SAMSUNG

Product Environmental Report

Crystal UHD Signage QBB

2023.05.12

At Samsung, we work to embed eco-conscious technology and innovation in all our products. By considering sustainability at every step of the product life cycle, we aim to empower our customers to join us in our journey to build together a better tomorrow.

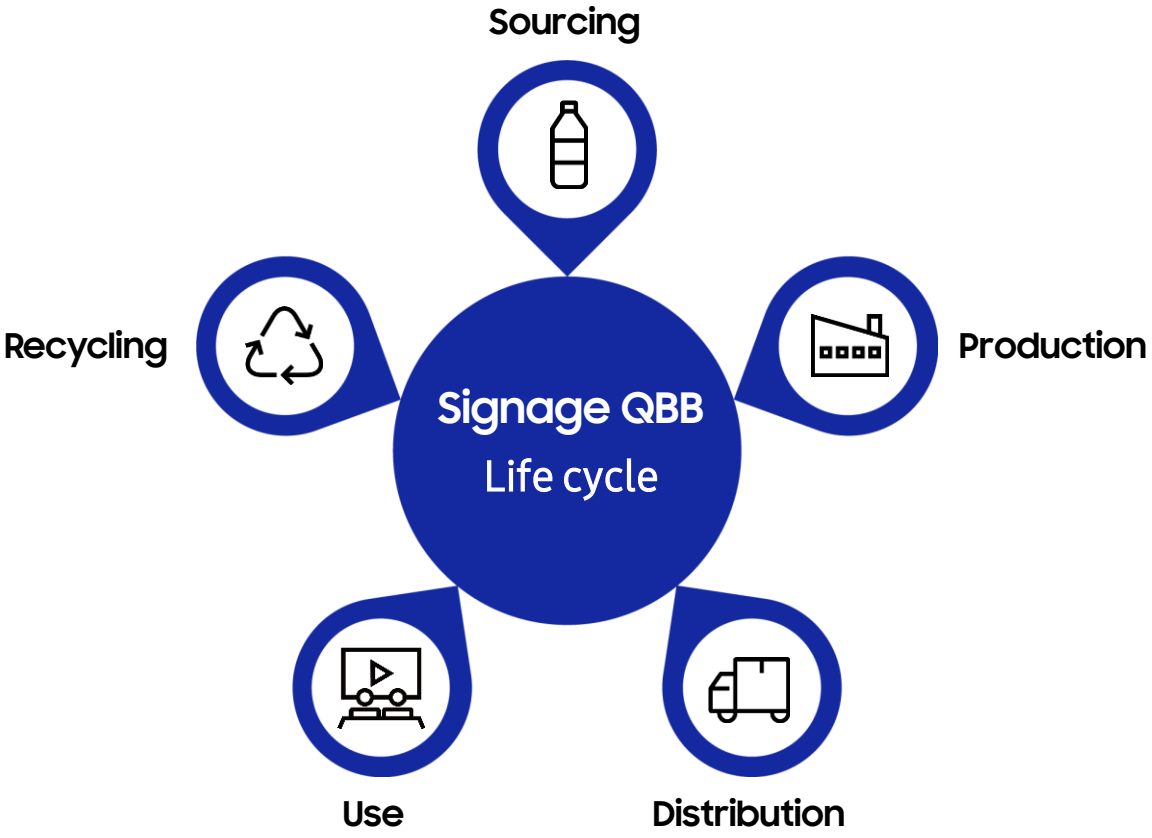
[1] [2]

* Certification acquisition [1] [2]
: QB50B, QB55B, QB65B, QB75B

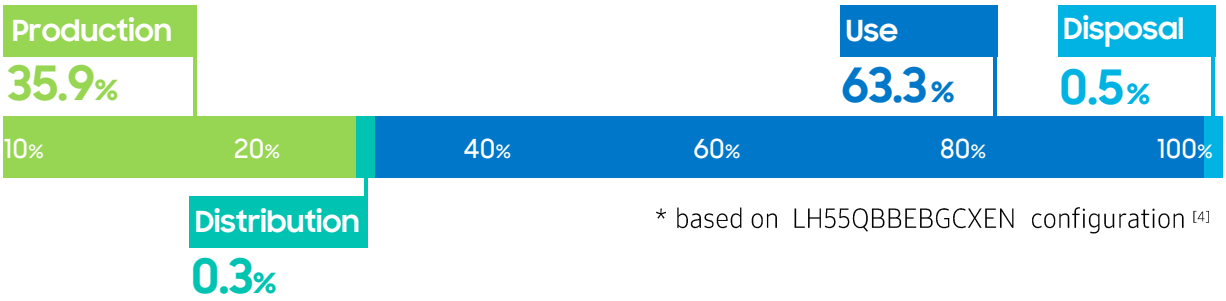
Product Carbon Footprint

To understand the environmental impacts of our products, at Samsung Electronics, we assess a product's entire life cycle, including the sourcing, production, distribution, product use and recycling phase.

At the production stage, we are aiming to expand the development and application of recycled materials with a lower carbon footprint. At the distribution stage, we are working to minimize packaging volume and weight to reduce carbon emissions. Through improving product energy efficiency, we are trying to improve the environmental impact at the use stage.



Signage QB55B Life cycle carbon emissions : 1,293 kg CO_2 eq . [3]



* based on LH55QBBEBGCXEN configuration [4]

※ The figure above calculates the environmental impact of one product over the entire life cycle as CO_2 emissions [4] This is equivalent to the amount of carbon generated by a gasoline powered car that travels about 5,911 km [5]

Sourcing

Across the product lifecycle, from raw material sourcing to disposal and recycling, we are doubling down on efforts toward creating a circular economy.

To build toward a circular system, we are using recycled materials and collecting e-waste to extract materials for reuse. By 2030, we aim for 50% of the plastic used in our DX products to incorporate recycled resin. By 2050, we will see this figure increase to 100%.

We use recycled materials for parts in the Signage QBB products. In addition, Samsung Electronics is trying to manage its supply chain so that minerals used in its products are mined in accordance with OECD due diligence guidelines.

Plastic

We apply 10% of recycled materials from products that consumers have finished using to the rear cover parts of QBB. [6]

Responsible minerals

For internationally disputed minerals such as tantalum, tin, tungsten, and gold, only 100% of the minerals supplied by smelters that have obtained global third-party certification are used. Minerals that raise human rights violations or environmental destruction issues during mining are included in the management[7] list to manage the mineral supply chain.

Chemical Mgmt.

To prevent hazardous substances from entering our products, we inspect manufactured parts and raw materials rigorously through our chemical management system.

Our standards for the Control of Substances Used in Products[8] are based on global regulations and standards. We voluntarily established reduction plans for the use of potentially hazardous substances as well as legally regulated substances.

Production

We are expanding the use of renewable energy at our business sites around the world.

Energy infrastructure and regulations which vary widely by jurisdiction require region-specific transition plans.

Renewable Energy

We plan to run all operations of the DX Division on renewable energy by 2027. [9]

We are constantly trying to reduce waste and expand recycling. Company-wide, we plan to obtain a platinum-level zero Waste to Landfill Certification, issued by safety certification organization Underwriters Laboratories(UL), for all global operations by 2025.

Sites that produce Samsung Electronics TV, Audio, and display products have been certified for environmental management (ISO14001) and energy management(ISO50001). [10]

Reducing material & Scrap recycling

Samsung Electronics is increasing the efficiency of using raw materials for each process to reduce the environmental impact that occurs during the production stage. Technology to reduce plastic usage in injection process *EGM: External Gas Molding has been developed and applied to products.
*Technology to reduce plastic usage by replacing the pressure-resistant process with air pressure after injecting raw materials

Distribution

To reduce the environmental impact of our product packaging, we are replacing plastic packaging and protective films with paper and recycled materials.

We are also reducing the volume and weight of packaging to mitigate greenhouse gas emissions in the transportation and shipping process.

Eco Packaging

We plan to remove plastic from packages (except cushions) of all TV, audio, and display products by 2030 and replace them with paper.

When packing the product, the expanded polystyrene (EPS) cushion, which is discarded after one-time use, was collected, reprocessed, and mixed with new materials to make the cushion. [11] * The waste EPS collection process of our products is currently carried out only in Republic of Korea

Recycled materials for packaging **100%**

Recycled materials are all applied to product packaging subsidiary materials (accessory bags, PP bands, stand bags, etc.) [12]

Plastic tape/band removal **100%**

The plastic tape that seals the packaging box has been removed, and the plastic band that binds the accessory cable has been changed to paper material. [13]

Metal staple removal **100%**

Recyclability of the paper box was enhanced by removing the metal staple used in the side joints of the box. [14]

Use

Environmental experts support product development at Samsung Electronics so we can empower our customers to use our products more sustainably.

During the product development phase, our stress tests help ensure the longevity and consistent performance of our products.

Energy Efficiency

To reduce use-phase carbon emissions, we set our plan to reduce power consumption by 30% compared to products with the same specifications in 2019. Our new products follow this plan. [15]

* Power consumption of QBB [16]

Our Signage's remote management solution provides an environment where you can access all devices at any time and manage them. 'Remote control' makes it easy to turn screen power on or off, adjust brightness through 'Setting control', and monitor devices in real time through 'Status monitoring'. Reduce energy consumption through diverse and detailed remote management.

Repair & Reuse

For the parts of TV and display products that have been replace by modules, we are changing the design to have them repaired separately. [17]

Use

Environmental experts support product development at Samsung Electronics so we can empower our customers to use our products more sustainably.

During the product development phase, our stress tests help ensure the longevity and consistent performance of our products.

We are developing various solutions that help products use energy efficiently at the use stage.

Energy Efficiency

Embedded media player

Samsung's built-in System Chip (SoC) technology does not require a separate media player. [18]

Screen lamp schedule

You can adjust the screen brightness twice a day by specifying the time. [19]

Sleep mode

When the video input signal is cut off, it automatically enters sleep mode. It can reduce power consumption by changing from 98W on a normal basis to 0.5W when switching to sleep mode. [20]

On & Off timer

You can set the timer to turn the screen on and off automatically on pre-specified times and days of the week. It is also possible to invalidate the timer during the period by designating a holiday. It can reduce power consumption by changing from 98W on average to 0.5W on pre-designated holidays. [20]

Recycling

To promote the circular economy and a low-carbon society, we are expanding responsible recycling more than 50 countries around the world.

Samsung's local recycling programs provide collection services tailored to each region for customers disposing e-waste, and we take back electrical and electronic waste regardless of product brand.

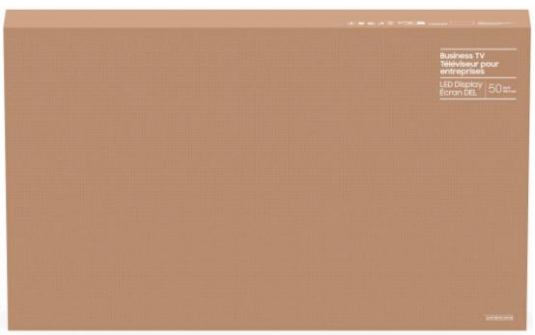
Repair & Reuse

We are trying to reuse parts to reduce waste even in the repair process of TV and display products. In 2022, about 550,000 parts are recovered from 36 countries, and 230,000 of them are reused after quality verification. By continuously reducing discarded parts, the environmental impact of waste products and waste materials is being reduced.

Eco Packaging

Eco-package is designed to allow consumers to upcycle the packaging box that was discarded after transporting the product. By removing promotional stickers that were attached to the box surface and reducing ink usage, packaging recyclability was increased, and environmental impact was reduced.

Customers can make their own props such as magazine stands and pet products using dot patterns printed on the surface of the packaging box. Through a contest in which consumers directly participate, the number of props has been expanded to disclose production drawings, and various campaigns have been conducted to help more consumers participate in the upcycle.



* Package design that innovatively reduces ink usage

Endnotes

Disclaimer

1. Energy star is a program in which the Environmental Protection Agency (EPA) of the United States certifies that it is an energy-efficient product among various electrical and electronic products.
Certification acquisition model : QB50B, QB55B, QB65B, QB75B

2. EPEAT (Electronic Product Environmental Assessment Tool) is an eco-friendly certification system for electronic products in the United States and is certified in three grades: Gold, Silver, and Bronze by evaluating various items such as prohibition of the use of harmful substances, energy efficiency of products, ease of decomposition and recycling of products and packaging materials, and corporate social responsibility.
Certification acquisition grade : EPEAT (Bronze)
Certification acquisition model : QB50B, QB55B, QB65B, QB75B

3. Guidelines and conditions applied to the calculation of carbon emissions
- PAS 2050:2011 – Specification for the assessment of the life cycle greenhouse gas emissions of goods and services
- Product Carbon Footprints : Requirements for Certification v2
- Database : Ecoinvent 3.8, Korea LCI DB

4. Life Cycle Assessment System Boundary
- Production: Pre-manufacturing (parts and materials that make up the product) and assembling the product at Samsung Electronics
- Distribution: Distribution from Vietnam to Netherlands
- Use: Used for 5 years
- Disposal: Waste disposal of parts and materials

5. It was based on the greenhouse gas equivalence calculation guide provided by the U.S. EPA.
- 1 kg CO_2eq is equivalent to the amount of 2.482 miles operated by gasoline car (source: U.S. EPA)

6. Environmental Claim Validation (ECV) verification was obtained from UL for recycled materials
Verification method : Environmental Claim Validation Procedure for Recycled content, UL 2809 – Fifth Edition
- QBB rear cover : PCM PC 10%

※ PCM : Post Consumer Material (Plastic that recycles waste products that consumers have finished using)

7. Samsung Electronics operates a mineral management process based on OECD due diligence guidelines for responsible minerals.
https://www.samsung.com/global/sustainability/people/supply-chain/#anchor4

8. Product Environment Management Substances Operation Rules
https://www.samsung.com/us/sustainability/environment/environment-data/

Endnotes

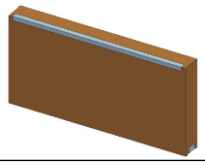
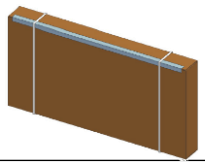
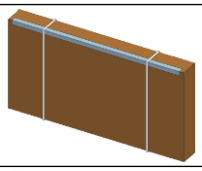
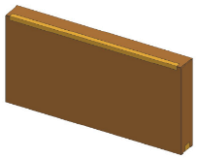
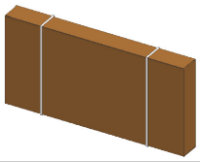
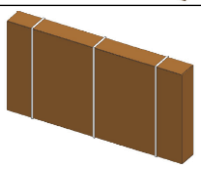
9. Details of the conversion of renewable energy
Samsung Electronics joined RE100, a global initiative, to reduce carbon indirect emissions (Scope 2) caused by power use and decided to push for the conversion of renewable energy to used power by 2050. First, Samsung Electronics is pushing to achieve its renewable energy target at all overseas operations within five years. The U.S., China and Europe, which have already achieved their renewable energy goals, have decided to expand their renewable energy supply contracts (PPAs) that are signed directly with renewable energy generation operators. The DX division is pushing to achieve its renewable energy target by 2027, both at home and abroad.
※ Samsung Electronics' Device eXperience (DX) division is in the business of producing and selling TVs, monitors, refrigerators, washing machines, air conditioners, smartphones, tablets, PCs, and wearable products.

10. Samsung Electronics adopts global standards such as environmental management (ISO1401) and energy management system (ISO5001), mandates all workplaces to obtain the certification, and recommends partner companies to obtain related international certifications to spread environmental safety management, which is reflected in the comprehensive evaluation of partner companies.
Except for one small production subsidiary (SSAP) in South Africa, all of Samsung Electronics' workplaces have obtained the certification as of 2021, and 86% of partners that are subject to comprehensive evaluation.

11. Recycled EPS
- After collecting and reprocessing EPS cushions that are discarded after one-time use during product packaging, cushions (renewable EPS 5% + new 95%) were produced by mixing them with new materials.

12. The recycled materials applied to the product packaging subsidiary materials are as follows.
- Parts containing 50% recycled plastic : Accessories Bag, PP Band, Stand Bag

13 The plastic tape for box sealing has been deleted or changed to paper, and it is applied separately as shown in the table below according to the product size.

구분	~ 55″ All in one box	46″~ 65″ Upper/lower detachable box	75″~ Upper/lower detachable box
Before			
After (second half of '23~)			
Changes	- Tape material change (OPP → Paper)	- Deleting Top Tape	- Deleting Top Tape - Adding a central PP band

14. Recyclability of paper boxes was increased by removing metal staples and replacing them with glue. The reduction of box assembly process time also reduced energy consumption in the manufacturing process.

15. We plan to improve power consumption by 30% on average in 2030 compared to the same performance model in 2019 by applying low power technology to representative models of seven major electronic products such as TVs, monitors, smartphones, refrigerators, washing machines, air conditioners, and PCs.

Endnotes

16. Typical power consumption of QBB

Model (Inch)	QB43B (43″)	QB50B (50″)	QB55B (55″)	QB65B (65″)	QB75B (75″)
Average power consumption	79 W	91 W	96 W	124 W	174 W

Power consumption measurement criteria: Regulation (EU) No 2019/2021 (as amended) and EN 50564:2011
Power consumption is calculated based on the power measured in our laboratory in '22 based on the initial shipment status product.
Different countries have different regulatory conditions or measurement standards, and measurement methods may be updated to change measurements when each country's regulatory conditions change.
The model name/model code of the product may vary by region or country where Samsung Electronics sells the product.

17. By applying about 230,000 single-product repairs to TVs and displays in 102 countries of about 49 subsidiaries in 2022, we are trying to reduce the burden of repair costs on consumers by reducing about $151 compared to the previous average repair costs, as well as reducing environmental impact by extending the life of products.

18. Embedded media player can save 35W of energy compared to using an external media player. * Tested under internal laboratory condition for LH55QBBEBGCXEN

19. 8am-6pm (daytime) : 300nit, 6pm-8am (nighttime) : 110nit in case of use (based on 300nit 98W, 110nit 39.9W), can save 59% of energy. * Tested under internal laboratory condition for LH55QBBEBGCXEN

20. (Sleep mode) Change from 98W on average to 0.5W when switching to sleep mode, 98W on/off timer on average, and 0.5W on pre-designated holidays to reduce power consumption. * Tested under internal laboratory condition for LH55QBBEBGCXEN

Recycling

Samsung established waste collection systems in each region as we work tirelessly to enhance the collection and recycling of waste products. We also offer product take-back and recycling services for Samsung products in countries with local take-back legislation. We are always looking to expand to additional locations.
https://www.samsung.com/us/sustainability/environment/environment-data/

Eco-Management

Samsung Electronics set the foundation for eco-management as a philosophy for the 21st century through the commitments made in the Samsung Environmental regulations and laws. We have put eco-management into action and are leading the way to a sustainable future by offering our customers eco-friendly products. We believe a healthy environment is essential to the future of society.

Corporate Sustainability Management

Samsung is constantly striving to deliver innovative products and services across the value chain. This is rooted in our core values in economy, society and environment. Therefore, we monitor the financial and non-financial impacts that we exert on society in order to maximize our positive impacts while minimizing any negative ones.
https://www.samsung.com/global/sustainability/main/

Appendix

SAMSUNG

Certificate of
Conformance

Energy Efficiency Certification

UL conducted an independent evaluation on behalf of:

Samsung Electronics Co Ltd

129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, 16677, Republic of Korea

for the following products:

Displays

Brand: SAMSUNG

Model: See Appendix A

This product meets all of the necessary qualifications pursuant to:

ENERGY STAR® PROGRAM REQUIREMENTS FOR DISPLAYS - VERSION 8.0 - Issue Date 2020/01/28

UL Energy Verified

2022-01-19
Certification Date

Certification Revision Date

Issued by

4790228903
UL Certificate Name

This is to certify that representative samples of the Certified Product(s) listed above have been investigated by UL to the Standard(s) indicated on this certificate, in accordance with the UL Global Services Agreement and the EEC Terms & Conditions ("Agreement"). The Certificate Holder is entitled to use the UL Energy Verified Mark for the Certified Product(s) listed on the certificate and manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate shall remain valid unless a Standard identified on this Certificate is amended or withdrawn prior to that date or there is a non-compliance with the Agreement.

Appendix A

Model Name	Model Number	Family Models		Additional Identifying Information
		Model Name	Model Number	
QB55B	QB55B	QB55B-N	QB55B-N	
		LH55QBBEBGCX**	LH55QBBEBGCX**	* can be any alphanumeric character
		LH55QBBNBGCX**	LH55QBBNBGCX**	* can be any alphanumeric character

ENERGY STAR

Appendix

SAMSUNG

Samsung Electronics Co., Ltd
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, Korea

Declaration of RoHS Compliance for QBB, QBB-N SERIES

Samsung Electronics Co. Ltd (the "Company") hereby declares that QBB, QBB-N SERIES placed on the European Community market by the Company and its subsidiaries are compliant with Directive 2011/65/EU on the Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment.

RoHS compliant means that where the product falls under the scope of the EU RoHS Directive, this product does not contain the following substances:

- Lead (0,1 %)
- Mercury (0,1 %)
- Cadmium (0,01 %)
- Hexavalent chromium (0,1 %)
- Polybrominated biphenyls (PBB) (0,1 %)
- Polybrominated diphenyl ethers (PBDE) (0,1 %)
- Bis(2-ethylhexyl) phthalate (DEHP) (0,1 %)
- Butyl benzyl phthalate (BBP) (0,1 %)
- Dibutyl phthalate (DBP) (0,1 %)
- Diisobutyl phthalate (DIBP) (0,1 %)

In excess of the indicated maximum concentration values by weight in homogenous materials, unless the substance is subject to an exemption specified in the Directive[1]. All products are compliant with the CE marking and further information requirements as foreseen by Directive 2011/65/EU.

This declaration represents the Company's knowledge and belief which is partially based on information provided by third party suppliers.

Further details about Samsung Electronics' RoHS compliance programme can be found in the accompanying FAQ document or at:
http://www.samsung.com/uk/aboutsamsung/samsungelectronics/corporatecitizenship/data_corner.html

Signature: YongSup LEE
Global Customer Satisfaction Team

Date: 2023-04-17

Name : YONGSUP LEE
Job position/Title : CL3/Product Quality Group

1 http://ec.europa.eu/environment//waste/rohs_eee/index_en.htm

RoHS

Appendix

SAMSUNG

Samsung Electronics Co., Ltd
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, Korea

Declaration of REACH Substances of Very High Concern (SVHCs) Disclosure

Model: QBB

Dear Customer:

The European Regulation 1907/2006 on the *Registration, Evaluation, Authorization, and Restriction of Chemicals* (REACH) entered into force on 1st June, 2007.[1]

Article 33 of REACH requires suppliers to inform recipients and respond to consumer enquiries if an article contains more than 0.1% (by weight per article) of any substance on the candidate list of Substances of Very High Concern (SVHC).[2]

Samsung Electronics Co. Ltd (the "SEC") hereby declares the presence of substances on the SVHC candidate list which are contained in a quantity of more than 0.1% (w/w) in the above product and / or its packaging[3] placed on the European Community market by the SEC and its subsidiaries.

The substances on the REACH SVHC candidate list in concentrations greater than 0.1% by weight per article are listed below.

Substance name	CAS No.	Application
Lead	7439-92-1	ASSY PCB MAIN ASSY ACCESSORY
Boric acid, crude natural	11113-50-1	ASSY OPEN CELL

Signature: YongSup LEE
Global Customer Satisfaction Team

Date: 2022-04-10

Name : YONGSUP LEE
Job position/Title : CL3/Product Quality Group

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:396:0001:0849:EN:PDF

[2] SVHC = Substances of Very High Concern. Considered as candidates for inclusion in Annex XIV of REACH.
The latest revision to the candidate list was published by the European Chemicals Agency on 17th January 2022 at: https://echa.europa.eu/candidate-list-table

[3] Reference: ECHA Guidance on requirements for substances in Articles.

REACH

Appendix

SAMSUNG

SAMSUNG

Samsung Electronics Co.Ltd
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do,
16677, Republic of Korea

Declaration of compliance with Directive 2012/19/EC (WEEE)

Samsung Electronics hereby declares that all products placed on the European Union internal market from 13th August 2005 are compliant with Directive 2012/19/EU (formerly 2002/96/EC) of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE).

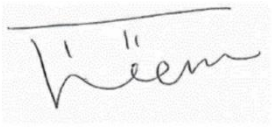
Electrical and Electronic Equipment supplied by Samsung Electronics complies with the following requirements:

1. Marking requirement - all Samsung products that are subject to the WEEE Directive shipped to the European Union from August 13th 2005 are compliant with the WEEE marking requirements. Such products are marked with the "crossed out wheelie bin" WEEE symbol in accordance with European Standard EN 50419.

2. Information for end users - according to the requirements of European Union member state WEEE legislation, information is provided to customers in several languages for all Samsung branded products subject to the WEEE directive.

3. Information to recyclers - as required by the WEEE Directive, on demand Samsung provides reuse and treatment information for each type of new EEE within one year after the equipment is put on the market.

Samsung Electronics is member of an approved WEEE producer compliance scheme in all EU countries where it has a legal presence in accordance with national law.

Signature : 

Date : Feb 14, 2022

Youngjin SUH
Vice President/Head of Products Environment Team
Global CS Center
SAMSUNG Electronics Co., Ltd.

WEEE