Provider Application
Battery Health Check CARA Approved®

Created by
CARA Europe Battery Health Workgroup

Version 1.2

Created by: Svenja Vloeberghs

Approved by: Roland Gagel, 23 February 2024

Car Remarketing Association – Europe INPA
Steenweg 3 box 402, 3540 Herk-de-Stad, Belgium
0649.867.534 – Register of Legal Entities Antwerp, division Hasselt
www.cara-europe.org – info@cara-europe.org

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

5.1 Minimum coverage[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 Y	12,11%	12%			
2	VOLKSWAGEN	ID.3	4,17%	16%			
3	BMW	IX3	4,16%	20%			
4	TESLA	MODEL 3	4,08%	25%			
5	VOLKSWAGEN	ID.4, ID.5	3,74%	28%			

[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 Q1 and Q2 of the year 2023 in the top 5 EU markets and the Benelux.

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
6	AUDI	Q4 E-TRON	3,63%	32%			
7	MG	MG4	3,50%	35%			
8	SKODA	ENYAQ	2,75%	38%			
9	FIAT	500E	2,66%	41%			
10	POLESTAR	2	2,33%	43%			
11	MERCEDES-BENZ	EQA	2,09%	45%			
12	VOLVO	XC40	1,95%	47%			
13	HYUNDAI	KONA	1,91%	49%			
14	SEAT	BORN	1,86%	51%			
15	OPEL	MOKKA	1,79%	53%			
16	BMW	I4	1,78%	55%			
17	PEUGEOT	E-208	1,75%	56%			
18	KIA	NIRO	1,69%	58%			
19	VOLKSWAGEN	ID.4	1,69%	60%			
20	SMART	FORTWO	1,64%	61%			
21	KIA	EV6	1,57%	63%			
22	OPEL	CORSA	1,52%	64%			
23	BMW	IX1	1,49%	66%			
24	HYUNDAI	IONIQ 5	1,45%	67%			
25	RENAULT	MEGANE	1,35%	69%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
26	PORSCHE	TAYCAN	1,31%	70%			
27	PEUGEOT	E-2008	1,28%	71%			
28	MERCEDES-BENZ	EQB	1,23%	72%			
29	AUDI	Q8 E-TRON	1,23%	74%			
30	MINI	MINI	1,18%	75%			
31	DACIA	SPRING	1,15%	76%			
32	BMW	IX	0,97%	77%			
33	MG	ZS	0,96%	78%			
34	FORD	MUSTANG MACH-E	0,91%	79%			
35	CITROEN	E-C4	0,89%	80%			
36	MERCEDES-BENZ	EQC	0,78%	81%			
37	VOLVO	C40	0,78%	81%			
38	MERCEDES-BENZ	EQE	0,75%	82%			
39	SMART	1	0,68%	83%			
40	NISSAN	LEAF	0,68%	83%			
41	MINI	COOPER	0,66%	84%			
42	RENAULT	TWINGO	0,65%	85%			
43	RENAULT	ZOE	0,65%	85%			
44	VOLKSWAGEN	ID.BUZZ	0,63%	86%			
45	CITROEN	E-BERLINGO	0,62%	87%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
46	OPEL	VIVARO	0,60%	87%			
47	HYUNDAI	IONIQ 6	0,58%	88%			
48	MG	MG5	0,57%	88%			
49	VOLKSWAGEN	UP!	0,49%	89%			
50	MAZDA	MX-30	0,45%	89%			
51	TOYOTA	BZ4X	0,45%	90%			
52	MERCEDES-BENZ	EQS	0,44%	90%			
53	VOLKSWAGEN	ID.5	0,42%	91%			
54	NISSAN	ARIYA	0,42%	91%			
55	JAGUAR	I-PACE	0,36%	91%			
56	AUDI	E-TRON	0,34%	92%			
57	TESLA	MODEL S	0,29%	92%			
58	HYUNDAI	IONIQ	0,23%	92%			
59	OPEL	COMBO	0,23%	93%			
60	JEEP	AVENGER	0,22%	93%			
61	TESLA	MODEL X	0,21%	93%			
62	MERCEDES-BENZ	EQV	0,19%	93%			
63	PEUGEOT	E-RIFTER	0,19%	93%			
64	MG	MARVEL R	0,18%	94%			
65	MAXUS	E DELIVER	0,18%	94%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
66	AUDI	E-TRON GT	0,18%	94%			
67	PEUGEOT	E-EXPERT	0,17%	94%			
68	BYD	ATTO 3	0,17%	94%			
69	GWM	FUNKY CAT	0,16%	94%			
70	MERCEDES-BENZ	EVITO	0,14%	95%			
71	FORD	E-TRANSIT	0,14%	95%			
72	TOYOTA	PROACE	0,13%	95%			
73	RENAULT	KANGOO	0,13%	95%			
74	BMW	I7	0,12%	95%			
75	CITROEN	E-JUMPY	0,12%	95%			
76	PEUGEOT	E-PARTNER	0,11%	95%			
77	AUDI	Q4 E-TRON SPORTBACK	0,11%	95%			
78	HYUNDAI	GV60	0,11%	96%			
79	DS	3	0,10%	96%			
80	TOYOTA	PROACE CITY	0,09%	96%			
81	KIA	SOUL	0,08%	96%			
82	FIAT	E-DOBLO	0,07%	96%			
83	OPEL	ASTRA	0,05%	96%			
84	CITROEN	E-DISPATCH	0,05%	96%			
85	LEXUS	UX 300E	0,05%	96%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
86	NISSAN	TOWNSTAR	0,04%	96%			
87	LEXUS	RZ	0,04%	96%			
88	HYUNDAI	GV70	0,04%	96%			
89	OPEL	VIVARO-E	0,04%	96%			
90	CITROEN	E-SPACETOURER	0,04%	96%			
91	MAXUS	T90	0,03%	96%			
92	SUBARU	SOLTERRA	0,03%	96%			
93	OPEL	ZAFIRA-E	0,03%	96%			
94	PEUGEOT	E-PARTNER	0,03%	96%			
95	AUDI	Q8 E-TRON SPORTBACK	0,03%	96%			
96	NIO	ET7	0,03%	96%			
97	HONDA	E	0,03%	96%			
98	NIO	ET5	0,03%	96%			
99	FIAT	E-ULYSSE	0,03%	96%			
100	AIWAYS	U5	0,02%	96%			
101	NIO	EL7	0,02%	97%			
102	SSANGYONG	KORANDO	0,02%	97%			
103	DR	EQ1	0,02%	97%			
104	FIAT	E-SCUDO	0,02%	97%			
105	FISKER	OCEAN	0,01%	97%			

#	Brands	Model	%	Aggregate	Can be tested	Can be tested as of	Remark
106	LOTUS	ELETRE	0,01%	97%			
107	MINI	ONE	0,01%	97%			
108	LUCID	AIR	0,01%	97%			
109	AUDI	RS E-TRON	0,01%	97%			
110	MERCEDES-BENZ	SPRINTER	0,01%	97%			
111	RENAULT	MASTER	0,01%	97%			
112	PEUGEOT	E-TRAVELLER	0,01%	97%			
113	MAXUS	E-DELIVER 9	0,01%	97%			
114	DS	3 CROSSBACK	0,01%	97%			
115	FAW	E-HS9	0,01%	97%			
116	BYD	BYD DOLPHIN	0,01%	97%			
117	FIAT	E-DUCATO	0,01%	97%			
118	HYUNDAI	G80	0,01%	97%			
119	BYD	TANG	0,00%	97%			
120	BYD	HAN	0,00%	97%			
121	OTHER		3,73%	100%			

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	