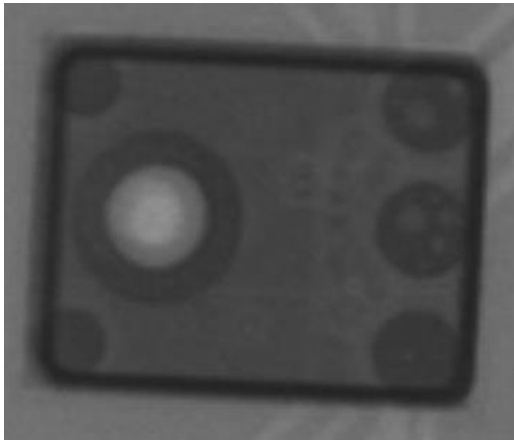


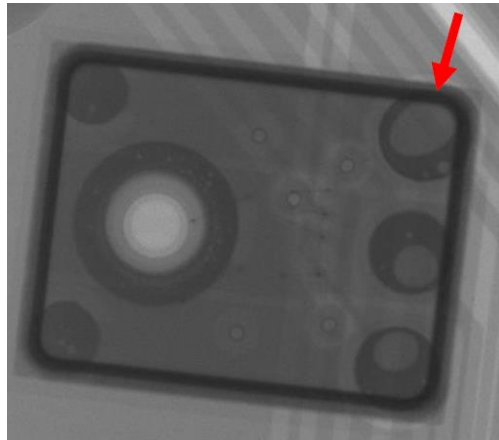
MIC SOLDERING DEFECT

I. Problem:

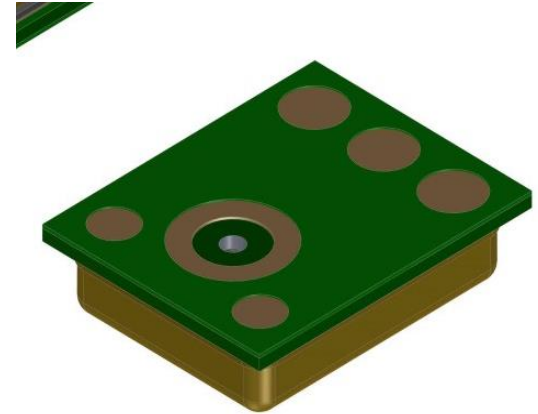
- ALT customer complained about void solder of MIC part is too much (Over 25%)
 - As IPC-A-610, Void solder in the ball isn't over 25%
 - And pads of MIC part aren't as balls. It is plate pad
- Have not specification about void solder for these part



OK



NG



MIC part

Summary:

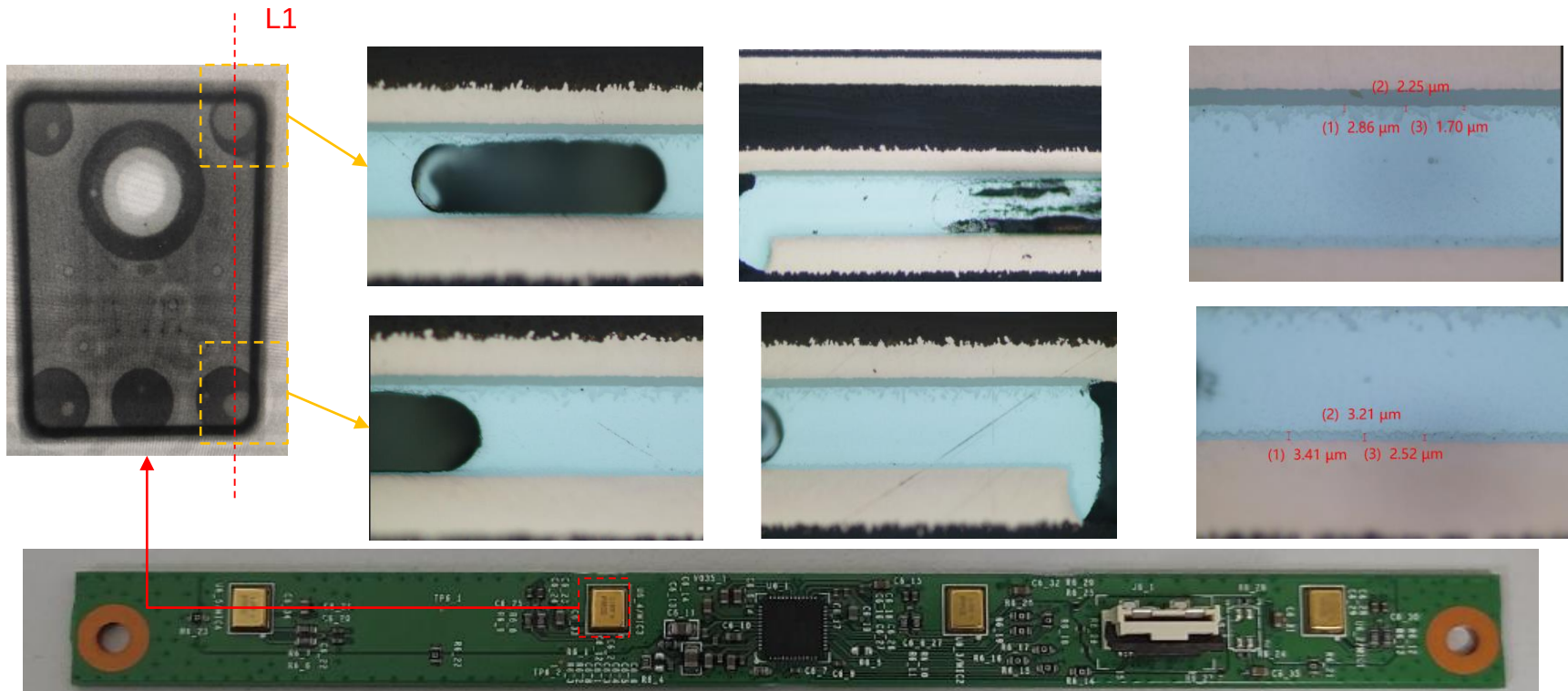
- In the last build, we also detected some board, which had void solder about 50%. Will improve in the next build

Confidential

MIC SOLDERING DEFECT

II. Analysis:

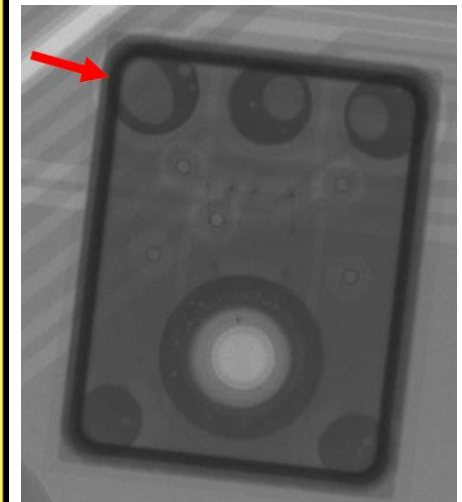
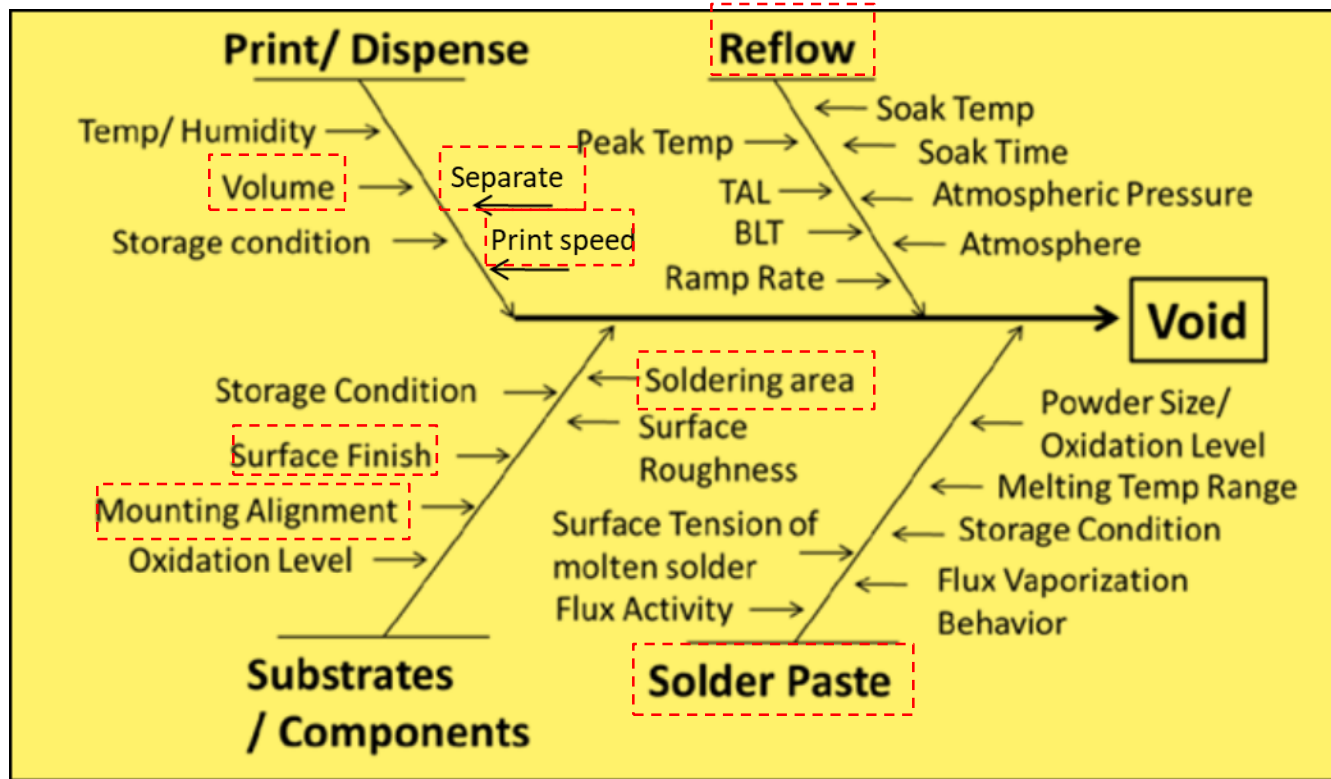
- Implement Cross Section to check solder joint of MIC part, which has large void solder.
- IMC solder is $1.7\text{-}3.4\mu\text{m}$ (spec: $1\text{-}5\mu\text{m}$)
- Solder paste was fallen to gap of solder mask. → May be solder paste was too much/ MIC was presses much
- The void may also happened because



Confidential

MIC SOLDERING DEFECT

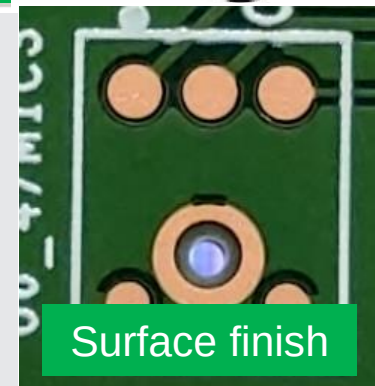
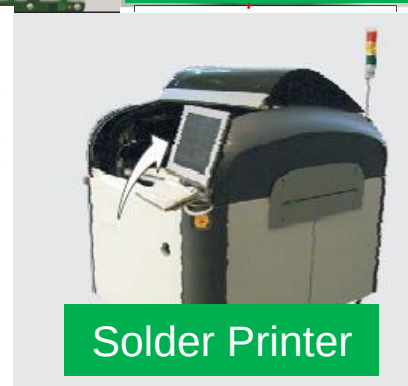
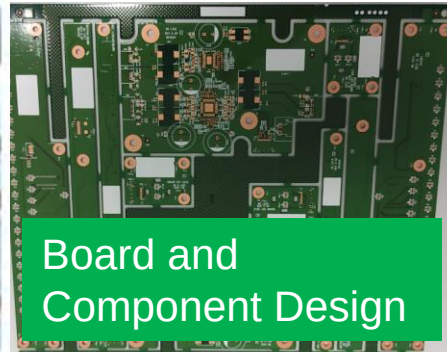
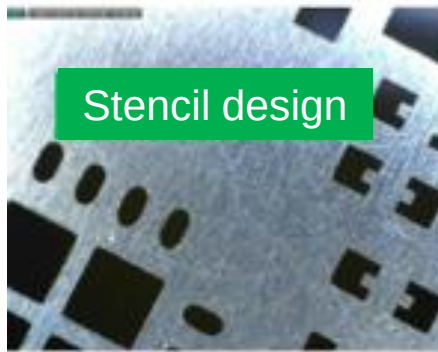
II. Analysis:



MIC SOLDERING DEFECT

III. Proposal:

Improvement items

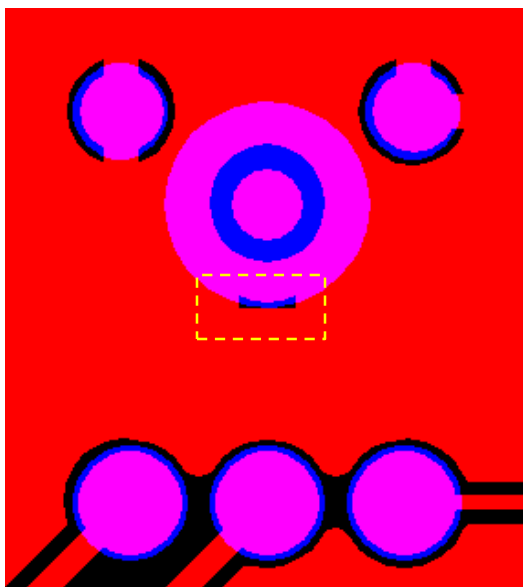


MIC SOLDERING DEFECT

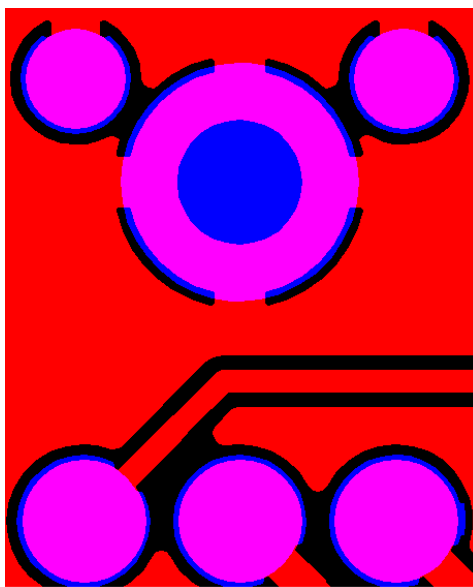
II. Action implemented in DVT3:

1. Board design:

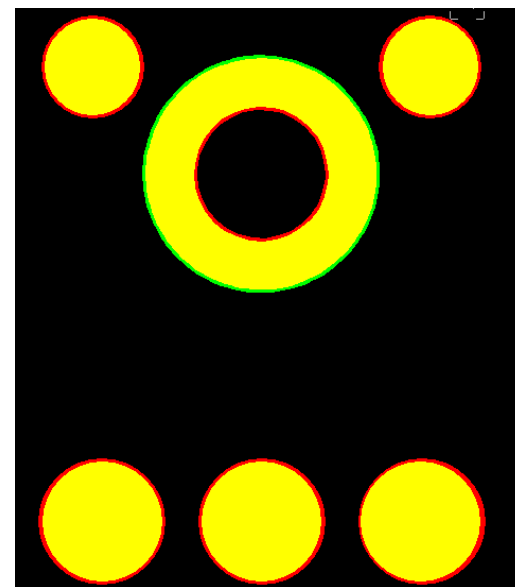
- In version 045, size of pad was modified, pad is bigger than last version (Red: 045; Green: 035)
- Remove trap at ring, which makes solder ball



Ver035



Ver045



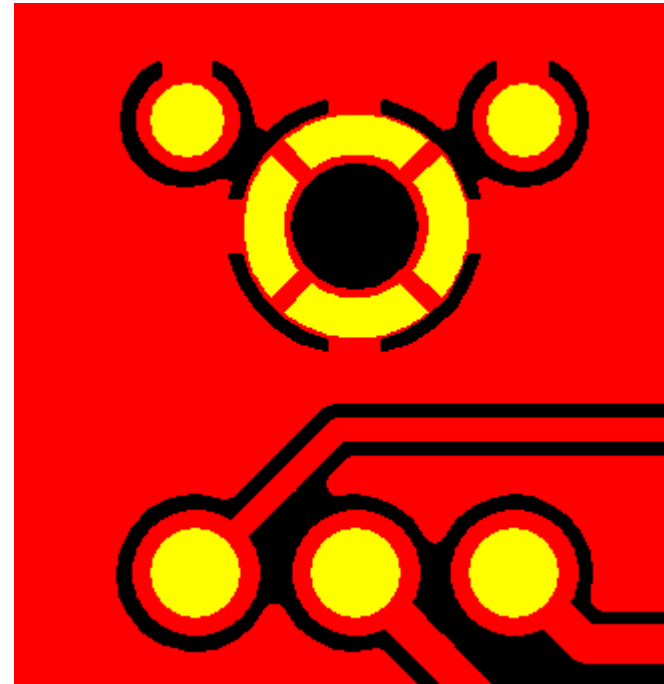
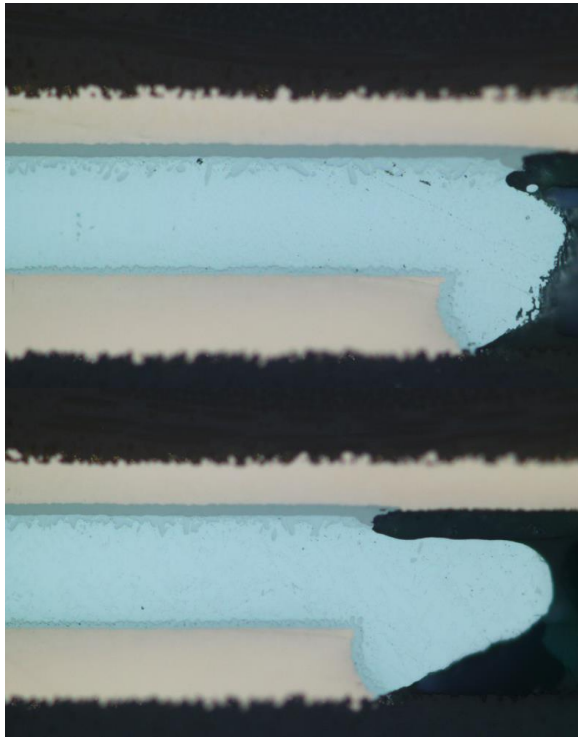
Compare

MIC SOLDERING DEFECT

II. Action implemented in DVT3:

2. Stencil design:

- As cross section, Solder paste seem be excessed → Modify pad smaller than stencil-v035



MIC SOLDERING DEFECT

III. Proposal to be verified:

3. Solder paste:

- Normally, we use solder paste 591.00046.005(KOKI S3X58M500) for all of product in factory
- will evaluate to use other solder paste 591.00054.005 (KOKI S3X70M500)
- This solder paste has particle size smaller than S3X58 → Solder paste is more activity.
- We can use both 2 solder paste types and see what solder paste is better for void solder

製品用途		印刷用
製品名		S3X70-M500
合金特性	合金組成 (%)	Sn96.5Ag3.0Cu0.5
	融点 (°C)	217 – 219
	粉末形状	球形
	粒径 (μm)	10 – 25
フラックス特性	ハライド含有量	0
	フラックスタイプ	ROL0*3
ペースト特性	フラックス含有量 (%)	11.3 ± 0.5
	粘度*1 (Pa.S)	200 ± 30
	銅板腐食*2	合格
	タック時間	> 48 hours
	シェルフライフ (10°C以下)	6 ヶ月
	その他の粒形 (μm)	20 – 38; 製品名 S3X58-M500

S3X70

Application		Printing – Stencil
Product		S3X58-M500
Alloy	Composition (%)	Sn96.5Ag3.0Cu0.5
	Melting point (°C)	217 – 219
	Shape	Spherical
	Particle size (μm)	20 – 38
Flux	Halide content (%)	0
	Flux type*2	ROL0
Product	Flux content (%)	11.5 ± 0.5
	Viscosity*1 (Pa.S)	220 ± 30
	Copper plate corrosion*3	Passed
	Tack time	> 48 hours
	Shelf life (below 10°C)	6 months
	Optional powder (μm)	20 – 45; Product code S3X48-M500

S3X58

MIC SOLDERING DEFECT

III. Proposal to be verified:

4. Solder Printer:

- Verify to change print speed slower: From 30mm/s and increase if void solder is OK

5. Mounter machine:

- Confirm mounting alignment. In this build, MIC is located by solder mask instead white paint.
- Confirm height mounting: Do not press part too deep

6. Reflow:

- Optimize reflow profile: adjust to prevent Flux entrapped or Oxidation during soldering:
Peak temp, TAL, Soak time, ...
- Verify Testing & Define Spec:
- Need to work with RD to define specification about void solder of these part.