PRODUCT INFORMATION LETTER

PIL CRP/14/8400
Dated 20 Mar 2014

New Cover Tape Sumitomo - Muar Assembly Plant

Sales Type/product family label	NA
Type of change	Package assembly material change
Reason for change	Improved tensile strength and better Visual Inspection
Description	Replacement of existing cover tape (Reference: CP21) used for tape & reel packing by a new one supplied by SUMITOMO (Reference: CSL-Z7302) for QFP, SOIC, TSSOP and QFN packages. Sumitomo cover tape is already qualified and used since 2010 on PSO, PSSO, and BGA package families, and on TQFP and HIQUAD packages since 2011. Note: No change on specification limits for "Peel Strength" parameter, controlled on manufacturing lines.
Forecasted date of implementation	01-Nov-2014
Forecasted date of samples for customer	17-Mar-2014
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	13-Mar-2014
Involved ST facilities	Muar Assembly Plant

DOCUMENT APPROVAL

Name	Function
Livache, Veronique	Corporate Quality Manager
Low, Patrick	Process Owner

SUMITOMO Cover tape - Muar Assembly Plant

WHAT is the change:

Replacement of existing cover tape (Reference: CP21) used for tape & reel packing by a new one supplied by SUMITOMO (Reference: CSL-Z7302) for QFP, SOIC, TSSOP and QFN packages.

Sumitomo cover tape is already qualified and used since 2010 on PSO, PSSO, and BGA package families, and on TQFP and HIQUAD packages since 2011.

Note: No change on specification limits for "Peel Strength" parameter, controlled on manufacturing lines.

WHY :

The cover tape CSL-Z7302 supplied by SUMITOMO has a better tensile strength, and allows a better and simplified visual Inspection.

	CPAK/PCT (current)	Sumitomo (New)	Comment
Tensile strength	68MPa	92MPa	CSL-Z7302 Better tensile strength
Transparency	Milky	Semi-transparent	CSL-Z7302 with better visibility for Visual Inspection

HOW will the change be qualified:

CSL-Z7302 Sumitomo cover tape implementation is following a working plan, detailed below.

Phase 1 – Preparation and risk assessment

- Risk assessment (Appendix 1)

Phase 2 – Qualification Execution

- Qualification & Workability validation (Qualification results in Appendix 2)

Phase 3 – Cover Tape Conversion

IMPACT OF THE CHANGE:

No impacts on **Fit and Function** of the parts with new cover tape.
No impact on **Form** of the parts, but change is visible on packing.

How will this change be identified:

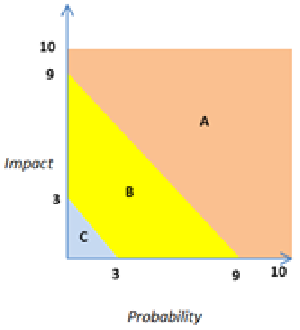
Current cover tape CP21 is "milky".
The new cover tape is semi-transparent.

<u>Appendix 1:</u> Risk Assessment

#	Risks identified	Potential risk resulting from	Before Action			Considered Action	Who	When	Status	After Action		
			Prob.	Impact	Class					Prob.	Impact	Class
1	Torn Tape	Customer detaping	6	6	A	Fast pull test and peel test	Plant	ww'42	Done	1	1	C
2	Cover tape residue at carrier tape	Customer detaping	6	6	A	Fast pull test and peel test	Plant	ww'42	Done	1	1	C

LEGEND

Probability	***Impact***	***Class***
None → 0	None → 0	Not acceptable → A
Low → 1	Low → 1	Major → B
Possible → 3	Notable → 3	Minor → C
Probable → 6	Sensitive → 6	
Frequent → 9	High risk → 9	
Sure → 10	Catastrophic → 10	



<u>Note:</u>

1- Any risk classified as A/B should be taken relevant effective actions to decrease occurrence frequency or enhance detectability.

*2- After actions taken, the maximum of **[Prob. X Impact]** should be not greater than 20 (Class A). (B $_{[Prob.\ X\ Impact]}$ ≤ 20, C $_{[Prob.\ X\ Impact]}$ ≤20*

Appendix 2: Qualification execution and results

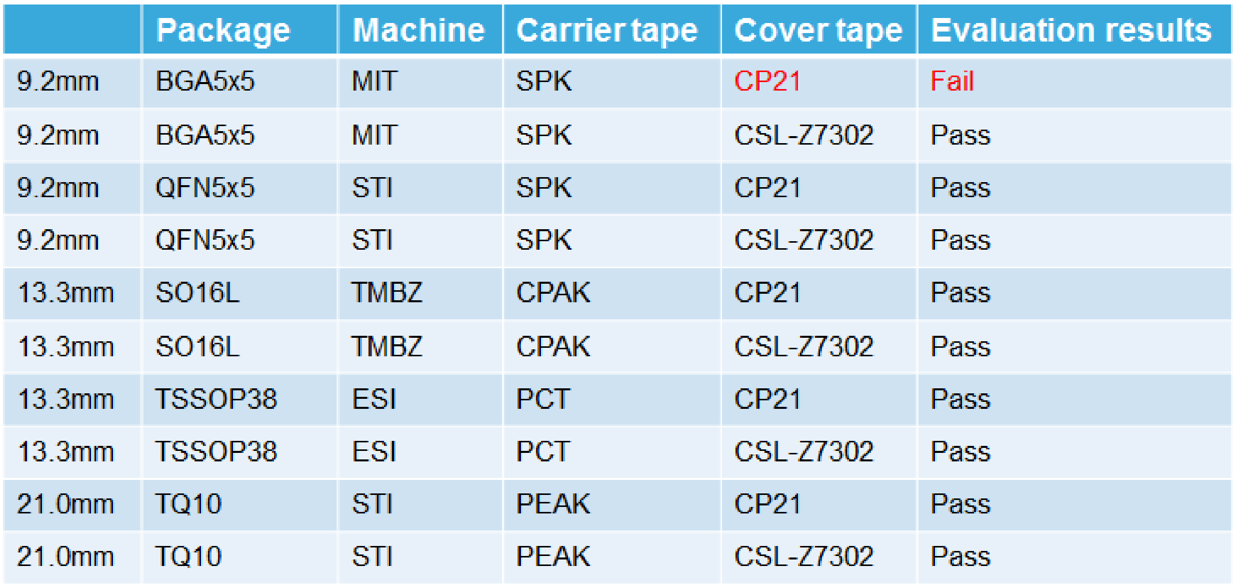
1) Peel tests

Conclusions: Sumitomo CSL-Z7302 cover tapes passed all peel tests and pull tests.

Summary Table

CP21: current cover Tape

CSL-Z7302: new SUMITOMO cover Tape

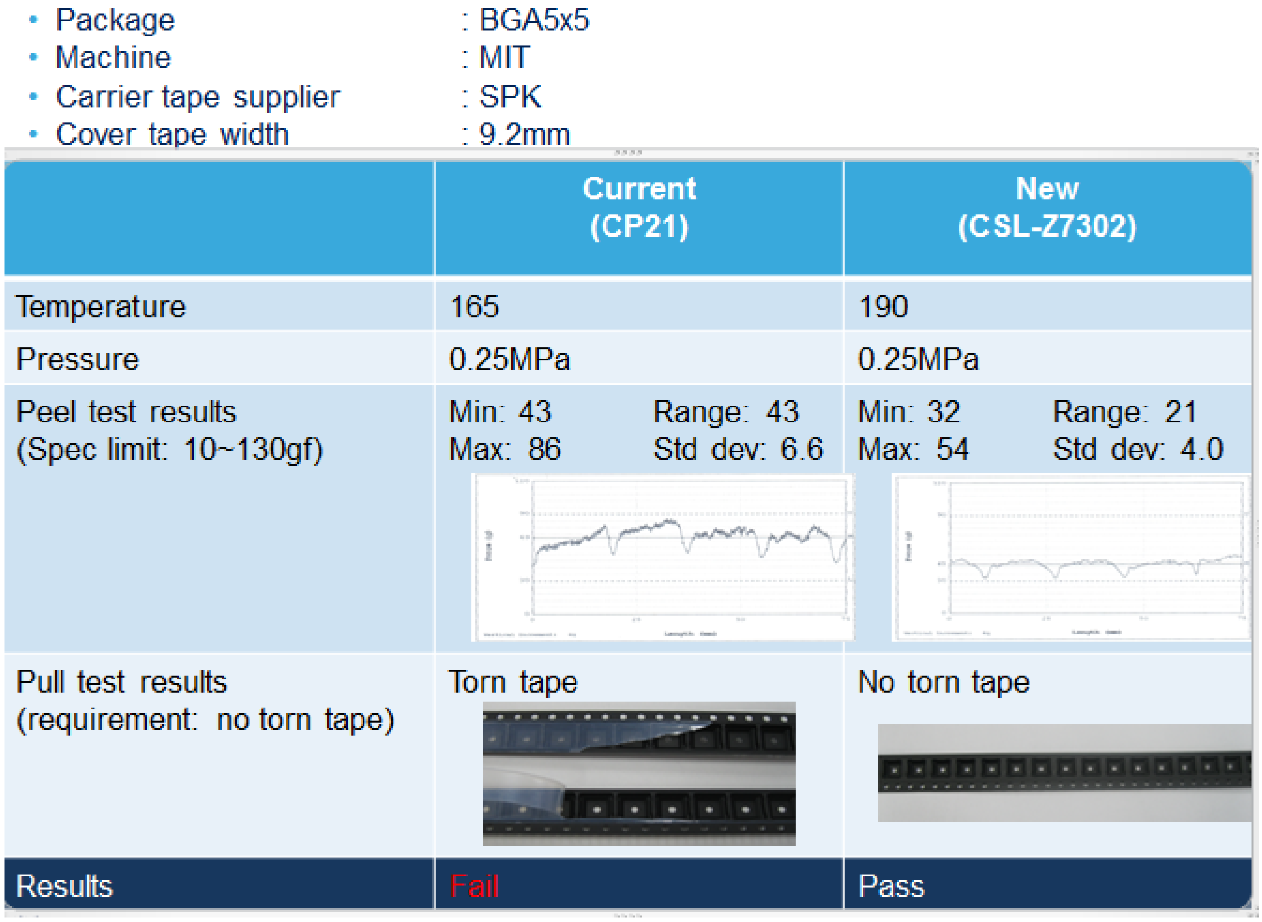


	Package	Machine	Carrier tape	Cover tape	Evaluation results
9.2mm	BGA5x5	MIT	SPK	CP21	Fail
9.2mm	BGA5x5	MIT	SPK	CSL-Z7302	Pass
9.2mm	QFN5x5	STI	SPK	CP21	Pass
9.2mm	QFN5x5	STI	SPK	CSL-Z7302	Pass
13.3mm	SO16L	TMBZ	CPAK	CP21	Pass
13.3mm	SO16L	TMBZ	CPAK	CSL-Z7302	Pass
13.3mm	TSSOP38	ESI	PCT	CP21	Pass
13.3mm	TSSOP38	ESI	PCT	CSL-Z7302	Pass
21.0mm	TQ10	STI	PEAK	CP21	Pass
21.0mm	TQ10	STI	PEAK	CSL-Z7302	Pass

2) Process control results (“Peel Strength” parameter)

“Peel strength” parameter results are better controlled with Sumitomo cover tape, because showing a better distribution (range of min/max results and standard deviation are improved). Results given below on:

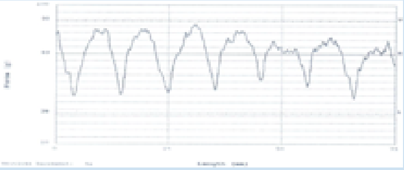
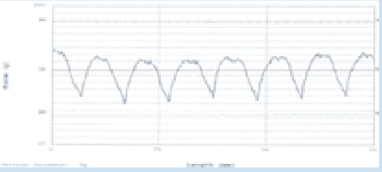
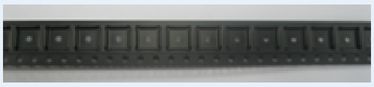
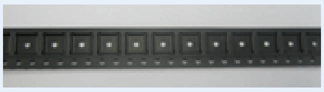
- BGA 5x5
- QFN 5x5
- SO16
- TQFP10x10



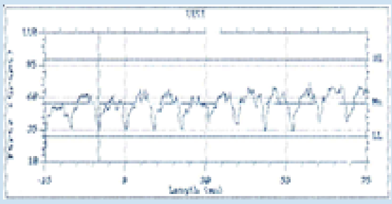
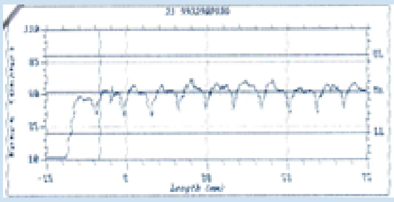
- Package : BGA5x5
- Machine : MIT
- Carrier tape supplier : SPK
- Cover tape width : 9.2mm

	Current (CP21)	New (CSL-Z7302)
Temperature	165	190
Pressure	0.25MPa	0.25MPa
Peel test results (Spec limit: 10~130gf)	Min: 43 Range: 43 Max: 86 Std dev: 6.6	Min: 32 Range: 21 Max: 54 Std dev: 4.0
Pull test results (requirement: no torn tape)	Torn tape	No torn tape
Results	Fail	Pass

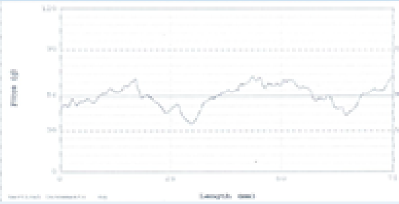
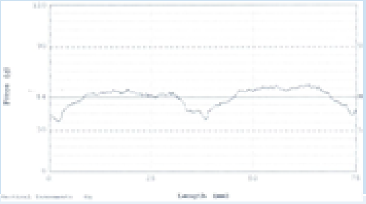
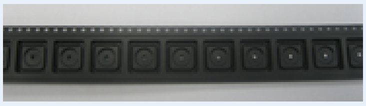
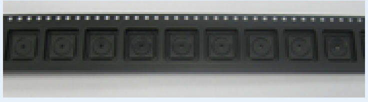
- Package : QFN5x5
- Machine : STI
- Carrier tape supplier : SPK
- Cover tape width : 9.2mm

	Current (CP21)	**New (CSL-Z7302)**
Temperature	152	155
Pressure	2.8MPa	2.8MPa
Peel test results (Spec limit: 10~130gf)	Min: 39 Range: 60 Max: 88 Std dev: 11 	Min: 37 Range: 35 Max: 72 Std dev: 9 
Pull test results (requirement: no torn tape)	No torn tape 	No torn tape 
Results	Pass	Pass

- Package : SO16L
- Machine : ISMECA- TMBZ
- Carrier tape supplier : CPAK
- Cover tape width : 13.3mm

	Current (CP21)	**New (CSL-Z7302)**
Temperature	165	175
Pressure	0.54MPa	0.54MPa
Peel test results (Spec limit: 10~130gf)	Min: 34 Range: 37 Max: 71 Std dev: 8.2 	Min: 44 Range: 27 Max: 71 Std dev: 5.2 
Pull test results (requirement: no torn tape)	No torn tape 	No torn tape 
Results	Pass	Pass

- Package : TQ10x10
- Machine : STI
- Carrier tape supplier : PEAK
- Cover tape width : 21.0mm

	Current (CP21)	**New (CSL-Z7302)**
Temperature	187	187
Pressure	3.5MPa	3.5MPa
Peel test results (Spec limit: 10~130gf)	Min: 35 Range: 34 Max: 70 Std dev: 8 	Min: 36 Range: 27 Max: 63 Std dev: 7 
Pull test results (requirement: no torn tape)	No torn tape 	No torn tape 
Results	Pass	Pass

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