**Name of the Test Specification**

Project-ID: -

Sample phase: -

Supplier: -

Version:-

**Daimler Truck AG**

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Release and Version History

Table 1: Version history

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Version** | **Date** | **Change** | **Sections**  **/Test-ID** | **Author** | **Released** |
| 1.0 | DD.MM.YYYY | xxxxxxx | All | XYZ |  |

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Table 2: Test procedure for Name of the test (Add test procedure at the start for the main table name)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Command** | **Parameter** | **Exit Condition** | **Comment** |
|  | **CYCLE-START-1** |  |  | **Pre-Cycle** |
|  | Set Temperature | *T* = 25 °C |  | Set temperature of climate chamber to 25°C |
|  | Rest |  | *t* > 30 min\* | Resting time for thermal relaxation of the cell.  \*Rest the cell for each Kelvin temperature difference (difference initial climate chamber temperature to set climate chamber temperature) 6 min, at least 30 min. |
|  | Discharge | *I* = INOM/3 | *V* < Vdyn,min | CC part of CCCV discharge |
|  | Discharge | *V* = Vdyn,min | *I* < 0.05.INOM | CV part of CCCV discharge |
|  | Rest |  | *t* > 30 min |  |
|  | Charge | *I* = IRPT/3 | *V* > Vdyn,max | CC part of CCCV charge. |
|  | Charge | *V* = Vdyn,max | *I* < 0.05.IRPT | CV part of CCCV charge |
|  | Set | Ah-Set = 0 |  | A fully charged cell is defined as 0 Ah. |
|  | Rest |  | *t* > 30 min |  |
|  | **CYCLE-END-1** | **COUNT = 1** |  |  |
|  | **CYCLE-START-2** |  |  | **CRPT Determination** |
|  | Discharge | *I* = INOM /3 | *V* < Vdyn,min | CC part of CCCV discharge |
|  | Discharge | *V* = Vdyn,min | *I* < 0.05.INOM | CV part of CCCV discharge.  **Determination of CRPT:** Set CRPT to the combined CCCV capacity of steps 13 and 14. |
|  | Rest |  | *t* > 30 min |  |
|  | Charge | *I* = IRPT/3 | *V* > Vdyn,max | CC part of CCCV charge |
|  | Charge | *V* = Vdyn,max | *I* < 0.05.IRPT | CV part of CCCV charge |
|  | Set | Ah-Set = 0 |  | A fully charged cell is defined as 0 Ah. |
|  | Rest |  | *t* > 30 min |  |
|  | **CYCLE-END-2** | **COUNT = 1** |  |  |
|  | **CYCLE-START-3** |  |  | **Add the keywords for the respective loops**  **Charge – Charging loop, Discharge – Discharging loop, Temperature – Temperature loops** |
|  | Set Temperature | *T = xx (or) T = Tchamber* |  |  |
|  | Discharge | *I* = xx (Use xx for the unknown variables in the test steps) | *V* < Vdyn,min  *I* < 0.05.INOM | I is chosen according to the supporting points in Table 3\* or DTC-O-5. (Mention the supporting table name followed by \* if Appendix is available) |
|  | Discharge | *I* = xx (Use xx for the unknown variables in the test steps) | *t* > *tPulse*  *V* < Vdyn,min  Ah-Set < 0 | Discharge pulse according to pulse sequence (see Table 3\*)  \*Start with discharge pulse I1 (see order Table 3\*).  Do not apply a discharge pulse at 0 % SOC. |
|  | Discharge | *I* = xx | *Ah- Set < -x CRPT*  *SOC < X %*  *I < 0.05.INOM* | Set the SOCset to xx % based on *CRPT* and according to the supporting points in Table 3\* |
|  | Charge | *I = xx* | *V* > Vdyn,max  *I* < 0.05.IRPT | Pulse to evaluate Ri. Pulse shall be done in CC mode without derating.  **Please consider \*\* notes below Table 3\*.** |
|  | Charge | *I = xx* | *t* > *tPulse*  *V* > Vdyn,max  Ah-Set > 0 | Charge pulse according to pulse sequence (see Table 3\*)  \*Start with discharge pulse I1 (see order Table 3\*).  Do not apply a discharge pulse at 100 % SOC. |
|  | Charge | *I* = xx | *Ah- Set > -x CRPT*  *SOC > X %*  *I < 0.05.INOM* | Set the SOCset to xx % based on *CRPT* and according to the supporting points in Table 3\* |
|  | **CYCLE-END-3** | **COUNT = xx** (Use xx for the unknown variables in the test steps) |  | **Number of cycles is equal to number of capacity cycles listed in Table 3\*. (Mention the supporting table name followed by \*)** |

Note: Use these standard lists of the keywords for the test steps

Table 3: Supporting points for performance tests.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TSet /** °C | **I1 / A** | **I2 / A** | **I3 / A** | **I4 / A** |
| +25 | Imax, cont | 1C | C/3 | C/5 |
| +45 | Imax, cont | 1C | C/3 | C/5 |
| +10 | Imax, cont | 1C | C/3 | C/5 |
| 0 | Imax, cont | 1C | C/3 | C/5 |
| -10 | Imax, cont | 1C | C/3 | C/5 |
| -20 | Imax, cont | 1C | C/3 | C/5 |

# Appendix

Table 3\*: Supporting points for name of the test.

|  |  |  |
| --- | --- | --- |
| **TSet /** °C | **I/ A** | **No. of Cycles** |
| +25 | Imax, cont | 1 |
| +25 | 1C | 1 |
| +25 | C/3 | 1 |
| +25 | C/5 | 1 |
| +45 | Imax, cont | 1 |
| +45 | 1C | 1 |
| +45 | C/3 | 1 |
| +45 | C/5 | 1 |
| . | . | . |
| . | . | . |

For continuous current - Imax, cont

For pulse current - Imax, pulse

**Note:** Each row in the supporting table will be considered as a separate iteration step for the respective loops

List of the Column names to be used in the supporting table:

1. Temperature - **TSet / °C**
2. Current – **I/A**
3. Cycle Count – **No. of Cycles**
4. State of Charge (SOC) - **SOCRPT, Set / %**
5. Starting SOC (for Quick Charge) – **Start SOC**
6. Ending SOC (for Quick charge) – **End SOC**
7. Pulse current time - **tpulse/s**
8. Charging or Discharging – **CH/DCH**

**Note:**

* Add only values inside the table (NO SYMBOLS)