



G-TLD

Glass **T**ransparent **LED** **D**isplay



SUMITOMO CHEMICAL



DONGWOO
FINE-CHEM

1. Company Introduction

 SUMITOMO CHEMICAL



- **Founded** : Sep. 22, 1913
- **Head Office:** Tokyo, Osaka
- **Plant / R&D:** Ehime, Osaka, Chiba
- **Fiscal Status (APR '23~MAR '24)**
: Assets : \$ 27 billion : Sales : \$ 17 billion
- **Employees**
: 32,161 people (as of MAR 2024)
- **Business Area**
: Petrochemicals & Plastics Sector
: Energy & Functional Materials Sector
: IT-related Chemicals Sector
: Health & Crop Sciences Sector
: Pharmaceuticals Sector

 DONGWOO FINE-CHEM



- **Founded** : Dec. 7, 1991
- **Shareholder** : Sumitomo Chemical
- **Financial Status (APR '23~MAR '24)**
: Sales : \$ 1,766 million
- **Places of Business Factory & Laboratory**
: Factory & Laboratory : Pyeongtaek, Iksan, Pangyo
- **Employees** : 2,552 people (as of MAR 2024)



SEE BEYOND THE SCREEN

Glass based transparent LED digital signage for next generation.

Combined super clarity with vibrant visuals to offer an unparalleled viewing experience.

Creating a captivating visual experience while maintaining the transparency of the space.

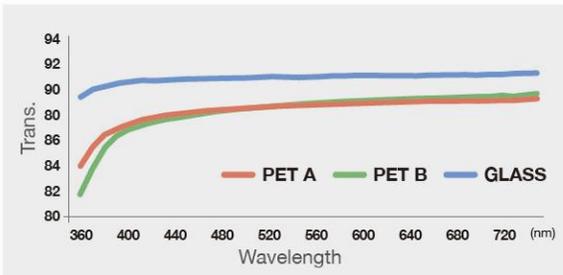
3. G-TLD Competitiveness



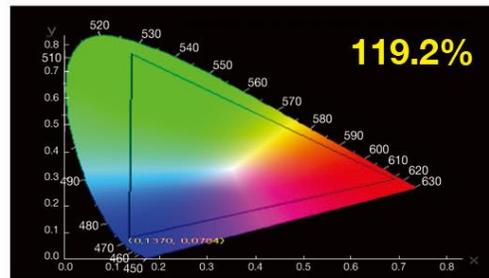
SUPERIOR CLARITY & TRANSPARENCY

The glass type transparent LED display offers unmatched clarity and high transparency compared to film type displays. And experience content in its purest form, unobstructed by any limitations with its high resolution and extension.

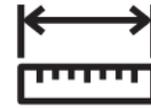
- Glass based substrate.
- Over 85% Opening aperture ratio : Thin wire design.
- Adjustable LED pitch, Minimum 4mm
- Max 8000nit brightness available
- Rich color reproduction (CIE 1931 119%)



Glass vs PET Transmittance



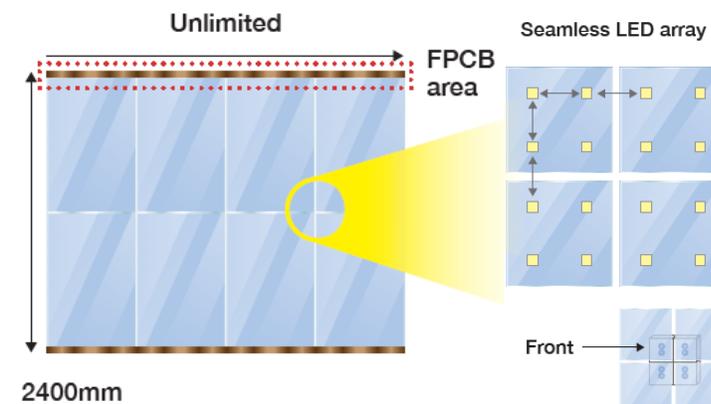
Rich color reproduction (CIE 1931 119%)



VERSATILITY IN DESIGN & SIZE

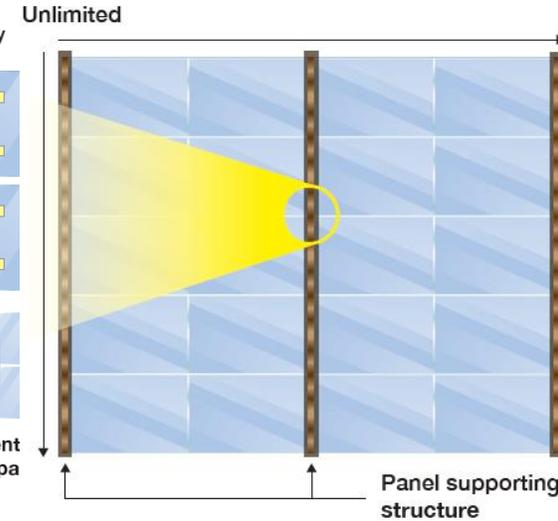
Can be modulized with seamless LED array.

Modulizing for clear display



- ✓ Limited to 2400mm height
- ✓ Display area seamless

Modulizing for large structure



- ✓ Height and width can be expanded without limit
- ✓ Display area seamless
- ✓ Panel support structure exists

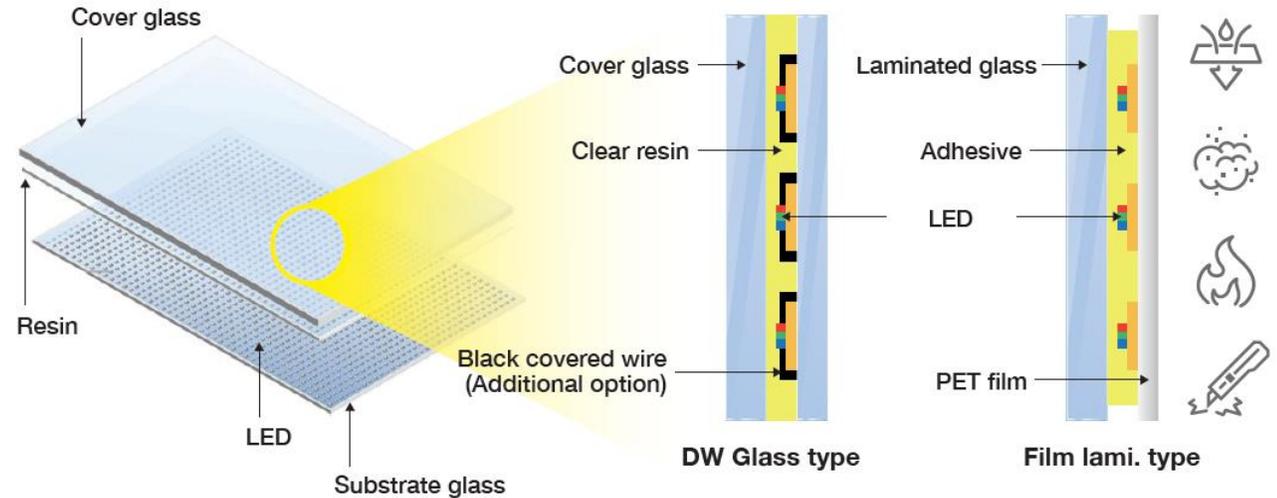
3. G-TLD Competitiveness



DURABILITY & LONGEVITY

One of the standout features of the glass type is its exceptional durability. Unlike film type displays that are susceptible to damage, the glass type ensures a longer lifespan and less maintenance.

- Strong resistance to physical damages.
 - : Scratched & Stamped & ripped damages.
- Free from chemical damages.
- Incombustible & flame-retardant
 - : Preventing burning due to the overcurrent & overheat.
- Perfectly sealed edge.
 - : Dust / Water proof
- Color deterioration free
- Break free
 - : Prevents shattering in case of breakage due to strong impact
- Easy to clean.



RELIABILITY TEST RESULT

	Condition	Factor	Result
Reliability Test	Hot Temperature Storage / 60°C	Brightness , External changes	OK
	Hot Temperature High Humidity / 85°C85%	Brightness , External changes	OK
	Hot Temperature High Humidity / 60°C90%	Brightness , External changes	OK
	Low Temperature Storage / -20°C	Brightness , External changes	OK
	Temperature Cycle / -20°C ↔ 60°C	Brightness , External changes	OK
	Light Resistance Test	UV resistance	YI, Transmittance, L*, a*, b*
Xenon resistance		YI, Transmittance, L*, a*, b*	OK

*Reliability test : 500Hr / Light resistance test : 300Hr

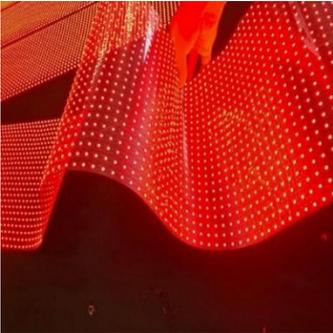
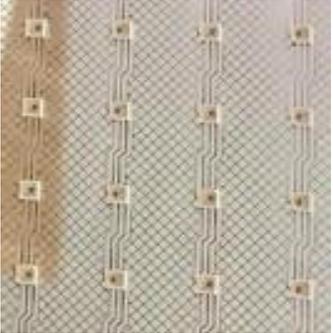
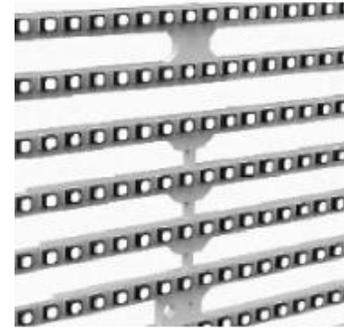
*Pass within 10% change at each factor

5. Comparison of Transparent Displays



DIFFERENCE IN DESIGN

DONGWOO Glass TLD achieved high resolution and high transparency both with our own technology.

	Glass type	Film type	Bar type
Product Image			
LED Array			
Opening ratio	80 ↑ %	70~80%	40~50%
Pattern design	Fine wire	Mesh	Bar

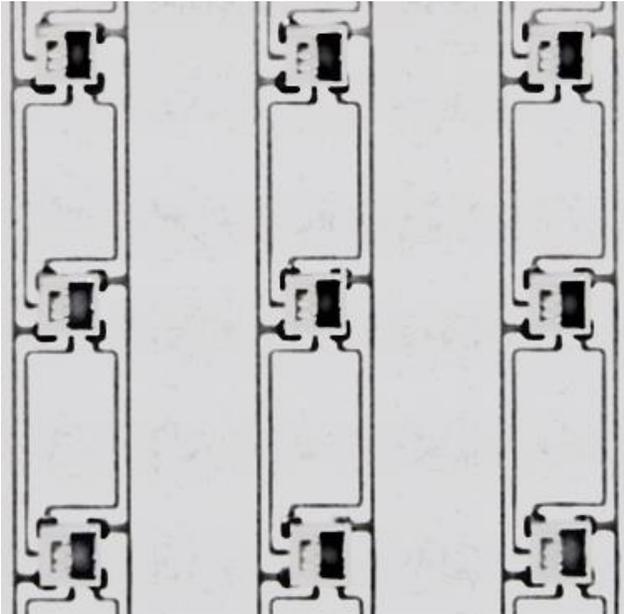
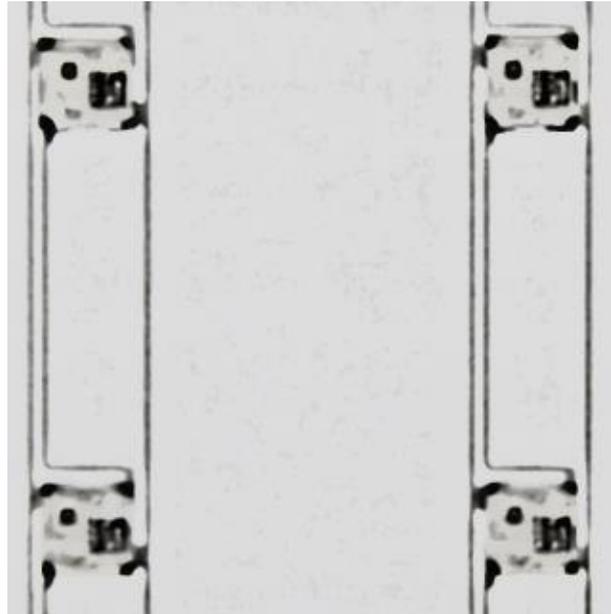
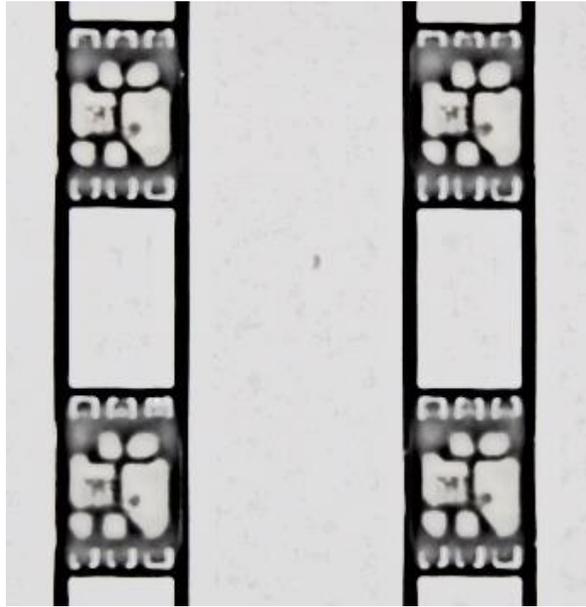


■ SPECIFICATION

	Type	Unit	Comment
Panel	Size	mm	Customizable (Max : 1200*500)
	Substrate glass	T	1.8T~
	Cover glass	T	1.8T, 3T, 5T(Customizable) including tempered glass
	Surface treatment	-	Custom option (AR, LR, etc.)
	Transparency	%	80 ↑
LED	Type	-	Cascade(4pin) / By-pass(5/6pin)
	Pitch	mm	Adjustable
	Size	mm	1.0*1.0, 1.2*1.2 ~
	Color scale	Bit	8~16
	Refresh rate	Hz	Over 30
	Brightness (MAX)	nit	8000
	Viewing angle	degree	160
Others	AC Input	V	100~240
	SMPS (DC)	V	Depends upon the design
	Power	W/h	Depends upon the design
	Temperature	°C	-40~85

6. About G-TLD

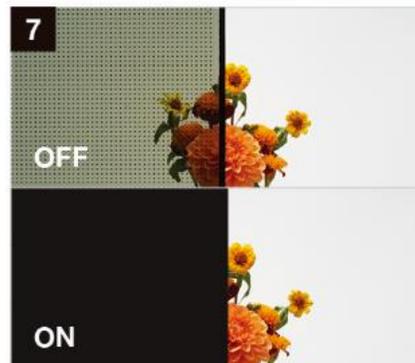
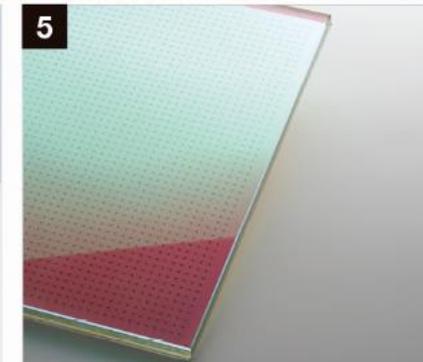
■ PATTERN STRUCTURE OF TLD

Type1		Type2		Type3	
4mm 5pin		6mm 4pin		6mm Black mold Black wire	
					
Bypass		Cascade		Bypass	
	data	pin	Size (mm)	Color scale (bit)	Brightness (nit)
LED type	Cascade	4pin	1.0*1.0 ~ 1.5*1.5	16	8000
	Bypass	5pin	1.0*1.0 ~ 1.5*1.5	16	8000

6. About G-TLD

MULTIPLE VARIATIONS

	Type		Comment
Cover Glass Type	1	Anti-reflection Coated glass	6mm LED pitch
	2		4mm LED pitch
	3	Black pattern LED with black mold	Lower reflection pattern Lower back-side light emission
	4	Translucent mirror Glass	Clothing retail shop Interior
	5	Hologram Mirror glass	Interior, retail shop
	6	Dark gray Colored glass	Luxurious hospitality, business area
	7	Smart window Laminated glass	Adjustable transmittance
	8	Mesh wired Sheet glass	Smoke barrier Incombustible & flame-retardant
Coverless Type	9	Clear resin Over coating	LED reworkable Lower weight



7. APPLICATIONS OF G-TLD

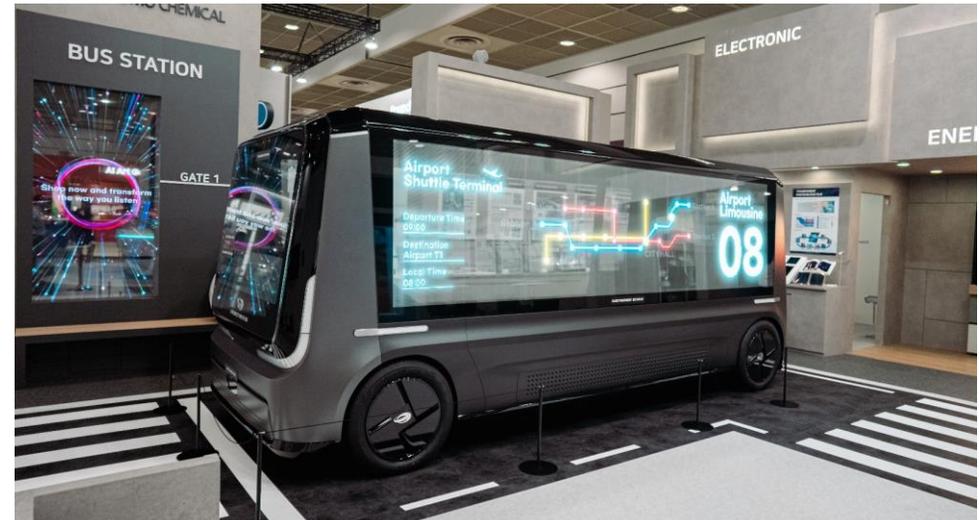


EV-BUS

7. APPLICATIONS OF G-TLD



EXPANDABLE STANDALONE MODULE



SMART BUS & BUS STATION



MEDIA WALL



COFFEE ROBOT