



2017 AMOLED Emitting Material Report

SAMPLE

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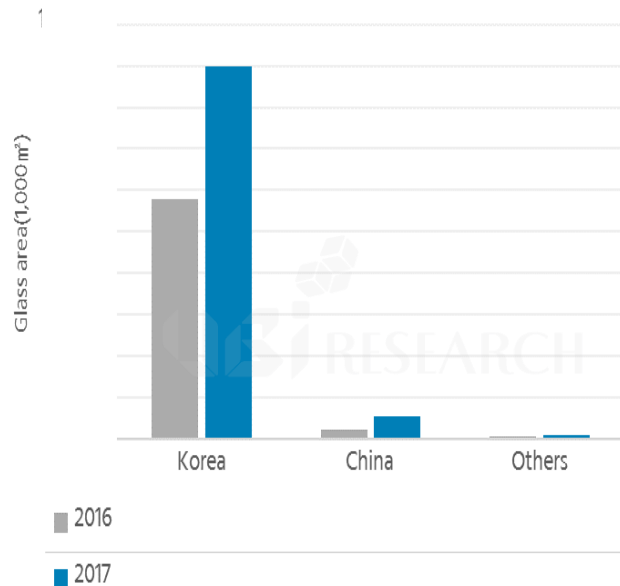
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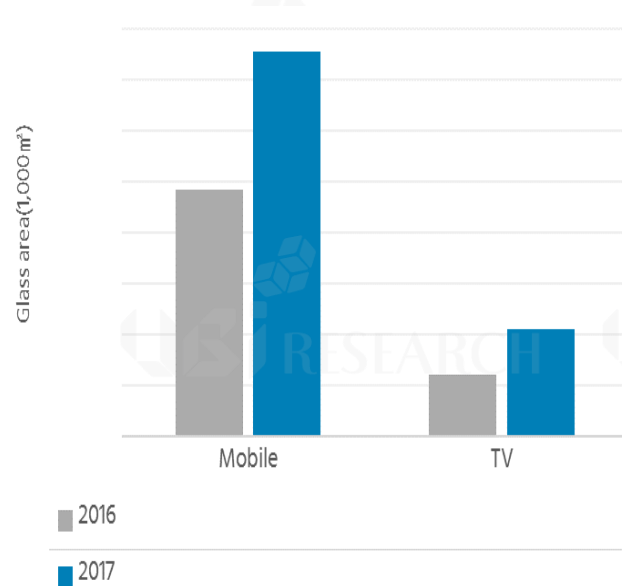
2.1 Capa. analysis of 2017 forecast AMOLED mass production line

- If 2017 AMOLED mass production line investment volume by country is converted into substrate area, Korea is m^2 , and then China is m^2 . China's substrate area is expected to increase by approx. 2.6 times compared to 2016.
- By application, TV use OLED line's substrate area is estimated to be million m^2 , an increase of approx. 1.8 times compared to 2016.
- Flexible AMOLED line substrate area is to be million m^2 , an increase of approx. 2.1 times compared to 2016.

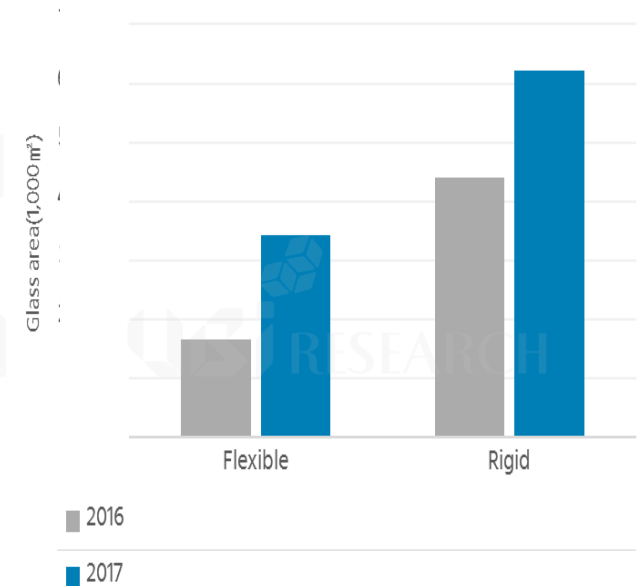
2016 and 2017 AMOLED mass production line investment comparison (area)



Source: UBI Research DB



Source: UBI Research DB



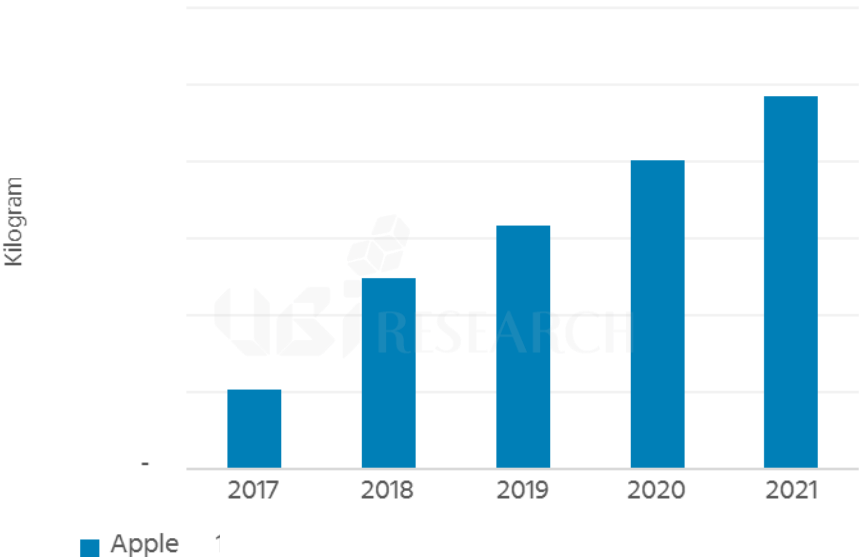
Source: UBI Research DB

4. Apple directed emitting materials market analysis

4.1 Apple directed emitting materials market analysis

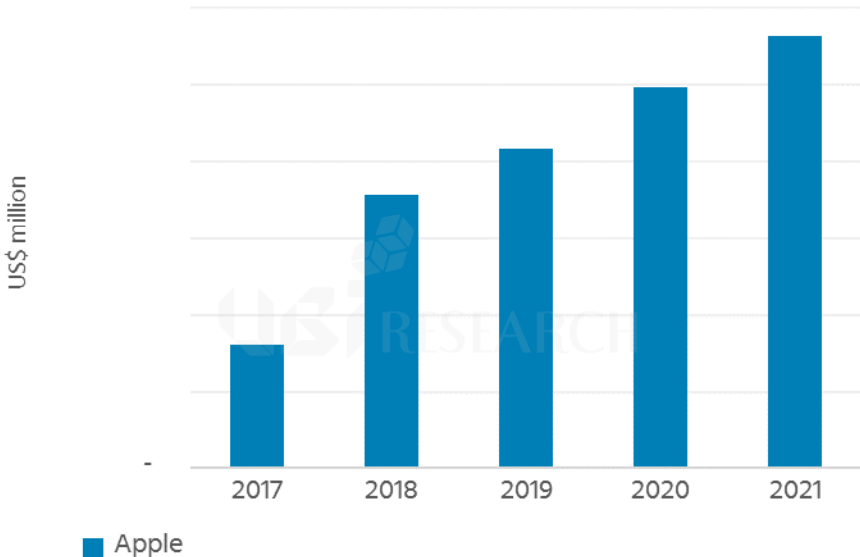
- Flexible AMOLED is expected to be applied to some models of 2017 Apple iPhone.
- AMOLED emitting materials demand volume expected to be used for Apple iPhone is in 2017 and in 2021.
- Emitting materials market expected to be used for Apple iPhone's AMOLED is estimated to be US\$ in 2017 and US\$ in 2021.
- In 2018 and 2019, flexible AMOLED is estimated to be applied to all new iPhone models. Accordingly, AMOLED emitting materials demand volume is also expected to greatly increase.

Apple directed emitting materials demand volume forecast



Source: UBI Research DB

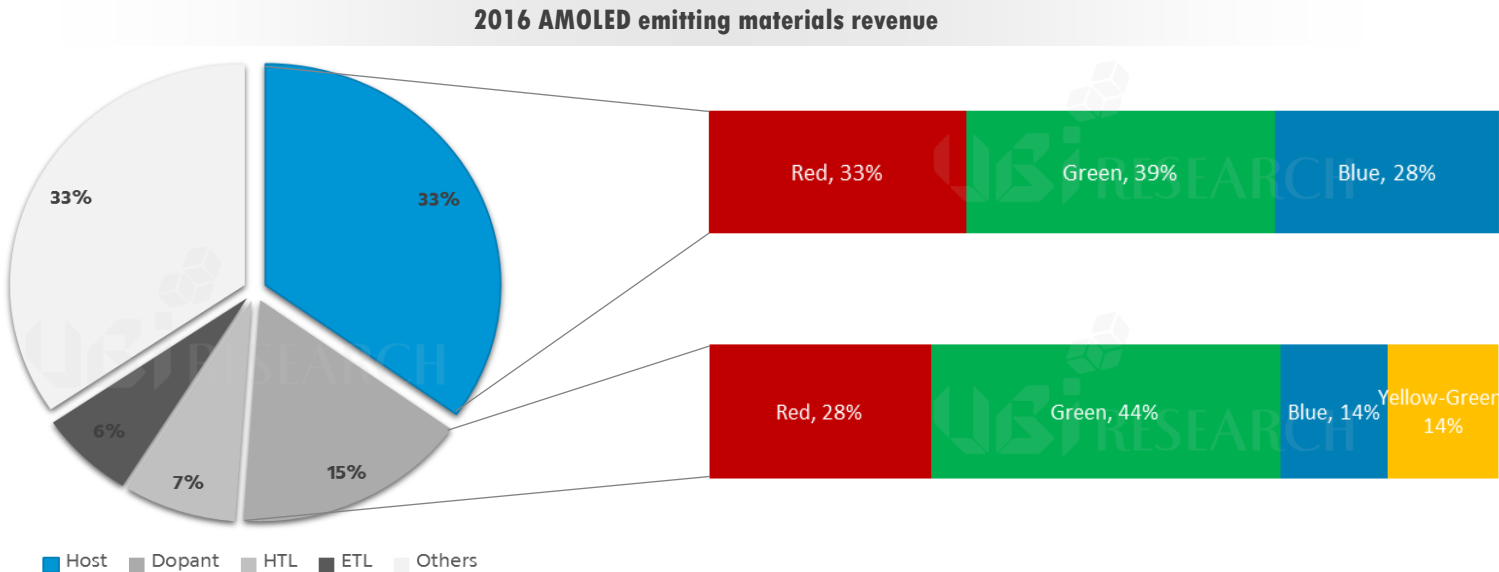
Apple directed emitting materials market forecast



Source: UBI Research DB

5.1 2016 AMOLED emitting materials revenue analysis

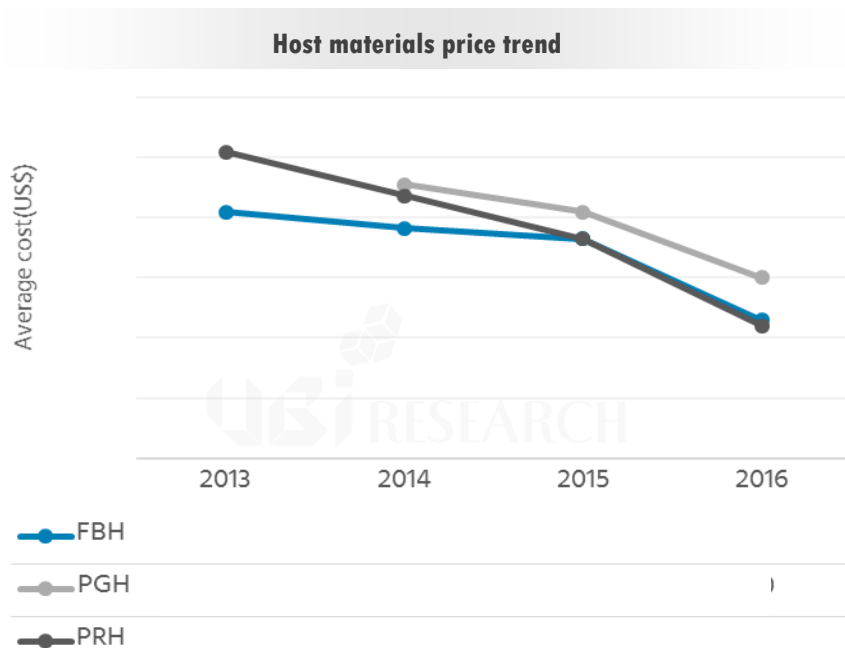
- 2016 AMOLED emitting materials revenue is categorized into host, dopant, HTL, ETL, and others and analyzed. Others include EIL, HITL, aETL (advanced ETL), HTL prime (red, green, blue), CGL, p dopant, etc.
- Host materials showed highest market share with 33% of total revenue, followed by dopant materials' 15%.
- Of host and dopant materials, green's revenue market share showed highest with 39% and 44% respectively. Of materials excluding green, the revenue market share was in the order of red, blue, and yellow-green.
- Others occupied 33% of total revenue.



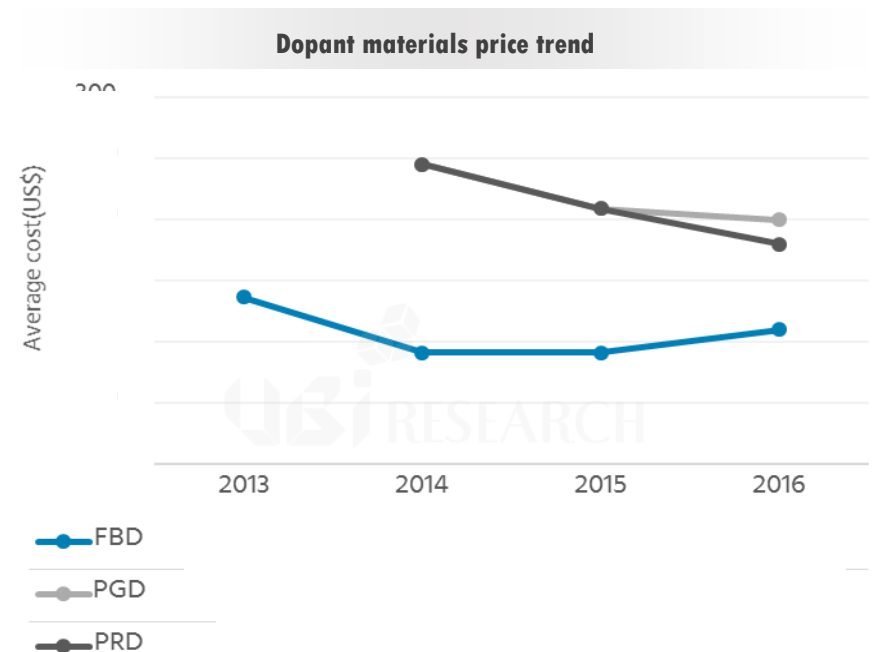
Source: UBI Research DB

6. Key AMOLED emitting materials price trend analysis

- Compared to 2015, all host materials fell. In particular, red host price fell greatly.
- For dopant materials, red showed US\$, a decrease of compared to 2015, and green showed US\$, a decrease of.
- Blue dopant material showed to be US\$, an increase of compared to previous year.



Source: UBI Research DB



Source: UBI Research DB

7. Supply chain and panel structure analysis

7.2 Samsung Display's supply chain by mobile device use AMOLED structure

Samsung Display's supply chain by mobile device use AMOLED structure

Material			M4	M5	M6	M7	M8
EIL							
ETL							
aETL							
EML	Red	Host					
		Dopant					
	Green	Host					
		Dopant					
	Blue	Host					
		Dopant					
HTL R prime							
HTL G prime							
HTL B prime							
P+							
HTL							
HIL							
Key model application							

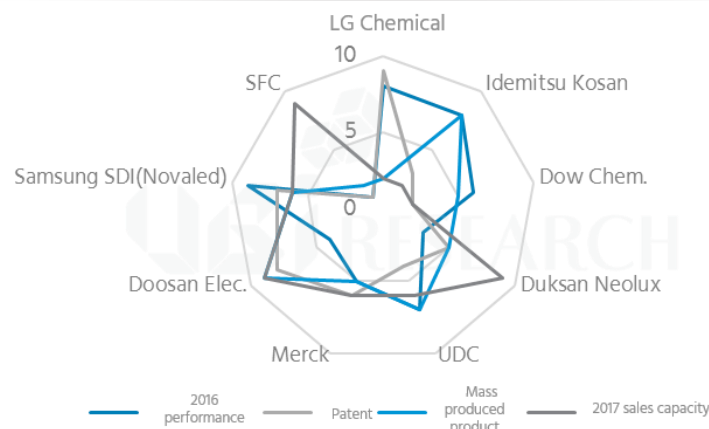
Source: UBI Research DB

12. Key AMOLED emitting materials companies competitiveness analysis

12.5 Summary

- Based on 2016 performance, Korean patents, mass produced products, and 2017 forecast revenue, key AMOLED emitting material companies' competitiveness were analyzed.
- Doosan is analysed to be one with highest competitiveness in 2017.
- Followed by Samsung SDI (incl. Novaled) and then UDC.
- Dow Chemical and SFC ranked 8th and 9th respectively.

Key AMOLED emitting materials companies' competitiveness



Source: UBI Research DB

Key AMOLED emitting material companies' competitiveness

Items	LG Chemical	Idemitsu Kosan	Dow Chemical	Duksan Neolux	UDC	Merck	Doosan	Samsung SDI (including Novaled)	SFC
2016 performance									
Patent									
Mass produced product									
2017 sales capacity									
Total									
Competitiveness rank									

Source: UBI Research DB



2017 AMOLED Emitting Material Report

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