

**TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING**  
**IEC 62133-2:2017, Edition 1.0**

**Secondary cells and batteries containing alkaline or other non-acid electrolytes –  
Safety requirements for portable sealed secondary cells, and for batteries made from  
them, for use in portable applications – Part 2: Lithium systems**

“R” Required  
“S” May be subcontracted, see OD 2012  
“SPTL” Specialized Facility, see IECEE 02-2  
“W” Witness testing in the categories “MED” and “MEAS”  
“3PPS” Three Phase Power Supply required

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
5.2	Insulation resistance	Insulation resistance measurement equipment. Per IEC 62133-2:2017, Clause 5.2.	R
6	Type test conditions	Temperature recorder.	R
7.1	Charging procedures for test purposes	Oven.	R
		DC power supply.	R
		Electric load.	R
7.2.1	Continuous charging at constant voltage (cells)	Multimeter.	R
		DC power supply.	R
		Timer.	R
7.2.2	Moulded case stress at high ambient temperature (battery)	Oven.	R
		Timer.	R
7.3.1	External short circuit (cell)	Multimeter - 80 mΩ ± 20 mΩ.	R
		Oven.	R

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
		Temperature measurement device. Per IEC 62133-2:2017, Clause 7.3.1.	R
		Timer.	R
7.3.2	External short circuit (battery)	Multimeter - 80 mΩ ± 20 mΩ.	R
		Temperature measurement device. Per IEC 62133-2:2017, Clause 7.3.2.	R
		Timer.	R
7.3.3	Free fall	Concrete or metal floor.	R
		Height measurement.	R
		Timer.	R
7.3.4	Thermal abuse (cells)	Oven. Per IEC 62133-2:2017, Clause 7.3.4.	R
		Timer.	R
7.3.5	Crush (cells)	Crush tester. Per IEC 62133-2:2017, Clause 7.3.5.	R
		Multimeter.	R
7.3.6	Over-charging of battery	DC power supply.	R
		Temperature measurement device. Per IEC 62133-2:2017, Clause 7.3.6.	R
		Timer.	R
7.3.7	Forced discharge (cells)	DC power supply.	R
		Timer.	R
7.3.8.1	Mechanical tests (batteries) – Vibration	Vibration tester. Per IEC 62133-2:2017, Clause 7.3.8.1.	R
7.3.8.2	Mechanical tests (batteries) – Shock	Shock tester. Per IEC 62133-2:2017, Clause 7.3.8.2.	R
7.3.9	Design evaluation – Forced internal short circuit (cells)	Per IEC 62133-2:2017, Clause 7.3.9 and Annex A.5, controlled environment (e.g. chamber), nickel particle, bag with sealing zipper and pressing equipment.	S
8.2	Small cell and battery safety information	Ingestion gauge. Per IEC 62133-2:2017, Figure 3.	R

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
D.2	Measurement of the internal AC resistance for coin cells	Internal resistance meter.	R