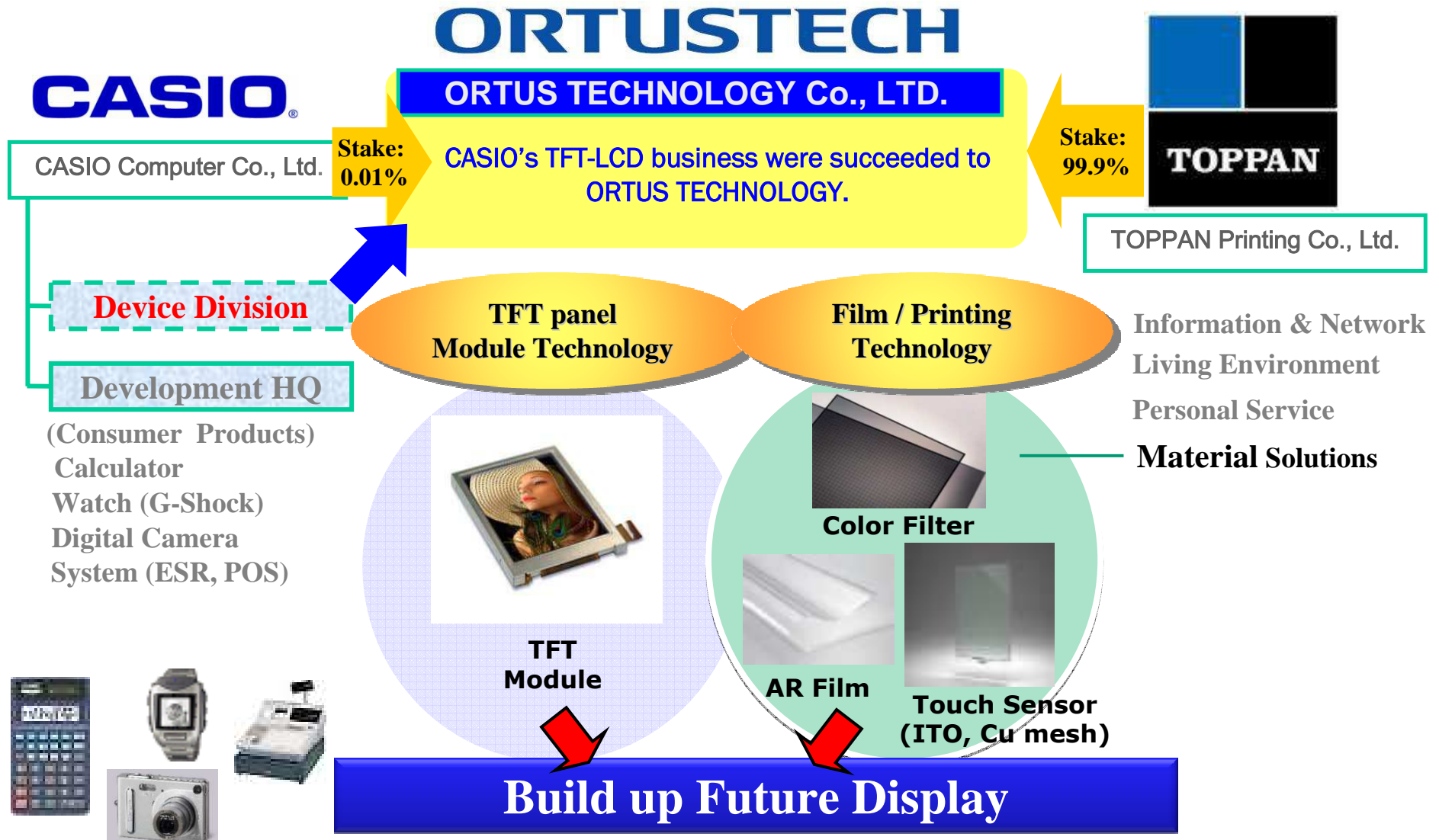


Introduction of ORTUS TECHNOLOGY CO.,LTD.

Company Overview

ORTUS TECHNOLOGY is a joint company established by Toppan Printing and Casio Computer on April 1st, 2010.



ISO 9001
ISO/TS 16949
BUREAU VERITAS
Certification



ORTUSTECH
ORTUS TECHNOLOGY CO., LTD.

Location

Sales

Production

ORTUS TECHNOLOGY (Kochi)

Headquarter
Pre-process
Post-process
ISO9001, ISO/TS
16949/14001

ORTUS TECHNOLOGY (Hino, Tokyo)

Head Office
Product planning
Product design
R&D
Sales
ISO9001, ISO/TS16949

Osaka Branch Office

Taiwan Liaison Office

ORTUSTECH (Malaysia) SB

Post-process
ISO9001/14001

Post

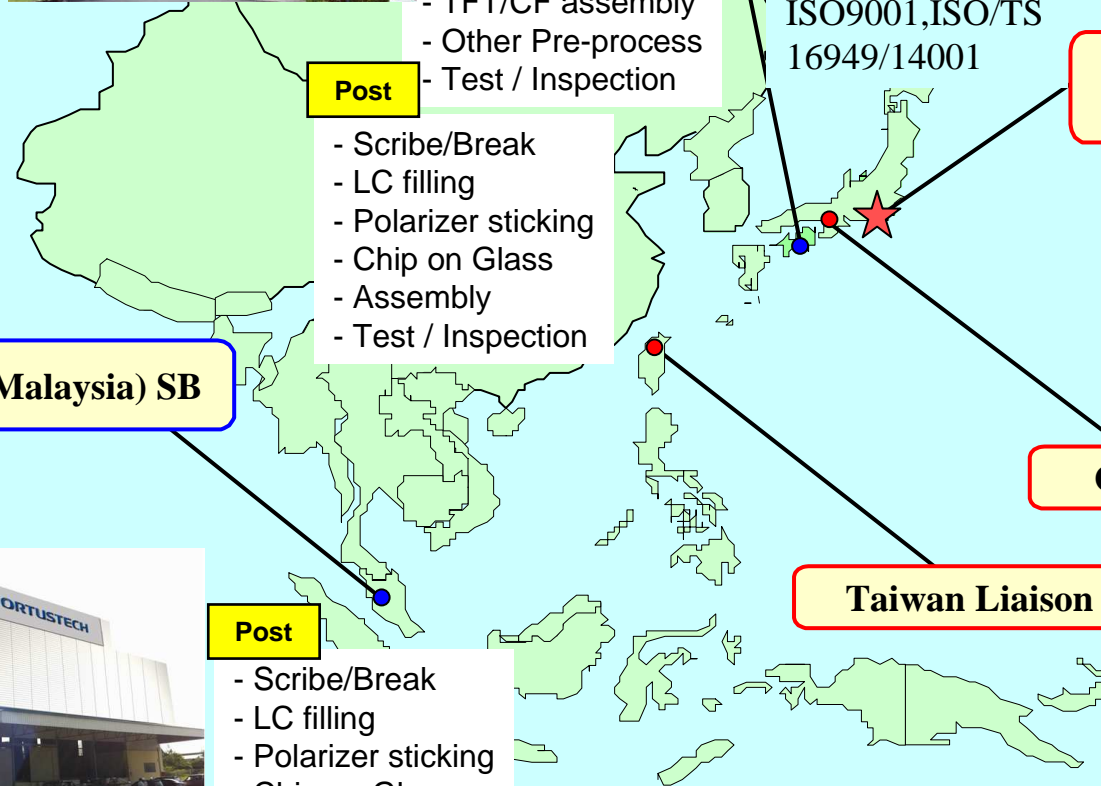
- Scribe/Break
- LC filling
- Polarizer sticking
- Chip on Glass
- Assembly
- Test / Inspection

Pre

- TFT Array
- Color Filter Array
- Rubbing
- TFT/CF assembly
- Other Pre-process
- Test / Inspection

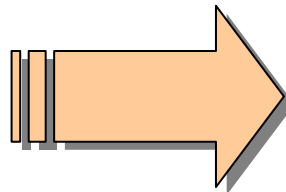
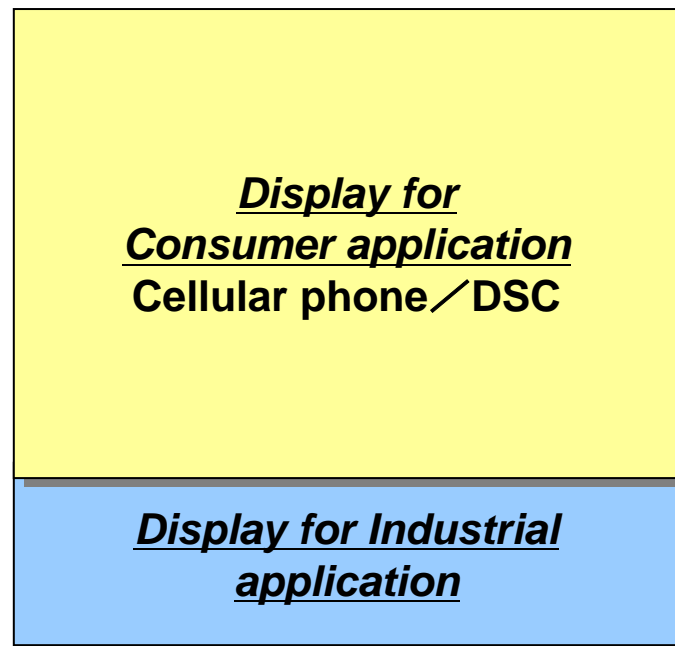
Post

- Scribe/Break
- LC filling
- Polarizer sticking
- Chip on Glass
- Assembly
- Test / Inspection

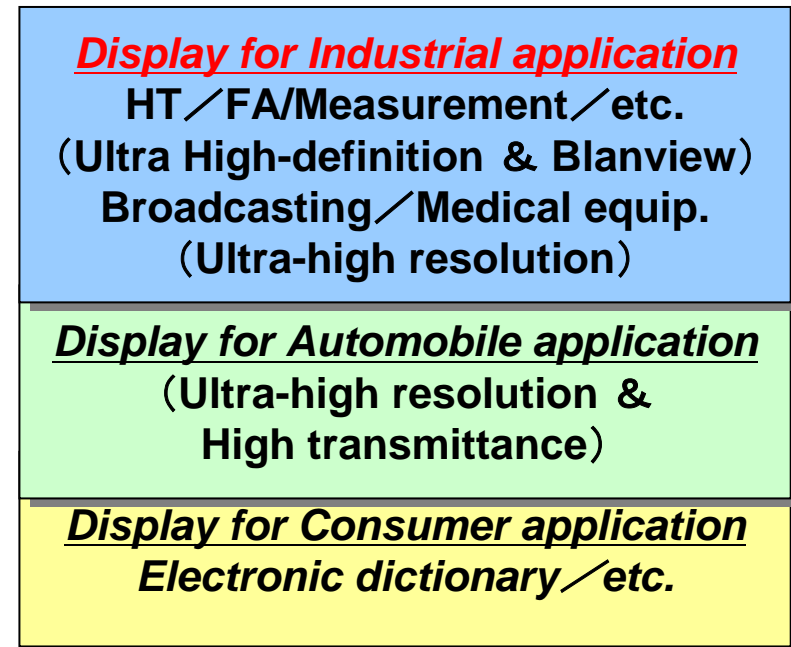


ORTUSTECH Business Strategy-1.

Before



Currently



ORTUSTECH Business Strategy-2.

Focus on Industrial application

■ Fit to small panel display in Industrial application

- Long-term stable supply

In-house Pre-process at KOCHI factor

- Flexible production
- Customize modification / Full-custom design

■ Common feature for Industrial Standard Products

- Wide range TFT

Operation temperature: -20 / +70

Storage temperature : -30 / +80

- RoHS compliance, Long-life backlight
- **New-Blanview Outdoor visibility, Low power consumption**
- Evaluation-kit available



ORTUSTECH Color TFT-LCD - Advantage

- ① **Reliable Experience – more than 30 years in LCD Business**
- ② **Blanview – Superior Outdoor Readability and Ultra Low Power Consumption**
- ③ **Long-term Stable Supply and Suit to flexible Small volume demand**
- ④ **Full in-house Production – Original own unique Products**
- ⑤ **Preparation and Propose to meet variety of needs and use from market**



A range of products based on leading-edge technologies for myriad uses in home life and business.

Full high-definition,
4K compatible ultra-high-
resolution LCD Displays



**Broadcasting
/ Medicine**

(医療機器など)
camera monitors,
camera finders,
medical devices,
etc.

A line-up of products with superb
outdoor visibility will have a wide
range of uses in business.



Business

(ハンディターミナル、
トランシーバーなど)
handheld terminals,
transceivers,
etc.

**Product Lines for
Diverse Sectors**

**Education /
Lifestyle**

(グラフ関数電卓など)
electronic dictionaries,
calculators with
graphing functions,
etc.



Industry

(FA / 計測機器、
車載、航空機など)
Factory automation /
measuring instruments,
on-board in vehicles,
aircraft, etc.



Our energy-saving displays are employed
in a variety of devices for lifestyles.



We offer the stable, long-term supply
of a full range of products for diverse
needs and uses in industry.

Core Technology - HAST (Hyper Amorphous Silicon TFT) + Blanview

Ultra-high definition TFT process

Fine low-resistive wiring

Ultra-narrow pitch COG bonding process

Optimized LCD design

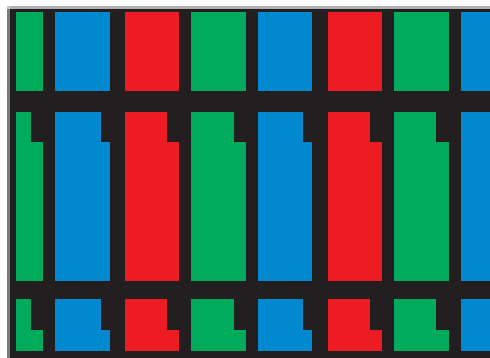
High aperture ratio
TFT technology

HAST

Low power
Driver design

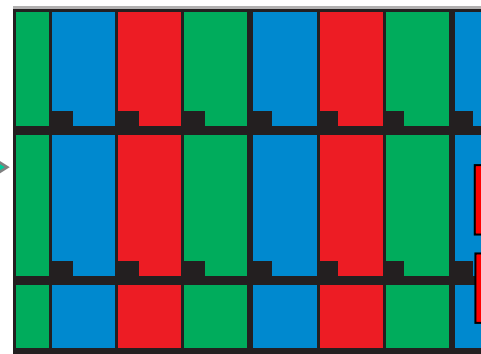
Fine pitch
COG process

Conventional TFT



30% larger
aperture ratio

HAST




Larger
Aperture ratio
30%

30% Higher Brightness

30% lower backlight power

Energy Saving Technology

 **New-Blanview**

 **Blanview**

Blanview = High readability under various environment

ORTUSTECH —Blanview offers compatibility realizing very **low power consumption** transmissive and **high readability** like transfective **even under direct sun light** and **even in indoors**.

Transmissive

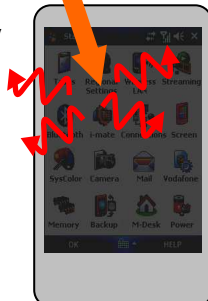
Low power
Nice image quality



Indoor



No good visibility
under sunlight



Outdoor

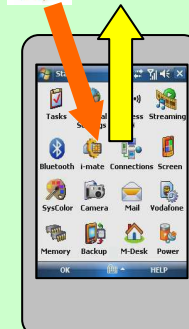
Advantages
of outdoor
visibility &
low power
consumption

Blanview

Clear visibility
by utilizing light
from outside



Indoor



Outdoor

Transflective

Require powerful
backlight



Visible by utilizing
Light from outside
But poor color

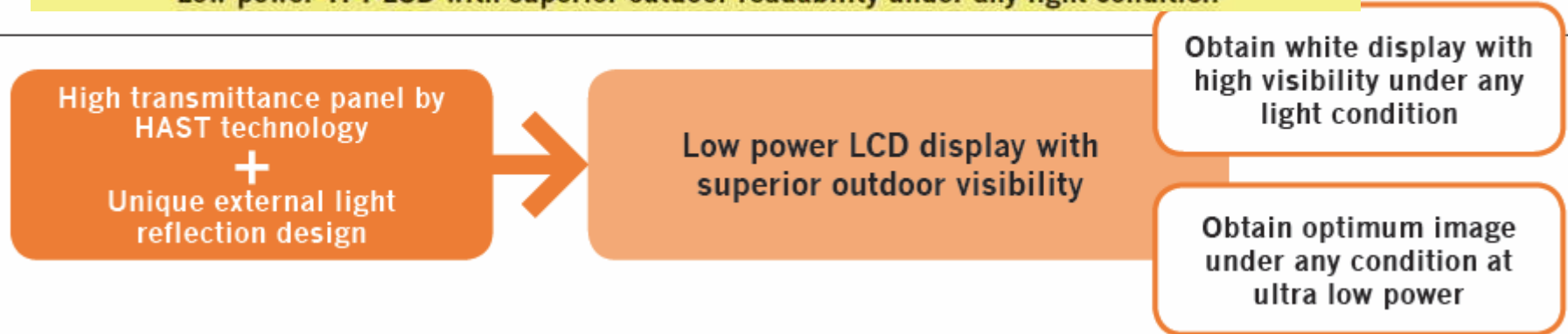


Outdoor

Improving technology
Keep high quality with PCAP

Blanview LCD

Low power TFT-LCD with superior outdoor readability under any light condition



New-Blanview LCD

High-pixel, high-definition and low power consumption TFT LCD with further improved color purity, reflectance and transmittance

Not only improve color purity, reflectance, transmittance, and outdoor visibility but enable product with a large number of pixels and high-definition.
"Evolving" energy-saving display

Revolution on effective use of external light

Improve
color
purity !

Improve
reflectance!

Improve
transmittance!

■ comparison Image under direct sun light (100,000lux)

Traditional
transmissive TFT,
backlight ON

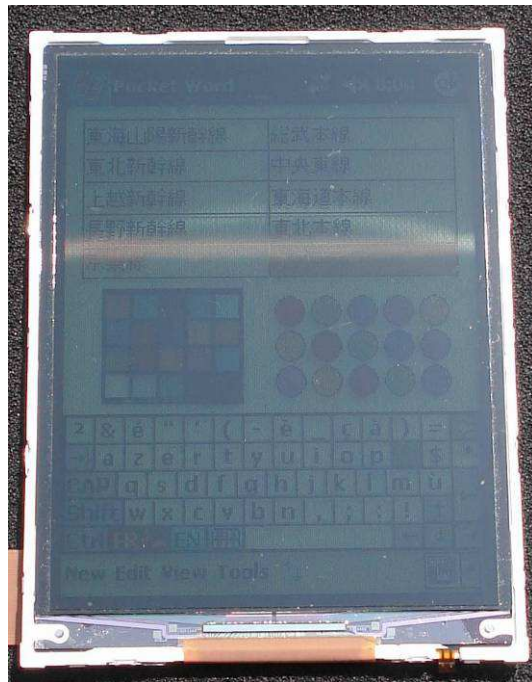


New-Blanview TFT,
backlight ON

Outdoor readability comparison ①

LCD comparison under fine weather (100,000lux)

Transmissive



Outdoor
readability

Poor

Blanview



Excellent


Transflective



Good

Outdoor readability comparison ③ (Assuming 100,000 lux)

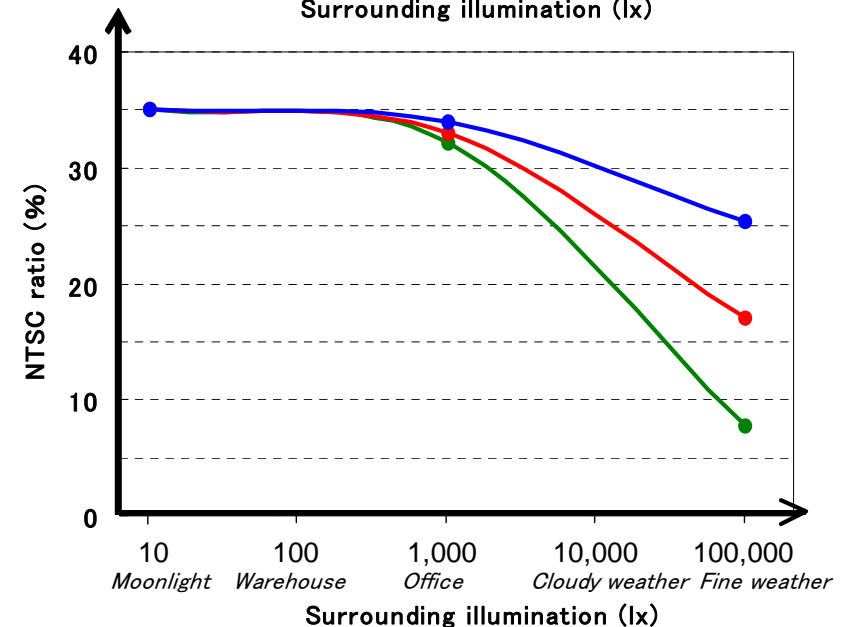
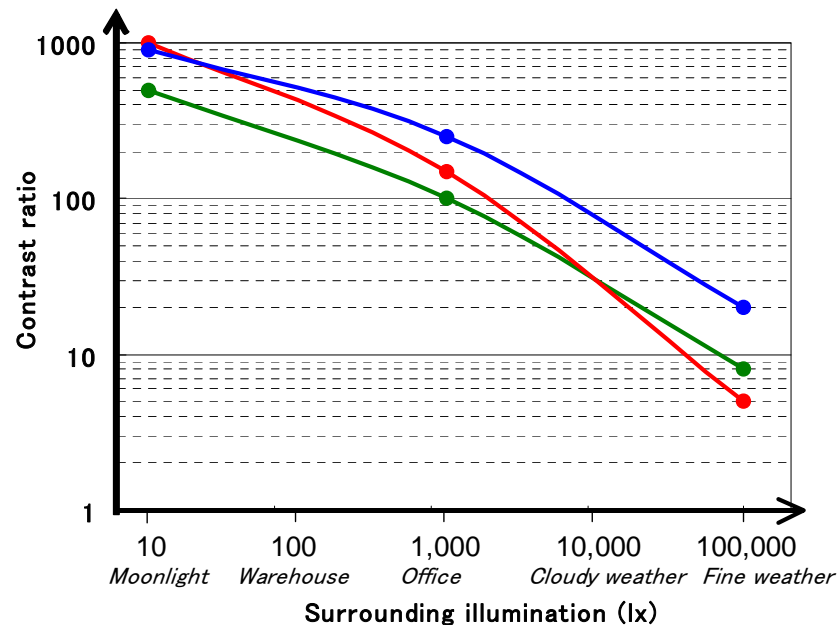
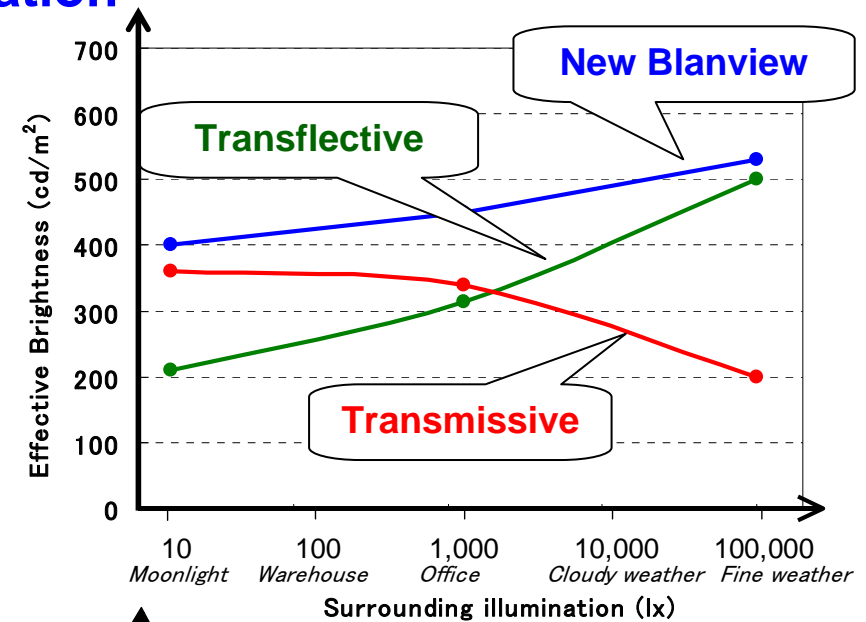


 **New-Blanview**

**Excellent outdoor readability & ultra-low power consumption are available.
About 50% of power consumption is reduced compared with OLED Display.**

Readability in the surrounding illumination

	Transmissive	New Blanview	Transflective
Outdoor	Bad	Excellent	Excellent
Indoor	Excellent	Excellent	Bad



Superior Power Efficiency = Lower Power Consumption

Competitive product

Brightness
Power Consumption (BL)

2.2"QVGA

330 cd/m²
192 mW

TM022HDHG03(Transmissive)

2.4"QVGA

250 cd/m²
192 mW

TM024HDH71(Transmissive)

4.3"WVGA

450 cd/m²
512 mW

TM043YDHP01(Transmissive)

5.0"HD

600 cd/m²
680 mW

TM050JDHG33(Transmissive)

"Evolving" energy saving

 New-Blanview

VA

Power Saving

400 cd/m²
49.2 mW

COM22H2P16ULC

74% Lower Power

300 cd/m²
41 mW

COM24H2P39ULC

78% Lower Power

450cd/m²
198 mW

COM43H4N10ULC


61% Lower Power

600 cd/m²
355 mW

COM50H5N03ULC

49% Lower Power

Comparison between New-Blanview and OLED

4.3" WVGA	OLED	New Blanview	 New-Blanview
Brightness	250 cd/m ²	400 cd/m ²	OLED low brigtness
Color Change Viewing Angle	Bad	Good	OLED color change
Sunlight Readability	Bad	Excellent	New Blanview better
Power Consumption	Bad 405mW~	Excellent 176mW	New Blanview almost half
Reliability	100/hr(LT95) 2000/hr(LT95)	20000/hr	OLED occur after image

Target Applications

Keyword

- Outdoor, Sunlight Readability
- Battery-driven Device
- Handheld
- Long life-cycle product
- Small volume product

【Reference】

- Handheld Rugged Computer
- Handheld Measurement
- Transceiver, Wireless equipment
- Diagnostics
- GIS/GPRS/GNSS/Tripod
- Construction / Farm machinery
- Security, Monitoring equipment
- Medical, Handheld Medical
- Walkie-Talkie/Radio
- Marine Equipment
- Vehicle Displays, Key Fob
- Factory Automation, Robotics
- 2-wheelers, Motorcycle, e-Mobility
- Non-display applications
(e.g. optical device, light shutter, etc)

