Test Summary issued under the responsibility of:

LG Energy Solution

UN 38.3 TEST SUMMARY

Basic Information			
Manufacturer	LG Energy Solution, LTD. 188, Munji-ro, Yuseong-gu, Daejeon, Republic of Korea Telephone : +82-2-3777-1114 E-mail : kkammy@lgensol.com Website : www.lgensol.com		
Test Laboratory	LG Energy Solution (Nanjing) Co., Ltd. NO.17-18 Hengyi Road, NO.26 Hengfei Road, Nanjing Economic & Technological Development Zone, Nanjing City, Jiangsu Province, China Telephone : +86-025-85603000-8288 E-mail : lixueyan@lgensol.com Website : www.lgensol.com		
Cell/Battery Information			
Cell/Battery Type	Rechargeable Lithium Ion Battery		
Physical Description	Pouch shape		
Model Name	EB-BF966ABY L, EB-BF966ABE L		
Ratings	3.9 V, 2126 mAh, 9.25 Wh		
Mean Mass	28.473 g		
Test Information			
Test Report Number	250326-[UN 38.3-SB] EB-BF966ABY L, EB-BF966ABE L		
Date of Test Report	2025-03-26		
Edition of UN Manual Used	Manual of Tests and Criteria ST/SG/AC.10/11/Rev.8, section 38.3		
Test Results			
T.1 : Altitude Simulation	PASS	T.5 : External Short Circuit	PASS
T.2 : Thermal Test	PASS	T.6 : Crush	PASS
T.3 : Vibration	PASS	T.7 : Overcharge	PASS
T.4 : Shock	PASS	T.8 : Forced Discharge	PASS
Approved by	Xueyan Li/Part Leader Platform Verification part DQA.T LG Energy Solution, Ltd. E-mail: lixueyan@lgensol.com		Signatory 

Test Report issued under the responsibility of:

LG Energy Solution

TEST REPORT

UN 38.3 Revision 8
Manual of Tests and Criteria ST/SG/AC.10/11/Rev.8, section 38.3

Report Number..... :	250326-[UN 38.3-SB] EB-BF966ABY L, EB-BF966ABE L
Standard..... :	UN 38.3 Revision 8 Manual of Tests and Criteria ST/SG/AC.10/11/Rev.8, section 38.3
Manufacturer's Name..... :	LG Energy Solution, LTD.
Address ..... :	188, Munji-ro, Yuseong-gu, Daejeon, Republic of Korea
Product Type..... :	Rechargeable Lithium Ion Battery
Figure of Single Cell..... :	Pouch shape
Model Name..... :	EB-BF966ABY L, EB-BF966ABE L
Ratings ..... :	3.9 V, 2126 mAh, 9.25 Wh
Mean Mass..... :	28.473 g
Electrolyte type of single cell..... :	☐ Gel polymer ☐ Solid polymer ☒ N/A
Date of issue ..... :	2025-03-26

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

Test Laboratory's Name..... :	LG Energy Solution (Nanjing) Co., Ltd.
Address ..... :	NO.17-18 Hengyi Road, NO.26 Hengfei Road, Nanjing Economic & Technological Development Zone, Nanjing City, Jiangsu Province, China
Prepared by..... :	Jie Ma / Engineer
Approved by ..... :	Xueyan Li / Part Leader

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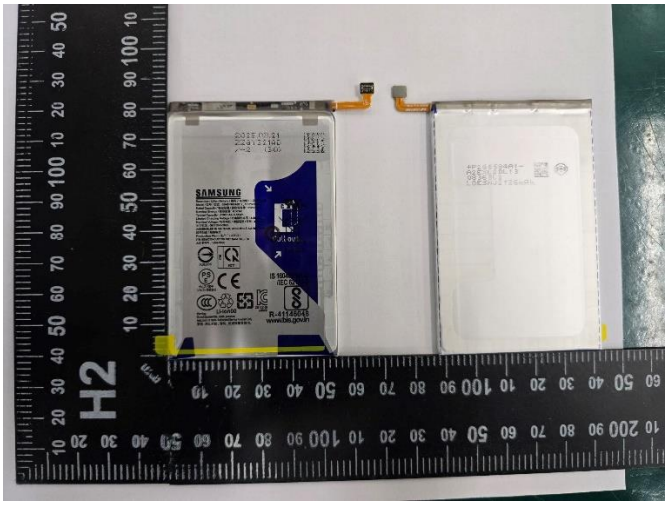
Test Results				
Clause	Test Item	Sample No.	Test Result	Remark
38.3.4.1	T.1 : Altitude Simulation	SB1# ~ SB10#	P	/
38.3.4.2	T.2 : Thermal Test		P	/
38.3.4.3	T.3 : Vibration		P	/
38.3.4.4	T.4 : Shock		P	/
38.3.4.5	T.5 : External Short Circuit		P	/
38.3.4.6	T.6 : Impact	/	N/A	/
	T.6 : Crush	C11# ~ C20#	P	/
38.3.4.7	T.7 : Overcharge	SB11# ~ SB18#	P	/
38.3.4.8	T.8 : Forced Discharge	C21# ~ C40#	P	/

Sample Photo



Technical Parameters:

Nominal Voltage ..... :	(V)	3.9
Rated Capacity..... :	(mAh)	2126
Standard Charge Current..... :	(mA)	425.2
Standard Discharge Current ..... :	(mA)	425.2
Discharge Cut-off Voltage ..... :	(V)	2.75
Maximum Charge Voltage..... :	(V)	4.50
Maximum Charge Current..... :	(mA)	2763.8
Maximum Discharge Current ..... :	(mA)	2126

Remark:

The table of Tests T.6 and T.8 is referring to the related cell test report (250322-[UN 38.3-C] P265584A1 Test Report)

Manual of Tests and Criteria		
Item	Test Condition	Criteria
*T.1 : Altitude Simulation	1) Store sample at 20±5℃ and 11.6kPa for 6hours	- After OCV (%) ≥ 90% - No leakage, no venting, no disassembly, no fire, no rupture - Mass loss limit(leakage) M<1g, no exceed 0.5% 1g≤M≤75g, no exceed 0.2% M>75g, no exceed 0.1%
*T.2 : Thermal Test	1) Sample is subjected to temperature cycling - 72±2℃ for 6hours ↔ -40±2℃ for 6hours - Maximum 30min for Interval time - 10cycles 2) Store sample at 20±5℃ for 24hours	
*T.3 : Vibration	1) Sample is subjected to sinusoidal vibration - 7Hz ↔ 200Hz ↔ 7Hz in 15min x 12times x 3direction - Sinusoidal waveform with a logarithmic sweep - Small : 7Hz to 18Hz (maintaining 1gn), 50Hz (until 8gn), 200Hz (maintaining 8gn), 1.6mm total excursion - Large : 7Hz to 18Hz (maintaining 1gn), 25Hz (until 2gn), 200Hz (maintaining 2gn), 1.6mm total excursion	
*T.4 : Shock	1) Sample is subjected to three shocks in each direction of three mutually perpendicular - Half sine shock - Small : Peak acceleration 150gn or √(100850/mass(kg)) (whichever is smaller), Pulse duration 6msec - Large : Peak acceleration 50gn or √(30000/mass(kg)) (whichever is smaller), Pulse duration 11msec - 6direction(±x, ±y, ±z) x 3cycles	
*T.5 : External Short Circuit	1) Store sample at 57±4℃ at least 6hours or until reach 57±4℃ 2) Short sample by connecting resistance of less than100mΩ at 57±4℃ 3) Sample remains on test until 1hours after temperature has returned 57±4℃	- No disassembly, No rupture, no fire within 6hours after test - Maximum Temperature ≤ 170℃
T.6 : Impact - Cylindrical cells ≥ 18.0mm in diameter	1) Place 15.8±0.1mm diameter type 316 steel bar on center of the sample at 20±5℃ 2) Drop 9.1±0.10kg weight from a height of 610±25mm at the intersection of the bar and sample	- No disassembly, no fire within 6hours after test - Maximum Temperature ≤ 170℃
T.6 : Crush - Cylindrical cells < 18.0mm in diameter - Other shapes	1) Crush sample between two plat surfaces by using 13±0.78kN force at 20±5 ℃ 2) 13±0.78kN has been applied, or voltage drops by at least 100 mV, or cell is deformed by 50 % or more of its original thickness has been obtained, the force is released	
T.7 : Overcharge	1) Charge sample at 20±5℃ until 24hours - Test current : Maximum charge current x 2 - Test voltage for standard charge voltage ≤ 18V : V(min.) = 2 x Maximum charge voltage or 22V - Test voltage for standard charge voltage > 18V : V(min.) = 1.2 x Maximum charge voltage	- No disassembly, no fire for 7 days after test
T.8 : Forced Discharge	1) Discharge sample by connecting in series with 12V DC power supply and resistive load for calculated time interval at 20±5℃ - Load : Rt((12V + Vc) / Maximum discharge current) - Rc - Rw - Time interval : Rated capacity / Maximum discharge current	- No disassembly, no fire for 7 days after test
*Tests T.1 to T.5 shall be conducted in sequence on the same cell or battery.		

TABLE: T.1 Altitude Simulation							P
Sample No.	Before Test		After Test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Fully charged at first cycle							
SB1#	28.471	4.4739	28.470	4.4722	0.004	99.96	O
SB2#	28.510	4.4751	28.509	4.4733	0.004	99.96	O
SB3#	28.452	4.4745	28.451	4.4729	0.004	99.96	O
SB4#	28.535	4.4745	28.534	4.4728	0.004	99.96	O
SB5#	28.420	4.4749	28.419	4.4732	0.004	99.96	O
Fully charged after 25 cycles							
SB6#	28.393	4.4851	28.394	4.4837	0.000	99.97	O
SB7#	28.552	4.4854	28.551	4.4838	0.004	99.96	O
SB8#	28.480	4.4773	28.480	4.4760	0.000	99.97	O
SB9#	28.481	4.4763	28.481	4.4752	0.000	99.98	O
SB10#	28.438	4.4764	28.438	4.4754	0.000	99.98	O
Results: O = No leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: T.2 Thermal test							P
Sample No.	Before Test		After Test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Fully charged at first cycle							
SB1#	28.470	4.4722	28.460	4.3753	0.035	97.83	O
SB2#	28.509	4.4733	28.499	4.3756	0.035	97.82	O
SB3#	28.451	4.4729	28.443	4.3774	0.028	97.86	O
SB4#	28.534	4.4728	28.524	4.3773	0.035	97.86	O
SB5#	28.419	4.4732	28.410	4.3812	0.032	97.94	O
Fully charged after 25 cycles							
SB6#	28.394	4.4837	28.384	4.3880	0.035	97.87	O
SB7#	28.551	4.4838	28.541	4.3861	0.035	97.82	O
SB8#	28.480	4.4760	28.471	4.3835	0.032	97.93	O
SB9#	28.481	4.4752	28.474	4.3844	0.025	97.97	O
SB10#	28.438	4.4754	28.430	4.3878	0.028	98.04	O
Results: O = No leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: T.3 Vibration							P
Sample No.	Before Test		After Test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Fully charged at first cycle							
SB1#	28.460	4.3753	28.460	4.3748	0.000	99.99	O
SB2#	28.499	4.3756	28.500	4.3750	0.000	99.99	O
SB3#	28.443	4.3774	28.443	4.3768	0.000	99.99	O
SB4#	28.524	4.3773	28.525	4.3768	0.000	99.99	O
SB5#	28.410	4.3812	28.411	4.3807	0.000	99.99	O
Fully charged after 25 cycles							
SB6#	28.384	4.3880	28.384	4.3876	0.000	99.99	O
SB7#	28.541	4.3861	28.542	4.3857	0.000	99.99	O
SB8#	28.471	4.3835	28.471	4.3830	0.000	99.99	O
SB9#	28.474	4.3844	28.473	4.3840	0.004	99.99	O
SB10#	28.430	4.3878	28.430	4.3873	0.000	99.99	O
Results: O = No leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: T.4 Shock							P
Sample No.	Before Test		After Test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Fully charged at first cycle							
SB1#	28.460	4.3748	28.461	4.3746	0.000	100.00	O
SB2#	28.500	4.3750	28.502	4.3749	0.000	100.00	O
SB3#	28.443	4.3768	28.444	4.3767	0.000	100.00	O
SB4#	28.525	4.3768	28.526	4.3766	0.000	100.00	O
SB5#	28.411	4.3807	28.411	4.3805	0.000	100.00	O
Fully charged after 25 cycles							
SB6#	28.384	4.3876	28.387	4.3873	0.000	99.99	O
SB7#	28.542	4.3857	28.543	4.3855	0.000	100.00	O
SB8#	28.471	4.3830	28.470	4.3828	0.004	100.00	O
SB9#	28.473	4.3840	28.475	4.3838	0.000	100.00	O
SB10#	28.430	4.3873	28.430	4.3871	0.000	100.00	O
Results: O = No leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: T.5 External Short Circuit				P
Sample No.	Ambient (℃) (At 57 ±4 ℃)	Testing resistance (mΩ)	Max. External Temperature (℃)	Results
Fully charged at first cycle				
SB1#	57.00	80.80	57.88	O
SB2#	57.00	83.40	57.78	O
SB3#	57.00	86.10	56.90	O
SB4#	57.00	81.60	57.17	O
SB5#	57.00	82.50	57.12	O
Fully charged after 25 cycles				
SB6#	57.00	80.80	57.92	O
SB7#	57.00	83.40	57.84	O
SB8#	57.00	86.10	57.12	O
SB9#	57.00	81.60	57.24	O
SB10#	57.00	82.50	57.30	O
Results: O = No disassembly, no rupture, no fire during the test and within six hours after the test.				

TABLE: T.6 Impact					N/A
TABLE: T.6 Crush					P
Sample No.	Max. External Temperature (℃)	Results	Sample No.	Max. External Temperature (℃)	Results
50% of the design rated capacity at first cycle			50% of the design rated capacity after 25 cycles		
C11#	20.99	O	C16#	20.15	O
C12#	20.53	O	C17#	19.49	O
C13#	19.69	O	C18#	19.46	O
C14#	20.71	O	C19#	19.91	O
C15#	19.53	O	C20#	19.47	O
Results: O = No disassembly, no fire during the test and within six hours after this test.					

TABLE: T.7 Overcharge					P
The test current					5.528 A
The test voltage					9.000 V
Sample No.	OCV(V)	Results	Sample No.	OCV(V)	Results
Fully charged at first cycle			Fully charged after 25 cycles		
SB11#	4.4737	O	SB15#	4.4775	O
SB12#	4.4746	O	SB16#	4.4765	O
SB13#	4.4788	O	SB17#	4.4764	O
SB14#	4.4750	O	SB18#	4.4852	O
Results: O = No disassembly, no fire during the test and within seven days after this test.					

TABLE: T.8 Forced discharge					P
Sample No.	OCV(V)	Results	Sample No.	OCV(V)	Results
Fully discharged at first cycle			Fully discharged after 25 cycles		
C21#	3.4991	O	C31#	3.5096	O
C22#	3.4890	O	C32#	3.5134	O
C23#	3.4993	O	C33#	3.5192	O
C24#	3.5145	O	C34#	3.5246	O
C25#	3.5073	O	C35#	3.5223	O
C26#	3.4874	O	C36#	3.5363	O
C27#	3.5149	O	C37#	3.5279	O
C28#	3.5040	O	C38#	3.5312	O
C29#	3.4847	O	C39#	3.5261	O
C30#	3.5000	O	C40#	3.5187	O
Results: O = No disassembly, no fire during the test and within seven days after this test.					