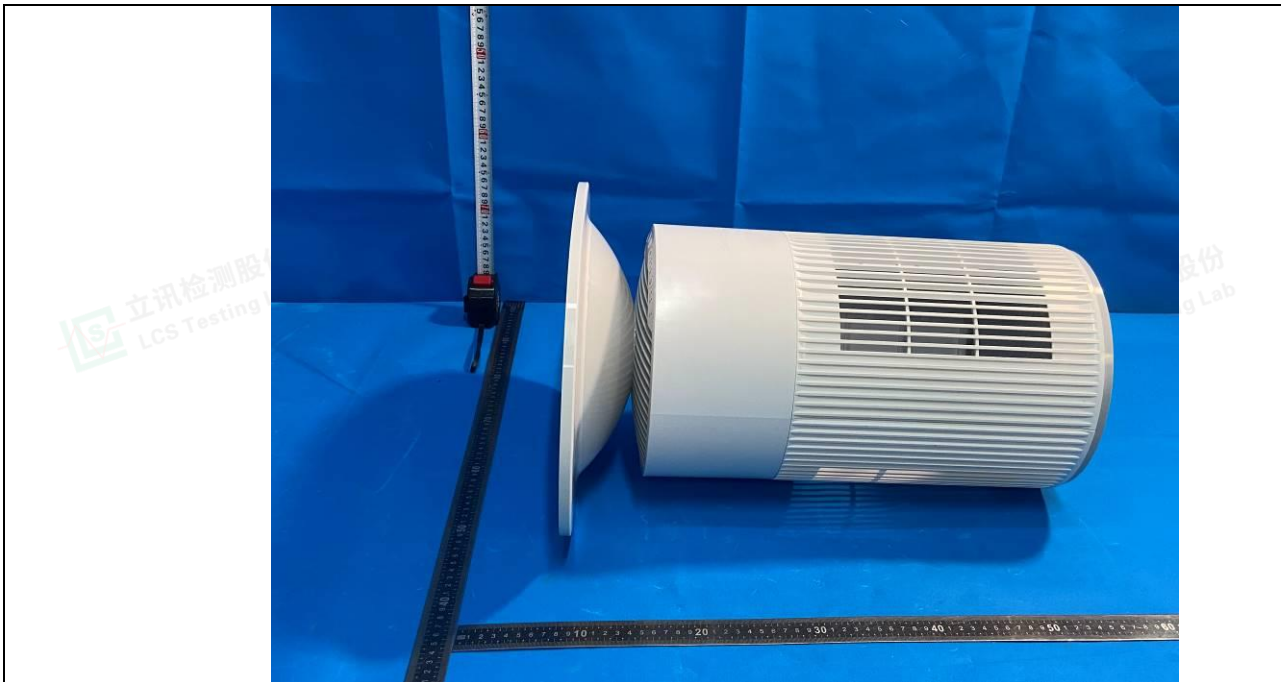
**Attachment No.2: Product Photos**Details of: External view for model W5302310Details of: External view for model W5302310

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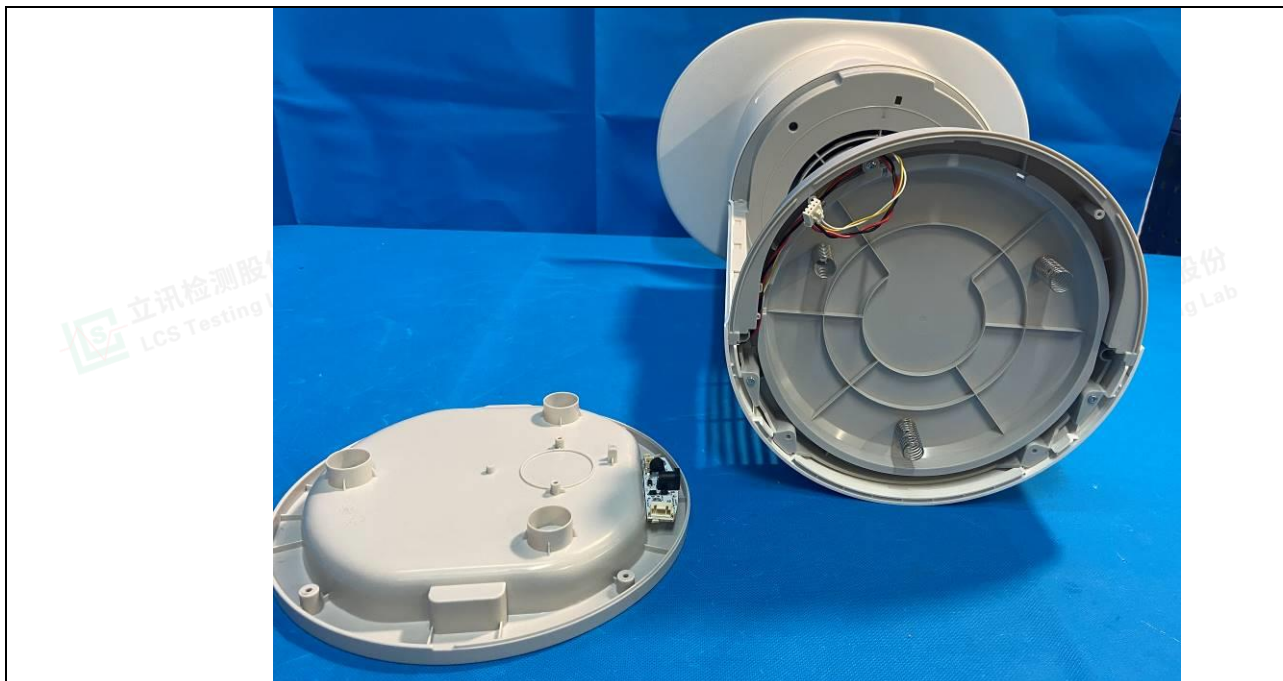
**Attachment No.2: Product Photos**Details of: External view for model W5302310Details of: Details view for model W5302310

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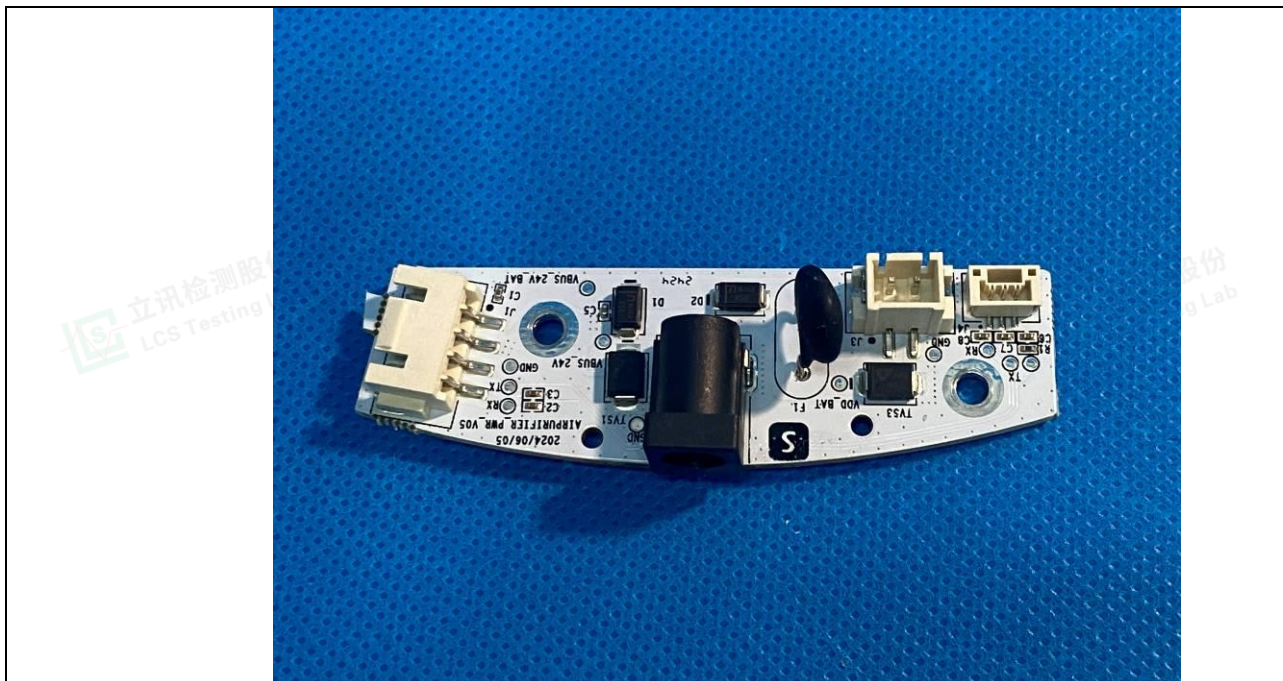
Scan code to check authenticity

**Attachment No.2: Product Photos**Details of: Internal view for model W5302310Details of: Internal view for model W5302310

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Attachment No.2: Product Photos

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Attachment No.2: Product Photos

Details of: Internal view for model W5302310



Details of: Internal view for model W5302310



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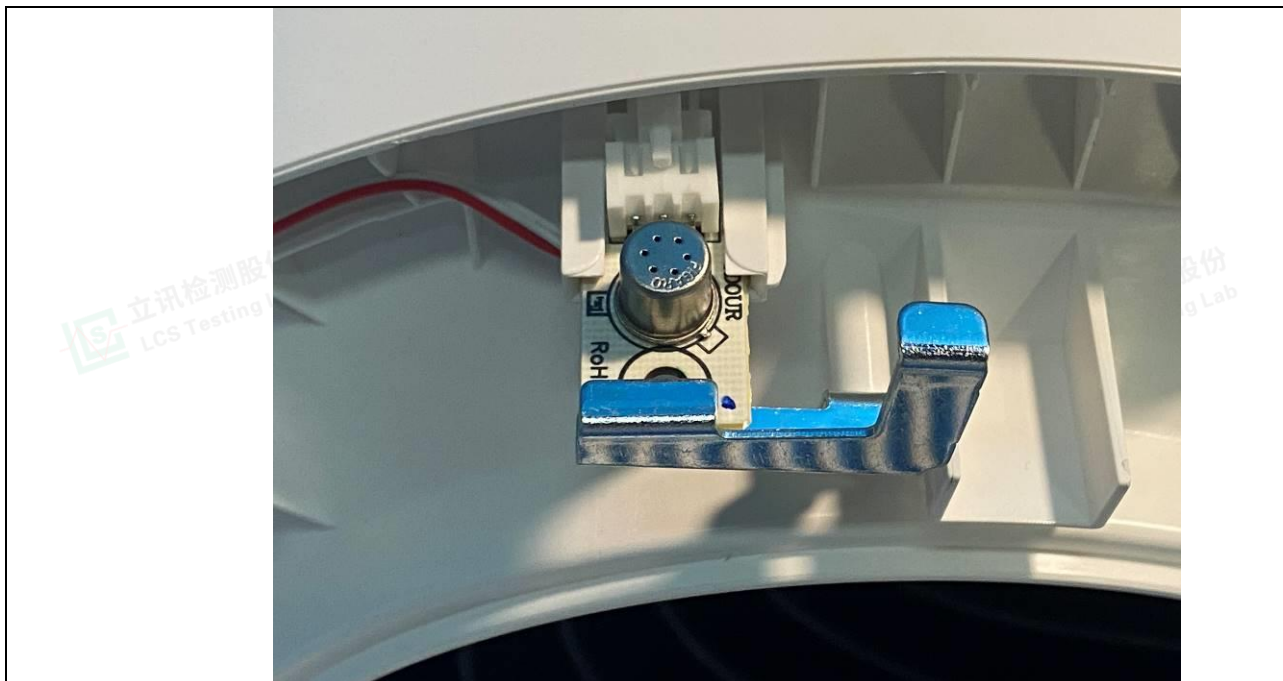
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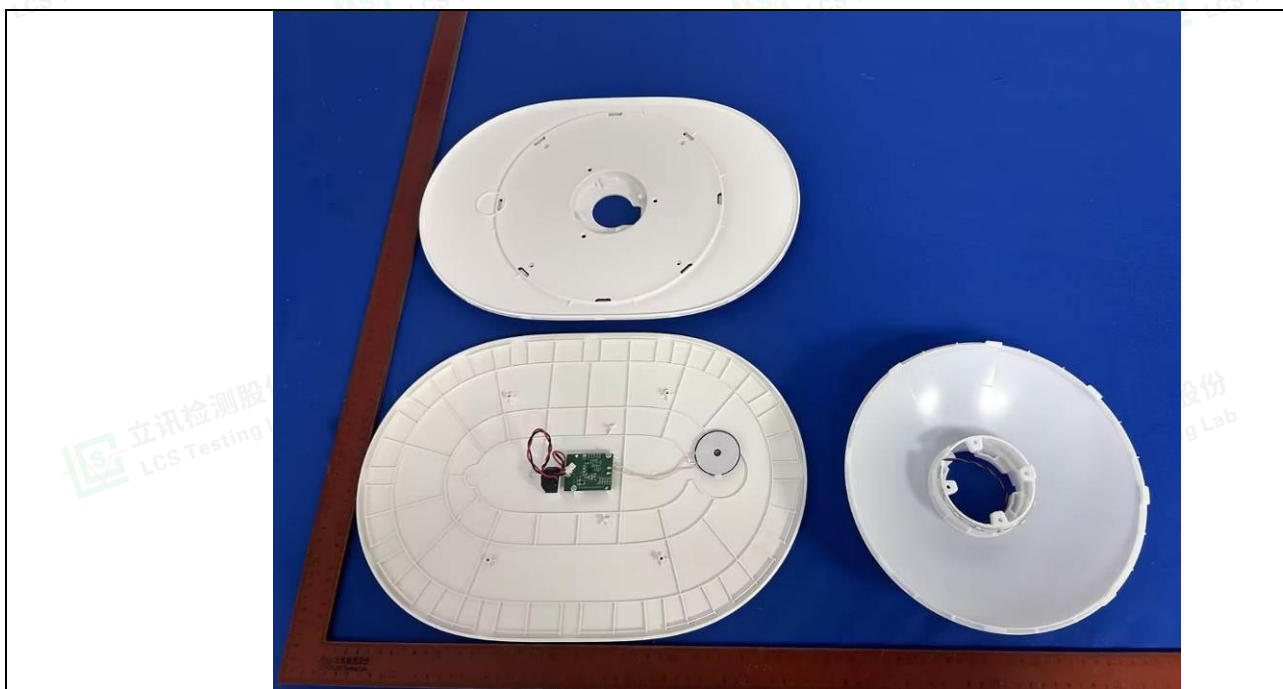


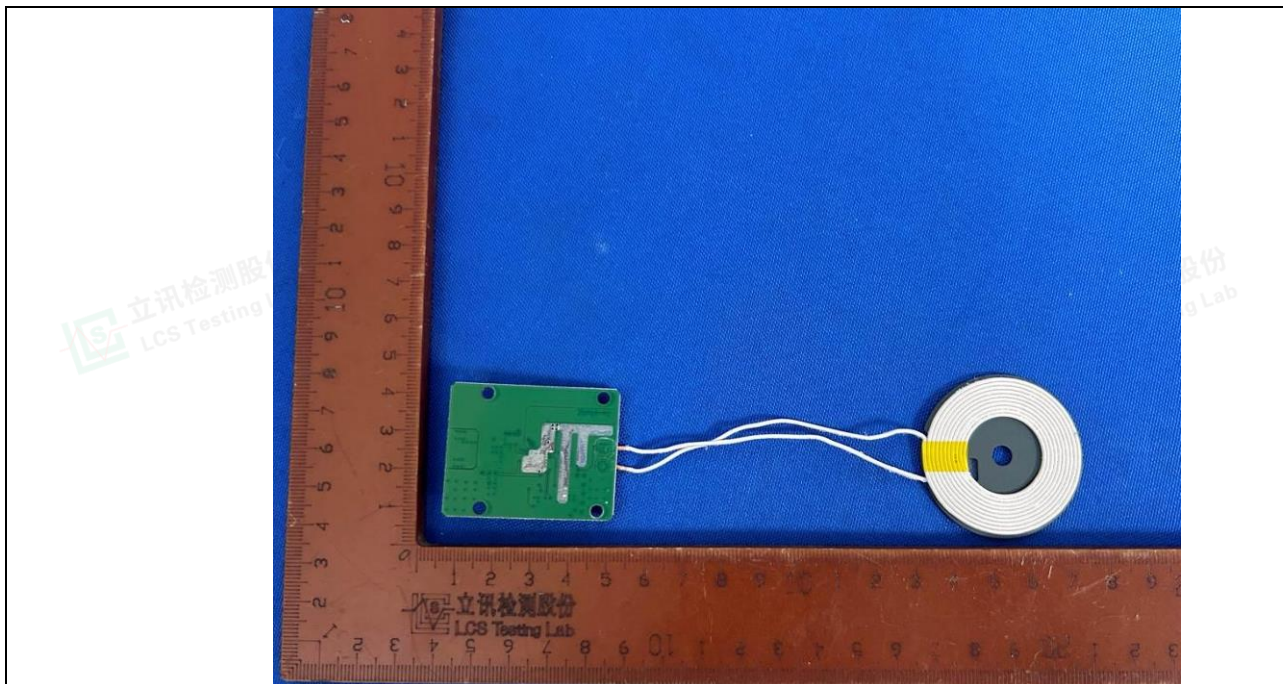
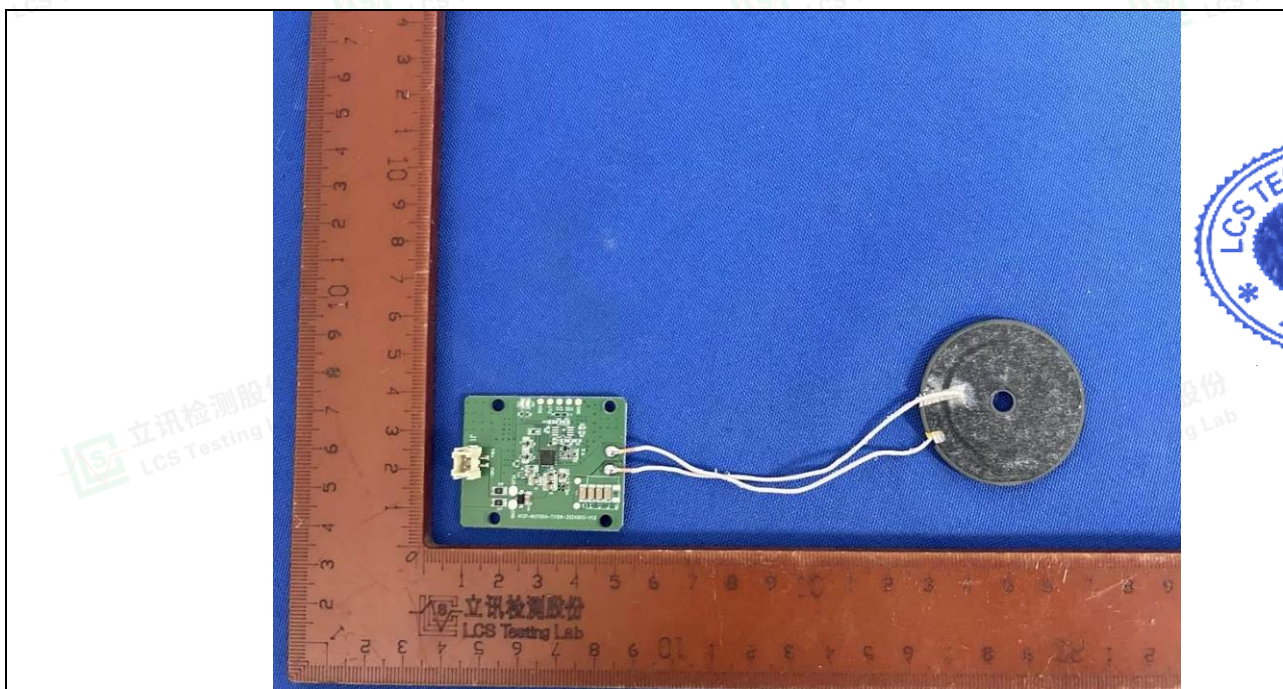
Attachment No.2: Product Photos

Details of: Internal view for model W5302310



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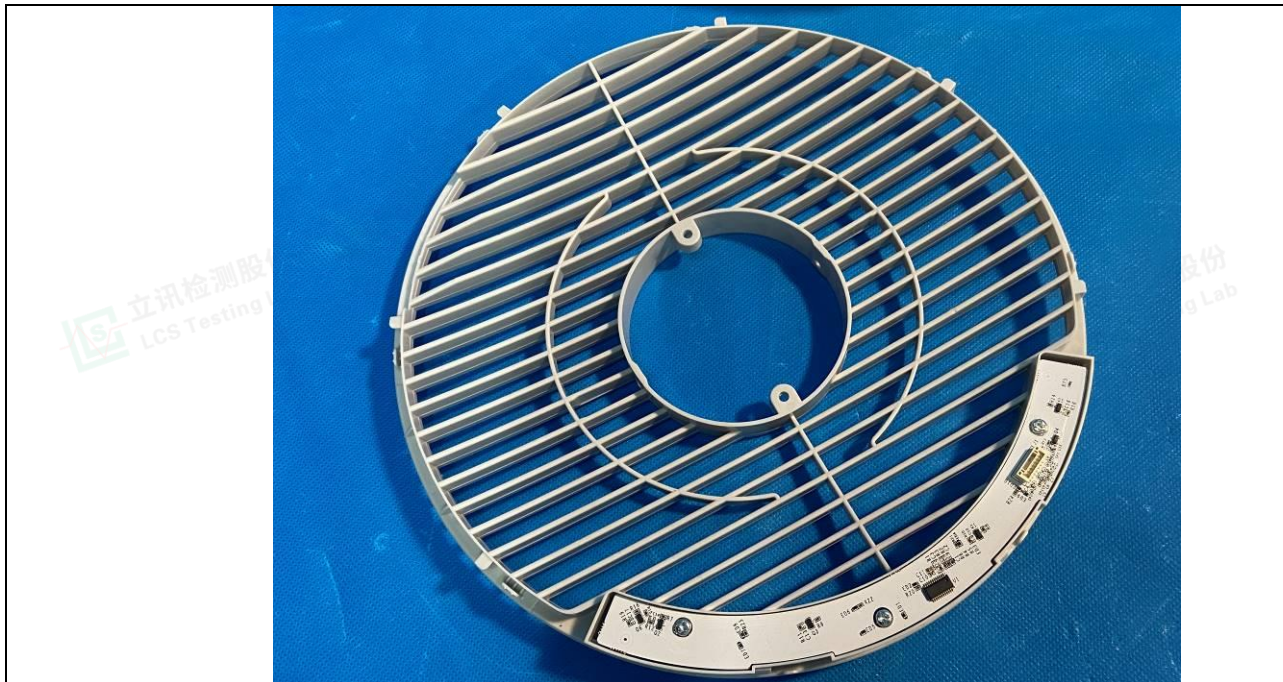
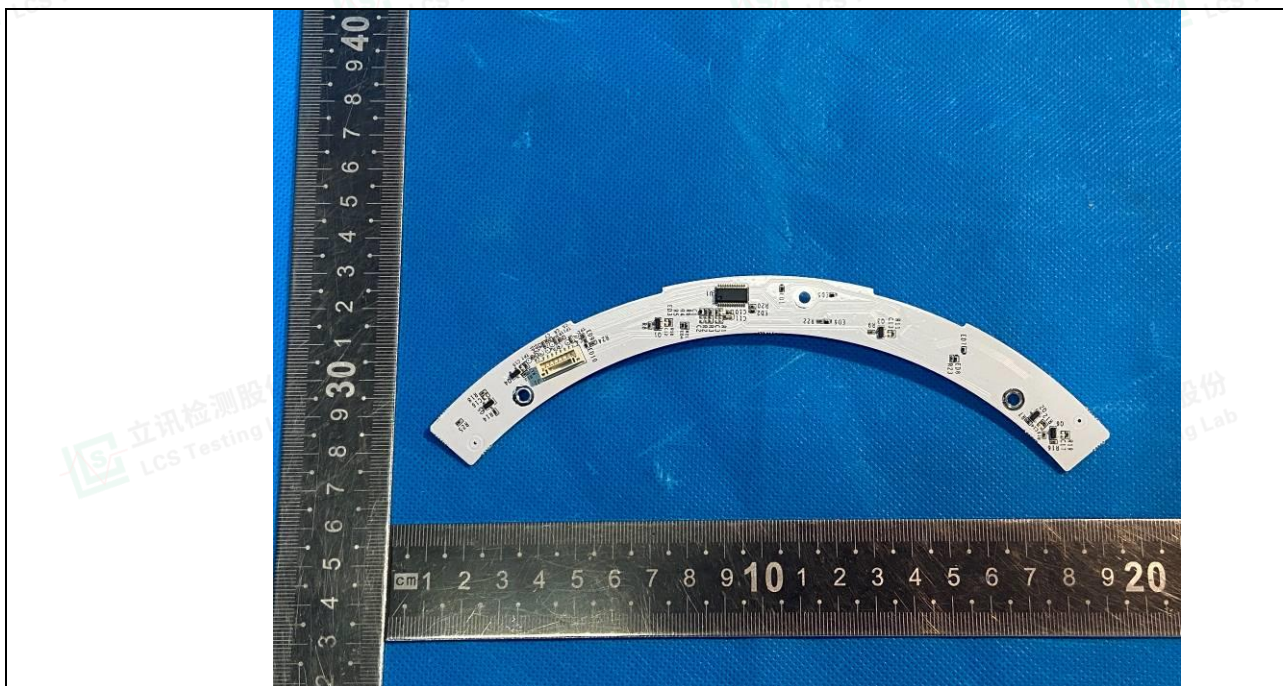
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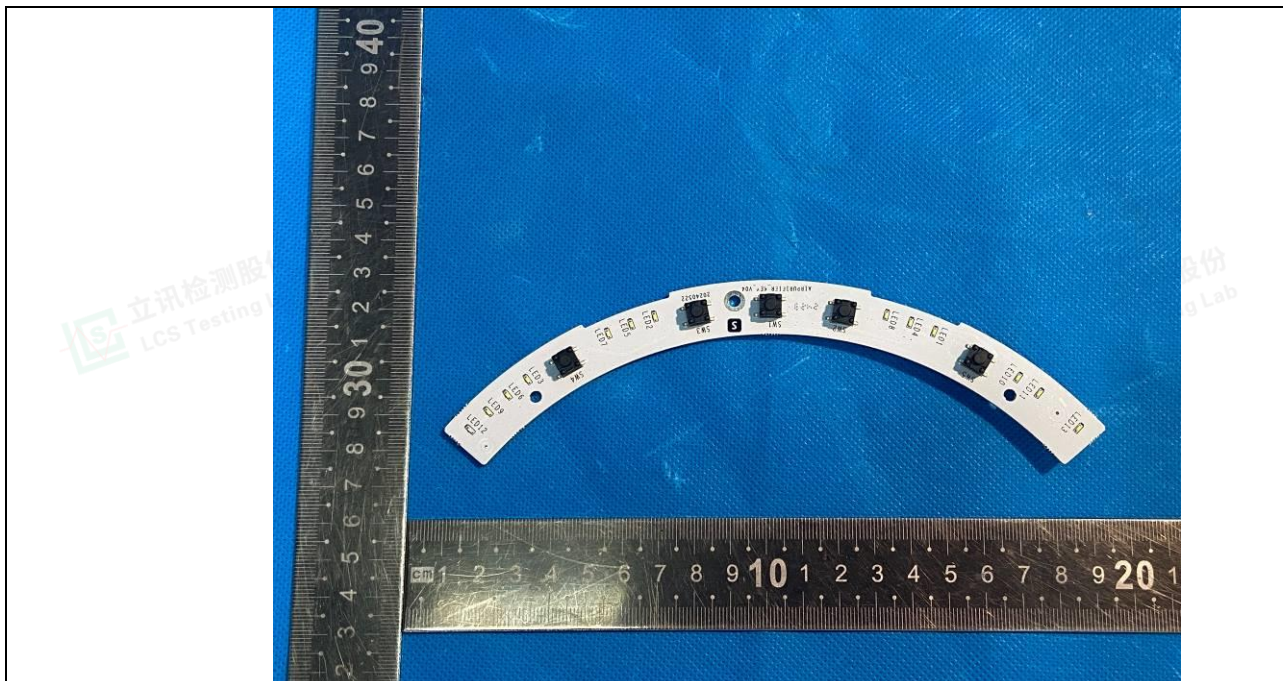
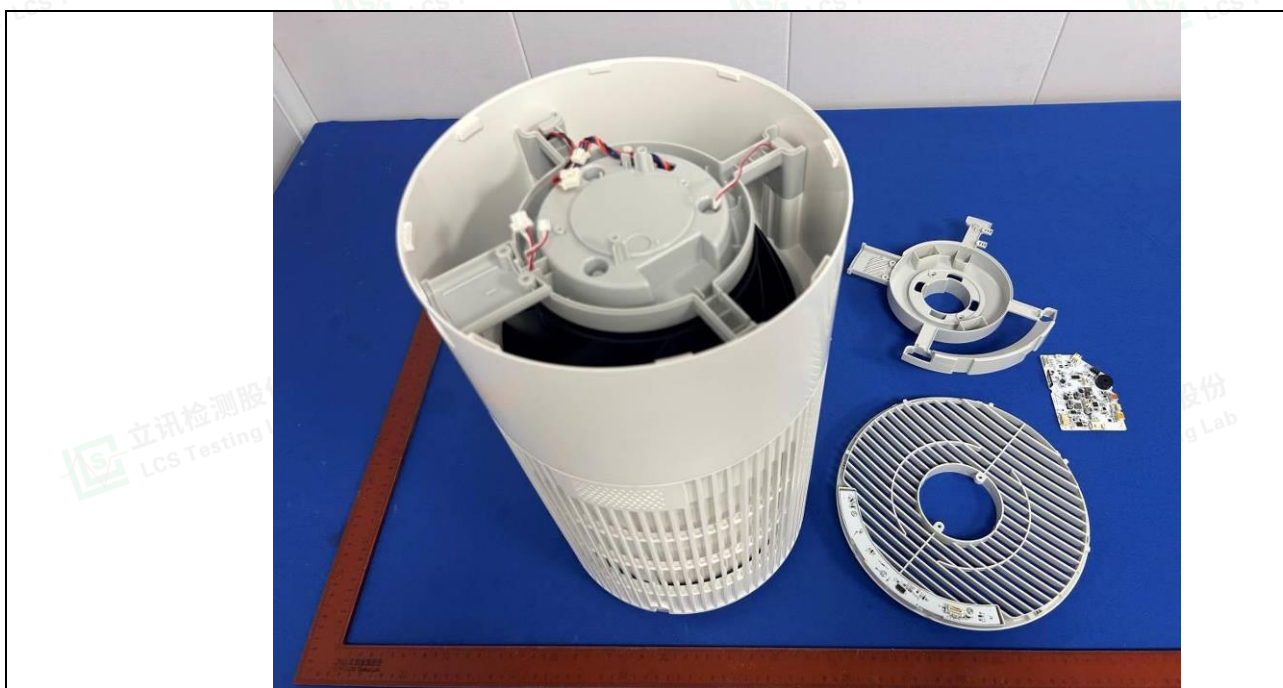
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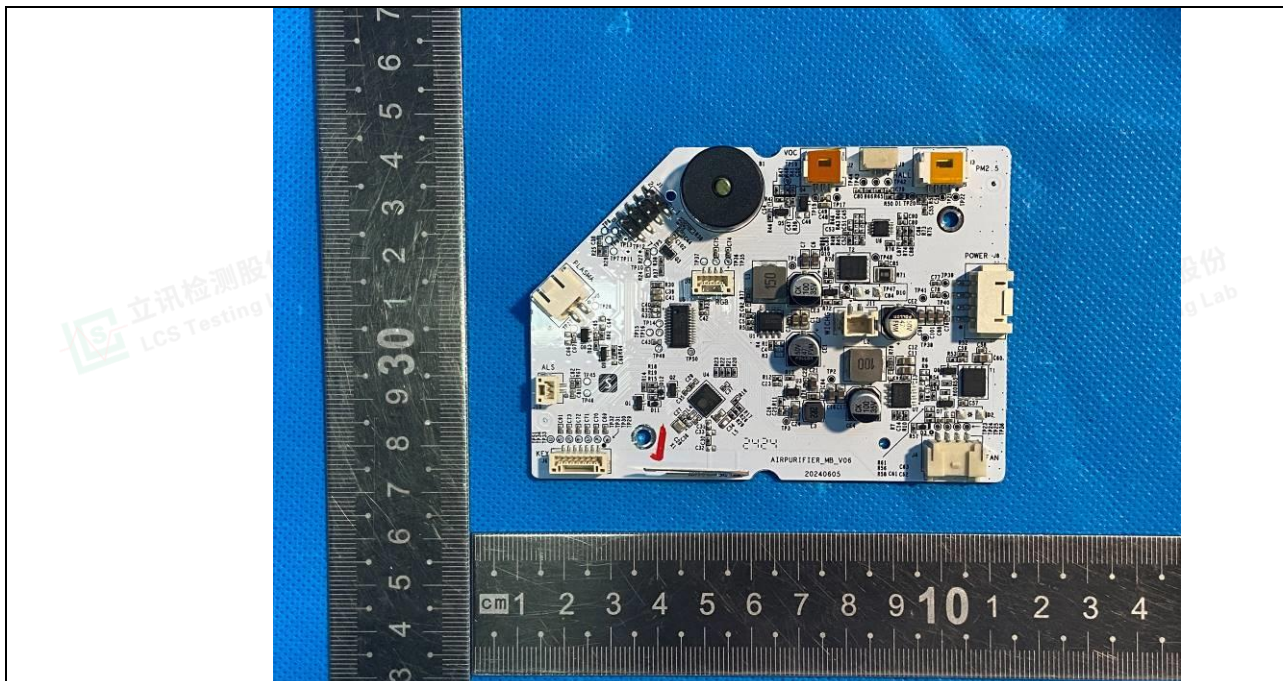
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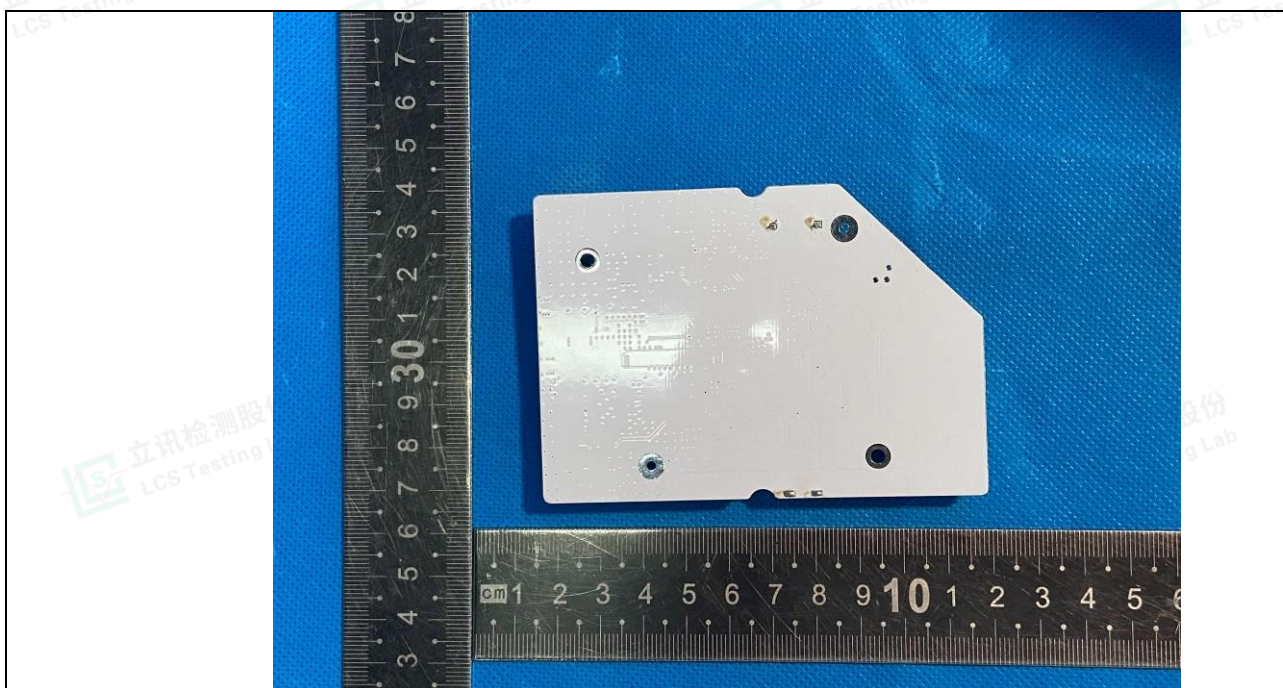


Attachment No.2: Product Photos

Details of: PCB view for model W5302310



Details of: PCB view for model W5302310



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Attachment No.2: Product Photos

Details of: Power supply unit view for model W5302310



Details of: Power supply unit view for model W5302310



----End of the report----



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EU Type Examination Certificate

Certificate No: TPS-RED500797 i01

Certificate Holder: Woan Technology (Shenzhen) Co., Ltd.
Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road
Mabu Community, Xixiang Sub-district
Bao'an District
518100 Shenzhen, Guangdong
PEOPLE'S REPUBLIC OF CHINA

Product Type: Wireless LAN equipment
SwitchBot Air Purifier Table

Model(s): W5302310, W5302311, W5302312,
W5302313, W5302314, W5302315

We, as Notified Body number 0123, have examined the technical documentation and supporting evidence for the above listed equipment and found it to comply with the requirements of Annex III Module B of Radio Equipment Directive 2014/53/EU in relation to the following essential requirements covered by the examination

Essential Requirements: Article 3.1 (a) in respect of Health and Safety
Article 3.1 (b) in respect to EMC
Article 3.2 in respect to the use of the Radio Spectrum

The certificate has been issued in accordance with the Testing, Certification, Validation and Verification Regulations of TÜV SÜD Product Service GmbH (Notified Body Number 0123).

The CE marking may be used on the equipment described above subject to the equipment meeting the compliance requirements of all applicable EU directives.

The conditions for the validity of this certificate are listed in the following pages.
For further details related to this certification please contact ps.zert@tuvsud.com

This is based upon examination of the following Technical Data file.

Technical Documentation: Woan W5302310 (v) RED TCF

Valid from: 2024-09-06



(Laurentiu Dan Miiler)

EU Type Examination Certificate

Certificate No: TPS-RED500797 i01

1 Equipment Description

SwitchBox Air Purifier Table support BLE, WiFi operated 2.4GHz and wireless power transmission system that operated at 110-205KHz.

1.1 Models

Model	HW Version	SW Version
Original W5302310, W5302311, W5302312, W5302313, W5302314, W5302315	V1.0	V0.6

1.2 Supported Functions and Features

1.2.1 Non-radio features

24.0VDC, 3.0A supplied by an external adapter.

1.2.2 Radio features

Radio	Feature	Operating Spectrum / Power	
IEEE 802.11 – 2.4 GHz	b/g/n, Adaptive	2400-2483.5 MHz	15.72 dBm
Bluetooth	BLE v4.2	2400-2483.5 MHz	1.65 dBm
WPT	Wireless Charging Output: 15W Max	110-205KHz	-22.21dBμA/m at 10m

1.3 Accessories

Model / Part Number	Description
CZH072240300EUWV, HA072240300EUW	AC/DC adapter 100-240 Vac ,50/60Hz to 24 Vdc/3A

2 Assessed Standards

Article 3.1(a)	Article 3.1(b)	Article 3.2
EN 60335-1:2012/A16:2023 EN 60335-2-65:2003/A12:2022 EN 62233:2008 EN 62311:2008 EN IEC 62311:2020	EN 301 489-1 V2.2.3 EN 301 489-3 V2.3.2. EN 301 489-17 V3.2.4 EN 55014-1:2021 EN 55014-2:2021 EN IEC 61000-3-2:2019/A1:2021 EN 61000-3-3:2013/A2:2021	EN 300 328 V2.2.2 EN 303 417 V1.1.1

EU Type Examination Certificate

Certificate No: TPS-RED500797 i01

3 Technical Documentation

3.1 Technical Documentation

Technical documentation and supporting evidence were examined and found to comply with the EU-type examination requirements in conjunction with Annex V requirements of the directive.

3.2 Declarations

Declaration of Conformity of W5302310 (v) for RED, draft	Issued	2024-08-21
Models Difference Declaration Letter	Issued	2024-08-21

3.3 Strategic Documentation

Risk Assessment Letter of W5302310 (v) for RED	Issued	2024-08-21
Justification of Conformity of W5302310 (v) for RED	Modified	2024-09-06

3.4 Technical Compliance Documentation

3.4.1 Article 3.1(a)

LCSA07294231S	Issued	2024-08-20
LCSA07264213EE	Issued	2024-08-12

3.4.2 Article 3.1(b)

LCSA07264213EA	Issued	2024-08-12
LCSA07264226E001	Issued	2024-08-29

3.4.3 Article 3.2

LCSA07264213EB	Issued	2024-08-12
LCSA07264213EC	Issued	2024-08-12
LCSA07264213ED	Issued	2024-08-12

4 Additional Information

None.

5 Conditions of Validity

None.