


# PRODUCT / PROCESS CHANGE NOTIFICATION

## 1. PCN basic data

|                      |  |                                      |
|----------------------|--|--------------------------------------|
| 1.1 Company          |   | STMicroelectronics International N.V |
| 1.2 PCN No.          | MDG/24/14405   |                                      |
| 1.3 Title of PCN     | ST Calamba (Philippines) UFQFPN 7x7 48L package line additional source for STM32G05x/G06x, STM32L45x/L46x and STM32G0Bx/G0Cx listed products |                                      |
| 1.4 Product Category | STM32G05x/G06x, STM32L45x/L46x and STM32G0Bx/G0Cx  |                                      |
| 1.5 Issue date       | 2024-05-29   |                                      |

## 2. PCN Team

|                           |                            |
|---------------------------|----------------------------|
| 2.1 Contact supplier      |                            |
| 2.1.1 Name                | ROBERTSON HEATHER          |
| 2.1.2 Phone               | +1 8475853058              |
| 2.1.3 Email               | heather.robertson@st.com   |
| 2.2 Change responsibility |                            |
| 2.2.1 Product Manager     | Ricardo Antonio DE SA EARP |
| 2.1.2 Marketing Manager   | Veronique BARLATIER        |
| 2.1.3 Quality Manager     | Pascal NARCHE              |

## 3. Change

|              |   |                            |
|--------------|---|----------------------------|
| 3.1 Category | 3.2 Type of change  | 3.3 Manufacturing Location |
| Transfer     | Line transfer for a full process or process brick (process step, control plan, recipes) from one site to another site: Assembly site (SOP 2617) | ST Calamba (Philippines)   |

## 4. Description of change

|   |  |  |
|---|--|--|
|   | Old  | New  |
| 4.1 Description   | Back-End Sources<br>- ASE KaoHsiung (Taiwan)<br>- STATSChipPAC JSCC (China)  | Back-End Sources<br>- ASE KaoHsiung (Taiwan) / Bonding Wire is Gold<br>- STATSChipPAC JSCC (China) / Bonding Wire is Gold<br>- ST Calamba (Philippines) / Bonding Wire is Copper Alloy |
| 4.2 Anticipated Impact on form,fit, function, quality, reliability or processability? | Lead color and surface finish change depending on leadfinishing.<br>Package darkness changes depending on molding compound.<br>Pin1 identifier might change in terms of form and positioning.<br>Marking position and size could be different upon assembly site, without any loss of information. |  |

## 5. Reason / motivation for change

|                      |   |
|----------------------|---|
| 5.1 Motivation       | Due to the success on the market of STM32 devices, ST General Purpose Microcontrollers Group decided to qualify an additional back-end site to maintain state of the art service level to our customers thanks to extra capacity. |
| 5.2 Customer Benefit | SERVICE IMPROVEMENT   |

## 6. Marking of parts / traceability of change

|                 |   |
|-----------------|---|
| 6.1 Description | Change is visible through assembly traceability plant, in the marking:<br>- "GQ" for Stats ChipPAC Jiangyin China (JSCC)<br>- "AA" for ASE Kaohsiung Taiwan<br>- "78" for ST Calamba Philippines<br>Please refer to PCN 14173 Additional information attached document. |
|-----------------|---|

## 7. Timing / schedule

|                                     |              |
|-------------------------------------|--------------|
| 7.1 Date of qualification results   | 2024-07-15   |
| 7.2 Intended start of delivery      | 2024-07-22   |
| 7.3 Qualification sample available? | Upon Request |

| 8. Qualification / Validation                      |   |            |            |
|--|---|------------|------------|
| 8.1 Description                                    | 14405 MDG-GPM-RER2317 PCN14405 ST CLB UFQFN7x7 48L STM32G-Cx - Reliability plan.pdf |            |            |
| 8.2 Qualification report and qualification results | Available (see attachment)  | Issue Date | 2024-05-29 |

| 9. Attachments (additional documentations)   |  |
|--|--|
| 14405 Public product.pdf<br>14405 MDG-GPM-RER2317 PCN14405 ST CLB UFQFN7x7 48L STM32G-Cx - Reliability plan.pdf<br>14405 PCN14405_Additional information.pdf |  |

| 10. Affected parts      |                         |                          |
|-------------------------|-------------------------|--------------------------|
| 10. 1 Current           |                         | 10.2 New (if applicable) |
| 10.1.1 Customer Part No | 10.1.2 Supplier Part No | 10.1.2 Supplier Part No  |
|                         | STM32G051C6U6           |                          |
|                         | STM32G051C8U6           |                          |
|                         | STM32G061C6U6           |                          |
|                         | STM32G061C8U6           |                          |
|                         | STM32G0B1CBU3           |                          |
|                         | STM32G0B1CBU6           |                          |
|                         | STM32G0B1CCU6           |                          |
|                         | STM32G0B1CEU6           |                          |
|                         | STM32G0B1CEU6N          |                          |
|                         | STM32G0C1CEU6           |                          |
|                         | STM32L451CCU3           |                          |
|                         | STM32L451CCU6           |                          |
|                         | STM32L451CCU6TR         |                          |
|                         | STM32L451CEU6           |                          |
|                         | STM32L451CEU6TR         |                          |
|                         | STM32L452CCU6           |                          |
|                         | STM32L452CEU3           |                          |
|                         | STM32L452CEU6           |                          |
|                         | STM32L462CEU6           |                          |
|                         | STM32L462CEU6TR         |                          |

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**MDG-GPM-RER2317 for PCN14405  
ST Calamba (Philippines) UFQFPN 7x7 48L  
package line additional source for  
STM32G05x/G06x, STM32L45x/L46x and  
STM32G0Bx/G0Cx listed products**

## **Reliability Evaluation Plan**

May 27<sup>th</sup>, 2024

MDRF GPM Quality & Reliability

# ST Calamba (Philippines) UFQFPN 7x7 48L package line additional source for STM32G05x/G06x, STM32L45x/L46x and STM32G0Bx/G0Cx listed products

## Package Vehicle tests

| Package line | Assembly Line | Package | Wire type | Device (RawLine Code)  | Diffusion Process Plant | Number of Qual Lots |
|--------------|---------------|---------|-----------|------------------------|-------------------------|---------------------|
| UFQFN        | UFQFN 7x7     | 48L     | Cu Alloy  | STM32G07x/08x (MI*460) | TN090CE<br>TSMC fab 14  | 1                   |
| UFQFN        | UFQFN 7x7     | 48L     | Cu Alloy  | STM32G47x/48x (MI*469) | TN090CE<br>TSMC fab 14  | 1                   |
| UFQFN        | UFQFN 7x7     | 48L     | Cu Alloy  | STM32C031x (MI*453)    | TN090CE<br>TSMC fab 14  | 1                   |
| UFQFN        | UFQFN 7x7     | 48L     | Cu Alloy  | STM32G0x (MI*456)      | TN090CE<br>TSMC fab 14  | 1                   |
| UFQFN        | UFQFN 7x7     | 48L     | Cu Alloy  | STM32L45x (MI*462)     | TN090CE<br>TSMC fab 14  | 1                   |
| UFQFN        | UFQFN 7x7     | 48L     | Cu Alloy  | STM32G0Bx (MI*467)     | TN090CE<br>TSMC fab 14  | 1                   |

### Reliability strategy:

Reliability will be performed on 3 lots from representative test vehicles of STM32G07x/08x, STM32G47x/48x and STM32C031x product families.

For products embedding 456, 462 & 467 dice in UFQFN48 7x7 package, evaluation will be focused on CDM and Construction Analysis, reliability being evaluated by similarity with dice 460,469 & 453 using same diffusion technology/plant in same UFQFN48 7x7 package.

# ST Calamba (Philippines) UFQFPN 7x7 48L package line additional source for STM32G05x/G06x, STM32L45x/L46x and STM32G0Bx/G0Cx listed products

## Package Reliability Trials

| Reliability Trial & Standard |  | Test Conditions  | Pass Criteria                 | Unit per Lot | Lot qty |
|------------------------------|--|--|-------------------------------|--------------|---------|
| <b>PC</b>                    | Pre-Conditioning: Moisture Sensitivity Jedec Level 3<br>J-STD-020/ JESD22-A113 | Bake (125°C / 24 hrs)<br>Soak (30°C / 60% RH / 192 hrs) for level 3<br>Convection reflow: 3 passes | 3 passes MSL3                 | 308          | 3       |
| <b>Uhast(*)</b>              | UnBiased Highly Accelerated Temperature and Humidity Stress<br>JESD22 A118     | 130°C, 85%RH, 2.3 atm  | 96h                           | 77           | 3       |
| <b>TC(*)</b>                 | Thermal Cycling<br>JESD22 A104   | -65°C +150°C   | 500Cy                         | 77           | 3       |
| <b>THB(*)</b>                | Biased temperature & humidity stress<br>JESD22 A101                            | 85°C, 85% RH bias  | 1000h                         | 77           | 3       |
| <b>HTSL(*)</b>               | High Temperature Storage Life<br>JESD22 A103                                   | 150°C- no bias   | 1000h                         | 77           | 3       |
| <b>Construction analysis</b> | ST internal specifications   | Ball shear, pull test, IMC inspection , internal analysis  | NA                            | 50           | 6       |
| <b>ESD</b>                   | ESD Charge Device Model<br>JEDEC JS-002  | Aligned with device datasheet  | Aligned with device datasheet | 3            | 6       |

(\*) tests performed after preconditioning

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**PRODUCT/PROCESS  
CHANGE NOTIFICATION  
PCN14405  
– Additional information**

**ST Calamba (Philippines) UFQFPN 7x7 48L package line  
additional source for STM32G05x/G06x, STM32L45x/L46x and  
STM32G0Bx/G0Cx listed products.**

**MDRF – General Purpose Microcontrollers Division (GPM)**

**What are the changes?**

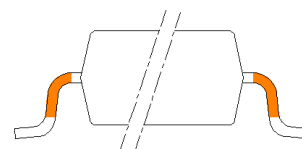
ST General Purpose Microcontrollers Division decided to qualify an additional back-end assembly site. The full process transfer to ST Calamba Assembly site is done maintaining state of the art service level to our customers thanks to extra capacity. This PCN is limited to STM32G05x/G06x, STM32L45x/L46x and STM32G0Bx/G0Cx listed products in UFQFPN 7x7 48L package.

Changes described in table below:

|                                       | Existing back-end sites                |  | Added back-end site       |
|---------------------------------------|--|--|---------------------------|
| Assembly site                         | Stats ChipPAC JSCC<br>Jiangyin China   | ASE Kaohsiung Taiwan                   | ST CALAMBA Philippines    |
| Lead frame                            | Copper Frame<br>Double Ring Ag Plating | Copper Frame<br>Double Ring Ag Plating | Copper plated PPF         |
| Leadfinishing <sup>(1)</sup>          | Pure Tin (e3)                          | Pure Tin (e3)                          | NiPdAu(e4)                |
| Epoxy Molding Compound <sup>(2)</sup> | Sumitomo G770                          | Sumitomo G631H                         | HITACHI CEL<br>9240ZHF10W |
| Glue                                  | Ablebond 8290<br>Hitachi EN4900GC      | Hitachi EN4900GC                       | QMI519                    |
| Wire                                  | Gold 0.8mil                            | Gold 0.8mil                            | Cu Alloy 0.8mil           |

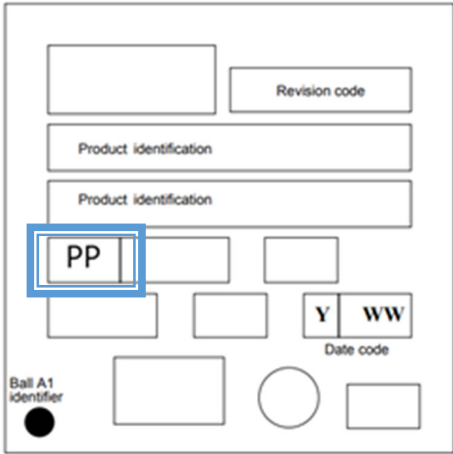
(1) Lead color and surface finish change depending on leadfinishing.

(2) Package darkness changes depending on molding compound.





### How can the change be seen?

| Marking           | Existing   | Added<br>Back-End Site              |
|-------------------|--|-------------------------------------|
| UFQFPN 7x7<br>48L |      |                                     |
| PP code           | <b>AA:</b> ASE KaoHsiung (Philippines)<br><b>GQ:</b> Stats ChipPAC JSCC Jiangyin China | <b>78:</b> ST Calamba (Philippines) |

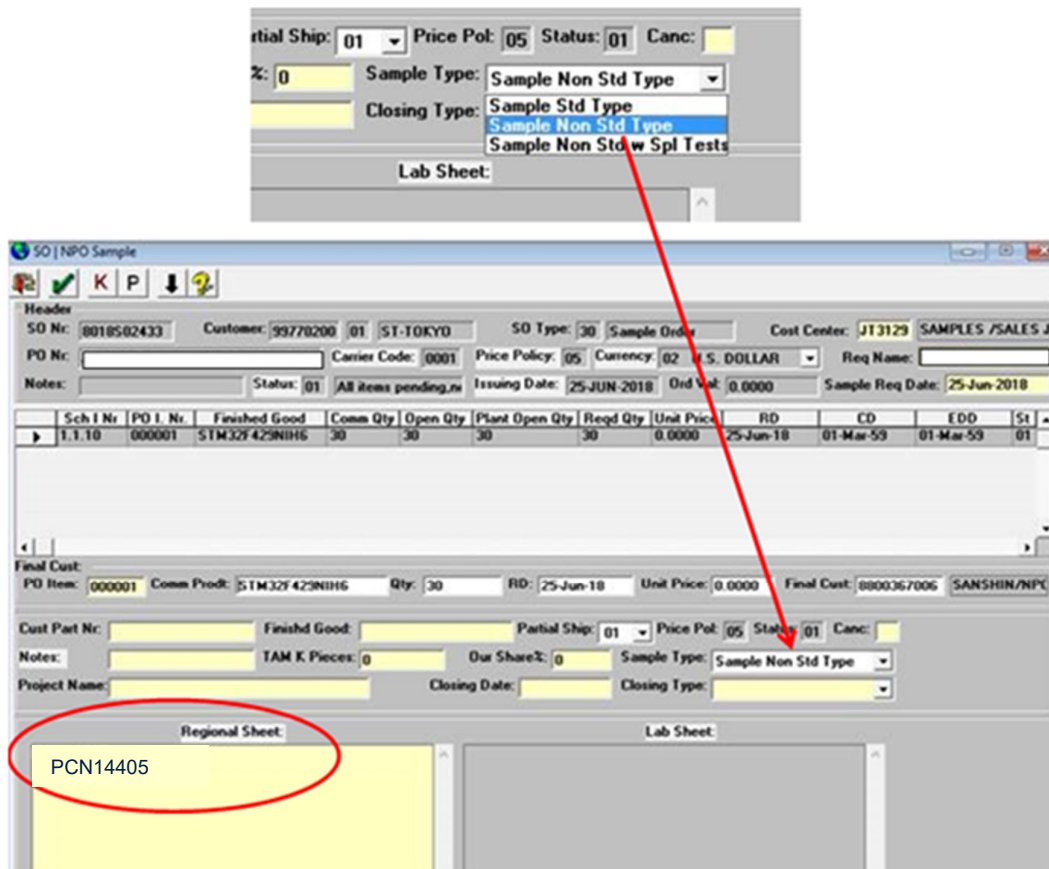
**Y WW code** indicates Year Week (manufacturing date)

**PP code** indicates assembly traceability plant code.

## How to order samples?

For all samples request linked to this PCN, please:

- place a **Non-standard** sample order (choose Sample Non Std Type from pull down menu)
- insert the PCN number "**PCN14405**" into the NPO Electronic Sheet/**Regional Sheet**
- request sample(s) through Notice tool, indicating a single Commercial Product for each request



The screenshot displays the 'NPO Sample' software interface. A red arrow points from the 'Sample Non Std Type' option in a dropdown menu to the 'Regional Sheet' section. The 'Regional Sheet' section is highlighted with a red circle and contains the text 'PCN14405'.

**Sample Type Dropdown Menu:**

- Sample Non Std Type
- Sample Std Type
- Sample Non Std Type
- Sample Non Std w Spl Tests

**Regional Sheet:**

PCN14405

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## Public Products List

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**PCN Title :** ST Calamba (Philippines) UFQFPN 7x7 48L package line additional source for STM32G05x/G06x, STM32L45x/L46x and STM32G0Bx/G0Cx listed products

**PCN Reference :** MDG/24/14405

**Subject :** Public Products List

Dear Customer,

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

|                 |                 |                  |
|-----------------|-----------------|------------------|
| STM32G061C6U6   | STM32L451CCU3TR | STM32G0B1CEU7TR  |
| STM32G0B1CCU3TR | STM32G0B1CCU6N  | STM32G0B1CCU7    |
| STM32L462CEU6   | STM32G051C8U6TR | STM32G0B1CCU6    |
| STM32G0B1CBU7   | STM32G0B1CEU6   | STM32G0B1CBU6N   |
| STM32G061C8U6   | STM32G0B1CEU7   | STM32G0B1CCU6NTR |
| STM32G0B1CCU3   | STM32G0B1CBU3   | STM32G051C8U7TR  |
| STM32G051C8U3   | STM32L451CEU6TR | STM32G0B1CBU6    |
| STM32G0B1CBU7TR | STM32G051C8U7   | STM32L451CCU6TR  |
| STM32L452CEU3   | STM32G051C8U6   | STM32L451CCU3    |
| STM32G0B1CBU6TR | STM32L462CEU6TR | STM32L451CEU6    |
| STM32G051C6U6   | STM32G0C1CCU6   | STM32G051C8U3TR  |
| STM32G0C1CEU6TR | STM32G0B1CCU6TR | STM32G0B1CEU6N   |
| STM32L452CEU6   | STM32G0B1CCU7TR | STM32L451CCU6    |
| STM32L452CCU6   | STM32G0C1CEU6   | STM32L462CEU6F   |

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