

DFM Report

Product Name:	Vayo-demo
Prepared By:	Vayo
Report Rev:	A
Date:	2018-1-23
Page:	20

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DFM Report

Generated by VayoPro-DFM Expert, Format v2.1

Basic Information

Customer Name	Vayo
Product Name	Vayo-demo
Assembly P/N & Rev	Vayo-dfmdemo-v5 v5
PCB P/N & Rev	Vayo-dfmdemo-pcb v5

Basic Product Information

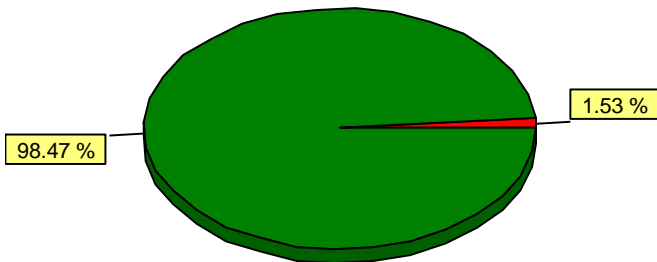
CAD Data Source	ECAD
ECAD File	odb.zip
BOM File	258951-001 BOM.xls
Matched Component (PN)	96.15%
Matched Component (RefDes)	98.63%
Size L x W(inch)	7.050 x 1.900
Thickness(inch)	0.063
Number of layers	4
Single or double reflow	Double Side
Through hole parts on 1 or both sides	Double Side

Assembly Process Flow

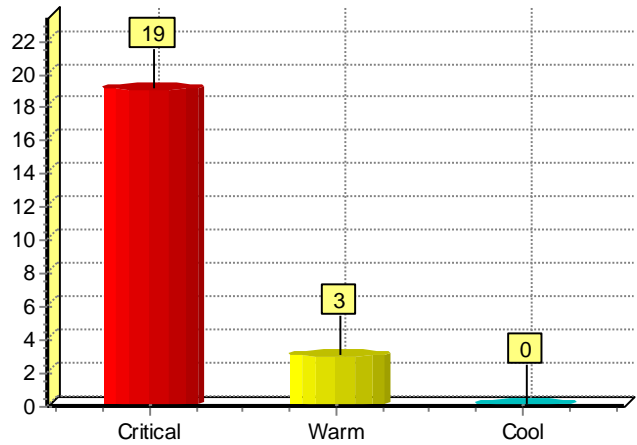
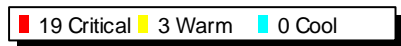
Printing->Mount->Reflow->MI->Wave

Analysis Summary

Check Item Summary



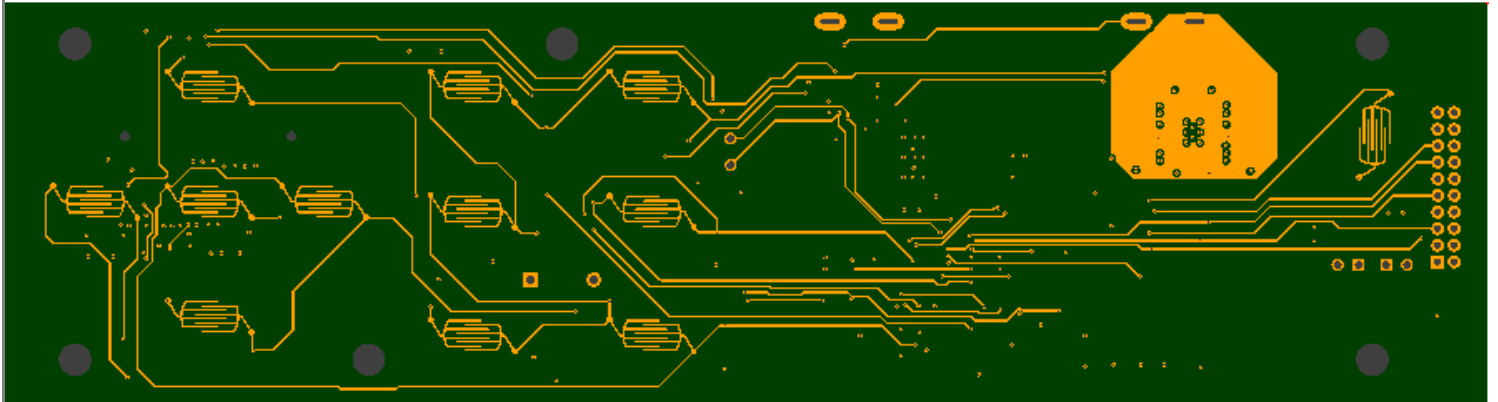
Priority Summary



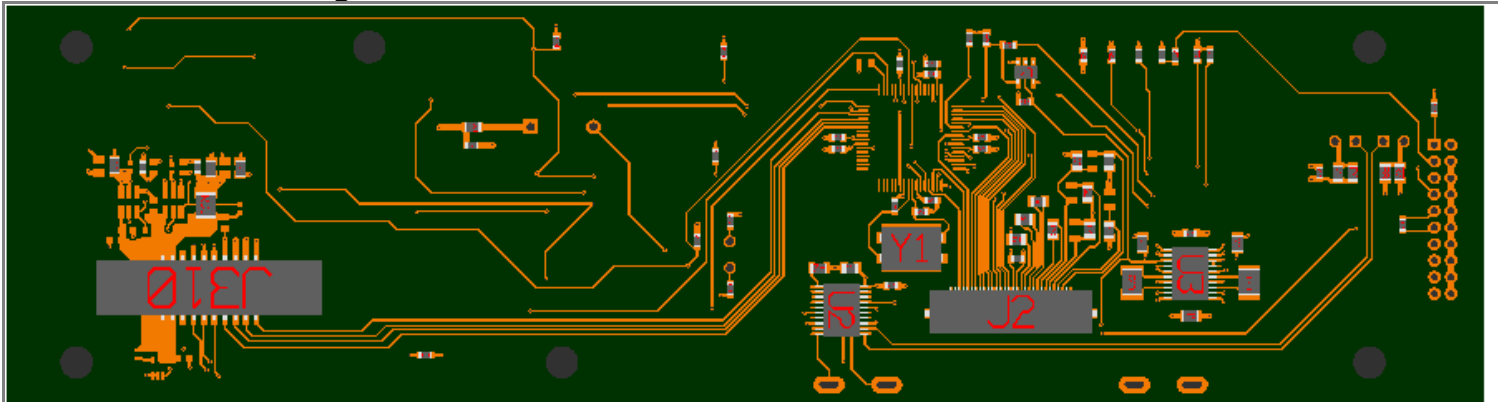
Critical: Major process/assembly issue. Compulsory to change.
 Warm: Minor concern. Highly recommended to change.
 Cool: No immediate concern.

PCBA Overview(3D)

Overview of Top Image



Overview of Bottom Image

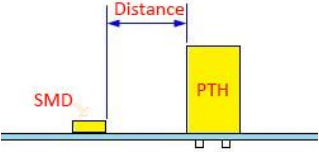
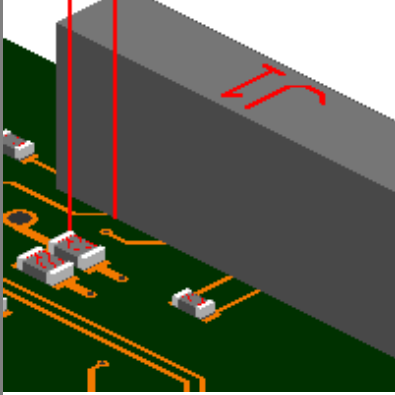


Report Items

Safe distance analysis by COMPTYPE(Assembly)

1) CRToConnector-TH

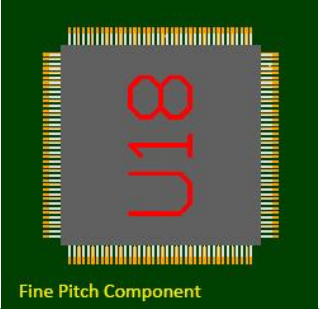
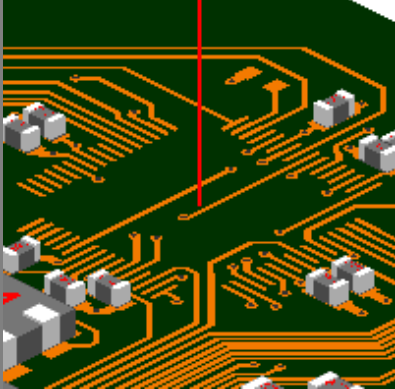
Check distance of component body to body (CR & Connector-TH)

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Too close distance potentially interferes with assembly equipment, difficult to rework</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Bottom Component R7 380.5 1142.0	Bottom Component J1 279.2 1142.0	=>125mil(3.175mm)	101.3		

Fiducial mark analysis(Assembly)

1) FinePitchICNoLocalFiducial

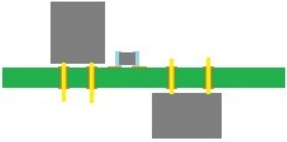
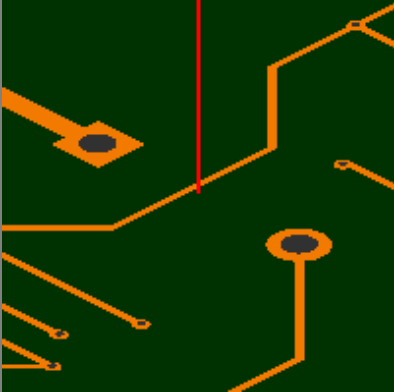
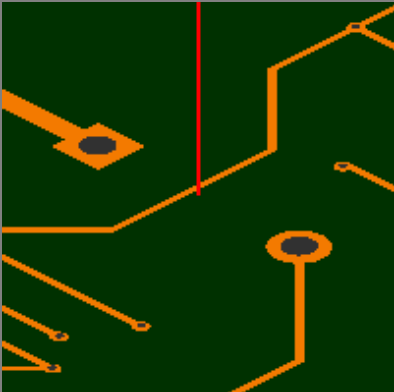
Check fine pitch IC have no local fiducial

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Local fiducial will make sure alignment accuracy by assembly machine. These should be located diagonally opposite of components.</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Bottom Component U1 2739.0 1269.0	Bottom Pads 2739.0 1269.0		0.0		<p>Recommend to layout two local fiducial in diagonal corner of fine pitch component, and layout at least two fiducials in PCB board diagonal corner.</p>

General assembly and process requirements(Assembly)

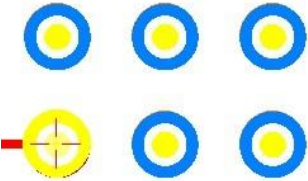
1) CompSide_Bottom(THT)

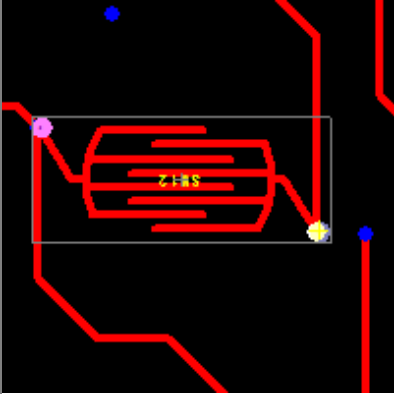
Report THT component on PCB bottom side

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Report through hole component is in PCB secondary side		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOT BZ1 4400.0 1320.0	BZ1 4400.0 1320.0		2.000		For through hole component, BZ1 & J1 is in bottom side and CR1&CR2 is in top side. Normally through hole component should be in same side, which is convenient for assembly process.
2	BOT BZ1 4400.0 1320.0	BZ1 4400.0 1320.0		2.000		For through hole component, BZ1 & J1 is in bottom side and CR1&CR2 is in top side. Normally through hole component should be in same side, which is convenient for assembly process.

2) THTPin1PadShape

Check first pin pad shape of THT component

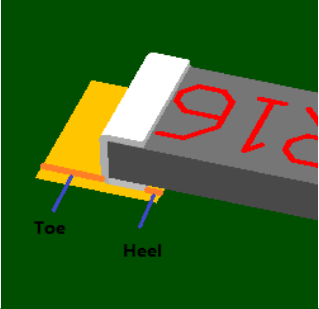
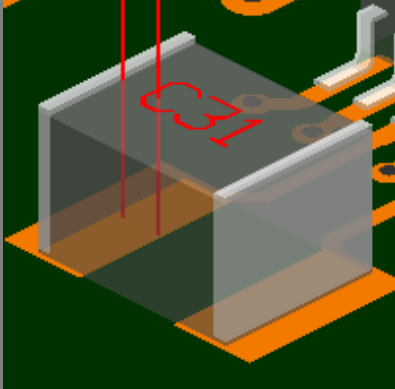
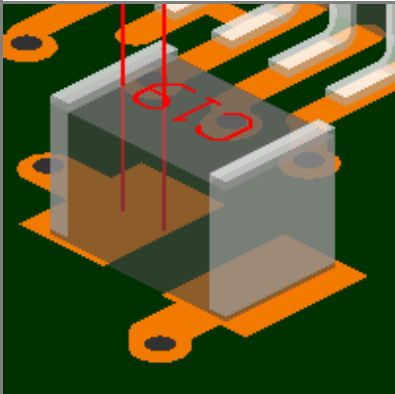
GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				The pin#1 pad for TH part is recommended to use square pad.		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment

1	Top Pads SW12 5025.0 920.0	Top Pads SW12 5025.0 920.0				Recommend to layout square pad for through hole component
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SMD land pattern standard(IPC7351)(Assembly)

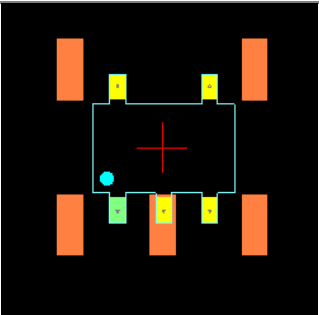
1) Rectangular-End_CC_Heel(=>0603)

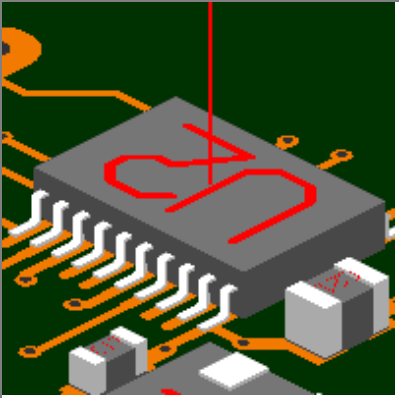
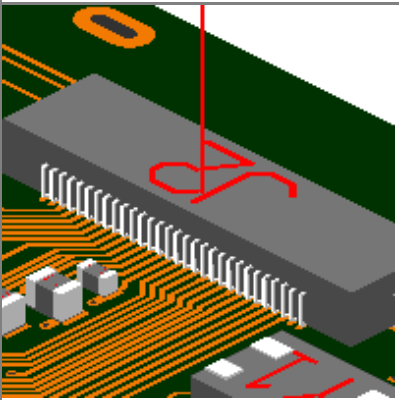
Check solder joint heel size

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Cannot meet IPC-7351 Generic Requirements for Surface Mount Design and Land Pattern Standard		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Bottom Pads C31.1 1123.5 524.9	Bottom Component Same value pin:C31.2 1123.5 548.5	0mm	23.6		Shape:C1210 heel distance is 23.6mils, which is too big, will cause solder ball issue.
2	Bottom Pads C19.2 1180.0 736.5	Bottom Component Same value pin:C19.1 1180.0 755.0	0mm	18.5		Shape:C0805 heel distance is 18.5mils, which is too big, will cause solder ball issue.

2) PinPitch_PadPitch(SMD)

Check pitch ratio of component pins and pads (SMD)

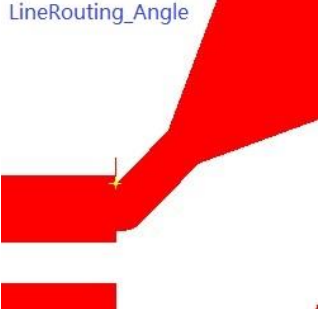
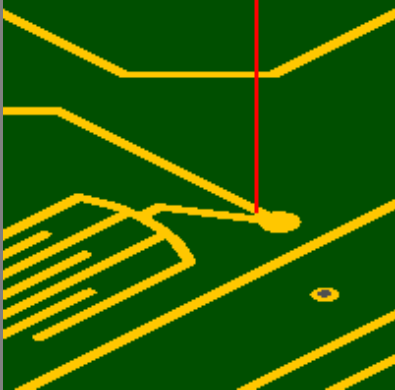
GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Different pitch for component pin and pad will potentially cause assembly issue or solderability issue		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment

1	Bottom Pads U2 3069.0 449.0	Bottom Component U2 3069.0 449.0	100%	102.40%		U2 CAD pitch is 0.6347mm and real component pitch is 0.65mm, which is different size, will potentially cause solderability issue.
2	Bottom Pads J2 2260.5 487.0	Bottom Component J2 2260.5 487.0	100%	103.66%		CAD pitch is 0.4823mm and real component pitch is 0.5mm, which is different size, will potentially cause solderability issue.

Outer signal layer analysis(Fabrication)

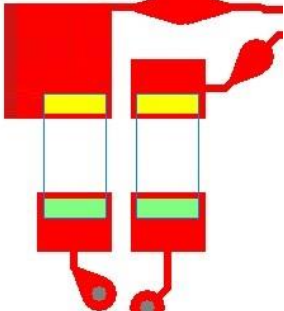
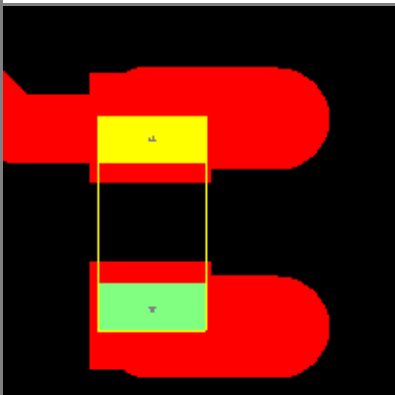
1) LineRouting_Angle

Check the trace angle too small

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Recommended line routing angle great then 90 degrees.</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	TOP 5020.0 348.1	TOP 5020.0 348.1	=>90 degree	30.964		The two lines angle is too small

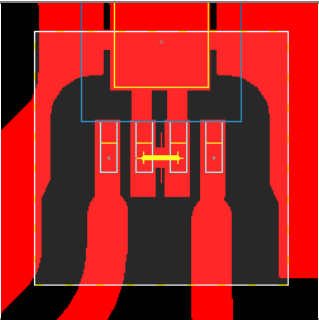
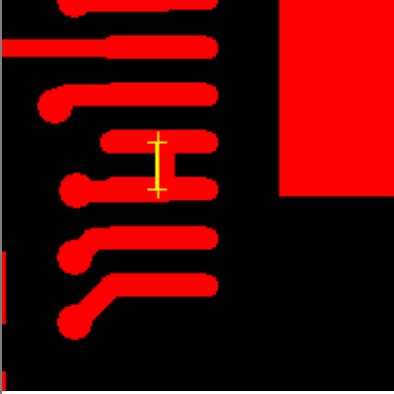
2) PadConnectionPercentage(Chip)

Check connection percentage of pad and copper

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Discrete component surrounded too much copper in two terminals will potentially cause misalign or tombstone issue in reflow process</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOTTOM C27 789.5 1073.9	BOTTOM 789.5 1073.9	<30%	57.00%		Discrete component imbalance stress in two terminals may cause misalign or tombstone issue in reflow process


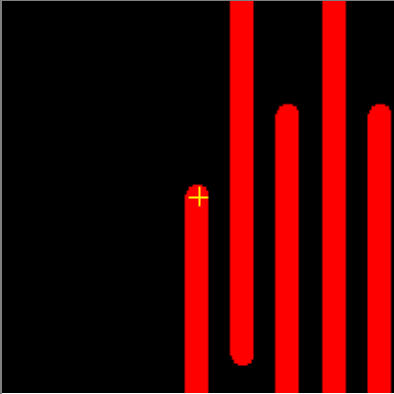
3) SMDDirectConnection

Check pads of SMD component connected directly

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Direct connection will misjudge short by optical equipment</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOTTOM U3 1289.5 658.4	BOTTOM 1289.5 684.0				Direct connection lines will cause visual inspection machine error detect short

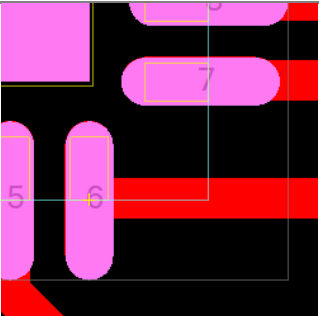
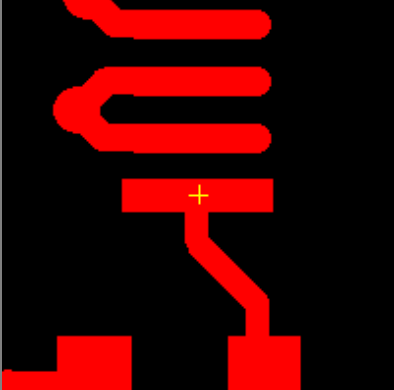
4) TraceNoConnection

Check trace no connection

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Trace no connection should be a design issue</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	TOP 469.0 670.0	TOP 469.0 670.0				Some trace no any connection, should be a design error

5) FootprintWideSideConnection

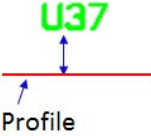
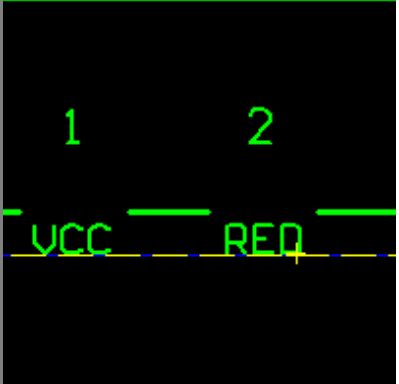
The trace is not drawn from the narrow side of the pad

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>The trace is recommended to pull from the pad wide side.</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Bottom Component U2 3182.0 561.5	BOTTOM 3182.0 561.5				

Silkscreen layer analysis(Fabrication)

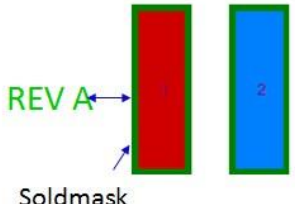
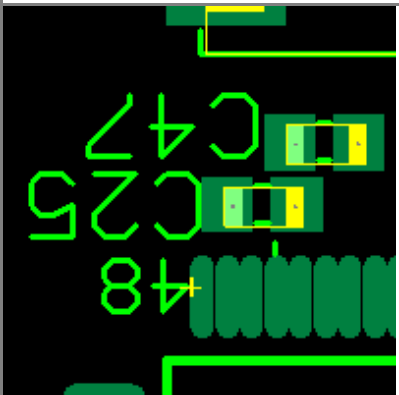
1) TextToProfile

Check distance of text to PCB profile

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Cannot meet PCB fabrication vendor process capability		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	TOPOVERLAY LINE 1719.0 1.5	1719.0 0.5	=>7mil (0.178mm)	1.0		

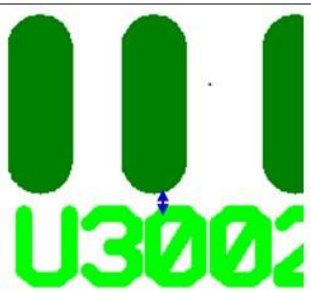
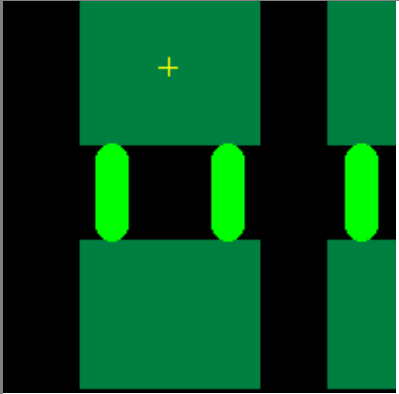
2) TextToSM

Check distance of text to solder mask

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Too close distance potentially causes solderability issue		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOTTOMSOL DER U1.48 2582.0 1034.0	BOTTOMOVE RLAY LINE 2581.5 1034.0	=>3mil(0.075 mm)	0.6		

3) SSTouchSM

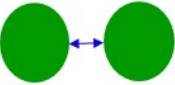
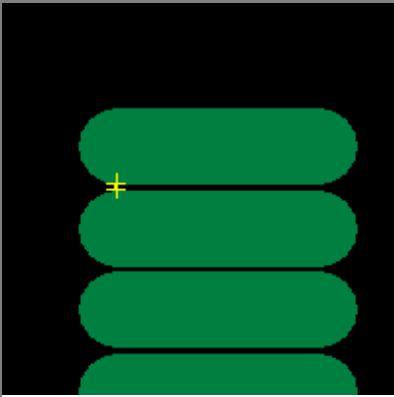
Check silkscreen touch solder mask

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Too close distance potentially causes solderability issue</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOTTOMSOLDER R25.1 1310.0 1630.5	BOTTOMOVERLAY 1310.0 1630.5				

Solder mask layer analysis(Fabrication)

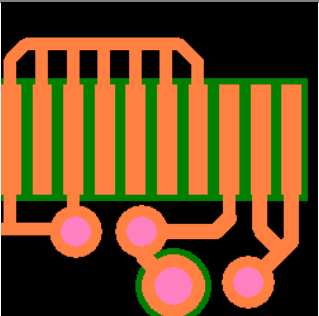
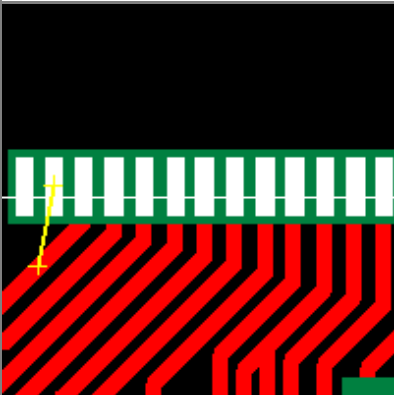
1) SMTtoSM

Check distance between solder mask pads

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Cannot meet PCB fabrication vendor process capability		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOTTOMSOLDER U1.50 2488.4 1130.7	BOTTOMSOLDER U1.49 2488.4 1131.7	=>3mil(0.075 mm)	1.1		

2) NoSMBridge

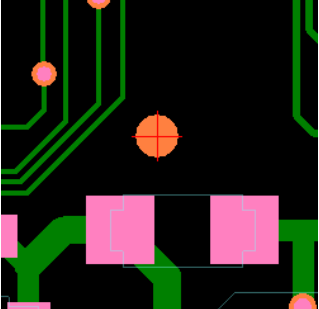
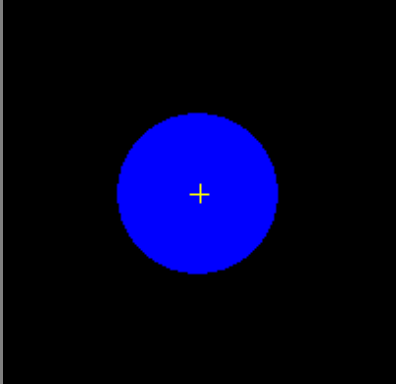
Check no solder mask bridge between exposed copper

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				No solder mask bridge will cause short issue. For fine pitch pads it is recommended to use SMD (solder mask defined pad) pad.		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	BOTTOM 1994.0 542.0	BOTTOMSOLDER 1984.0 595.0				J2 no solder mask bridge will easily cause short issue

TP analysis(Test Point)

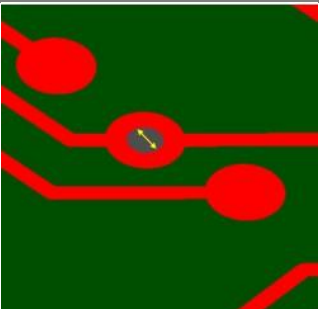
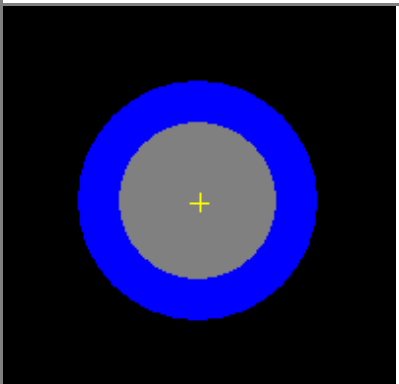
1) TPMissingSP

Check test point missing solder paste pad

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>TP missing solder paste will cause TP is oxidation</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Top Pads TP1.1 3600.0 650.0	TOPPASTE 3600.0 650.0				TP missing solder mask opening will cause TP cannot use

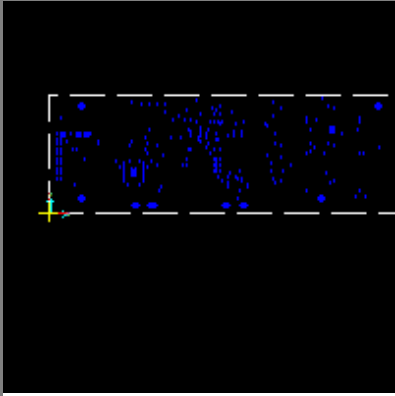
2) TPHoleSize

Check test point hole size

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				<p>Too big hole may potentially causes TP cannot use</p>		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Top Pads TP1.1 3600.0 650.0	DRILL TP1.1 3600.0 650.0	<20mil(0.5m m)	38.0		Recommend TP drill size smaller than 20mils

3) NetNoTestPoint

Check the nets have no test point

GRAPHICAL DESCRIPTION				POTENTIAL RISK/RECOMMENDATION		
				Every net should have at least one node for ICT test		
#	Location1	Location2	Std Value	Act Value(mil)	Image Captured	Comment
1	Top Pads LCD_NWR 0.0 0.0	Top Pads 0.0 0.0	=>1 pcs	0.000		Net no TP

Appendix1: Parts Information Summary

PN Information

TOP QTY (SMD)	2
Bottom QTY (SMD)	33
Total QTY (SMD)	35
TOP QTY (PTH)	2
Bottom QTY (PTH)	2
Total QTY (PTH)	4

Part Information

TOP QTY (SMD)	13
Bottom QTY (SMD)	91
Total QTY (SMD)	104
TOP QTY (PTH)	4
Bottom QTY (PTH)	2
Total QTY (PTH)	6

Pin Information

TOP QTY (SMD)	28
Bottom QTY (SMD)	347
Total QTY (SMD)	375
TOP QTY (PTH)	6
Bottom QTY (PTH)	22
Total QTY (PTH)	28

Package Information

Minimum Pitch (SMD)	0.4823
Minimum Pitch (PTH)	1.9812
Maxmum Pin QTY (SMD)	64
Maxmum Pin QTY (PTH)	20
BGA QTY	0
CGA QTY	0

Appendix2: BOM Verification Report

BOM Verefication Report

BOM & CAD Verefication Report

Unloaded parts (in CAD not in BOM)

C20	C34	C35	C38	C39	C40	C41	C42
C43	C44	C45	J1	R3	R30	R31	R32
R35	R4	R5	R6	SW1	SW10	SW11	SW12
SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9
TP1	TP2	U5	U6	U7			

Appendix3: No Library List

Note : No assignment real component list as below, will refer to CAD package to do analysis.

No Library List

#	PN	Description	MPN	Manufacture
1	255659-001	DISPLAY,LCD,128X64	JCM-061-01	Data Modul, Inc

No Library RefDes List

#	RefDes	PN	Package
1	DP1	255659-001	DISPLAY RGB

Appendix4: Fixture List

Fixture Type	YES	NO	QTY	Comments
TOP Side Stencil				
Bottom Side Stencil				
SMT TOP Side Fixture				
SMT Bottom Side Fixture				
SMT Both Side Fixture				
TOP Side Reflow Fixture				
Bottom Side Reflow Fixture				
Both Side Reflow Fixture				
TOP Side WaveSolder Fixture				
Bot Side WaveSolder Fixture				
Depanel Fixture				
PressFit Fixture				
Pre-forming Fixture				
Hand Soldering Fixture				
ICT Fixture				
FCT Fixture				
Other Fixture				
Other Tools				
Customized Tools				