

# DipTrace XML. PCB Layout.

*File format specification*

## File structure

1. File title.....	10
2. Information about file, <Source>.....	10
3. Component library section, <Library>.....	10
3.1. Pattern Library used in the project, <Library>.....	10
4. Board description section, <Board>.....	10
4.1. Board outline parameters, <BoardOutline>.....	10
4.1.1. Main board outline parameters.....	10
4.1.2. List of board outline points, <Points>.....	11
4.2. Panelization parameters, <Panel>.....	11
4.2.1. Main panelization parameters.....	11
4.2.2. List of coordinates of horizontal tabs, <HorzTabsX>.....	12
4.2.2.1. X coordinate of horizontal tab, <Item>.....	12
4.2.3. List of coordinates of vertical tabs, <VertTabsY>.....	12
4.2.3.1. Y coordinate of vertical tab, <Item>.....	12
4.3. Project sheet settings, <SheetSettings>.....	12
4.3.1. Display of titles, <DisplayTitles>.....	12
4.3.2. Sheet borders display, <DisplaySheet>.....	13
4.3.3 X coordinate of displayed sheet center, <XPos>.....	13
4.3.4. Y coordinate of displayed sheet center, <YPos>.....	13
4.3.5. Sheet scale, <Scale>.....	13
4.3.6. Sheet width, <SheetWidth>.....	13
4.3.7. Sheet height, <SheetHeight>.....	13
4.3.8. Left Border Margin, <LeftMargin>.....	13
4.3.9. Top Border Margin, <TopMargin>.....	13
4.3.10. Right Border Margin, <RightMargin>.....	14
4.3.11. Bottom Border Margin, <BottomMargin>.....	14
4.3.12. Sheet zone parameters, <BorderZones>.....	14
4.3.12.1. Sheet zone display, <Visible>.....	14
4.3.12.2. Number of horizontal zones, <HorzZones>.....	14
4.3.12.3. Number of vertical zones, <VertZones>.....	14
4.3.12.4. Zone Template, <Standard>.....	14
4.3.12.5. Font Name, <FontName>.....	14
4.3.12.6. Font size, <FontSize>.....	15
4.3.12.7. Font Line Width, <FontLineWidth>.....	15
4.3.12.8. Display Zone Border, <Border>.....	15
4.3.12.9. Horizontal Zone Width, <HorzBorderSize>.....	15
4.3.12.10. Vertical Zone Width, <VertBorderSize>.....	15
4.3.13. Bottom-Right Title Block parameters, <BottomRightBlock>.....	15
4.3.13.1. Title Block name, <Name>.....	16
4.3.13.2. List of Title Block columns, <ColumnWidths>.....	16
4.3.13.2.1. Column width, <Item>.....	16
4.3.13.3. List of Title Block rows, <RowHeights>.....	16
4.3.13.3.1. Row height, <Item>.....	16
4.3.13.4. List of cell borders in Title Block column, <Cells>.....	16
4.3.13.4.1. List of cell borders in column row, <Item>.....	17
4.3.13.4.1.1. Cell borders in the column row, <Item>.....	17
4.3.13.5. List of Title Block fields, <Fields>.....	17

4.3.13.5.1. Title Block field parameters, <Field>.....	17
4.3.13.5.1.1. Main field parameters.....	17
4.3.13.5.1.2. List of text lines, <TextLines>.....	18
4.3.13.5.1.2.1. Text line, <TextLine>.....	18
4.3.13.5.1.3. Font Name, <FontName>.....	18
4.3.14. Bottom-Left Title Block parameters, <BottomLeftBlock>.....	19
4.3.15. Top-Right Title Block parameters, <TopRightBlock>.....	19
4.3.16. Top-Left Title Block parameters, <TopLeftBlock>.....	19
4.3.17. External Top-Left Title Block parameters, <ExtTopLeftBlock>.....	19
4.3.18. External Bottom-Left Title Block parameters, <ExtBottomLeftBlock>.....	19
4.4. Common settings, <Settings>.....	19
4.4.1. Part Markings, <Markings>.....	19
4.4.1.1. Rotate Markings with Component, <CompRotate>.....	19
4.4.1.2. Font, <FontVector>.....	19
4.4.1.3. Font Name, <FontName>.....	19
4.4.1.4. Font size, <FontSize>.....	19
4.4.1.5. Font line width, <FontWidth>.....	20
4.4.1.6. Font Scale, <FontScale>.....	20
4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>.....	20
4.4.1.8. Common markings settings for Name, <NameGlobal>.....	21
4.4.1.9. Common markings settings for Value, <ValueGlobal>.....	21
4.4.1.10. Common markings settings for Pattern, <PatternGlobal>.....	21
4.4.1.11. Common markings settings for Manufacturer, <ManufacturerGlobal>.....	21
4.4.1.12. Common markings settings for Datasheet, <DatasheetGlobal>.....	21
4.4.1.13. List of common markings settings for Additional Fields, <AddFieldsGlobal>.....	21
4.4.1.13.1. Common markings settings for Additional Field, <AddField>.....	21
4.4.1.13.1.1. Main common markings settings for Additional Field.....	21
4.4.1.13.1.2. Additional Field Name, <Name>.....	22
4.4.2. List of names of Assembly Variants, <AssemblyVariants>.....	22
4.4.2.1. Assembly Variant name, <AssemblyVariant>.....	22
4.4.3. Grid settings, <Grid>.....	22
4.4.3.1. Grid display, <Visible>.....	22
4.4.3.2. Snap to grid, <Snap>.....	22
4.4.3.3. Grid Size, <Size>.....	23
4.4.3.4. Y Grid Size, <Size>.....	23
4.4.3.5. Y Grid Size Identical to X, <YIdentical>.....	23
4.4.4. Origin settings, <Origin>.....	23
4.4.4.1. Origin display, <Visible>.....	23
4.4.4.2. Axis color, <AxisColor>.....	23
4.4.4.3. X coordinate of Origin, <X>.....	23
4.4.4.4. Y coordinate of Origin, <Y>.....	24
4.4.5. Add to Assembly settings, <Assembly>.....	24
4.4.5.1. Add to Assembly - Pads, <Pads>.....	24
4.4.5.2. Add to Assembly - Component Silk Screen, <Silk>.....	24
4.4.5.3. Add to Assembly - Component Borders, <CompBorders>.....	24
4.4.5.4. Add to Assembly - Board Outline, <BoardOutline>.....	24
4.4.6. Layer Display settings <LayerDisplayMode>.....	24
4.4.7. Edit Inactive Layer setting, <EditInactiveLayer>.....	25
4.4.8. Line Width settings, <LineWidth>.....	25
4.4.8.1. Line Width for Silk, <Silk>.....	25

4.4.8.2. Line Width for Table, <Table>.....	25
4.4.8.3. Line Width for Titles, <Titles>.....	25
4.4.8.4. Line Width for Board Outline, <BoardOutline>.....	25
4.4.8.5. Line Width for Other Layers, <Assembly>.....	25
4.4.8.6. Line Width for Component Outline, <CompOutline>.....	25
4.4.8.7. Line Width for Courtyard, <Courtyard>.....	26
4.4.9. Route Setup settings, <Routing>.....	26
4.4.9.1. Current Autorouter, <Router>.....	26
4.4.9.2. Trace Width, <TraceWidth>.....	26
4.4.9.3. Trace Clearance, <TraceClearance>.....	26
4.4.9.4. Copper to Board Outline clearance, <BoardClearance>.....	26
4.4.9.5. Outer Diameter of Vias, <ViaSize>.....	26
4.4.9.6. Hole Diameter of Vias, <ViaHole>.....	26
4.4.9.7. Fanout Length, <FanoutLength>.....	27
4.4.10. Layer Stackup for Trace Length Calculation, <StackLength>.....	27
4.4.11. Pad Signal Delay for Trace Length Calculation, <SignalDelayLength>.....	27
4.4.12. Solder Mask Swell by default, <SolderMaskSwell>.....	27
4.4.13. Paste Mask Shrink by default, <PasteMaskShrink>.....	27
4.4.14. Show Component Fiducials, <ShowCompFiducials>.....	27
4.4.15. Layer display settings, <LayerPanel>.....	27
4.4.15.1. Main layer display settings.....	27
4.4.15.2. List of display settings of custom non-signal layers, <NonSignal>.....	28
4.4.15.2.1. Custom non-signal layer display setting, <Item>.....	28
4.4.16. Related Schematic file name, <RelatedSchem>.....	29
4.4.16.1. Full path to Related Schematic file, <Path>.....	29
4.4.16.2. Path to Related Schematic File via environment variable, <Var>.....	29
4.4.17. Lock Components on Top Side, <TopComponentLock>.....	29
4.4.18. Lock Components on Bottom Side, <BottomComponentLock>.....	29
4.4.19. Net structure lock, <LockNetStructure>.....	29
4.4.20. Flip Text automatically, <FlipTextAuto>.....	29
4.4.21. Jumper Wires, <JumperLayer>.....	30
4.4.22. Project directory, <ProjectDir>.....	30
4.5. Project libraries, <ProjectLibs>.....	30
4.5.1. Sorted.....	30
4.5.2. List of folders with project libraries, <Folders>.....	30
4.5.2.1. Folder with project libraries, <Folder>.....	30
4.5.2.1.1. Full path to folder with project libraries, <Path>.....	30
4.5.2.1.2. Path to folder with project libraries via environment variable, <Var>.....	30
4.5.3. List of project library files, <Libs>.....	31
4.5.3.1. Project library file, <Lib>.....	31
4.5.3.1.1. Full path to project library file, <Path>.....	31
4.5.3.1.2. Path to project library file via environment variable, <Var>.....	31
4.6. List of Copper Layers, <CopperLayers>.....	31
4.6.1. Description of Copper Layer, <Lay>.....	31
4.6.1.1. Main parameters of Copper Layer.....	31
4.6.1.2. Copper Layer name, <Name>.....	32
4.7. List of custom Non-Signal layers, <NonSignals>.....	32
4.7.1. Description of custom Non-Signal layer, <NonSignal>.....	32
4.7.1.1. Main parameters of custom Non-Signal layer.....	32
4.7.1.2. Custom Non-Signal layer name, <Name>.....	32

4.8. Layer Stackup Template name, <LayerStackName>.....	32
4.9. List of Layer Stack layers, <LayerStackItems>.....	32
4.9.1. Description of Layer Stack layer, <LayerStackItem>.....	33
4.9.1.1. Main layer parameters.....	33
4.9.1.2. Layer material, <Material>.....	33
4.9.1.2.1. Main layer material parameters.....	33
4.9.1.2.2. Material name, <Name>.....	33
4.10. List of hierarchy sheets, <HierarchySheets>.....	33
4.10.1. Description of hierarchy sheet, <HSheet>.....	33
4.10.1.1. Hierarchy sheet number.....	33
4.10.1.2. Hierarchy sheet name, <Name>.....	34
4.10.1.3. List of hierarchy sheet blocks, <UpdateIds>.....	34
4.10.1.3.1. Description of hierarchy sheet block, <Uid>.....	34
4.10.1.3.1.1. Block identifier.....	34
4.10.1.3.1.2. Block name.....	34
4.11. List of project Via Styles, <ViaStyles>.....	34
4.11.1. Description of Via Style, <ViaStyle>.....	34
4.11.1.1. Main parameters of Via Style.....	34
4.11.1.2. Via Style name, <Name>.....	34
4.12. List of project Net Classes, <NetClasses>.....	35
4.12.1. Description of Net Class, <NetClass>.....	35
4.12.1.1. Main parameters of Net Class.....	35
4.12.1.2. Net Class name, <Name>.....	35
4.12.1.3. List of Net Class settings by layers, <LayProperties>.....	36
4.12.1.3.1. Net Class settings for layer, <LayProperty>.....	36
4.12.1.3.1.1. Main Net Class settings for layer.....	36
4.12.1.3.1.2. Layer name, <LayerName>.....	36
4.12.1.3.1.3. Clearance Details, <ClearanceDetails>.....	36
4.12.1.4. List of allowed Via Styles for Net Class, <AllowedVias>.....	37
4.12.1.4.1. Allowed Via Style for Net Class, <ViaStyle>.....	37
4.12.1.5. Net Class autorouting settings, <Autorouting>.....	37
4.12.1.5.1. Main Net Class autorouting settings.....	37
4.12.1.5.2. List of layers selected for autorouting, <RouteLayers>.....	38
4.12.1.5.2.1. Layer for autorouting, <Item>.....	38
4.13. Clearances between net classes, <ClassToClass>.....	38
4.13.1. Main settings of clearances between net classes.....	38
4.13.2. List of Class to Class Clearances, <CTC_Cells>.....	38
4.13.2.1. Class to Class clearance, <Cells>.....	38
4.13.2.2. List of Clearances by layers, <LayerClearances>.....	38
4.13.2.2.1. Clearances for layer, <Lay>.....	39
4.14. DRC settings, <DRC>.....	39
4.14.1. Main DRC settings.....	39
4.14.2. Show list of errors, <>ShowList>.....	40
4.14.3. Real Time DRC Mode, <RealTimeMode>.....	40
4.14.4. Real Time DRC Mode, <DRCDone> .....	40
4.14.5. List of Clearances by layers, <LayClearances>.....	40
4.14.5.1. Clearances for layer, <LayClearance>.....	40
4.14.5.1.1. Main parameters of Clearances for layer.....	40
4.14.5.1.2. General parameters of Clearances for layer.....	41
4.14.6. List of Sizes by layers, <LayClearances>.....	42

4.14.6.1. Sizes for layer, <LaySize>.....	42
4.15. Check Net Connectivity settings, <ConnectivityCheck>.....	42
4.16. Length Matching settings, <MainLengthRule>.....	42
4.16.1. Main Length Matching settings.....	42
4.16.2. Rule name, <Name>.....	43
4.16.3. List of connections controlled by the rule, <Rules>.....	43
4.16.3.1. Connection controlled by the rule, <Rule>.....	43
4.17. List of Length Matching rules, <LengthRules>.....	43
4.17.1. Length Matching rule, <LengthRules>.....	43
4.17.1.1. Main parameters of Length Matching rule.....	43
4.17.1.2. Rule name, <Name>.....	44
4.17.1.3. List of connections controlled by the rule, <Rules>.....	44
4.17.1.3.1. Connection controlled by the rule, <Rule>.....	44
4.18. List of project components, <Components>.....	44
4.18.1. Description of project component, <Component>.....	45
4.18.1.1. Main parameters of project component.....	45
4.18.1.2. Component RefDes, <RefDes>.....	46
4.18.1.3. Component Name, <Name>.....	46
4.18.1.4. Component Value, <Value>.....	46
4.18.1.5. List of hierarchy blocks that comprise component, <HierarchyPath>.....	46
4.18.1.5.1. Hierarchy block that comprises component, <Item>.....	47
4.18.1.6. List of component exclusions from Assembly Variants, <AssemblyExclude>.....	47
4.18.1.6.1. Component exclusion from Assembly Variant, <Item>.....	47
4.18.1.7. Component library file, <LibPath>.....	47
4.18.1.7.1. Full path to component library file, <Path>.....	47
4.18.1.7.2. Path to the component library file via environment variable, <Var>.....	47
4.18.1.8. Individual marking settings for RefDes, <RefDesMarking>.....	47
4.18.1.8.1. Silk layer settings, <Silk>.....	47
4.18.1.8.2. Assembly layer settings, <Assy>.....	48
4.18.1.9. Individual marking settings for Name, <NameMarking>.....	48
4.18.1.10. Individual marking settings for Value, <ValueMarking>.....	48
4.18.1.11. Individual marking settings for Pattern, <PatternMarking>.....	48
4.18.1.12. Individual marking settings for Manufacturer, <ManufacturerMarking>.....	48
4.18.1.13. Individual marking settings for Datasheet, <DatasheetMarking>.....	48
4.18.1.14. List of Additional Fields, <AddFields>.....	49
4.18.1.14.1. Description of Additional Field and individual settings of its marking, <AddField>.....	49
4.18.1.14.1.1. Main parameters of Additional Field.....	49
4.18.1.14.1.2. Additional Field Name, <Name>.....	49
4.18.1.14.1.3. Additional Field Value, <Text>.....	49
4.18.1.14.1.4. Individual marking settings for Silk layer, <Silk>.....	49
4.18.1.14.1.5. Assembly layer settings, <Assy>.....	50
4.18.1.15. List of settings of component pads, <Pads>.....	50
4.18.1.15.1. Component pad settings, <Pad>.....	50
4.18.1.15.1.1. Main pad settings.....	50
4.18.1.15.2. List of layers for Hide Pad Ring, <HideRingLay>.....	50
4.18.1.15.2.1. Layer for Hide Pad Ring, <Item>.....	50
4.18.1.15.3. List of layers for Pad Layers, <BlindLay>.....	51
4.18.1.15.3.1. Layer for Pad Layers, <Item>.....	51
4.18.1.15.4. List of Thermal Settings by layers, <CustomSpokes>.....	51

4.18.1.15.4.1. Thermal Settings for layer, <CustomSpoke>.....	51
4.18.1.15.5. Pad teardrops settings, <TeardropParams>.....	51
4.18.1.15.6. Mask and Paste settings, <MaskPaste>.....	52
4.18.1.15.6.1. Main Mask and Paste settings.....	52
4.18.1.15.6.2. List of paste segments in Top layer for segmented paste, <TopSegments>.....	53
4.18.1.15.6.2.1. Coordinates of diagonals of paste segments in Top layer for segmented paste, <Item>.....	53
4.18.1.15.6.3. List of paste segments in Bottom layer for segmented paste, <BotSegments>.....	53
4.18.1.15.6.3.1. Coordinates of diagonals of paste segments in Bottom layer for segmented paste, <Item>.....	53
4.18.1.15.7. List of internal connections, <InternalConnections>.....	54
4.18.1.15.7.1. Internal Connection, <IntCon>.....	54
4.18.1.15.7.1.1. Main parameters of Internal Connection.....	54
4.18.1.15.7.1.2. List of pads of internal connection, <PadId>.....	54
4.18.1.15.7.1.2.1. Internal connection pad, <Item>.....	54
4.18.1.15.7.1.3. List of Ratlines of internal connection, <Ratlines>.....	54
4.18.1.15.7.1.3.1. Internal connection Ratline, <Ratline>.....	54
4.18.1.15.8. Category assigned to component, <Category>.....	54
4.18.1.15.8.1. Sequence number of the category in the list.....	54
4.18.1.15.8.2. Name of category assigned to component, <Name>.....	55
4.18.1.15.8.3. List of Category types and subtypes assigned to component, <CategoryTypes>.....	55
4.18.1.15.8.3.1. Type and subtype description, <CategoryType>.....	55
4.18.1.15.8.3.1.1. Type name and number, <Type>.....	55
4.18.1.15.8.3.1.2. Subtype name and number, <SubType>.....	55
4.19. List of project Ratlines, <Ratlines>.....	55
4.19.1. Project Ratline, <Ratline>.....	55
4.20. List of project nets, <Nets>.....	56
4.20.1. Project net, <Net>.....	56
4.20.1.1. Main parameters of project net.....	56
4.20.1.2. Net name, <Name>.....	57
4.20.1.3. List of net pads, <Pads>.....	57
4.20.1.3.1. Net pad, <Item>.....	57
4.20.1.4. Net teardrops settings, <TeardropParams>.....	57
4.20.1.5. List of Net Teardrops, <Teardrops>.....	58
4.20.1.5.1. Net Teardrop, <Teardrop>.....	58
4.20.1.5.1.1. Main teardrop parameters.....	58
4.20.1.5.1.2. List of polygon points of teardrop, <Points>.....	58
4.20.1.5.1.2.1. Teardrop polygon point, <Point>.....	58
4.20.1.6. List of Net traces, <Trace>.....	58
4.20.1.6.1. Net trace, <Trace>.....	58
4.20.1.6.1.1. Main parameters of net trace.....	58
4.20.1.6.1.2. List of trace points, <Points>.....	59
4.20.1.6.1.2.1. Trace point, <Point>.....	60
4.20.1.6.1.3. List of trace Teardrops, <ConnectedTeardrops>.....	61
4.20.1.6.1.3.1. Trace teardrop, <Item>.....	61
4.21. List of Differential Pairs, <DifferentialPairs>.....	61
4.21.1. Project Differential Pair, <DifferentialPair>.....	61
4.21.1.1. Main parameters of project Differential Pair.....	61
4.21.1.2. Differential Pair name, <Name>.....	62

4.21.1.3. List of paired pads of differential pair, <PadPoints>.....	62
4.21.1.3.1. Paired pads of differential pair, <PadPoint>.....	62
4.21.1.4. List of differential pair segments, <Segments>.....	62
4.21.1.4.1. Diff. pair segment, <Segment>.....	62
4.21.1.4.1.1. Main parameters of differential pair segment.....	62
4.21.1.4.1.2. List of segment center points, <CenterPoints>.....	63
4.21.1.4.1.2.1. Segment center point, <CenterPoint>.....	63
4.21.1.4.1.2.1.1. Main parameters of central point.....	63
4.21.1.4.1.2.1.2. List of center points of segment positive trace, <PosPoints>.....	63
4.21.1.4.1.2.1.2.1. Center point of segment positive trace, <PosPoint>.....	64
4.21.1.4.1.2.1.3. List of center points of segment negative trace, <NegPoints>.....	64
4.21.1.4.1.2.1.3.1. Center point of segment negative trace, <NegPoint>.....	64
4.21.1.5. List of separate traces of differential pair positive net, <PosSeparateTraces>.....	65
4.21.1.5.1. Separate trace of differential pair positive net, <PosTrace>.....	65
4.21.1.5.1.1. Main parameters of the separate trace of differential pair positive net.....	65
4.21.1.5.1.2. List of trace points, <Points>.....	66
4.21.1.5.1.2.1. Trace point, <Point>.....	66
4.21.1.6. List of separate traces of differential pair negative net, <NegSeparateTraces>.....	67
4.21.1.6.1. Separate trace of differential pair negative net, <NegTrace>.....	67
4.22. List of removed Differential Pairs, <RemovedDifferentialPairs>.....	67
4.22.1. Removed Differential Pair, <DifferentialPair>.....	67
4.22.1.1. Main parameters of removed Differential Pair.....	67
4.23. List of project Copper Pours, <CopperPours>.....	68
4.23.1. Project Copper Pour, <CopperPour>.....	68
4.23.1.1. Main parameters of project Copper Pour.....	68
4.23.1.2. List of polygon points of Copper Pour, <Points>.....	70
4.23.1.2.1. Polygon point of Copper Pour, <Point>.....	70
4.24. List of shapes, <Shapes>.....	70
4.24.1. Shape description, <Shape>.....	70
4.24.1.1. Main parameters of shape.....	70
4.24.1.2. List of shape points, <Points>.....	72
4.24.1.2.1. Shape point coordinates, <Item>.....	73
4.24.1.3. Font Name, <FontName>.....	73
4.24.1.4. List of lines of "Text" shape, <TextLines>.....	73
4.24.1.4.1. Lines of "Text" shape, <TextLine>.....	73
4.24.1.5. Picture file, <PictureFile>.....	73
4.24.1.5.1. Full path to the picture file, <Path>.....	73
4.24.1.5.2. Path to the picture file via environment variable, <Var>.....	73
4.24.1.6. Vector picture, <PictureVector>.....	73
4.24.1.6.1. Main vector picture parameters.....	73
4.24.1.6.2. List of polygons of vector picture, <Polygons>.....	74
4.24.1.6.2.1. Vector picture polygon, <Polygon>.....	74
4.24.1.6.2.1.1. List of polygon points of vector picture, <Points>.....	74
4.24.1.6.2.1.1.1. Polygon point, <Item>.....	74
4.25. List of Design Errors, <DesignErrors>.....	74
4.25.1. Design Error, <DesignError>.....	74
4.25.1.1. Main parameters of Design Error.....	74
4.25.1.2. List of errors in layers, <Lays>.....	76
4.25.1.2.1. Error in layer, <Item>.....	76
4.26. List of tables, <Tables>.....	76

4.26.1. Table description, <Table>.....	77
4.26.1.1. Main parameters of table.....	77
4.26.1.2. Font Name, <FontName>.....	78
4.26.1.3. Table name, <Name>.....	78
4.26.1.4. Autoupdate parameters, <AutoUpdate>.....	78
4.26.1.4.1. Main autoupdate parameters.....	78
4.26.1.4.2. Assembly variant name, <AssemblyName>.....	79
4.26.1.4.3. Decimal Separator, <Separator>.....	79
4.26.1.4.4. List of columns, <Columns>.....	79
4.26.1.4.4.1. Table column, <Column>.....	80
4.26.1.4.4.1.1. Main column parameters.....	80
4.26.1.4.4.1.2. Column name, <Name>.....	80
4.26.1.4.4.1.3. Column Title, <Title>.....	80
4.26.1.5. List of width values of table columns, <ColWidths>.....	80
4.26.1.5.1. Column width, <Item>.....	81
4.26.1.6. List of height values of table rows, <RowHeights>.....	81
4.26.1.6.1. Row height, <Item>.....	81
4.26.1.7. List of table columns, <Cells>.....	81
4.26.1.7.1. List of rows in the table column, <Cell>.....	81
4.26.1.7.1.1. Cell parameters in the column row, <Cell>.....	81
4.26.1.7.1.1.1. Main parameters of cell.....	81
4.26.1.7.1.1.2. Font Name, <FontName>.....	82
4.26.1.7.1.1.3. List of lines of text in cell, <TextLines>.....	82
4.26.1.7.1.1.3.1. Lines of text in cell, <TextLine>.....	82
4.27. List of dimensions, <Dimensions>.....	82
4.27.1. Dimension description, <Dimension>.....	82
4.27.1.1. Main parameters of dimension, <Dimension>.....	82
4.27.1.2. Font Name, <FontName>.....	85
4.27.1.3. Text for Pointer.....	85
4.28. List of groups, <Groups>.....	85
4.28.1. Group description, <Group>.....	85

**With the default value, some parameters are not written to the file.**

## **1. File title**

```
<?xml version="1.0" encoding="UTF-8"?>
```

Description of the XML file version and encoding.

## **2. Information about file, <Source>**

```
<Source Type="DipTrace-PCB" Version="4.3.0.3" Units="inch">
```

**Type="DipTrace-PCB"** – file created in the DipTrace PCB Layout;

**Version="4.3.0.3"** – version of the file format;

**Units="inch"** – Measurement units of dimensions in the file:

mm – millimetres;  
inch – inches;  
mil – mils.

## **3. Component library section, <Library>**

```
<Library Type="DipTrace-ComponentLibrary" Version="4.3.0.3" Units="inch">  
{...}  
</Library>
```

Fully corresponds to the description of the Component Editor XML format. In PCB Layout this section is only used as a Design Cache library.

### **3.1. Pattern Library used in the project, <Library>**

```
<Library Type="DipTrace-ComponentLibrary" Version="4.3.0.3" Units="inch">  
{...}  
</Library>
```

Fully corresponds to the description of the Pattern Editor XML format. Each pattern is assigned a unique "PatternStyle" to associate with the component library and project.

## **4. Board description section, <Board>**

### **4.1. Board outline parameters, <BoardOutline>**

#### **4.1.1. Main board outline parameters**

```
<BoardOutline Locked="N" Selected="N">
```

Locked	Bool	"Y" – Locked ; "N" – Unlocked.
Selected	Bool	"Y" – Selected;

		"N" – Not selected.
--	--	---------------------

#### 4.1.2. List of board outline points, <Points>

<Points> – start of the list of board outline points;  
 {...} – board outline points (Point);  
 </Points> – end of the list of board outline points.

### 4.2. Panelization parameters, <Panel>

#### 4.2.1. Main panelization parameters

<Panel Type="V-Scoring" Columns="3" Rows="2" ColumnSpacing="0" RowSpacing="1" PanelizeSingle="N" RailShow="N" RailLeft="0" RailRight="0" RailTop="0" RailBottom="0" TabWidth="13.5" TabRadius="3.6" TabStep="225" HoleDiam="2.4" HoleStep="3.6" HoleInset="0" HoleKeepout="3" TabsDone="N" CombinedRadius="1.5" KeepMaterial="N" BorderTabs="0">

Type	Text	Panelization types: "V-Scoring"; "Tab Routing".
Columns	Int	Number of columns.
Rows	Int	Number of rows.
ColumnSpacing	Real	"Board to Board" and "Board to Edge Rail" Spacing - Columns.
RowSpacing	Real	"Board to Board" and "Board to Edge Rail" Spacing - Rows.
PanelizeSingle	Bool	Add Edge Rails for Single Board: "Y" – enabled; "N" – disabled.
RailShow	Bool	Add Edge Rails: "Y" – enabled; "N" – disabled.
RailLeft	Real	Left rail width.
RailRight	Real	Right rail width.
RailTop	Real	Top rail width.
RailBottom	Real	Bottom rail width.
TabWidth	Real	Tab width.
TabRadius	Real	Tab corner radius.
TabStep	Real	Tab step.
HoleDiam	Real	Hole diameter.
HoleStep	Real	Hole step.
HoleInset	Real	Hole inset.
HoleKeepout	Real	Hole keepout.

TabsDone	Bool	"Y" – the number of tabs has been set, cannot be set automatically; "N" – the number of tabs has not been set, has to be set automatically.
CombinedRadius	Real	Corner radius for combined V-Score /Tab Routing panelization.
KeepMaterial	Bool	Keep Material at Empty Areas: "Y" – enabled; "N" – disabled.
BorderTabs	Int	Tabs between edge rails: "0" – None; "1" – Horizontal; "2" – Vertical.

#### 4.2.2. List of coordinates of horizontal tabs, <HorzTabsX>

<HorzTabsX> – start of the list of coordinates of horizontal tabs;  
 {...} – X coordinates of horizontal Tabs (Item);  
 </HorzTabsX> – end of the list of coordinates of horizontal tabs.

##### 4.2.2.1. X coordinate of horizontal tab, <Item>

Item	Real	X coordinate of horizontal tab.
------	------	---------------------------------

#### 4.2.3. List of coordinates of vertical tabs, <VertTabsY>

<VertTabsY> – start of the list of coordinates of vertical tabs;  
 {...} – X coordinates of vertical tabs (Item);  
 </VertTabsY> – end of the list of coordinates of vertical tabs;

##### 4.2.3.1. Y coordinate of vertical tab, <Item>

Item	Real	Y coordinate of vertical tab.
------	------	-------------------------------

#### 4.3. Project sheet settings, <SheetSettings>

##### 4.3.1. Display of titles, <DisplayTitles>.

<DisplayTitles>Y</DisplayTitles>

DisplayTitles	Bool	Display of titles: "Y" – enabled; "N" – disabled.
---------------	------	---

#### **4.3.2. Sheet borders display, <DisplaySheet>**

<DisplaySheet>Y</DisplaySheet>

DisplayTitles	Bool	Sheet borders display: "Y" – enabled; "N" – disabled.
---------------	------	---

#### **4.3.3 X coordinate of displayed sheet center, <XPos>**

<XPos>0</XPos>

XPos	Real	X coordinate of the displayed sheet center.
------	------	---

#### **4.3.4. Y coordinate of displayed sheet center, <YPos>**

<YPos>0</YPos>

YPos	Real	Y coordinate of the displayed sheet center.
------	------	---

#### **4.3.5. Sheet scale, <Scale>**

<Scale>100</Scale>

Scale	Real	Sheet scale, percentage.
-------	------	--------------------------

#### **4.3.6. Sheet width, <SheetWidth>**

<SheetWidth>420</SheetWidth>

SheetWidth	Real	Sheet width.
------------	------	--------------

#### **4.3.7. Sheet height, <SheetHeight>**

<SheetHeight>297</SheetHeight>

SheetHeight	Real	Sheet height.
-------------	------	---------------

#### **4.3.8. Left Border Margin, <LeftMargin>**

<LeftMargin>5</LeftMargin>

LeftMargin	Real	Left border margin.
------------	------	---------------------

#### **4.3.9. Top Border Margin, <TopMargin>**

<TopMargin>5</TopMargin>

TopMargin	Real	Top border margin.
-----------	------	--------------------

#### 4.3.10. Right Border Margin, <RightMargin>

<RightMargin>5</RightMargin>

RightMargin	Real	Right border margin.
-------------	------	----------------------

#### 4.3.11. Bottom Border Margin, <BottomMargin>

<BottomMargin>5</BottomMargin>

BottomMargin	Real	Bottom border margin.
--------------	------	-----------------------

#### 4.3.12. Sheet zone parameters, <BorderZones>

##### 4.3.12.1. Sheet zone display, <Visible>.

<Visible>Y</Visible>

Visible	Bool	Sheet zone display: "Y" – enabled; "N" – disabled.
---------	------	--

##### 4.3.12.2. Number of horizontal zones, <HorzZones>

<HorzZones>4</HorzZones>

HorzZones	Int	Number of horizontal zones.
-----------	-----	-----------------------------

##### 4.3.12.3. Number of vertical zones, <VertZones>

<VertZones>4</VertZones>

VertZones	Int	Number of vertical zones.
-----------	-----	---------------------------

##### 4.3.12.4. Zone Template, <Standard>

<Standard>0</Standard>

Standard	Int	Zone Template: "0" – ANSI; "1" – ISO.
----------	-----	---

##### 4.3.12.5. Font Name, <FontName>

<FontName>Tahoma</FontName>

FontName	Text	Name of the TrueType font. Not used for Zone Information.
----------	------	---

#### 4.3.12.6. Font size, <FontSize>

<FontSize>10</FontSize>

FontSize	Int	Font size.
----------	-----	------------

#### 4.3.12.7. Font Line Width, <FontLineWidth>

<FontLineWidth>-2</FontLineWidth>

FontLineWidth	Int	Line width for vector font: -3 – thin; -2 – normal; -1 – bold; >0 – custom, actual value is set here.
---------------	-----	---

#### 4.3.12.8. Display Zone Border, <Border>

<Border>Y</Border>

Border	Bool	Zone Border display: "Y" – enabled; "N" – disabled.
--------	------	---

#### 4.3.12.9. Horizontal Zone Width, <HorzBorderSize>

<HorzBorderSize>5</HorzBorderSize>

HorzBorderSize	Real	Horizontal zone width.
----------------	------	------------------------

#### 4.3.12.10. Vertical Zone Width, <VertBorderSize>

<VertBorderSize>5</VertBorderSize>

VertBorderSize	Real	Vertical zone width.
----------------	------	----------------------

#### 4.3.13. Bottom-Right Title Block parameters, <BottomRightBlock>

<BottomRightBlock Width="139.7" Height="26.5937">

Width	Real	Title Block width.
Height	Real	Title Block height.

#### **4.3.13.1. Title Block name, <Name>**

<Name>ANSI (TR)</Name>

Name	Text	Title Block name.
------	------	-------------------

#### **4.3.13.2. List of Title Block columns, <ColumnWidths>**

<ColumnWidths> – start of the list of columns;  
 {...} – column width (Item);  
</ColumnWidths> – end of the list of columns.

##### **4.3.13.2.1. Column width, <Item>**

<Item>12.7</Item>

Item	Real	Column width.
------	------	---------------

#### **4.3.13.3. List of Title Block rows, <RowHeights>**

<RowHeights> – start of the list of rows;  
 {...} – row height (Item);  
</RowHeights> – end of the list of rows.

##### **4.3.13.3.1. Row height, <Item>**

<Item>6.35</Item>

Item	Real	Row height.
------	------	-------------

#### **4.3.13.4. List of cell borders in Title Block column, <Cells>**

<Cells>  
<Item>  
<Item FieldId="1" TopLine="Y" BottomLine="Y" LeftLine="Y" RightLine="N"/>  
<Item FieldId="2" TopLine="Y" BottomLine="Y" LeftLine="Y" RightLine="Y"/>  
<Item FieldId="0" TopLine="Y" BottomLine="N" LeftLine="Y" RightLine="N"/>  
</Item>  
<Item>  
<Item FieldId="1" TopLine="Y" BottomLine="Y" LeftLine="N" RightLine="N"/>  
<Item FieldId="3" TopLine="Y" BottomLine="Y" LeftLine="Y" RightLine="Y"/>  
<Item FieldId="0" TopLine="Y" BottomLine="N" LeftLine="N" RightLine="N"/>  
</Item>  
</Cells>

<Cells> – start of the list of cell borders in the column;  
 {...} – cell borders in the column (Item);  
</Cells> – end of the list of cell borders in the column;

#### **4.3.13.4.1. List of cell borders in column row, <Item>**

```
<Item>
<Item FieldId="1" TopLine="Y" BottomLine="Y" LeftLine="Y" RightLine="N"/>
<Item FieldId="2" TopLine="Y" BottomLine="Y" LeftLine="Y" RightLine="Y"/>
<Item FieldId="0" TopLine="Y" BottomLine="N" LeftLine="Y" RightLine="N"/>
</Item>
```

<Item> – start of the list of cell borders in the column row;  
 {...} – cell borders in the column row (Item);  
 </Item> – end of the list of cell borders in the column row.

#### **4.3.13.4.1.1. Cell borders in the column row, <Item>**

```
<Item FieldId="1" TopLine="Y" BottomLine="Y" LeftLine="Y" RightLine="N"/>
```

FieldId	Int	Id of the field to which a cell belongs.
TopLine	Bool	Display of the top border line of the cell: "Y" – enabled; "N" – disabled.
BottomLine	Bool	Display of the bottom border line of the cell: "Y" – enabled; "N" – disabled.
LeftLine	Bool	Display of the left border line of the cell: "Y" – enabled; "N" – disabled.
RightLine	Bool	Display of the right border line of the cell: "Y" – enabled; "N" – disabled.

#### **4.3.13.5. List of Title Block fields, <Fields>**

<Fields> – start of the list of fields;  
 {...} – field parameters (Field);  
 </Fields> – end of the list of fields.

#### **4.3.13.5.1. Title Block field parameters, <Field>**

```
<Field Id="0" FontVector="Y" FontSize="8" FontWidth="-2" FontScale="1" LineSpacing="1.2"
TextShow="Text" TextAlign="Left" X1="61.6667" Y1="-27.5" X2="185" Y2="-55">
<TextLines>
<TextLine>REVISION</TextLine>
</TextLines>
<FontName>Tahoma</FontName>
</Field>
```

#### **4.3.13.5.1.1. Main field parameters**

<b>Id</b>	<b>Int</b>	Field identifier (Id).
<b>FontVector</b>	<b>Bool</b>	"Y" – vector font; "N" – True Type font.
<b>FontSize</b>	<b>Int</b>	Font Size.
<b>FontWidth</b>	<b>Real</b>	Line width for vector text: -3 – thin; -2 – normal; -1 – bold; >0 – custom, actual value is set here.
<b>FontScale</b>	<b>Real</b>	Horizontal scale for the vector text.
<b>LineSpacing</b>	<b>Real</b>	Line spacing for multiline text.
<b>TextShow</b>	<b>Text</b>	Displayed text: "Text"; "Sheet"; "File".
<b>TextAlign</b>	<b>Text</b>	Text alignment: "Center"; "Right"; "Left".
<b>X1</b>	<b>Real</b>	X shift from the upper left corner of the Title Block to the upper left corner of the field.
<b>Y1</b>	<b>Real</b>	Y shift from the upper left corner of the Title Block to the upper left corner of the field.
<b>X2</b>	<b>Real</b>	X shift from the upper left corner of the Title Block to the bottom right corner of the field.
<b>Y2</b>	<b>Real</b>	Y shift from the upper left corner of the Title Block to the bottom right corner of the field.

#### 4.3.13.5.1.2. List of text lines, <TextLines>

<TextLines> – start of the list of lines;

{...} – list of lines (TextLine);

</TextLines> – end of the list of lines.

#### 4.3.13.5.1.2.1. Text line, <TextLine>

<b>TextLine</b>	<b>Text</b>	Text line.
-----------------	-------------	------------

#### 4.3.13.5.1.3. Font Name, <FontName>

<b>FontName</b>	<b>Text</b>	Name of the TrueType font.
-----------------	-------------	----------------------------

#### **4.3.14. Bottom-Left Title Block parameters, <BottomLeftBlock>**

Same as 4.3.13 Bottom-Right Title Block parameters, <BottomRightBlock>.

#### **4.3.15. Top-Right Title Block parameters, <TopRightBlock>**

Same as 4.3.13 Bottom-Right Title Block parameters, <BottomRightBlock>.

#### **4.3.16. Top-Left Title Block parameters, <TopLeftBlock>**

Same as 4.3.13 Bottom-Right Title Block parameters, <BottomRightBlock>.

#### **4.3.17. External Top-Left Title Block parameters, <ExtTopLeftBlock>**

Same as 4.3.13 Bottom-Right Title Block parameters, <BottomRightBlock>.

#### **4.3.18. External Bottom-Left Title Block parameters, <ExtBottomLeftBlock>**

Same as 4.3.13 Bottom-Right Title Block parameters, <BottomRightBlock>.

### **4.4. Common settings, <Settings>**

#### **4.4.1. Part Markings, <Markings>**

##### **4.4.1.1. Rotate Markings with Component, <CompRotate>**

<CompRotate>Y</CompRotate>

CompRotate	Bool	Rotate Markings with Component: "Y" – enabled; "N" – disabled.
------------	------	--

##### **4.4.1.2. Font, <FontVector>**

<FontVector>Y</FontVector>

FontVector	Bool	"Y" – vector font; "N" – True Type font.
------------	------	---

##### **4.4.1.3. Font Name, <FontName>**

<FontName>Tahoma</FontName>

FontName	Text	Name of the TrueType font.
----------	------	----------------------------

##### **4.4.1.4. Font size, <FontSize>**

<FontSize>6</FontSize>

FontSize	Int	Font size.
----------	-----	------------

#### 4.4.1.5. Font line width, <FontWidth>

<FontWidth>-2</FontWidth>

FontWidth	Int	Font line width for vector text. -3 – thin; -2 – normal; -1 – bold; >0 – custom, actual value is set here.
-----------	-----	--

#### 4.4.1.6. Font Scale, <FontScale>

<FontScale>1</FontScale>

FontScale	Real	Horizontal scale for the vector text.
-----------	------	---------------------------------------

#### 4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>

<RefDesGlobal SilkShow="Show" SilkAlign="Center" AssyShow="Hide" AssyAlign="Auto"/>

SilkShow	Text	Show: "Show" – show; "Hide" – hide.
SilkAlign	Text	Align: "Center"; "Top"; "Bottom"; "Left"; "Right"; "Corner"; "Auto".
AssyShow	Text	Show: "Show" – show; "Hide" – hide.
AssyAlign	Text	Align: "Center"; "Top"; "Bottom"; "Left"; "Right"; "Corner"; "Auto".

#### **4.4.1.8. Common markings settings for Name, <NameGlobal>**

<NameGlobal SilkShow="Hide" SilkAlign="Auto" AssyShow="Hide" AssyAlign="Auto"/>

Same as 4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>.

#### **4.4.1.9. Common markings settings for Value, <ValueGlobal>**

<ValueGlobal SilkShow="Hide" SilkAlign="Auto" AssyShow="Hide" AssyAlign="Auto"/>

Same as 4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>.

#### **4.4.1.10. Common markings settings for Pattern, <PatternGlobal>**

<PatternGlobal SilkShow="Hide" SilkAlign="Auto" AssyShow="Hide" AssyAlign="Auto"/>

Same as 4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>.

#### **4.4.1.11. Common markings settings for Manufacturer, <ManufacturerGlobal>**

<ManufacturerGlobal SilkShow="Hide" SilkAlign="Auto" AssyShow="Hide" AssyAlign="Auto"/>

Same as 4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>.

#### **4.4.1.12. Common markings settings for Datasheet, <DatasheetGlobal>**

<DatasheetGlobal SilkShow="Hide" SilkAlign="Auto" AssyShow="Hide" AssyAlign="Auto"/>

Same as 4.4.1.7. Common markings settings for RefDes, <RefDesGlobal>.

#### **4.4.1.13. List of common markings settings for Additional Fields, <AddFieldsGlobal>**

<AddFieldsGlobal> – start of the list;  
  {...}                  – Additional Field settings (AddField);  
</AddFieldsGlobal> – end of the list.

##### **4.4.1.13.1. Common markings settings for Additional Field, <AddField>**

<AddField SilkShow="Hide" SilkAlign="Auto" AssyShow="Hide" AssyAlign="Auto">  
<Name>Part Number (Digi-Key)</Name>  
</AddField>

###### **4.4.1.13.1.1. Main common markings settings for Additional Field**

SilkShow	Text	Show: "Show" – show; "Hide" – hide.
SilkAlign	Text	Align:

		"Center"; "Top"; "Bottom"; "Left"; "Right"; "Corner"; "Auto".
AssyShow	Text	Show: "Show" – show; "Hide" – hide.
AssyAlign	Text	Align: "Center"; "Top"; "Bottom"; "Left"; "Right"; "Corner"; "Auto".

#### 4.4.1.13.1.2. Additional Field Name, <Name>

Name	Text	Additional field name.
------	------	------------------------

#### 4.4.2. List of names of Assembly Variants, <AssemblyVariants>

<AssemblyVariants> – start of the list;  
 {...} – Assembly Variant name (AssemblyVariant);  
 </AssemblyVariants> – end of the list.

#### 4.4.2.1. Assembly Variant name, <AssemblyVariant>

<AssemblyVariant>Assembly 1</AssemblyVariant>

AssemblyVariant	Text	Assembly Variant name.
-----------------	------	------------------------

#### 4.4.3. Grid settings, <Grid>

##### 4.4.3.1. Grid display, <Visible>

<Visible>Y</Visible>

Visible	Bool	"Y" – show; "N" – hide.
---------	------	----------------------------

##### 4.4.3.2. Snap to grid, <Snap>

<Snap>Y</Snap>

Snap	Bool	"Y" – enabled; "N" – disabled.
------	------	-----------------------------------

#### 4.4.3.3. Grid Size, <Size>

<Size>2.54</Size>

Size	Real	Grid Size.
------	------	------------

#### 4.4.3.4. Y Grid Size, <Size>

<YSize>0.635</YSize>

YSize	Real	Y Grid Size.
-------	------	--------------

#### 4.4.3.5. Y Grid Size Identical to X, <YIdentical>

<YIdentical>Y</YIdentical>

YIdentical	Bool	Y grid size: "Y" – identical to X; "N" – not identical to X, YSize is used.
------------	------	---

#### 4.4.4. Origin settings, <Origin>

##### 4.4.4.1. Origin display, <Visible>

<Visible>Y</Visible>

Visible	Bool	"Y" – show; "N" – hide.
---------	------	----------------------------

##### 4.4.4.2. Axis color, <AxisColor>

<AxisColor>16711680</AxisColor>

AxisColor	Int	Axis color.
-----------	-----	-------------

##### 4.4.4.3. X coordinate of Origin, <X>

<X>10</X>

X	Real	X coordinate of origin.
---	------	-------------------------

#### **4.4.4.4. Y coordinate of Origin, <Y>**

<Y>10</Y>

Y	Real	Y coordinate of origin.
---	------	-------------------------

#### **4.4.5. Add to Assembly settings, <Assembly>**

##### **4.4.5.1. Add to Assembly - Pads, <Pads>**

<Pads>N</Pads>

Pads	Bool	Pads in the Assembly layer: "Y" – show; "N" – hide.
------	------	---

##### **4.4.5.2. Add to Assembly – Component Silk Screen, <Silk>**

<Silk>N</Silk>

Silk	Bool	Component Silk Screen in the Assembly layer: "Y" – show; "N" – hide.
------	------	--

##### **4.4.5.3. Add to Assembly – Component Borders, <CompBorders>**

<CompBorders>N</CompBorders>

CompBorders	Bool	Component Borders in the Assembly layer: "Y" – show; "N" – hide.
-------------	------	--

##### **4.4.5.4. Add to Assembly – Board Outline, <BoardOutline>**

<BoardOutline>Y</BoardOutline>

BoardOutline	Bool	Board Outline in the Assembly layer: "Y" – show; "N" – hide.
--------------	------	--

#### **4.4.6. Layer Display settings <LayerDisplayMode>**

<LayerDisplayMode>Contrast</LayerDisplayMode>

LayerDisplayMode	Text	Layer Display Mode: "Current Only"; "All Layers"; "Contrast".
------------------	------	--

#### **4.4.7. Edit Inactive Layer setting, <EditInactiveLayer>**

<EditInactiveLayer>Y</EditInactiveLayer>

EditInactiveLayer	Bool	For LayerDisplayMode = "Contrast": "Y" – Contrast Edit; "N" – Contrast Only.
-------------------	------	--

#### **4.4.8. Line Width settings, <LineWidth>**

##### **4.4.8.1. Line Width for Silk, <Silk>**

<Silk>0.25</Silk>

Silk	Real	Line Width for Silk.
------	------	----------------------

##### **4.4.8.2. Line Width for Table, <Table>**

<Table>0.25</Table>

Table	Real	Line Width for Table.
-------	------	-----------------------

##### **4.4.8.3. Line Width for Titles, <Titles>**

<Titles>0.0253</Titles>

Titles	Real	Line Width for Titles.
--------	------	------------------------

##### **4.4.8.4. Line Width for Board Outline, <BoardOutline>**

<BoardOutline>0.14</BoardOutline>

BoardOutline	Real	Line Width for Board Outline.
--------------	------	-------------------------------

##### **4.4.8.5. Line Width for Other Layers, <Assembly>**

<Assembly>0.12</Assembly>

Assembly	Real	Line width for Other Layers.
----------	------	------------------------------

##### **4.4.8.6. Line Width for Component Outline, <CompOutline>**

<CompOutline>0.05</CompOutline>

CompOutline	Real	Line Width for Component Outline.
-------------	------	-----------------------------------

#### **4.4.8.7. Line Width for Courtyard, <Courtyard>**

<Courtyard>0.05</Courtyard>

Courtyard	Real	Line Width for Courtyard.
-----------	------	---------------------------

#### **4.4.9. Route Setup settings, <Routing>**

##### **4.4.9.1. Current Autorouter, <Router>**

<Router>Shape</Router>

Router	Text	Current Autorouter: "Shape"; "Grid".
--------	------	--

##### **4.4.9.2. Trace Width, <TraceWidth>**

<TraceWidth>0.33</TraceWidth>

TraceWidth	Real	Trace Width.
------------	------	--------------

##### **4.4.9.3. Trace Clearance, <TraceClearance>**

<TraceClearance>0.33</TraceClearance>

TraceClearance	Real	Trace Clearance.
----------------	------	------------------

##### **4.4.9.4. Copper to Board Outline clearance, <BoardClearance>**

<BoardClearance>0.762</BoardClearance>

BoardClearance	Real	Copper to Board Outline clearance.
----------------	------	------------------------------------

##### **4.4.9.5. Outer Diameter of Vias, <ViaSize>**

<ViaSize>1</ViaSize>

ViaSize	Real	Outer Diameter of Vias.
---------	------	-------------------------

##### **4.4.9.6. Hole Diameter of Vias, <ViaHole>**

<ViaHole>0.5</ViaHole>

ViaHole	Real	Hole Diameter of Vias.
---------	------	------------------------

#### **4.4.9.7. Fanout Length, <FanoutLength>**

<FanoutLength>0.3387</FanoutLength>

FanoutLength	Real	Fanout Length (Pad to Via).
--------------	------	-----------------------------

#### **4.4.10. Layer Stackup for Trace Length Calculation, <StackLength>**

<StackLength>Y</StackLength>

StackLength	Bool	Layer Stackup for Trace Length Calculation: "Y" – use; "N" – do not use.
-------------	------	--

#### **4.4.11. Pad Signal Delay for Trace Length Calculation, <SignalDelayLength>**

<SignalDelayLength>N</SignalDelayLength>

SignalDelayLength	Bool	Pad Signal Delay for Trace Length Calculation: "Y" – Use; "N" – do not use.
-------------------	------	---

#### **4.4.12. Solder Mask Swell by default, <SolderMaskSwell>**

<SolderMaskSwell>0.05</SolderMaskSwell>

SolderMaskSwell	Real	Solder Mask Swell by default.
-----------------	------	-------------------------------

#### **4.4.13. Paste Mask Shrink by default, <PasteMaskShrink>**

<PasteMaskShrink>0.05</PasteMaskShrink>

PasteMaskShrink	Real	Paste Mask Shrink by default.
-----------------	------	-------------------------------

#### **4.4.14. Show Component Fiducials, <ShowCompFiducials>**

<ShowCompFiducials>N</ShowCompFiducials>

ShowCompFiducials	Bool	Component Fiducials: "Y" – Show; "N" – Hide.
-------------------	------	--

#### **4.4.15. Layer display settings, <LayerPanel>**

##### **4.4.15.1. Main layer display settings**

<LayerPanel TopAssy="Y" TopMask="N" TopPaste="N" BotAssy="Y" BotMask="N"

BotPaste="N" TopTerminals="N" BotTerminals="N" TopCourtyard="N" BotCourtyard="N"  
 TopOutline="N" BotOutline="N" TopDimensions="Y" BotDimensions="Y">

TopAssy	Bool	"Y" – show; "N" – hide.
TopMask	Bool	"Y" – show; "N" – hide.
TopPaste	Bool	"Y" – show; "N" – hide.
BotAssy	Bool	"Y" – show; "N" – hide.
BotMask	Bool	"Y" – show; "N" – hide.
BotPaste	Bool	"Y" – show; "N" – hide.
TopTerminals	Bool	"Y" – show; "N" – hide.
BotTerminals	Bool	"Y" – show; "N" – hide.
TopCourtyard	Bool	"Y" – show; "N" – hide.
BotCourtyard	Bool	"Y" – show; "N" – hide.
TopOutline	Bool	"Y" – show; "N" – hide.
BotOutline	Bool	"Y" – show; "N" – hide.
TopDimensions	Bool	"Y" – show; "N" – hide.
BotDimensions	Bool	"Y" – show; "N" – hide.

#### 4.4.15.2. List of display settings of custom non-signal layers, <NonSignal>

<NonSignal> – start of the list;  
 {...} – display settings (Item);  
 </NonSignal> – end of the list.

Sequence number in the list corresponds to the layer Id in the list of custom non-signal layers of the project (4.7).

##### 4.4.15.2.1. Custom non-signal layer display setting, <Item>

<Item>N</Item>

Item	Bool	"Y" – show; "N" – hide.
------	------	----------------------------

#### 4.4.16. Related Schematic file name, <RelatedSchem>

##### 4.4.16.1. Full path to Related Schematic file, <Path>

<Path>C:\Program Files\DiptTrace\Examples\CNC\_controller.dch</Path>

Path	Text	Full path to the Related Schematic file.
------	------	--

##### 4.4.16.2. Path to Related Schematic File via environment variable, <Var>

<Var>%maindir%\Examples\CNC\_controller.dch</Var>

Var	Text	Path to the Related Schematic File via environment variable.
-----	------	--

#### 4.4.17. Lock Components on Top Side, <TopComponentLock>

<TopComponentLock>N</TopComponentLock>

TopComponentLock	Bool	Components on the Top side: "Y" – locked; "N" – unlocked.
------------------	------	---

#### 4.4.18. Lock Components on Bottom Side, <BottomComponentLock>

<BottomComponentLock>N</BottomComponentLock>

BottomComponentLock	Bool	Components on the Bottom side: "Y" – locked; "N" – unlocked.
---------------------	------	--

#### 4.4.19. Net structure lock, <LockNetStructure>

<LockNetStructure>N</LockNetStructure>

LockNetStructure	Bool	Net structure: "Y" – locked; "N" – unlocked.
------------------	------	--

#### 4.4.20. Flip Text automatically, <FlipTextAuto>

<FlipTextAuto>Y</FlipTextAuto>

FlipTextAuto	Bool	Flip Text Automatically:
--------------	------	--------------------------

		"Y" – enabled; "N" – disabled.
--	--	-----------------------------------

#### 4.4.21. Jumper Wires, <JumperLayer>

<JumperLayer>Silk</JumperLayer>

JumperLayer	Text	Jumper Wires: "Silk"; "Assembly"; "Signal"; "Do Not Show".
-------------	------	--

#### 4.4.22. Project directory, <ProjectDir>

<ProjectDir>D:\Work\Project</ProjectDir>

ProjectDir	Text	Path to the project directory.
------------	------	--------------------------------

### 4.5. Project libraries, <ProjectLibs>

#### 4.5.1. Sorted

<ProjectLibs Sorted="N">

Sorted	Bool	Project libraries: "Y" – sorted by name; "N" – not sorted.
--------	------	--

#### 4.5.2. List of folders with project libraries, <Folders>

<Folders> – start of the list of folders;  
 {...} – folders with libraries (Folder);  
 </Folders> – end of the list of folders;

##### 4.5.2.1. Folder with project libraries, <Folder>

###### 4.5.2.1.1. Full path to folder with project libraries, <Path>

<Path>C:\Program Files\DiPTrace\Lib</Path>

Path	Text	Full path to the folder with project libraries.
------	------	---

###### 4.5.2.1.2. Path to folder with project libraries via environment variable, <Var>

<Var>%standardlibs%</Var>

Var	Text	Path to the folder with project libraries via environment variable.
-----	------	---

### **4.5.3. List of project library files, <Libs>**

<Libs> – start of the list of files;  
 {...} – library files (Lib);  
 </Libs> – end of the list of files.

#### **4.5.3.1. Project library file, <Lib>**

##### **4.5.3.1.1. Full path to project library file, <Path>**

<Path>C:\Program Files\DiPTrace\Lib\buzzers.lib</Path>

Path	Text	Full path to the project library file.
------	------	--

##### **4.5.3.1.2. Path to project library file via environment variable, <Var>**

<Var>%standardlibs%\buzzers.lib</Var>

Var	Text	Path to the project library file via environment variable.
-----	------	--

### **4.6. List of Copper Layers, <CopperLayers>**

<CopperLayers> – start of the list;  
 {...} – description of Copper Layers (Lay);  
 </CopperLayers> – end of the list.

#### **4.6.1. Description of Copper Layer, <Lay>**

##### **4.6.1.1. Main parameters of Copper Layer**

<Lay Id="0" Type="Signal" PlanePad="By Pads" NetId="-1" PlaneRing="0.2" Color="4227327" Locked="N">

Id	Int	Copper Layer identifier (Id).
Type	Text	Layer Type: "Signal"; "Plane".
PlanePad	Text	Plated Holes: "By Pads"; "Fixed Ring".
NetId	Int	Identifier of the connected net (Id) in the list of nets (4.20). "-1" – not connected to net.
PlaneRing	Real	Fixed Ring Size.
Color	Int	Layer color.
Locked	Bool	"Y" – locked ; "N" – unlocked.

#### **4.6.1.2. Copper Layer name, <Name>**

<Name>Inner 1</Name>

Name	Text	Layer name.
------	------	-------------

### **4.7. List of custom Non-Signal layers, <NonSignals>**

<NonSignals> – start of the list;  
 {...} – description of custom Non-Signal layers (NonSignal);  
 </NonSignals> – end of the list.

#### **4.7.1. Description of custom Non-Signal layer, <NonSignal>**

##### **4.7.1.1. Main parameters of custom Non-Signal layer**

<NonSignal Id="0" Side="None" Color="11206655">

Id	Int	Custom Non-Signal layer identifier (Id).
Side	Text	Side: "None"; "Top"; "Bottom".
Color	Int	Layer color.

#### **4.7.1.2. Custom Non-Signal layer name, <Name>**

<Name>Non-Signal 1</Name>

Name	Text	Layer name.
------	------	-------------

### **4.8. Layer Stackup Template name, <LayerStackName>**

<LayerStackName>4 Layers Default Stackup</LayerStackName>

LayerStackName	Text	Layer stackup template name.
----------------	------	------------------------------

### **4.9. List of Layer Stack layers, <LayerStackItems>**

<LayerStackItems> – start of the list;  
 {...} – description of the layers (LayerStackItem);  
 </LayerStackItems> – end of the list.

## 4.9.1. Description of Layer Stack layer, <LayerStackItem>

### 4.9.1.1. Main layer parameters

<LayerStackItem Lay="0">

Lay	Int	Layer identifier (Id). "-1" – for "Dielectric".
-----	-----	--

## 4.9.1.2. Layer material, <Material>

### 4.9.1.2.1. Main layer material parameters

<Material Type="Conductor" VariableThickness="N" Thickness="0.0348" Constant="0"  
TraceWidth="0.2">

Type	Text	Layer material type: "Conductor"; "Plane"; "Dielectric".
VariableThickness	Bool	Variable Thickness: "Y" – enabled; "N" – disabled.
Thickness	Real	Material thickness.
Constant	Real	Material constant.
TraceWidth	Real	Default trace width for "Conductor".

### 4.9.1.2.2. Material name, <Name>

<Name>Copper 1 Oz</Name>

Name	Text	Material name.
------	------	----------------

## 4.10. List of hierarchy sheets, <HierarchySheets>

<HierarchySheets> – start of the list;  
{...} – description of hierarchy sheets (HSheet);  
</HierarchySheets> – end of the list.

## 4.10.1. Description of hierarchy sheet, <HSheet>

### 4.10.1.1. Hierarchy sheet number.

<HSheet Number="1">

Number	Int	Hierarchy sheet number.
--------	-----	-------------------------

#### **4.10.1.2. Hierarchy sheet name, <Name>**

<Name>DRIVER</Name>

Name	Text	Hierarchy sheet name.
------	------	-----------------------

#### **4.10.1.3. List of hierarchy sheet blocks, <UpdateIds>**

<UpdateIds> – start of the list;  
 {...} – description of blocks (UID);  
 </UpdateIds> – end of the list.

##### **4.10.1.3.1. Description of hierarchy sheet block, <Uid>**

###### **4.10.1.3.1.1. Block identifier**

<Uid Name="55">

Name	Int	Block identifier.
------	-----	-------------------

###### **4.10.1.3.1.2. Block name**

<Name>Block1</Name>

Name	Text	Block name.
------	------	-------------

#### **4.11. List of project Via Styles, <ViaStyles>**

<ViaStyles> – start of the list;  
 {...} – description of Via Styles (ViaStyle);  
 </ViaStyles> – end of the list.

##### **4.11.1. Description of Via Style, <ViaStyle>**

###### **4.11.1.1. Main parameters of Via Style**

<ViaStyle Id="0" Size="1" HoleSize="0.5" Lay1="0" Lay2="1">

Id	Int	Via Style identifier (Id).
Size	Real	Outer Diameter.
HoleSize	Real	Hole Diameter.
Lay1	Int	Initial layer Id (From Layer).
Lay2	Int	Final layer Id (To Layer).

###### **4.11.1.2. Via Style name, <Name>**

<Name>Default</Name>

Name	Text	Via Style name.
------	------	-----------------

## 4.12. List of project Net Classes, <NetClasses>

<NetClasses> – start of the list;  
 {...} – description of Net Classes (NetClass);  
 </NetClasses> – end of the list.

### 4.12.1. Description of Net Class, <NetClass>

#### 4.12.1.1. Main parameters of Net Class

<NetClass Id="0" UpdateId="0" Type="Normal" AllLayers="Y" CheckLength="N" AllVias="Y" PerformDRC="N" Phase="2" Phase\_ErrorLength="10" LengthDelta="2.54" FixedLength="0.3" MaxUncoupledLength="10" Tolerance="2">

Id	Int	Net Class identifier (Id).
UpdateId	Int	NetClass identifier for update. "0" – for "Default".
Type	Text	NetClass type: "Normal"; "Differential Pair".
AllLayers	Bool	NetClass settings: "Y" – the same for all layers; "N" – individual for every layer.
CheckLength	Bool	Length Matching by Class: "Y" – enabled; "N" – disabled.
AllVias	Bool	Use All Via Styles: "Y" – enabled; "N" – disabled.
PerformDRC	Bool	Use Clearance in DRC: "Y" – enabled; "N" – disabled.
Phase	Real	Dynamic Phase Tolerance.
Phase_ErrorLength	Real	Dynamic Phase Error Length.
LengthDelta	Real	Length Matching Tolerance.
FixedLength	Real	Length Matching Fixed Length.
MaxUncoupledLength	Real	Differential Pair Uncoupled Length.
Tolerance	Real	Differential Pair Length Tolerance.

#### 4.12.1.2. Net Class name, <Name>

<Name>Default</Name>

Name	Text	Net Class name.
------	------	-----------------

#### 4.12.1.3. List of Net Class settings by layers, <LayProperties>

<LayProperties> – start of the list;  
 {...} – settings by layer (LayProperty);  
 </LayProperties> – end of the list.

##### 4.12.1.3.1. Net Class settings for layer, <LayProperty>

###### 4.12.1.3.1.1. Main Net Class settings for layer

<LayProperty Width="0.33" MinWidth="0.01" MaxWidth="100" Clearance="0.33"  
 Neck\_Width="0.3" Neck\_DifClearance="0.25" Neck\_MaxLength="3" DifClearance="0.33">

Width	Real	Trace Width.
MinWidth	Real	Min. Width.
MaxWidth	Real	Max. Width.
Clearance	Real	Clearance for "Normal", Clearance to Others for "Differential Pair".
Neck_Width	Real	Neck Trace Width.
Neck_DifClearance	Real	Neck Primary Gap.
Neck_MaxLength	Real	Max Neck Length.
DifClearance	Real	Differential Pair Primary Gap.

###### 4.12.1.3.1.2. Layer name, <LayerName>

<LayerName>Top</LayerName>

LayerName	Text	Layer name.
-----------	------	-------------

###### 4.12.1.3.1.3. Clearance Details, <ClearanceDetails>

<ClearanceDetails TraceToTrace="0.3" TraceToVia="0.3" TraceToPad="0.4" TraceToSmd="0.3"  
 TraceToCopper="0.3" ViaToVia="0.3" ViaToPad="0.4" ViaToSmd="0.3" ViaToCopper="0.3"  
 PadToPad="0.4" PadToSmd="0.3" PadToCopper="0.3" SmdToSmd="0.3" SmdToCopper="0.3"/>

TraceToTrace	Real	Trace to Trace Clearance.
TraceToVia	Real	Trace to Via Clearance.
TraceToPad	Real	Trace to Pad Clearance.
TraceToSmd	Real	Trace to Smd Clearance.
TraceToCopper	Real	Trace to Copper Clearance.
ViaToVia	Real	Via to Via Clearance.

ViaToPad	Real	Via to Pad Clearance.
ViaToSmd	Real	Via to Smd Clearance.
ViaToCopper	Real	Via to Copper Clearance.
PadToPad	Real	Pad to Pad Clearance.
PadToSmd	Real	Pad to Smd Clearance.
PadToCopper	Real	Pad to Copper Clearance.
SmdToSmd	Real	Smd to Smd Clearance.
SmdToCopper	Real	Smd to Copper Clearance.

#### 4.12.1.4. List of allowed Via Styles for Net Class, <AllowedVias>

<AllowedVias> – start of the list;  
 {...} – allowed Via Styles (ViaStyle);  
 </AllowedVias> – end of the list.

#### 4.12.1.4.1. Allowed Via Style for Net Class, <ViaStyle>

<ViaStyle>2</ViaStyle>

ViaStyle	Int	Via Style Id in the list of project via styles (4.11).
----------	-----	--

#### 4.12.1.5. Net Class autorouting settings, <Autorouting>

##### 4.12.1.5.1. Main Net Class autorouting settings

<Autorouting RoutePriority="N" PriorityValue="0" RouteMaxVias="N" MaxViasValue="10000" RouteMaxIncorrectWay="N" MaxIncorrectWayValue="30000" RouteAllLayers="Y">

RoutePriority	Bool	Priority: "Y" – Enabled; "N" – Disabled.
PriorityValue	Int	Priority Value.
RouteMaxVias	Bool	Max Vias in Net: "Y" – Enabled; "N" – Disabled.
MaxViasValue	Int	Max Vias in Net Value.
RouteMaxIncorrectWay	Bool	Max Incorrect Way: "Y" – Enabled; "N" – Disabled.
MaxIncorrectWayValue	Int	Max Incorrect Way Value.
RouteAllLayers	Bool	Use Router Settings to: "Y" – All Layers; "N" – only in selected layers.

#### **4.12.1.5.2. List of layers selected for autorouting, <RouteLayers>**

<RouteLayers> – start of the list;  
{...} – layers for autorouting (Item);  
</RouteLayers> – end of the list.

Every line of the list corresponds to a layer in the order of the project Copper Layers list (4.6).

#### **4.12.1.5.2.1. Layer for autorouting, <Item>**

<Item>N</Item>

Item	Bool	Layer for autorouting: "Y" – Enabled; "N" – Disabled.
------	------	---

### **4.13. Clearances between net classes, <ClassToClass>**

#### **4.13.1. Main settings of clearances between net classes**

<ClassToClass Enabled="Y">

Enabled	Bool	Class to Class Clearances: "Y" – Enabled; "N" – Disabled.
---------	------	---

#### **4.13.2. List of Class to Class Clearances, <CTC\_Cells>**

<CTC\_Cells> – start of the list;  
{...} – Class to Class clearances (Cell);  
</CTC\_Cells> – end of the list.

#### **4.13.2.1. Class to Class clearance, <Cells>**

<Cell NetClass1="0" NetClass2="2" Clearance="0.3"/>

NetClass1	Int	The first NetClass Id in the list of project net classes (4.12).
NetClass2	Int	The second NetClass Id in the list of project net classes (4.12).
Clearance	Real	Clearance between the first and the second NetClass. "-1" – not set, default value is used. The parameter is present if the same Clearance is set for all layers.

#### **4.13.2.2. List of Clearances by layers, <LayerClearances>**

<LayerClearances> – start of the list;  
{...} – Clearances by layers (Lay);  
</LayerClearances> – end of the list.

The list is present if different Clearances are set for different layers.

#### 4.13.2.2.1. Clearances for layer, <Lay>

<Lay Id="0" Clearance="0.21"/>

Id	Int	Layer Id in the list of project Copper Layers (4.6).
Clearance	Real	Clearance for a layer.

### 4.14. DRC settings, <DRC>

#### 4.14.1. Main DRC settings

<DRC AllLayers="Y" CheckClearance="Y" CheckSize="N" CheckJumpers="N"  
 CheckCopperPours="N" CheckClassToClass="Y" CheckSilk="Y" CheckLength="Y"  
 CheckKeepouts="N" CheckSameNet="N" CheckSameComponentPads="Y" CheckCourt yard="N"  
 SilkClearance="0.05">

AllLayers	Bool	Clearance for all layers: "Y" – same; "N" – different.
CheckClearance	Bool	Check Clearance: "Y" – Enabled; "N" – Disabled.
CheckSize	Bool	Check Sizes: "Y" – Enabled; "N" – Disabled.
CheckJumpers	Bool	Check Jumper Wires: "Y" – Enabled; "N" – Disabled.
CheckCopperPours	Bool	Check Copper Pours: "Y" – Enabled; "N" – Disabled.
CheckClassToClass	Bool	Check Class-to-Class Rules: "Y" – Enabled; "N" – Disabled.
CheckSilk	Bool	Check Silk over Pads: "Y" – Enabled; "N" – Disabled.
CheckLength	Bool	Check Length Matching: "Y" – Enabled; "N" – Disabled.
CheckKeepouts	Bool	Check Route Keepouts: "Y" – Enabled; "N" – Disabled.
CheckSameNet	Bool	Check Same Net Clearances:

		"Y" – Enabled; "N" – Disabled.
CheckSameComponentPads	Bool	Check Same Pattern Pads: "Y" – Enabled; "N" – Disabled.
CheckCourtyard	Bool	Check Courtyard: "Y" – Enabled; "N" – Disabled.
SilkClearance	Real	Silk over Pads Clearance.

#### 4.14.2. Show list of errors, <ShowList>

<ShowList>Y</ShowList>

ShowList	Bool	Show a list of errors or "No errors" message: "Y" – Enabled; "N" – Disabled.
----------	------	--

#### 4.14.3. Real Time DRC Mode, <RealTimeMode>

<RealTimeMode>0</RealTimeMode>

RealTimeMode	Int	Real Time DRC Mode: "0" – do not check; "1" – show violations.
--------------	-----	--

#### 4.14.4. Real Time DRC Mode, <DRCDone>

<DRCDone>N</DRCDone>

DRCDone	Bool	Correspondence of the errors to the current board: "Y" – corresponds; "N" – does not correspond.
---------	------	--

#### 4.14.5. List of Clearances by layers, <LayClearances>

<LayClearances> – start of the list;  
 {...} – Clearances by layers (LayClearance);  
 </LayClearances> – end of the list.

#### 4.14.5.1. Clearances for layer, <LayClearance>

##### 4.14.5.1.1. Main parameters of Clearances for layer

<LayClearance Lay="0" SameTraceToTrace="0" SameSmdToVia="0" SameSmdToPad="0"  
 SameSmdToSmd="0">

Lay	Int	Layer Id in the list of project Copper Layers (4.6).
SameTraceToTrace	Real	Same Net Trace to Trace Clearance.
SameSmdToVia	Real	Same Net Smd to Via Clearance.
SameSmdToPad	Real	Same Net Smd to Pad Clearance.
SameSmdToSmd	Real	Same Net Smd to Smd Clearance.

#### 4.14.5.1.2. General parameters of Clearances for layer

```
<ClearanceDetails TraceToTrace="0.2" TraceToVia="0.2" TraceToPad="0.2" TraceToSmd="0.19"
TraceToCopper="0.2" TraceToDrill="0.2" TraceToBoard="0.2" ViaToVia="0.23" ViaToPad="0.2"
ViaToSmd="0.2" ViaToCopper="0.2" ViaToDrill="0.2" ViaToBoard="0.2" PadToPad="0.2"
PadToSmd="0.2" PadToCopper="0.2" PadToDrill="0.2" PadToBoard="0.2" SmdToSmd="0.2"
SmdToCopper="0.2" SmdToDrill="0.2" SmdToBoard="0" CopperToCopper="0.2"
CopperToDrill="0.2" CopperToBoard="0.2" DrillToDrill="0.2" DrillToBoard="0.2"/>
```

TraceToTrace	Real	Trace to Trace Clearance.
TraceToVia	Real	Trace to Via Clearance.
TraceToPad	Real	Trace to Pad Clearance.
TraceToSmd	Real	Trace to Smd Clearance.
TraceToDrill	Real	Trace to Drill Clearance.
TraceToBoard	Real	Trace to Board Clearance.
ViaToVia	Real	Via to Via Clearance.
ViaToPad	Real	Via to Pad Clearance.
ViaToSmd	Real	Via to Smd Clearance.
ViaToCopper	Real	Via to Copper Clearance.
ViaToDrill	Real	Via to Drill Clearance.
ViaToBoard	Real	Via to Board Clearance.
PadToPad	Real	Pad to Pad Clearance.
PadToSmd	Real	Pad to Smd Clearance.
PadToCopper	Real	Pad to Copper Clearance.
PadToDrill	Real	Pad to Drill Clearance.
PadToBoard	Real	Pad to Board Clearance.
SmdToSmd	Real	Smd to Smd Clearance.
SmdToCopper	Real	Smd to Copper Clearance.
SmdToDrill	Real	Smd to Drill Clearance.
SmdToBoard	Real	Smd to Board Clearance.
CopperToCopper	Real	Copper to Copper Clearance.
CopperToDrill	Real	Copper to Drill Clearance.

CopperToBoard	Real	Copper to Board Clearance.
DrillToDrill	Real	Drill to Drill Clearance.
DrillToBoard	Real	Drill to Board Clearance.

#### 4.14.6. List of Sizes by layers, <LayClearances>

<LaySizes> – start of the list;  
 {...} – Sizes by layers (LaySize);  
 </LaySizes> – end of the list.

##### 4.14.6.1. Sizes for layer, <LaySize>

<LaySize Lay="0" MinTrace="0.3048" MinDrill="0.7112" MinRing="0.1524" MaxRing="50.8254" MaxPlatedHole="5.08" MaxNonPlatedHole="5.08"/>

Lay	Int	Layer Id in the list of project Copper Layers (4.6).
MinTrace	Real	Minimum trace width.
MinDrill	Real	Minimum hole diameter.
MinRing	Real	Minimum Ring Size.
MaxRing	Real	Maximum Ring Size.
MaxPlatedHole	Real	Maximum Plated Hole.
MaxNonPlatedHole	Real	Maximum Non-plated Hole.

#### 4.15. Check Net Connectivity settings, <ConnectivityCheck>

<ConnectivityCheck Traces="Y" Shapes="Y" CopperPours="Y"/>

Traces	Bool	"Y" – Enabled; "N" – Disabled.
Shapes	Bool	"Y" – Enabled; "N" – Disabled.
CopperPours	Bool	"Y" – Enabled; "N" – Disabled.

#### 4.16. Length Matching settings, <MainLengthRule>

##### 4.16.1. Main Length Matching settings

<MainLengthRule Type="By User" FixedLength="30.5" Delta="2.54" AnyError="N" NetClass="2">

Type	Text	Rule type: "By User"; "By NetClass".
------	------	--

FixedLength	Real	Fixed Length.
Delta	Real	Tolerance.
AnyError	Bool	Violations: "Y" – detected; "N" – not detected.
NetClass	Int	NetClass Id in the list of project net classes (4.12), for Length Matching by Net Class.

#### 4.16.2. Rule name, <Name>

<Name>Length Rule 1</Name>

Name	Text	The rule name.
------	------	----------------

#### 4.16.3. List of connections controlled by the rule, <Rules>

<Rules> – start of the list;  
 {...} – controlled connections (Rule);  
 </Rules> – end of the list.

##### 4.16.3.1. Connection controlled by the rule, <Rule>

<Rule NetId="5" Comp1="50" Pad1="33" Comp2="2" Pad2="1" Length="17.8346" Error="N"/>

NetId	Int	Net Id in the list of project nets (!).
Comp1	Int	Id of the first component in the list of the project components (!).
Pad1	Int	Pad Id in the list of pads of the first component (!).
Comp2	Int	Id of the second component in the list of the project components (!).
Pad2	Int	Pad Id in the list of pads of the second component (!).
Length	Real	Connection length.
Error	Bool	Violation: "Y" – detected; "N" – not detected.

#### 4.17. List of Length Matching rules, <LengthRules>

<LengthRules> – start of the list;  
 {...} – Length Matching rules (LengthRule);  
 </LengthRules> – end of the list.

##### 4.17.1. Length Matching rule, <LengthRules>

###### 4.17.1.1. Main parameters of Length Matching rule

<LengthRule Type="By NetClass" FixedLength="12" Delta="2.54" AnyError="N" NetClass="1">

Type	Text	Rule type: "By User"; "By NetClass".
FixedLength	Real	Fixed Length.
Delta	Real	Tolerance.
AnyError	Bool	Violations: "Y" – detected; "N" – not detected.
NetClass	Int	NetClass Id in the list of project net classes (4.12), for Length Matching by Net Class.

#### 4.17.1.2. Rule name, <Name>

<Name>Length Rule 1</Name>

Name	Text	The rule name.
------	------	----------------

#### 4.17.1.3. List of connections controlled by the rule, <Rules>

<Rules> – start of the list;  
 {...} – controlled connections (Rule);  
 </Rules> – end of the list.

#### 4.17.1.3.1. Connection controlled by the rule, <Rule>

<Rule NetId="5" Comp1="50" Pad1="33" Comp2="2" Pad2="1" Length="17.8346" Error="N"/>

NetId	Int	Net Id in the list of project nets (!).
Comp1	Int	Id of the first component in the list of the project components (4.18).
Pad1	Int	Pad Id in the list of pads of the first component (4.18.1.15).
Comp2	Int	Id of the second component in the list of the project components (4.18).
Pad2	Int	Pad Id in the list of pads of the second component (4.18.1.15).
Length	Real	Connection length.
Error	Bool	Violation: "Y" – detected; "N" – not detected.

### 4.18. List of project components, <Components>

<Components> – start of the list;  
 {...} – description of project components (Component);  
 </Components> – end of the list.

## 4.18.1. Description of project component, <Component>

Those settings are used in addition to component parameters set in pattern library section (3.1).

### 4.18.1.1. Main parameters of project component

```
<Component Id="0" UpdateId="-1" Type="IPC-7351" PatternStyle="PatType0" X="15.24"
Y="22.86" Angle="0" Side="Top" Flip="N" HorzFlip="N" ShowFiducials="Common"
CustomMarkingFont="N" MarkingFontSize="5" MarkingFontAll="N" GridAlign="Origin"
PanelExclude="N" Group="-1" Locked="N" Selected="N" PlacementClearance="3">
```

<b>Id</b>	<b>Int</b>	Component identifier (Id).
<b>UpdateId</b>	<b>Int</b>	Component identifier (Id) for update from Schematic.
<b>Type</b>	<b>Text</b>	Component type: "Pad"; "MtHole"; "Via"; "Fiducial". This parameter is absent for other types of components from the pattern library section (3.1).
<b>PatternStyle</b>	<b>Text</b>	"Pattern Style" in the pattern library section (3.1).
<b>X</b>	<b>Real</b>	X coordinate of component.
<b>Y</b>	<b>Real</b>	Y coordinate of component.
<b>Angle</b>	<b>Real</b>	Component rotation angle. The parameter is absent if = 0.
<b>Side</b>	<b>Text</b>	Component location side: "Top"; "Bottom".
<b>Flip</b>	<b>Bool</b>	"Y" – flipped; "N" – not flipped.
<b>HorzFlip</b>	<b>Bool</b>	"Y" – flipped horizontally; "N" – not flipped horizontally.
<b>ShowFiducials</b>	<b>Bool</b>	Component Fiducials display: "Common"; "Show"; "Hide".
<b>CustomMarkingFont</b>	<b>Bool</b>	Markings font size: "Y" – custom; "N" – default.
<b>MarkingFontSize</b>	<b>Int</b>	Custom markings font size.
<b>MarkingFontAll</b>	<b>Bool</b>	Apply font set in PCB Layout to markings of all the patterns, including those created in the Pattern Editor. "Y" – apply; "N" – do not apply.

GridAlign	Text	Grid Alignment by: "Pad"; "Origin".
PanelExclude	Bool	Do Not Panelize: "Y" – enabled; "N" – disabled.
Group	Int	Group number (Id) in the list of project groups (!), to which a component belongs. "-1" – does not belong to any group.
Locked	Bool	"Y" – Locked; "N" – Unlocked.
Selected	Bool	"Y" – Selected; "N" – Not Selected.
PlacementClearance	Real	Auto-placement Spacing. This parameter is present only if Custom values are set, and absent with Common value.

#### 4.18.1.2. Component RefDes, <RefDes>

<RefDes>C1</RefDes>

RefDes	Text	Component RefDes.
--------	------	-------------------

#### 4.18.1.3. Component Name, <Name>

<Name>10SVP10M</Name>

Name	Text	Component Name.
------	------	-----------------

#### 4.18.1.4. Component Value, <Value>

<Value>47</Value>

Value	Text	Component value.
-------	------	------------------

<HierarchyPath/>

Component's belonging to a hierarchical structure.

#### 4.18.1.5. List of hierarchy blocks that comprise component, <HierarchyPath>

<HierarchyPath> – start of the list;  
 {...} – hierarchy blocks (Item);  
 </HierarchyPath> – end of the list.

The list starts with the block of the top hierarchical structure level. The Part Id of the hierarchy

block in the schematic is listed last.

#### 4.18.1.5.1. Hierarchy block that comprises component, <Item>

<Item>2</Item>

Item	Int	Block identifier (4.10.1.3.1.1) in the list of blocks of a hierarchical sheet (4.10.1.3).
------	-----	---

#### 4.18.1.6. List of component exclusions from Assembly Variants, <AssemblyExclude>

<AssemblyExclude> – start of the list;  
{...} – Assembly Variants (Item);  
</AssemblyExclude> – end of the list.

#### 4.18.1.6.1. Component exclusion from Assembly Variant, <Item>

<Item>1</Item>

Item	Int	Sequence number of Assembly variant in the list of Assembly Variants (4.4.2).
------	-----	---

#### 4.18.1.7. Component library file, <LibPath>

##### 4.18.1.7.1. Full path to component library file, <Path>

<Path>C:\Program Files\DiPTrace\Lib\buzzers.lib</Path>

Path	Text	Full path to the component library file.
------	------	--

##### 4.18.1.7.2. Path to the component library file via environment variable, <Var>

<Var>%standardlibs%\buzzers.lib</Var>

Var	Text	Path to the component library file via environment variable.
-----	------	--

#### 4.18.1.8. Individual marking settings for RefDes, <RefDesMarking>

##### 4.18.1.8.1. Silk layer settings, <Silk>

<Silk Show="Common" Align="Common" Horz="Center" Vert="Center" X="0" Y="0" Angle="0"/>

Show	Text	Show: "Common" – use general setting (4.4.1.7); "Show" – show; "Hide" – hide.
Align	Text	Align:

		"Common" – use general setting (4.4.1.7); "Center"; "Top"; "Bottom"; "Left"; "Right"; "Corner"; "Auto"; "Position".
Horz	Text	Horizontal Anchor Point: "Center"; "Right"; "Left".
Vert	Text	Vertical Anchor Point: "Center"; "Bottom"; "Top".
X	Real	X shift from the pattern center (for "Position").
Y	Real	Y shift from the pattern center (for "Position").
Angle	Real	Rotation angle (for "Position").

#### 4.18.1.8.2. Assembly layer settings, <Assy>

<Assy Show="Common" Align="Common" Horz="Center" Vert="Center" X="0" Y="0" Angle="0"/>

Same as Silk layer settings (4.18.1.8.1).

#### 4.18.1.9. Individual marking settings for Name, <NameMarking>

Same as individual markings settings for RefDes (4.18.1.8).

#### 4.18.1.10. Individual marking settings for Value, <ValueMarking>

Same as individual markings settings for RefDes (4.18.1.8).

#### 4.18.1.11. Individual marking settings for Pattern, <PatternMarking>

Same as individual markings settings for RefDes (4.18.1.8).

#### 4.18.1.12. Individual marking settings for Manufacturer, <ManufacturerMarking>

Same as individual markings settings for RefDes (4.18.1.8).

#### 4.18.1.13. Individual marking settings for Datasheet, <DatasheetMarking>

Same as individual markings settings for RefDes (4.18.1.8).

#### **4.18.1.14. List of Additional Fields, <AddFields>**

<AddFields> – start of the list;  
 {...} – description of Additional Fields (AddField);  
 </AddFields> – end of the list.

#### **4.18.1.14.1. Description of Additional Field and individual settings of its marking, <AddField>**

##### **4.18.1.14.1.1. Main parameters of Additional Field**

<AddField Type="Text">

Type	Text	Additional field value type: "Text"; "Link".
------	------	--

##### **4.18.1.14.1.2. Additional Field Name, <Name>**

<Name>Unique Name</Name>

Name	Text	Additional Field Name.
------	------	------------------------

##### **4.18.1.14.1.3. Additional Field Value, <Text>**

<Text>MALLORY\_ASI301Q</Text>

Text	Text	Additional Field Value.
------	------	-------------------------

##### **4.18.1.14.1.4. Individual marking settings for Silk layer, <Silk>**

<Silk Show="Common" Align="Common" Horz="Center" Vert="Center" X="0" Y="0" Angle="0"/>

Show	Text	Show: "Common" – use general setting (4.4.1.13.1.1); "Show" – show; "Hide" – hide.
Align	Text	Align: "Common" – use general setting (4.4.1.13.1.1); "Center"; "Top"; "Bottom"; "Left"; "Right"; "Corner"; "Auto"; "Position".

Horz	Text	Horizontal Anchor Point: "Center"; "Right"; "Left".
Vert	Text	Vertical Anchor Point: "Center"; "Bottom"; "Top".
X	Real	X shift from the pattern center (for "Position").
Y	Real	Y shift from the pattern center (for "Position").
Angle	Real	Rotation angle (for "Position").

#### 4.18.1.14.1.5. Assembly layer settings, <Assy>

<Assy Show="Common" Align="Common" Horz="Center" Vert="Center" X="0" Y="0" Angle="0"/>

Same as Silk layer settings (4.18.1.14.1.4).

#### 4.18.1.15. List of settings of component pads, <Pads>

<Pads> – start of the list;  
 {...} – pad settings (Pad);  
 </Pads> – end of the list.

#### 4.18.1.15.1. Component pad settings, <Pad>

##### 4.18.1.15.1.1. Main pad settings

<Pad Id="1" NetId="-1" InternalConnection="-1">

Id	Int	Component pad identifier (Id).
NetId	Int	Net Id in the list of project nets (4.20). "-1" – not connected to net.
InternalConnection	Int	Id of internal connection in the list of component's internal connections (4.18.1.15.6). "-1" – does not belong to any internal connection.

#### 4.18.1.15.2. List of layers for Hide Pad Ring, <HideRingLay>

<HideRingLay> – start of the list;  
 {...} – layers for Hide Pad Ring (Item);  
 </HideRingLay> – end of the list.

#### 4.18.1.15.2.1. Layer for Hide Pad Ring, <Item>

<Item>1</Item>

Item	Int	Id of the layer in the project Copper Layers list (4.6), for which Hide Pad Ring is set.
------	-----	--

#### 4.18.1.15.3. List of layers for Pad Layers, <BlindLay>

<BlindLay> – start of the list;  
 {...} – layers for Pad Layers (Item);  
 </BlindLay> – end of the list.

##### 4.18.1.15.3.1. Layer for Pad Layers, <Item>

<Item>2</Item>

Item	Int	Layer Id in the list of project Copper Layers (4.6).
------	-----	--

#### 4.18.1.15.4. List of Thermal Settings by layers, <CustomSpokes>

<CustomSpokes> – start of the list;  
 {...} – Thermal Settings by layers (CustomSpoke);  
 </CustomSpokes> – end of the list.

##### 4.18.1.15.4.1. Thermal Settings for layer, <CustomSpoke>

<CustomSpoke Lay="1" Type="0" Spoke="0" Width="0.33"/>

Lay	Int	Layer Id in the list of project Copper Layers (4.6). "-1" – the same parameters for all layers.
Type	Int	Connect: "0" – By Pour (common settings); "1" – Yes (connect always); "2" – No (do not connect).
Spoke	Int	Thermal: "0" – Direct; "1" – 2 spoke 90; "2" – 2 spoke 90; "3" – 4 spoke 45; "4" – 4 spoke 90;
Width	Real	Spoke Width.

#### 4.18.1.15.5. Pad teardrops settings, <TeardropParams>

<TeardropParams PadVia="1" Smd="1" Trace="0" TJunc="0" PadViaWidth="0.7"  
 PadViaLength="0.3" SmdWidth="2" SmdLength="1" TraceLength="1" TJuncLength="1"/>

PadVia	Int	Teardrop type for Pad and Via: "0" – no teardrops;
--------	-----	---

		"1" – line; "2" – curve.
Smd	Int	Teardrop type for SMD Pads: "0" – no teardrops; "1" – line; "2" – curve.
Trace	Int	Teardrop type for Trace: "0" – no teardrops; "1" – line; "2" – curve.
TJunc	Int	Teardrop type for T-Junction: "0" – no teardrops; "1" – line; "2" – curve.
PadViaWidth	Real	Connection for Pad and Via. Percentage of pad size.
PadViaLength	Real	Length for Pad and Via. Percentage of pad size.
SmdWidth	Real	Connection for SMD Pads. Percentage of trace width.
SmdLength	Real	Length for SMD Pads. Percentage of trace width.
TraceLength	Real	Length for Trace Width Difference. Percentage of trace width.
TJuncLength	Real	Length for T-Junction. Percentage of trace width.

#### 4.18.1.15.6. Mask and Paste settings, <MaskPaste>

##### 4.18.1.15.6.1. Main Mask and Paste settings

```
<MaskPaste TopMask="Open" BotMask="Tented" TopPaste="Segments" BotPaste="Solder"
Segment_Percent="50" Segment_EdgeGap="0.3" Segment_Gap="0.2" Segment_Side="1"
CustomSwell="0.1" CustomShrink="0.1">
```

TopMask	Text	Mask in Top Layer: "Common"; "Open"; "Tented"; "By Paste".
BotMask	Text	Mask in Bottom Layer: "Common"; "Open"; "Tented"; "By Paste".
TopPaste	Text	Paste in Top Layer: "Common"; "Solder"; "No Solder"; "Segments".

BotPaste	Text	Paste in Bottom Layer: "Common"; "Solder"; "No Solder"; "Segments".
Segment_Percent	Real	Fill percent for segmented paste mask
Segment_EdgeGap	Real	Minimum edge clearance for segmented paste mask
Segment_Gap	Real	Minimum clearance between segments for segmented paste mask
Segment_Side	Real	Minimum segment side for segmented paste mask
CustomSwell	Real	Solder Mask Swell.
CustomShrink	Real	Paste Mask Shrink.

#### 4.18.1.15.6.2. List of paste segments in Top layer for segmented paste, <TopSegments>

<TopSegments> – start of the list of segments;  
 {...} – list of segments (Item);  
 </TopSegments> – end of the list of segments.

##### 4.18.1.15.6.2.1. Coordinates of diagonals of paste segments in Top layer for segmented paste, <Item>

<Item X1="-0.4525" Y1="0.4525" X2="0.4525" Y2="-0.4525"/>

X1	Real	X coordinate of the first diagonal point.
Y1	Real	Y coordinate of the first diagonal point.
X2	Real	X coordinate of the second diagonal point.
Y2	Real	Y coordinate of the second diagonal point.

#### 4.18.1.15.6.3. List of paste segments in Bottom layer for segmented paste, <BotSegments>

<BotSegments> – start of the list of segments;  
 {...} – list of segments (Item);  
 </BotSegments> – end of the list of segments.

##### 4.18.1.15.6.3.1. Coordinates of diagonals of paste segments in Bottom layer for segmented paste, <Item>

<Item X1="-0.4525" Y1="0.4525" X2="0.4525" Y2="-0.4525"/>

X1	Real	X coordinate of the first diagonal point.
Y1	Real	Y coordinate of the first diagonal point.
X2	Real	X coordinate of the second diagonal point.

Y2	Real	Y coordinate of the second diagonal point.
----	------	--

#### 4.18.1.15.7. List of internal connections, <InternalConnections>

<InternalConnections> – start of the list of Internal Connections;  
 {...} – list of Internal Connections (IntCon);  
 </InternalConnections> – end of the list of Internal Connections.

#### 4.18.1.15.7.1. Internal Connection, <IntCon>

##### 4.18.1.15.7.1.1. Main parameters of Internal Connection

<IntCon ConnectAll="N">

ConnectAll	Bool	"Y" – Connect All Pads; "N" – Connect Any Pad / Use for Routing.
------------	------	---

##### 4.18.1.15.7.1.2. List of pads of internal connection, <PadId>

<PadId> – start of the list;  
 {...} – list of pads (Item);  
 </PadId> – end of the list.

##### 4.18.1.15.7.1.2.1. Internal connection pad, <Item>

<Item>2</Item>

Item	Int	Pad Id in the list of component pads (4.18.1.15).
------	-----	---

##### 4.18.1.15.7.1.3. List of Ratlines of internal connection, <Ratlines>

<Ratlines> – start of the list;  
 {...} – list of pads (Ratline);  
 </Ratlines> – end of the list.

##### 4.18.1.15.7.1.3.1. Internal connection Ratline, <Ratline>

<Ratline X="2" Y="3"/>

X	Int	Id of the first Ratline pad in the list of component pads (4.18.1.15).
Y	Int	Id of the second Ratline pad in the list of component pads (4.18.1.15).

#### 4.18.1.15.8. Category assigned to component, <Category>

##### 4.18.1.15.8.1. Sequence number of the category in the list

<Category Index="0">

Index	Int	The number of the category assigned to component.
-------	-----	---

#### 4.18.1.15.8.2. Name of category assigned to component, <Name>

<Name>Connectors</Name>

Name	Text	Name of the category assigned to the component.
------	------	---

#### 4.18.1.15.8.3. List of Category types and subtypes assigned to component, <CategoryTypes>

<CategoryTypes> – start of the list of types and subtypes;  
 {...} – list of types and subtypes (CategoryType);  
 </CategoryTypes> – end of the list of types and subtypes.

#### 4.18.1.15.8.3.1. Type and subtype description, <CategoryType>

##### 4.18.1.15.8.3.1.1. Type name and number, <Type>

<Type Index="0">Circular</Type>

Index	Int	Number of the type in the list of the current category.
	Text	Type name.

##### 4.18.1.15.8.3.1.2. Subtype name and number, <SubType>

<SubType Index="1">Power DIN</SubType>

Index	Int	Subtype number in the list of the current type.
	Text	Subtype name.

#### 4.19. List of project Ratlines, <Ratlines>

<Ratlines> – start of the list;  
 {...} – project Ratlines (Ratline);  
 </Ratlines> – end of the list.

#### 4.19.1. Project Ratline, <Ratline>

<Ratline Id="0" Hidden="N" X1="14.605" Y1="12.7" X2="14.7656" Y2="6.9857" Comp1="1" Pad1="2" Comp2="0" Pad2="2"/>

Id	Int	Ratline identifier (Id).
Hidden	Bool	"Y" – hide; "N" – show.
X1	Real	X coordinate of the first diagonal point.

Y1	Real	Y coordinate of the first diagonal point.
X2	Real	X coordinate of the second diagonal point.
Y2	Real	Y coordinate of the second diagonal point.
Comp1	Int	Id of the first component in the list of the project components (4.18).
Pad1	Int	Id of the first pad in the list of pads of the first component (4.18.1.15).
Comp2	Int	Id of the first component in the list of the project components (4.18).
Pad2	Int	Id of the first pad in the list of pads of the first component (4.18.1.15).

## 4.20. List of project nets, <Nets>

<Nets> – start of the list;  
 {...} – project nets (Net);  
 </Nets> – end of the list.

### 4.20.1. Project net, <Net>

#### 4.20.1.1. Main parameters of project net

<Net Id="0" NetClass="0" RouteMode="Ratlines" HideRatlines="N" ShowLength="N" Highlighted="N" CustomColor="Y" TraceColor="0" MeanderGap="-1" Locked="N">

<b>Id</b>	Int	Project net identifier (Id).
<b>NetClass</b>	Int	Net netclass identifier (Id) in the list of project netclasses (4.12).
<b>RouteMode</b>	Text	Auto-route Mode: "Ratlines"; "Correct Traces"; "Full Reroute"; "Dont Route".
<b>HideRatlines</b>	Bool	Net Ratlines: "Y" – Hide; "N" – Show.
<b>ShowLength</b>	Bool	Trace Length: "Y" – Show; "N" – hide.
<b>Highlighted</b>	Bool	Highlight Net: "Y" – enabled; "N" – disabled.
<b>CustomColor</b>	Bool	Trace Color: "Y" – Custom; "N" – By Layer.
<b>TraceColor</b>	Int	Custom Color.
<b>MeanderGap</b>	Real	Custom Meander Gap. The parameter is absent if 'by Net Class' option is enabled.

Locked	Bool	"Y" – Locked; "N" – Unlocked.
--------	------	----------------------------------

#### 4.20.1.2. Net name, <Name>

<Name>AP-WAKE-BT</Name>

Name	Text	Net name.
------	------	-----------

#### 4.20.1.3. List of net pads, <Pads>

<Pads>           – start of the list;  
 {...}           – net pad (Item);  
 </Pads>          – end of the list.

#### 4.20.1.3.1. Net pad, <Item>

<Item Comp="1" Pad="1"/>

Comp	Int	Id of component in the list of the project components (4.18).
Pad	Int	Pad Id in the list of component pads (4.18.1.15).

#### 4.20.1.4. Net teardrops settings, <TeardropParams>

<TeardropParams PadVia="1" Smd="1" Trace="0" TJunc="0" PadViaWidth="0.7"  
 PadViaLength="0.3" SmdWidth="2" SmdLength="1" TraceLength="1" TJuncLength="1"/>

PadVia	Int	Teardrop type for Pad and Via: "0" – no teardrops; "1" – line; "2" – curve.
Smd	Int	Teardrop type for SMD Pads: "0" – no teardrops; "1" – line; "2" – curve.
Trace	Int	Teardrop type for Trace: "0" – no teardrops; "1" – line; "2" – curve.
TJunc	Int	Teardrop type for T-Junction: "0" – no teardrops; "1" – line; "2" – curve.
PadViaWidth	Real	Connection for Pad and Via. Percentage of pad size.
PadViaLength	Real	Length for Pad and Via. Percentage of pad size.
SmdWidth	Real	Connection for SMD Pads. Percentage of trace width.

SmdLength	Real	Length for SMD Pads. Percentage of trace width.
TraceLength	Real	Length for Trace Width Difference. Percentage of trace width.
TJuncLength	Real	Length for T-Junction. Percentage of trace width.

#### 4.20.1.5. List of Net Teardrops, <Teardrops>

<Teardrops> – start of the list;  
 {...} – net teardrops (Teardrop);  
 </Teardrops> – end of the list.

##### 4.20.1.5.1. Net Teardrop, <Teardrop>

###### 4.20.1.5.1.1. Main teardrop parameters

<Teardrop Id="1" Lay="0" DrawX="20.955" DrawY="12.1287">

Id	Int	Teardrop identifier (Id).
Lay	Int	Layer Id in the list of project Copper Layers (4.6).
DrawX	Real	X coordinate of the first point of the polygon.
DrawY	Real	Y coordinate of the first point of the polygon.

###### 4.20.1.5.1.2. List of polygon points of teardrop, <Points>

<Points> – start of the list;  
 {...} – polygon points (Point);  
 </Points> – end of the list.

###### 4.20.1.5.1.2.1. Teardrop polygon point, <Point>

<Point X="20.7899" Y="11.42"/>

X	Real	X coordinate of the polygon.
Y	Real	Y coordinate of the polygon.

#### 4.20.1.6. List of Net traces, <Trace>

<Traces> – start of the list;  
 {...} – net traces (Trace);  
 </Traces> – end of the list.

##### 4.20.1.6.1. Net trace, <Trace>

###### 4.20.1.6.1.1. Main parameters of net trace

<Trace Id="0" Connected1="Pad" Object1="1" SubObject1="1" Point1="-1" Connected2="Pad"  
 Object2="0" SubObject2="1" Point2="0" Group="1" PairSeparateTrace="-1" Selected="N">

<b>Id</b>	<b>Int</b>	Trace identifier (Id).
Connected1	Text	Type of the first connected object: "Pad"; "Trace"; "Segment"; "Separate Trace"; "Free".
Object1	Int	Number (Id) of the connection network or component; for "Separate Trace" - the connection segment.
SubObject1	Int	Number (Id) of the connection line or pad, for "Separate Trace" - the central connection point.
Point1	Int	connection point number; for "Separate Trace" - internal point of unpaired.
Connected2	Text	Type of the first connected object: "Pad"; "Trace"; "Segment"; "Separate Trace"; "Free".
Object2	Int	Number (Id) of the connection network or component; for "Separate Trace" - the connection segment.
SubObject2	Int	Number (Id) of the connection line or pad, for "Separate Trace" - the central connection point.
Point2	Int	connection point number; for "Separate Trace" - internal point of unpaired.
Group	Int	Number of the group (Id), to which the trace belongs, see <Groups> section. "-1" – does not belong to any group.
PairSeparateTrace	Int	Number (Id) of the corresponding line in the net and in the differential pair (cross references with TraceId (4.21.1.5 / 4.21.1.6)) for the individual net lines of the pair. "-1" – in all other cases.
Selected	Bool	"Y" – Selected; "N" – Not Selected.

#### 4.20.1.6.1.2. List of trace points, <Points>

<Points> – start of the list;  
 {...} – trace points (Point);  
 </Points> – end of the list.

The points are listed in the order they are connected by a trace.

#### 4.20.1.6.1.2.1. Trace point, <Point>

<Point Id="0" X="20.955" Y="12.7" Lay="0" Width="0.3302" Jumper="0" Arc="N" ViaStyle="-1" PhaseFwd="0" PhaseBack="0" PairPoint="-1" PairSubPoint="0" PairNecked="N" Meander="0" MeanderAngle="0" Selected="N"/>

<b>Id</b>	<b>Int</b>	Trace point identifier (Id).
<b>X</b>	<b>Real</b>	X coordinate of the point.
<b>Y</b>	<b>Real</b>	Y coordinate of the point.
<b>Lay</b>	<b>Int</b>	Id of trace segment layer in the list of project Copper Layers (4.6).
<b>Width</b>	<b>Real</b>	Trace segment width
<b>Jumper</b>	<b>Int</b>	Segment: "0" – Trace; "1" – Top Jumper Wire; "2" – Bottom Jumper Wire.
<b>Arc</b>	<b>Bool</b>	"Y" – arc middle point; "N" – line point.
<b>ViaStyle</b>	<b>Int</b>	Via Style Id in the list of project via styles (4.11). "-1" – segment is not connected to Via.
<b>PhaseFwd</b>	<b>Real</b>	Forward point phase lead (for differential pair).
<b>PhaseBack</b>	<b>Real</b>	Backward point phase lead (for differential pair).
<b>PairPoint</b>	<b>Int</b>	Coresponding point of the central line of differential pair. "-1" – not for differencial pair.
<b>PairSubPoint</b>	<b>Int</b>	Corresponding internal point of the center point of the differential pair line (non-symmetrical only).
<b>PairNecked</b>	<b>Bool</b>	"Y" – Segment Necked; "N" – in all other cases.
<b>Meander</b>	<b>Int</b>	"0" – normal point, not meader; "1" – meander limit (arc center); "2" – meander side (arc final point and side line); "3" – top arcs of meander; "4" – extremum between the top arcs; "10" – chord of the carrier arc after the meander contraction (if possible, replaced by a part of the arc).
<b>MeanderAngle</b>	<b>Real</b>	the angle of the meander guide line (has to be set to all meander points).
<b>Selected</b>	<b>Bool</b>	"Y" – Selected; "N" – Not Selected.

The parameters of each trace segment are indicated at its second point. The parameters of the very first point in the list are ignored, except for Id, X, Y.

#### **4.20.1.6.1.3. List of trace Teardrops, <ConnectedTeardrops>**

<ConnectedTeardrops> – start of the list;  
{...} – trace teardrops (Item);  
</ConnectedTeardrops> – end of the list.

#### **4.20.1.6.1.3.1. Trace teardrop, <Item>**

<Item>1</Item>

Item	Int	Teardrop Id in the list of the net teardrops (4.20.1.5).
------	-----	--

### **4.21. List of Differential Pairs, <DifferentialPairs>**

<DifferentialPairs> – start of the list;  
{...} – Project Differential Pair (DifferentialPair);  
</DifferentialPairs> – end of the list.

#### **4.21.1. Project Differential Pair, <DifferentialPair>**

##### **4.21.1.1. Main parameters of project Differential Pair**

<DifferentialPair Id="0" NetClass="1" PosNet="0" NegNet="1" RouteMode="Dont Route" AutoPadPoints="Y" CustomColor="Y" TraceColor="11206655">

<b>Id</b>	Int	Project Differential Pair identifier (Id).
<b>NetClass</b>	Int	Differential Pair Net netclass identifier (Id) in the list of project netclasses (4.12).
<b>PosNet</b>	Int	Id of the positive net of a differential pair in the list of project nets (4.20).
<b>NegNet</b>	Int	Id of the negative net of a differential pair in the list of project nets (4.20).
<b>RouteMode</b>	Text	Auto-route Mode: "Ratlines"; "Correct Traces"; "Full Reroute"; "Dont Route".
<b>AutoPadPoints</b>	Bool	Automatic setting of paired pads: "Y" – enabled; "N" – disabled.
<b>CustomColor</b>	Bool	Trace Color: "Y" – Custom; "N" – By Layer.
<b>TraceColor</b>	Int	Custom Color.

#### **4.21.1.2. Differential Pair name, <Name>**

<Name>D0</Name>

Name	Text	Differential Pair name.
------	------	-------------------------

#### **4.21.1.3. List of paired pads of differential pair, <PadPoints>**

<PadPoints> – start of the list;  
 {...} – paired pads of differential pair (PadPoint);  
 </PadPoints> – end of the list.

##### **4.21.1.3.1. Paired pads of differential pair, <PadPoint>**

<PadPoint Id="0" PosComp="0" PosPad="2" NegComp="0" NegPad="1"/>

Id	Int	Identifier (Id) of paired pads of differential pair.
PosComp	Int	Id of the positive net component in the list of the project components (4.18).
PosPad	Int	Positive net pad Id in the list of component pads (4.18.1.15).
NegComp	Int	Id of the negative net component in the list of the project components (4.18).
NegPad	Int	Negative net pad Id in the list of component pads (4.18.1.15).

#### **4.21.1.4. List of differential pair segments, <Segments>**

<Segments> – start of the list;  
 {...} – differential pair segments (Segment);  
 </Segments> – end of the list.

##### **4.21.1.4.1. Diff. pair segment, <Segment>**

###### **4.21.1.4.1.1. Main parameters of differential pair segment**

<Segment PosTrace="0" NegTrace="0" StartPoint="0" EndPoint="1" StartSegment="-1" EndSegment="-1">

PosTrace	Int	Positive net trace Id in the list of net traces (4.20.1.6).
NegTrace	Int	Negative net trace Id in the list of net traces (4.20.1.6).
StartPoint	Int	Id of the start segment point in the list of paired pads of a differential pair (4.21.1.3).
EndPoint	Int	Id of the end segment point in the list of paired pads of a differential pair (4.21.1.3).
StartSegment	Int	Id of the start point of other segment in the list segments of a differential pair (4.21.1.4).
EndSegment	Int	Id of the end point of other segment in the list segments of a

		differential pair (4.21.1.4).
--	--	-------------------------------

#### 4.21.1.4.1.2. List of segment center points, <CenterPoints>

<CenterPoints> – start of the list;  
 {...} – segment center points (CenterPoint);  
 </CenterPoints> – end of the list.

#### 4.21.1.4.1.2.1. Segment center point, <CenterPoint>

##### 4.21.1.4.1.2.1.1. Main parameters of central point

<CenterPoint X="12.065" Y="22.86" Lay="0" ViaStyle="0" Type="Paired" PosTrace\_StartPoint="-1" PosTrace\_EndPoint="0" NegTrace\_StartPoint="-1" NegTrace\_EndPoint="0" PosTraceSide="1" Necked="N" Selected="N" PhaseError="N">

X	Real	X coordinate of the center point.
Y	Real	Y coordinate of the center point.
Lay	Int	Layer Id in the list of project Copper Layers (4.6).
ViaStyle	Int	Via Style Id in the list of project via styles (4.11).
Type	Int	Line and drawing type: "Paired" – dot segment (paired); "Turn" – turning segment (paired); "Connection" – connection to pads or vias; "Unpaired" – unpaired, free.
PosTrace_StartPoint	Int	Positive net start trace Id in the list of net traces (4.20.1.6).
PosTrace_EndPoint	Int	Positive net end trace Id in the list of net traces (4.20.1.6).
NegTrace_StartPoint	Int	Negative net start trace Id in the list of net traces (4.20.1.6).
NegTrace_EndPoint	Int	Negative net end trace Id in the list of net traces (4.20.1.6).
PosTraceSide	Int	Coefficient of the side of the positive line location.
Necked	Bool	Segment: "Y" – Necked; "N" – Not Necked.
Selected	Bool	"Y" – Selected; "N" – Not Selected.
PhaseError	Bool	Phase error: "Y" – detected; "N" – not detected.

#### 4.21.1.4.1.2.1.2. List of center points of segment positive trace, <PosPoints>

<PosPoints> – start of the list;  
 {...} – center points of segment positive trace (PosPoint);  
 </PosPoints> – end of the list.

#### 4.21.1.4.1.2.1.2.1. Center point of segment positive trace, <PosPoint>

<PosPoint X="-1.27" Y="0" Selected="N" Lay="0" ViaStyle="0" Necked="N" Meander="0" MeanderAngle="0" Arc="N"/>

X	Real	X coordinate of the center point.
Y	Real	Y coordinate of the center point.
Selected	Bool	"Y" – Selected; "N" – Not Selected.
Lay	Int	Layer Id in the list of project Copper Layers (4.6).
ViaStyle	Int	Via Style Id in the list of project via styles (4.11).
Necked	Bool	"Y" – Necked; "N" – Not Necked.
Meander	Int	"0" – normal point, not meander; "1" – meander limit (arc center); "2" – meander side (arc final point and side line); "3" – top arcs of meander; "4" – extremum between the top arcs; "10" – chord of the carrier arc after the meander contraction (if possible, replaced by a part of the arc).
MeanderAngle	Real	the angle of the meander guide line (has to be set to all meander points).
Arc	Bool	"Y" – arc middle point; "N" – line point.

#### 4.21.1.4.1.2.1.3. List of center points of segment negative trace, <NegPoints>

<NegPoints> – start of the list;  
 {...} – center points of segment negative trace (NegPoint);  
 </NegPoints> – end of the list.

#### 4.21.1.4.1.2.1.3.1. Center point of segment negative trace, <NegPoint>

<NegPoint X="0" Y="1.27" Selected="N" Lay="0" ViaStyle="0" Necked="N" Meander="0" MeanderAngle="0" Arc="N"/>

X	Real	X coordinate of the center point.
Y	Real	Y coordinate of the center point.
Selected	Bool	"Y" – Selected; "N" – Not Selected.
Lay	Int	Layer Id in the list of the project Copper Layers (4.6).
ViaStyle	Int	Via Style Id in the list of the project via styles (4.11).
Necked	Bool	"Y" – Necked;

		"N" – Not Necked.
Meander	Int	"0" – normal point, not meader; "1" – meander limit (arc center); "2" – meander side (arc final point and side line); "3" – top arcs of meander; "4" – extremum between the top arcs; "10" – chord of the carrier arc after the meander contraction (if possible, replaced by a part of the arc).
MeanderAngle	Real	the angle of the meander guide line (has to be set to all meander points).
Arc	Bool	"Y" – arc middle point; "N" – line point.

#### 4.21.1.5. List of separate traces of differential pair positive net, <PosSeparateTraces>

<PosSeparateTraces> – start of the list;  
 {...} – separate traces of differential pair positive net (PosTrace);  
 </PosSeparateTraces> – end of the list.

##### 4.21.1.5.1. Separate trace of differential pair positive net, <PosTrace>

###### 4.21.1.5.1.1. Main parameters of the separate trace of differential pair positive net

<PosTrace Id="0" Connected1="Pad" Object1="5" SubObject1="1" Point1="-1"  
 Connected2="Segment" Object2="2" SubObject2="4" Point2="-1" Selected="N" Group="-1"  
 TraceId="3">

Id	Int	Trace identifier (Id).
Connected1	Text	Type of the first connected object: "Pad"; "Trace"; "Segment"; "Separate Trace"; "Free".
Object1	Int	Number (Id) of the connection network or component; for "Separate Trace" - the connection segment.
SubObject1	Int	Number (Id) of the connection line or pad, for "Separate Trace" - the central connection point.
Point1	Int	Connection point number; for "Separate Trace" - internal point of unpaired.
Connected2	Text	Type of the first connected object: "Pad"; "Trace"; "Segment"; "Separate Trace";

		"Free".
Object2	Int	Number (Id) of the connection network or component; for "Separate Trace" - the connection segment.
SubObject2	Int	Number (Id) of the connection line or pad, for "Separate Trace" - the central connection point.
Point2	Int	Connection point number; for "Separate Trace" - internal point of unpaired.
Selected	Bool	"Y" – Selected; "N" – Not Selected.
Group	Int	Number of the group (Id), to which the trace belongs, see <Groups> section. "-1" – does not belong to any group.
TraceId	Int	Number (Id) of the corresponding line in the net and in the differential pair (cross references with PairSeparateTrace (4.20.1.6.1.1)) for the individual net lines of the pair. "-1" – in all other cases.

#### 4.21.1.5.1.2. List of trace points, <Points>

<Points> – start of the list;  
 {...} – trace points (Point);  
 </Points> – end of the list.

The points are listed in the order they are connected by a trace.

#### 4.21.1.5.1.2.1. Trace point, <Point>

<Point X="23.495" Y="6.35" Lay="0" Width="0.381" Jumper="0" Arc="N" ViaStyle="-1" Selected="N" Necked="N" Meander="0" MeanderAngle="0"/>

Id	Int	Trace point identifier (Id).
X	Real	X coordinate of the point.
Y	Real	Y coordinate of the point.
Lay	Int	Id of trace segment layer in the list of the project Copper Layers (4.6).
Width	Real	Trace segment width
Jumper	Int	Segment: "0" – Trace; "1" – Top Jumper Wire; "2" – Bottom Jumper Wire.
Arc	Bool	"Y" – arc middle point; "N" – line point.
ViaStyle	Int	Via Style Id in the list of the project via styles (4.11). "-1" – segment is not connected to Via.

Selected	Bool	"Y" – Selected; "N" – Not Selected.
Necked	Bool	"Y" – Segment Necked; "N" – in all other cases.
Meander	Int	"0" – normal point, not meader; "1" – meander limit (arc center); "2" – meander side (arc final point and side line); "3" – top arcs of meander; "4" – extremum between the top arcs; "10" – chord of the carrier arc after the meander contraction (if possible, replaced by a part of the arc).
MeanderAngle	Real	the angle of the meander guide line (has to be set to all meander points).

The parameters of each trace segment are indicated at its second point. The parameters of the very first point in the list are ignored, except for Id, X, Y.

#### 4.21.1.6. List of separate traces of differential pair negative net, **<NegSeparateTraces>**

<NegSeparateTraces> – start of the list;  
 {...} – separate traces of differential pair negative net (NegTrace);  
 </NegSeparateTraces> – end of the list.

##### 4.21.1.6.1. Separate trace of differential pair negative net, **<NegTrace>**

<NegTrace Id="0" Connected1="Segment" Object1="2" SubObject1="4" Point1="-1" Connected2="Free" Object2="-1" SubObject2="-1" Point2="0" Selected="N" Group="-1" TraceId="3">

Same as separate trace of differential pair positive net (4.21.1.5).

#### 4.22. List of removed Differential Pairs, **<RemovedDifferentialPairs>**

<RemovedDifferentialPairs> – start of the list;  
 {...} – removed Differential Pair (RemovedDifferentialPair);  
 </RemovedDifferentialPairs> – end of the list.

##### 4.22.1. Removed Differential Pair, **<DifferentialPair>**

###### 4.22.1.1. Main parameters of removed Differential Pair

<RemovedDifferentialPair Id="0" PosNet="0" NegNet="1" NetClass="1" CustomColor="Y" TraceColor="11206655">

Id	Int	Project Differential Pair identifier (Id).
PosNet	Int	Id of the positive net of a differential pair in the list of project nets (4.20).

NegNet	Int	Id of the negative net of a differential pair in the list of project nets (4.20).
NetClass	Int	Differential Pair Net netclass identifier (Id) in the list of project netclasses (4.12).
CustomColor	Bool	Trace Color: "Y" – Custom; "N" – By Layer.
TraceColor	Int	Custom Color.

The description of other parameters of a removed differential pair is similar to the description of parameters of a non-removed differential pair (4.21.1.2 – 4.21.1.4).

## 4.23. List of project Copper Pours, <CopperPours>

<CopperPours> – start of the list;  
 {...} – project Copper Pours (CopperPour);  
 </CopperPours> – end of the list.

### 4.23.1. Project Copper Pour, <CopperPour>

#### 4.23.1.1. Main parameters of project Copper Pour

<CopperPour Id="0" NetId="-1" Lay="0" Priority="0" Poured="Y" Type="Solid" Clearance="0.33" UseNetClearance="N" BoardClearance="0.66" LineWidth="0.1" LineSpacing="0.1" MinimumArea="3" Spoke="Direct" SpokeWidth="0.33" ViaDirect="Y" SMD\_Separate="N" SMD\_Spoke="Direct" SMD\_SpokeWidth="0.33" RatlineMode="Automaticaly" SnapToBoard="N" IslandRegion="Y" IslandInternal="N" IslandConnection="N" RegionsDone="Y" Group="-1" PanelExclude="N" Locked="N" Selected="N">

Id	Int	Project Copper Pour identifier (Id).
NetId	Int	Id of connected net in the list of project nets (4.20). "-1" – not connected to net.
Lay	Int	Layer Id in the list of project Copper Layers (4.6).
Priority	Int	Pour Priority.
Poured	Bool	State: "Y" – Poured; "N" – Unpoured.
Type	Text	Pour type: "Solid"; "Horizontal Lines"; "Vertical Lines"; "Cross 45"; "Cross 90".
Clearance	Real	Clearance.

UseNetClearance	Bool	Use Net Clearance: "Y" – enabled; "N" – disabled.
BoardClearance	Real	Border Clearance
LineWidth	Real	Line Width.
LineSpacing	Real	Line Spacing.
MinimumArea	Real	Minimum island area.
Spoke	Text	Thermals: "Direct"; "2 spoke 90"; "2 spoke"; "4 spoke 45"; "4 spoke".
SpokeWidth	Real	Spoke Width.
ViaDirect	Bool	Direct Connection for Vias: "Y" – enabled; "N" – disabled.
SMD_Separate	Bool	Separate Thermals for SMD: "Y" – enabled; "N" – disabled.
SMD_Spoke	Text	Thermals for SMD: "Direct"; "2 spoke 90"; "2 spoke"; "4 spoke 45"; "4 spoke".
SMD_SpokeWidth	Real	Spoke Width for SMD.
RatlineMode	Text	Hide Net Ratlines: "Automatically"; "All Ratlines"; "Do Not Hide".
SnapToBoard	Bool	Snap to Board Outline: "Y" – enabled; "N" – disabled.
IslandRegion	Bool	Island Removal – Minimum Area: "Y" – enabled; "N" – disabled.
IslandInternal	Bool	Island Removal – Internal: "Y" – enabled; "N" – disabled.
IslandConnection	Bool	Island Removal – Unconnected: "Y" – enabled; "N" – disabled.

RegionsDone	Bool	Regions: "Y" – created; "N" – not created.
Group	Int	Number of the group (Id), to which a Copper Pour belongs, see <Groups> section. "-1" – does not belong to any group.
PanelExclude	Bool	Do Not Panelize: "Y" – enabled; "N" – disabled.
Locked	Bool	"Y" – Locked; "N" – Unlocked.
Selected	Bool	"Y" – Selected; "N" – Not Selected.

#### 4.23.1.2. List of polygon points of Copper Pour, <Points>

<Points> – start of the list;  
 {...} – polygon points (Point);  
 </Points> – end of the list.

##### 4.23.1.2.1. Polygon point of Copper Pour, <Point>

<Point X="20.7899" Y="11.42"/>

X	Real	X coordinate of the polygon.
Y	Real	Y coordinate of the polygon.

#### 4.24. List of shapes, <Shapes>

<Shapes> – start of the list;  
 {...} – shape description (Shape);  
 </Shapes> – end of the list.

##### 4.24.1. Shape description, <Shape>

###### 4.24.1.1. Main parameters of shape

<Shape Id="0" Type="Polyline" AllLayers="N" Layer="Top Assy" LayId="0" LineWidth="0.2" Angle="0" HorzAlign="Left" VertAlign="Top" TextAlign="Left" Inverted="N" PictureWidth="3.81" PictureHeight="1.6984" PictureProportions="Y" PictureRaster="N" PictureTransparent="0" FontVector="Y" FontSize="10" FontWidth="-2" FontScale="1" LineSpacing="1.2" Group="-1" NetId="-1" PanelExclude="N" Locked="N" Selected="N">

Id	Int	Shape identifier (Id) in the project.
Type	Int	Shape type: "Line";

		<p>"Arc";      "Rectangle";      "FillRect";      "Obround";      "FillObround";      "Text";      "Picture";      "Polyline";      "Polygon".</p>
AllLayers	Bool	All Layers for shape in the Copper layer: "Y" – enabled; "N" – disabled.
Layer	Text	<p>Layer:      "Top Assy";      "Top Silk";      "Route Keepout";      "Signal/Plane";      "Bottom Silk";      "Bottom Assy";      "Top Mask";      "Top Paste";      "Bottom Paste";      "Bottom Mask";      "Board Cutout";      "Placement Keepout";      "None";      "Top Dimension";      "Bottom Dimension";      "Non-Signal";      "Top Courtyard";      "Bottom Courtyard";      "Top Outline";      "Bottom Outline";      "Top Terminals";      "Bottom Terminals".</p>
LayId	Int	Layer Id in the list of Copper Layers (4.6) for "Signal/Plane" or in the list of custom Non-Signal layers (4.7) for "Non-Signal".
LineWidth	Real	Shape line width (not filled and non-text objects only).
Angle	Real	Angle of the text and picture in radians, counterclockwise.
HorzAlign	Text	Horizontal text and picture anchor point: "Center"; "Right"; "Left".
VertAlign	Text	Vertical text and picture anchor point: "Center"; "Bottom"; "Top".

TextAlign	Text	Text alignment: "Center"; "Right"; "Left".
Inverted	Bool	Invert Text: "Y" – enabled; "N" – disabled.
PictureWidth	Real	Picture Width.
PictureHeight	Real	Picture Height.
PictureProportions	Bool	Picture proportions: "Y" – constrain; "N" – do not constrain.
PictureRaster	Bool	"Y" – raster picture; "N" – vector picture.
PictureTransparent	Real	Picture Transparency, percentage.
FontVector	Bool	"Y" – vector font; "N" – True Type font.
FontSize	Int	Font size for text object.
FontWidth	Real	Line width for vector text: -3 – thin; -2 – normal; -1 – bold; >0 – custom, actual value is set here.
FontScale	Real	Horizontal scale for the vector text.
LineSpacing	Real	Line spacing for multiline text.
Group	Int	Number of the group (Id), to which the shape belongs, see <Groups> section. "-1" – does not belong to any group.
NetId	Int	Id of connected net in the list of project nets (4.20). "-1" – not connected to net.
PanelExclude	Bool	Do Not Panelize: "Y" – enabled; "N" – disabled.
Locked	Bool	"Y" – Locked; "N" – Unlocked.
Selected	Bool	"Y" – Selected; "N" – Not Selected.

#### 4.24.1.2. List of shape points, <Points>

- <Points>      – start of the list of shape points;
- {...}            – list of shape points (Item);
- </Points>     – end of the list of shape points.

#### **4.24.1.2.1. Shape point coordinates, <Item>**

<Item X="86.995" Y="21.59"/>

X	Real	X coordinate.
Y	Real	Y coordinate.

#### **4.24.1.3. Font Name, <FontName>**

<FontName>Tahoma</FontName>

FontName	Text	Name of the TrueType font.
----------	------	----------------------------

#### **4.24.1.4. List of lines of "Text" shape, <TextLines>**

<TextLines> – start of the list of lines;  
 {...} – list of lines (TextLine);  
 </TextLines> – end of the list of lines.

#### **4.24.1.4.1. Lines of "Text" shape, <TextLine>**

<TextLine>Power</TextLine>

TextLine	Text	Text line.
----------	------	------------

#### **4.24.1.5. Picture file, <PictureFile>**

<PictureFile>  
 <Path>D:\Work\Tests\Pict.bmp</Path>  
 <Var>%pictures%\Pict.bmp</Var>  
 </PictureFile>

#### **4.24.1.5.1. Full path to the picture file, <Path>**

Path	Text	Full path to the picture file.
------	------	--------------------------------

#### **4.24.1.5.2. Path to the picture file via environment variable, <Var>**

Var	Text	Path to the picture file via environment variable.
-----	------	--

#### **4.24.1.6. Vector picture, <PictureVector>**

##### **4.24.1.6.1. Main vector picture parameters**

<PictureVector Width="25.3333" Height="9.3333">

Width	Real	Picture Width.
Height	Real	Picture Height.

#### 4.24.1.6.2. List of polygons of vector picture, <Polygons>

<Polygons> – start of the list;  
 {...} – polygons of vector picture (Polygon);  
 </Polygons> – end of the list.

#### 4.24.1.6.2.1. Vector picture polygon, <Polygon>

##### 4.24.1.6.2.1.1. List of polygon points of vector picture, <Points>

<Points> – start of the list;  
 {...} – polygon points (Item);  
 </Points> – end of the list.

##### 4.24.1.6.2.1.1.1. Polygon point, <Item>

<Item X="0.8333" Y="-1.6667"/>

X	Real	X coordinate.
Y	Real	Y coordinate.

#### 4.25. List of Design Errors, <DesignErrors>

<DesignErrors> – start of the list;  
 {...} – Design Error (DesignError);  
 </DesignErrors> – end of the list.

#### 4.25.1. Design Error, <DesignError>

##### 4.25.1.1. Main parameters of Design Error

```
<DesignError X="8.1792" Y="8.1791" Type="Clearance" Value="0.0495" Rule="0.2"
RuleType="DesignRules" RuleLay="-1" ObjectType1="Pad" ObjectType2="Trace" Object1="1"
SubObject1="2" Point1="-1" Object2="0" SubObject2="0" Point2="2" ExtObject1="-1"
ExtObject2="-1" ObjectNetClass1="-1" ObjectNetClass2="0">
```

X	Real	X coordinate.
Y	Real	Y coordinate.
Type	Text	Error type: "Clearance"; "MinTrace"; "MinHole"; "MinRing";

		<pre>"MaxRing"; "MaxPlatedHole"; "MaxNonPlatedHole"; "ShiftedVia"; "Drill"; "TraceLength"; "HiddenPad"; "PrimaryGap"; "UncoupledLength"; "LengthTolerance"; "PhaseTolerance"; "MaxNeckLength".</pre>
Value	Real	Current gap or size.
Rule	Real	Allowed gap or size.
RuleType	Text	<p>Rule type:</p> <pre>"DesignRules"; "NetClass1"; "NetClassDetails1"; "NetClass2"; "NetClassDetails2"; "ClassToClass".</pre>
RuleLay	Int	Id of the layer with an error in the list of the project Copper Layers (4.6).
ObjectType1	Text	<p>Type of the first object:</p> <pre>"Trace"; "BoardOutline"; "Shape"; "Via"; "Pad"; "MtHoleKeepout"; "PlanePad"; "CopperPour"; "BoardCutout"; "StaticVia"; "PadHole"; "MtHole"; "ViaHole"; "SMD"; "Silk"; "RouteKeepout"; "JumperWire"; "DiffPair"; "LengthMatch"; "Courtyard"; "FiducialKeepout"; "Teardrop"; "PanelHoleKeepout"; "PanelHole";</pre>

		"PausedTrace"; "PausedJumperWire"; "PausedVia"; "PausedViaHole".
ObjectType2	Text	Same as ObjectType1.
Object1	Int	Object sequence number (Id) in the corresponding list.
SubObject1	Int	Sequence number (Id) of an element (pad, line, etc.) of the object in the corresponding list.
Point1	Int	Number of point of an element of the object.
Object2	Int	Object sequence number (Id) in the corresponding list.
SubObject2	Int	Sequence number (Id) of an element (pad, line, etc.) of the object in the corresponding list.
Point2	Int	Number of point of an element of the object.
ExtObject1	Int	Component Id for checking component shapes.
ExtObject2	Int	Component Id for checking component shapes.
ObjectNetClass1	Int	NetClass Id of the nets of the first object in the list of project netclasses (4.12).
ObjectNetClass2	Int	NetClass Id of the nets of the first object in the list of project netclasses (4.12).

#### 4.25.1.2. List of errors in layers, <Lays>

<Lays> – start of the list;  
 {...} – error in layers (Item);  
 </Lays> – end of the list.

Every line of the list corresponds to a layer in the order of the project Copper Layers list (4.6).

##### 4.25.1.2.1. Error in layer, <Item>

<Item>N</Item>

Item	Bool	Error in layer: "Y" – detected; "N" – not detected.
------	------	---

#### 4.26. List of tables, <Tables>

<Tables> – start of the list;  
 {...} – description of tables (Table);  
 </Tables> – end of the list.

## 4.26.1. Table description, <Table>

### 4.26.1.1. Main parameters of table

```
<Table Id="0" X1="7.62" Y1="13.97" X2="53.34" Y2="5.842" Layer="Top Assy" NonSignal="0"
Orientation="0" CellWidth="15.24" CellHeight="4.064" HideBorder="N" PanelExclude="N"
 TextAlign="Left" FontVector="Y" FontSize="8" FontWidth="-2" FontScale="1"
LineSpacing="1.2" Locked="N" Selected="N" Group="-1">
```

<b>Id</b>	<b>Int</b>	Table identifier (Id) in the project.
X1	Real	X coordinate of the top left corner of the table.
Y1	Real	Y coordinate of the top left corner of the table.
X2	Real	X coordinate of the bottom right corner of the table.
Y2	Real	X coordinate of the bottom right corner of the table.
Layer	Text	Layer: "Top Assy"; "Top Silk"; "Bottom Silk"; "Bottom Assy".
NonSignal	Int	Id of custom Non-Signal layer in the list of custom Non-Signal layers (4.7).
Orientation	Text	Table rotation angle, digrees: "0"; "90"; "180"; "270".
CellWidth	Real	Cell width.
CellHeight	Real	Cell height.
HideBorder	Bool	Hide Border: "Y" – enabled; "N" – disabled.
PanelExclude	Bool	Do Not Panelize: "Y" – enabled; "N" – disabled.
TextAlign	Text	Text alignment: "Center"; "Right"; "Left".
FontVector	Bool	"Y" – vector font; "N" – True Type font.
FontSize	Int	Font Size.
FontWidth	Real	Line width for vector text: -3 – thin; -2 – normal;

		-1 – bold; >0 – custom, actual value is set here.
FontSize	Real	Horizontal scale for the vector text.
LineSpacing	Real	Line spacing for multiline text.
Locked	Bool	"Y" – Locked; "N" – Unlocked.
Selected	Bool	"Y" – Selected; "N" – Not Selected.
Group	Int	Number of group (Id), to which the table belongs, see <Groups> section. "-1" – does not belong to any group.

#### 4.26.1.2. Font Name, <FontName>

<FontName>Tahoma</FontName>

FontName	Text	Name of the TrueType font.
----------	------	----------------------------

#### 4.26.1.3. Table name, <Name>

<Name>Table</Name>

Name	Text	Table name.
------	------	-------------

#### 4.26.1.4. Autoupdate parameters, <AutoUpdate>

##### 4.26.1.4.1. Main autoupdate parameters

<AutoUpdate Type="Text" Units="Common" RowType="Components" Header="N" AssemblyVariant="0" BomRowNumber="N" BomTotal="N" PickOffX="0" PickOffY="0" PickMirror="N" PickOrigin="N">

Type	Text	Documentation table: "Text"; "LayerStack"; "BOM"; "Pick and Place"; "Hole Size".
Units	Text	Measuring units used in documentation: "Common"; "inch"; "mil"; "mm".
RowType	Text	For "Pick and Place": "All"; "Top";

		"Bottom".  For "BOM": "Components"; "Name"; "Name and Value"; "Name and Pattern"; "Name, Value and Pattern".
Header	Bool	Add Header: "Y" – enabled; "N" – disabled.
AssemblyVariant	Int	Sequence number of Assembly variant in the list of Assembly Variants (4.4.2). "-1" – Default.
BomRowNumber	Bool	Add Row Number: "Y" – enabled; "N" – disabled.
BomTotal	Bool	Add Total Quantity/Price: "Y" – enabled; "N" – disabled.
PickOffX	Real	X offset for Pick and Place.
PickOffY	Real	X offset for Pick and Place.
PickMirror	Bool	Mirror for Pick and Place: "Y" – enabled; "N" – disabled.
PickOrigin	Bool	Use Design Origin for Pick and Place: "Y" – enabled; "N" – disabled.

#### 4.26.1.4.2. Assembly variant name, <AssemblyName>

<AssemblyName>Assembly 1</AssemblyName>

AssemblyName	Text	Assembly variant name.
--------------	------	------------------------

#### 4.26.1.4.3. Decimal Separator, <Separator>

<Separator>.</Separator>

Separator	Text	Decimal Separator.
-----------	------	--------------------

#### 4.26.1.4.4. List of columns, <Columns>

<Columns> – start of the list;  
 {...} – table column (Column);  
 </Columns> – end of the list.

#### **4.26.1.4.4.1. Table column, <Column>**

##### **4.26.1.4.4.1.1. Main column parameters**

<Column Type="2" TextAlign="Left" Width="22,42">

Type	Int	Column Show: "0" – RefDes; "1" – Value; "2" – Name; "3" – Pattern; "4" – Center X; "5" – Center Y; "8" – Side; "9" – Rotation; "10" – Package Height; "11" – Origin X; "12" – Origin Y; "13" – First Pad X; "14" – First Pad Y; >100 – Addition Fields.
TextAlign	Text	Text alignment: "Center"; "Right"; "Left".
Width	Real	Column width.

#### **4.26.1.4.4.1.2. Column name, <Name>**

<Name>Manufacturer</Name>

Name	Text	Column name ("Show").
------	------	-----------------------

#### **4.26.1.4.4.1.3. Column Title, <Title>**

<Name>Manufacturer</Name>

Title	Text	Column title.
-------	------	---------------

#### **4.26.1.5. List of width values of table columns, <ColWidths>**

<ColWidths> – start of the list of the width values of the columns;

{...} – column width (Item);

</ColWidths> – end of the list of the width values of the columns.

#### **4.26.1.5.1. Column width, <Item>**

<Item>12.7</Item>

Item	Real	Column width.
------	------	---------------

#### **4.26.1.6. List of height values of table rows, <RowHeights>**

<RowHeights> – start of the list of the height values of the rows;  
 {...} – row height (Item);  
 </RowHeights> – end of the list of the height values of the rows.

#### **4.26.1.6.1. Row height, <Item>**

<Item>6.35</Item>

Item	Real	Row height.
------	------	-------------

#### **4.26.1.7. List of table columns, <Cells>**

<Cells> – start of the list of table columns;  
 {...} – table columns (Cell);  
 </Cells> – end of the list of table columns.

#### **4.26.1.7.1. List of rows in the table column, <Cell>**

<Cell> – start of the list of rows in the column;  
 {...} – table rows (Cell);  
 </Cell> – end of the list of rows in the column.

#### **4.26.1.7.1.1. Cell parameters in the column row, <Cell>**

##### **4.26.1.7.1.1.1. Main parameters of cell**

<Cell X1="44.45" Y1="20.955" X2="59.69" Y2="16.891" TextAlign="Left" FontVector="Y" FontSize="8" FontWeight="-2" FontScale="1" LineSpacing="0.4">

X1	Real	X coordinate of the top left corner of the cell.
Y1	Real	Y coordinate of the top left corner of the cell.
X2	Real	X coordinate of the bottom right corner of the cell.
Y2	Real	Y coordinate of the bottom right corner of the cell.
TextAlign	Text	Text alignment: "Center"; "Right"; "Left".
FontVector	Bool	"Y" – vector font; "N" – True Type font.

FontSize	Int	Font Size.
FontWidth	Real	Line width for vector text: -3 – thin; -2 – normal; -1 – bold; >0 – custom, actual value is set here.
FontSize	Real	Horizontal scale for the vector text.
LineSpacing	Real	Line spacing for multiline text.

#### 4.26.1.7.1.1.2. Font Name, <FontName>

<FontName>Tahoma</FontName>

FontName	Text	Name of the TrueType font.
----------	------	----------------------------

#### 4.26.1.7.1.1.3. List of lines of text in cell, <TextLines>

<TextLines> – start of the list of lines;  
 {...} – list of lines (TextLine);  
 </TextLines> – end of the list of lines.

#### 4.26.1.7.1.1.3.1. Lines of text in cell, <TextLine>

<TextLine>Voltage</TextLine>

TextLine	Text	Text line.
----------	------	------------

### 4.27. List of dimensions, <Dimensions>

<Dimensions> – start of the list of dimensions;  
 {...} – list of dimensions (Dimension);  
 </Dimensions> – end of the list of dimensions.

#### 4.27.1. Dimension description, <Dimension>

##### 4.27.1.1. Main parameters of dimension, <Dimension>

<Dimension Id="0" Type="Free" PointerMode="Coordinates" X1="15.24" Y1="17.78" X2="13.208" Y2="17.78" XD="15.24" YD="22.86" Layer="Top Dimension" NonSignal="0" Angle="0" ArrowSize="3" ExternalRadius="0" Units="Common" ShowUnits="N" Connected1="Pad" Object1="0" SubObject1="2" Point1="0" Connected2="Pattern Shape" Object2="0" SubObject2="4" Point2="1" FontVector="Y" FontSize="4" FontWidth="-2" FontScale="1" Group="-1" PanelExclude="N" Locked="N" Selected="N">

Id	Int	Dimension identifier (Id) in the project.
Type	Text	Size type: "Horizontal";

		"Vertical"; "Free"; "Radius"; "Pointer".
PointerMode	Int	Actual for Type="Pointer". Display: "Coordinates"; "Comment".
X1	Real	X coordinate of the first size point.
Y1	Real	Y coordinate of the first size point.
X2	Real	X coordinate of the second size point.
Y2	Real	Y coordinate of the second size point.
XD	Real	X coordinate of the first point of dimension line.
YD	Real	Y coordinate of the first point of dimension line.
Layer	Text	Layer: "Top Silk"; "Top Assy"; "Top Mask"; "Top Paste"; "Bottom Paste"; "Bottom Mask"; "Bottom Assy"; "Bottom Silk"; "Top"; "Top Keepout"; "Bottom Keepout"; "Bottom"; "Board Cutout"; "Top Dimension"; "Bottom Dimension"; "Non-Signal"; "Top Courtyard"; "Bottom Courtyard"; "Top Outline"; "Bottom Outline"; "Top Terminals"; "Bottom Terminals".
NonSignal	Int	Id of custom Non-Signal layer in the list of custom Non-Signal layers (4.7).
Angle	Real	Angle of the dimension line.
ArrowSize	Real	Dimension line arrow size.
ExternalRadius	Int	Arc direction, actual for Type="Radius": 1 – inside circle; -1 – outside the circle; 0 – for other Types.

Units	Text	Size measuring units: "Common"; "inch"; "mil"; "mm".
ShowUnits	Bool	Measuring units: "Y" – show; "N" – hide.
Connected1	Text	Type of the object, to which the first dimension point is connected. "Pad"; "Pattern Shape"; "Pattern Hole"; "Net"; "Plane"; "Shape"; "Board Outline"; "Origin"; "Panel". "-1" – not connected to any object.
Object1	Int	Object sequence number (Id) in the corresponding list.
SubObject1	Int	Sequence number (Id) of an element (pad, line, etc.) of the object in the corresponding list.
Point1	Int	Number of point of an element of the object.
Connected2	Text	Type of the object, to which the second dimension point is connected. "Pad"; "Pattern Shape"; "Pattern Hole"; "Net"; "Plane"; "Shape"; "Board Outline"; "Origin"; "Panel". "-1" – not connected to any object.
Object2	Int	Object sequence number (Id) in the corresponding list.
SubObject2	Int	Sequence number (Id) of an element (pad, line, etc.) of the object in the corresponding list.
Point2	Int	Number of point of an element of the object.
FontVector	Bool	"Y" – vector font; "N" – True Type font.
FontSize	Text	Font size
FontWidth	Real	Line width for vector text: -3 – thin; -2 – normal; -1 – bold;

		>0 – custom, actual value is set here.
FontScale	Real	Horizontal scale for the vector text.
Group	Int	Number of group (Id), to which the table belongs, see <Groups> section. "-1" – does not belong to any group.
PanelExclude	Bool	Do Not Panelize: "Y" – enabled; "N" – disabled.
Locked	Bool	"Y" – Locked; "N" – Unlocked.
Selected	Bool	"Y" – Selected; "N" – Not Selected.

#### 4.27.1.2. Font Name, <FontName>

<FontName>Tahoma</FontName>

FontName	Text	Name of the TrueType font.
----------	------	----------------------------

#### 4.27.1.3. Text for Pointer

<PointerText>DimComment</PointerText>

PointerText	Text	Text for Type="Pointer".
-------------	------	--------------------------

### 4.28. List of groups, <Groups>.

<Groups> – start of the list of groups;  
 {...} – group descriptions (Group);  
 </Groups> – end of the list of groups.

#### 4.28.1. Group description, <Group>

<Group Id="0" Selected="N"/>

Id	Int	Identifier (Id), group number.
Selected	Bool	"Y" – Selected; "N" – Not Selected.