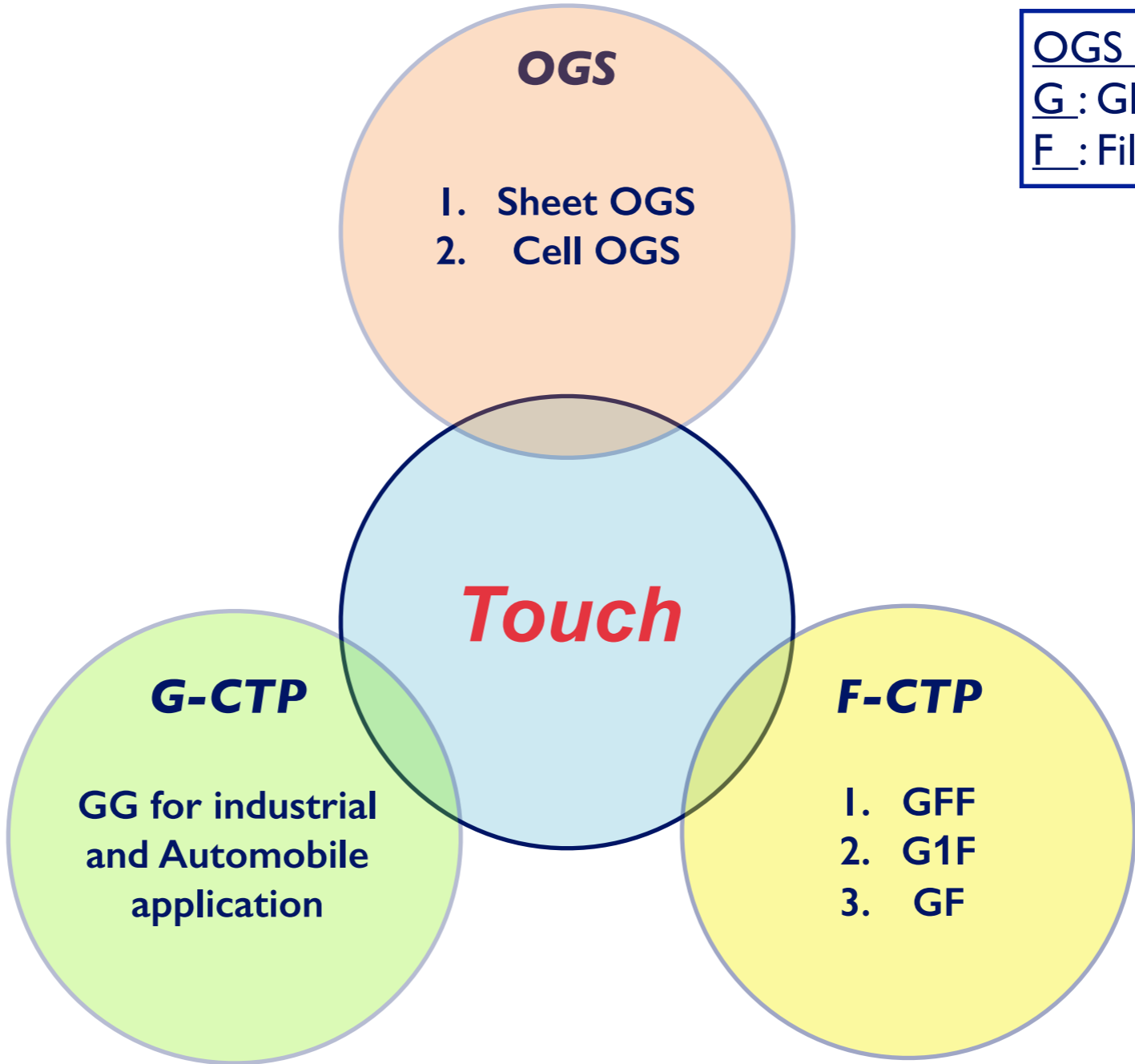


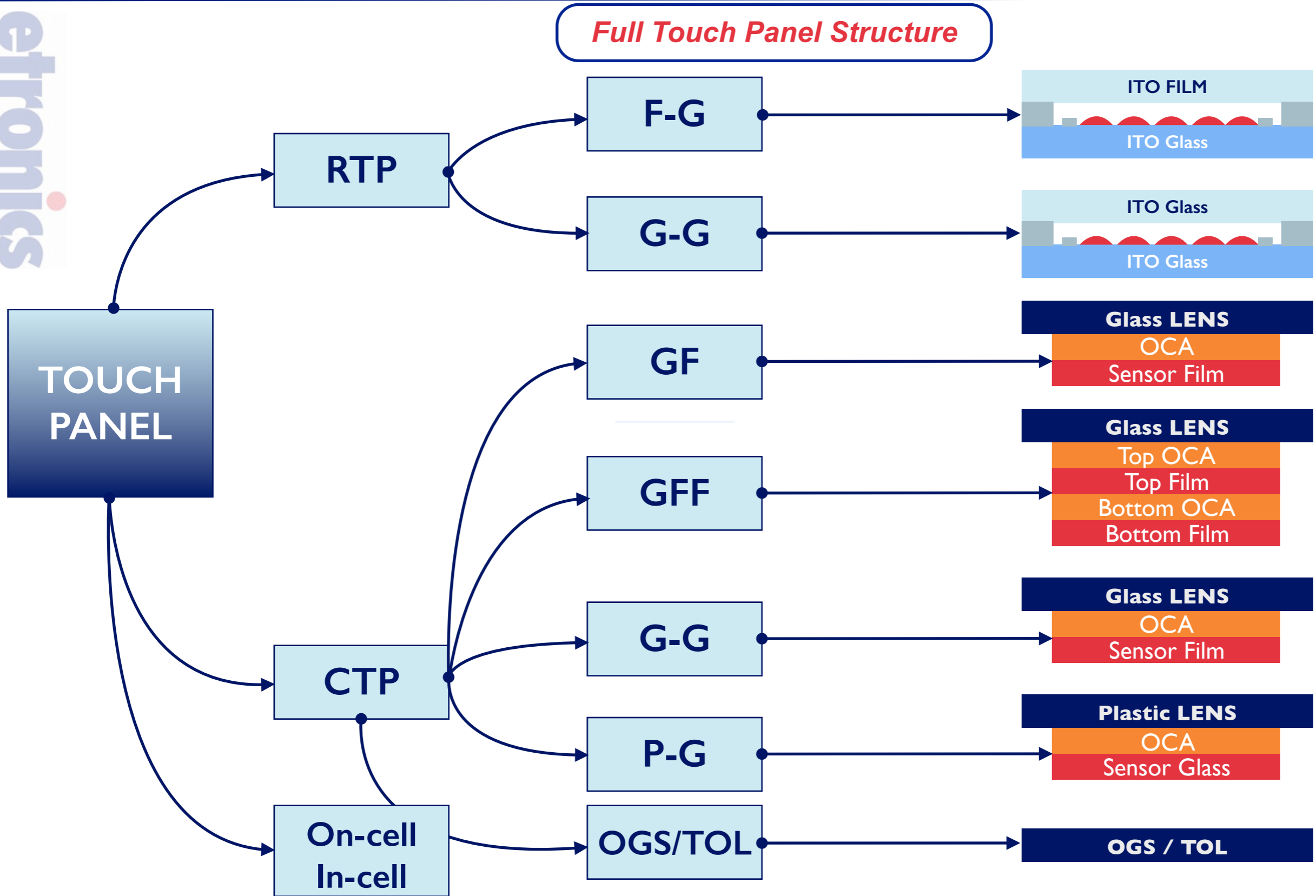
Smart Display - Touch Pads & Touch Technology



Touch technology solution

OGS : One glass solution
G : Glass
F : Film





On-cell / Out-cell Technology

	OGS	GG	GFF
Stacked Map	<div style="background-color: #002060; color: white; padding: 2px; text-align: center;">Cover LENS 0.7mm</div> <div style="background-color: #FF8C00; padding: 2px; text-align: center;">ITO Sensor</div> <div style="background-color: #DC143C; padding: 2px; text-align: center;">Rear Film 0,1mm</div>	<div style="background-color: #002060; color: white; padding: 2px; text-align: center;">Cover LENS 0.7mm</div> <div style="background-color: #FFD700; padding: 2px; text-align: center;">OCA 0,175mm</div> <div style="background-color: #FF8C00; padding: 2px; text-align: center;">ITO Sensor</div> <div style="background-color: #A9A9A9; padding: 2px; text-align: center;">Glass substrate 0,4mm</div>	<div style="background-color: #002060; color: white; padding: 2px; text-align: center;">Cover LENS 0.7mm</div> <div style="background-color: #FFD700; padding: 2px; text-align: center;">OCA 0,075mm</div> <div style="background-color: #800080; padding: 2px; text-align: center;">ITO Film 0,125mm</div> <div style="background-color: #FFD700; padding: 2px; text-align: center;">OCA 0,075mm</div> <div style="background-color: #800080; padding: 2px; text-align: center;">ITO Film 0,125mm</div>
Weight	Lightest	Light	Lighter
Thickness	Thin (0,65mm=0,55mm+0,1mm Back Adhesive) (0,80mm=0,70mm+0,1mm Back Adhesive) (1,20mm=1,10mm+0,1mm Back Adhesive)	Thick (1,275mm)	Thinner (1,1mm)
Transmissivity	Highest	Higher	High
Price	Low	Higher	Low
Optical Boding	Without attaching glass and glass, simple process.	Need glass and glass lamination, complex process.	Need film and film lamination, more complicated process.
Manufacture	Simple production process, high efficiency, higher yield rate.	More production process, difficult to improve when yield rate reach to a certain level.	More production process, difficult to improve when yield rate reach to a certain lever.

NB: OGS is thinner, production process is simple, yield rate is better

OGS Vs. GG & GFF

On-cell / OGS Compare						
Item	On-cell			Out Cell		
	Bridge	Single (M)	Single (S)	GFF	GFM	OGS
LENS	0,55					
Sensor	0	0	0	0,145	0,1	0
OCA	0,175					
Polarizer	0,172					
TFT Cell	0,4	0,4	0,4	0,3	0,3	0,3
Backlight	0,52					
Thickness	1,817	1,817	1,817	1,862	1,817	1,717
Sensor on	On CF	On CF	On CF	On Film	On Film	On Glass
FPC No.	2pcs	2pcs	2pcs	2pcs	2pcs	2pcs
IC No.	2pcs	2pcs	2pcs	2pcs	2pcs	2pcs
Accuracy	1,0 (Center) 1,5 (Border) ø7	1,5 (Center) 2,0 (Border) ø7	1,5 (Center) 2,5 (Border) ø8	1,0 (Center) 1,5 (Border) ø5	1,5 (Center) 2,0 (Border) ø7	1,0 (Center) 1,5 (Border) ø5
Anti Water	General	General	Good	Better	General	General
Lamination	1	1	1	3	2	1

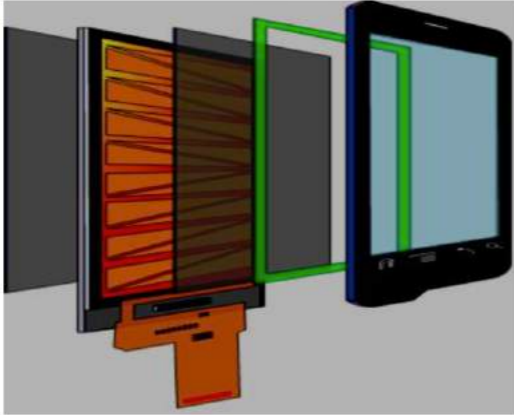
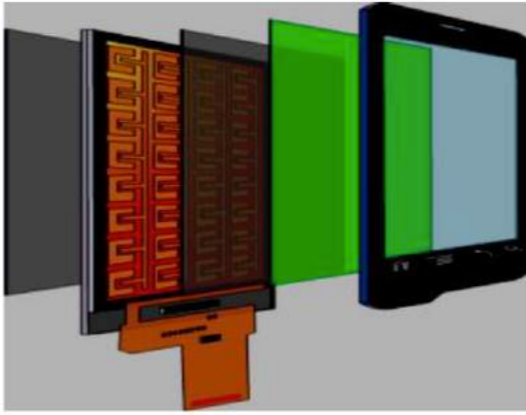
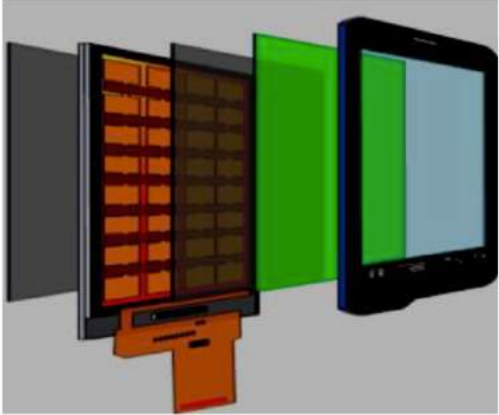
NB: 1) Anti Water

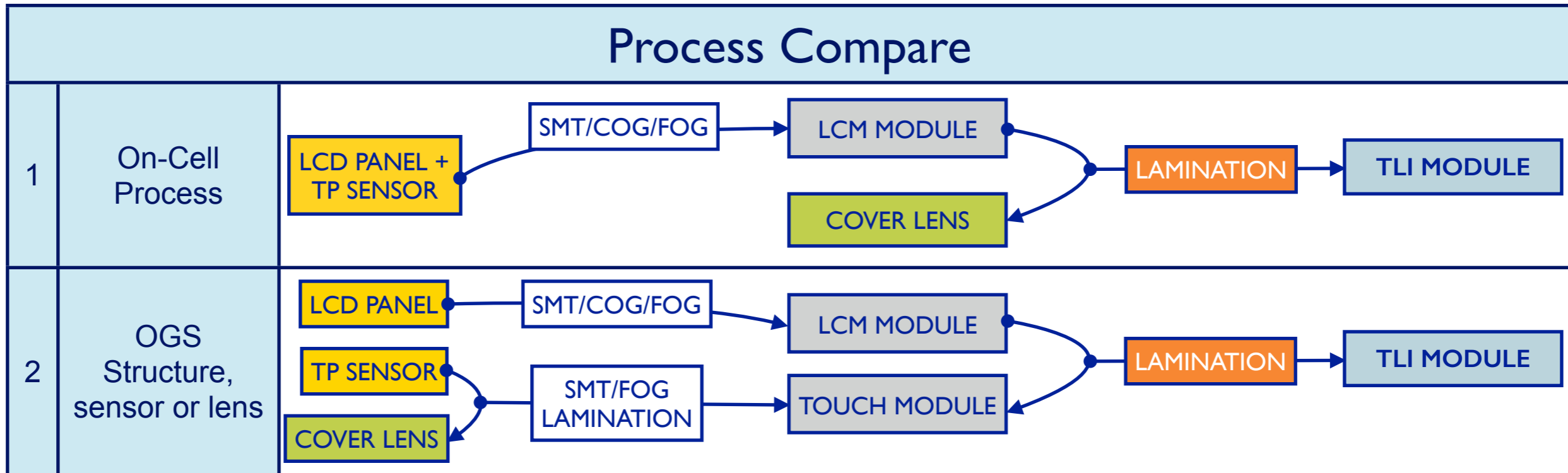
- Better means operating in the water drops is **OK**
- Good means operating outside the water drops is **OK**
- General mean operating in the water film is **OK**

2)

- The above data are reference 5 inch standard project, are typical values, only for references

On-Cell Technology

On-Cell Structure			
Technical	One layer	One layer	Bridge
Pattern	Triangle	Caterpillar	Diamond or others
Structure			



Treatment of LENS surface & IC supplier

Item	Coating	Additional Film
AR (Anti-reflectance)	R<1% with 7H	AGAR film with 3H
AF (Anti-fingerprint)	Coating or Evaporation	N/A
AG (Anti-glare)	Etching with 7h	AGAR film with 3H
Anti-sunglasses	N/A	With retardation film
AS (Anti-shatter)	N/A	AS film on OGS

Item	Supplier
Common IC	Cypress
	Atmel
	Synaptics
	Focaltech
	Himax
	MSTAR



Full Lamination

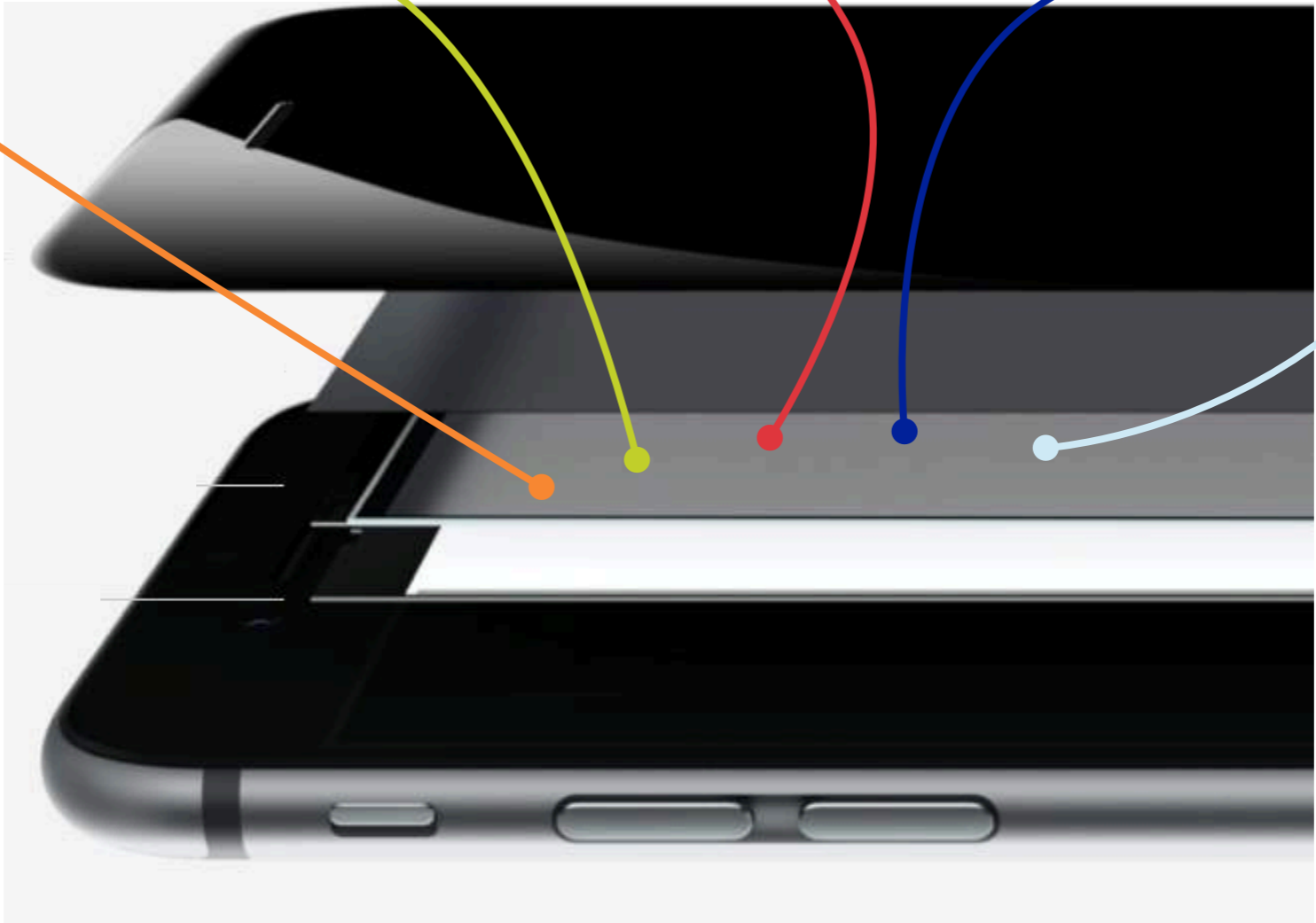
TRANSFLECTIVE

ULTRA-THIN

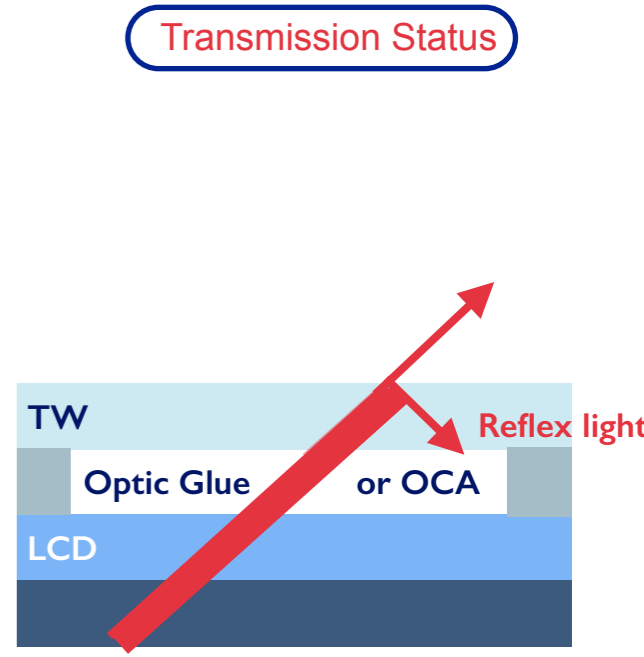
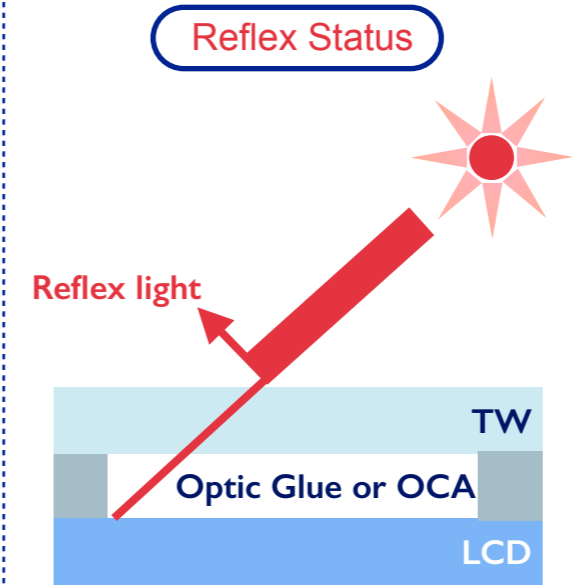
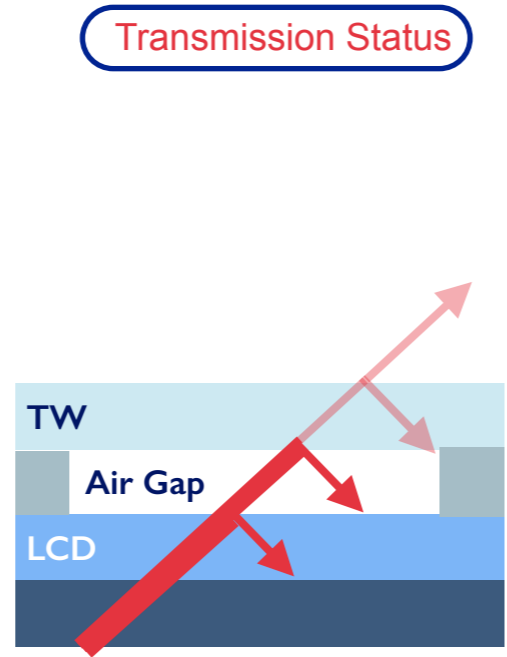
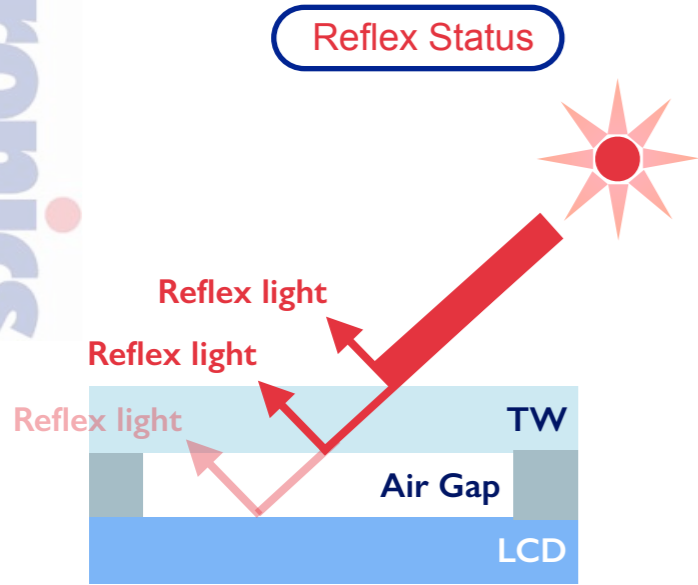
ANTI-DUSTING

TRUE BLACK

HIGH RELIABILITY



Full Lamination



Item	TLI Tech. Pros
Light Transmission	5% upgrade
Contrast	22% upgrade (gorgeous picture, wider viewing angle)
Surface Brightness	8% to 10% upgrade
Total set Thickness	0,1 to 0,7mm thinner
Dust, Stain...	Free from (Between TOUCH WINDOW and LCM)

NB: • Testing dates for reference above, is not value guaranteed.

TFT Display Solution

MP			
1" to 2,4"		2,4" to 4,3"	
<p>1,38"</p> <p><u>H2. TFT220220-1-E</u></p> <ul style="list-style-type: none"> • TM . 220*220 • IC: R61505W • Outline T:2,5mm 	<p>1,93"</p> <p><u>H2. TFT220176-6-E</u></p> <ul style="list-style-type: none"> • TM . 220*176 • IC: R61505W0D5 • Outline T:2,18mm 	<p>2,41"</p> <p><u>H2. TFT240320-183-E</u></p> <ul style="list-style-type: none"> • TM . 240*320 • IC: R61505W0D5 • Outline T:3,05mm 	<p>3,50"</p> <p><u>INX. TFT320240-92-E/91-E</u></p> <ul style="list-style-type: none"> • TM . 320*240 • IC: HX8238-D • Outline T:3,5mm / 4,8mm
<p>1,60"</p> <p><u>H2. TDO-QVGA0160A90020</u></p> <ul style="list-style-type: none"> • TF . 240*240 • IC: ST7789S-G4 • Outline T:2,42mm 	<p>2,20"</p> <p><u>H2. TFT320240-115-V1</u></p> <ul style="list-style-type: none"> • TM . 320*240 • IC: HX8368-B • Outline T:2,85mm 	<p>2,75"</p> <p><u>H2. TFT240400-67</u></p> <ul style="list-style-type: none"> • TF . 240*400 • IC: HX8352-C • Outline T:2mm 	<p>3,51"</p> <p><u>H2. TFT480640-5</u></p> <ul style="list-style-type: none"> • TF . 480*640 • IC: HX8363-A • Outline T:3,23mm
<p><u>H2. TFT240240-2</u></p> <ul style="list-style-type: none"> • TM . 240*240 • IC: ST7789S-G4 • Outline T:1,58mm 	<p><u>H2. TFT240320-287</u></p> <ul style="list-style-type: none"> • TM . 240*320 • IC: HX8347-i0 • Outline T:2,9mm 	<p>2,83"</p> <p><u>H2. TFT128160-159-E</u></p> <ul style="list-style-type: none"> • TM. 240*320 • IC: R61505W • Outline T:2,85mm 	<p><u>H2. TFT240320-287</u></p> <ul style="list-style-type: none"> • TF . 480*640 • IC: HX8363-A • Outline T:4,33mm
<p>1,77"</p> <p><u>H2. TFT128160-159-E</u></p> <ul style="list-style-type: none"> • TM . 128*160 • IC: ST7735S-G4 • Outline T:2,38mm 	<p>2,36"</p> <p><u>H2; TGT320240-222-E</u></p> <ul style="list-style-type: none"> • TM . 320*240 • IC: HX8368-B • Outline T:2,05mm 	<p>3,20"</p> <p><u>H2. TFT240320-289-E</u></p> <ul style="list-style-type: none"> • TM . 240*320 • IC: ST7789S-G4 • Outline T:3,65mm 	<p>4,26"</p> <p><u>H2. TFT480854-15-E</u></p> <ul style="list-style-type: none"> • TM . 480*854 • IC: HX8363-A • Outline T:2mm

TFT Display Solution

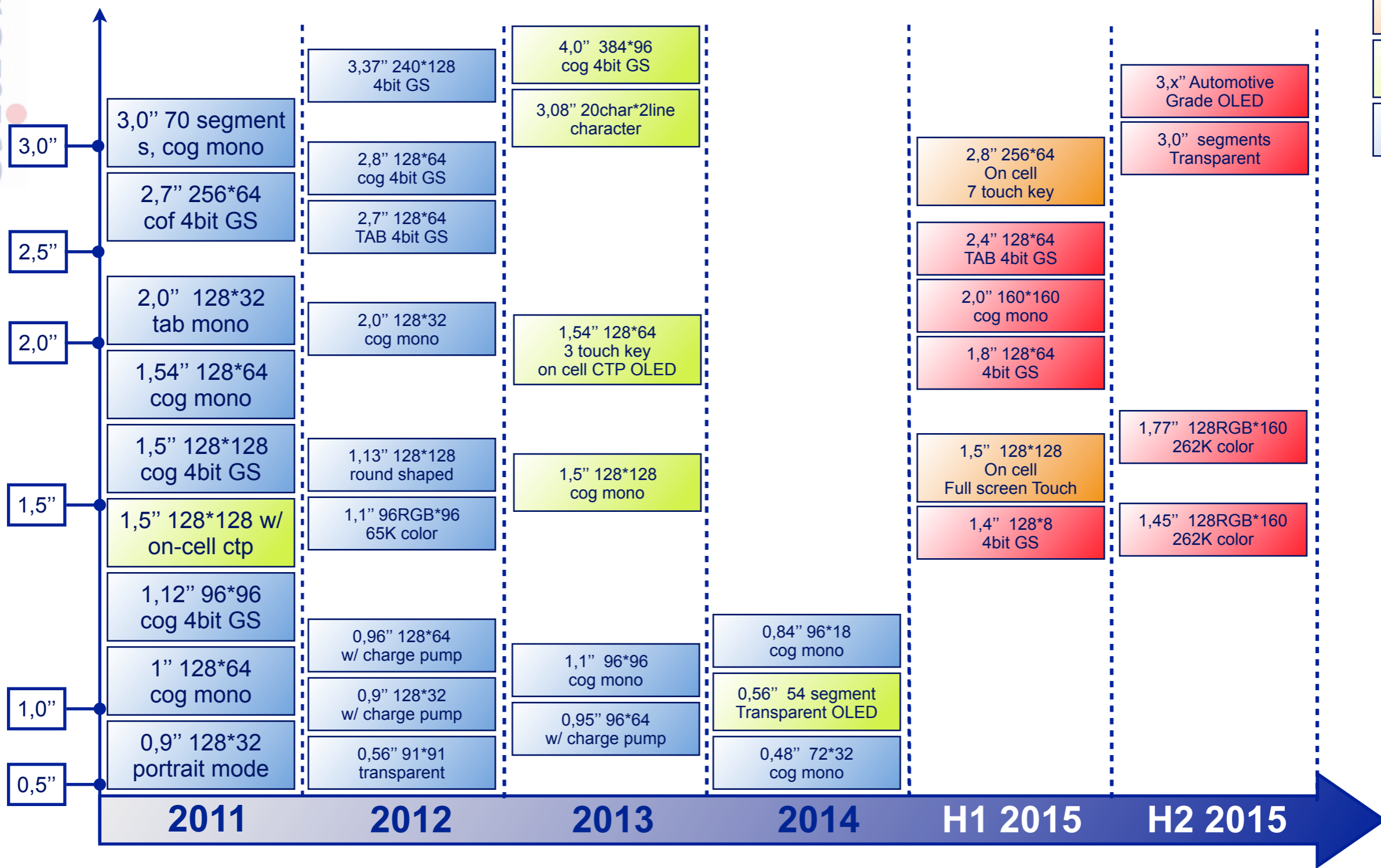
MP			
4,3" to 5"		5,0" to 6,5"	
4,30"	4,73"	5,0"	5,7"
<p><u>INX .TFT480272-13-E</u></p> <ul style="list-style-type: none"> • TM . 480*272 • IC: HX8257-A • Outline T:2,9mm 	<p><u>H2. TFT800480-42-V1</u></p> <ul style="list-style-type: none"> • TM . 800*480 • IC: HX8262-A*2 + HX8662-C • Outline T:2,86mm 	<p><u>INX . TFT800480-28-E</u></p> <ul style="list-style-type: none"> • TF . 800*480 • IC: HX8258-A*2 + HX8662-C • Outline T:5,05mm 	<p><u>STN. MSG320240-223-E</u></p> <ul style="list-style-type: none"> • TM . 320*240. mono • IC: NT7711*2 • Outline T:3,5mm / 4,8mm
<p><u>H2 . TFT480272-20-E</u></p> <ul style="list-style-type: none"> • TM . 480*272 • IC: SSD2128 • Outline T:2,9mm 		<p style="text-align: center;">5,2"</p> <p><u>H2. TFT1P4249-R</u></p> <ul style="list-style-type: none"> • TM. 640*240 • IC: HX8250-A*2 + HX8655-C • Outline T:4,5mm 	<p><u>INX. TFT320240-98-E</u></p> <ul style="list-style-type: none"> • TF . 320*240 • IC: HX8615C+HX8218-C • Outline T:6,3mm
<p><u>H2. TFT800480-37-V2-E</u></p> <ul style="list-style-type: none"> • TM . 800*480 • IC: HX8264-D*2+HX8662-C • Outline T:2,9mm 			<p><u>INX; TDA-QVGA0570A90006</u></p> <ul style="list-style-type: none"> • TF . 320*240 • IC: HX8615C+HX8218-C • Outline T:3,23mm
			<p><u>INX; TFT640480-7-E</u></p> <ul style="list-style-type: none"> • TM . 640*480 • IC: HX8250-A*2+HX8678-B • Outline T: 6,3mm

TFT Display Solution

MP	
6,5" to 10,0"	9,7" and above
<p>6,5"</p> <p><u>H2. TFT400240-3-E</u></p> <ul style="list-style-type: none"> • TM . 400*240 • IC: NT39327+NT39406-D*2 • Outline T:6,5/8,1mm 	<p>9,7"</p> <p><u>HSD. TDT1024768-10</u></p> <ul style="list-style-type: none"> • TM . 1024*768 • IC: HX8282A+HX8695*2 • Outline T:2,75mm
<p>7,0"</p> <p><u>HSD. TFT800480-59-E</u></p> <ul style="list-style-type: none"> • TM . 800*480 • IC: HX8264+HX8664-B • Outline T:3,5mm 	<p>10,1"</p> <p><u>HSD. TFT1280800-A-V1-E</u></p> <ul style="list-style-type: none"> • TM. 1280*800 • IC: OTD71017*A+OTD9800A-C2 • Outline T:2,4mm
<p>8,0"</p> <p><u>HSD. TGT1P1195</u></p> <ul style="list-style-type: none"> • TM . 800*480 • IC: OTA700A*2+SPFD6048A*1 • Outline T:6,4mm 	<p>10,4"</p> <p><u>H2. TFT800600-4-E</u></p> <ul style="list-style-type: none"> • TM . 800*600 • IC: HX8258-A*2+HX8677-A • Outline T:13,7mm
	<p>11,0"</p> <p><u>H2. TFT1280120-1-V1-E</u></p> <ul style="list-style-type: none"> • TF . 1280*120 • IC: HX8232-B*5+HX5655-C • Outline T:7,6mm
	<p>HSD. TDO-K90009</p> <ul style="list-style-type: none"> • TM. 1280*800 • IC: OTD7101A*4+OTD9800A • Outline T:3,57mm
	<p>AUO. TGT19201200-1-V1</p> <ul style="list-style-type: none"> • TM. 1920*1200 • IC: AU65005H*6+AU39508H*2 • Outline T:2,5mm

PMOLED Product Roadmap

*Last update - March 2015





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