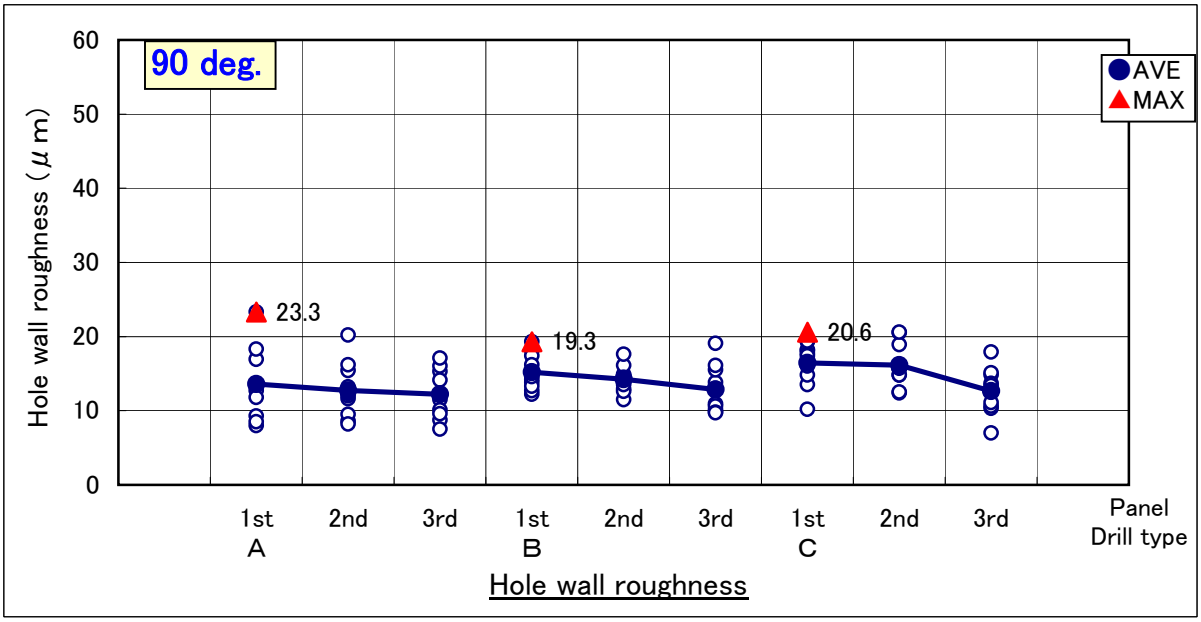
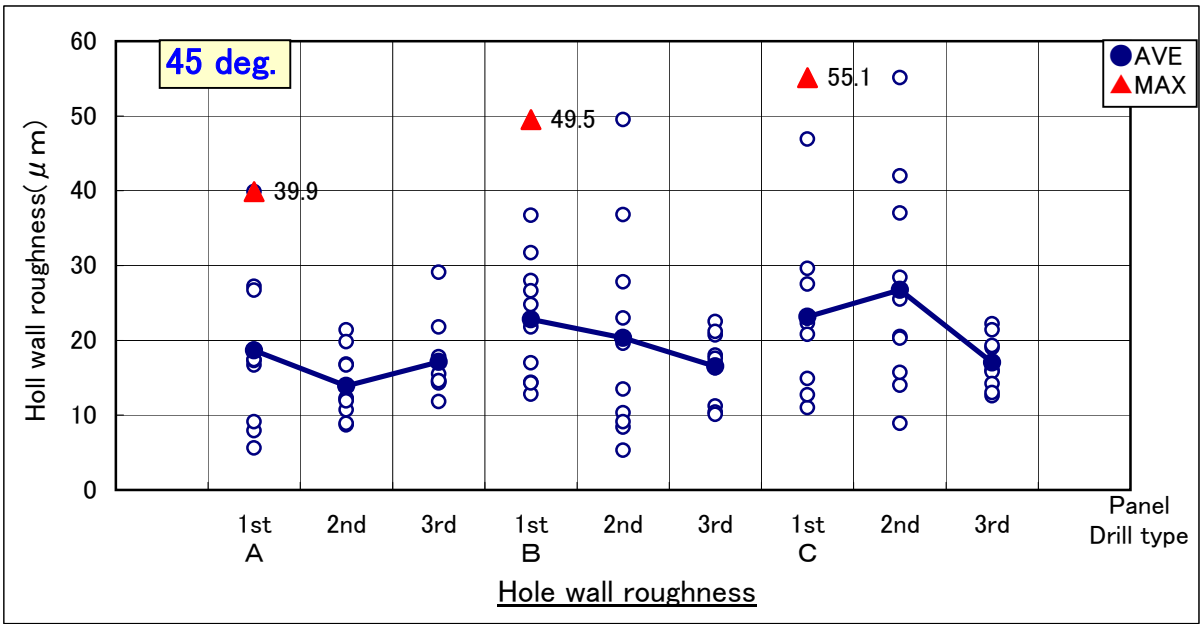
Hole wall roughness
(Comparing 45 deg. and 90 deg.)

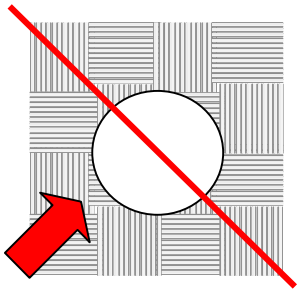
＜UV 0.4x6.5 typeA＞
＜UV 0.4x6.5 typeB＞
＜UV 0.4x6.5 typeC＞

＜Drilling Condition＞
PWB：FR-4(D/S)t1.6x3s
E/B：Al t0.15　B/B：Paper　Clad　t1.5
N：125krpm　　V：157.1m/min
F：2.5m/min　　f：20μm/rev
Hits：5000
5 holes are measured around 5000 hit, and 10 points are measured.
Cross section：90 deg.／45 deg.

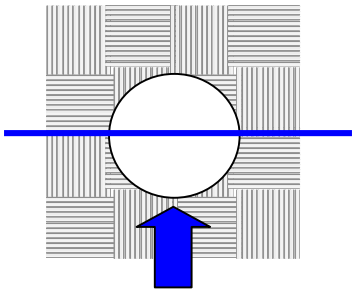




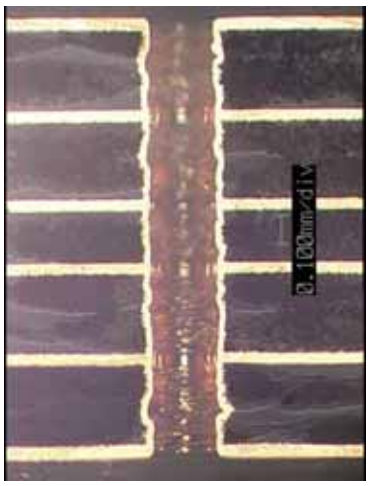
Difference of cutting direction



Cross-section
cutting line
45 deg.



Cross-section
cutting line
90 deg.

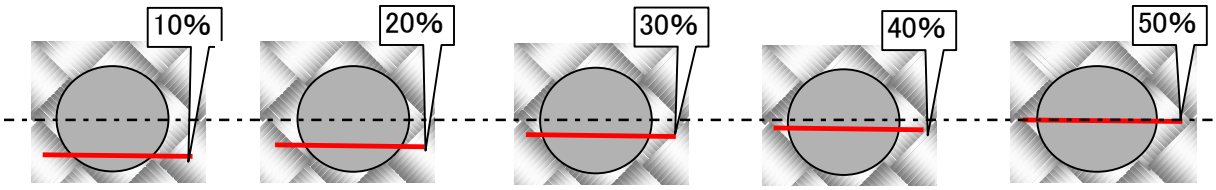


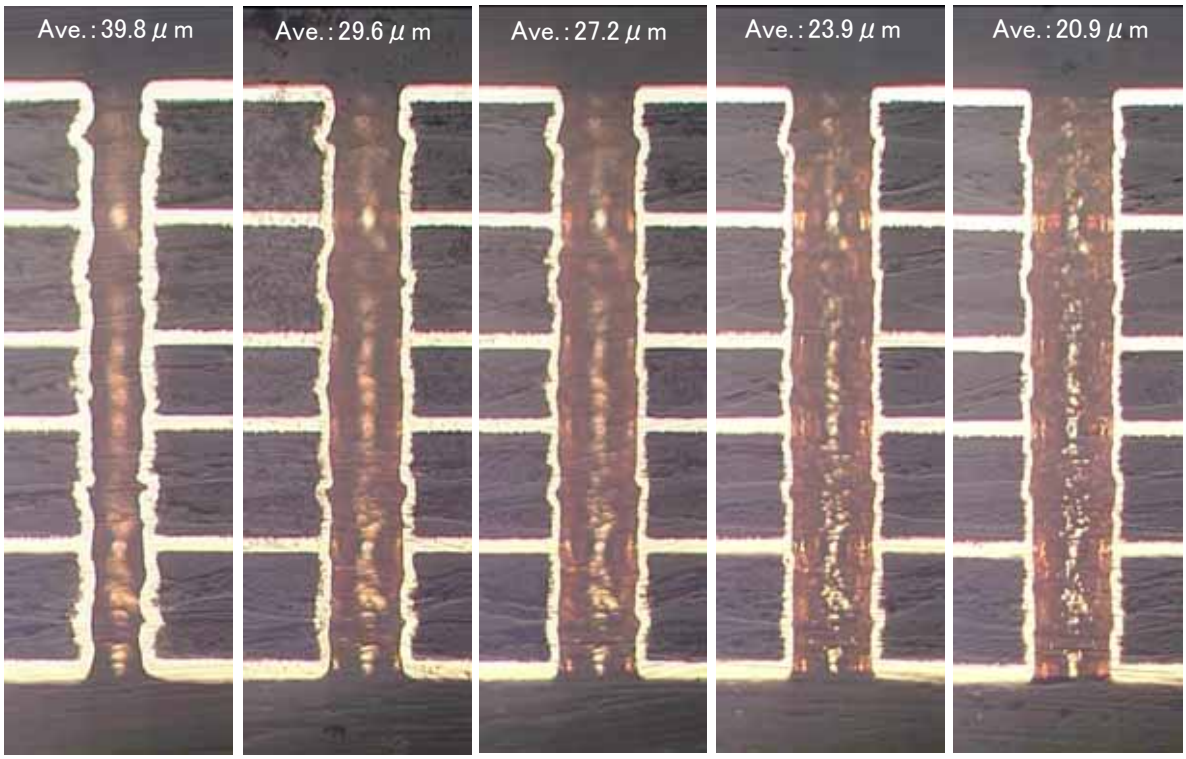
45 deg.
MAX 44.8 μm
AVERAGE 34.9 μm

90 deg.
MAX 24.5 μm
AVERAGE 20.9 μm

Difference of roughness

The following data shows the differences in hole wall roughness depending on where the cross section is cut off.





10% **20%** **30%** **40%** **50%**

The hole wall roughness on the cross section was Ave.:39.8 μ m at 10%, but it decreased Ave.:20.9 μ m at 50%. Cross-section pieces should be made carefully.