

Independent Certification of Lithium-Ion Battery UN Transportation Model Regulation




Model Number	CGA-E/627
Nominal Voltage	11.1 V
Rated Capacity	3.90 Ah
Watt-hour Rating	44 Wh

Customer Model No.	PEC Model No.
45N1038	CGA-E/627AW

No.	Test Item	Criteria	Result	Remark
T1	Altitude Simulation	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T2	Thermal Test	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T3	Vibration	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T4	Shock	No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing.	Passed	
T5	External Short Circuit	External temperature should not exceed 170 degC. No disassembly, rupture, and fire within six hours of this test.	Passed	
T6	Impact	External temperature should not exceed 170 degC. No disassembly, and fire within six hours of this test.	Passed	Component Cell Test
T7	Overcharge	No disassembly, and fire within seven days of this test.	Passed	
T8	Forced Discharge	No disassembly, and fire within seven days of this test.	-	Cell only

We confirmed the test results based on the UN manual of tests and criteria sub-section 38.3

Panasonic Corporation Energy Company  
Lithium-ion Battery Business Unit

Issued on, Jan. 01. 2012		
Approved	Checked	Prepared
		

松下电器产业株式会社 能源公司  
检验报告  
Test Report

No. B1197-1  
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样品名称 Name of Sample	中文 Chinese	锂离子电池组 CGA-E/627 (11.1V 3900mAh 44Wh)		
	英文 English	Lithium Ion Battery CGA-E/627 (11.1V 3900mAh 44Wh)		
送检单位 Consignor	松下电器产业株式会社 能源公司 Panasonic Corporation Energy Company			
生产单位 Manufacturer	松下电器产业株式会社 能源公司 Panasonic Corporation Energy Company			
检验方法 Test Method	联合国《关于危险货物运输的建议书》 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS"			
判定标准 Criterion	联合国《关于危险货物运输的建议书》 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS"			
样品外观 Appearance	黑色长方形块状固体 Black Rectangle Blocky Solid			
检测起迄日期 Test Date	2009/05/08-2009/06/15	样品编号 Sample No	/	
检测项目 Test Items	高度模拟试检; 热测试; 振动试检; 冲击试检; 外短路试检; 冲撞试检; 过充电试检 Altitude simulation, Thermal test, Vibration test, Shock, External short circuit, Impact, Overcharge			
检验结论 Conclusion	受检样品通过 UN38.3检测, 检测合格。 The sample has passed the test items of UN38.3.  日期(date):2012年(y) 01月(m) 01日(d)			
备注 Remark	Similar Model Certification with the data of CGA-E/626 Same cell, Same construction battery pack Ratio of (CGA-E/627)/(CGA-E/623) : [+]=100.0%, [-]=100.0%, [Electrolyte]=100.0%			
受检单位地址 Consignor Address	日本:大阪府守口市松下町1番1号 1-1 Matsushita-cho, Moriguchi City, Osaka, Japan	邮政编码 Post Code	570-8511	

批准人职务(the title of approver):  
 质量保证部长(Director of Quality Assurance)  
 质量保证科长(Manager of Quality Assurance)  
 质量保证主任工程师(Chief Engineer of QA)

批准 Approver: A. Takemoto  
 审核 Checker: K. Hashimoto  
 主检 Appraiser: S. Iwata

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序号 No	检测项目 Name of Test Items	标准要求或标准款号 Standard Requirement or the Clause Number of Standard	检验结果 Test Result	本项结论 Test Conclusion	备注 Remark
1	高度模拟试检 Altitude simulation	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-1 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-1	见附表1 See Appendix 1	合格 Passed	/
2	热测试检 Thermal test	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-2 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-2	见附表2 See Appendix 2	合格 Passed	/
3	振动试检 Vibration test	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-3 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-3	见附表3 See Appendix 3	合格 Passed	/
4	冲击试检 Shock	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-4 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-4	见附表4 See Appendix 4	合格 Passed	/
5	外短路试检 External short circuit	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-5 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-5	见附表5 See Appendix 5	合格 Passed	/
6	冲撞试检 Impact	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-6 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-6	见附表6 See Appendix 6	合格 Passed	/
7	过充电试检 Overcharge	试检和标准手册38.3(4 <sup>th</sup> ) 38.3 Test T-7 UN Manual of Tests and Criteria Section (4 <sup>th</sup> ) 38.3 Test T-7	见附表7 See Appendix 7	合格 Passed	/
检验环境条件 / Test Environment Condition			环境温度:20-25℃ / Ambient Temperature:20-25℃		
分包检验状况 Subcontracted Test Condition	检测项目 Test Items	/			
	分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post Code	/
		地址 Address	/	电话 Tel	/

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A: 电池判断新机种与否的检查表

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(Checklist for Judging New Type Cell or not )

被判定的电池: CGA103450AH

比较参照电池: CGA103450AE

没有全部的项目变更的情况不是新机种

When there is no change in all items, it is NOT considered to be a New Type Cell.

确认项目 Check item	受影响的要素 The element which is given influence	变更的存在 Presence of change
电池尺寸 Cell dimensions	Are the dimensions of this cell the same as those of the test completion cell?	-
安全零部件和机械构件 Safety parts and mechanical components	Are the safety parts and mechanical components of this cell the same as those of the test completion cell?	-
电池的正极材料 Cathode material system	Is cathode material system of this cell the same as that of the test completion cell?	-
电池的负极材料 Anode material system	Is anode material system of this cell the same as that of the test completion cell?	-
电池的电解液材料 Electrolyte material system	Is electrolyte material system of this cell the same as that of the test completion cell?	-
电池的正极质量 Mass of cathode material	Is mass difference of the design center of each cell concerning cathode <b>less than 0.1 g or 20% ?</b>	-
电池的负极质量 Mass of anode material	Is mass difference of the design center of each cell concerning anode <b>less than 0.1 g or 20% ?</b>	-
电池的电解液质量 Mass of electrolyte	Is mass difference of the design center of each cell concerning electrolyte <b>less than 0.1 g or 20% ?</b>	-
判断结果 Judgment result	“新机种”、非“新机种” New Type or not	<input type="checkbox"/> New <input checked="" type="checkbox"/> Not new

变更有(Change) ⇒ ○、没有变更(No change) ⇒ -



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**B : 组电池判断新机种与否的检查表**

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(Checklist for Judging New Type Battery or not )

被判定的组电池 : CGA-E/627

比较参照组电池 : CGA-E/623

没有全部的项目变更的情况不是新机种

When there is no change in all items, it is NOT considered to be a New Type Battery.

确认项目 Test Item (Function)		受影响的要素 The element which is given influence	变更的存在 Presence of change
T 1	高度模拟试检 (减压负荷) Altitude Simulation (Decompression load)	Crimped part, Gasket (Cell) Gas Release Vent, Cell Case (Cell) Pack (Plastic) Case	- - -
	T 2	热测试检(高温/低温重复) Thermal Shock (Repetition of high and low temp.)	- - -
T 3	振动试检 (振动负荷) Vibration (Vibration load)	Finished state of Wound Electrodes (Cell)	-
T 4	冲击试检 (冲击负荷) Shock (Shock load)	Electric wiring member Electronic Parts on a circuit board · Cell Holding Member (Adhesive, Both Sides Tape, Lib of Plastic Case )	- - -
T 5	外短路试检 (短路电流) External Short Circuit (Short current)	Over-voltage Protection Current Control Device Safety Device of cell (Cell) Lead Tab	- - - -
T 6	[Cell] 冲撞试检 (冲突负荷) [Cell] Impact (Crash load)	Separator (Cell) Insulation State in a cell (Cell)	- -
T 7	[Pack] 过充电试检 (充电负荷) [Pack] Overcharge (Charge load)	Overcharge Protection Thermal Device Safety Device of cell (Cell)	- - -
T 8	[Cell] 强制放电试检 (过放电负荷) [Cell] Forced Discharge (Over discharge load)	Finished state of Wound Electrodes (Cell)	-
判断结果 Judgment result		“新机种”、非“新机种” New Type or not	<input type="checkbox"/> New <input checked="" type="checkbox"/> Not new

变更有(Change) ⇒ ○、没有变更(No change) ⇒ -

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Appendix 1

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序号 No	T-1	检测项目名称 Name of Test Items		高度模拟试检 Altitude simulation				
		试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他 现象 Other Event
样品 编号 Sample No	样品状态 Sample Status	质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	303.39	12.451	303.35	12.443	0.01%	99.9%	0
2	首次充满 Initial 100% charge	303.67	12.449	303.62	12.442	0.02%	99.9%	0
3	首次充满 Initial 100% charge	304.25	12.435	304.21	12.427	0.01%	99.9%	0
4	首次充满 Initial 100% charge	303.52	12.449	303.47	12.440	0.02%	99.9%	0
5	首次放光 Initial 100% discharge	303.62	10.152	303.57	10.101	0.02%	99.5%	0
6	首次放光 Initial 100% discharge	303.98	10.191	303.94	10.145	0.01%	99.5%	0
7	首次放光 Initial 100% discharge	303.64	10.183	303.59	10.134	0.02%	99.5%	0
8	首次放光 Initial 100% discharge	303.55	10.191	303.51	10.146	0.01%	99.6%	0
9	50次充满 50cycles 100% charge	303.44	12.467	303.44	12.433	0.00%	99.7%	0
10	50次充满 50cycles 100% charge	303.33	12.467	303.34	12.433	0.00%	99.7%	0
11	50次充满 50cycles 100% charge	301.83	12.401	301.84	12.374	0.00%	99.8%	0
12	50次充满 50cycles 100% charge	301.69	12.404	301.70	12.377	0.00%	99.8%	0
13	50次放光 50cycles 100% discharge	303.22	10.031	303.23	9.604	0.00%	95.7%	0
14	50次放光 50cycles 100% discharge	302.98	10.073	302.99	9.673	0.00%	96.0%	0
15	50次放光 50cycles 100% discharge	303.45	10.032	303.46	9.600	0.00%	95.7%	0
16	50次放光 50cycles 100% discharge	303.54	10.061	303.54	9.652	0.00%	95.9%	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液, 无漏气, 无解体, 无破裂, 无起火  
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

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Appendix 2

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序号 No	T-2	检测项目名称 Name of Test Items		热测试检 Thermal test				
		试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他 现象 Other Event
样品 编号 Sample No	样品状态 Sample Status	质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	303.35	12.443	303.30	12.234	0.02%	98.3%	0
2	首次充满 Initial 100% charge	303.62	12.442	303.56	12.232	0.02%	98.3%	0
3	首次充满 Initial 100% charge	304.21	12.427	304.16	12.226	0.02%	98.4%	0
4	首次充满 Initial 100% charge	303.47	12.440	303.42	12.231	0.02%	98.3%	0
5	首次放光 Initial 100% discharge	303.57	10.101	303.53	9.344	0.01%	92.5%	0
6	首次放光 Initial 100% discharge	303.94	10.145	303.89	9.398	0.02%	92.6%	0
7	首次放光 Initial 100% discharge	303.59	10.134	303.54	9.379	0.02%	92.5%	0
8	首次放光 Initial 100% discharge	303.51	10.146	303.46	9.419	0.02%	92.8%	0
9	50次充满 50cycles 100% charge	303.44	12.433	303.39	12.231	0.02%	98.4%	0
10	50次充满 50cycles 100% charge	303.34	12.433	303.29	12.233	0.02%	98.4%	0
11	50次充满 50cycles 100% charge	301.84	12.374	301.80	12.211	0.01%	98.7%	0
12	50次充满 50cycles 100% charge	301.70	12.377	301.65	12.209	0.02%	98.6%	0
13	50次放光 50cycles 100% discharge	303.23	9.604	303.19	8.923	0.01%	92.9%	0
14	50次放光 50cycles 100% discharge	302.99	9.673	302.95	8.991	0.01%	92.9%	0
15	50次放光 50cycles 100% discharge	303.46	9.600	303.41	8.915	0.02%	92.9%	0
16	50次放光 50cycles 100% discharge	303.54	9.652	303.50	8.968	0.01%	92.9%	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液, 无漏气, 无解体, 无破裂, 无起火  
 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

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序号 No	T-3	检测项目名称 Name of Test Items		振动试检 Vibration test				
		试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他 现象 Other Event
样品 编号 Sample No	样品状态 Sample Status	质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	303.30	12.234	303.30	12.210	0.00%	99.8%	0
2	首次充满 Initial 100% charge	303.56	12.232	303.56	12.209	0.00%	99.8%	0
3	首次充满 Initial 100% charge	304.16	12.226	304.17	12.202	0.00%	99.8%	0
4	首次充满 Initial 100% charge	303.42	12.231	303.42	12.211	0.00%	99.8%	0
5	首次放光 Initial 100% discharge	303.53	9.344	303.53	ODP	0.00%	-	0
6	首次放光 Initial 100% discharge	303.89	9.398	303.90	ODP	0.00%	-	0
7	首次放光 Initial 100% discharge	303.54	9.379	303.55	ODP	0.00%	-	0
8	首次放光 Initial 100% discharge	303.46	9.419	303.47	ODP	0.00%	-	0
9	50次充满 50cycles 100% charge	303.39	12.231	303.40	12.211	0.00%	99.8%	0
10	50次充满 50cycles 100% charge	303.29	12.233	303.30	12.214	0.00%	99.8%	0
11	50次充满 50cycles 100% charge	301.80	12.211	301.80	12.193	0.00%	99.9%	0
12	50次充满 50cycles 100% charge	301.65	12.209	301.66	12.190	0.00%	99.8%	0
13	50次放光 50cycles 100% discharge	303.19	8.923	303.19	ODP	0.00%	-	0
14	50次放光 50cycles 100% discharge	302.95	8.991	302.95	ODP	0.00%	-	0
15	50次放光 50cycles 100% discharge	303.41	8.915	303.42	ODP	0.00%	-	0
16	50次放光 50cycles 100% discharge	303.50	8.968	303.50	ODP	0.00%	-	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液, 无漏气, 无解体, 无破裂, 无起火  
 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.



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Appendix 4

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序号 No	T-4	检测项目名称 Name of Test Items		冲击试检 Shock				
		试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他 现象 Other Event
样品 编号 Sample No	样品状态 Sample Status	质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	303.30	12.210	303.29	12.198	0.00%	99.9%	0
2	首次充满 Initial 100% charge	303.56	12.209	303.56	12.198	0.00%	99.9%	0
3	首次充满 Initial 100% charge	304.17	12.202	304.16	12.190	0.00%	99.9%	0
4	首次充满 Initial 100% charge	303.42	12.211	303.42	12.199	0.00%	99.9%	0
5	首次放光 Initial 100% discharge	303.53	ODP	303.53	ODP	0.00%	-	0
6	首次放光 Initial 100% discharge	303.90	ODP	303.89	ODP	0.00%	-	0
7	首次放光 Initial 100% discharge	303.55	ODP	303.55	ODP	0.00%	-	0
8	首次放光 Initial 100% discharge	303.47	ODP	303.46	ODP	0.00%	-	0
9	50次充满 50cycles 100% charge	303.40	12.211	303.40	12.199	0.00%	99.9%	0
10	50次充满 50cycles 100% charge	303.30	12.214	303.30	12.202	0.00%	99.9%	0
11	50次充满 50cycles 100% charge	301.80	12.193	301.80	12.179	0.00%	99.9%	0
12	50次充满 50cycles 100% charge	301.66	12.190	301.66	12.178	0.00%	99.9%	0
13	50次放光 50cycles 100% discharge	303.19	ODP	303.19	ODP	0.00%	-	0
14	50次放光 50cycles 100% discharge	302.95	ODP	302.95	ODP	0.00%	-	0
15	50次放光 50cycles 100% discharge	303.42	ODP	303.42	ODP	0.00%	-	0
16	50次放光 50cycles 100% discharge	303.50	ODP	303.50	ODP	0.00%	-	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液, 无漏气, 无解体, 无破裂, 无起火  
 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

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序号No	T-5	检测项目名称 Name of Test Items	外短路试检 External short circuit
样品编号 Sample No	样品状态 Sample Status	样品表面最高温度 Max. External Temperature (°C)	其他现象 Other Event
1	首次充满 Initial 100% charge	55.6	0
2	首次充满 Initial 100% charge	55.6	0
3	首次充满 Initial 100% charge	55.4	0
4	首次充满 Initial 100% charge	55.2	0
5	首次放光 Initial 100% discharge	55.6	0
6	首次放光 Initial 100% discharge	55.6	0
7	首次放光 Initial 100% discharge	55.5	0
8	首次放光 Initial 100% discharge	55.2	0
9	50次充满 50cycles 100% charge	55.6	0
10	50次充满 50cycles 100% charge	55.5	0
11	50次充满 50cycles 100% charge	55.3	0
12	50次充满 50cycles 100% charge	55.1	0
13	50次放光 50cycles 100% discharge	55.6	0
14	50次放光 50cycles 100% discharge	55.6	0
15	50次放光 50cycles 100% discharge	55.4	0
16	50次放光 50cycles 100% discharge	55.3	0
备注: D-解体, R-破裂, F-起火, 0-无解体, 无破裂, 无起火 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.			

松下电器产业株式会社 能源公司

检验报告 -----附表6

Test Report

No. B1197-1

Component cell:CGA103450AE Appendix 6

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序号No	T-6	检测项目名称 Name of Test Items	冲撞试检 Impact
样品编号 Sample No	样品状态 Sample Status	样品表面最高温度 Max. External Temperature (°C)	其他现象 Other Event
1	首次半充(横向) Initial 50% charge (horizontal)	122	0
2	首次半充(横向) Initial 50% charge (horizontal)	124	0
3	首次半充(横向) Initial 50% charge (horizontal)	127	0
4	首次半充(横向) Initial 50% charge (horizontal)	132	0
5	首次半充(横向) Initial 50% charge (horizontal)	126	0
6	首次半充(纵向) Initial 50% charge (vertical)	23	0
7	首次半充(纵向) Initial 50% charge (vertical)	23	0
8	首次半充(纵向) Initial 50% charge (vertical)	24	0
9	首次半充(纵向) Initial 50% charge (vertical)	53	0
10	首次半充(纵向) Initial 50% charge (vertical)	23	0
11	50次放光(横向) 50cycles 100% discharge (horizontal)	61	0
12	50次放光(横向) 50cycles 100% discharge (horizontal)	63	0
13	50次放光(横向) 50cycles 100% discharge (horizontal)	62	0
14	50次放光(横向) 50cycles 100% discharge (horizontal)	62	0
15	50次放光(横向) 50cycles 100% discharge (horizontal)	65	0
16	50次放光(纵向) 50cycles 100% discharge (horizontal)	23	0
17	50次放光(纵向) 50cycles 100% discharge (horizontal)	24	0
18	50次放光(纵向) 50cycles 100% discharge (horizontal)	24	0
19	50次放光(纵向) 50cycles 100% discharge (horizontal)	24	0
20	50次放光(纵向) 50cycles 100% discharge (horizontal)	22	0

备注: D-解体, R-破裂, F-起火, 0-无解体, 无破裂, 无起火

Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

