PRODUCT INFORMATION LETTER

PIL CRP/13/7985
Dated 08 Jul 2013

Qualification of 2nd Source Tray Suppliers for TQFP 10x10x1.0

Sales Type/product family label	TQFP
Type of change	Package assembly material change
Reason for change	Second source for dual material sourcing
Description	New supplier of trays KOSTAT has been qualified. The tray impacted is tray for TQFP10x10x1.0mm packages. The key dimensions of the new trays are identical to the ones provided by the current supplier UBOT. It concerns the products whose testing and finishing plants are located in Muar and at our subcontractors.
Forecasted date of implementation	01-Oct-2013
Forecasted date of samples for customer	01-Aug-2013
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	01-Jul-2013
Involved ST facilities	ST Muar and Subcontractors

DOCUMENT APPROVAL

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

Qualification of 2nd Source Tray Suppliers for TQFP 10x10x1.0

WHAT:

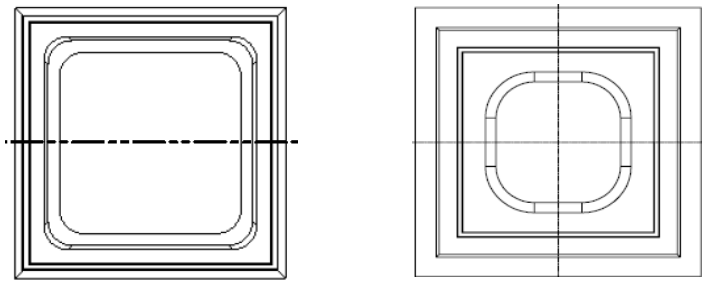
New suppliers of trays have been qualified. The key dimensions of these new trays are identical to the ones provided by the current supplier UBot. In addition, trays remain stackable independently of the supplier.

The tray impacted is tray for TQFP10x10x1.0mm packages: the new qualified supplier is KOSTAT.

It concerns the products whose testing and finishing plants are located in Muar and at our subcontractors

The only change being introduced is a visual difference as indicated below:

UBOT **KOSTAT**



WHY:

To qualify Kostat as 2nd source for dual material sourcing and cost reduction.

WHEN:

October 2013.

HOW:

Kostat is already qualified in Muar and subcontractors have already pass workability tests.
Listed below there are the reports:

Annex 1: Qualification Report of Muar

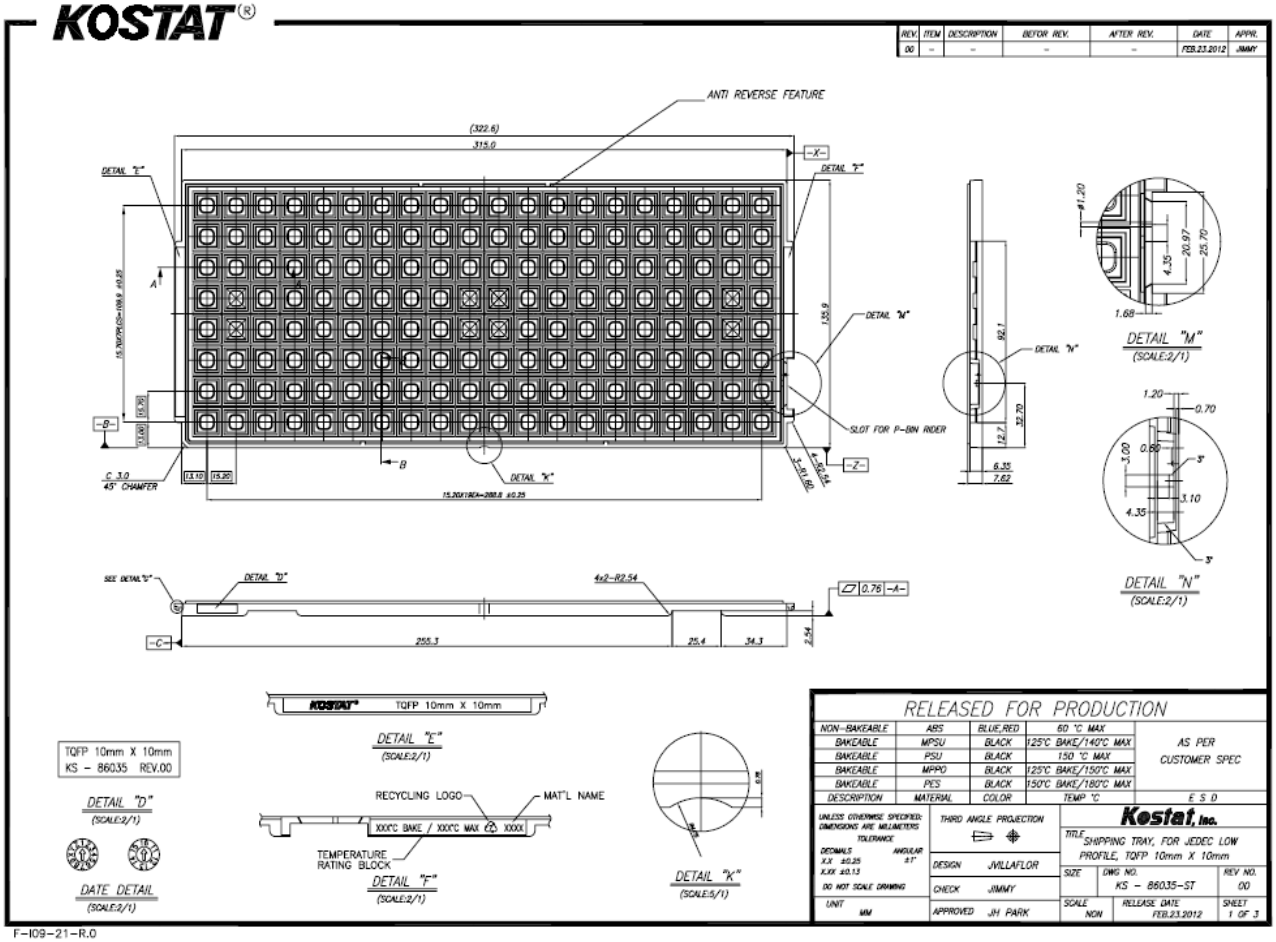
Annex 2: Stackability Validation

Annex 1: Qualification Report of Muar

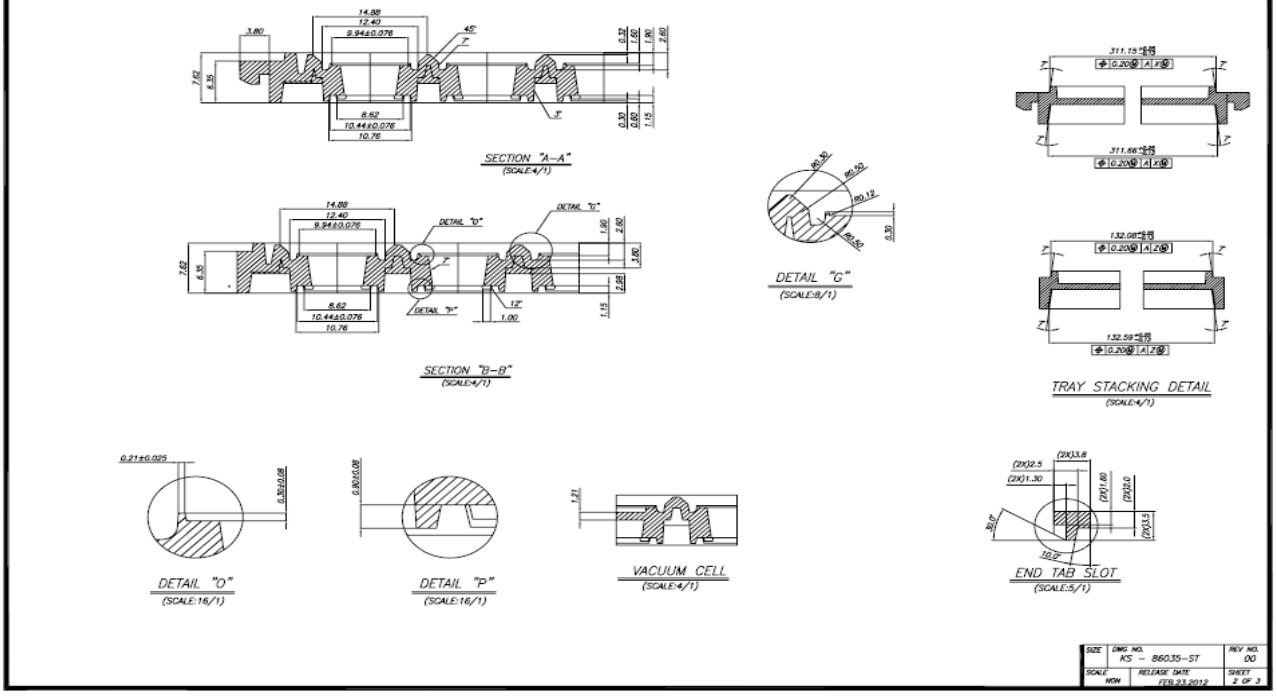
Qualification of new TQFP 10x10x1.0 Tray (by Muar)

Suppliers : Kostat
Supplier Part Nos. : KS-86035 Rev.00

Tray Drawing:

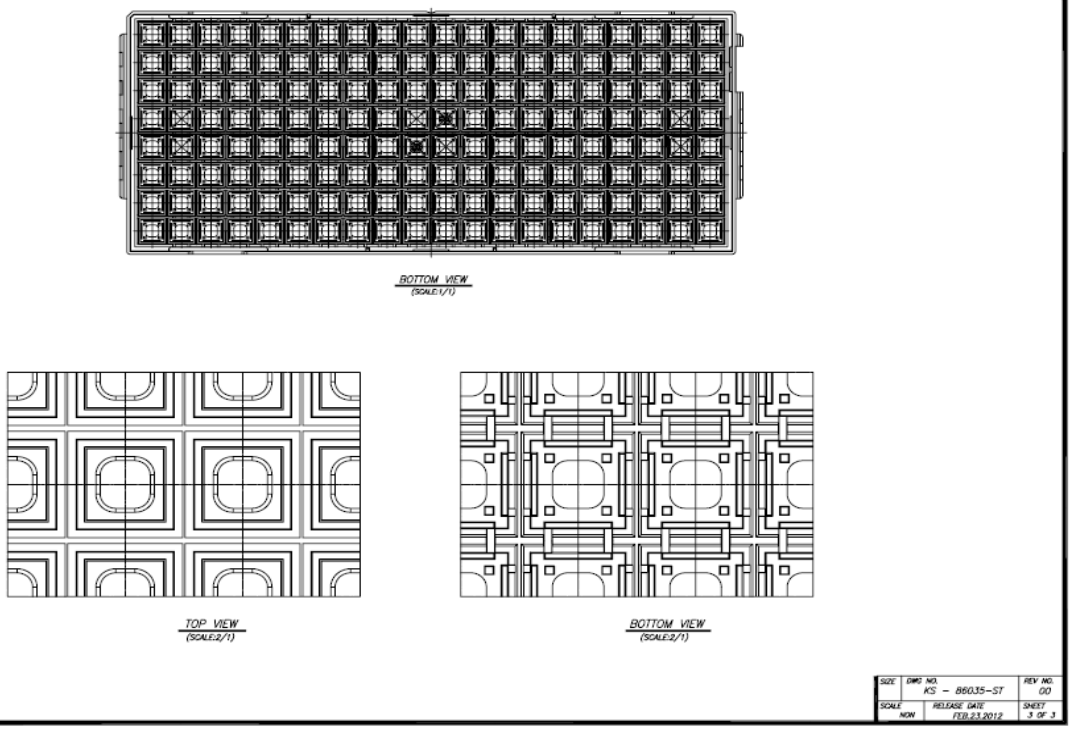


KOSTAT®



SIZE	DWG NO.	REV NO.
	KS – 86035–ST	00
SCALE	RELEASE DATE	SHEET
NON	FEB.23.2012	2 OF 3

KOSTAT®



SIZE	DWG NO.	REV NO.
	KS – 86035–ST	00
SCALE	RELEASE DATE	SHEET
NON	FEB.23.2012	3 OF 3

F-109-21-R.0

Baking tests (Bakeable trays only)
3 cycles baking

Methodology

1. Sample of 10 trays

2. Duration: 24 hrs for each cycle. After each cycle, the tray must be left to cool at production environment for a minimum of 1hr before starting the second baking.

3. Temperature: 125 deg. C (Refer to spec number 0033575).

4. Baking can be done with or without units.

5. Trays must be strapped using Velcro belt. (Strapping refer to spec number 0056593).

6. Measure the warp after the 3rd cycle. The warp should be <0.50mm.
The dry baking was carried out on a Mazzali Oven in the 'Reliability Lab'. The warpage measurements were taken before and after the 3 cycle bake. The measurements were carried out in the tool making shop using the surface table and feeler gauges. Six measuring points were taken on every tray according to spec. 8080190 and recorded on a table. Please see below.

Tray warpage after 3 cycle baking test (Black Trays)

Warpage (mm)	Side 1	Side 2	Side 3	Side 4	Side 5	Side 6
Sample 1	**0.30**	**0.05**	**0.10**	**0.30**	**0.25**	**0.25**
Sample 2	**0.15**	**0.05**	**0.05**	**0.25**	**0.15**	**0.20**
Sample 3	**0.15**	**0.05**	**0.10**	**0.20**	**0.15**	**0.20**
Sample 4	**0.20**	**0.10**	**0.15**	**0.25**	**0.15**	**0.20**
Sample 5	**0.15**	**0.15**	**0.20**	**0.25**	**0.15**	**0.20**
Sample 6	**0.20**	**0.15**	**0.25**	**0.25**	**0.15**	**0.20**
Sample 7	**0.20**	**0.20**	**0.30**	**0.20**	**0.15**	**0.20**
Sample 8	**0.20**	**0.15**	**0.25**	**0.25**	**0.10**	**0.25**
Sample 9	**0.20**	**0.20**	**0.30**	**0.20**	**0.10**	**0.20**
Sample 10	**0.25**	**0.20**	**0.30**	**0.20**	**0.10**	**0.25**

All readings are within limits.

1 cycle bake
Methodology

1. Sample : 6 trays
2. Duration 48 hrs.
3. Temperature : Base on the temperature mark on the tray. (in our case 150 deg. C)
4. Do not use devices and Velcro belt straps.
5. After the bake cycle measure the tray warpage after leaving the tray to cool to room temperature.

The trays were checked for the below items:

Inspection items	Sample size	Results, Yes/No
Any shrinkage on overall length	6 pcs	No
Any shrinkage on pocket dimension	6 pcs	No
Any shrinkage on overall thickness	6 pcs	No
Warpage readings (should less than 0.76)	6 pcs	0.67mm

Drop Test:

The drop test was performed with the packing methodology described in spec number 0056593. The drop test was carried out according to methodology described in specification number 7416802.

Scanning results after drop test:

Inner Box Drop	Coplanarity (0-75um)	Standoff (50-150um)	Pitch (420-580um)	Results
ABC	0 reject	0 reject	0 reject	PASS
DEF	0 reject	0 reject	0 reject	PASS
GHI	0 reject	0 reject	0 reject	PASS

Visual inspection results after drop test:

Inspection items	Sample size	Reject quantity at ABC	Reject quantity at DEF	Reject quantity at GHI
Unit chip	960 units	0/960	0/960	0/960
Unit stuck	960 units	0/960	0/960	0/960
Unit misplace	960 units	0/960	0/960	0/960
Chip trays	7 trays	PASS	PASS	PASS

ESD Characteristics:

Equipment used :

Prostat PRS-801 Resistance Meter
Prostat PRV-913 MicroprobeVerifier
Prostat probes PRF-922A-B and PRF914
ProstatPsychrometer PHT-771

Methodology

A sample of trays were used to measure the surface resistance. Each tray was tested at six different points. The accepted limits for the trays should be within 1x10exp5<Rs<1x10exp11.

Every reading was recorded as shown in the table below.

	QFP 10x10 1.0 mm (KOSTAT)		
	Sample 1	Sample 2	Sample 3
Min Readings	1 E 07	1 E 07	1 E 07
Max Readings	1 E 07	1 E 07	1 E 07
Results	PASS	PASS	PASS

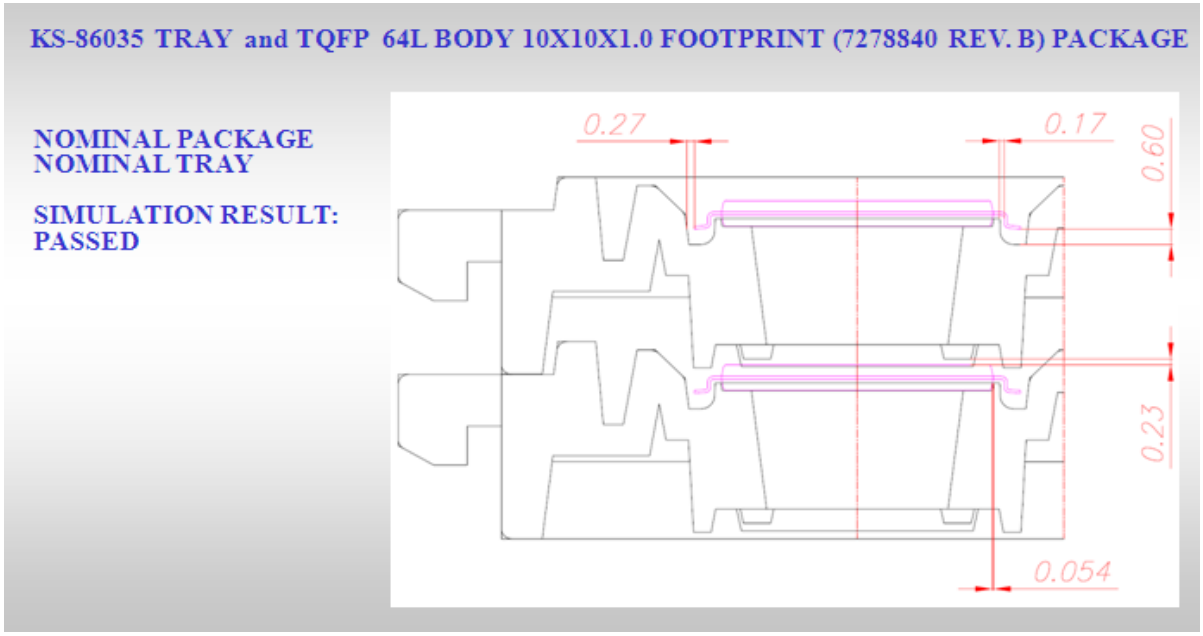
ESD results: Pass

Workability Test:

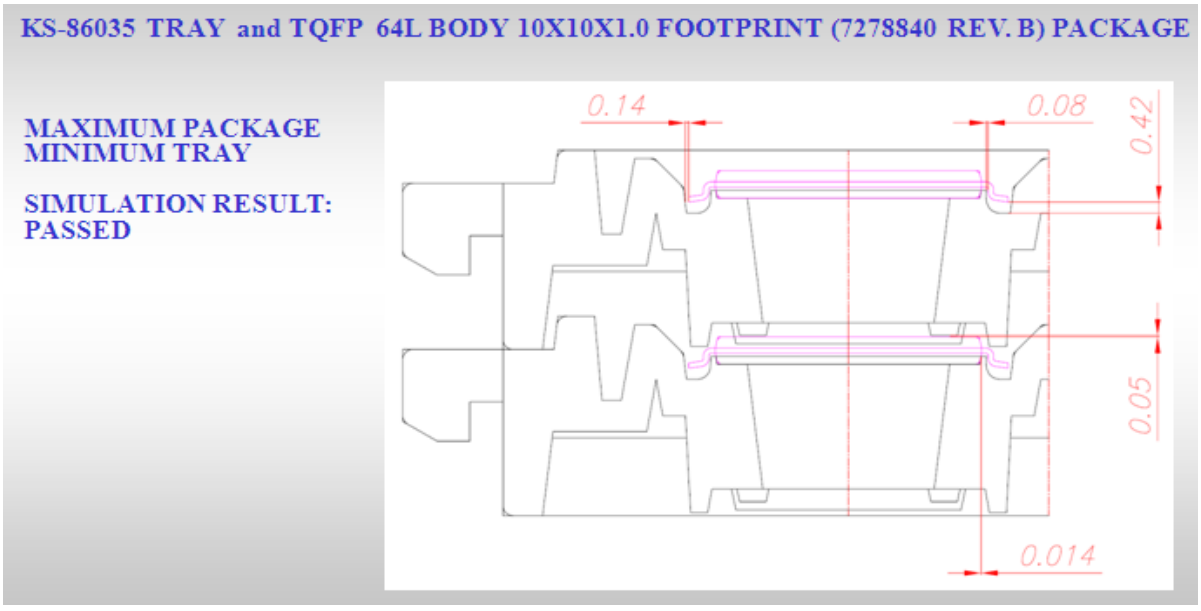
Trays were checked at assembly level, on the test handlers, and on the finishing scanners for workability issues. No abnormalities were exhibited.

Fit Analysis

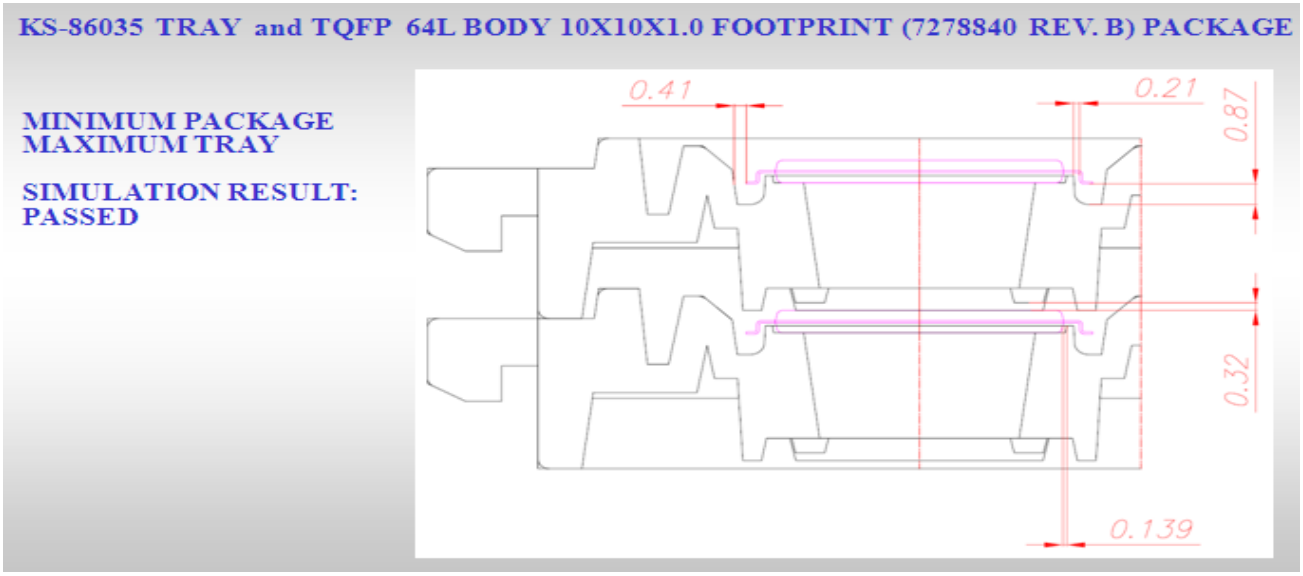
Nominal Conditions



Minimum Pocket vs Maximum Package



Maximum Pocket vs Minimum Package

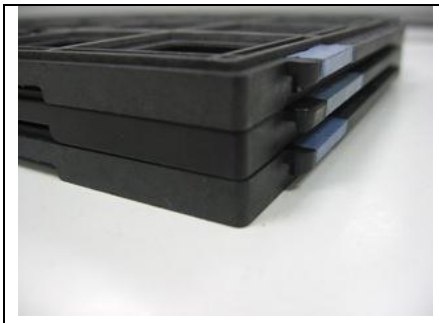
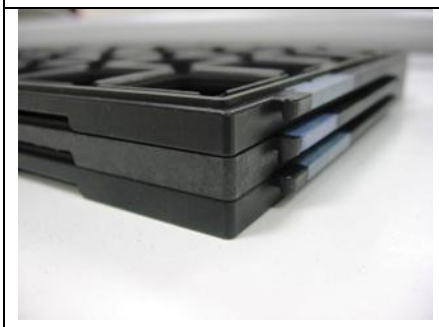


Conclusion:

The tray passed all the qualification tests and can therefore be qualified.

Muar
LL Seng
Packing Coordinator
22/05/2013

Annex 2: Stackability Validation

	1st case 1. UBot 2. Kostat 3. UBot
	2nd case 1. Kostat 2. UBot 3. Kostat

Public Products List

PIL Title : Qualification of 2nd Source Tray Suppliers for TQFP 10x10x1.0
PIL Reference : CRP/13/7985
PIL Created on : 04-JUL-2013

Subject : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change:

ST COMMERCIAL PRODUCT

L6460	L6460TR	L6713A
L6713ATR	L99DZ80EP	L99DZ80EPTR
L99DZ81EP		

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