



PTC
ÜRÜN TEST VE BELGELENDİRME
SAN. TİC. LTD. ŞTİ

DENEY RAPORU
TEST REPORT

Müşteri Adı / Adresi:
Customer name / address

GAMA AKÜMÜLATÖR SANAYİ VE TİCARET LİMİTED ŞİRKETİ
ÇALI MAH. 4.(410) SK. NO:4 NİLÜFER / BURSA/ TÜRKİYE

Rapor ve İstek No:
Report and order no:

171801-4697-1-R1

Numunenin Adı ve Tarifi:
Name and identity of test item:

LİTYUM AKÜ

Deneyin Yapıldığı Tarih:
Date of test:

26.08.2025 – 15.09.2025

Rapor Sayfa Sayısı:
Number of pages of the report:

17

Açıklamalar:
Remarks:

Ürün ilgili testlerden geçmiştir, lütfen raporu inceleyiniz.
The product passes related tests, see report below.

Mühür/ Tarih
Seal/ Date

16.02.2026



Deneyi Yapan Personel
Person in Performing the Test

Dijital olarak imzalayan
EMİRHAN BABUR
Tarih: 2026.02.16
16:09:56 +03'00'

Onaylayan /
Laboratuvar Teknik
Yöneticisi
Approved by / Laboratory
Technical Manager

EMİNE NUR ÇİDEM
2026.02.16
18:07:37 +03'00'

Bu rapor, Laboratuvarımızın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.
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Bu rapor 30.01.2026 tarihli 171801-4697-1 numaralı raporun yerine geçmektedir. / This report replaces the report numbered 171801-4697-1 dated 30.01.2026.

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DENEY RAPORU / TEST REPORT IEC 62133-1	
Rapor Numarası Report number	: 171801-4697-1-R1
Veriliş Tarihi Date of issue	: 16.02.2026
Toplam Sayfa Sayısı Total number of pages	: 17
Deneyi Yapan Laboratuvar Testing Laboratory	: PTC ÜRÜN TEST VE BELGELENDİRME SAN. TİC. LTD. ŞTİ
Adres Address	: Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir / İSTANBUL
Deney Adresi Testing Location	: Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir / İSTANBUL
Başvuranın Adı Applicant's name	: GAMA AKÜMÜLATÖR SANAYİ VE TİCARET LİMİTED ŞİRKETİ
Adresi Address	: ÇALI MAH. 4.(410) SK. NO:4 NİLÜFER / BURSA/ TÜRKİYE
Deney Ayrıntıları Test Specifications	
Standard	: IEC 62133-1
Deney Prosedürü Test procedure	: Deney standartlarına göre kısmi deneyler/ According to the test standard partial tests
Standard Dışı Deney Yöntemi Non-standard test method	: -
Deney Raporu Form No Test report form no	: -
Deney Rapor Form(ları) Oluşturan Test report form(s) originator	: PTC
Ana TRF Master TRF	: -
Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir. Bu rapor laboratuvar gönderilen numunelere uygulanan deney/deneyler sonucu hazırlanmıştır. Müşteriye ait diğer numuneleri kapsamaz. <i>The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report. This report was prepared according to test results of specimens sent to laboratory. It doesn't contain other specimens belonging to customer.</i>	
Deney Numunesi Açıklaması Test item description	: LİTYUM AKÜ
Marka Trade Mark	: GAMALLON
Üretici Manufacturer	: GAMA AKÜMÜLATÖR SANAYİ VE TİCARET LİMİTED ŞİRKETİ
Model/Tip Model /Type reference	: GAMALLON-80V-560AH
Beyan Değerleri Ratings	: 83.2 V ; 46.59 kW ; Class II ; IP65

Standart/Standard : IEC 62133-1

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

Ek Dosya Listesi (Eklerin içerdği sayfa sayısı dahil) :

List of attachments (including a total number of pages in each attachment) :

Ek.1 / Attachment.1 - Ölçüm Cihazları / Measuring Equipments

Ek.2 / Attachment.2 - Görsel Dökümanlar / Photo Documentation

Olası Deney Durumu Kararları/ Possible test case verdicts:

- deney durumu deney numunesi için geçerli değildir....: <i>test case does not apply to the test object</i>	N
- deney numunesi gereksinimi karşılıyor.....: <i>test object does meet the requirement</i>	P (Pass / Geçti)
- deney numunesi gereksinimi karşılamıyor.....: <i>test object does not meet the requirement</i>	F (Fail / Kaldı)

Genel Açıklamalar / General Remarks

Revizyon Sebebi/ Reason of Revision : Ürünün model adı değiştirilmiştir. / *The product model name has been changed.*

Bu raporda sunulan test sonuçları yalnızca test edilen nesneyle ilgilidir. Bu rapor, yayınlayan test laboratuvarının yazılı onayı olmaksızın tamamen veya kısmen çoğaltılamaz.

“(Bakınız Kutu #)” rapora eklenen ek bilgilere işaret etmektedir.

“Ekli tabloya bakınız”, rapora eklenen bir tabloya atıfta bulunmaktadır.

Parantez içerisindeki madde numaraları, ilgili deney standardında geçen maddelere karşılık gelir.

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. “(See Enclosure #)” refers to additional information appended to the report. “(See appended table)” refers to a table appended to the report.

Bu rapor boyunca ☐ **nokta** / ☒ **virgül ondalık ayracı olarak kullanılır.**

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

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Örnek Mahallesi Udi Hasanbey Sokak Reis Plaza No: 31A Ataşehir/İstanbul-Turkey

Tel: +90 216 225 03 41 e-mail: info@ptctesting.com web: www.ptctesting.com

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	Parameter measurement tolerances		N
	Parameter measurement tolerances		N

5	General safety considerations		P
5.1	General		P
5.2	Insulation and wiring		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ		P
	Insulation resistance (MΩ) :	999,9 MΩ	—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N
	Orientation of wiring maintains adequate creepage and clearance distances between conductors		N
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N
5.3	Venting		N
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition		N
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N
5.4	Temperature, voltage and current management		P
	Batteries are designed such that abnormal temperature-rise conditions are prevented		P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		P

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	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified		N
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		N
	Terminal contacts are arranged to minimize the risk of short circuits		N
5.6	Assembly of cells into batteries		P
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		P
	Battery has some type of safety device or feature for charging.		P
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer /designer may ensure proper design and assembly		P
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N
	Protective circuit components are added as appropriate and consideration given to the end-device application		N
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this document		N
5.7	Quality plan		N
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery		N

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6	Type test and sample size		P
	Tests were made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.		P
7	Specific requirements and tests		N
7.1	Charging procedure for test purposes		N
7.2	Intended use		N
7.2.1	Continuous low-rate charging (cells)		N
	Results: No fire. No explosion	(See Table 7.2.1)	N
7.2.2	Vibration		N
	Results: No fire. No explosion. No leakage	(See Table 7.2.2)	N
7.2.3	Case stress at high ambient temperature(batteries)		N
	Oven temperature (°C).....:		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N
7.2.4	Temperature cycling		N
	Results: No fire. No explosion. No leakage.		N
7.3	Reasonably foreseeable misuse		N
7.3.1	Incorrect installation (cells)		N
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N
	- A stabilized dc power supply.		N
	Results: No fire. No explosion.....:	(See Table 7.3.1)	N
7.3.2	External short circuit		N
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or		N
	- The case temperature declined by 20% of the maximum temperature rise		N
	Results: No fire. No explosion.....:	(See Table 7.3.2)	N
7.3.3	Free fall		N

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	Results: No fire. No explosion.		N
7.3.4	Mechanical shock (crash hazard)		N
	Results: No fire. No explosion. No leakage.		N
7.3.5	Thermal abuse (cells)		N
	Oven temperature (°C).....:		—
	Results: No fire. No explosion.		N
7.3.6	Crushing of cells		N
	The crushing force was released upon: - The maximum force of 13 kN ± 0.78 kN has been applied; or		N
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N
	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set		N
	Results: No fire. No explosion.....:	(See Table 7.3.6)	N
7.3.7	Low pressure (cells)		N
	Chamber pressure (kPa).....:		—
	Results: No fire. No explosion. No leakage.		N
7.3.8	Overcharge		N
	Results: No fire. No explosion.....:	(See Table 7.3.8)	N
7.3.9	Forced discharge		N
	Results: No fire. No explosion.....:	(See Table 7.3.9)	

8	Information for safety		P
8.1	General		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.		P
	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.		N
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N

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	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user..... :		N
	Guidance is provided in IEC TR 62188 on the design are provided for information in Annex A and Annex B.		N
8.2	Small cell and battery safety information		N
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N
	-Keep small cells and batteries which are considered swallowable out of the reach of children.		N
	-Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2h of ingestion.		N
	-In case of ingestion of a cell or battery, seek medical assistance promptly.		N

9	Marking		P
9.1	Cell marking		N
	Cells marked as specified in the applicable cell standards: IEC 61951-1 or IEC 61951-2.		N
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked.		N
	However, cell marking can be indicated with the battery, the instructions and/or the specifications.		N
9.2	Battery marking		N
	Batteries marked as specified in the applicable cell standards: IEC 61951-1 or IEC 61951-2.		N
	Batteries marked with an appropriate caution statement.		N
	Terminals have clear polarity marking on the external surface of the battery.		N
	Batteries with keyed external connector need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N

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9.3	Caution for ingestion of small cells and batteries		N
	Small cells and batteries determined to be small are including a caution statement regarding the hazards of ingestion in accordance with 8.2.		N
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion are given on the immediate package.		N
9.4	Other information		N
	Storage and disposal instructions marked on or supplied with the battery.		N
	Recommended charging instructions marked on or supplied with the battery.		N

10	Packaging		P
	Packaging for button cells are not be small enough to fit within the limits of the ingestion gauge of Figure 2		P
	Annex C for information regarding packaging		N

Annex A (informative)	Recommendations to equipment manufacturers and battery assemblers	N
Annex B (informative)	Recommendations to the end-users	N
Annex C (informative)	Packaging	N

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7.2.1	TABLE: Continuous low rate charge (cells)					N
Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (A)	OCV at start of test, (Vdc)	Results	
Supplementary information: - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain)						

7.2.2	TABLE: Vibration		N
Model		OCV at start of test, (Vdc)	Results
Supplementary information:			
- No fire or explosion			
- No leakage			
- Leakage			
- Fire			
- Explosion			
- Bulge			
- Others (please explain)			

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7.3.1	TABLE: Incorrect installation (cells)		N
Model		OCV of reversed cell, (Vdc)	Results
Supplementary information: - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain)			

7.3.2	TABLE: External short circuit					N
Model	Ambient (at 20°C ± 5°C or 55°C ± 5°C)	OCV at start of test, (Vdc)	Resistance of circuit, (Ω)	Maximum case temperature rise ΔT, (°C)	Results	
Supplementary information: - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain)						

7.3.6	TABLE: Crush			N
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results	

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Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.8	TABLE: Overcharge				N
Model	OCV prior to charging, (Vdc)	Maximum charge current, (A)	Time for charging, (hours)	Results	
Supplementary information: - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain)					

7.3.9	TABLE: Forced discharge (cells)				N
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_r , (A)	Time for reversed charge, (minutes)	Results	
Supplementary information: - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain)					

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Ölçüm Cihazları / Measuring Equipments

Cihaz Adı <i>Device name</i>	Model Tipi <i>Model Type</i>	Üretici <i>Manufacturer</i>	Son Kalb. Tarihi <i>Last Cal. Date</i>	Gelecek Kalb. Tarihi <i>Next Cal. Date</i>
DC Güç Kaynağı / DC Power Supply	Sunline_SL-605D	Avrasya Elektronik Dan.İth.İhr.Paz. ve San.Tic.Ltd.Şti.	29.01.2025	29.01.2026
Multitester	M12094	Metrel	19.08.2025	19.08.2026
Yüksek Gerilim Test Cihazı / High Voltage Test Device	MT-78X	Multitech	19.08.2025	19.08.2026
Kumpas / Caliper	MC090-51	TorQ	19.08.2025	19.08.2026
Kuvvet Ölçer / Force Meter	FK 500	Sauter	30.12.2024	30.12.2025
32 Kanallı Tarayıcı Sıcaklık Ölçer / 32 Channel Scanner Temperature Meter	MT-32U	Multitech	19.08.2025	19.08.2026
Rüzgara Dayanıklı Kabin	-	-	-	-
Petrol Eteri/Petroleum Ether	ASO-46-L50	Liva	-	-
Sterilizatör / Sterilizer	FN-120	Nüve	30.01.2025	30.01.2026

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Photos of Sample



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AYNIYAT BEYANI

IDENTITY DECLARATION

GAMALLON-80V-560AH model **LİTYUM AKÜ** adlı ürünün aşağıdaki tabloda marka ve modelleri verilen ürünler ile bütün teknik özelliklerinin (örneğin: tasarım-konstrüksiyon özellikler-komponentler) aynı olduğunu beyan ederiz.

We declare that the **GAMALLON-80V-560AH** model **LİTYUM AKÜ** product is identical in all technical respects (e.g. design-construction- properties-critical components) with the brands and corresponding models that indicated at below table.

NO	Model Adı/Model Name	Güç/Power W
1	GAMALLON-12V-7AH	89,6
2	GAMALLON-12V-14AH	179,2
3	GAMALLON-12V-28AH	358,4
4	GAMALLON-12V-42AH	537,6
5	GAMALLON-12V-56AH	716,8
6	GAMALLON-12V-75AH	960
7	GAMALLON-12V-96AH	1228,8
8	GAMALLON-12V-100AH	1280
9	GAMALLON-12V-200AH	2560
10	GAMALLON-24V-100AH	2560
11	GAMALLON-24V-105AH	2688
12	GAMALLON-24V-150AH	3840
13	GAMALLON-24V-200AH	5120
14	GAMALLON-24V-210AH	5376
15	GAMALLON-24V-230AH	5888
16	GAMALLON-24V-280AH	7168
17	GAMALLON-24V-300AH	7680
18	GAMALLON-24V-460AH	11776
19	GAMALLON-36V-100AH	3840
20	GAMALLON-36V-105AH	4032
21	GAMALLON-36V-150AH	5760
22	GAMALLON-36V-200AH	7680
23	GAMALLON-36V-210AH	8064
24	GAMALLON-36V-230AH	8832
25	GAMALLON-36V-280AH	10752
26	GAMALLON-36V-300AH	11520
27	GAMALLON-36V-460AH	17664
28	GAMALLON-48V-100AH	5120
29	GAMALLON-48V-105AH	5376
30	GAMALLON-48V-200AH	10240

GAMALLON
Gama Akümülatör Sanayi Tic. A.Ş.
Çeltikçi Mh. OSKAR-410/51. 41060 Menteşe / Muğla
Tic. Sic. No: 224 443 00 02 - 443 41 51 Faks No: 224 443 05 43
Çekirge V.D.: 388 067 7675 Tic. Sic. No: 176
Mersis No: 08330017767500010

31	GAMALLON-48V-230AH	11776
32	GAMALLON-48V-280AH	14336
33	GAMALLON-48V-300AH	15360
34	GAMALLON-48V-460AH	23552
35	GAMALLON-48V-560AH	28672
36	GAMALLON-48V-608AH	31129,6
37	GAMALLON-80V-230AH	19136
38	GAMALLON-80V-280AH	23296
39	GAMALLON-80V-306AH	25459,2
40	GAMALLON-80V-460AH	38272
41	GAMALLON-80V-560AH	46592
42	GAMALLON-80V-612AH	50918,4
43	GAMALLON-80V-690AH	57408
44	GAMALLON-80V-918AH	76377,6
45	GAMALLON-80V-1224AH	101836,8

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Gama Akümülatör San. ve Tic. Ltd. Şti.
Cm. No: 276 & 416 SR. No: 4/10000000000
Tic. Sic. No: 276443 SR. No: 416443
Etiler/Beşiktaş/İstanbul
Tic. Sic. No: 276443 SR. No: 416443
Mersis No: 3308010767000019