


**PRODUCT / PROCESS CHANGE INFORMATION**

**1. PCI basic data**

<b>1.1 Company</b>		STMicroelectronics International N.V
<b>1.2 PCI No.</b>	CRP/15/9342	
<b>1.3 Title of PCI</b>	OMLF/HDLM Discontinuance and Conversion to UDLF/XDLF. Panasonic System Networks (PCC) Leadframe Business Closure.	
<b>1.4 Product Category</b>	TSSOP20, TSSOP28, TSSOP38	
<b>1.5 Issue date</b>	2015-09-03	

**2. PCI Team**

<b>2.1 Contact supplier</b>	
<b>2.1.1 Name</b>	ROBERTSON HEATHER
<b>2.1.2 Phone</b>	+1 8475853058
<b>2.1.3 Email</b>	heather.robertson@st.com
<b>2.2 Change responsibility</b>	
<b>2.2.1 Process Owner</b>	Patrick LOW
<b>2.1.2 Corporate Quality Manager</b>	Veronique LIVACHE

**3. Change**

<b>3.1 Category</b>	<b>3.2 Type of change</b>	<b>3.3 Manufacturing Location</b>
Materials	New direct material part number (same supplier, different supplier or new supplier), lead frame, resin, wire, ...)	AMKOR, ATP1

**4. Description of change**

	<b>Old</b>	<b>New</b>
<b>4.1 Description</b>	OMLF manufacturing lines is running in AMKOR ATP1(TSSOP28 and TSSOP38). Panasonic System Networks (PCC) lead frame supplies AMKOR Philipines for TSSOP20 and TSSOP28.	OMLF manufacturing lines will be discontinued in AMKOR ATP1(TSSOP28 and TSSOP38). Panasonic System Networks (PCC) lead frame will not supply AMKOR Philipines for TSSOP20 and TSSOP28. It will be replaced by ASM, Mitsui High Tech (Malaysia) and MALAYSIAN SH ELECTRONICS SDN BHD that depends on different device.
<b>4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?</b>	No Impact	

**5. Reason / motivation for change**

<b>5.1 Motivation</b>	PANASONIC System Networks (PCC) has announced the closure of their lead frame business. OMLF manufacturing lines will be discontinued at AMKOR ATP1.
<b>5.2 Customer Benefit</b>	MANUFACTURING FLEXIBILITY

**6. Marking of parts / traceability of change**

<b>6.1 Description</b>	NA
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**7. Timing / schedule**

<b>7.1 Date of qualification results</b>	2015-09-26
<b>7.2 Intended start of delivery</b>	2015-10-09
<b>7.3 Qualification sample available?</b>	Upon Request

**8. Qualification / Validation**

<b>8.1 Description</b>			
<b>8.2 Qualification report and qualification results</b>	In progress	<b>Issue Date</b>	

**9. Attachments (additional documentations)**

9342PpPrdtLst.pdf  
Amkor 2838 conversion\_PCC shutdown.pdf

**10. Affected parts**

<b>10. 1 Current</b>		<b>10.2 New (if applicable)</b>
<b>10.1.1 Customer Part No</b>	<b>10.1.2 Supplier Part No</b>	<b>10.1.2 Supplier Part No</b>
	L6470H	
	L6470HTR	
	L6472H	
	L6472HTR	
	L6474HTR	
	ST2378ETTR	
	ST3222BTR	
	ST3222CTR	
	ST3222EBTR	
	ST3243EBTR	
	ST3243ECTR-E	
	ST7540	
	ST7540TR	
	ST8024CTR	
	STLUX285A	
	STLUX385ATR	
	STNRG388A	
	STPM01FTR	
	STPM10BTR	
	TDA7719	

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## Public Products List

**PCI Title :** OMLF/HDLM Discontinuance and Conversion to UDLF/XDLF. Panasonic System Networks (PCC) Leadframe Business Closure.

**PCI Reference :** CRP/15/9342

**PCI Created on :** 22-Jul-2015

**Subject :** Public Products List

Dear Customer,

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

RTDA7719TR	ST3243EBTR	TDA7719
STPM01FTR	STLUX285A	STPM10BTR
L6472H	STLUX383A	ST3222CTR
STLUX385ATR	ST8024CTR	ST8024LCTR
L6474H	ST3222BTR	L6472HTR
TDA7718B	ST33TPM12SPIR28	TDA7718BTR
STLUX385A	ST33TPM12LPCR28	ST2378ETTR
L6470HTR	ST33TPM12I2CR28	ST7540TR
STNRG388ATR	L6474HTR	L6470H
TDA7718NTR	STNRG388A	TDA7718N
ST7540	STLUX285ATR	ST3222ECTR
STLUX383ATR	ST3222EBTR	STNRG288ATR
L6997STR	L6997S	STNRG288A
TDA7719TR	RTDA7719	ST3243ECTR-E



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# **OMLF/HDLF Discontinuance and Conversion to UDLF/XDLF & Panasonic System Networks (PCC) Leadframe Business Closure**

## **Product Change Information**

### **1- What is the change:**

- Panasonic System Networks (PCC) lead frame supplier has informed Amkor Philippines (ST' subcontractor) on its decision to close their lead frame business after September 2015.
- This factory closure of PCC lead frame will impact Amkor Philippines (ST's subcontractor) production after ww39 (Sep, 2015 time frame)
- This PCC lead frame will be replaced by ASM, Mitsui High Tech (Malaysia) and MALAYSIAN SH ELECTRONICS SDN BHD that depends on different device.
- The change is also including the conversion for TSSOP28 & 38 pins from OMLF to UDLF lead frames
- The impacted packages are TSSOP20 leads, TSSOP28 leads, and TSSOP38 leads

Plant	Package	Current Lead frame Format	Qualified Lead frame Format
ATP1	TSSOP20	HDLF	XDLF
	TSSOP28	OMLF	UDLF
	TSSOP38	OMLF	UDLF

### **2- WHY:**

Reasons for these changes are:

- PANASONIC System Networks (PCC) has announced the closure of their lead frame business
- OMLF manufacturing lines will be discontinued at AMKOR ATP1

### **3- WHEN will this change occur:**

Target date for full conversion is on W41'2015 onwards.

### **4- HOW will the change be qualified:**

- Risk have been evaluated (Refer to Annex 1)
- Approach for selecting the alternative lead frames in UDLF and XDLF format is same specifications, same materials, same finishing.
- This change will be qualified using the standard ST/Amkor procedures that agree by ST for quality and reliability evaluation. Major steps of the qualification plan are:
  - Process assessment
  - Workability
  - Construction checking
  - Reliability checking

### **5- IMPACTS OF THE CHANGE:**

Form: No change  
Fit: No change  
Function: No change

### **6 - APPENDICES:**

APPENDIX 1 Risk assessment

APPENDIX 2 Qualification / Reliability Plan

APPENDIX 3 Construction / Reliability / Qualification Results based on Amkor's qualification data

**APPENDIX 1: RISK ASSESSMENT**

#	Risks identified	Potential risk resulting from	Class	Considered action
1	Workability issues on machines at different process step (Die attach, wire bonding, molding, plating, cropping)	Difference of leadframe size (Length x Width), leadframe matrix and leadframe plating	Low	<ul style="list-style-type: none"> <li>To validate if any impact (yield, Non-stick on lead, machine stops) in workability</li> </ul>
		Difference in machine models used at mold	Medium	<ul style="list-style-type: none"> <li>New mold system</li> <li>To validate if any impact (yield, delamination, wiresweep, machine stops) in workability</li> </ul>
2	D/A Quality problem	Results not in accordance with ST requirements on following: - void - coverage - Bond line thickness - Die shear	Low	<ul style="list-style-type: none"> <li>Same material use, same process control, no change in specification.</li> <li>Validated during workability exercise</li> </ul>
3	Wire bonding quality problems	Results not in accordance with ST requirements on following: - Non-stick on Leads (NSOL). Poor bond ability of 2 <sup>nd</sup> bond - Pull test	Low	<ul style="list-style-type: none"> <li>Same material use, same process control, no change in specification.</li> <li>Validated during workability exercise and qualification</li> </ul>
4	Mold quality problems	Results not in accordance with ST requirements on following: -delamination -wiresweep -package mismatch	Medium	<ul style="list-style-type: none"> <li>Same material use, same process control, difference on the pellet size</li> <li>Validated during workability exercise and qualification</li> </ul>
5	Reliability	Delamination	Medium	<ul style="list-style-type: none"> <li>Delamination issue checked during qualification exercise (MSL3)</li> </ul>
6	Product performance	Electrical performance deterioration due to difference of POA	Low	<ul style="list-style-type: none"> <li>Control of LF Dimension at IQC (each lead frame lot)</li> <li>LF Dimension measurement during LF qualification</li> <li>Check at Electrical test</li> <li>P/N and specific test vehicles selected to ensure it complies with standard requirements</li> </ul>
7	Manufacturing issues	Yield degradation due to possible difference of Lead Frame plating type (R-Ag, DR-Ag, Spot-Ag, TPPF) and leadframe surface morphology	Low	To validate impact (if any) during workability
		Low Productivity due to possible difference of Lead Frame plating type (R-Ag, DR-Ag, Spot-Ag, TPPF) and leadframe surface morphology	Low	To validate impact (if any) during workability
		Lead frame quality issue brought instability performances	Low	Checked during workability exercise
8	Supply Chain: To guarantee parts delivery to our customers and avoid business disruption	Due to this unpredicted crisis, no sufficient stock of lead frames is available.	Medium	<ul style="list-style-type: none"> <li>Fast generation of PCI towards customer for immediate approval</li> </ul>
9	Supply Chain: Quality issues	Quality or reliability problems in the field	Low	<ul style="list-style-type: none"> <li>Re-enforced IQC controls (each lead frame lot)</li> <li>Designed a Fast safe Launch exercise with a Lot Acceptance Test (LAT) approach</li> </ul>

**APPENDIX 2: Qualification / Reliability Plan**

Test Name	Conditions	Lots #	Sample Size	Notes
JL3	24h bake @ 125C + MSLn TH soak + reflow simulation (3 times JEDEC J-STD -020D)	1 per L/F Option	22 pcs/lot	1, 2, 3
JL3 + TCT	Ta = - 50/150C, 500 cycles	1 per L/F Option	77 pcs / lot	1, 2
HTSL	HTSL (static storage at 150degC): 500H/1000H	1 per L/F Option	45 pcs / lot	1
PPT	PPT @ 121°C/2 Atm (96H)	1 per L/F Option	77 pcs / lot	1 & 2

Notes	Description	Sample size
1	Electrical test	100%
2	SAM analysis in C and T mode to check delamination resin-die, resin-lead, resin-die pad , DA integrity	20pcs /lot min
3	pull test after de-capsulation (to collect pull strength and failure mode and to inspect by SEM all abnormal failure mode)	30 wire from 5 units min

*Note: More stringent tests have been performed according to product specificities.*



**APPENDIX 3: Qualification execution & results summary according to Amkor's qualification**

Plant	Packages	Construction analysis	Qualification on process	Reliability	Qualification completion
ATP1	TSSOP20	Pass	Pass	Pass	Pass
ATP1	TSSOP28	Pass	Pass	Pass	Pass
ATP1	TSSOP38	Pass	Pass	Pass	Pass