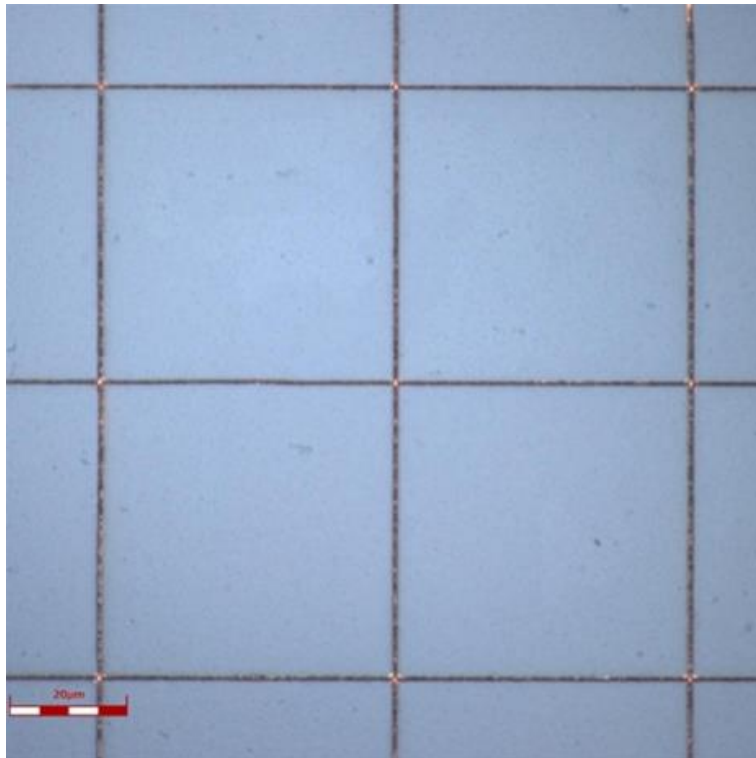


17th May 2019

DNP developed conductive film with ultrafine mesh for antenna that does not disturb visibility even if it is stuck on the screen of smartphone.

Dai Nippon Printing Co., Ltd. (DNP) developed a "conductive film with ultrafine mesh" used as a highly sensitive antenna for communication, which one micron width metal mesh is made into a film. It can be attached to the display screen of next-generation smartphones by taking advantage of the product characteristics which its wires are embedded in transparent film, eliminating the need to store the antenna inside the device, and responding to the device's high functionality and miniaturization.



Conductive film with ultrafine mesh (enlarged image)

[Background]

In order to respond to the rapid expansion of the amount of data exchanged with communication devices such as smartphones, 5G environment preparation that can transmit and receive large-capacity data compared to the current 4th generation mobile communication system (4G) is in progress. Smartphones compatible with this 5G are being developed around the world for commercialization in 2020, and it is difficult to secure a space to store an antenna for 5G in the device where miniaturization and high functionality are simultaneously required. To solve these issues, DNP developed "conductive film with ultrafine mesh" which functions as an antenna without losing the

appearance of the screen even if it is attached to the display instead of the inside of a smartphone, by using photolithography technology that has been cultivated for many years.

[Features of developed "conductive film with ultrafine mesh"]

The conductive film with ultrafine mesh developed by DNP achieves the same level of performance as the current smartphone antenna. The ultrafine pattern of metal (copper) is formed on a substrate film, by setting the line width to 1 μm or less in each of the vertical and horizontal directions the visibility of the smartphone screen will not be lost. In addition, copper has low sheet resistance compared to other metals, so it achieves sheet resistance ($2 \Omega/\square$) suitable for antennas even with ultrafine line widths (1μm).

[Future plan]

DNP plans to provide this conductive film with ultrafine mesh to smartphone manufacturers and others. The conductive film with ultrafine mesh developed this time is introduced at the DNP booth of the "SID 2019" of the display conference held in San Jose, USA from May 14 to 16.