TEST REPORT

No. ETA25060017P-002 for

Hangzhou Longlux Electronic Technology Co., Ltd

The Western Science Park, Hangzhou City, China

Service	REQUIREMENTS FOR LIGHT SOURCE AND CONTROL GEAR ACCORDING TO (EU)2019/2020 AND (EU)2019/2015
Report Type	3600 Hours Test Report
Product Type	LED Panel Lights with SELV driver
Model Number	LLX-Panel-6060-24W-CCT
Trade Mark	Longlux
Date of Issue	July 16, 2025
Date of Tests	February 14, 2025 through July 16, 2025
Test Laboratory	ETA Testing Technology Co., Ltd.
Address	Floor 8, Building A, The Western Science Park, Yuhang District, Hangzhou 311121, China
Test Location	ETA Testing Technology Co., Ltd.
Prepared By	Kavi Ding
Reviewer	Sean Wan

This report is for the exclusive use of ETA's Client and is provided pursuant to the agreement between ETA and its Client. ETA's responsibility and liability are limited to the terms and conditions of the agreement. ETA assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the ETA name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by ETA. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an ETA certification program.

Table of Content

REMARKS 3
REFERENCE STANDARD.....3
EQUIPMENT LIST.....4
PRODUCT INFORMATION 5
TEST RESULTS.....6
PRODUCT PICTURES.....16

********** End of Page **********

REMARKS

General Disclaimer	The test results presented in this report relate only to the object tested.
TBD	To Be Determined, test case will be conducted.
N/A	Test case does not apply to the test object.
Pass	Test item does meet the requirement.

REFERENCE STANDARD

Designation	Description
COMMISSION REGULATION (EU) 2019/2020 of 1 October 2019	Laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012
COMMISSION DELEGATED REGULATION (EU) 2019/2015 of 11 March 2019	Supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012
COMMISSION DELEGATED REGULATION (EU) 2021/340 of 17 December 2020	Amending Delegated Regulations (EU) 2019/2013, (EU) 2019/2014, (EU) 2019/2015, (EU) 2019/2016, (EU) 2019/2017 and (EU) 2019/2018 with regard to energy labelling requirements for electronic displays, household washing machines and household washer-dryers, light sources, refrigerating appliances, household dishwashers, and refrigerating appliances with a direct sales function
COMMISSION REGULATION (EU) 2021/341 of 23 February 2021	Amending Regulations (EU) 2019/424, (EU) 2019/1781, (EU) 2019/2019, (EU) 2019/2020, (EU) 2019/2021, (EU) 2019/2022, (EU) 2019/2023 and (EU) 2019/2024 with regard to ecodesign requirements for servers and data storage products, electric motors and variable speed drives, refrigerating appliances, light sources and separate control gears, electronic displays, household dishwashers, household washing machines and household washer-dryers and refrigerating appliances with a direct sales function
2021 No. 1095 ENERGY CONSERVATION	The Ecodesign for Energy-Related Products and Energy Information (Lighting Products) Regulations 2021
IEC 62612-2015	Self-ballasted LED lamps for general lighting services with supply voltages ＞50V - Performance requirements.

The above standards or test methods were used in part or totally to test.

********** End of Page **********

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Calibration data	Due date
Everfine – Goniophotometer	GO-R5000	ETA1013	---	---
AC power source for Goniophotometer System	DPS1010	ETA1006	2024/11/30	2025/11/29
Power Analyzer for Goniophotometer	WT310	ETA1005	2024/8/8	2025/8/7
Two meter integrating sphere unit	Everfine – 2M	ETA1014	---	---
AC power source for Integrating Sphere System	DPS1010	ETA1002	2024/11/30	2025/11/29
Power Analyzer for Integrating Sphere System	WT310	ETA1001	2024/11/30	2025/11/29
Spectroradiometer	HAAS 2000	ETA1003	---	---
DC Linear Power Source	WY12010	ETA1004	2024/11/30	2025/11/29
Illumination Photometer	Z-10	ETA1007	2024/11/22	2025/11/21
Luminous intensity Standard lamp For Goniophotometer	---	ETA1008	2025/3/10	2026/3/9
Standard lamp	D204	ETA1033	2024/8/9	2025/8/8
Aging room 1	HWX-35F	ETA1054	---	---
Aging room 2	HWX-35F	ETA1056	---	---
Digital Thermometer	TES-1311A	ETA1141	2024/11/30	2025/11/29
Tektronix Oscilloscope	DPO2012B	ETA1187	2025/4/24	2026/4/23
Flicker Photometer	LFA-3000	ETA1028	2024/11/22	2025/11/21
Programmable power supply	PCR1000WH	ETA1029	2024/11/22	2025/11/21

********** End of Page **********

PRODUCT INFORMATION

Applicant	Hangzhou Longlux Electronic Technology Co., Ltd
Address	The Western Science Park, Hangzhou City, China
Trade Mark	Longlux
Product Type	LED Panel Lights with SELV driver
Model Number	LLX-Panel-6060-24W-CCT
Lamp cap	N/A
Rated Input	220-240V~;50/60Hz
Rated Power	24W
Rated Luminous Flux (Φuse)	3120lm
Declared ηTM	130.00lm/W
Declared Correlated Colour Temperature (CCT)	3000K-4000K-6500K
Declared Colour Rendering (CRI)	80
Declared Displacement factor for LED and OLED MLS(DF)	≥0.7
Declared Lumen maintenance factor for LED and OLED	0.96
Declared Survival factor for LED and OLED	0.9
Declared colour consistency for LED and OLED	≤6
Declared beam angle for DLS	N/A
Declared Life time	25000h
Declared Flicker for LED and OLED MLS	≤1.0
Declared Stroboscopic effect for LED and OLED MLS	≤0.4

********** End of Page **********

TEST RESULTS

1. Initial Test Data: LLX-Panel-6060-24W-CCT at 6500K

Sample No.	Input Voltage (V)	Current (mA)	Power (W)	Luminous Flux (Φuse) (lm)	Lumen Efficacy (lm/W)	CCT (K)	Beam angle (°) for DLS
L1	230.0	106.0	23.17	3227.7	139.30	6544	--
L2	230.0	109.5	23.94	3206.8	133.98	6503	--
L3	230.0	107.9	23.58	3224.7	136.73	6515	--
L4	230.0	108.4	23.68	3204.4	135.35	6501	--
L5	230.0	107.2	23.43	3206.3	136.85	6506	--
L6	230.0	107.0	23.38	3205.7	137.10	6505	--
L7	230.0	106.5	23.28	3213.6	138.07	6509	--
L8	230.0	108.2	23.64	3209.0	135.74	6547	--
L9	230.0	108.4	23.69	3226.0	136.19	6522	--
L10	230.0	107.4	23.47	3218.9	137.16	6511	--
Average	/	/	23.52	3214.3	136.65	6516	--
Required	--	--	--	--	--	--	--

Sample No.	Colour rendering (CRI)	Displacement factor (DF)	Colour consistency	Flicker (Pst LM)	Stroboscopic effect (SVM)	Psb (W)	Pnet (W)
L1	82.2	0.971	3.0	0.012	0.013	--	--
L2	82.2	0.979	3.2	0.012	0.019	--	--
L3	82.2	0.972	3.3	0.014	0.013	--	--
L4	82.2	0.977	3.0	0.019	0.014	--	--
L5	82.2	0.980	3.1	0.013	0.012	--	--
L6	82.3	0.977	3.3	0.012	0.014	--	--
L7	82.2	0.974	3.1	0.015	0.011	--	--
L8	82.3	0.972	3.3	0.019	0.016	--	--
L9	82.2	0.978	3.0	0.018	0.020	--	--
L10	82.3	0.978	3.2	0.012	0.019	--	--
Average	82.2	0.976	3.1	0.015	0.015	--	--
Required	CRI≥80	DF≥0.7	SDCM≤6	Pst LM≤1.0	SVM≤0.4	<0.5W	<0.5W

********** End of Page **********

2. Initial Test Results: LLX-Panel-6060-24W-CCT at 6500K

Sample No.	Initial Luminous Flux (Φuse) (lm)	Efficacy factor (F)	CRI factor (R)	Threshold efficacy (η)	End loss factor (L)	Correction factor (C)	Ponmax
L1	3227.7	1.00	1.01	120	1.5	1.08	31.09
L2	3206.8	1.00	1.01	120	1.5	1.08	30.90
L3	3224.7	1.00	1.01	120	1.5	1.08	31.07
L4	3204.4	1.00	1.01	120	1.5	1.08	30.88
L5	3206.3	1.00	1.01	120	1.5	1.08	30.90
L6	3205.7	1.00	1.01	120	1.5	1.08	30.91
L7	3213.6	1.00	1.01	120	1.5	1.08	30.97
L8	3209.0	1.00	1.01	120	1.5	1.08	30.93
L9	3226.0	1.00	1.01	120	1.5	1.08	31.08
L10	3218.9	1.00	1.01	120	1.5	1.08	31.02
Average	3214.3	1.00	1.01	120	1.5	1.08	30.97
Factor	N/A	☒1.00 for NDLS ☐0.85 for DLS	☐0.65 for CRI≤25 ☒ (CRI+80)/160 for CRI>25	120.0 for LED	☒1.5 for LED ☐2.0 for connected light sources	☐NDLS & NMLS: 1.00 ☒NDLS & MLS: 1.08 ☐DLS & NMLS: 1.15 ☐DLS & MLS: 1.23	Ponmax= Cx(L+ Φuse/(Fx η)xR

Correction factor (C)	☐FL or HID with CCT > 5 000 K: +0.10 ☐FL with CRI > 90: 0.10 ☐HID with second envelope: +0.10 ☐MH NDLS > 405 W with non-clear envelope: +0.10 ☐DLS with anti-glare shield: +0.20 ☐Colour-tuneable light source (CTLS) : +0.10 ☐High luminance light sources (HLLS) : +0,0058 • Luminance-HLLS - 0,0167

********** End of Page **********

3. Initial Test Results for Energy Efficiency Classes: LLX-Panel-6060-24W-CCT at 6500K

Sample No.	Initial Luminous Flux (Φuse) (lm)	Pon(W)	F_{TM}	ηTM (lm/W)	Test Energy efficiency class	Declare Energy efficiency class
L1	3227.7	23.17	1.000	139.3	D	E
L2	3206.8	23.94	1.000	134.0	E	E
L3	3224.7	23.58	1.000	136.7	D	E
L4	3204.4	23.68	1.000	135.3	D	E
L5	3206.3	23.43	1.000	136.8	D	E
L6	3205.7	23.38	1.000	137.1	D	E
L7	3213.6	23.28	1.000	138.1	D	E
L8	3209.0	23.64	1.000	135.7	D	E
L9	3226.0	23.69	1.000	136.2	D	E
L10	3218.9	23.47	1.000	137.2	D	E
Average	3214.3	23.52	1.000	136.6	D	E

Energy efficiency class:

A: 210 ≤ ηTM
B: 185 ≤ ηTM < 210
C: 160 ≤ ηTM < 185
D: 135 ≤ ηTM < 160
E: 110 ≤ ηTM < 135
F: 85 ≤ ηTM < 110
G: ηTM < 85

Factors FTM by light source type:

☒NDLS & MLS: 1.000
☐NDLS & NMLS: 0.926
☐DLS & MLS: 1.176
☐DLS & NMLS: 1.089

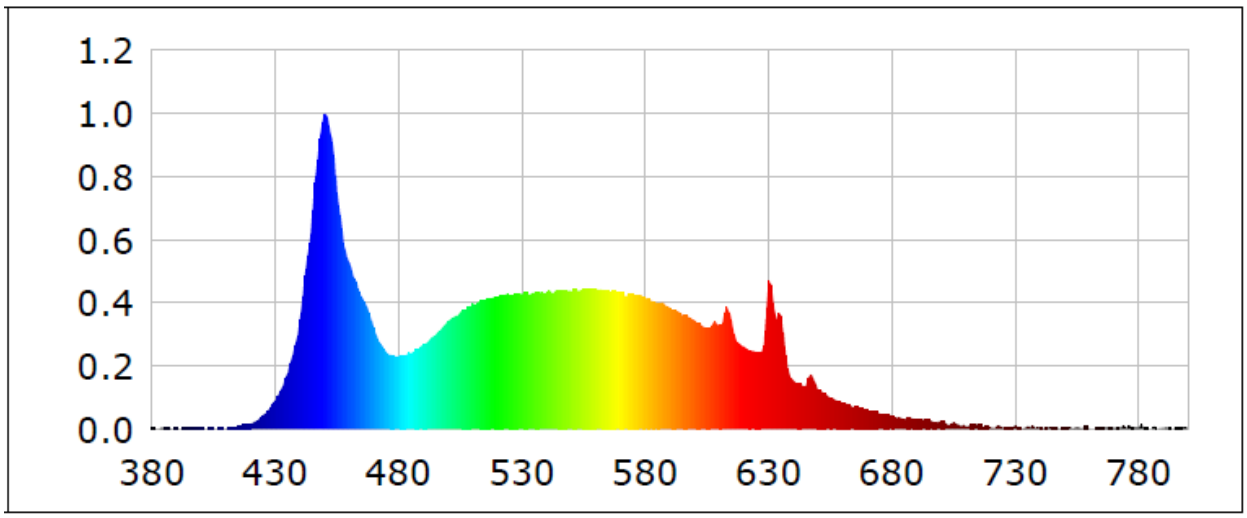
********** End of Page **********

4. Test Results of Survival Factor and Lumen Maintenance: LLX-Panel-6060-24W-CCT at 6500K

Sample No.	Initial Luminous Flux (Φuse) (lm)	3600H Luminous Flux (Φuse) (lm)	XLMF,MIN% at 3600H	Survival Factor at 3600H
L1	3227.7	3107.2	96.27%	Survival
L2	3206.8	3113.3	97.09%	Survival
L3	3224.7	3108.2	96.39%	Survival
L4	3204.4	3098.1	96.69%	Survival
L5	3206.3	3104.7	96.83%	Survival
L6	3205.7	3110.2	97.02%	Survival
L7	3213.6	3100.4	96.48%	Survival
L8	3209.0	3111.0	96.95%	Survival
L9	3226.0	3109.0	96.37%	Survival
L10	3218.9	3119.0	96.90%	Survival
Average	3214.3	3108.1	96.70%	Survival
Required	--	--	95.81%	90%

********** End of Page **********

5. Spectrum: LLX-Panel-6060-24W-CCT at 6500K



********** End of Page **********

COMMISSION REGULATION (EU) 2019/2020:

3. Information requirements

From 1 September 2021 the following information requirements shall apply:

(a) Information to be displayed on the light source itself

For all light sources, except CTLS, LFL, CFLni, other FL, and HID, the value and physical unit of the useful luminous flux (lm) and correlated colour temperature (K) shall be displayed in a legible font on the surface if, after the inclusion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission.

For directional light sources, the beam angle (°) shall also be indicated.

If there is room for only two values, the useful luminous flux and the correlated colour temperature shall be displayed. If there is room for only one value, the useful luminous flux shall be displayed.

(b) Information to be visibly displayed on the packaging

(1) Light source placed on the market, not in a containing product

If a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following information shall be clearly and prominently displayed on the packaging:

(a) the useful luminous flux (Φuse) in a font at least twice as large as the display of the on-mode power (Pon), clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°);

(b) the correlated colour temperature, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set;

(c) the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;

(d) electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC);

(e) the L70B50 lifetime for LED and OLED light sources, expressed in hours;

(f) the on-mode power (Pon), expressed in W;

(g) the standby power (Psb), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;

(h) the networked standby power (Pnet) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;

(i) the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set;

(j) if CRI< 80, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, a clear indication to this effect. For HID light sources with useful luminous flux > 4 000 lm, this indication is not mandatory;

(k) if the light source is designed for optimum use in non-standard conditions (such as ambient temperature Ta ≠ 25 °C or specific thermal management is necessary): information on those conditions;

(l) a warning if the light source cannot be dimmed or can be dimmed only with specific

********** End of Page **********

dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods shall be provided on the manufacturer's website;

(m) if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place;

(n) if the light source is within the scope of Directive 2012/19/EU, without prejudice to marking obligations pursuant to Article 14(4) of Directive 2012/19/EU, or contains mercury: a warning that it shall not be disposed of as unsorted municipal waste.

Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyer; for other items this is also recommended, if space permits.

For light sources that can be set to emit light with different characteristics, the information shall be reported for the reference control settings. In addition, a range of obtainable values may be indicated.

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

(2) Separate control gears:

If a separate control gear is placed on the market as a stand-alone product and not as a part of a containing product, in a packaging containing information to be visibly displayed to potential buyers, prior to their purchase, the following information shall be clearly and prominently displayed on the packaging:

(a) the maximum output power of the control gear (for HL, LED and OLED) or the power of the light source for which the control gear is intended (for FL and HID);

(b) the type of light source(s) for which it is intended;

(c) the efficiency in full-load, expressed in percentage;

(d) the no-load power (Pno), expressed in W and rounded to the second decimal, or the indication that the gear is not intended to operate in no-load mode. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;

(e) the standby power (Psb), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;

(f) where applicable, the networked standby power (Pnet), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;

(g) a warning if the control gear is not suitable for dimming of light sources or can be used only with specific types of dimmable light sources or using specific wired or wireless dimming methods. In the latter cases, detailed information on the conditions in which the control gear can be used for dimming shall be provided on the manufacturer's or importer's website;

(h) a QR-code redirecting to a free-access website of the manufacturer, importer or authorised representative, or the internet address for such a website, where full information on the control gear can be found.

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

(c) Information to be visibly displayed on a free-access website of the manufacturer, importer

********** End of Page **********

or authorised representative

(1) Separate control gears:

For any separate control gear that is placed on the EU market, the following information shall be displayed on at least one free-access website:

(a) the information specified in point 3(b)(2), except 3(b)(2)(h);

(b) the outer dimensions in mm;

(c) the mass in grams of the control gear, without packaging, and without lighting control parts and non-lighting parts, if any and if they can be physically separated from the control gear;

(d) instructions on how to remove lighting control parts and non-lighting parts, if any, or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes;

(e) if the control gear can be used with dimmable light sources, a list of minimum characteristics that the light sources should have to be fully compatible with the control gear during dimming, and possibly a list of compatible dimmable light sources;

(f) recommendations on how to dispose of it at the end of its life in line with Directive 2012/19/EU.

The information does not need to use the exact wording in the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

(d) Technical documentation

(1) Separate control gears:

The information specified in point 3(c)(1) of this Annex shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC.';

(e) Information for products specified in point 3 of Annex III

For the light sources and separate control gears specified in point 3 of Annex III the intended purpose shall be stated in the technical documentation for compliance assessment as per Article 5 of this Regulation and on all forms of packaging, product information and advertisement, together with an explicit indication that the light source or separate control gear is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment, in accordance with Article 5 of this Regulation shall list the technical parameters that make the product design specific to qualify for the exemption.

In particular for light sources indicated in point 3(p) of Annex III it shall be stated: 'This light source is only for use by photo sensitive patients. Use of this light source will lead to increased energy cost compared to an equivalent more energy efficient product.'

********** End of Page **********

Article 4 Removal of light sources and separate control gears

1. Manufacturers, importers or authorised representatives of containing products shall ensure that light sources and separate control gears can be replaced with the use of common available tools and without permanent damage to the containing product, unless a technical justification related to the functionality of the containing product is provided in the technical documentation explaining why the replacement of light sources and separate control gear is not appropriate.

   The technical documentation shall also provide instructions on how light sources and separate control gears can be removed without being permanently damaged for verification purposes by market surveillance authorities.

2. Manufacturers, importers or authorised representatives of containing products shall provide information about the replaceability or non-replaceability of light sources and control gears by end-users or qualified persons without permanent damage to the containing product. Such information shall be available on a free-access website. For products sold directly to end-users, this information shall be on the packaging, at least in the form of a pictogram, and in the user instructions.

3. Manufacturers, importers or authorised representatives of containing products shall ensure that light sources and separate control gears can be dismantled from containing products at end of life. Dismantling instructions shall be available on a free access website.

********** End of Page **********

COMMISSION DELEGATED REGULATION (EU) 2019/2015:

ANNEX V: Product information

1. Product information sheet

1.1. Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 3, including when the light source is a part in a containing product. Details see table 3: Product information sheet.

For light sources that can be tuned to emit light at full-load with different characteristics, the values of parameters that vary with these characteristics shall be reported at the reference control settings.

If the light source is no longer placed on the EU market, the supplier shall put in the product database the date (month, year) when the placing on the EU market stopped.

2. Information to be displayed in the documentation for a containing product

If a light source is placed on the market as a part in a containing product, the technical documentation for the containing product shall clearly identify the contained light source(s), including the energy efficiency class.

If a light source is placed on the market as a part in a containing product, the following text shall be displayed, clearly legible, in the user manual or booklet of instructions:

“This product contains a light source of energy efficiency class <X>”,
where <X> shall be replaced by the energy efficiency class of the contained light source.

If the product contains more than one light source, the sentence can be in the plural, or repeated per light source, as suitable.

3. Information to be displayed on the supplier’s free access website:

(a) The reference control settings, and instructions on how they can be implemented, where applicable;

(b) Instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimize their power consumption;

(c) If the light source is dimmable: a list of dimmers it is compatible with, and the light source — dimmer compatibility standard(s) it is compliant with, if any;

(d) If the light source contains mercury: instructions on how to clean up the debris in case of accidental breakage;

(e) Recommendations on how to dispose of the light source at the end of its life in line with Directive 2012/19/EU of the European Parliament and of the Council (1).

4. Information for products specified in point 3 of Annex IV

For the light sources specified in point 3 of Annex IV, their intended use shall be stated on all forms of packaging, product information and advertisement, together with a clear indication that the light source is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment, in accordance with paragraph 3 of Article 3 of Regulation (EU) 2017/1369 shall list the technical parameters that make the product design specific to qualify for the exemption.

********** End of Page **********

PRODUCT PICTURES



LLX-Panel-6060-24W-CCT

None Attachment

********** End of Report **********