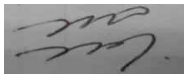
Model name : **INR18650-25R**

Revision 04

Executive Div.	Safety Center	Confidential

	Name / Title	Signature	Date
Reported by	HW Ham / Assistant manager		2013.02.05
Approved by	SW Yoo / Senior manager		2013.02.05

Test report; UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3

2011, Rev.5, Amend.1

Document No : MT0080405

SAMSUNG SDI

Energy Business Division

Product Information

1. Model name: INR18650-25R

2. Product classification: Li-ion cylindrical cell

3. Nominal voltage: 3.6V

4. Rated capacity: 2500mAh

5. Wh Capacity: 9Wh

6. Weight of product: Max 45g

7. Test Date: 2013.01.18 ~ 2013.02.04

8. Test Location: SAMSUNG SDI Safety Center, 508 Sungsungdong, Cheonan Chungcheongnamdo, Korea

Test summary

Test No.	Test item	Relating Std.	Test begins on (YYYY/MM/DD)	Test Completed on (YYYY/MM/DD)	Judgment (Pass/Fail)
T1	Altitude simulation	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.1	2013.01.18	2013.01.18	Pass
T2	Thermal test	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.2	2013.01.19	2013.01.25	Pass
T3	Vibration	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.3	2013.01.29	2013.01.29	Pass
T4	Shock	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.4	2013.01.31	2013.01.31	Pass
T5	External short circuit	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.5	2013.02.04	2013.02.04	Pass
T6	Impact / Crush	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.6	2013.02.04	2013.02.04	Pass
T7	Overcharge	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.7	N/A	N/A	N/A
T8	Forced discharge	UN Manual of Tests and Criteria, Part Ⅲ, Subsection 38.3.4.8	2013.01.28	2013.02.04	Pass
P1	Packaging Drop	2013 IATA Dangerous Goods Regulations 54th Edition	2013.02.04	2013.02.04	Pass

- Tests T-1 through T-5 shall be conducted in sequence with the same cell/pack/single cell battery.
- For test 6, test should be conducted for Li-ion cells or component cell contained in a battery.
- T7 shall be performed only for Li-ion rechargeable battery or rechargeable single cell battery not cell.
- T8 should be conducted for Li-ion cells or component cell contained in a battery.

(T-1~T-5) Transportation Test (Test Result: Pass)

Frech cell 100% SOC								
	Initial				T1			
No.	OCV(V)				OCV(V)	Residual OCV(%)	Appearance	Result
1	4.15				4.15	100.00	O	PASS
2	4.15				4.15	100.00	O	PASS
3	4.15				4.15	100.00	O	PASS
4	4.15				4.15	100.00	O	PASS
5	4.15				4.15	100.00	O	PASS
6	4.15				4.15	100.00	O	PASS
7	4.15				4.15	100.00	O	PASS
8	4.15				4.15	100.00	O	PASS
9	4.15				4.15	100.00	O	PASS
10	4.15				4.15	100.00	O	PASS
	T2				T3			
No.	OCV(V)	Residual OCV(%)	Appearance	Result	OCV(V)	Residual OCV(%)	Appearance	Result
1	4.10	98.80	O	PASS	4.10	100.00	O	PASS
2	4.10	98.80	O	PASS	4.10	100.00	O	PASS
3	4.10	98.80	O	PASS	4.10	100.00	O	PASS
4	4.10	98.80	O	PASS	4.10	100.00	O	PASS
5	4.10	98.80	O	PASS	4.10	100.00	O	PASS
6	4.10	98.80	O	PASS	4.10	100.00	O	PASS
7	4.10	98.80	O	PASS	4.10	100.00	O	PASS
8	4.10	98.80	O	PASS	4.10	100.00	O	PASS
9	4.10	98.80	O	PASS	4.10	100.00	O	PASS
10	4.10	98.80	O	PASS	4.10	100.00	O	PASS
	T4				T5			
No.	OCV(V)	Residual OCV(%)	Appearance	Result	Max T(℃)	Appearance		Result
1	4.10	100.00	O	PASS	102	O		PASS
2	4.10	100.00	O	PASS	103	O		PASS
3	4.10	100.00	O	PASS	110	O		PASS
4	4.10	100.00	O	PASS	99	O		PASS
5	4.10	100.00	O	PASS	100	O		PASS
6	4.10	100.00	O	PASS	97	O		PASS
7	4.10	100.00	O	PASS	112	O		PASS
8	4.10	100.00	O	PASS	95	O		PASS
9	4.10	100.00	O	PASS	113	O		PASS
10	4.10	100.00	O	PASS	100	O		PASS
[Appearance] O-No Leackage, No Venting, No Disassembly, No Rupture, No Fire / L-Leackage / V-Venting / D-Disassembly / R-Rupture / F-Fire								
[Criteria] T1~T4: No mass loss(Not exceed 0.1%), no leakage, no venting, no disassembly, no rupture, no fire, voltage drop less than 90%. T5: External temperature does not exceed 170℃, no disassembly, no rupture, and no fire within 6 hours of this test								

T-6) Impact/Crush Test (Test Result: Pass)

■ **Cell type**

[ ] Cylindrical cells greater than 20 mm in diameter

[X] Prismatic, Pouch, Cylindrical cells not more than 20 mm in diameter

■ **Test procedure**

[ ] Impact

[X] Crush

Frech Cell 50% SOC				
	Initial	T6		
No.	OCV(V)	Max Temp(℃)	Appearance	Result
1	3.67	20	O	PASS
2	3.67	20	O	PASS
3	3.67	20	O	PASS
4	3.67	20	O	PASS
5	3.67	20	O	PASS
[Appearance] O-No Disassembly, No Fire / D-Disassembly / F-Fire				
[Criteria] External temperature does not exceed 170℃, no disassembly,				

T-7) Over charge Test (Test Result: N/A)

■ **Test condition: N/A**

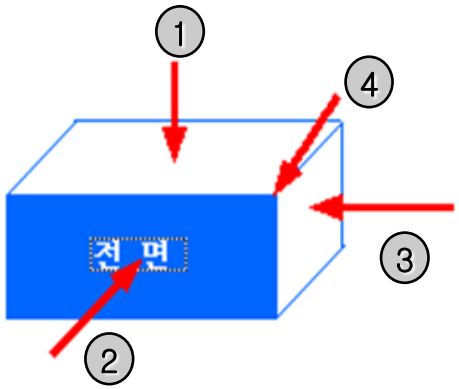
T-8) Forced discharge Test (Test Result: Pass)

■ **Test condition: 20A / 8Min**

Frech cell 0% SOC				50 cycled cell 0% SOC		
No.	Max. tempe(℃)	Appearance	Result	Max. temp(℃)	Appearance	Result
1	114	O	PASS	100	O	PASS
2	106	O	PASS	113	O	PASS
3	116	O	PASS	52	O	PASS
4	96	O	PASS	86	O	PASS
5	100	O	PASS	99	O	PASS
6	97	O	PASS	93	O	PASS
7	113	O	PASS	110	O	PASS
8	107	O	PASS	95	O	PASS
9	100	O	PASS	88	O	PASS
10	103	O	PASS	99	O	PASS
[Appearance] O-No Disassembly, No Fire / D-Disassembly / F-Fire						
[Criteria] No disassembly and no fire within 7 days of the test						

P-1) 1.2m Packaging Drop Test (Test Result: Pass)

■ Test Method



■ Sample Picture

	Front	Back
Sample Picture		
	Before Test	**After Test**
Test Result		

P-1) 1.2m Packaging Drop Test (Test Result: Pass)

■ **Test Result**

	Before test	After test
Test Result(Pass/Fail)	**Pass**	
Weight (Kg)	0.383	0.383
Criteria	- Without damage to cells or batteries contained therein. - Without shifting of the contents so as to allow battery to battery(or Cell to cell) contact. - Without release of contents.	
Remark	Outer packaging is damaged but samples inside the package remain intact and no damage, no shifting, no release of contents for samples inside the package.	