CASE SUMMARY

Identified if the patent is worth acquiring by reverse engineering an OLED Display

Value Delivered

The client was able to identify the value of the patent based
on its infringement on the OLED display of the top display manufacturer.

Problem to be solved

The client, an Asian display manufacturer, was looking to acquire a patent related to OLED technology, to support their R&D and upcoming products. For this, it was important to ensure the patent which they are considering to acquire is of high value.

Solutions offered

The potential patent for acquisition seemed promising as based on online research, there were leads that a flagship product of a top display manufacturer (ABC, Inc.) uses similar technology. This caught the interest of the client. However, before investing in the acquisition, the question was – Is the patent completely overlapping with the technology used by ABC, Inc.?

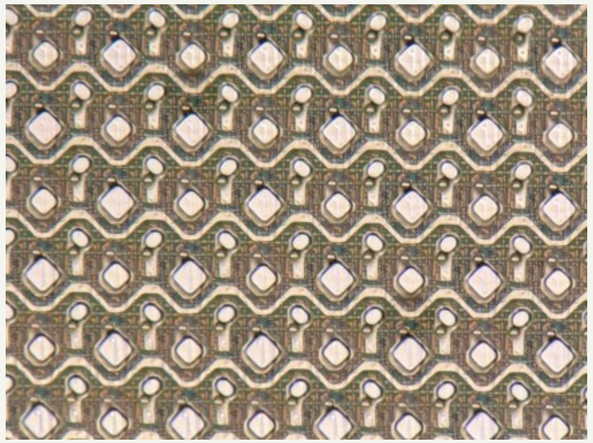
The patent claimed aspects on core OLED layers, i.e. semi-conductor level information which was not explicitly available online and also could not be determined with the naked eye. To be precise, we needed to see if an encapsulation layer is present in the OLED stack and if the composition of that layer is as claimed in the patent (organic and inorganic components).
So, we proposed to perform Reverse Engineering (RE) on the OLED display of ABC, Inc. to figure out the presence of the layer and its composition. The client agreed as RE would uncover the details of the OLED stack, which will ultimately help in their R&D as well.

RE itself was certainly a hard nut to crack. From sample preparation to using electron microscopy, there were a series of roadblocks. The sample preparation took multiple iterations as the OLED is sensitive to high temperatures. Then in electron microscopy, the encapsulation layer to be analyzed was not visible in the first few attempts. We tried various resolutions, however, there was no success. After brainstorming, we decided to take help from industry experts. By combining our patent knowledge and industrial knowledge, we were finally able to analyze the encapsulation layer and its components in the OLED display using TEM and EDX scans. All this was done in collaboration with a Nanotechnology lab based in Singapore.

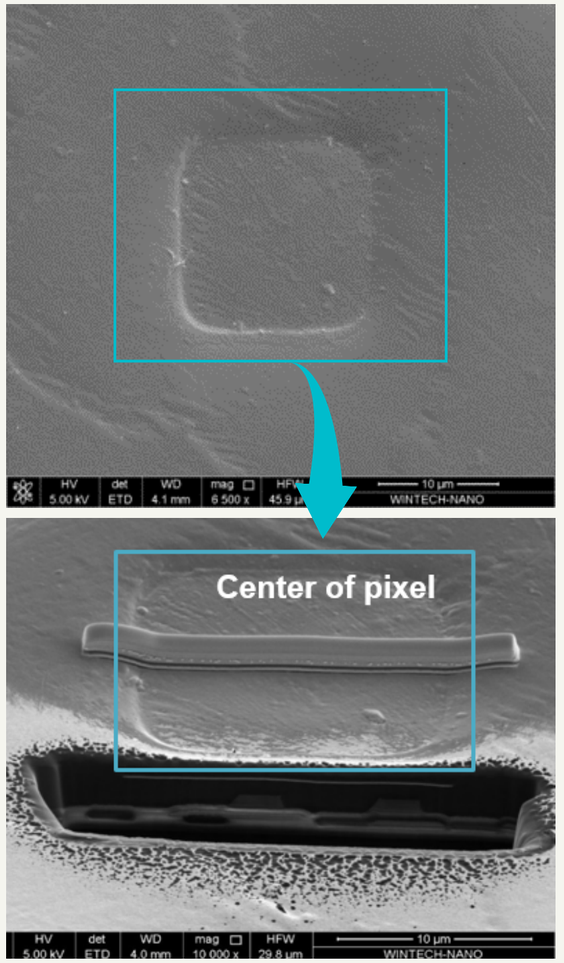
By analyzing the patent details and output from reverse engineering, it was concluded that ABC's OLED display encapsulation layers did not have the same composition as claimed in the patent. Hence, it wasn't infringing. This gave the client the answers to his questions and a surety of the worth of the patent, before investing millions in it.

OLED display

Magnified View,
Pixel layout of Display



SEM Image of Pixel



Cross-sectional Cut of pixel
to study various layers

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