

## UcamX v2023.12

### Fixed issues

Your continued feedback is important and appreciated. This version resolves the following issues you have raised with our Customer Care department.

#### Analysis: Copper Count

- New ucam.db key "copper.area.message.compatibility.mode" was introduced to get the copper calculation report compatible to Ucam 8.1.
- Introduction of ucam.db key copper\_density.nested to influence the reference size of the outline layer that is used to calculate the copper density percentages.
- Overlapping objects in the outline layer were confusing Layer Copper Calculation, the copper area itself was correctly calculated but the calculation of the copper density (% filling) was incorrect. Calculation of the copper density is considering the overlapping objects.

#### CAD Output: Gerber

- Segments in a contour region that would result in zero-length draws in the created Gerber file, by using the applied output resolution, are skipped to prevent confusion in the definition of the Gerber contours.
- Default values for format and units used during Gerber output have been reviewed.
- Instead of the formerly hardcoded value the value of arc.expand.margin is used in 274x output when CAD resource key 274x\*expand\_arcs is set to 1.
- The resolution of the arc expand margin should not be smaller than the resolution in the CAD resource file.
- The usage of the Step&Repeat command, during Gerber output, has been reviewed according to the Gerber Format Specification.

#### CAD Output: ODB++

- ODB++ V7 output was not always allocating the correct rotation when outputting rotated complex pads that could be output as chamfered rectangles. The expected image is obtained by allocating the correct rotation to these chamfered rectangles.

#### Drill Output: Classical Drill

- Tool Editor was not always saving all modifications that have been made to the parameters of the drill tools. All the modifications are correctly saved again (even without pressing Enter after updating the values if the fields).

#### Editing Tools: Contours

- With some configurations of contourize.analytic.arc.expand.margin Exact Contourize of a rounded box and a slightly overlapping small region could get confused with the orientation of an arc in the resulting contour. These constructions are correctly handled now.
- When small contours below the contourization resolution defined in contourize.analytic.threshold\_ppi are removed, the key: contourize.warning.small\_objects: 1 (default) influences if in that case a warning will be shown or not.

#### Editing Tools: Distort

- Applying a distortion, with different values for both directions, was struggling with COMplex apertures for which the image was (far) outside the aperture origin. Distort is correctly handling these complexes.

#### Editing Tools: Drill Tool Manager

- Drill Tool Manager correctly renumbers the Toolnr while calculating.
- Grouping method in DrillToolManager groups also on ApertureManager.
- Drill Tool Manager is handling deletion of empty drill layers as expected.
- Optimized slot length calculation.
- Creating a Symbol drawing in Drill Tool Manager could cause UcamX crash. Symbol drawing can be created normally again.

### **Editing Tools: Expand**

- Expand True Objects transfers object and aperture attributes from the parent object/aperture to the new objects/apertures

### **Editing Tools: Fill Pattern**

- Optimized algorithm to prevent failure in "Fill Pattern" based on calculation of vertices when expanding arcs.

### **Editing Tools: PadMaker**

- The crash in Pad Maker has been solved.

### **Editing Tools: Rout**

- Compensate Left/Right is working as expected in case the value set for compensation is bigger than 1/2 the distance.

### **Editing Tools: Shave**

- Solved issues for "Pad Shave" in case of complexes on the same position.
- Pad Shave -> Clip is handling "SHAVE WOULD SPLIT" violations without crashes again.
- Introduction of new ucam.db key pad.shave.keep.flashpoint to influence the origin of a COMplex aperture that could be created while running Pad Shave with Method Clip.
- "Pad Shave" reverse respecting the netlist prevents pad and copper trace open.

### **Editing: Apertures**

- Multi Block edit was ignoring the modifications made to the data in case the layer names in block edit mode have been modified while editing. The modified layer name is ignored, and the changes made to the data are applied.
- Multi Block Edit, with option Keep Link activated, could get confused when on certain layers the involved block is linked and not on other layers, the expected modifications were not always correctly applied. Editing these blocks has been improved and link between blocks is broken where needed for having the expected result.
- Adding a layer, while editing a block from a drill layer, was failing.

### **Editing: Insert**

- If the following line of ucam.properties has a value (e.g. EE\_add\_break.value: 15) the line in addbreaks is drawn with a fixed angle (Like in easydraw). If this button doesn't exist, it works like: Drag line with no aperture for add a break.

### **Editing: Markup Assistant**

- After changing the unit Markup is working again as expected.
- Pads are properly marked up as SMDPads.

### **Editing: Toolbox**

- Delete Segment did not always highlight the dragged segment which also prevented deleting the segment. Delete Segment is properly highlighting the objects that allows deleting the segment.

### **Editing: Transform**

- Directional movement is creating the correct image without false rotations or wrong shifting.

### **Electrical test: ATG**

- When loading multi up jobs, the blocks are expanded so the correct location of the fault is displayed when faultfinding with a barcode.
- The resource key ipcatg\*multidrills\_new: 0 must be present for this to work correctly and have the correct result in the DPS software.

### **Electrical test: Microcraft Emma**

- Emma output also contains adjacency value.

### **Electrical test: Testpoint generation**

- ucam.db keys added by default to improve performance of Testpoint Generation where many GND plane covered vias exist.

- Optimized testpoint creation in SmartTest.

### Electrical test: Utest

- Mask contours with a stroke are considered and pads temporarily split for end point detection are correctly applied to the rules.
- Optimized testpoint creation in SmartTest.
- Optimized midpoint filtering adjustments developed.
- Optimized testpoint creation. Depending on the ucam.db keys:=testpoint.handle\_painted\_pads.use\_inclosing\_rectangle: 1 (used if "Handle Painted Pads" switched on, default value 1) testpoint.nonpainted\_pads.use\_inclosing\_rectangle: 0 (used if "Handle Painted Pads" switched off, default value 0) the pad could be replaced by an enclosed simple shape pad.
- Enhanced dead end pad detection.
- Reset in Utest no longer changes the values of the configured parameters in the Test Points section of the Utest menu.
- Reset in Utest is resetting the markers of the calculation(s) that has(have) been run previously.
- Optimization to the dead end pads detection by new key in ucam.db: testpoint.detect\_deadend\_pads.max\_width: The value should be more than the width of the pads to be detected.
- Performance of endpoint detection is optimized.

### General:

- "Enter" or "Space" key can be used to close a warning window.
- Any regular closing of a session will end up with the logfile being removed. Behold that one has the option to print or 'save as' before exit if desired.

### General: SnapMode

- Improved visualization of snap positions.

### General: User Interface

- Ucam.db key native.FileDialog.OpenJob is defining file chooser used by Ucam.
- The presence of an icons folder, in \$HOME and/or \$ETSCAM\_CFG could causing that some icons in the Selections and Transform Objects menu were missing. These folders are no longer preventing the display of these icons.

### General: Workspace

- Outline layer gets or remains activated unexpectedly after switching to/from the Paneliz8tor workspace.
- SmartFix function is also available in single processor UcamX sessions.

### Hypertool: Scripting

- lay.expand\_nibble is working as expected in a Hypertool.

### Input: DPF

- Loading DPF files that are containing slightly invalid Complex apertures are automatically validating these aperture definitions (similar as what is done while editing the Complex aperture definition).

### Input: DXF

- DXF Import was suffering with a small negative bulge factor defined on a vertex, which could result in a big almost full circular image although a small arc segment would be expected. These bulge factors are now correctly interpreted.

### Input: Excellon 2

- The Java exception, that could appear when copying the default wheel file into the job folder, has been resolved.

### Input:

- Corrected validation of .gbrjob files.
- Specification of Component FileFunction according to the Gerber X2 specification was notified as invalid. These confusing messages are no longer given.

### **Input: Import ODB++**

- Importing an ODB++ job that contains an attribute value without the indication of the attribute name was causing UcamX crash. These attribute values are ignored now but the job can be loaded successfully.
- Conversion of standard ODB++ symbol Rectangular Thermal without gaps resulted in an UNDEFINED aperture. These thermals are now correctly converted (as rectangular donuts).
- Filtering the jobs in the ODB++ Steps menu has been restored, some builds were displaying all ODB++ jobs of the folder, ignoring the specified filter.
- Optimized ODB++ input.
- Enhanced handling of vector text.
- Prevented conversion errors for copper pads covered by negative contours or hole definition containing short arcs.
- ODB++ Import conversion is correctly considering the configuration of 'odbxx.input.job\_dynamic\_string' for both conversion of dynamic string \$\$JOB and for the name of the created job. Previously it was possible that the job name was always using the value of the <base\_folder>, even in situations where the conversion of \$\$JOB used the value of JOB\_NAME.
- Also the Power/Ground of context MISC layers of an ODB++ job are treated as the other MISC layers.
- The redirection of certain font of an ODB++ to an existing vector text font of UcamX is working again. There have been versions in which the configuration of odbxx.input.font.<font> was ignored and the text was converted by using the ODBstandard.dpf vector text font.
- Import of ODB++ files translates the attribute uODBxxToolsFinish\_Size with uCustomerDiameter to match the attributes used for DTM.

### **Job Management: Save Job**

- When job.save.higher\_resolution: 0, the unit (U=...) was not written in the DPF file(s) and the data was saved in MIL. Now the files are saved according to the unit currently being used by UcamX.

### **Layer Validation:**

- Easier and clearer viewing of JobEdit. Different colors for subclasses and indication of empty layers. Ucam.db key to turn on the colors: dwa.layer.color set to true or 1. Default setting is off. Key set to false or 0.

### **Netlist: Build**

- With the solution the net number for the "uPlated=0" drills is set to a unique value > 0. It is assured, that uPlated with no value always behave as default -> uPlated=1.

### **Panelization: CustomerPanel**

- Dynamic Text entry can now be modified and is working correctly.

### **Panelization: PanelPlus**

- Corrected PanelPlus setup for values in Frames/Coupons.

### **PowerRIP: mlfdpf**

- Submitting a layer to a FlashRIP on which the GCS module is configured, could fail on some arcs (Error in merger input 21). Exposing these jobs can be completed successfully.

### **Product Stage Editor:**

- Importing a material file in Product Stages list could warn about invalid aperture names. Loading these files builds up information without these confusing warning messages.

### **Rout Manager:**

- Reference layer plane 2 is only used as reference layer. Nothing can be deleted.
- It is now possible to insert a tangent arc between a draw and an arc.
- Switch all directions, also switches the direction no matter if there are flashes in the layer or not.
- Fill polygon is now correctly filling polygon area.

### **Rout Manager: Cleanup**

- Reconstruct Arcs, in Cleanup tab of Rout Manager, has been improved and is correctly considering the selections.
- Generate and Reconstruct Arcs of Rout Manager have been reviewed to optimize the number of arcs that are needed to replace the tracks by arcs.

### Select: Embedded

- Selecting embedded objects was not selecting all embedded regions, after deleting the embedded objects sometimes a rerun for embedded objects was required for selecting remaining embedded objects. All embedded objects get selected in the same action now.

### Select: Overlaps

- New ucam.db key to change the behavior of Select – Overlaps select.overlapping.contours: set to 0 = the behavior is like in UcamX v2017.04 and older (selecting everything which is overlapping the enclosing box of a BLOck aperture). Set to 1 = the objects contained in a BLOck are considered. All objects overlapped by that (positive and negative) are selected.

### SmartPlot:

- Translation of some label string was confusing the configuration of layer polarity in SmartPlot.
- Optimized error messages in SmartPlot Standalone.

### SmartStart:

- Big aperture number in linked wheel file could cause UcamX crash while converting Excellon 2 files.
- Certain ASCII files were analyzed as Gerber files (because the text contained a sequence of characters that can be used also in Gerber commands), the file format analysis has been improved to prevent analyzing these files as Gerber format files.
- .pcb and .rep files are not recognized as Gerber files allowing better processing of jobs.

### Toolbar: Icons

- Tooltip corrected to "Delete selections".
- New icons to better differ between copy and paste.

### Verification: DRC

- Correct visualization of errors is reinstated.
- New ucam.db key drc.concise.warning invented to reduce the warnings to the minimum needed. Default is set to 0 -> all warnings visible. If set to 1 -> warnings are turned off.

### Verification: Image Compare

- Prevented unnecessary activation of drill layers in image compare.

### Verification: Net Compare

- The involved unit has been added to the default values for the margins specified in the Net Compare menu, to prevent confusion when running the function when inappropriate unit is used as current unit. Changing the unit automatically recalculates the margin into the current unit.
- Net compare only highlights the nets of the "current" job, not nets from the netlist reference layer(s).

### Verification: Secure Etch Compensation

- A clearance between 2 elements marked with uSECexclude attribute was created with minimum of all provided clearance values, now always 0 is used.

### View: Apertures

- Closing of running functions is correct again.

### View: Numbers

- Ring calculation between 2 regions that have inner contours could be incorrect (clearance of 0 was indicated instead of the smallest ring between the regions. The ring between these regions is calculated properly).
- Ring calculations on rounded COMplex apertures have been improved.

### YELO: Copper Adjuster

- Copper Adjuster centers the trace between SMD Pads.

### YELO: Mask Adjuster

- If the toggle "ignore rings bigger than set value" is on and the mask openings are big enough to not need adjustments mask adjuster is not changing the openings.
- Optimized code for Tombstone and Solder Escape Prevention.
- Circular pads that were turned into complexes by MaskAdjuster remain circles and the result is correct.

- Solder mask openings for BGA pads are handled according to description.
- Provided warning boxes are fitted to the text.
- Via Handling is respecting and adjusting copper overhang on top of handling solder web and mask to mask clearances.