

EMC TEST REPORT

Product Name Led Clock
 Trade mark CHENGDA
 Model No. DS-6626
 Report No. CTB220117001E
 Applicant Jinjiang Dongsheng Watches Electronic Industry&Trade Co., Ltd
 Pujin Industrial Zone Longhu Jinjiang Fujian China
 Manufacturer Jinjiang Dongsheng Watches Electronic Industry&Trade Co., Ltd
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 Date of Receipt 2022-01-12
 Date of Test(s) 2022-01-12~ 2022-01-17
 Date of Issue 2022-01-19
 Test Standard(s) EN IEC 55014-1:2021, EN IEC 55014-2:2021
 EN IEC 61000-3-2:2019, EN 61000-3-3:2013/A1:2019
 Test Result: Pass

In the configuration tested, the EUT complied with the standards specified above.

Compiled by:

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Reviewed by:

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Zack Zhu

Approved by:



Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of CTB. This document may be altered or revised by CTB, personnel only, and shall be noted in the revision of the document.

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1. Description of version

Report No.	Issue Date	Description	Approved
CTB220117001E	2022-01-19	Original	Valid

2. Test summary

Emission		
Test item	Test Method	Result
Continuous disturbance	EN IEC 55014-1	PASS
Discontinuous disturbance		N/A ²
Magnetic field strength		N/A ³
Disturbance power		N/A
Radiated emission		PASS
Harmonic current emissions	EN IEC 61000-3-2	N/A ¹
voltage changes, voltage fluctuations and flicker	EN 61000-3-3	N/A ¹
Immunity(EN IEC 55014-2)		
Test item	Test Method	Result
Electrostatic discharges	IEC 61000-4-2	PASS
Fast transients	IEC 61000-4-4	N/A ¹
Injected currents	IEC 61000-4-6	N/A ¹
Radio frequency electromagnetic field	IEC 61000-4-3	N/A ⁴
Surges	IEC 61000-4-5	N/A ¹
Voltage dips	IEC 61000-4-11	N/A ¹

Note: N/A is abbreviation for Not Applicable.

1. The Product is powered by USB power, this test items is not applicable.
2. The Product has no switching operations, automatic programme or other electrically controlled or operated functions
3. It only apply to induction cooking appliances.
4. The Product is belong to category II.

3. Measurement uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard

Test item	Frequency	Expanded Uncertainty (U_{Lab})
Conducted Emission	150 kHz to 30 MHz	± 3.2 dB
Disturbance power	30 MHz to 300 MHz	± 3.7 dB
Radiated Emission	30 MHz to 1000 MHz	± 4.8 dB
Radiated Emission	1000 MHz to 6000 MHz	± 4.9 dB

uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %

4. General information

4.1. Description of EUT

Product name	Led Clock
Trade Mark	CHENGDA
Model	DS-6626
Serial No.	/
Model Difference	/
Rated Power	/
Normal Testing Voltage	DC 5V from adapter
Category	<input type="checkbox"/> I <input checked="" type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> V
The highest frequency of the internal sources of the EUT :	<input checked="" type="checkbox"/> less than 108 MHz, the measurement shall only be made up to 1 GHz. <input type="checkbox"/> between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. <input type="checkbox"/> between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. <input type="checkbox"/> above 1 GHz, the measurement shall be made up to 6 GHz.
Configuration	<input checked="" type="checkbox"/> Table-top <input type="checkbox"/> Floor-standing
Adapter Information:	/

Note: The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

4.2. Description of Accessory Device

No.	Device Type	Brand	Model	Specification	Note
1.	ADAPTER	JIYIN	JY-05100C	/	/

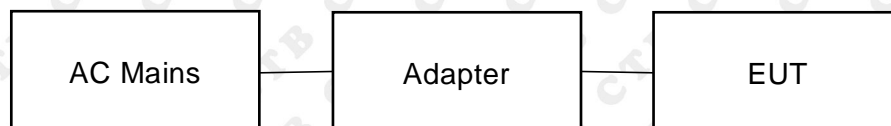
4.3. Test conditions

Temperature: 15-25°C

Relative Humidity: 30-60 %

Atmospheric pressure: 800hPa-1060hPa

4.4. Block diagram of EUT configuration



4.5. Operating condition of EUT

Operating condition	Mode 1*	Working	Test Voltage	DC 5V
Note: This test covers all possible operating modes of the device, only the worst data are list in report. The worst data are shows (*) is the nearest standard limit which were recorded in this report.				

5.List of test and measurement instruments

Continuous disturbance					
No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	AMN	ROHDE&SCHWARZ	ESH3-Z5	831551852	2022.08.05
2	Pulse limiter	ROHDE&SCHWARZ	ESH3Z2	357881052	2022.08.05
3	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCS30	834115/006	2022.08.05
4	Coaxial cable	ZDECL	Z302S	18091904	2022.08.05
5	AAN	Schwarzbeck	NTFM8158	6114	2022.08.05
6	EZ-EMC	Frad	EMC-con3A1.1	/	/

Radiated emission					
No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	1911	2022.08.07
2	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	869	2022.08.07
3	Amplifier	Agilent	8449B	3008A01838	2022.08.05
4	Amplifier	HP	8447E	2945A02747	2022.08.05
5	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESPI7	100362	2022.08.05
6	Coaxial cable	ETS	RFC-SNS-100 -NMS-80 NI	/	2022.08.05
7	Coaxial cable	ETS	RFC-SNS-100 -NMS-20 NI	/	2022.08.05
8	Coaxial cable	ETS	RFC-SNS-100 -SMS-20 NI	/	2022.08.05
9	Coaxial cable	ETS	RFC-NNS-10 0-NMS-300 NI	/	2022.08.05
10	EZ-EMC	Frad	EMC-con3A1. 1	/	/

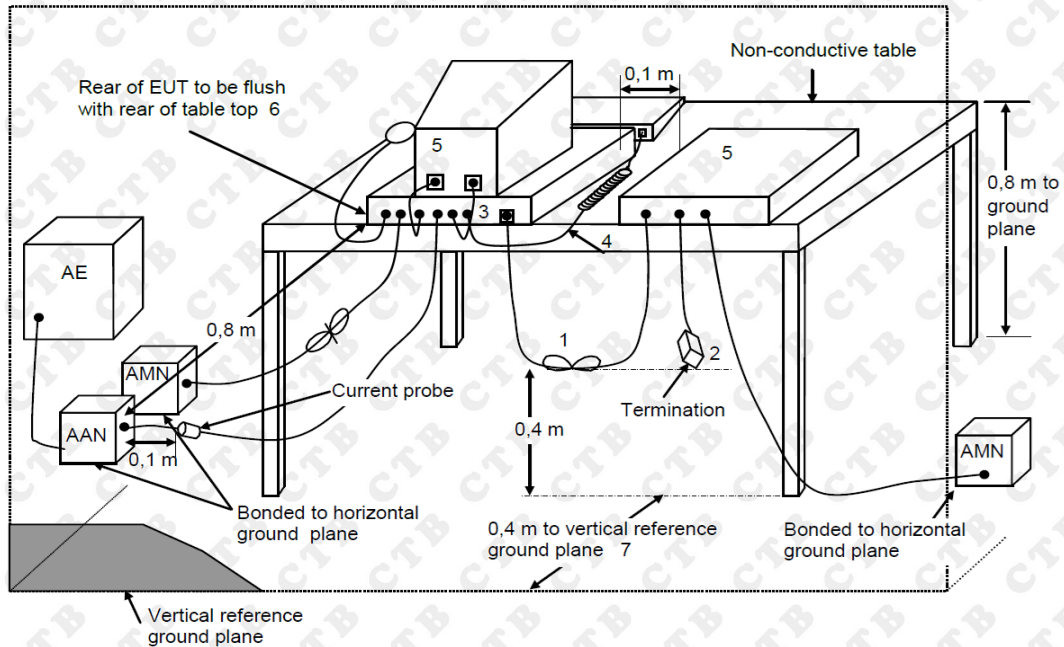
Electrostatic discharges					
No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	ESD Simulator	TESTQ	NSG437	329	2022.08.07

5. Emission

6.1. Continuous disturbance

6.1.1. Block diagram of test setup

For table-top equipment



6.1.2. Limit

General limits						
Frequency range	Mains ports		Associated ports			
	Disturbance voltage		Disturbance voltage		Disturbance current	
MHz	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ A	Average dB μ A
0,15 to 0,50	Decreasing linearly with the logarithm of the frequency from:		80	70	Decreasing linearly with the logarithm of the frequency from:	
	66 to 56	59 to 46			40 to 30	30 to 20
0,50 to 5	56	46	74	64	30	20
5 to 30	60	50	74	64		

The lower limit applies at the transition frequencies.
The test report shall state which test method was used and which limits were applied.

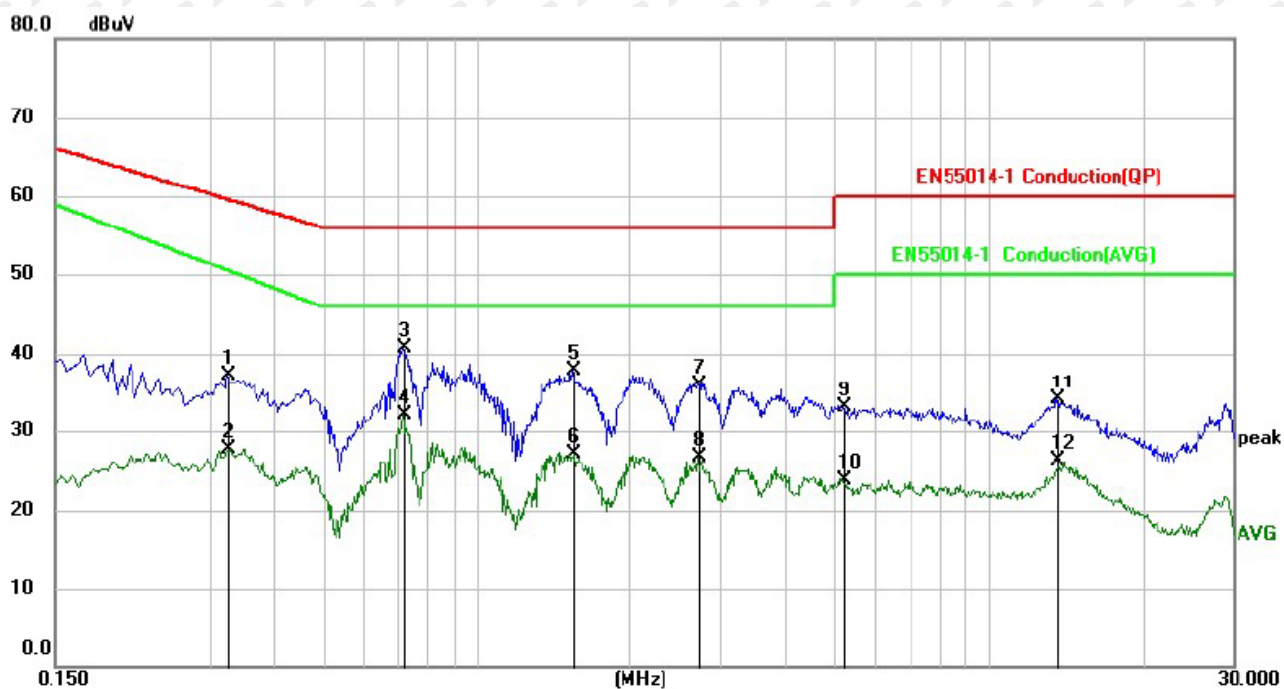
Limits for mains port of tools						
Frequency range	P ≤ 700 W		700 W < P ≤ 1 000 W		P > 1 000 W	
MHz	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ V	Average dB μ V
	Decreasing linearly with the logarithm of the frequency from:					
0,15 to 0,35	66 to 59	59 to 49	70 to 63	63 to 53	76 to 69	69 to 59
0,35 to 5	59	49	63	53	69	59
5 to 30	64	54	68	58	74	64
The lower limit applies at the transition frequencies. P = rated power of the motor only.						

6.1.3. Test procedure

1. The AMN placed 0,8m from the boundary of the unit under test and bonded to a round reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.
2. Both sides of AC line are checked to find out the maximum conducted emission according to the EN 55014-1 regulations during conducted emission test. And the voltage probe had been used for the load terminals test according to the EN 55014-1 standard.
3. The bandwidth of the test receiver (R&S ESCS30) is set at 9 kHz in 150 kHz~30 MHz.
4. The frequency range from 150 kHz to 30MHz is checked.

6.1.4. Test results

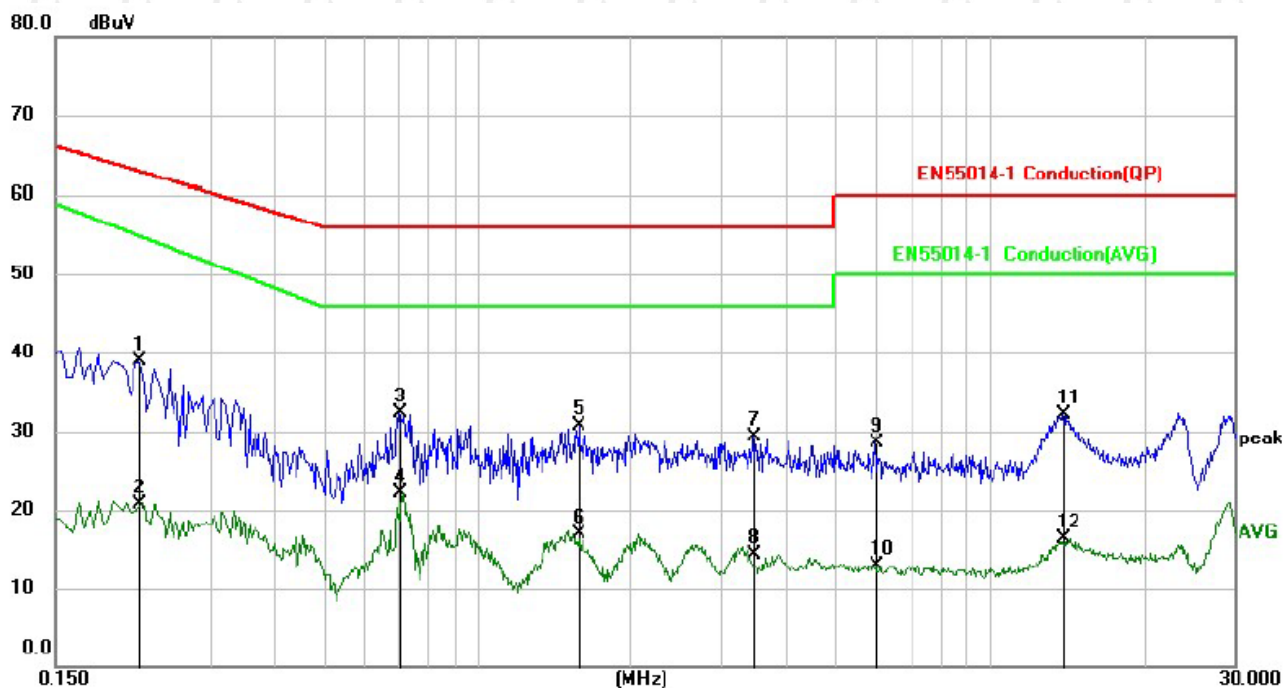
Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Phase :	Line
Test Voltage :	DC 5V	Test Mode:	Mode 1



No.	Mk.	Freq.	Reading	Correct	Measurement	Limit	Margin	
		MHz	dBuV	Factor	dBuV	dBuV	dB	Detector
1		0.3260	26.68	10.62	37.30	59.55	-22.25	QP
2		0.3260	17.10	10.62	27.72	50.62	-22.90	AVG
3		0.7180	30.18	10.56	40.74	56.00	-15.26	QP
4	*	0.7180	21.59	10.56	32.15	46.00	-13.85	AVG
5		1.5420	27.22	10.62	37.84	56.00	-18.16	QP
6		1.5420	16.48	10.62	27.10	46.00	-18.90	AVG
7		2.7139	25.52	10.63	36.15	56.00	-19.85	QP
8		2.7139	16.15	10.63	26.78	46.00	-19.22	AVG
9		5.1940	22.39	10.66	33.05	60.00	-26.95	QP
10		5.1940	13.29	10.66	23.95	50.00	-26.05	AVG
11		13.5820	23.17	10.88	34.05	60.00	-25.95	QP
12		13.5820	15.36	10.88	26.24	50.00	-23.76	AVG

Note: Result=Reading + Factor
Over Limit=Result - Limit

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	DC 5V	Test Mode:	Mode 1



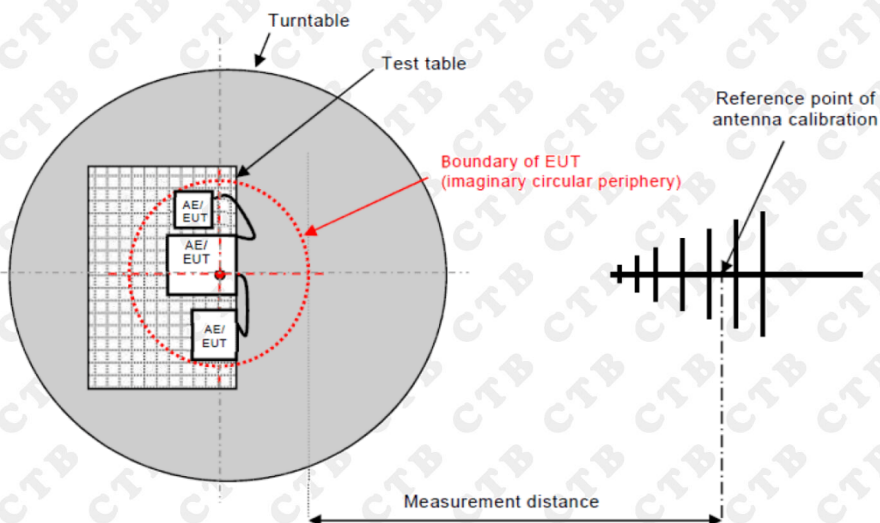
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Margin dB	Detector
1		0.2180	28.15	10.68	38.83	62.89	-24.06	QP
2		0.2180	10.09	10.68	20.77	54.96	-34.19	AVG
3	*	0.7019	21.79	10.56	32.35	56.00	-23.65	QP
4		0.7019	11.48	10.56	22.04	46.00	-23.96	AVG
5		1.5820	20.11	10.62	30.73	56.00	-25.27	QP
6		1.5820	6.27	10.62	16.89	46.00	-29.11	AVG
7		3.4780	18.75	10.64	29.39	56.00	-26.61	QP
8		3.4780	3.64	10.64	14.28	46.00	-31.72	AVG
9		5.9780	17.74	10.68	28.42	60.00	-31.58	QP
10		5.9780	2.28	10.68	12.96	50.00	-37.04	AVG
11		13.8580	21.13	10.89	32.02	60.00	-27.98	QP
12		13.8580	5.35	10.89	16.24	50.00	-33.76	AVG

Note: Result=Reading + Factor
Over Limit=Result - Limit

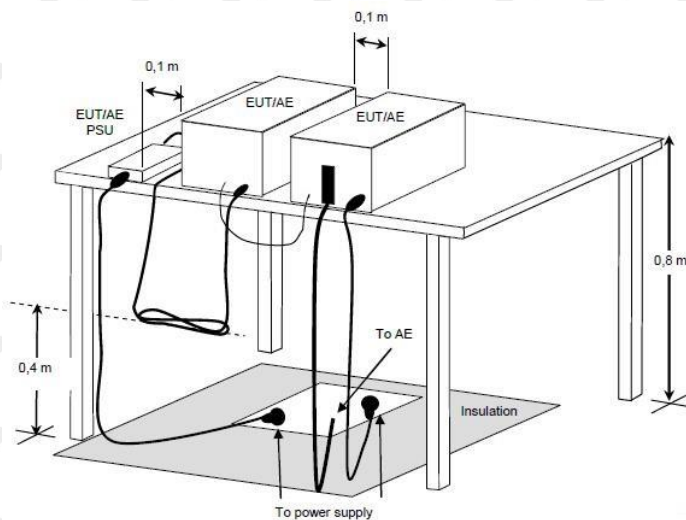
6.2. Radiated emission

6.2.1. Block diagram of test setup

Measurement distance



For table-top equipment



6.2.2. Limit

Up to 1GHz:

Frequency range MHz	Measurement			Limits dB(μ V/m)
	Facility	Distance m	Detector type / bandwidth	
30 to 230	SAC	3	Quasi Peak / 120 kHz	40
230 to 1 000				47

Above 1GHz:

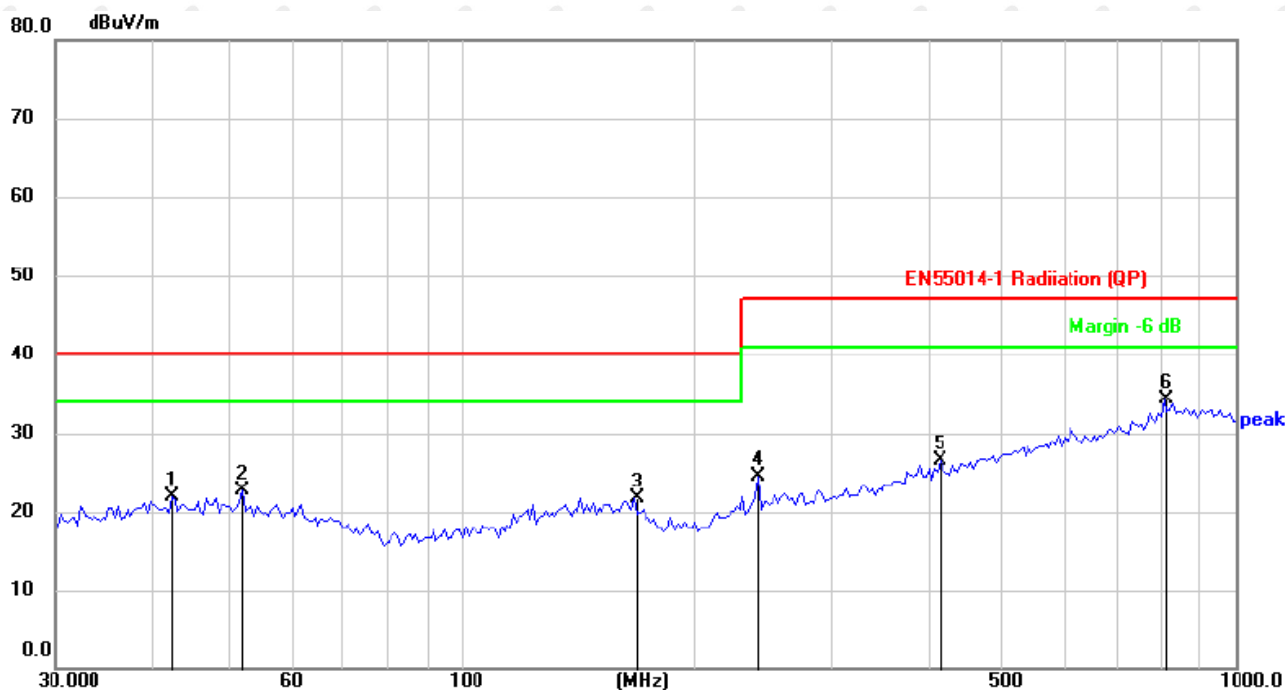
Frequency range MHz	Measurement			Class B limits dB(μ V/m)
	Facility	Distance m	Detector type / bandwidth	
1 000 to 3 000	FSOATS	3	Average / 1MHz	50
3 000 to 6 000				54
1 000 to 3 000		3	Peak / 1MHz	70
3 000 to 6 000				74

6.2.3. Test procedure

1. The EUT is placed on a turn table which is 0,8m meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The Boundary of EUT (imaginary circular periphery) is set 3 meters away from the receiving antenna (Reference point of antenna calibration) which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antennas (calibrated by dipole antenna) are used as a receiving antenna.
2. Both horizontal and vertical polarizations of the antenna are set on test.
3. The bandwidth setting on the test receiver (R&S ESPI) reference 5.3.2.
4. The EUT is tested in Semi-Anechoic Chamber.
5. The Test results are listed in Section 5.3.4.

6.2.4. Test results

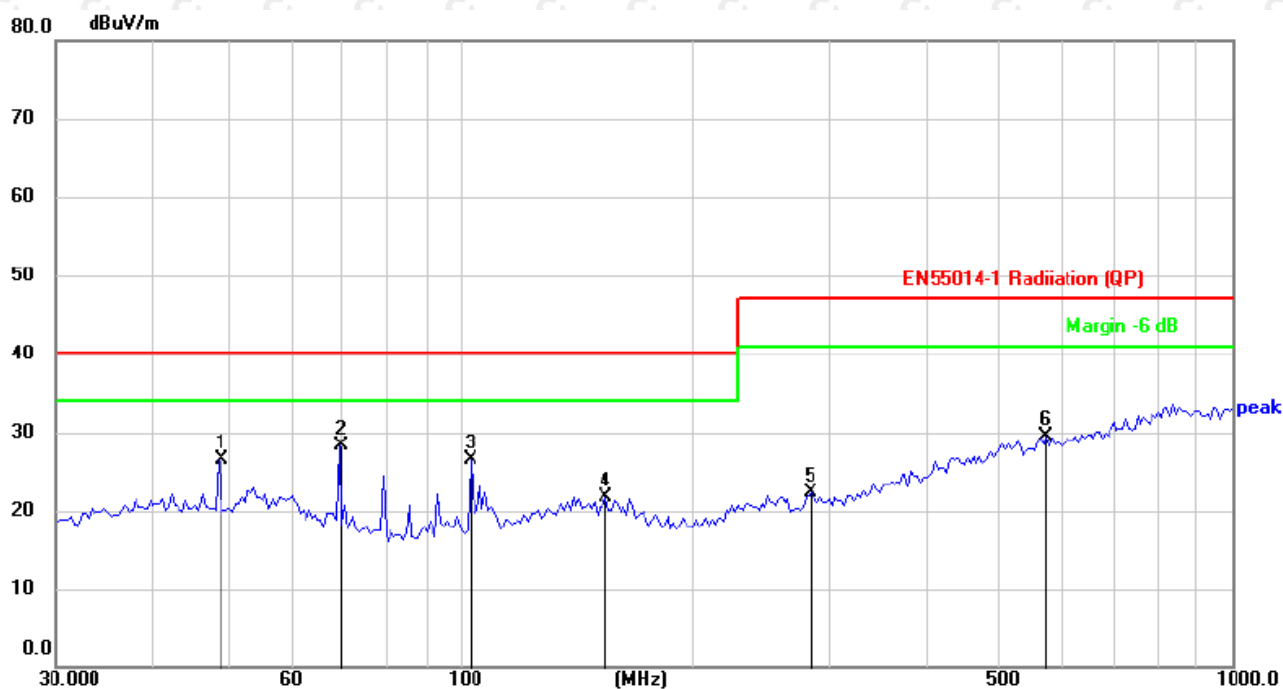
Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Horizontal
Test Voltage :	DC 5V	Test Mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		42.2281	27.26	-5.35	21.91	40.00	-18.09	QP
2		52.1164	28.47	-5.75	22.72	40.00	-17.28	QP
3		167.2368	27.73	-5.99	21.74	40.00	-18.26	QP
4		241.6763	30.21	-5.78	24.43	47.00	-22.57	QP
5		416.1791	27.74	-1.29	26.45	47.00	-20.55	QP
6	*	810.2654	28.26	6.05	34.31	47.00	-12.69	QP

Note: Result=Reading + Factor
Over Limit=Result - Limit

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Vertical
Test Voltage :	DC 5V	Test Mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		48.5867	32.04	-5.59	26.45	40.00	-13.55	QP
2	*	69.6005	36.07	-7.86	28.21	40.00	-11.79	QP
3		103.2609	34.99	-8.43	26.56	40.00	-13.44	QP
4		154.5493	27.19	-5.53	21.66	40.00	-18.34	QP
5		285.4768	27.72	-5.36	22.36	47.00	-24.64	QP
6		575.6342	27.34	2.12	29.46	47.00	-17.54	QP

Note: Result=Reading + Factor
Over Limit=Result - Limit

6. Immunity

7.1. Performance criterion

Performance criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual operating state or stored data is allowed to persist after the test. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

7.2. Classification of apparatus

Category I: equipment containing no electronic control circuitry.

All appliances having no electronic control circuitry are considered to be category I.

Electric circuits consisting of passive components (such as radio interference suppression capacitors or inductors, mains transformers, mains frequency rectifiers and heating elements) are not considered to be electronic control circuitry.

Category II: mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz.

Test items:

Electrostatic discharges with performance criterion B;

Electric fast transients with performance criterion B;

Injected currents 150 kHz to 230 MHz with performance criterion A;

Surges with performance criterion B;

Voltage dips with performance criterion C.

Category III: battery operated equipment not included in Category I.

NOTE: The assignment to Category III is independent of the clock frequency

This category also includes equipment provided with rechargeable batteries, which can be charged, directly or indirectly, from the mains. Accordingly, this equipment shall also be subjected to the test requirements for mains operated equipment but only when testing the charging function.

If the equipment can operate its intended functions when connected, directly or indirectly to the mains, then it is not battery operated. Accordingly, it shall be classified as Category II, Category IV or Category V, as applicable, and subjected to the corresponding test requirements when in mains operation.

Test items:

Electrostatic discharges with performance criterion B/C^a;

Electric fast transients with performance criterion B;

Injected currents 150 kHz to 80 MHz with performance criterion A;

Radio frequency electromagnetic fields ^{b, c} 80 MHz to (F) MHz with performance criterion A;

Surges with performance criterion B;

NOTE:

a. Performance criterion C may be applied to toys not using score or data entered by the user (e.g. musical soft toys and sounding toys).

b. The frequency (F), up to which this test needs to be performed, is determined from either categories IV test requirements or categories V test requirements, according to the principle for distinguishing between categories IV and V.

c. For Category III toys, the radio frequency electromagnetic fields test shall be applicable only for ride on toys.

Category IV: mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 15 MHz but lower than or equal to 200 MHz.

Test items:

Electrostatic discharges with performance criterion B;

Electric fast transients with performance criterion B;

Injected currents 150 kHz to 80 MHz with performance criterion A;

Radio frequency electromagnetic fields 80 MHz to 1000 MHz with performance criterion A;

Surges with performance criterion B;

Voltage dips with performance criterion C.

Category V: mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 200 MHz.

Test items:

Electrostatic discharges with performance criterion B;

Electric fast transients with performance criterion B;

Injected currents 150 kHz to 80 MHz with performance criterion A;

Radio frequency electromagnetic fields 80 MHz to 6000 MHz with performance criterion A;

Surges with performance criterion B;

Voltage dips with performance criterion C.

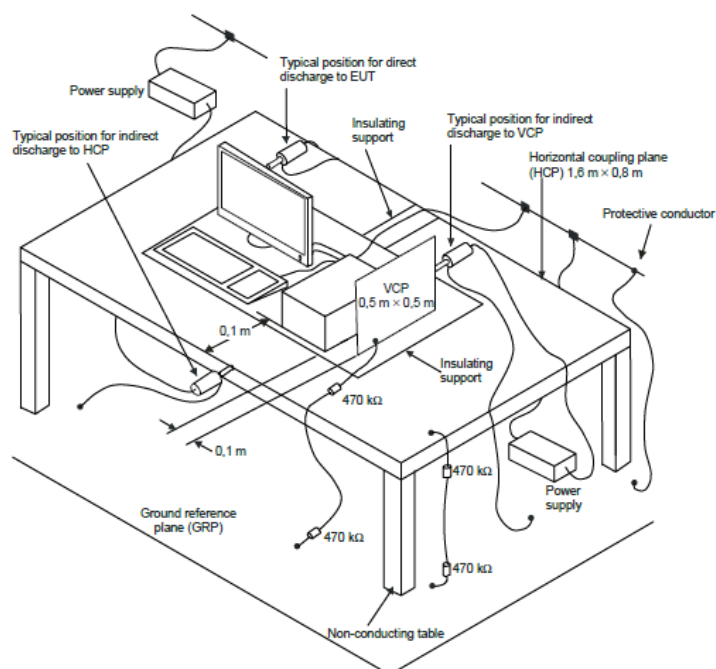
7.3. Electrostatic discharges

7.3.1. Test standard and Levels

Environmental phenomenon	Test specifications	Basic Standard
Electrostatic discharge	8 kV air discharge	IEC 61000-4-2
	4 kV contact discharge	

7.3.2. Block diagram of test setup

For table-top equipment



7.3.3. Test procedure

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.

2. Contact discharge:

All the procedure shall be same as Section 1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

3. Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

4. Indirect discharge for vertical coupling plane

At least 20 single discharge 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.

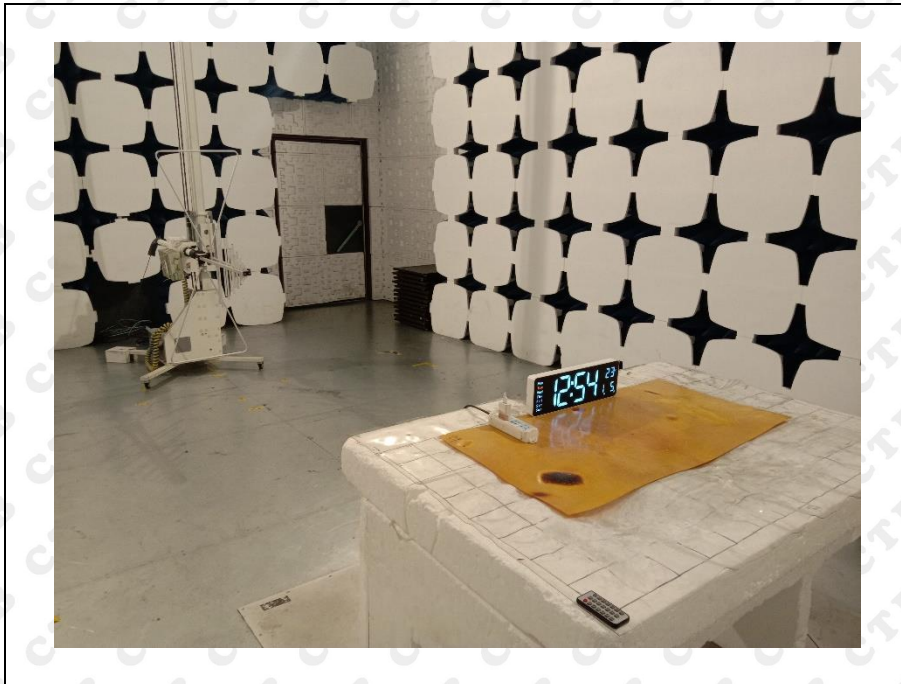
7.3.4. Test results

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Test Mode:	Mode 1
Test Voltage :	DC 5V		

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Criterion	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A
Note: /					

7. Photographs of test setup

RE



CE



ESD



8. Photographs of EUT

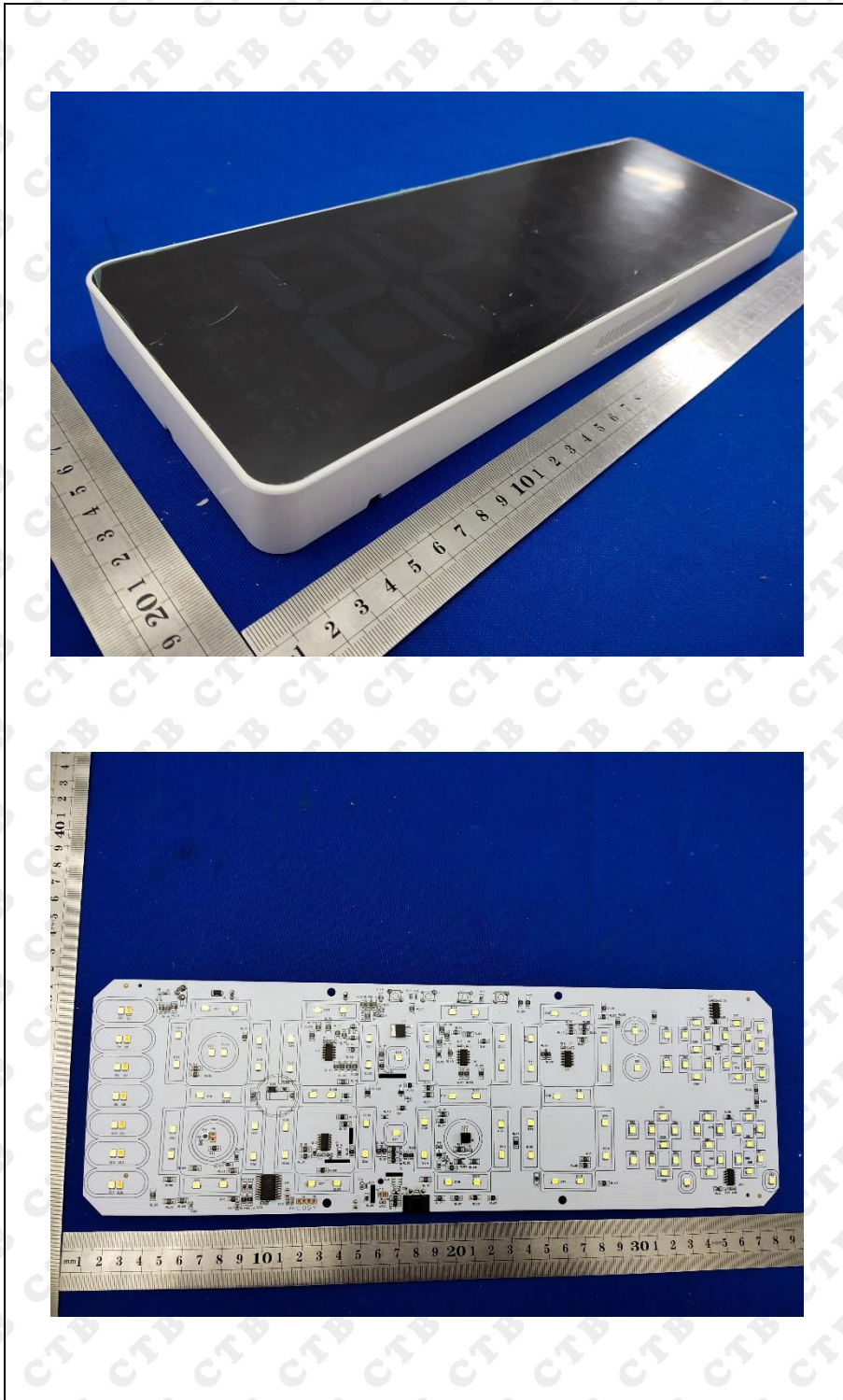
EUT photo 1



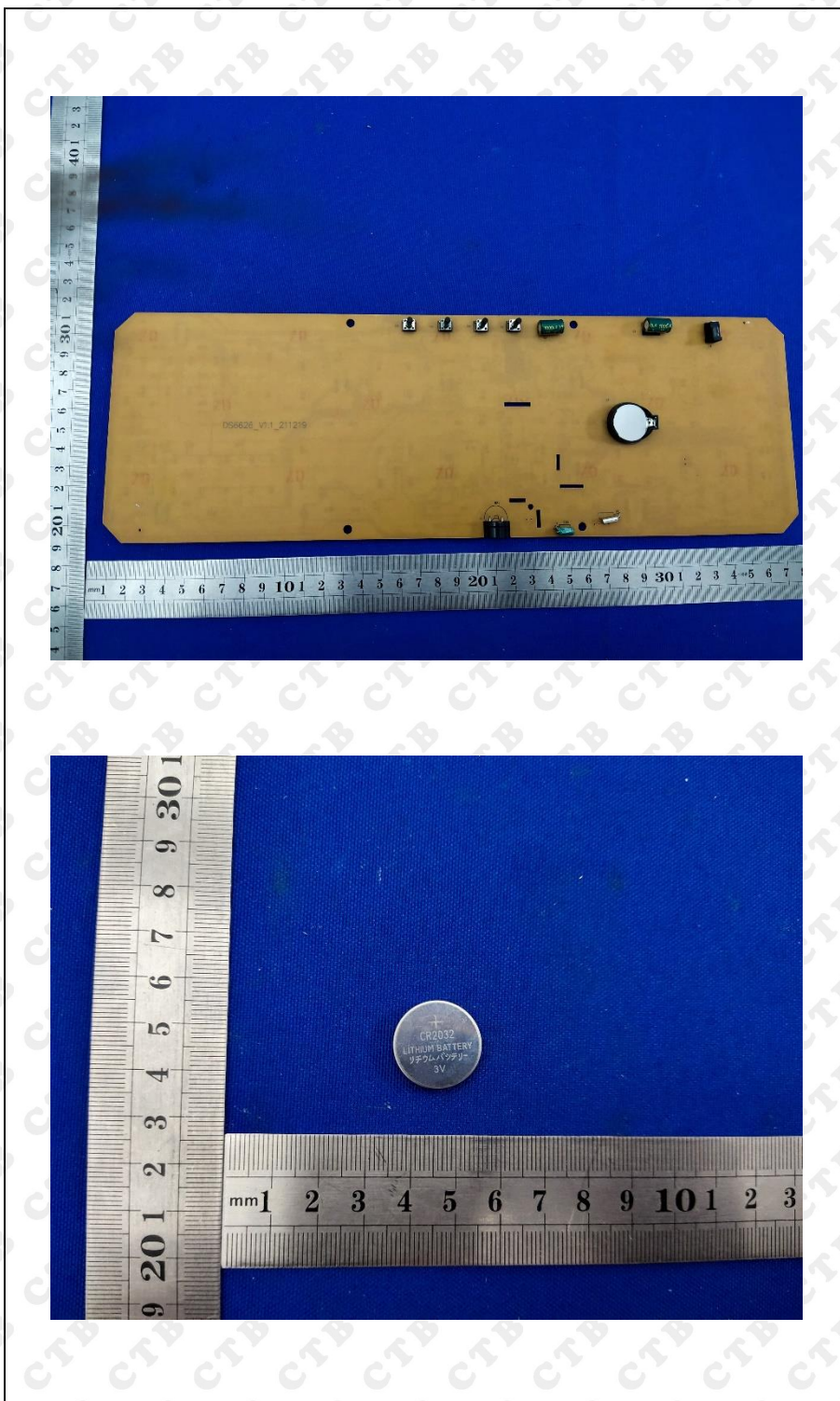
EUT photo 2



EUT photo 3



EUT photo 4



End of report