

Technical Report

Report No. DPEA-982

A. Equipment information

Model name: PN-E659
Equivalent models:
Brand: SHARP
Category Type: Digital Signage Display
Detail category if above is "Other":
Serial No.:
Firmware Version: Ver. 1.08
Rated voltage: 100-240 V
Rated frequency: 50/60 Hz

B. Applicable regulations:

No. (EU) 2019/2021 amended by No. (EU) 2021/341
(Eco-design Requirements for electronic displays) **Applicable**
No. (EU) 2019/2013 amended by No. (EU) 2021/340
(Energy Labelling of electronic displays) **Applicable**

Applicable standards:

Measurement according to EN 62087-1:2016 (General)
EN 62087-2:2016 (Signal and media)
EN IEC 62087-7:2019 (Computer monitors)
EN 50564:2011 (Measurement of low power consumption)

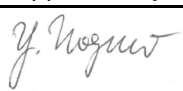
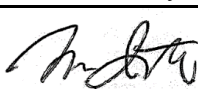
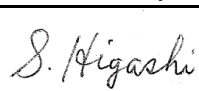
C. Result

ErP Directive: Points A and B of Annex II of 2019/2021 **Not Applicable**
Points C of Annex II of 2019/2021 **Comply**
Energy efficiency class: G (for SDR), Not Applicable (for HDR)

D. Issuer information

Company name: SHARP CORPORATION
Division: Smart Business Solutions BU Digital Imaging Solution Business Unit
Department: MN Engineering Division II
Address: 492 Minosho-cho, Yamato-Koriyama-shi, Nara, 639-1186, Japan
Issued Date: 21 / Jan / 2025

Signature:

Approved by	Checked by	Issued by
		
Y. Nogami	M. Itoh	S. Higashi
Division Manager	Senior Manager	

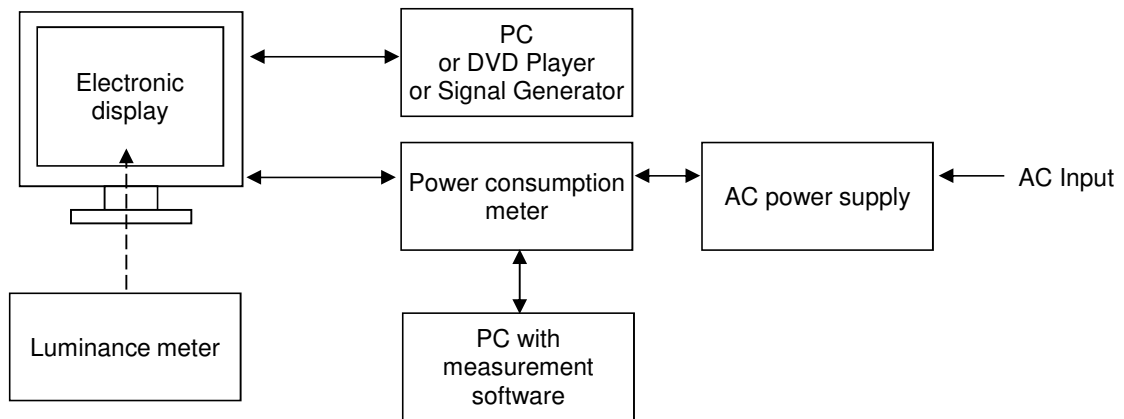
Measurement and confirmation data

1. Test condition

- 1) Ambient temperature
- 2) Test voltage in V and frequency in Hz
- 3) Total harmonic distortion of AC power supply system
- 4) The input terminal for the audio and video test signals

23.1	°C
230	V
50.0	Hz
2.000	% (Max 2%)
HDMI	

<Measurement setting>



<Test equipment data>

No.	Device	Model	Brand	Serial No.	Valid calibration data
1	Digital Power Meter	WT310E	YOKOGAWA	C3XL12007E	2025/10/11
2	Tem-Humidity Meter	8813	deli	8813	2025/7/23
3	Luminance Meter	Bm-7	TOPCON	835157	2025/1/9
4	Illuminance	T-10A	KONICA MINOLTA	20015099	2025/3/6
5	Anemometer	6006-DC	KANOMAX	6319	2025/3/11
6	AC Power Supply	APW-150N	ELECTRONIC	930345	-

Measurement and confirmation data

2. On mode and EEI requirement (No. (EU) 2019/2021 Annex II. A)

(i)	Measured On mode power consumption for Standard Dynamic Range (SDR): P_{measured}	104.1W
	<Method of shift to a stable condition of On mode for SDR> After turned on the display, keep on aging more than 15 minutes.	
(ii)	EEI	0.84
	EEI verdict as of 1 March 2021	Not Applicable
	(Reference) EEI verdict as of 1 March 2023	Not Applicable
(iii)	Measured On mode power consumption for High Dynamic Range (HDR) mode with HLG	Not Applicable
	Measured On mode power consumption for High Dynamic Range (HDR) mode with HDR10	Not Applicable
	<Method of shift to a stable condition of On mode for HDR> After turned on the display, keep on aging more than 15 minutes. Then change to each compatible HDR setting.	

The On mode measuring performed in accordance with EN IEC 62087-7:2019.

The "average power approach" was used for calculation of the power consumption.

Used signal : Dynamic broadcast-content video signal (EN 62087-2:2016)

3. Automatic Brightness Control (ABC) function allowance (No. (EU) 2019/2021 Annex II. B.1)

If electronic displays meet all of the following requirements, they qualify for a 10 % reduction in P_{measured}

(i)	Whether ABC is enabled in the normal configuration of the electronic display	No
(ii)	Measured ON mode power consumption at 100 lux ambient light at the ABC sensor	Not Applicable
	Measured ON mode power consumption at 12 lux ambient light at the ABC sensor	Not Applicable
	Percentage of power reduction due to ABC action between the 100 lux and 12 lux ambient light conditions	Not Applicable
(iii)	Measured screen luminance at 100 lux ambient light at the ABC sensor	Not Applicable
	Measured screen luminance at 60 lux ambient light at the ABC sensor	Not Applicable
	Percentage of screen luminance due to ABC action between the 100 lux and 60 lux ambient light conditions	Not Applicable
	Measured screen luminance at 35 lux ambient light at the ABC sensor	Not Applicable
	Percentage of screen luminance due to ABC action between the 100 lux and 35 lux ambient light conditions	Not Applicable
	Measured screen luminance at 12 lux ambient light at the ABC sensor	Not Applicable
	Percentage of screen luminance due to ABC action between the 100 lux and 12 lux ambient light conditions	Not Applicable

Measurement and confirmation data

4. Forced menu, set up menus and warning message (No. (EU) 2019/2021 Annex II. B.2)

(i)	Whether the electronic display has the forced menu on initial activation proposing alternative settings.	Not Applicable
(ii)	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 Applicable
(iii)	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.	Not Applicable
(iv)	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.	Not Applicable
(v)	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.	Not Applicable

5. Peak white luminance requirement (No. (EU) 2019/2021 Annex II. B.3)

(i)	Measured peak white luminance of the brightest on mode configuration	400.1cd/m2
	<The picture settings used for the brightest peak white luminance> BRIGHTNESS: 100, CONTRAST: 100	
(ii)	Measured peak white luminance of the normal configuration	339.6cd/m2
(iii)	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/m2 or, if the electronic display is primarily intended for close viewing by a single user, not less than 150 cd/m2.	Not Applicable
(iv)	Peak white luminance ratio	84.9%
(v)	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 Applicable

Measure the peak white luminance not less than 60 minutes after it has been switched on.

Used signal :Box and outline video signal (EN 62087-2:2016)

Measurement and confirmation data

6. Off, Standby and Networked standby mode requirement (No. (EU) 2019/2021 Annex II. C.1)

(i)	Measured Off mode power consumption	0.0W
	Off mode verdict (<0.3W)	PASS
	<Method of shift to Off mode> Main power switch is turned off.	
(ii)	Measured Standby mode power consumption	0.41W
	Standby mode power consumption allowance	0.50W
	<Allowances for additional functions > None	
	Standby mode verdict	PASS
	<Method of shift to Standby mode> During the display is ON state, by pushing the power button of the display or remote controller it goes into standby mode in normal configuration. During it is standby mode, by pushing the power button of the display or remote controller it can be returned to ON state.	
(iii)	Measured Networked standby mode power consumption	0.74W
	Networked standby mode power consumption allowance	2.00W
	<Allowances for additional functions > None	
	Networked standby mode verdict	PASS
	<Method of shift to Networked standby mode (Max condition)> At first the settings are changed "LAN PORT" to "ON" and set the LAN control setting. Then during the display is ON state, by pushing power button of the display or remote controller or by network control it goes into networked standby mode. During it is networked standby mode, by pushing the power button of the display or remote controller or by network control it can be returned to ON state.	

Off mode, Standby mode and Networked standby mode measuring have been performed in accordance with sampling method of EN 50564:2011.

The measurement time for the average measurement is 10 minutes.

(Total 15 minutes, the measurement data of the first 5 minutes is discarded.)

Measurement and confirmation data

<Network information>

(i)	Number and type of network interfaces	4 (LAN:1, RS-232C:1, HDMI CEC:2)
(ii)	Position of each network interfaces (except for wireless network interfaces)	LAN: Input terminal RS-232C: Input terminal HDMI CEC: HDMI input terminal
(iii)	Whether the display qualifies as display with HiNA functionality	No
(iv)	Which networked interfaces enable Networked standby mode	LAN, RS-232C, HDMI CEC
(v)	In networked standby mode, whether the power management function switch the electronic display automatically into standby mode or off mode	No
(vi)	The default time after which the power management function switches the display into a networked standby mode	Not Available
(vii)	The trigger to be used to reactivate the display	LAN: LAN control RS-232C: Serial command HDMI CEC: CEC link

7.Availability of Off, Standby and Networked standby modes (No. (EU) 2019/2021 Annex II. C.2)

(i)	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.	Yes
(ii)	The configuration menu, instruction manuals and other documentation, if any, shall refer to off mode, standby mode or networked standby mode using those terms.	Yes
(iii)	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.	Yes
(iv)	For networked television: Networked standby mode shall be disabled in normal configuration. 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.	Not Applicable
(v)	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.	Yes

Measurement and confirmation data

8. Automatic standby (No. (EU) 2019/2021 Annex II. C.3,4)

(i)	Length of time in on mode before the electronic display automatically switches to standby, off mode, or another condition which does not exceed the applicable power demand requirements for off mode or standby mode.	1:00
(ii)	For televisions: the length of time, following the last user interaction, before the television automatically switches to standby, off-mode, or another condition which does not exceed the applicable power consumption requirements for off mode or standby mode.	Not Applicable
(iii)	For televisions equipped with room presence sensor: the length of time, when no presence is detected, before the television automatically switches to standby, off-mode, or another condition which does not exceed the applicable power demand requirements for off mode or standby mode.	Not Applicable
(iv)	For electronic displays other than televisions and broadcast displays: the length of time, when no input is detected, before the electronic display automatically switches to standby, off mode, or another condition which does not exceed the applicable power consumption requirements for off mode or standby mode.	1:00
(v)	The measured value of the time before the electronic display automatically reaches standby, or off-mode, or another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when no input is detected.	1:00
(vi)	Whether electronic displays with a designated computer signal interface	Yes
	If the above is Yes, whether the electronic display prioritizes the computer display power management protocols set out in point 6.2.3 of Annex II of Commission Regulation (EU) No 617/2013	Yes
	<If the above is No, deviation detail from the protocols>	

9. Material efficiency requirement (No. (EU) 2019/2021 Annex II. D)

(i)	Plastic components heavier than 50 g shall be marked by specifying the type of polymer with the appropriate standard symbols or abbreviated terms. And the components containing flame retardants shall additionally be marked with the abbreviated term of the polymer followed by hyphen.	Yes
(ii)	Electronic displays with a screen panel in which concentration values of Cadmium (Cd) by weight in homogeneous materials exceed 0,01 %, shall be labelled with the 'Cadmium inside' logo. An additional 'Cadmium inside' logo shall be firmly attached internally on the display panel or molded. A 'Cadmium free' logo shall be used if concentration values of Cadmium (Cd) by weight in any homogeneous material part of the display do not exceed 0,01 %.	Yes
(iii)	The use of halogenated flame retardants is not allowed in the enclosure and stand of electronic displays.	Yes

Measurement and confirmation data

10. Energy efficiency class (No. (EU) 2019/2013 Annex II)

(i)	Whether scope of Energy Labelling of electronic displays(2019/2013)	Yes
(ii)	Measured On mode power consumption for Standard Dynamic Range (SDR)	104.1W
	Declared value of On mode power consumption for Standard Dynamic Range (SDR)	115W
	Measured peak white luminance of the normal configuration	340cd/m2
	Declared value of peak white luminance of the normal configuration	280cd/m2
	Measured peak white luminance of the brightest on mode configuration	400cd/m2
	Declared value of peak white luminance of the brightest on mode configuration	350cd/m2
	EEI _{label} for SDR	1.01
	Energy Efficiency class for SDR	G
(iii)	Measured On mode power consumption for High Dynamic Range (HDR) mode with HLG	Not Applicable
	Measured On mode power consumption for High Dynamic Range (HDR) mode with HDR10	Not Applicable
	Average value of measured On mode power consumption for High Dynamic Range (HDR)	Not Applicable
	Declared value of On mode power consumption for High Dynamic Range (HDR)	Not Applicable
	EEI _{label} for HDR	Not Applicable
	Energy Efficiency class for HDR	Not Applicable

Measurement and confirmation data

11. Product information sheet, Technical documentation (No. (EU) 2019/2013 Annex V, VI)

Parameter	Declared value			Unit
Supplier's name or trade mark	SHARP CORPORATION			-
Supplier's address	1 Takumi-cho Sakai-ku, Sakai-City, Osaka 590-8522, Japan			-
Model identifier	PN-E659			-
Energy efficiency class for SDR	G			-
On mode power demand in SDR	115.0			W
Energy efficiency class for HDR	Not Applicable			-
On mode power demand in HDR	Not Applicable			W
Off mode power demand	0.0			W
Standby mode power demand	0.5			W
Networked standby mode power demand	2.0			W
Electronic display category	Digital Signage Display			-
Size ratio	16	:	9	integer
Screen resolution (pixels)	3840	:	2160	pixels
Screen diagonal (cm)	163.9			cm
Screen diagonal (inch)	65			inches
Viewable screen area	114.8			dm ²
Panel technology used	LCD			-
Automatic Brightness Control (ABC) available	No			-
Voice recognition sensor available	No			-
Room presence sensor available	No			-
Image refresh frequency rate (default)	60			Hz
Minimum guaranteed availability of software and firmware updates from the date of end of the placement on the market	8			Years
Minimum guaranteed availability of spare parts from the date of end of the placement on the market	7			Years
Minimum guaranteed product support from the date of end of the placement on the market	8			Years
Minimum duration of the general guarantee offered by the supplier	3			Years

Measurement and confirmation data

Parameter	Declared value	Unit
For On mode		
Peak white luminance of the brightest on mode configuration	350	cd/m2
Peak white luminance of the normal configuration	280	cd/m2
Peak white luminance ratio (calculated)	80.0%	%
For Auto Power Down (APD)		
Length of time in on mode before the electronic display automatically switches to standby, off mode, or another condition which does not exceed the applicable power demand requirements for off mode or standby mode.	1:00	mm:ss
For televisions: the length of time, following the last user interaction, before the television automatically switches to standby, off-mode, or another condition which does not exceed the applicable power consumption requirements for off mode or	Not Applicable	mm:ss
For televisions equipped with room presence sensor: the length of time, when no presence is detected, before the television automatically switches to standby, off-mode, or another condition which does not exceed the applicable power demand requirements for off mode or standby mode.	Not Applicable	mm:ss
For electronic displays other than televisions and broadcast displays: the length of time, when no input is detected, before the electronic display automatically switches to standby, off mode, or another condition which does not exceed the applicable power consumption requirements for off mode or standby mode.	1:00	mm:ss

Measurement and confirmation data

Parameter		Declared value	Unit
For ABC			
Percentage of power reduction due to ABC action between the 100 lux and 12 lux ambient light conditions		Not Available	%
On mode power at 100 lux ambient light at the ABC sensor		Not Available	W
On mode power at 12 lux ambient light at the ABC sensor		Not Available	W
Screen luminance at 100 lux ambient light at the ABC sensor		Not Available	cd/m2
Screen luminance at 60 lux ambient light at the ABC sensor		Not Available	cd/m2
Screen luminance at 35 lux ambient light at the ABC sensor		Not Available	cd/m2
Screen luminance at 12 lux ambient light at the ABC sensor		Not Available	cd/m2
For Power Supply			
Power supply type		Internal	-
External standardised power supply (non standardized and included in the product box)	Description	Not Available	-
	Input voltage	Not Available	V
	Output voltage	Not Available	V
	Input current (max)	Not Available	A
	Output current (min)	Not Available	A
External standardised suitable power supply (or suitable one if not included in the product box)	Supported standard name or list	Not Available	-
	Required output voltage	Not Available	V
	Required delivered current	Not Available	A
	Required current frequency	Not Available	Hz