

DOCKETED	
Docket Number:	26-OPT-02
Project Title:	Seahawk Battery Energy Storage System
TN #:	272154
Document Title:	UL 9540A Test Results
Description:	N/A
Filer:	Erin Phillips
Organization:	Dudek
Submitter Role:	Applicant Consultant
Submission Date:	8/24/2026 2:12:25 PM
Docketed Date:	8/24/2026

MEMORANDUM

To: California Energy Commission Staff
From: Sequoia Energy Storage 1, LLC
Subject: Seahawk Battery Energy Storage System Project (26-OPT-02) – UL9540A Test Reports
Date: August 24, 2026
Attachment(s): Non-Confidential UL9540A Test Reports

On May 27, 2026, Sequoia Energy Storage 1, LLC (the “Applicant”) filed an Application for Confidential Designation for Opt-In Application for Certification for Confidential UL9540A Test Reports (TN: 271256). Since filing TN: 271256, the Applicant has sought and received permission from the manufacturer to publicly disclose the UL9540A test reports. The Applicant retracts its prior Application for Confidential Designation for Opt-In Application for Certification for Confidential UL9540A Test Reports (TN: 271256) and provides the non-confidential UL9540A test reports herein.

Date : 21.11.2023

Contemporary Amperex Technology
Co., Limited
No.2, Xingang Road,
Zhangwan Town, Jiaocheng District
352100 Ningde City Fujian
P.R. China
Attn: Sandy Lv

Re. : CU US + Canada Certificate

Type of Equipment : Rechargeable Lithium-ion Battery System
Model Designation : See Certificate
Certificate No. : CU 72302693 0001
File No. : CN23J9GR 001
Engineer/Contact : Wilson Zhou
Standard(s) : ANSI/CAN/UL 9540:2020

Dear Ms. Sandy Lv,

Enclosed, please find the TÜV Rheinland Certificate of
Approval No. CU 72302693 0001 as requested.

The equipment will be held by the manufacturer for
reference purposes.

Call the TÜV hotline at 1-TÜV-Rheinland (1-888-743-4652)
to get answers for all your compliance needs.

If we can be of any further assistance to you,
please do not hesitate to contact us.

Sincerely yours,
Certification Body



Weichun Li

Enclosure

证书的详细资料请登陆www.certipedia.com查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询

Certificate



Certificate no.

CU 72302693 01

License Holder:

Contemporary Amperex Technology
Co., Limited
No.2, Xingang Road,
Zhangwan Town, Jiaocheng District
Ningde City
352100 Fujian
P.R. China

Manufacturing Plant:

Contemporary Amperex Technology
Co., Limited
No.2, Xingang Road,
Zhangwan Town, Jiaocheng District
Ningde City
352100 Fujian
P.R. China

Test report no.: USA-Zhouwils CN23J9GR 001

Client Reference: Sandy lv

Tested to: ANSI/CAN/UL 9540:2020

Certified Product: Rechargeable Lithium-ion Battery System

License Fee - Units

Type Designation: C02306P05L01

10

Nominal voltage : 1331.2V

Rated capacity : 3060Ah

Trademark : CATL

Other Data : See Appendix (Construction Data Form)

Appendix: 1, 1-42

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Licensed Test mark:



**Date of Issue
(day/mo/yr)**

21/11/2023



Thank you for giving UL the opportunity to partner with you.

Inspections at your plant will be conducted by the Inspection Center in your vicinity. More information on Follow-up Service Inspections can be found at <https://www.ul.com/resources/follow-up-services-additional-resources>. Please note, Follow-Up Procedure Revisions or Report Revisions do not include Authorization Pages, Indices, Section General, and/or Appendices unless revisions were required or requested.

Should you have any questions, after reviewing the material, or need to report any inaccuracies, please reach out to your UL representative or find UL contact details for your local Customer Service Department at <https://www.ul.com/about/locations>.

Please find attached the related material

For your convenience, the below describes the related updates:

For revised/new documentation, please reference 2023-06-02 in the page headings.

Volume(s) 1 Section(s) 20 were added.

Manufacturer Party Site Number 3308372 was added.

Manufacturer Party Site Number 3308375 was added.

Manufacturer Party Site Number 3308378 was added.

MH62898-vol1-AuthorizationPage
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Figure-3-Total
Illustration-2-Total

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Times change, Trust Remains™



File MH62898

Vol 1

Authorization Page 1

Issued: 2018-06-07

Revised: 2023-06-06

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS - COMPONENT
(BBGA2, BBGA8)

Manufacturer:	SEE ADDENDUM FOR MANUFACTURER LOCATIONS
Applicant:	827603 (Party Site) Contemporary Amperex Technology Co Limited No 2 Xingang Road Zhangwan Town Jiaocheng District NingdeFujian 352100 China NINGDE FUJIAN 352100 CN
Recognized Company:	827603 (Party Site) SAME AS APPLICANT

Use of the Mark

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant, Manufacturer(s), and Recognized Company to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

Additional Responsibilities

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following website: <https://www.ul.com/fus>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <https://www.ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

Acceptance of Follow-Up Services

The Applicant and the specified Manufacturer(s) and any Recognized Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s), and any Recognized Company will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: <https://www.ul.com/resources/contracts/follow-up-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

Use and Ownership of the Follow-Up Service Procedure

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the Applicant, the specified Manufacturer(s), and representatives of UL and is not

to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Definition of Terms

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

No Third Party Liability

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

Certification Body

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body. The certification body's accreditation status for the applicable certification scheme and identification of the accreditation body can be found at <https://www.ul.com/resources/accreditation>.

Deborah Jennings-Conner
VP Regulatory Services
UL LLC

LOCATION

827603 (Party Site)
Contemporary Amperex Technology Co Limited
No 2 Xingang Road
Zhangwan Town Jiaocheng District
NingdeFujian 352100
China
NINGDE FUJIAN 352100 CN

Factory ID: None
UL Contracting Party for above site is: UL GmbH

827603 (Party Site)
Contemporary Amperex Technology Co Limited
No 2 Xingang Road
Zhangwan Town Jiaocheng District
NingdeFujian 352100
China
NINGDE FUJIAN 352100 CN

Factory ID: None
UL Contracting Party for above site is: UL GmbH

2334244 (Party Site)
United Auto Battery Co,.Ltd
No.328 Huanyuan West Rd, Kunlun Street
Liyang Jiang Su 213300 CN

Factory ID: UABC
UL Contracting Party for above site is: UL GmbH

3085991 (Party Site)
Jiaocheng Contemporary Amperex Technology Co.Ltd
No. 1, Outer Ring Road, Feiluan Town, Jiaocheng District
Ningde FUJIAN 352000 CN

Factory ID: JC
UL Contracting Party for above site is: UL GmbH

3308372 (Party Site)
Guangdong Ruiqing Contemporary Amperex Technology Limited
No.1 ,Shidai Street,High-Tech Industrial Development Zone
Zhaoqing Guangdong Sheng 526238 CN

Factory ID: RQ
UL Contracting Party for above site is: UL GmbH

3308375 (Party Site)
Fuding Contemporary Amperex Technology Limited
No. 1, Shidai Road, Xueqiao Village, Qianqi Town, Fuding City
Ningde Fujian Sheng 355200 CN

Factory ID: FD
UL Contracting Party for above site is: UL GmbH

3308378 (Party Site)
Yichun Contemporary Amperex Technology Limited
No 1 Chunfeng Road, Economic And Technological Development Zone
Yichun Jiangxi Sheng 336000 CN

Factory ID: YC
UL Contracting Party for above site is: UL GmbH

INDEX

Product Description/Model	Section	Requirements Evaluated to (US and/or CN)
Lithium Ion Cell, Model(s): S5E891	1	USR, CNR
Lithium Ion Cell, Model(s): 6LH3L8	2	USR, CNR
Lithium Ion Cell, Model(s): 001CB310, CB310, CB2W0	3	USR, CNR
Lithium Ion Cell, Model(s): 001CB270	4	USR, CNR
Lithium Ion Cell, Model(s): 001CE210	5	USR, CNR
Lithium Ion Cell, Model(s): 001CB150	6	USR, CNR
Lithium Ion Cell, Model(s): 6LH3L7	7	USR, CNR
Lithium Ion Cell, Model(s): 001CB0Y0	8	USR, CNR
Lithium Ion Cell, Model(s): CB4S0	9	USR, CNR
Lithium Ion Cell, Model(s): CB5T0	10	USR, CNR
Lithium Ion Cell, Model(s): CB320	11	USR, CNR
Lithium Ion Cell, Model(s): CB370	12	USR, CNR
Lithium Ion Cell, Model(s): CB6H0	13	USR, CNR
Lithium Ion Cell, Model(s): CB7C0	14	USR, CNR
Lithium Ion Cell, Model(s): CB940	15	USR, CNR
Lithium Ion Cell, Model(s): CB240	16	USR, CNR
Lithium Ion Cell, Model(s): CB230	17	USR, CNR
Lithium Ion Cell, Model(s): CB3S0	18	USR, CNR
Lithium Ion Cell, Model(s): CB5Q0	19	USR, CNR
Lithium Ion Cell, Model(s): CBDD0	20	USR, CNR

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

APPENDIX A - FIELD REPRESENTATIVE'S RESPONSIBILITIES AND INSTRUCTIONS FOR
EXAMINATION OF THE PRODUCT
GENERAL

The Field Representative's general responsibilities, as part of the Follow-Up Services Procedure, are as noted in the published document titled, "UL Mark Surveillance Requirements", and is available through UL's secure customer portal MyHome@UL.com and/or through UL's internet site www.UL.com. Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Representative.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

When a product does not comply with the Follow-Up Service Procedure require that the manufacturer implement appropriate action as outlined in the "UL Variation Notice and Corrective Action Requirements" document.

CONSTRUCTION CONSIDERATIONS

The Field Representative is required to examine production bearing, or intended to bear, the UL Mark or Markings, to determine compliance with each of the construction requirements referenced in the "Construction Considerations" section of Appendix D.

The following are applicable only to BBGA2 secondary lithium cells:

- There are two types of factory Follow-Up Programs that apply to the BBGA2 Product Category for secondary lithium cells. One type relies on the verification of critical dimensions and/or specifications contained in detailed drawings, specification sheets, and/or the FUS Procedure (in lieu of required factory testing). The other relies on required factory testing (in lieu of verification of critical specifications contained in detailed drawings/specification sheets, and/or the FUS Procedure).
- Secondary Lithium Cell Models Relying Upon Required Factory Testing -
 - They are models that are specified in Table 1 of Appendix D.
 - No special instructions beyond those already contained in the Appendix Pages, Special Appendix Pages, or the body of the FUS Procedure.
- Secondary Lithium Cell Models Relying Upon Verification of Critical Dimensions and/or *Specifications* -
 - They are models that are specified in Table 1 of Appendix D for Periodic Production Test F only.

APPENDIX A

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

- The Field Representative shall examine the construction from the information provided in the construction details outlined in the FUS Procedure. If the FUS Procedure referenced drawings and/or specification sheets are not physically contained in the FUS Procedure, they will be referenced by drawing/specification sheet number and last revision date. The Field Representative shall use the manufacturer's copies of the drawings and/or specification sheets to conduct the inspection. If requested by the UL Office, the Field Representative shall provide information from the FUS Procedure referenced drawing or specification sheet in use at the time of the visit.
- In addition to the information outlined in the electrode and electrolyte items of the product description section of the FUS Procedure, the following information shall be checked on each visit for each product inspected.
 1. Positive (Cathode) and Negative (Anode) Electrode(s): A generic description of the active materials, a description of the substrate materials, the overall dimensions of the electrode and the ratio of the negative to positive electrode capacity per area. See Ill 1 for an example of the critical information required for inspection of a lithium ion cell.

Changes to the active material or to a substrate material, a change in the dimensions of the electrode or a change in the manufacturer's specifications for the ratio of the negative to positive electrode capacity per area would necessitate a re-evaluation by UL. For changes in other areas contained in the FUS Procedure referenced drawing or specification sheet, it is not necessary for the manufacturer to have the FUS Procedure changed to incorporate the latest revision level/date. However, you shall work with the manufacturer to preserve the critical information contained on the document referenced in the FUS Procedure so that it could be used during subsequent inspections to determine that critical information contained on documents with newer revision levels/dates has not changed.

APPENDIX A

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

2. Electrolyte(s): For secondary lithium cells, the lithium salts and their percentage of the total electrolyte composition, the solvents and their percentage of the total electrolyte composition, a description of allowed contaminants and maximum levels allowed. See Ill 2 for an example of the critical information required for inspection of a secondary lithium cell electrolyte.

Changes to the lithium salt composition or in its percentage of the total electrolyte composition, in the solvent(s) used or in each solvent's percentage of the total electrolyte composition, an increase of the current maximum allowed contaminant levels or the addition of new allowed contaminants would necessitate a re-evaluation by UL. For changes in other areas contained in the FUS Procedure referenced drawing or specification sheet, it is not necessary for the manufacturer to have the FUS Procedure changed to incorporate the latest revision level/date. However, you shall work with the manufacturer to preserve the critical information contained on the document referenced in the FUS Procedure so that it could be used during subsequent inspections to determine that critical information contained on documents with newer revision levels/dates has not changed.

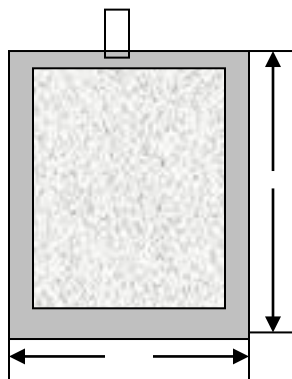
The following is applicable to BBGA2 secondary nickel cells:

Models specified in Table 1 of Appendix D are subjected to Periodic Production Test F only.

APPENDIX A

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)ILLUSTRATION 1: ELECTRODE INFORMATION
(Lithium ion cell Example)

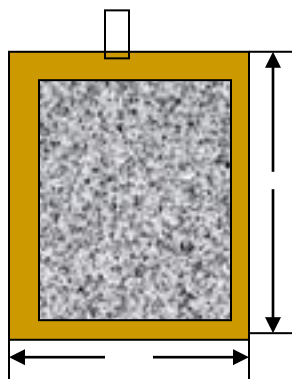
1. Drawing Number and Revision date
2. The capacity ratio of the negative (anode) to positive (cathode) electrodes: i.e. ≥ 1.008
3. Positive Electrode Information:



Overall Dimensions of Positive Electrode

Positive Electrode Active Materials: i.e. LiCoO_2 , LiCoMnNiO_2 , etc.
Positive Electrode Substrate Material: i.e. aluminum foil

4. Negative Electrode Information:



Overall Dimensions of Negative Electrode

Negative Electrode Active Materials: i.e. graphite, carbon, etc.
Negative Electrode Substrate Material: i.e. copper foil

APPENDIX A

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)ILLUSTRATION 2: ELECTROLYTE INFORMATION
(Lithium ion cell Example)

1. Drawing number and revision date: JN-HCY-15901/2016-04-12
2. Lithium Salts: *i.e.* LiPF_6 , LiBF_4 , LiClO_4 , *etc.*
Lithium salt - weight % of composition: *i.e.* $13.5 \pm 0.3 \%$
3. Solvent(s) (typically more than one): *i.e.* EC, PC, DMC, EMC, EA, MA
For each solvent - weight % of composition: *i.e.* $10.95 \pm 1.0 \%$
4. Allowed Impurities: *i.e.* H_2O , HF, Fe, Na, K, Ca, *etc.*
Maximum impurity levels: *i.e.* 4 ppm,

Electrolyte Drawing # ABC Revision Date: 12/1/07	
Lithium Salt	Weight percentage
LiPF_6	$13.5 \pm 0.3 \%$
Solvent(s)	Weight Percentage
EC	25%
EMC	12%
DMC	47.25%
VC	0.75%
PS	1%
ES	0.5%
Allowed Impurities	Maximum Allowed Levels, ppm
H_2O	10
HF	25
FE	1
Na	4
K	4

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT
APPLICATIONS (BBGA2, BBGA8)

APPENDIX B - INSTRUCTIONS FOR FIELD REPRESENTATIVE'S SAMPLE SELECTION

(RESERVED FOR FUTURE USE)

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

APPENDIX C - INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

(RESERVED FOR FUTURE USE)

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2,BBGA8)

APPENDIX D - MANUFACTURER' S RESPONSIBILITIES, CONSTRUCTION CONSIDERATIONS,
AND REQUIREMENTS FOR FACTORY TESTS

The Follow-Up Service Procedure covering the product is loaned to the manufacturer and constitutes the basis on which the product is judged for compliance with the applicable requirements.

MANUFACTURER' S RESPONSIBILITIES

GENERAL

The Manufacturer's general responsibilities, as part of the Follow-Up Services Procedure, are as noted in the published document titled, "UL Mark Surveillance Requirements", and is available through UL's secure customer portal MyHome@UL.com and/or through UL's internet site www.UL.com. Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Representative.

Periodic Production Tests - Conduct the periodic production tests on those cell models as indicated in Table 1 Appendix D.

CONSTRUCTION CONSIDERATIONS

The manufacturer shall verify compliance with the applicable descriptions and requirements contained in this Procedure. Consideration shall also be given to the general requirements described below, which also apply to products covered in this Procedure. It is the manufacturer's responsibility to assure that production complies with these requirements.

Component BBGA2 Secondary Lithium Cells -

For those cases where the Follow-Up Service is based upon verification of critical dimensions and/or specifications of cells, it is recognized that the manufacturer may change dimensions and/or specifications (therefore changing revision levels) for parameters not specified in the FUS Procedure. It is acceptable for the manufacturer to do so without seeking a change to the FUS Procedure as long as he still retains a copy of the FUS Procedure referenced drawing, so the Field Representative during subsequent visits can continue to confirm that the latter revision levels do not include any changes to the dimensions and/or specifications for parameters referenced by the FUS Procedure. Any changes to dimensions and/or specifications for parameters covered in the FUS Procedure must first be authorized by UL and the latest version (revision level) of the drawing must be incorporated in the FUS Procedure.

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

MANUFACTURER'S PERIODIC PRODUCTION-LINE TEST PROGRAM

For cell models subjected to periodic production testing, refer to Table 1 of App. D.

The applicable tests and examinations described below shall be performed by the manufacturer **[Note]** on random samples chosen in accordance with Table B of App. D below.

Manufacturer's equipment used for periodic production testing is as outlined in Table 2 of App. D.

TABLE B
FREQUENCY OF PERIODIC PRODUCTION TESTS AND NUMBER OF SAMPLES TESTED

Test or Examination	Type of Product	Frequency	No. of Cells Tested ^B
Weight Measurement	Component cells	Daily	3
Upper Discharge Profiles	Component cells	Monthly	3
Lower Discharge Profile	Component cells	Monthly	3
Leakage	Secondary lithium cells	Monthly	3
X-Ray Const. Examination	Secondary lithium cells	Monthly	3
Heating ^A	Component cells	Annually	2
A - For the heating test, testing is conducted once per year on each model representative of a family of cells as outlined in Table 1 of App D. Different models are to be tested each time so that each model is tested at least once within a 4 year period.			
B - The number of samples per test of each model subjected to periodic production testing.			

[Note: Test samples for periodic production testing could be sent out to the test center of the headquarters to conduct test.]

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

A. Weight Test

Test Method

Using a calibrated scale, a representative sample of production cells from each model as outlined in Table 1 of App. D shall be weighed and compared with the manufacturer's specified weight.

Basis for Acceptability

The weight of samples shall be within the tolerances per Table 3 of App. D.

B. Upper Discharge Profile

Test Method

A representative sample of production cells as outlined in Table 1 of App. D from each model shall be subjected to a 1.0C Discharge Profile Production Test. Cells intended for high rate discharge applications greater than 1.0C, shall be subjected to a higher discharge profile as outlined in Table 4.

Samples shall be fully charged in accordance with the manufacturer's specifications for charging. The samples shall then be discharged at a 1.0C A discharge rate, or higher rate as applicable, at an ambient of $25 \pm 5^{\circ}\text{C}$ to the manufacturers specified end point voltage. The voltage over current discharge profiles shall be recorded during discharging of the cell. The curves obtained shall be compared with the manufacturers specified discharge profile for the cell.

Basis of Acceptability

The discharge voltage over current profile shall be within the manufacturer's specification tolerances per Table 4 of App. D.

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

C. Lower Discharge Profile

Test Method

A representative sample of production cells as outlined in Table 1 of App. D from each model shall be subjected to a 0.2C Discharge Profile Production Test. Cells intended for high rate discharge applications greater than 1.0C, shall be subjected to a low discharge profile at higher rates than 0.2C, as outlined in Table 4 of App. D.

Samples shall be fully charged in accordance with the manufacturer's specifications for charging. The samples shall then be discharged at a 0.2C Amp discharge rate, or higher rate as applicable, at an ambient of $25 \pm 5^{\circ}\text{C}$ to the manufacturers specified end point voltage. The voltage over current discharge profiles shall be recorded during discharging of the cell. The curves obtained shall be compared with the manufacturers specified discharge profile for the cell.

Basis of Acceptability

The discharge voltage over current profile shall match the manufacturer's specification tolerances per Table 4 of App. D.

D. Leakage

Test Method

A representative sample of secondary lithium production cells as outlined in Table 1 of App. D from each model shall be subjected to a Leakage Test.

Samples fully charged in accordance with the manufacturer's specifications, shall be subjected to conditioning at $60 \pm 2^{\circ}\text{C}$ for 20 days.

At the conclusion of the conditioning, the cells shall be allowed to return to room ambient ($25 \pm 5^{\circ}\text{C}$) and examined for visual signs of leakage of electrolyte.

Basis of Acceptability

There shall be no signs of leakage.

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

E. X-Ray Construction Review

Test Method

A representative sample of production secondary lithium cells as outlined in Table 1 of App. D from each model shall be subjected to an X-Ray Construction Review as outlined below.

Samples shall be X-rayed utilizing equipment as outlined in Table 2 in App. D. The X-rays of the chosen production test samples shall be compared with the manufacturer's comparison X-Ray of the cell model to determine that construction features such the placement and size of the electrodes, length of center tube, tab placement and design, etc. have not changed from the manufacturer's X-ray Construction Review.

Basis of Acceptability

The X-rays of the examined production samples shall be comparable with the manufacturer's X-Ray Construction Review. There shall be no signs of change.

F. Heating Test

General

This test is conducted once per year on each model representative of a family of cells as outlined in Table 1 of App D. Different models are to be tested each time so that each model is tested at least once within a 4 year period.

Test Method

Two fully charged cells are to be subjected to the heating test.

The cells are to be placed in an air circulating oven or gravity convection oven. The temperature is to be raised from an ambient of $25 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$) at a rate of $5 \pm 2^{\circ}\text{C}/\text{min}$ ($7.5 \pm 3.6^{\circ}\text{F}/\text{min}$) to a temperature of $130 \pm 2^{\circ}\text{C}$ ($266 \pm 3.6^{\circ}\text{F}$) or for sodium beta batteries to $25 \pm 2^{\circ}\text{C}$ ($77 \pm 3.6^{\circ}\text{F}$) above the maximum operating temperature of the cell as outlined in Table 5 of App D. Once the maximum temperature is reached, it is held for 30 min. The test is then discontinued and the samples are allowed to cool to ambient.

Basis of Acceptability

There shall be no evidence of fire or explosion of the cells.

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

Procedure In Case of Nonconforming Results

When nonconformance is encountered during the manufacturer's test and inspection program, the manufacturer shall follow the procedure detailed below:

- a. Reject the lot and hold production since last acceptable sample.
- b. Perform analysis to determine cause of nonconformance, corrective action to be taken, and portion of segregated production or lots affected.
- c. Implement corrective action.
- d. Randomly select a minimum of verification samples in accordance with parameters tables in App. D for retest of nonconforming parameters.
- e. If all verification samples pass, the lot may be accepted.
- f. If any verification sample does not conform, all reference to UL may be removed from the affected production, the production may be scrapped entirely or, the manufacturer may notify the Field Representative of the nonconformance and a Special Investigation shall be initiated by the manufacturer. The Special Investigation shall be concluded and the segregated production may bear the UL Listing Mark only when, in the judgment of UL, the conditions responsible for the Special Investigation have been corrected.

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)TABLE 1
CELL MODELS SUBJECT TO PERIODIC PRODUCTION TESTING

Cell Model(s)	Section No./ Report Date	*Periodic Production Tests to be Conducted: A, B, F, C, D, E, F#
S5E891	1	F
6LH3L8	2	F
001CB310, CB310, CB2W0	3	F
001CB270	4	F
001CB150	6	F
001CB0Y0	8	F
CB4S0	9	F
CB5T0	10	F
CB320	11	F
CB370	12	F
CB6H0	13	F
CB7C0	14	F
CB940	15	F
CB240	16	F
CB230	17	F
CB3S0	18	F
CB5Q0	19	F
CBDD0	20	F
* - <i>Note to CAS: Cells from the same family (i.e. same chemistry and construction except different ratings) must all be subjected to or all not subjected to Periodic Production Testing Tests A through E, but not both, within a procedure section/report date. Cells from different families may choose either option within each volume, but the two options shall not be mixed within a single section/report date.</i> # - <i>The Periodic Production Test F (heating test) is conducted on all cells including those cells not subjected to periodic production tests A through E and Nickel Cells. Testing is conducted once per year on each model representative of a family of cells as outlined in Table 1 of App D. Different models are to be tested each time so that each model is tested at least once within a 4 year period.</i>		

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2,BBGA8)TABLE 2
PERIODIC PRODUCTION TEST EQUIPMENT

The following equipment has been evaluated with respect to the requirements expressed in Appendix D and has been found suitable:

Test	Type of Equipment	Equipment Manufacturer's Name	Equipment Model No.
Weight	Electronic balance	--	--
Upper Discharge	Battery Testing System	--	--
Lower Discharge	Battery Testing System	--	--
Leakage	Power battery extrusion machine	--	--
	Drop tester	--	--
X-Ray Construction Review	X-Ray Construction	--	--
Heating	Thermal shock test machine	Various	Temperature range: RT~+300 °C Heating-up time: RT ~+300 °C ≤ 60min

[illegible]

[illegible]

APPENDIX D

BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS
(BBGA2, BBGA8)

TABLE 5 - HEATING TEST PARAMETERS

Models#	Section No.	Test Maximum Temperature, °C
S5E891	1	130
6LH3L8	2	130
001CB310, CB310, CB2W0	3	130
001CB270	4	130
001CB150	6	130
001CB0Y0	8	130
CB4S0	9	130
CB5T0	10	130
CB320	11	130
CB370	12	130
CB6H0	13	130
CB7C0	14	130
CB940	15	130
CB240	16	130
CB230	17	130
CB3S0	18	130
CB5Q0	19	130
CBDD0	20	130
# - The periodic production heating test is done on lithium ion and nickel cells		

File MH62898
Project 4790870138

June 2, 2023

REPORT

on

COMPONENT - Batteries Cells for Use in Stationary and /or Transport
Applications
(BBGA2, BBGA8)

Contemporary Amperex Technology Co Limited

NINGDE, FUJIAN, CHINA

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Cell Model	Mfgs. Recommended Charge Specifications					Mfgs. Recommended Discharge Specifications				
	Voltage, Vdc	Current, A	Maximum Voltage/Upper limit charging voltage, Vdc	Maximum Current		Current, A	End Point Voltage, Vdc	Lower limit discharging voltage, Vdc ##	Maximum Current	
				Continuous charging current, A	Pulse charging current, A ##				Continuous discharging current, A	Pulse discharging current, A ##
CBDD0	3.65	153	3.95	153	229.5 (t≤30s)	153	2.5	2.0	195.9	306 (t≤30s)
## - Note: The parameter is defined by manufacturer and not verified by UL.										

MANUFACTURER'S SPECIFIED TEMPERATURE PARAMETERS:

The following values, based upon manufacturer's internal data, are the manufacturer's recommended temperature specifications.

Cell Model	Charge, °C		Discharge, °C		Storage, °C		Surface Temperature Limit, °C
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit	
CBDD0	0	60	-20	60	-30	60	65

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

USR, CNR indicates compliance with the requirements outlined in ANSI/CAN/UL 1973:2022, Batteries for Use in Stationary and Motive Auxiliary Power Applications, Edition 3, Issue Date 02/25/2022.

Use - For use only in products where the acceptability of the combination is determined by UL LLC.

Conditions of Acceptability - The use of these cells may be considered generally acceptable under the conditions given below:

1. These cells have been evaluated for safety only. No capacity performance testing has been conducted as part of this investigation.
2. The compatibility of the cell and charging circuit combination shall be evaluated in the end use application. In addition, the end use application is to provide protection circuitry to prevent cells from exceeding the limits for voltage, current and temperature under charging and discharging as specified by the manufacturer in the tables above.
3. Evaluation of the cells in this report to the following test has been conducted with acceptable results:

- ☐ UL 2580, CL 16
- ☐ UL 2580, ANNEX B
- ☐ UL 2580, ANNEX D
- ☐ UL 2271, CL 16
- ☒ UL 1973, Cl 7.12 and Appendix E2 to E9
- ☐ UL 1973, Appendix E11

The need for additional testing of the cells shall be determined in the end use application.

4. These cells are to be used only in devices where servicing of the cell circuit and installation and replacement of the cells will be done by a trained technician. These cells are intended for installation in a protective enclosure in an end use application that prevents access to the cells and any external protective devices provided with the cells during normal use of the cell including charging and discharging.
5. The suitability of these cells for multi-cell applications including series or parallel connections shall be determined in the end use. Cells connected in series in the end use applications, shall be protected against cell reversal due to imbalance and shall be maintained within the manufacturer's specified limits for voltage, current and temperature during charging and discharging.
6. These cells secured with fixture had been subjected to projectile test. Additional tests may be need and the acceptance should be determined in the end use application. As a result, the suitability of these cells in the end use application with regard to an explosion hazard as a result of exposure to fire may need to be determined.

MARKINGS/INSTRUCTIONS:

Recognized Company, Model designation, and date of manufacturer on the cell.

The cell shall be marked with the UL Recognition Mark and CUL Recognition Mark.

The date of manufacture may be in the form of a code.

S/N: MMM NNNNN XXXXXX DDD LL SSSSS

MMM: Three digits for manufacture code.

NNNNN: Five digits for Cell model.

XXXXXX: Six digits for Traceable Code.

DDD: Three digits for date of manufactured.

The first one represents the year of manufactured, 0=2010..., 9=2019, A=2020, B=2021, C=2022, D =2023...;

The second one represents the month of manufactured, 1=Jan..., A=Oct, B=Nov, C=Dec;

The third one represents the date of manufactured, 0~9, A=10, B=11, C=12....
For example, "D36" means date of manufacture: 2023.03.06.

LL: Two digits for Line number.

SSSSS: Five digits for Serial number of cell.

[x] See Section General for details of manufacturer's marking for cells manufactured at more than one factory location.

The cells are to be provided with information containing the manufacturer's specified limits for voltage, temperature and current during charging and discharging as well as the cell ratings for the end use manufacturer. The information shall provide instructions for proper storage, installation, use, and disposal of the cells.

CELL WEIGHT

The cell weight is as noted below.

Cell Model	Weight $\pm$ tolerances (g)
CBDD0	5500 $\pm$ 300

CELL DISCHARGE CURVE:

See the following illustrations for diagrams of cell discharge curve

Cell Model	Illustration No.
CBDD0	ILL.1

[x] Lithium-ion Cells Model CBDD0- Fig(s) 1 ~ 3.

General - See Ill.2 for additional information.

1. Cell Case - Consists of material, overall dimensions, and thickness of plating as noted below.

Cell Model	Case Material	Case Dimensions, mm			Case Mtl. Thickness, mm
--	--	Length	Width	Height	--
CBDD0	Aluminum	174.7±0.8	71.6±0.8	207.3±0.8	Side:0.8±0.08 Bottom:1.5±0.15 Other faces:0.65±0.05

2. Cell Lid - Prismatic Aluminum lid, connected JR with Al connector and Cu connector, covered with top insulation plate, Secured to case by: laser welding.
3. Electrode Assemblies - Consists of positive and negative electrodes rolled in "jelly roll" assembly, total two JR within the case and constructed. They are constructed as noted below.

Cell Model	Positive Electrode		Negative Electrode		Negative Electrode/ Positive Electrode Capacity ratio
	Drawing No.*	Dimensions mm	Drawing No.*	Dimensions mm	(Ah _{NE} /Ah _{PE})
CBDD0	CPF #	L: 12628-15352* W: 170-206* T: 0.175-0.213 (For one JR)	APG #	L: 12969-15766* W: 172-208* T: 0.134-0.163 (For one JR)	>1
* - Controlling Documentation containing details of composition of positive and negative electrodes. See Appendix A for more details. # - Internal Design Drawing No.					

4. Separator - Unlisted component battery separator Located between the electrodes and constructed as noted below. The separator is sized to extend beyond the electrodes as noted below for reliable insulation.

Cell Model	Separator Mfg.	Type Designation	Report Reference (Unlisted Component)		Dimensions, mm			Minimum Extension beyond electrodes, mm
--	--	--	File Number	Report Date	Length, mm	Width, mm	Thickness, μm	--
CBDD0	9676	SBM	MH62937	2018-06-07	27937-33532	176-214	13 $\pm$ 5	1

5. Electrolyte - Constructed as noted below.

Cell Model	Generic Composition	Drawing No.*
CBDD0	LiPF ₆ /EC/PC/DEC/EMC/DMC	MD-ESN #
* - Controlling Documentation containing details of composition of electrolyte. See Appendix A for more details. # - Internal Design Drawing No.		

6. Insulators - Consists of the following parts within the cell:
Information on the materials employed, location and construction information are as noted in the illustrations below.

Cell Model	Insulation Parts	Type	Ill. Nos.
CBDD0	Top Insulation Plate	PP	MD-PAT #
	Bottom Insulation Plate	PP	MD-PAP #
# - Internal Design Drawing No.			

7. Electrode Tabs - (Provided for the electrical connection of the electrodes to the cell terminals). Tabs constructed as noted below:

Cell Model	Tab Construction	Tab Ill. No.
CBDD0	Main electrode tabs was secured to the terminals by ultrasonic welding.	Positive Tab: Aluminum, MD-CCA # L(22-36)mm*W(30-42)mm*T(0.012-0.018)mm Negative Tab: Copper, MD-ACC # L(22-36)mm*W(30-42)mm*T(0.003-0.009)mm
# - Internal Design Drawing No.		

8. Cell terminal - constructed as noted below:

Cell Model	Terminal Ill. Nos.
CBDD0	MD-PTA # Positive Material: Aluminum Negative Material: Aluminum + Copper Secured by laser welding
# - Internal Design Drawing No.	

9. Vent Mechanism - The vent mechanism is constructed as noted below.

Cell Model	Vent Ill. No.
CBDD0	MD-PTA # Length: 25.3-30.3mm, Width: 13.7-16.7mm Material: MFX2 Valve opening pressure: 0.4-1.2MPa
# - Internal Design Drawing No.	

Figure-1 Page-1

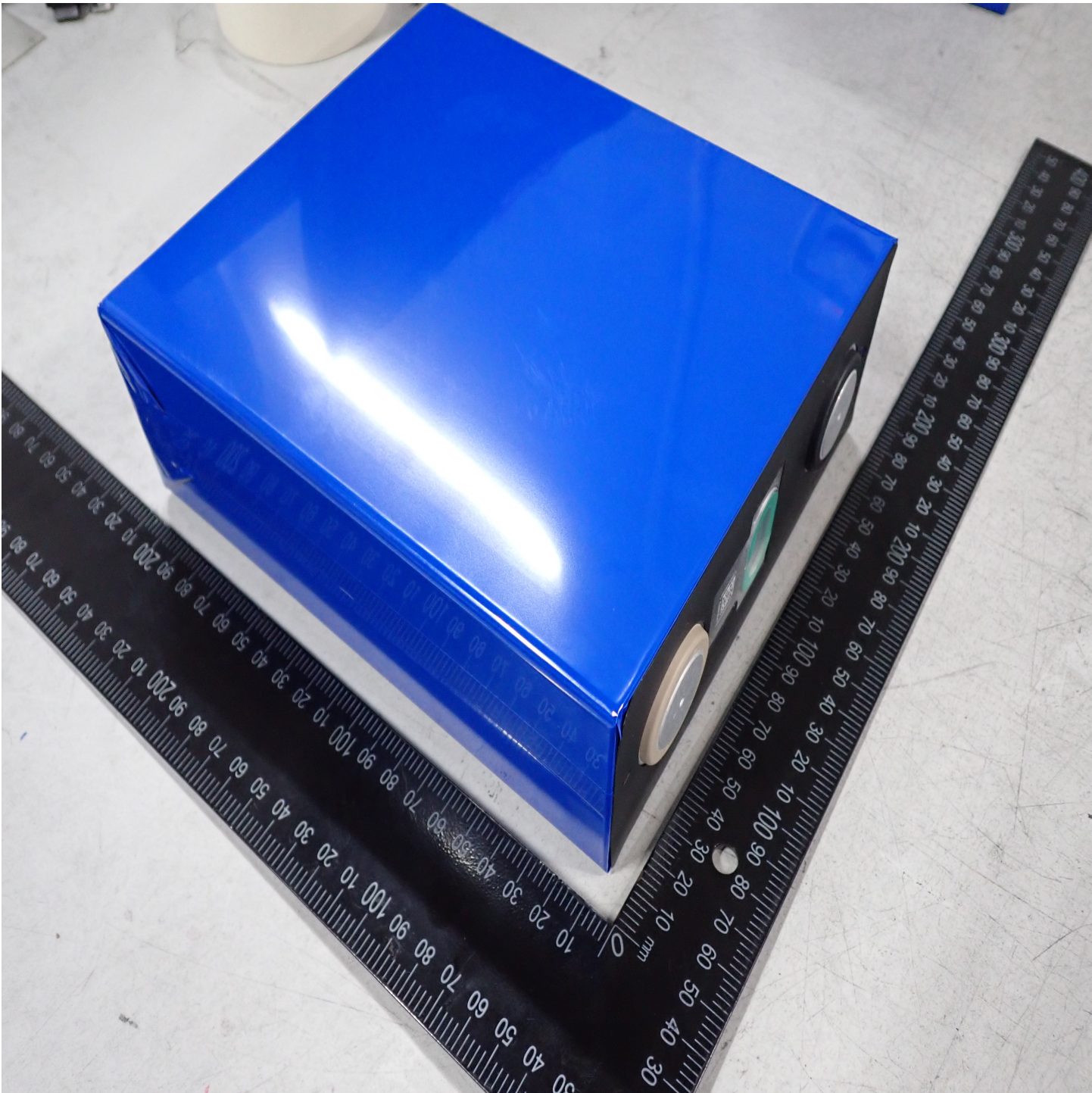


Figure-2 Page-1

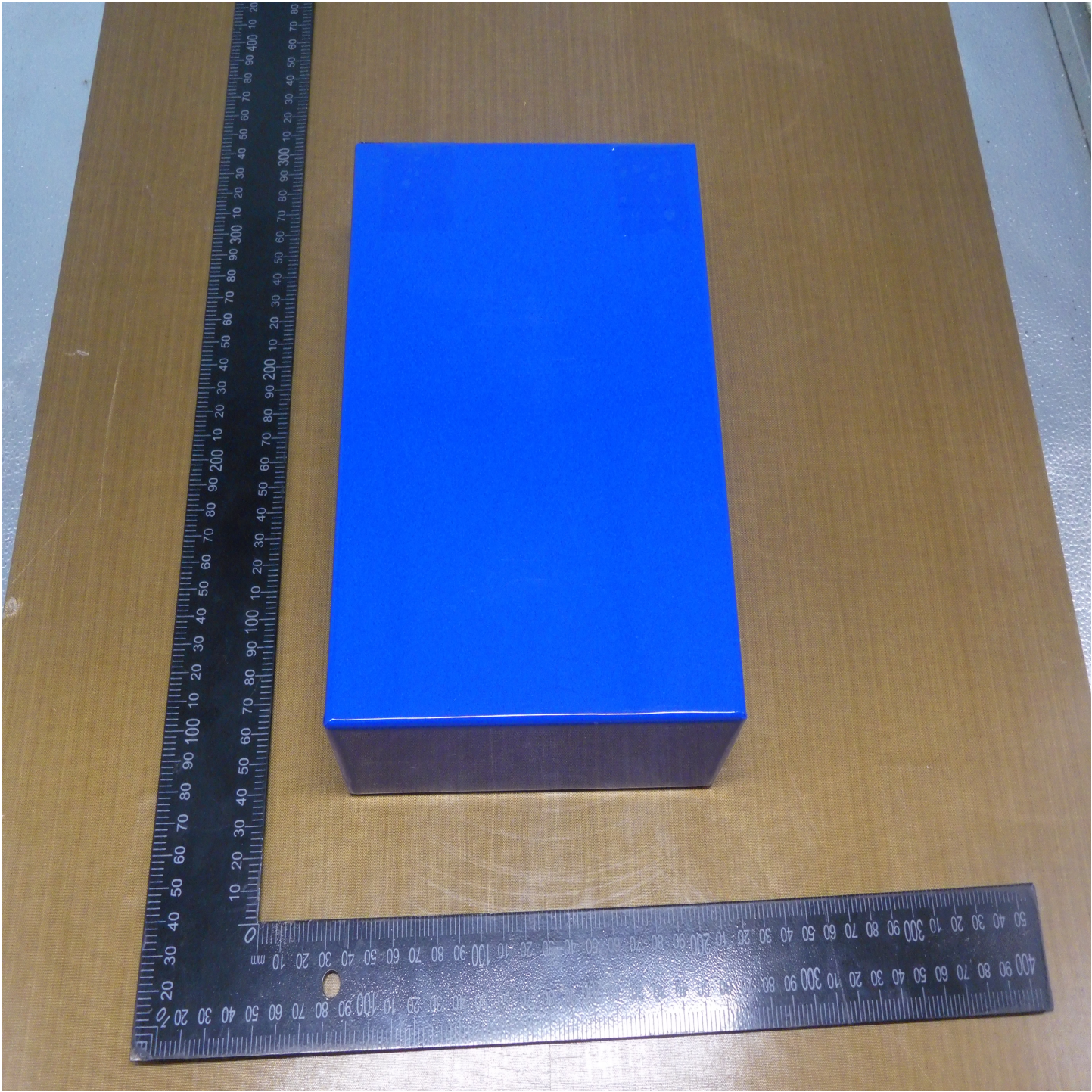
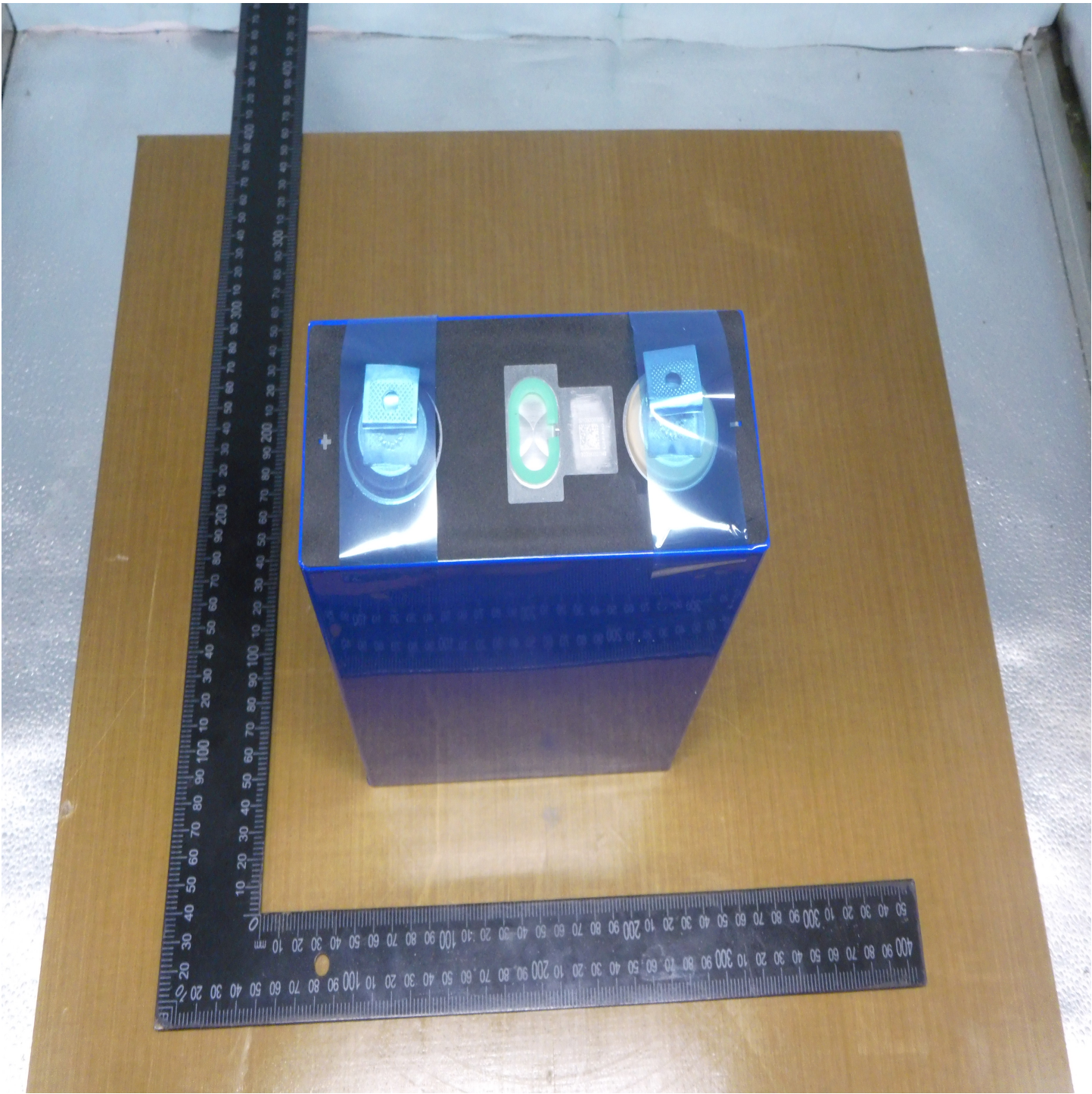
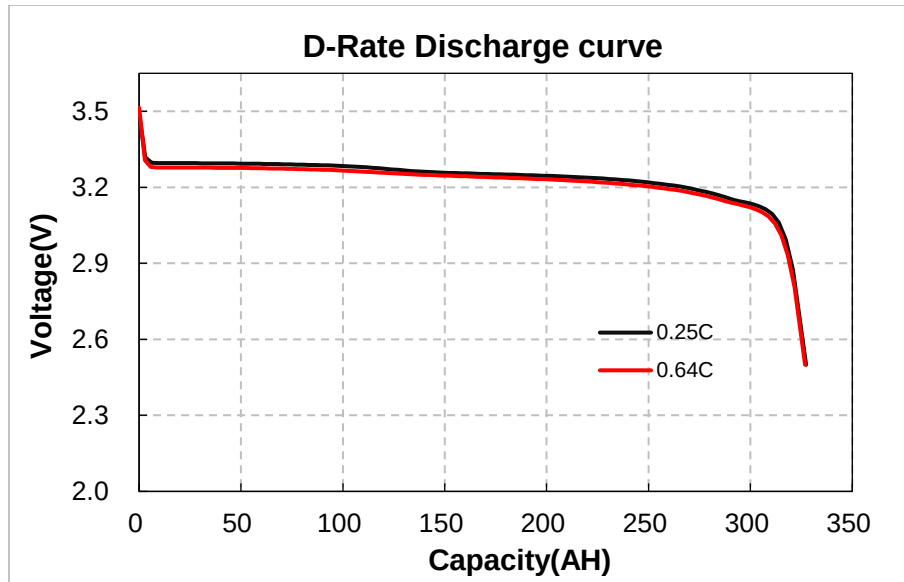


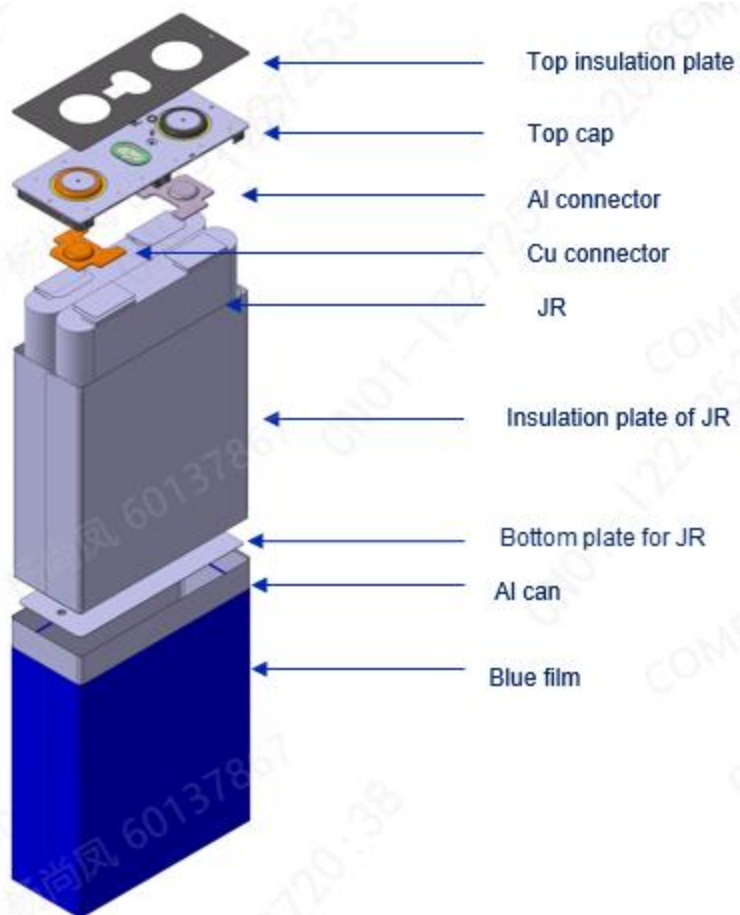
Figure-3 Page-1



The following Page(s) are related to Illustration-1. The next supplement, if applicable, will be identified with a new Supplement Page Heading



The following Page(s) are related to Illustration-2. The next supplement, if applicable, will be identified with a new Supplement Page Heading





Thank you for giving UL the opportunity to partner with you.

Inspections at your plant will be conducted by the Inspection Center in your vicinity. More information on Follow-up Service Inspections can be found at <https://www.ul.com/resources/follow-up-services-additional-resources>. Please note, Follow-Up Procedure Revisions or Report Revisions do not include Authorization Pages, Indices, Section General, and/or Appendices unless revisions were required or requested.

Should you have any questions, after reviewing the material, or need to report any inaccuracies, please reach out to your UL representative or find UL contact details for your local Customer Service Department at <https://www.ul.com/about/locations>.

Please find attached the related material

For your convenience, the below describes the related updates:

For revised/new documentation, please reference 2023-06-02 in the page headings.

Manufacturer Party Site Number 3308372 was added.

Manufacturer Party Site Number 3308375 was added.

Manufacturer Party Site Number 3308378 was added.

MH62937-vol1-AuthorizationPage
MH62937-vol1-Index
MH62937-vol1-Appendix
MH62937-20180607-Description

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Times change, Trust Remains™



FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

UNLISTED COMPONENT
BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS - UNLISTED COMPONENT
(BBGA3, BBGA9)

Manufacturer:	SEE ADDENDUM FOR MANUFACTURER LOCATIONS
Applicant:	827603 (Party Site) Contemporary Amperex Technology Co Limited No 2 Xingang Road Zhangwan Town Jiaocheng District NingdeFujian 352100 China NINGDE FUJIAN 352100 CN

Use of the Mark

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant and Manufacturer(s) to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

Additional Responsibilities

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following website: <https://www.ul.com/fus>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <https://www.ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

Acceptance of Follow-Up Services

The Applicant and the specified Manufacturer(s) in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant and the specified Manufacturer(s) will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: <https://www.ul.com/resources/contracts/follow-up-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

Use and Ownership of the Follow-Up Service Procedure

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the Applicant, the specified Manufacturer(s), and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding

that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Definition of Terms

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

No Third Party Liability

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

Certification Body

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body. The certification body's accreditation status for the applicable certification scheme and identification of the accreditation body can be found at <https://www.ul.com/resources/accreditation>.

Deborah Jennings-Conner
VP Regulatory Services
UL LLC

LOCATION

827603 (Party Site)
Contemporary Amperex Technology Co Limited
No 2 Xingang Road
Zhangwan Town Jiaocheng District
NingdeFujian 352100
China
NINGDE FUJIAN 352100 CN

Factory ID: None
UL Contracting Party for above site is: UL GmbH

827603 (Party Site)
Contemporary Amperex Technology Co Limited
No 2 Xingang Road
Zhangwan Town Jiaocheng District
NingdeFujian 352100
China
NINGDE FUJIAN 352100 CN

Factory ID: None
UL Contracting Party for above site is: UL GmbH

3085991 (Party Site)
Jiaocheng Contemporary Amperex Technology Co.Ltd
No. 1, Outer Ring Road, Feiluan Town, Jiaocheng District
Ningde FUJIAN 352000 CN

Factory ID: JC
UL Contracting Party for above site is: UL GmbH

2334244 (Party Site)
United Auto Battery Co,.Ltd
No.328 Huanyuan West Rd, Kunlun Street
Liyang Jiang Su 213300 CN

Factory ID: None
UL Contracting Party for above site is: UL GmbH

3308372 (Party Site)
Guangdong Ruiqing Contemporary Amperex Technology Limited
No.1 ,Shidai Street,High-Tech Industrial Development Zone
Zhaoqing Guangdong Sheng 526238 CN

Factory ID: RQ
UL Contracting Party for above site is: UL GmbH

3308375 (Party Site)
Fuding Contemporary Amperex Technology Limited
No. 1, Shidai Road, Xueqiao Village, Qianqi Town, Fuding City
Ningde Fujian Sheng 355200 CN

Factory ID: FD
UL Contracting Party for above site is: UL GmbH

3308378 (Party Site)
Yichun Contemporary Amperex Technology Limited
No 1 Chunfeng Road, Economic And Technological Development Zone
Yichun Jiangxi Sheng 336000 CN

Factory ID: YC
UL Contracting Party for above site is: UL GmbH

UNLISTED COMPONENT INDEX			
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	1	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2018-06-07	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	S5E891	Model (Unlisted Comp)	ND16T40
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	3	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2019-07-22	Report Date (Unlisted Comp if known)	2018-06-07
Model1 (End Product)	001CB310	Model1 (Unlisted Comp)	SCF16
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	4	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2019-07-23	Report Date (Unlisted Comp if known)	2018-06-07
Model1 (End Product)	001CB270	Model1 (Unlisted Comp)	SBP
Model next+2 (End Product)	001CE210	Model next+2 (Unlisted Comp)	PZ9-1

UNLISTED COMPONENT INDEX			
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	6	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2019-10-30	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	001CB150	Model (Unlisted Comp)	SBE9-2
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	9	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2021-04-16	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CB4S0	Model (Unlisted Comp)	SAL16-1
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	12	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2021-08-13	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CB370	Model (Unlisted Comp)	MD-SBP-181-001CL

UNLISTED COMPONENT INDEX			
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	13	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2022-04-07	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CB6H0	Model (Unlisted Comp)	SBD7
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	15	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2022-09-09	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CB940	Model (Unlisted Comp)	MD-SBP
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
*Section (End Product)	16	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2022-09-29	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CB240	Model (Unlisted Comp)	MD-SBP-102-0001L

UNLISTED COMPONENT INDEX			
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	18	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2022-12-02	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CB3S0	Model (Unlisted Comp)	MD-SBP-167- 001CL

UNLISTED COMPONENT INDEX			
File Number (End Product)	MH62898	File Number (Unlisted Comp)	MH62937
Volume (End Product)	1	Volume (Unlisted Comp)	1
Section (End Product)	20	Section (Unlisted Comp)	1
CCN (End Product)	BBGA2/8	CCN (Unlisted Comp)	BBGA3/9
Report Date (End Product if known)	2023-06-02	Report Date (Unlisted Comp if known)	2018-06-07
Model (End Product)	CBDD0	Model (Unlisted Comp)	SBM

APPENDIX A - FIELD REPRESENTATIVE'S RESPONSIBILITIES AND INSTRUCTIONS FOR EXAMINATION OF THE PRODUCT

FIELD REPRESENTATIVE'S RESPONSIBILITIES

The Field Representative's responsibilities include, but are not limited to:

Examine the construction of production bearing, or intended to bear, the UL Mark or Markings to determine compliance with the description of the product and any other requirements expressed in this Procedure.

Where so specified by Appendix B, select samples to be forwarded to the appropriate UL Testing Laboratory for Follow-Up Tests. The packaging and shipment of samples are the responsibility of the manufacturer.

Where so specified by Appendix D, inspect the test records and facilities of the manufacturer to verify that:

- a. The proper number of samples are undergoing the required tests,
- b. The required tests are being performed correctly and appropriate records are maintained,
- c. The proper information is being recorded and is up-to-date,
- d. The instruments being used for the tests have been calibrated at the prescribed interval and are in good working order.

Report to the manufacturer and the UL Responsible Office by means of a Variation Notice (VN) if:

- a. Variations in construction are found,
- b. The manufacturer's method and/or frequency of test is not as described,
- c. The records maintained by the manufacturer are not as described,
- d. The manufacturer's inspection program is not being performed as described,
- e. The manufacturer's test equipment is not properly calibrated, calibrations are not conducted at the prescribed frequency, or calibration certificates/records do not contain all required information. (Note: Variation Notices written for these issues are to be handled under Field Representative control.).

f. The calibration of the equipment before any adjustments are made is outside of the required tolerance (equipment manufacturer's accuracy specification), or the equipment is determined to be non-operational, discovered to be defective, or has other features that could affect the validity of previous measurements/test results. (Note: For these issues, the VN shall be issued under a Temporary Acceptance status for analysis by the Variation Notice Handling Office.)

g. Nonconforming test results are witnessed during tests conducted specifically for the Field Representative.

Explain to the manufacturer that a Variation Notice is a means of communication with the manufacturer and forms a record of those items where nonconformance with the Procedure has been encountered.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

When a product does not comply with the Follow-Up Service Procedure require that the manufacturer shall either:

- a. Remove any markings referencing UL from the product, or obliterate these markings where the marking is imprinted, die-stamped, molded, etc., or
- b. Modify all products to bring them into compliance with the Follow-Up Service Procedure, or
- c. Hold shipment pending further instructions from UL

It is the manufacturer's responsibility to forward a copy of the Variation Notice to the Applicant. If the rejection of the product is questioned by the manufacturer and Applicant, the material may be held at the point of inspection, typically at the factory, pending an appeal. The manufacturer has the right to appeal a decision with which they disagree. Appeals of technical decisions and held shipments should be directed to the Variation Notice Handling Office. To resolve issues involving variations in construction, the manufacturer and Applicant may also be offered the option of contacting a Customer Service Professional.

Should UL grant temporary authorization for the continued use of the UL Mark, such temporary authorization shall only be for the time needed to review and/or process the Procedure revisions, or as otherwise specified to cover a particular lot or production run.

When it is decided that UL Marks are to be removed from products, the manufacturer shall demonstrate that all marks referencing UL are removed from the affected material. Those marks referencing UL not destroyed during their removal from the product shall be retrieved from the manufacturer's control by the Field Representative and either (1) held until the manufacturer demonstrates adequate control of their production to assure the application of the Mark to only those products that comply with requirements, (2) returned to the supporting UL Label Center, or (3) destroyed.

APPENDIX B - INSTRUCTIONS FOR FIELD REPRESENTATIVE'S SAMPLE SELECTION

FIELD REPRESENTATIVE

Certain products covered by this Procedure employ constructions or materials requiring Follow-Up Tests to be conducted at UL.

Samples shall be identified and tagged with the applicable information using a Sample Tag (Form 3000-217).

All separator samples for Follow-Up Tests shall be sent to UL Taiwan

SPECIAL APPENDIX B - SPECIAL INSTRUCTIONS FOR FIELD REPRESENTATIVE'S
SAMPLE SELECTION

SEPARATOR MATERIALS

Separators are tabulated under a specific group based upon identical separator construction features.

Once each year, select one separator sample from each group of separators outlined in Table 1 of Special Appendix B in each of the sample sizes as follows:

- ☐ A length of 1000 mm material in the machine direction, i.e. along the length of the material as it is unrolled, of each group of separator (for thickness measurement)
- ☐ A piece of 60 x 200 mm material of each group of separator (for material ID tests)
- ☐ ~~10 pieces of 60 x 60 mm material for each group of separator (for permeability)~~

Note: One complete sample of the separator can be provided rather than separate pieces as noted above if the single sample is large enough to obtain the above sized samples from it.

The separator sample(s) shall be provided with their group, volume and section numbers and separator ID/Part number.

In the special circumstance that individual separator samples cannot be shipped for testing, a minimum of three complete cells for each separator group outlined in Table 1 may be selected and sent instead. The cells are to be marked with:

- ☐ the cell manufacturer's name, model number, separator group number and cell capacity

Note: Because of the way lithium ion polymer cells are constructed, the option of sending whole cell samples for separator testing is not offered, and actual separator samples as noted above must be sent.

All separator sample(s) for separator testing are to be sent to UL Taiwan for Follow Up Tests.

TABLE 1 - SEPARATOR MATERIAL SAMPLE SELECTION

Group No.	Section No.	Cell Model No.**	Separator Part/Identification Number*	Cell Capacity, Ah**
1	1	N/A	ND16T40	N/A
1	1	N/A	SCF16	N/A
1	1	N/A	SBP	N/A
1	1	N/A	PZ9-1	N/A
1	1	N/A	SBE9-2	N/A
1	1	N/A	SAL16-1	N/A
1	1	N/A	MD-SBP-181-001CL	N/A
1	1	N/A	SBD7	N/A
1	1	N/A	MD-SBP	N/A
1	1	N/A	MD-SBP-102-0001L	N/A
1	1	N/A	MD-SBP-167-001CL	N/A
1	1	N/A	SBM	N/A
* - For special circumstances where complete cells must be shipped for testing instead of the separator materials, this column shall be marked "N/A" ** - Unless complete cells are shipped for testing, these columns shall be marked "N/A"				

APPENDIX C - INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

SEPARATOR TESTS:

The following tests shall be conducted on samples selected in accordance with Table 1 of Special Appendix B.

For special circumstances, when cells must be shipped in lieu of separator samples, special additional sample preparation must be followed as outlined under Preparation of Samples Obtained From Cells.

PREPARATION OF SAMPLES OBTAINED FROM CELLS

Cells provided for separator tests, shall be fully discharged at a 1C rate until they are completely discharged (@ 0.2Vdc open circuit voltage). The cells shall be carefully disassembled in a sample preparation area taking care to prevent damage to the electrode assembly. The electrode assembly shall be unwound, or disassembled and a sufficient quantity of separator material as outlined in Appendix B, is to be removed from the electrodes for testing.

The separator sample(s) shall then be soaked in a suitable cleaning solvent (i.e. acetone) to remove active material and/or electrolyte residue for 24 hours, and allowed to air dry in a clean chamber prior to conducting the separator material ID and other tests noted below.

SEPARATOR MATERIAL ID TESTS

GENERAL

The Qualitative Infrared Analysis (IR), Differential Scanning Calorimetry (DSC), and Thermogravimetric Analysis (TGA) Tests are to be conducted in accordance with the current Standard for Polymeric Materials Short Term Property Evaluations (UL 746A).

CONDITIONING

Prior to material ID testing, the samples shall be conditioned in an atmosphere of 50.0 $\pm$ 2.0% RH and 23.0 $\pm$ 1.0°C for a minimum of 40 hours.

A. QUALITATIVE INFRARED ANALYSIS

METHOD

The separator sample(s) shall be subjected to the Qualitative Infrared Analysis (IR) test and comply with the Basis for Acceptability.

An infrared spectrum of the material shall be obtained using an infrared spectrophotometer.

BASIS FOR ACCEPTABILITY

The test spectrum shall correlate with the spectrum referenced on Special Appendix C, Table 1.

B. DIFFERENTIAL SCANNING CALORIMETRY

METHOD

The separator sample(s) shall be subjected to the Differential Scanning Calorimetry (DSC) Test and shall comply with the Basis for Acceptability below.

BASIS FOR ACCEPTABILITY

The test thermogram shall indicate the same thermal response over the programmed temperature range as that referenced in Special Appendix C, Table 1.

C. THERMOGRAVIMETRY

METHOD

The separator sample(s) shall be subjected to the Thermogravimetry (TGA) Test and shall comply with the Basis for Acceptability.

BASIS OF ACCEPTABILITY

The thermogram obtained shall indicate the same characteristic weight loss over the programmed temperature range as referenced in Special Appendix c, Table 1.

D. THICKNESS

METHOD

The separator thickness is determined by utilizing an instrument designed for measuring easily deformed work pieces at thicknesses in the 10 - 30 μm range. The measuring instrument shall be adjusted so that a force of 0.01N (1 gram-force) is placed on the sample when measuring the thickness.

The thickness of the sample is measured every 20 cm in the machine direction of the sample for a total of 5 measurements. The thickness of the sample is calculated as the average of the 5 measurements. The thickness value obtained shall be compared with the value noted in Table C of Special Appendix C.

BASIS OF ACCEPTABILITY

The separator thickness shall be within the thickness measurement tolerances as noted in Table 1 of Sp. App. C.

SPECIAL APPENDIX C - SPECIAL INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

TABLE 1 - INDEX TO SEPARATOR TESTING

SEPARATOR IDENTIFICATION AND THICKNESS TESTING

Group No.	Separator Part/ID No.	Report Date	Sect. No.	Thickness $\pm$ tolerances μm	Identification Testing (Report Dates)		
					IR	DSC	TGA
1	ND16T40	2018-06-07	1	12 $\pm$ 2	#	#	#
1	SCF16	2018-06-07	1	16 $\pm$ 2	#	#	#
1	SBP	2018-06-07	1	20 $\pm$ 2	#	#	#
1	PZ9-1	2018-06-07	1	9.0 $\pm$ 1.5	#	#	#
1	SBE9-2	2018-06-07	1	9.0 $\pm$ 1.5	#	#	#
1	SAL16-1	2018-06-07	1	16 $\pm$ 5	#	#	#
1	MD-SBP-181-001CL	2018-06-07	1	7 $\pm$ 2	#	#	#
1	SBD7	2018-06-07	1	7 $\pm$ 1	#	#	#
1	MD-SBP	2018-06-07	1	9 $\pm$ 5	#	#	#
1	MD-SBP-102-0001L	2018-06-07	1	9 $\pm$ 1	#	#	#
1	MD-SBP-167-001CL	2018-06-07	1	12 $\pm$ 3	#	#	#
1	SMB	2018-06-07	1	13$\pm$5	#	#	#

Legend for Tests:

IR= Qualitative Infrared Analysis

DSC= Differential Scanning Calorimetry

TGA= Thermogravimetry

Comment: # - The parameter is to be determined after follow-up service inspection.

APPENDIX D - MANUFACTURER' S RESPONSIBILITIES, CONSTRUCTION CONSIDERATIONS, AND REQUIREMENTS FOR FACTORY TESTS

MANUFACTURER' S RESPONSIBILITIES

The manufacturer's responsibilities include, but are not limited to:

Control of the UL Mark - Restrict the use of markings that reference UL (either directly by use of the name, an abbreviation of it, or the UL symbol, Classification Mark or Recognized Component Mark, or indirectly by means of agreed-upon markings that are understood to indicate acceptance by UL) to those products that are found by the manufacturer's own inspection to comply with the Follow-Up Service Procedure description. Use of such markings is further limited by the agreements that have been executed by the Subscriber and UL. Confine the application of markings referencing UL to the location or locations authorized in these Appendix Pages or the Follow-Up Service Procedure.

Access to Factory - During hours in which the factory is in operation, provide the Field Representative with free access to any portion of the premises where the product or components thereof are being fabricated, processed, finished or stored, and to the test areas when testing is required in this document. The Field Representative shall be permitted to inspect and witness prescribed tests, prior to shipment, any product bearing or intended to bear markings referencing UL. If product disassembly is required, it shall be undertaken by the manufacturer. Tests required, as part of this Procedure, shall be conducted by the manufacturer.

Corrective Action - Perform a root cause analysis of nonconforming test results reported by UL in order to determine and implement appropriate corrective actions. Upon request, the manufacturer shall submit the findings of their analysis and action plan for review and/or monitoring by UL. For those cases involving questionable test and measuring equipment, the manufacturer shall evaluate and document the effects of the equipment on previous inspections or tests. The manufacturer shall evaluate if the equipment condition could have significantly affected previous inspection or test results and take corrective action as appropriate. The equipment in question shall be removed from service by segregation or prominent labeling and marking.

Production Tests - Conduct the Factory Tests detailed in Appendix D.

Required Records - Maintain records of test performance. Unless indicated otherwise in the Procedure, the information to be recorded should include the model or catalog number, identification of the product, the test conducted, the test date, and the results. Records are to be retained for at least 6 months and shall be readily available for review by the Field Representative.

Note: It is not necessary to keep complete test records when 100% of production is tested, if the manufacturer has an auditable system in place to confirm that production is always subjected to the required tests. Instead, exception reports indicating noncompliance and corrective action should be retained.

Test Equipment and Personnel - Provide, at a convenient location, all required test equipment and facilities and any required personnel for conducting all tests that are to be performed at the factory. These shall be available when needed so that the inspection work can proceed without undue delay.

Test and Measuring Equipment and Standards Calibration - All test and measuring instruments required as part of the Follow-Up Services Procedure or used by UL Field Representatives in the conduct of inspection activity at the factory shall be calibrated in accordance with UL's published calibration requirements for manufacturers. The published document is titled, "UL Calibration Requirements: Equipment Used for UL/C-UL/ULC Mark Follow-Up Services", and is available on UL's website at the following address, "www.ul.com/fieldservices/requirements.html". Manufacturers that do not have internet access may obtain the current version from their local UL Customer Service representative in the same manner as other requests for requirements.

Samples for Follow-Up Testing at UL - If Appendix B specifies that samples are required to be forwarded to UL for Follow-Up Testing, the manufacturer shall forward the samples selected by the Field Representative, to the specified UL Testing Laboratory, within five working days of the Field Representative's inspection visit. Packaging and shipment of the samples are the responsibility of the manufacturer.

MANUFACTURER'S PRODUCTION TEST PROGRAM

(Reserved)

File MH62937
Project 4788478887

June 7, 2018

REPORT

on

Unlisted Component - Lithium Batteries (BBGA3, BBGA9)

for use only in

APPLICANT'S CLASSIFIED, LISTED OR RECOGNIZED PRODUCTS,
SYSTEMS OR COMPONENTS

Contemporary Amperex Technology Co Limited
NINGDE, FUJIAN, CHINA

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DESCRIPTION

PRODUCT COVERED:

Component - Battery separator.

Part Nos.	Separator Mfg.
ND16T40	CYG Chinaly New Material Co.,LTD
SCF16	Bosser New Material Co.,LTD
SBP	ZIMT
PZ9-1	GL New Material Co.,LTD
SBE9-2	Sinoma Lithium Battery Separator Co.,Ltd
SAL16-1	CangzhouMingzhu Plastic Co.,Ltd
MD-SBP-181-001CL	Shanghai Energy New Materials Technology Co.,Ltd.
SBD7	Shanghai Enjie New Material Technology Co., Ltd
MD-SBP	Jiangsu Beixing New MATERIALS Technology Co., Ltd
MD-SBP-102-0001L	EJ
MD-SBP-167-001CL	10585 #
SBM	9676 #

- Manufacturer code which defined by applicant

PARAMETERS SPECIFICATIONS:

See Table IA and IB for parameters specifications

GENERAL MATERIAL COMPOSITION:

Part No.	Generic material(s) specification
ND16T40	PE
SCF16	PP
SBP	PP
PZ9-1	PE
SBE9-2	PE
SAL16-1	PP
MD-SBP-181-001CL	PE
SBD7	PE
MD-SBP	PE
MD-SBP-102-0001L	PE
MD-SBP-167-001CL	PE
SBM	PE

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

The products are lithium ion battery separators which are essentially a porous membrane of insulating material(s) intended to provide electrical insulation between the electrodes of a lithium ion battery while also allowing for ion transport between the electrodes. The separators have various parameter specifications related to the material and structural properties of the material and that are determined through testing.

Use - For use only in products where the acceptability of the combination is determined by UL LLC.

Conditions of Acceptability - The following are among the considerations to be made in judging the use of this material in an end-use product.

1. The separators have been evaluated for the parameters outlined in Tables IA and IB. These parameters identify the general characteristics of the separator. However, the overall suitability of the separator and lithium ion cell combination shall be determined in the lithium ion cell evaluation.
2. The separator must be sized appropriately in the cell so that it can maintain isolation between the electrodes during the life of the cell. Therefore, the overall dimensions of the separator and the amount the separator overlaps the electrodes shall be documented in the cell construction evaluation.

MARKINGS

The separator is marked either on the material, wrapper or, roll or smallest shipping container with the following information: Manufacturer's name and part number.

INSTRUCTIONS

The separator is provided with instructions containing its parameter specifications and intended chemistry as well as instructions on the proper storage, handling and installation of the separator for lithium ion battery manufacturing.

TABLE IA
SEPARATOR PARAMETERS

Part No.	Permeability (secs/25/ml)	Thickness , μm	Tensile Strength kg-f/cm^2	
			Machine	Transverse
ND16T40	50	12 $\pm$ 2	1600	1450
*SCF16	56	12 $\pm$ 3	$\geq$ 1450	$\geq$ 100
SBP	56	20 $\pm$ 2	$\geq$ 1500	$\geq$ 150
PZ9-1	170 $\pm$ 60	9.0 $\pm$ 1.5	$\geq$ 1500	$\geq$ 1200
SBE9-2	ND 160 $\pm$ 50	9.0 $\pm$ 1.5	$\geq$ 1200	$\geq$ 1000
SAL16-1	140 $\pm$ 60	16 $\pm$ 5	$\geq$ 1000	$\geq$ 60
MD-SBP-181- 001CL	160 $\pm$ 50	7 $\pm$ 2	$\geq$ 2000	$\geq$ 1500
SBD7	171	7 $\pm$ 2	$\geq$ 2000	$\geq$ 1500
MD-SBP	160 $\pm$ 50	9 $\pm$ 5	$\geq$ 2000	$\geq$ 100
MD-SBP-102- 0001L	160 $\pm$ 50	9 $\pm$ 1	$\geq$ 2000	$\geq$ 1500
MD-SBP-167- 001CL	250 $\pm$ 85	12 $\pm$ 3	$\geq$ 1500	$\geq$ 150
SBM	190$\pm$60	13$\pm$5	$\geq$1500	$\geq$1500

TABLE IB
SEPARATOR PARAMETERS

Part No.	Puncture Strength (g-f/mm)	Dimensional Stability (g-f/mm)		Shutdown Temp, °C	Melt Temp, °C
		Machine	Transverse		
ND16T40	380	6.6%	4.9%	130	150
SBE9-2	≥260	18.1%	17.9%	125	145
SAL16-1	≥80	≤3%	-0.5-0.5%	135	165
MD-SBP-181-001CL	≥300	≤4%	≤3%	135±5	140±5
SBD7	379	13.8%	13.7%	135	138
MD-SBP	≥300	≤4%	≤3%	140±8	140±8
MD-SBP-102-0001L	>300	<4%	<3%	≥130	≥138
MD-SBP-167-001CL	≥305	≤4%	≤3%	135±25	140±25
SBM	>300	≤3%	≤2%	135-150	140±5
* - During the dimensional stability test, the puncture strength test is repeated on samples subjected to conditioning for 1 hour at 130 ± 2°C.					

TABLE IB
SEPARATOR PARAMETERS

Part No.	Puncture Strength (g-f/mm)	Dimensional Stability* (g-f/mm)	Shutdown Temp, °C	Melt Temp, °C
SCF16	180	Machine: 7.6%/ Transverse: 1.3%	≥100	≥100
SBP	≥280	MD≤2.5%; TD≤0.8%	≥100	≥100
PZ9-1	≥200	Machine: ≤6.0% / Transverse: ≤6.0%	125±8	138±5
* - During the dimensional stability test, the puncture strength test is repeated on samples subjected to conditioning for 1 hour at 130 ± 2°C.				