

**TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 62133-1:2017, 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 1: Nickel systems**

PROVISIONAL

“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 62133-1:2017, Clause 5.2.	R
6	Type test conditions	Temperature recorder.	R
7.1	Charging procedures for test purposes	DC power supply.	R
		Electric load.	R
7.2.1	Continuous low-rate charging (cells)	Multimeter.	R
		DC power supply.	R
		Timer.	R
7.2.2	Vibration	Vibration tester. Per IEC 62133-1:2017, Clause 7.2.2.	R
		Timer.	R
7.2.3	Case stress at high ambient temperature (batteries)	Oven.	R
		Timer.	R

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
7.2.4	Temperature cycling	Oven. Per IEC 62133-1:2017, Clause 7.2.4.	R
		Timer.	R
7.3.1	Incorrect installation (cells)	Multimeter.	R
7.3.2	External short circuit	Multimeter - 80 mΩ ± 20 mΩ.	R
		Oven.	R
		Temperature measurement device. Per IEC 62133-1:2017, Clause 7.3.2.	R
		Timer.	R
7.3.3	Free fall	Concrete floor.	R
		Height measurement.	R
		Timer.	R
7.3.4	Mechanical shock (crash hazard)	Shock tester. Per IEC 62133-1:2017, Clause 7.3.4.	R
		Timer.	R
7.3.5	Thermal abuse (cells)	Oven. Per IEC 62133-1:2017, Clause 7.3.5.	R
		Timer.	R
7.3.6	Crushing of cells	Crush tester. Per IEC 62133-1:2017, Clause 7.3.6.	R
		Multimeter.	R
7.3.7	Low pressure (cells)	Vacuum chamber. Per IEC 62133-1:2017, Clause 7.3.7.	R
		Timer.	R
7.3.8	Overcharge	DC power supply.	R
		Timer.	R
7.3.9	Forced discharge (cells)	DC power supply.	R
		Timer.	R
8.2	Small cell and battery safety information	Ingestion gauge. Per IEC 62133-1:2017, Figure 2.	R