

Prüfbericht-Nr.: <i>Test report no.:</i>	CN233MR3 001	Auftrags-Nr.: <i>Order no.:</i>	P01149679	Seite 1 von 16 <i>Page 1 of 16</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2023-07-03	
Auftraggeber: <i>Client:</i>	Guangzhou Shirui Electronics Co., Ltd. No.192 KeZhu Road Science ParkEconomic-Technological Development Area Guangzhou, Guangdong, 510530 China			
Prüfgegenstand: <i>Test item:</i>	Digital Signage Display			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	PN-ME552			
Auftrags-Inhalt: <i>Order content:</i>	Energy Efficiency Test Report for Electronic Displays			
Prüfgrundlage: <i>Test specification:</i>	COMMISSION REGULATION (EU) 2019/2021 Ecodesign requirements for electronic displays Amended by COMMISSION REGULATION (EU) 2021/341			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2023-07-03	Detaillierte Fotodokumentation siehe Seite 12 zu diesem Bericht <i>Detailed photo documentation see page 12 to this report</i>		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003410526-001			
Prüfzeitraum: <i>Testing period:</i>	2023-07-03~2023-07-10			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
Geprüft von: Vincent Tu <i>Tested by:</i>		Genehmigt von: Jolene Zhao <i>Authorized by:</i>		
Datum: <i>Date:</i>	2023-10-13	Ausstellungs datum: <i>Issue date:</i>	2023-10-13	
Stellung / Position:	Project Engineer	Stellung / Position:	Reviewer	
Sonstiges / Other:	The product fulfils the energy efficiency requirements of above test specification. This report replaces original report dated 2023-08-21.			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

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Produktbeschreibung
Product description

General Product Information

1	Product details	Product Name: LCD MONITOR Model Name: PN-ME552 Trademark: SHARP Rated Input: 100-240V~, 50/60Hz, 2.6-1.1A (2.5A for Mexico) Resolution: 3840*2160 Screen size: 1209.6mm x 680.4mm Viewing screen area, A: 82.3 dm² Visible screen diagonal: 138.8 cm / 54.6inch The EUT is a 54.6-inch LCD monitor with LED backlight, LCD panel: S55N-UHD (CVTE)
2	Accessories	Product Name: N/A Model Name: N/A Trademark: N/A Rated Input: N/A
3	Other	1.Model difference : N/A 2.Test sample(s), as well sample information, description, product details and intended usage was provided by customer. 3.The input terminal for the audio and video test signals: HDMI 4.Serial number: Engineering sample
4	Test sample obtaining:	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:

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Produktbeschreibung Product description

Copy of Marking Plate(s):

Identification marking



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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
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**COMMISSION REGULATION (EU) 2019/2021
of 1 October 2019 with amended by (EU) 2021/341 of 23 February 2021
laying down ecodesign requirements for electronic displays pursuant to
Directive 2009/125/EC of the European Parliament and of the Council,
amending Commission Regulation (EC) No 1275/2008 and repealing
Commission Regulation (EC) No 642/2009**

—	ANNEX II Ecodesign requirements	See below	P
A	ENERGY EFFICIENCY REQUIREMENTS		N/A
1.	ENERGY EFFICIENCY INDEX LIMITS FOR ON-MODE The energy efficiency index (EEI) of an electronic display shall be calculated using the following equation: corr is a correction factor of 10 for OLED electronic displays that do not $EEI = \frac{(P_{measured} + 1)}{(3 \times [90 \times \tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3) + corr}$ apply the ABC allowance in point B (1). This shall apply until 28 February 2023. corr shall be zero in all other cases. The EEI of an electronic display shall not exceed the maximum EEI (EEI_{max}) according to the limits in Table 1 from the dates indicated.	Not apply to digital signage displays.	N/A

Table 1

EEI limits for on-mode

	EEI_{max} for electronic displays with resolution up to HD	EEI_{max} for electronic displays with resolution above HD and up to UHD	EEI_{max} for electronic displays with resolution above UHD and for MicroLED displays
1 March 2021	0,90	1,10	n.a.
1 March 2023	0,75	0,90	0,90'

B	ALLOWANCES AND ADJUSTMENTS FOR THE PURPOSE OF THE EEI CALCULATION AND FUNCTIONAL REQUIREMENTS		—
1.	Electronic displays with automatic brightness control (ABC)		N/A
—	Electronic displays qualify for a 10 % reduction in $P_{measured}$, if they meet all of the following requirements: (a) ABC is enabled in the normal configuration of the electronic display and persists in any other standard dynamic range configuration available to the end-user; (b) the value of $P_{measured}$, in the normal configuration, is measured with ABC disabled or, if ABC cannot be disabled, in an ambient light condition of 100 lux measured at the ABC sensor; (c) the value of $P_{measured}$ with ABC disabled, if applicable, shall be equal to or greater than the on mode	Not apply to digital signage displays.	N/A

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	power measured with ABC enabled in an ambient light condition of 100 lux measured at the ABC sensor; (d) with ABC enabled, the measured value of the on mode power must decrease by 20 % or more when the ambient light condition, measured at the ABC sensor, is reduced from 100 lux to 12 lux; and (e) the ABC control of the display screen luminance meets all of the following characteristics when the ambient light condition measured at the ABC sensor changes: —the measured screen luminance at 60 lux is between 65 % and 95 % of the screen luminance measured at 100 lux; —the measured screen luminance at 35 lux is between 50 % and 80 % of the screen luminance measured at 100 lux; and —the measured screen luminance at 12 lux is between 35 % and 70 % of the screen luminance measured at 100 lux.		
2.	Forced menu and set up menus		N/A
—	Electronic displays may be placed on the market with a forced menu on initial activation proposing alternative settings. Where a forced menu is provided, the normal configuration shall be set as default choice, otherwise the normal configuration shall be the out-of-the-box setting.	Not apply to digital signage displays.	N/A
—	If the user selects a configuration other than the normal configuration and this configuration results in a higher power demand than the normal configuration, a warning message about the likely increase in energy use shall appear and confirmation of the action shall be explicitly requested.		N/A
—	If the user selects a setting other than those that are part of the normal configuration and this setting results in a higher energy consumption than the normal configuration, a warning message about the likely increase in energy consumption shall appear and confirmation of the action explicitly requested.		N/A
—	A change by the user in a single parameter in any setting shall not trigger any change in any other energy-relevant parameter, unless unavoidable. In such a case a warning message shall appear about the change of other parameters and the confirmation of the change shall be explicitly requested.		N/A
3.	Peak white luminance ratio		N/A

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
—	In the normal configuration, the peak white luminance of the electronic display in a 100 lux ambient light viewing environment shall not be less than 220 cd/m ² or, if the electronic display is primarily intended for close viewing by a single user, not less than 150 cd/m ² . If the electronic display's peak white luminance in the normal configuration is set to lower values, it shall not be less than 65 % of the peak white luminance of the display, in a 100 lux ambient light viewing environment in the brightest on mode configuration.	Not apply to digital signage displays.	N/A
C	OFF MODE, STANDBY AND NETWORKED STANDBY MODE REQUIREMENTS		P
1.	Power demand limits other than on-mode Electronic displays shall not exceed power demand limits in the different modes and conditions listed in Table 2:		P
—	Off mode: $P_{\text{off}} \leq 0.30 \text{ W}$ (Max. limit)	Total maximum limit $P_{\text{off}} 0.30\text{W}$ Measured $P_{\text{off}} 0.02\text{W}$	P
—	Standby mode: $P_{\text{Standby}} \leq 0.50 \text{ W}$ (Max. limit) Allowances for additional functions when present and enabled - Status display: $P_{\text{Standby_adder}} = 0.20 \text{ W}$ - Deactivation using room presence detection: $P_{\text{Standby_adder}} = 0.50 \text{ W}$ - Touch functionality, if usable for activation: $P_{\text{Standby_adder}} = 1.00 \text{ W}$ Total maximum power demand with all additional functions when present and enabled $\leq 2.20 \text{ W}$	Total maximum limit $P_{\text{Standby}} 0.50\text{W}$ Measured $P_{\text{Standby}} 0.458\text{W}$	P
—	Networked standby mode: $P_{\text{nsb}} \leq 2.00 \text{ W}$ (Max. limit) Allowances for additional functions when present and enabled - Status display: $P_{\text{nsb_adder}} = 0.20 \text{ W}$ - Deactivation using room presence detection: $P_{\text{nsb_adder}} = 0.50 \text{ W}$ - Touch functionality, if usable for activation: $P_{\text{nsb_adder}} = 1.00 \text{ W}$ - HiNA function: $P_{\text{nsb_adder}} = 4.00 \text{ W}$ Total maximum power demand with all additional functions when present and enabled: $P_{\text{nsb}} \leq 7.70 \text{ W}$	Total maximum limit $P_{\text{nsb}} 2.00 \text{ W}$ Measured $P_{\text{nsb}} 0.681\text{W}$	P
2.	Availability of off, standby and networked standby modes		P
	Electronic displays shall provide off mode or standby mode or a networked standby mode or other modes which do not exceed the applicable power demand requirements for standby mode.	Off mode, standby mode and networked standby mode provided	P
	The configuration menu, instruction manuals and other documentation, if any, shall refer to off mode, standby	Automatic switch to standby mode without signal input	P

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
	mode or networked standby mode using those terms.		
	Automatic switch to off mode and/or standby mode and/or another mode which does not exceed the applicable power demand requirements for standby mode shall be set as default, including for networked displays where the network interface is enabled when in on mode.		P
	Networked standby mode shall be disabled in 'normal configuration' of a networked television. The end user shall be prompted to confirm the activation of networked standby, if it is needed for a chosen remotely activated function, and must be able to disable it.		N/A
	Networked electronic displays shall comply with the requirements for networked standby mode with the reactivation trigger device connected to the network and ready to activate a trigger instruction when required to. With networked standby mode disabled, networked electronic displays shall comply with the requirements of standby mode.		P
3.	Automatic standby in televisions		N/A
	(a) Televisions shall provide a power management function, enabled as delivered by the manufacturer that, within 4 hours following the last user interaction, shall switch the television from on mode into standby mode or networked standby mode or another mode which does not exceed the applicable power demand requirements respectively for standby or networked standby mode. Before such automatic switch, televisions shall show, for at least 20 seconds, an alert message warning the user of the impending switch, with possibility of delaying or temporarily cancelling it.		N/A
	(b) If the television provides a function allowing the user to shorten, extend or disable the 4-hour period for automatic mode transitions detailed in (a), a warning message shall appear about a potential increase in energy use and a confirmation of the new setting must be requested when an extension beyond the 4-hour period or disabling is selected.		N/A
	(c) If the television is equipped with a room presence sensor, the automatic transition from on mode into any mode as detailed in (a) applies if no presence is detected for no more than 1 hour.		N/A
	(d) Televisions with various selectable input sources shall prioritise the power management protocols of the signal source selected and displayed over those default power management mechanisms described in the paragraphs (a) to (c) above.		N/A
4.4	Automatic standby in displays other than televisions		P

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
	Electronic displays other than televisions, with various selectable input sources shall switch, as configured in the normal configuration, into standby mode, networked standby mode or another mode which does not exceed the applicable power demand requirements respectively for standby or networked standby mode when no input is detected by any input source for over 10 seconds and, for digital interactive whiteboards and for broadcast displays, for over 60 minutes.	10s	P
	Before triggering such a switch, a warning message shall be displayed and the switch completed within 10 minutes.	35s	P

Test Condition

Test method:

1. COMMISSION DELEGATED REGULATION (EU) 2019/2013 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of electronic displays and repealing Commission Delegated Regulation (EU) No 1062/2010.
2. COMMISSION REGULATION (EU) 2019/2021 of 1 October 2019 laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009

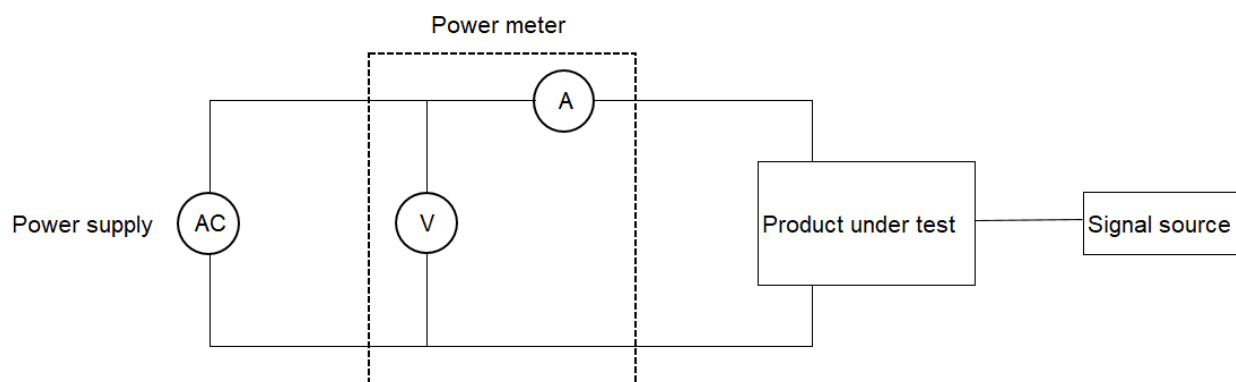
Notes: The following test standards provide important supporting information for the specification of test equipment and the required testing conditions relevant to measurement and testing guidance:

EN 50564: 2011 Electrical and electronic household and office equipment – Measurement of low power consumption

EN 62087-3: 2016 Methods of measurement for the power consumption of televisions

EN 62087-7: 2019 Methods of measurement for the power consumption of computer monitors

Test set-up:



Note: Lower power loads connection according to EN50564:2011

Test equipment:

Equipment No.	Name of Equipment	Remarks	Next Cal. Date
1.742	Digital Power Meter	Chroma / 66205	Jan-2024
1.720	Luminance Meter	Konica Minolta / LS-150	Mar-2024
1.736	Temperature Humidity Recorder	HUAHANWEI / TH20R-EX	Oct-2023
1.741	AC Power Source	Chroma / 61602	Jan-2024
1.891	Stop watch	LEAF / PC396	Jan-2024
1.870	Illuminance meter	Konica Minolta / CL-200	Nov-2023

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Test Data and Results

Power Consumption Measurement		
Ambient temperature	23.7℃	
Test voltage in V	229.6	
Test frequency in Hz	49.8	
Total harmonic distortion of AC power supply system	1.55%	
The input terminal for the audio and video test signals	HDMI	
On mode (SDR)	111.4W	
EEL	1.184	
On mode (HDR10)	112.8W	
On mode (HLG)	112.4W	
Off mode	0.02W	
Standby mode	0.458W	
Network standby mode	0.681W	
Luminance Measurement		
Normal configuration	354.1 cd/m ²	
Brightest configuration	488.1 cd/m ²	
Luminance ratio	72.6%	
Test with ABC enabled		
Illuminance (lux)	Power (W)	Luminance (cd/m2)
100	N/A	N/A
60	N/A	N/A
35	N/A	N/A
12	N/A	N/A

Calculation of EEL _{label} and classification		
	SDR	HDR
P _{measured} (declared value)	123.0W	124.0W
EEL label	1.420	1.431
Energy efficiency class	G	G
$EEL_{label} = \frac{(P_{measured} + 1)}{(3 \times [90 \times \tanh(0,025 + 0,0035 \times (A - 11)) + 4] + 3) + corr_l}$		
Energy Efficiency Class	Energy Efficiency Index (EEL _{label})	
A	EEL _{label} < 0.30	
B	0.30 ≤ EEL _{label} < 0.40	
C	0.40 ≤ EEL _{label} < 0.50	
D	0.50 ≤ EEL _{label} < 0.60	
E	0.60 ≤ EEL _{label} < 0.75	
F	0.75 ≤ EEL _{label} < 0.90	
G	0.90 ≤ EEL _{label}	

Photographs



Figure 1. front view



Figure 2. Back view

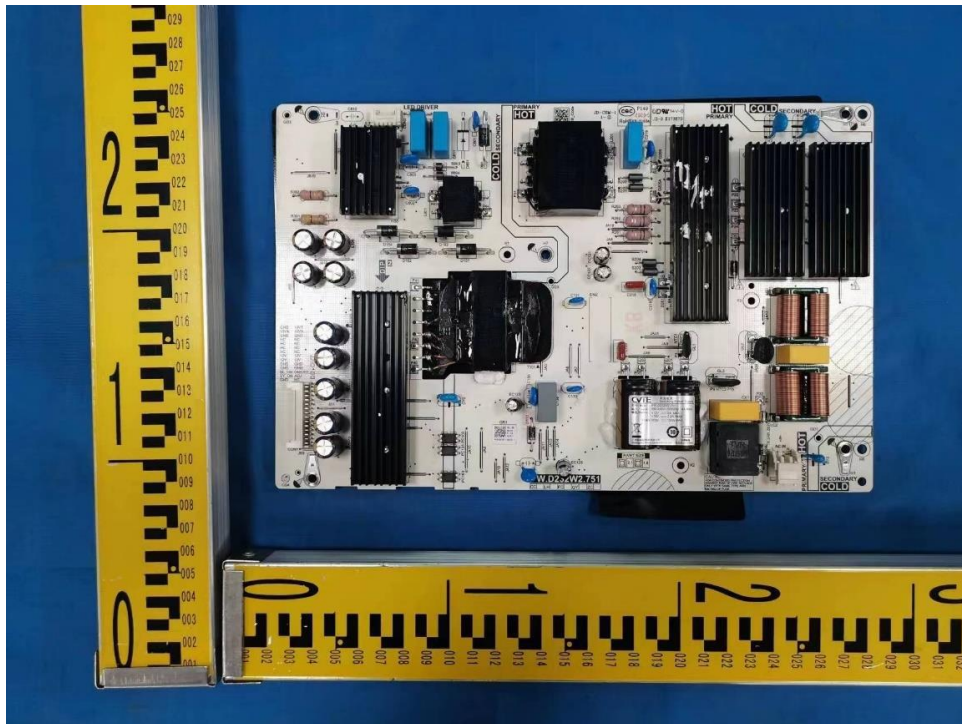


Figure 3. Power board

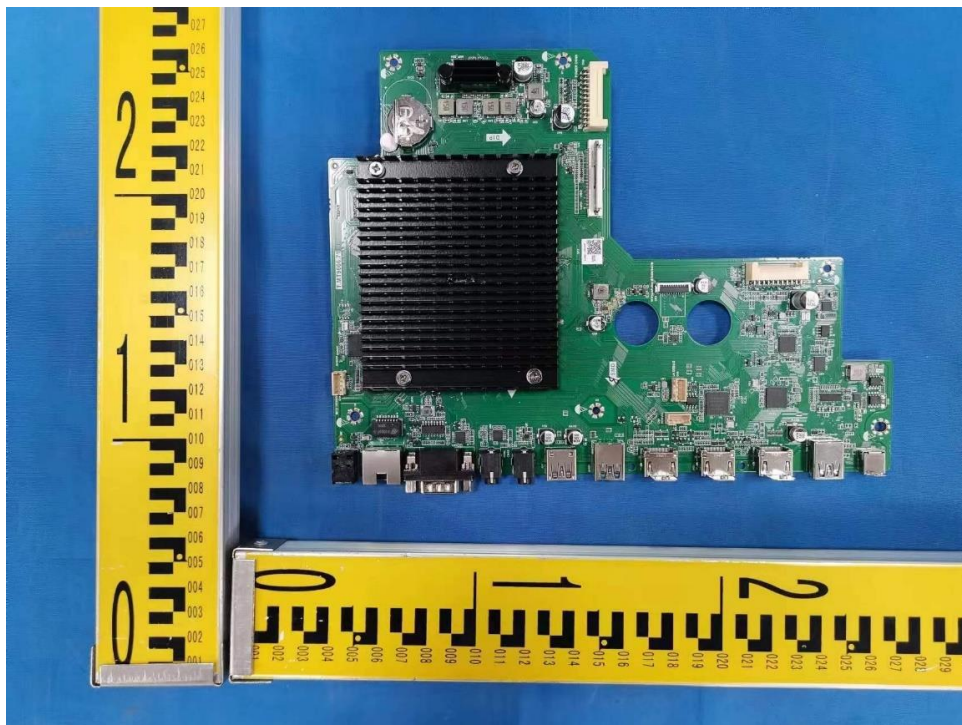


Figure 4. Mainboard view

--End of Test Report--