

## Lithium Ion Battery Test Summary

### LITHIUM CELLS OR BATTERIES TEST SUMMARY IN ACCORDANCE WITH SUB-SECTION 38.3 OF UN MANUAL OF TESTS AND CRITERIA

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Lithium Ion cells and Metabo Lithium-Ion-batteries Li-Power, LiHD, and CAS Li-Ion have been successfully tested and comply with UN Model Regulation, Manual of Test and Criteria, Part III subsection 38.3

| PERFORMED TESTS |    |                        | RESULTS        |                |
|-----------------|----|------------------------|----------------|----------------|
|                 |    |                        | Cells          | Batteries      |
| 38.3.4.1        | T1 | Altitude Simulation    | Pass           | Pass           |
| 38.3.4.2        | T2 | Thermal Test           | Pass           | Pass           |
| 38.3.4.3        | T3 | Vibration              | Pass           | Pass           |
| 38.3.4.4        | T4 | Shock                  | Pass           | Pass           |
| 38.3.4.5        | T5 | External Short Circuit | Pass           | Pass           |
| 38.3.4.6        | T6 | Impact / Crush         | Pass           | Not applicable |
| 38.3.4.7        | T7 | Overcharge             | Not applicable | Pass           |
| 38.3.4.8        | T8 | Forced Discharge       | Pass           | Not applicable |



The UN38.3 tests were performed at least by one of the following test houses and were tested to UN Manual Test and Criteria Revision 3 Amendment 1 or subsequent revisions or amendments.

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|---|---|
| <p>TÜV Rheinland InterCert Kft.<br/>Termék üzletág Villamos laboratórium<br/>Beke u. 41-43<br/>H-1135 Budapest, Hungary</p> <p>Telephone: +36-1-461-1100<br/>E-Mail: <a href="mailto:tuv@hu.tuv.com">tuv@hu.tuv.com</a><br/>Web: <a href="http://www.tuv.hu">www.tuv.hu</a></p>   | <p>Samsung SDI Safety Center<br/>467, Beonyeong-ro<br/>Seobuk-gu, Cheonan-si<br/>Chungcheongnam-do, Korea</p> <p>Telephone: +82-41-560-3114<br/>E-Mail: <a href="mailto:sdimaster@samsung.com">sdimaster@samsung.com</a><br/>Web: <a href="http://www.samsungsdi.com">www.samsungsdi.com</a></p>                                |
| <p>DEKRA Testing and Certification (Shanghai) Ltd.<br/>Guangzhou Branch<br/>No. 3 Qiyun Road, Science City<br/>Guangzhou Hi-Tech Ind. Development Zone<br/>Guangzhou, China</p> <p>Telephone: +86 20 6661 2000<br/>E-Mail: <a href="mailto:Among.Chen@dekra.com">Among.Chen@dekra.com</a><br/>Web: <a href="http://www.dekra.com">www.dekra.com</a></p> | <p>SIQ Ljubljana<br/>Mašera-Spasićeva ulica 10<br/>1000 Ljubljana, Slovenija</p> <p>Telephone: +386 1 4778 100<br/>E-Mail: <a href="mailto:info@siq.si">info@siq.si</a><br/>Web: <a href="http://www.siq.si">www.siq.si</a></p>   |
| <p>Sanyo Component Europe GmbH<br/>Technical CRM Section<br/>Stahlgruberring 4<br/>81829 München, Germany</p> <p>Telephone: +49 89 460095-0<br/>E-Mail: <a href="mailto:info.europe@sanyo-energy.com">info.europe@sanyo-energy.com</a><br/>Web: <a href="http://www.sanyo-energy-europe.com">www.sanyo-energy-europe.com</a></p>                        | <p>Shanghai Research Institute<br/>of Chemical Industry Testing Co. Ltd.<br/>345 Yunlin Road(E)<br/>200062, Shanghai, China</p> <p>Telephone: +86 21 52813463<br/>E-Mail: <a href="mailto:zhoujy@oxygen18.com.cn">zhoujy@oxygen18.com.cn</a><br/>Web: <a href="http://www.oxygen18.com.cn/">http://www.oxygen18.com.cn/</a></p> |

### Product Test Information - Cells

| Model     | Physical Description    | Weight | Rating | Test report      |            |
|-----------|-------------------------|--------|--------|------------------|------------|
|           |                         | [kg]   | [Wh]   | number           | date       |
| INR-21700 | Li-ion cylindrical cell | 0,072  | 18,0   | SDI-UN-190426-03 | 2019-04-19 |
| INR-21700 | Li-ion cylindrical cell | 0,067  | 14,4   | SDI-UN-170306-01 | 2017-03-06 |
| INR-21700 | Li-ion cylindrical cell | 0,070  | 10,8   | SDI-UN-170331-01 | 2017-03-31 |
| INR-18650 | Li-ion cylindrical cell | 0,045  | 7,2    | SDI-UN-150630-03 | 2015-06-30 |
| INR-18650 | Li-ion cylindrical cell | 0,045  | 9,0    | SDI-UN-170331-02 | 2017-03-31 |
| INR-20700 | Li-Ion cylindrical cell | 0,056  | 11,3   | E1415524         | 2014-05-28 |
| INR-20700 | Li-Ion cylindrical cell | 0,063  | 13,0   | E1622012         | 2016-05-19 |
| INR-18650 | Li-Ion cylindrical cell | 0,042  | 5,55   | NO.1118110180    | 2018-12-25 |
| INR-18650 | Li-Ion cylindrical cell | 0,041  | 7,4    | NO.1113120355    | 2014-01-21 |

### Product Test Information – Batteries 10,8V

Batteries are exchangeable and can be used in all 10,8 V products.

| Model                              | Physical                          | Weight | Rating | SoC          | Test report                                    |  |                    |
|------------------------------------|-----------------------------------|--------|--------|--------------|--|--|--------------------|
| number                             | Description                       | [kg]   | [Wh]   | [%]          | number   | date                                   | regulation         |
| Li-Power<br>625438000<br>316045190 | Li-Ion<br>10,8 V - 2,0 Ah<br>3S1P | 0,195  | 21,6   | > 20<br>< 30 | 1-5031/17-01-02<br>S 87/2017/1<br>28249539 001 | 2017-12-08<br>2018-01-25<br>2019-04-07 | UN 3480<br>UN 3481 |
| Li-Power<br>625585000<br>321000270 | Li-Ion<br>10,8V -4,0 Ah<br>3S2P   | 0,381  | 43,2   | > 20<br>< 30 | 28246992 001                                   | 2018-09-21                             | UN 3480<br>UN 3481 |

### Product Test Information – Batteries 12V (U<sub>max</sub>)

Batteries are exchangeable and can be used in all 12 V products.

| Model                              | Physical                        | Weight | Rating | SoC          | Test report                |                          |                    |
|------------------------------------|---------------------------------|--------|--------|--------------|----------------------------|--------------------------|--------------------|
| number                             | Description                     | [kg]   | [Wh]   | [%]          | number                     | date                     | regulation         |
| LiHD<br>625349000<br>321001140     | Li-Ion<br>12 V - 4,0 Ah<br>3S1P | 0,324  | 43,2   | > 20<br>< 30 | 28246989 002               | 2019-10-24               | UN 3480<br>UN 3481 |
| Li-Power<br>625406000<br>321001120 | Li-Ion<br>12 V - 2,0 Ah<br>3S1P | 0,224  | 21,6   | > 20<br>< 30 | 28246384 002<br>4374118.50 | 2020-01-20<br>2021-04-15 | UN 3480<br>UN 3481 |



**Product Test Information – Batteries 14,4 V**

Batteries are exchangeable and can be used in all 14,4 V products

| <b>Model</b>                       | <b>Physical</b>                   | <b>Weight</b> | <b>Rating</b> | <b>SoC</b>   | <b>Test report</b> |            |                    |
|------------------------------------|-----------------------------------|---------------|---------------|--------------|--------------------|------------|--------------------|
| number                             | <b>Description</b>                | [kg]          | [Wh]          | [%]          | number             | date       | regulation         |
| Li-Power<br>625417000<br>321001060 | Li-Ion<br>14,4 V – 1,5 Ah<br>4S1P | 0,324         | 21,6          | > 20<br>< 30 | 4359720.50         | 2019-12-19 | UN 3480<br>UN 3481 |
| Li-Power<br>625590000<br>321000390 | Li-Ion<br>14,4 V – 4,0 Ah<br>4S2P | 0,538         | 57,6          | > 20<br>< 30 | SDI-UN-131219-02   | 2013-12-19 | UN 3480<br>UN 3481 |
| Li-Power<br>625595000<br>321000540 | Li-Ion<br>14,4 V – 2,0 Ah<br>4S1P | 0,340         | 28,8          | > 20<br>< 30 | 28248753 001       | 2018-12-21 | UN 3480<br>UN 3481 |

**Product Test Information – Batteries 18V**

Batteries are exchangeable and can be used in all 18 V products

| Model<br>number                    | Physical<br>Description          | Weight<br>[kg] | Rating<br>[Wh] | SoC<br>[%]   | Test report  |  |                    |
|------------------------------------|----------------------------------|----------------|----------------|--------------|--|--|--------------------|
|                                    |                                  |                |                |              | number   | date   | regulation         |
| LiHD<br>625367000<br>321001000     | Li-Ion<br>18 V - 4,0 Ah<br>5S1P  | 0,584          | 72,0           | > 20<br>< 30 | 28242835 003   | 2020-12-18   | UN 3480<br>UN 3481 |
| LiHD<br>625368000<br>321001040     | Li-Ion<br>18 V - 5,5 Ah<br>5S2P  | 0,983          | 99,0           | > 20<br>< 30 | 28242837 003   | 2020-12-18   | UN 3480<br>UN 3481 |
| LiHD<br>625369000<br>321000980     | Li-Ion<br>18 V - 8,0 Ah<br>5S2P  | 0,977          | 144,0          | > 20<br>< 30 | 28246520 001   | 2018-09-17   | UN 3480<br>UN 3481 |
| LiHD<br>625549000<br>321001600     | Li-Ion<br>18 V - 10,0 Ah<br>5S2P | 0,996          | 180,0          | > 20<br>< 30 | 28253888 002<br>T211-0815/20                                 | 2020-09-23<br>2020-11-04                             | UN 3480<br>UN 3481 |
| Li-Power<br>625418000<br>321001050 | Li-Ion<br>18 V – 1,5 Ah<br>5S1P  | 0,392          | 27,0           | > 20<br>< 30 | 4359675.50   | 2019-12-19   | UN 3480<br>UN 3481 |
| Li-Power<br>625591000<br>321000480 | Li-Ion<br>18 V – 4,0 Ah<br>5S2P  | 0,648          | 72,0           | > 20<br>< 30 | 28248081 001   | 2018-11-09   | UN 3480<br>UN 3481 |
| Li-Power<br>625592000<br>321000350 | Li-Ion<br>18 V – 5,2 Ah<br>5S2P  | 0,670          | 93,6           | > 20<br>< 30 | 28247087 001   | 2019-02-20   | UN 3480<br>UN 3481 |
| Li-Power<br>625596000<br>321000550 | Li-Ion<br>18 V – 2,0 Ah<br>5S1P  | 0,383          | 36,0           | > 20<br>< 30 | 28251003 001   | 2019-09-27   | UN 3480<br>UN 3481 |
| Li-Power<br>625026000<br>321001450 | Li-Ion<br>18 V – 2,0 Ah<br>5S1P  | 0,383          | 36,0           | > 20<br>< 30 | HU213J99 004   | 2021-12-03   | UN 3480<br>UN 3481 |
| Li-Power<br>625027000<br>321001470 | Li-Ion<br>18 V – 4,0 Ah<br>5S2P  | 0,685          | 72,0           | > 20<br>< 30 | HU2177MB 001<br>HU219AFS 001<br>HU210YG9 001<br>HU21A74Q 001 | 2021-05-25<br>2021-05-21<br>2021-08-06<br>2021-09-09 | UN 3480<br>UN 3481 |
| Li-Power<br>625028000<br>321001490 | Li-Ion<br>18 V – 5,2 Ah<br>5S2P  | 0,695          | 93,6           | > 20<br>< 30 | HU216BYZ 001   | 2021-07-22   | UN 3480<br>UN 3481 |



**Product Test Information – Batteries 18V with Drop-Safe**

Batteries are exchangeable and can be used in all 18 V products

| Model<br>number                     | Physical<br>Description          | Weight<br>[kg] | Rating<br>[Wh] | SoC<br>[%]   | Test report                  |                          |                    |
|-------------------------------------|----------------------------------|----------------|----------------|--------------|------------------------------|--------------------------|--------------------|
|                                     |                                  |                |                |              | number                       | date                     | regulation         |
| LiHD (DS)<br>624989000<br>321001640 | Li-Ion<br>18 V - 4,0 Ah<br>5S1P  | 0,660          | 72,0           | > 20<br>< 30 | 28242835 003                 | 2020-12-18               | UN 3480<br>UN 3481 |
| LiHD (DS)<br>624990000<br>321001650 | Li-Ion<br>18 V - 5,5 Ah<br>5S2P  | 1,065          | 99,0           | > 20<br>< 30 | 28242837 003                 | 2020-12-18               | UN 3480<br>UN 3481 |
| LiHD (DS)<br>624991000<br>321001660 | Li-Ion<br>18 V - 10,0 Ah<br>5S2P | 1,156          | 180,0          | > 20<br>< 30 | 28253888 002<br>T211-0815/20 | 2020-10-01<br>2020-11-04 | UN 3480<br>UN 3481 |

**Product Test Information – Batteries 36 V**

Batteries are exchangeable and can be use in all 36 V products

| Model<br>number                    | Physical<br>Description          | Weight<br>[kg] | Rating<br>[Wh] | SoC<br>[%]   | Test report  |            |                    |
|------------------------------------|----------------------------------|----------------|----------------|--------------|--------------|------------|--------------------|
|                                    |                                  |                |                |              | number       | date       | regulation         |
| Li-Power<br>625453000<br>316046040 | Li-Ion<br>36 V – 1,5 Ah<br>10S1P | 0,680          | 54,0           | > 20<br>< 30 | MT0028369    | 2010-08-27 | UN 3480<br>UN 3481 |
| Li-Power<br>625529000<br>321000130 | Li-Ion<br>36 V – 5,2 Ah<br>10S2P | 1,289          | 187,2          | > 20<br>< 30 | 28249699 001 | 2019-05-28 | UN 3480<br>UN 3481 |
| LiHD<br>625344000<br>321000810     | Li-Ion<br>36V – 6,2 Ah<br>10S2P  | 1,655          | 223,2          | > 20<br>< 30 | BJ-AMA0001CA | 2015-12-28 | UN 3480<br>UN 3481 |

**Signature of responsible person of the Company**

ppa. Bernd Fleischmann (digitally signed)

Vice President Product Engineering & Quality)