| PCN Number:  |                           | 2           | 20161212000  |   |                    |                             | P                               | PCN Date:                |          | Dec 13 2016                   |  |
|--|---------------------------|-------------|--|---|--------------------|-----------------------------|---------------------------------|--------------------------|----------|-------------------------------|--|
| Title: Quality TI Phil PLCC package  |                           |             | lippines as an additional Assembly & Test site for select Devices in the |   |                    |                             |                                 |                          |          |                               |  |
|  |                           | : <u>P(</u> | CN Ma  | nager De  | ept:               | Quality Ser                 | rvice                           | S                        |          |                               |  |
| Proposed 1 <sup>st</sup> Ship Date   |                           | Date        | e: March 13 2017   |   | Esti               | stimated Sample Availabilit |                                 |                          | ility:   | Provided upon<br>Request      |  |
| Change   |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |
|  | embly Site                |             |  | Assembly Process  |                    |                             | $\underline{\boxtimes}$         |                          |          |                               |  |
| Desi   |                           |             | H  | Electrical Specification  |                    | $\perp$                     |                                 | Mechanical Specification |          |                               |  |
| X Test   | <u>Site</u><br>er Bump Si | to          | H  | Packing/Shipping/Labeling Wafer Bump Material   |                    | $\mathbb{H}$                | Test Process Wafer Bump Process |                          |          |                               |  |
|  | er Fab Site               | ie          | H  | Wafer Fab Ma  |                    |                             | H                               | Wafer Fab Process        |          |                               |  |
|  | or rab orco               |             |  | Part number   |                    |                             |                                 | Warer 1                  | 45 110   |                               |  |
|  |                           |             |  |   |                    | etails                      |                                 |                          |          |                               |  |
| Descript   | ion of Cha                | ange:       |  |   |                    |                             |                                 |                          |          |                               |  |
|  | ne list of de             |             |  | to announce the vn below. Con   |                    |                             |                                 |                          |          | mbly and Test<br>rent and new |  |
|  |                           |             |  |   | ммт                | •                           |                                 |                          | TIPI     |                               |  |
| M  | ount Com                  | pound       |  |   |                    | 10008                       |                                 | 4                        | i8       |                               |  |
|  | old Compo                 |             | -  |   | <sup>‡</sup> 14100 |                             | 4208458<br>4207207              |                          |          |                               |  |
| Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.  Reason for Change: |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |
|  | y of Supply               |             |  |   |                    |                             |                                 |                          |          |                               |  |
| Anticipa   | ted impac                 | t on        | Fit, F   | orm, Functio  | n, Qu              | ality or Rel                | iabi                            | lity (pos                | sitive / | negative):                    |  |
| None   |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |
| Anticipated impact on Material Declaration   |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |
| No Impact to the Material Declaration  |                           |             |  | Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained from the <u>TI ECO website</u> . |                    |                             |                                 |                          |          |                               |  |
| Changes to product identification resulting from this PCN:   |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |
|  |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |
| Assen  | Assembly Site             |             |  |   |                    |                             |                                 |                          |          |                               |  |
| MMT  |                           |             | ALP  |   |                    | THA                         |                                 |                          |          | achoengsao                    |  |
| TIPI   |                           | PHI PHL     |  |   |                    | Ba                          | aguio City                      |                          |          |                               |  |
| Sample product shipping label (not actual product label)   |                           |             |  |   |                    |                             |                                 |                          |          |                               |  |

TEXAS INSTRUMENTS
MADE IN: Malaysia
2DC: 2Q;
MSL '2 /260C/1 YEAR SEAL DT

MSL 2 /260C/1 YEAR SEAL DT MSL 1 /235C/UNLIM 03/29/04

PT: 39 LBL: 5A (L)TO:1750



(1P) \$N74L\$07N\$R (Q) 2000 (D) 0336 (31T)LOT: 3959047MLA (4W) TKY(1T) 7523483812 (P) (2P) REV: (V) 0033317

(2P) REV: (V) 0033317 (20L) CSO: SHE (21L) CCO:USA (22L) ASO: MLA (23L) ACO: MYS

# **Topside Device marking (if included):**

Assembly site code for ALP= 8

Assembly site code for PHI = W

| <b>Product Affected</b> |                 |                 |             |   |
|-------------------------|-----------------|-----------------|-------------|---|
| DAC7724N                | DAC7724NB/750G4 | DAC7725NB       | DAC7725NBG4 |   |
| DAC7724N/750            | DAC7724NBG4     | DAC7725NB/750   | UC3770AQ    |   |
| DAC7724NB               | DAC7725N        | DAC7725NB/750G4 | UC3770AQTR  |   |
| DAC7724NB/750           |                 |                 |             | _ |



## **Qualification Report**

## MMT Offload Qualification for PLCC 28FN devices Approve Date 27-Oct-2016

#### **Product Attributes**

| •                   |                           |                            |   |                                       |                                     |
|---------------------|---------------------------|----------------------------|---|---------------------------------------|-------------------------------------|
| Attributes          | Qual Device:<br>DAC7724NB | Qual Device:<br>UC3770AQTR | QBS Package Reference:<br>SN74ACT8890FN | QBS Package Reference:<br>TL16C754BFN | QBS Package Reference:<br>TLC545IFN |
| Assembly Site       | PHI (TIPI)                | PHI (TIPI)                 | PHI                                     | PHI                                   | PHI                                 |
| Package Family      | PLCC                      | PLCC                       | PLCC                                    | PLCC                                  | PLCC                                |
| Flammability Rating | UL 94 V-0                 | UL 94 V-0                  | UL 94 V-0                               | UL 94 V-0                             | UL 94 V-0                           |
| Wafer Fab Supplier  | SFAB                      | SFAB                       | DFAB                                    | HFAB                                  | DFAB                                |
| Wafer Fab Process   | BCMOS                     | JI-PWR1                    | C40                                     | C21                                   | LINCMOS                             |

- QBS: Qual By Similarity
   Qual Device DAC7724NB is qualified at LEVEL3-245C
   Qual Device UC3770AQTR is qualified at LEVEL3-260C

#### **Qualification Results** Data Displayed as: Number of lots / Total sample size / Total failed

| H    |   |                                  |                           |                            |  |  |  |
|------|---|----------------------------------|---------------------------|----------------------------|--|--|--|
| Туре | Test Name / Condition                         | Duration                         | Qual Device:<br>DAC7724NB | Qual Device:<br>UC3770AQTR | QBS Package<br>Reference:<br>SN74ACT8890FN | QBS Package<br>Reference:<br>TL16C754BFN | QBS Package<br>Reference:<br>TLC545IFN |
| -    | Moisture Sensitivity, Jedec                   | Level 1-260C                     | -                         | -                          | -  | -  | 2/24/0                                 |
| -    | Moisture Sensitivity, Jedec                   | Level 3-245C                     | 3/34/0                    | -                          | -  | -  | -                                      |
| -    | Moisture Sensitivity, Jedec                   | Level 3-260C                     | -                         | 3/36/0                     | 2/24/0                                     | 2/24/0                                   | -                                      |
| AC   | Autoclave 121C                                | 240 Hours                        | -                         | -                          | 3/231/0                                    | 2/154/0                                  | 3/231/0                                |
| AC   | Autoclave 121C                                | 96 Hours                         | -                         | 3/231/0                    | -  | -  | -                                      |
| CDM  | ESD - CDM                                     | 500V                             | -                         | -                          | -  | 3/15/0                                   | -                                      |
| FLAM | Flammability (UL 94V-0)                       | -                                | -                         | -                          | -  | 3/15/0                                   | -                                      |
| HAST | Biased HAST, 130C/85%RH                       | 96 Hours                         | -                         | 3/229/0                    | -  | -  | -                                      |
| HTOL | Life Test, 125C                               | 1000 Hours                       | -                         | -                          | -  | 3/117/0                                  | -                                      |
| HTSL | High Temp Storage Bake 150C                   | 1000 Hours                       | -                         | -                          | 3/231/0                                    | 3/231/0                                  | 3/231/0                                |
| MISC | Salt Atmosphere                               | -                                | -                         | -                          | -  | 3/22/0                                   | -                                      |
| MQ   | Manufacturability (Assembly)                  | (per mfg. Site<br>specification) | Pass                      | Pass                       | Pass                                       | Pass                                     | Pass                                   |
| TC   | Temperature Cycle, -65/150C                   | 500 Cycles                       | -                         | 3/229/0                    | 3/231/0                                    | 3/231/0                                  | 3/231/0                                |
| THB  | Biased Temperature and Humidity,<br>85C/85%RH | 600 Hours                        | -                         | -                          | -  | 3/78/0                                   | -                                      |
| TS   | Thermal Shock -65/150C                        | 500 Cycles                       | -                         | -                          | 3/231/0                                    | 3/231/0                                  | 3/231/0                                |

Qualified Pb-Free(SMT) and Green

For questions regarding this notice, e-mails can be sent to the regional contacts shown below or your local Field Sales Representative.

| Location     | E-Mail                         |
|--------------|--------------------------------|
| USA          | PCNAmericasContact@list.ti.com |
| Europe       | PCNEuropeContact@list.ti.com   |
| Asia Pacific | PCNAsiaContact@list.ti.com     |
| Japan        | PCNJapanContact@list.ti.com    |

<sup>-</sup> Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on an activation energy of 0.7eV: 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV: 150C/1k Hours, and 170C/420 Hours

<sup>-</sup> The following are equivalent Temp Cycle options per JESD47: -55C/125C/700 Cycles and -65C/150C/500 Cycles Quality and Environmental data is available at TI's external Web site: http://www.ti.com/