Provider Application
Battery Health Check CARA Approved®

Created by
CARA Europe Battery Health Workgroup

Version 1.1

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Approved by: Roland Gagel, 28 February 2023

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1 Introduction

With this Provider Application, the provider aims to obtain certification for the Battery Health Check CARA Approved.

Please note, that only one test certificate can be accredited with one application. To apply for different certification levels, or different test types, the provider needs to submit separate applications. The application must be in writing (email is acceptable), written in English language.

This Provider Application describes how the battery testing services will function and it indicates where the services deviate from the Requirements of the Battery Health Check CARA Approved.

This Provider Application forms the basis for the test performed by the Testing Company to validate whether the Provider's battery tests comply with the Requirements. It is to be completed by the Provider.

The Testing Company will validate the feasibility of the testing method, the technical foundation, and the fulfilment of the requirements before entering physical testing.

CARA Board

Contact: admin@cara-europe.org

2 Provider information

2.1 Company details

(i) Registered Name	
(ii) Registered Address	
(iii) Postal address (if differs from registered address)	
(iv) VAT number	

2.2 Details of the official representative

(i) Full Name	
(ii) Position	
(iii) Phone number	
(iv) E-mail Address	

2.3 Details of the technical contact

(i) Full Name	
(ii) Position	
(iii) Phone number	
(iv) E-mail Address	

2.4 Other details

(i) Name of the Test (intended trade name used by the applicant)	
(ii) Desired timeframe for certification testing	
(iii) Optional: references	

3 Universal Requirements

The provider must propose a solution in line with the current remarketing return process. Please state compliance or deviations in the right column.

(i) The maximum duration of a test end-to-end is 30 minutes a. Without major disassembly (except removeable covers such as over OBD, charging outlet covers) b. With minimal intervention of the inspector during this period – Plug-in and plug-out activity (OBD and / or charging connector) – Time to start and stop test < 2 min* c. Must not involve test driving except minimal* distances within compound d. Require minimal* hardware and no significant fixed installations e. Result must be available within short timeframe; the goal is 30 min after test end *(*) high requirements for time, driving and hardware won't exclude applicants, but are likely to make solution not viable.*	
(ii) Possible to test batteries at charging levels from 10 to 80 % SOC	

(iii) Use data sources available today plus own technology to determine the SOH a. Vehicle, car data provider, inspection provider, car owner	
(iv) Generate a valid result of the battery health in % SOH of original certified capacity	
(v) Generate a certificate from an independent source (can use manufacturer information)	

(vi) Description of the test procedure (required hardware, required software, time to test, how to apply the test to the vehicle; General description and per Model instructions, limitations, and exclusions) Note: The testing algorithms and calculation needn't to be disclosed.	
(vii) Description of the test output e.g., example of a test report or certificate (please attach an example)	
(viii) Geographical and language availability of test	

4 Technical Requirements

The provider must demonstrate that it can cover the following points with its system solution. Please state compliance or deviations in the right column.

(i) Readout of the manufacturer SOH The provider shall ensure that it can read out and display the manufacturer-specific battery health status (SOH) from the corresponding control units, such as: The Battery Management System (BMS), without manipulation. If the provider provides further information on the battery health status or carries out its own calculations and assessment of data, it must be ensured that this can be presented in a reproducible manner. Furthermore, the provider must plausibly present its assessment to the CARA working group. (e.g., calculate SOH from a Deterioration factor [%] or a remaining energy absolute value [kWh]). The value is intended to represent a percentage value. It further ensures that this process is reproducibly repeatable.	

(ii) Long-term access (Secure Gateway Access) The provider must demonstrate and explain in the documents provided the methodology it uses to ensure long-term access to the data required to read out the battery health status. What countermeasures are taken on his side when vehicle manufacturers might block their OBD II interface against unauthorized access?	
(iii) Duration of the process The provider ensures a maximum readout time of 30 minutes. This includes all models listed under Chapter 7. The provider shows the readout duration of the different models.	

5 Requirements to cover the market

The providers must demonstrate that the test covers at least a predetermined percentage of BEV Passenger Vehicle Fleet registered in the previous year, including the confirmation, which brands and models can be tested with the test and any applicable exclusions. It is possible to provide a timeline of when tests for certain makes/models in future will be possible.

The provider needs to provide any evidence that tests have been performed for the minimum set of vehicles required and results

Vehicle registrations are based on official sources[1] or third parties that state their sources as an official authority. For simplicity, the minimum of 80% will be based on yearly registration at model level. As soon as new manufacturers of BEV vehicles enter the market relevant for CARA, they are included in the list of OEMs according to their respective percentage market coverage.

(i) For 2023 certification, the level of model coverage is required to be at least 80%
(ii) For 2024 certification, the level of model coverage is required to be at least 85%
(iii) For 2025 certification and later, the level of model coverage is required to be at least 90%

5.1 Example of minimum coverage from 1st HJ 2022[2]

Applicants will need to self-assess their coverage based on the following model basket. The applicant should indicate whether the brand/model can be tested at the time the application is submitted. If the brand/model cannot yet be tested, indicate the time when the applicant believes the brand/model can be tested.

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
1	TESLA	MODEL 3	12,2%	12,2%			
2	RENAULT	ZOE	7,0%	19,2%			
3	VOLKSWAGEN	ID.3	5,8%	25,0%			
4	FIAT	500E	4,3%	29,3%			

[1] Official sources refer to eithers a local vehicle registration authority, ex. KBA in German, or a relevant association, ex. ACEA
[2] Market share per OEM based on year 2021 and on the following countries: Germany, Norway, UK, France, Italy, Spain, Denmark, Finland, Switzerland, Sweden, Netherlands, Austria, and Portugal.

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
5	VOLKSWAGEN	UP!	4,2%	33,5%			
6	PEUGEOT	E-208	4,2%	37,7%			
7	HYUNDAI	KONA	3,8%	41,5%			
8	KIA	NIRO	3,8%	45,3%			
9	AUDI	E-TRON	3,3%	48,5%			
10	VOLKSWAGEN	ID.4	3,1%	51,6%			
11	SMART	FORTWO	3,1%	54,7%			
12	SKODA	ENYAQ	3,0%	57,7%			
13	MINI	COOPER	2,9%	60,6%			
14	RENAULT	TWINGO	2,7%	63,4%			
15	DACIA	SPRING	2,6%	65,9%			
16	NISSAN	LEAF	2,4%	68,3%			
17	BMW	I3	2,2%	70,5%			
18	PEUGEOT	E-2008	2,2%	72,7%			
19	OPEL	CORSA-E	2,0%	74,7%			
20	MERCEDES-BENZ	EQA	1,7%	76,3%			
21	PORSCHE	TAYCAN	1,3%	77,7%			
22	FORD	MUSTANG MACH-E	1,3%	79,0%			
23	HYUNDAI	IONIQ 5	1,2%	80,2%			
24	OPEL	MOKKA-E	1,1%	81,3%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
25	BMW	IX3	1,1%	82,4%			
26	MERCEDES-BENZ	EQC	1,0%	83,5%			
27	TESLA	MODEL Y	1,0%	84,5%			
28	SMART	FORFOUR	1,0%	85,5%			
29	HYUNDAI	IONIQ	1,0%	86,5%			
30	MG	ZS	1,0%	87,5%			
31	CITROEN	E-C4	0,9%	88,4%			
32	SEAT	MII	0,8%	89,2%			
33	MAZDA	MX-30	0,8%	90,0%			
34	VOLVO	XC40	0,7%	90,7%			
35	JAGUAR	I-PACE	0,7%	91,4%			
36	Vauxhall	Corsa-E	0,6%	92,1%			
37	KIA	EV6	0,6%	92,7%			
38	POLESTAR	2	0,6%	93,3%			
39	MG	5	0,6%	93,9%			
40	KIA	SOUL	0,6%	94,5%			
41	SKODA	CITIGO	0,4%	94,8%			
42	DS	3 CROSSBACK	0,4%	95,2%			
43	BMW	I4	0,3%	95,5%			
44	VAUXHALL	MOKKA	0,3%	95,8%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
45	HONDA	E	0,3%	96,1%			
46	MERCEDES-BENZ	EQV	0,3%	96,4%			
47	CUPRA	BORN	0,3%	96,7%			
48	SEAT	BORN	0,3%	97,0%			
49	VOLKSWAGEN	GOLF	0,2%	97,2%			
50	LEXUS	UX 300E	0,2%	97,4%			
51	MERCEDES-BENZ	EVITO	0,1%	97,5%			
52	CITROEN	JUMPY	0,1%	97,6%			
53	VOLVO	C40	0,1%	97,7%			
54	Nissan	E-NV200	0,1%	97,7%			
55	MERCEDES-BENZ	EQS	0,1%	97,8%			
56	CITROEN	E-BERLINGO	0,1%	97,9%			
57	PEUGEOT	E-EXPERT	0,1%	98,0%			
58	TOYOTA	PROACE	0,1%	98,0%			
59	OPEL	ZAFIRA-E	0,1%	98,1%			
60	VAUXHALL	VIVARO	0,0%	98,1%			
61	PEUGEOT	E-RIFTER	0,0%	98,2%			
62	OPEL	VIVARO-ZAFIRA LIFE	0,0%	98,2%			
63	MG	MARVEL R	0,0%	98,3%			
64	AIWAYS	U5	0,0%	98,3%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
65	SERES	3	0,0%	98,3%			
66	MERCEDES-BENZ	EQB	0,0%	98,3%			
67	PEUGEOT	E-TRAVELLER	0,0%	98,4%			
68	TESLA	MODEL X	0,0%	98,4%			
69	VOLKSWAGEN	TRANSPORTER	0,0%	98,4%			
70	OPEL	COMBO-E	0,0%	98,4%			
71	CITROEN	E-SPACETOURER	0,0%	98,4%			
72	MAXUS	E-DELIVER	0,0%	98,4%			
73	DFSK	SERES 3	0,0%	98,4%			
74	TESLA	MODEL S	0,0%	98,4%			
75	RENAULT	MEGANE	0,0%	98,4%			
76	VOLKSWAGEN	CADDY	0,0%	98,4%			
77	DR	EVO	0,0%	98,4%			
78	FIAT	DUCATO	0,0%	98,4%			
79	OPEL	VIVARO-E	0,0%	98,4%			
80	JAC	IEV7S	0,0%	98,5%			
81	MERCEDES-BENZ	SPRINTER	0,0%	98,5%			
82	RENAULT	KANGOO	0,0%	98,5%			
83	VAUXHALL	COMBO	0,0%	98,5%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
84	SSANGYONG	KORANDO E-MOTION	0,0%	98,5%			
85	DFSK	EC35	0,0%	98,5%			
86	OPEL	AMPERA-E	0,0%	98,5%			
87	MELEX	378	0,0%	98,5%			
88	SERES	DFSK	0,0%	98,5%			
89	VOLKSWAGEN	CRAFTER	0,0%	98,5%			
90	ZAGO AUTOMOTIVE	CRAFTER	0,0%	98,5%			
91	ZHIDOU	ZHIDOU	0,0%	98,5%			
92	SEAT	SEAT-OTHER	0,0%	98,5%			
93	ABT	ABT E-CADDY	0,0%	98,5%			
94	MAN	TGE	0,0%	98,5%			
95	PEUGEOT	E-PARTNER	0,0%	98,5%			
96	IGH	PORTER ELECTRIC	0,0%	98,5%			
97	XPENG	P7	0,0%	98,5%			
98	XPENG	P5	0,0%	98,5%			
99	ABT	E-TRANSPORTER	0,0%	98,5%			
100	JAC	XEV	0,0%	98,5%			
101	BYD	TANG	0,0%	98,5%			
102	GREEN TOUR	EV4	0,0%	98,5%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
103	OPEL	ZAFIRA LIFE	0,0%	98,5%			
104	BYD	HCE	0,0%	98,5%			
105	CITROEN	C-ZERO	0,0%	98,5%			
106	EP	EFL302	0,0%	98,5%			
107	GOUPIL	G4	0,0%	98,5%			
108	MAXUS	EUNIQ	0,0%	98,5%			
109	MAXUS	EV80	0,0%	98,5%			
110	NISSAN	ARIYA	0,0%	98,5%			
111	PIAGGIO	PORTER	0,0%	98,5%			
112	Renault	MASTER	0,0%	98,5%			
113	STELLA	VITA	0,0%	98,5%			
114	Other	Other	1,52%	100,0%			

Any changes in the Applicants' details and/or information provided in this Application must be communicated to the CARA Board.

Yours faithfully, Signed	
Date	
Full Name	
Position	
Company	