



United Nations



Economic and Social Council

A focus on Tachographs Interoperability Certification: Procedures & Lab Requirements



Regulation (EU) N° . 1360/2002 Annex I(B) requirement 278 and
Regulation (EU) N° . 165/2014 Annex IC requirement 440:

*Interoperability tests are carried out by a single laboratory under the
authority and responsibility of the European Commission*

- Since 2004, the Joint Research Centre (JRC) of the EC has been appointed to host the Interoperability Certification Laboratory, run interoperability test and deliver interoperability certificates
- Since 2009, UN/ECE has recognised this role to the JRC also for non-EU AETR working-parties (EC-UNECE MoU from January 2009, renewed until now, with last renewal in July 2015 until June 2017)

RATIONALE

- Independence from national or industrial interest
- Harmonization and uniformity of procedures with a single trustworthy reference centre
- A single reference set of VUs and cards is used, constructed incrementally by the accumulation of previously certified equipment (cards and vehicle units)



Type Approval is there to ensure that all digital tachograph equipment in scope of the legislation (e.g. cards, vehicle units, motion sensors, paper) is compliant with technical requirements in terms of functionalities, performance, security and interoperability.

Type approval is a **responsibility** of National type approval authorities.

Type approval of a new piece of equipment is granted after successful presentation of **3 certifications** by the equipment manufacturer, namely and in order:

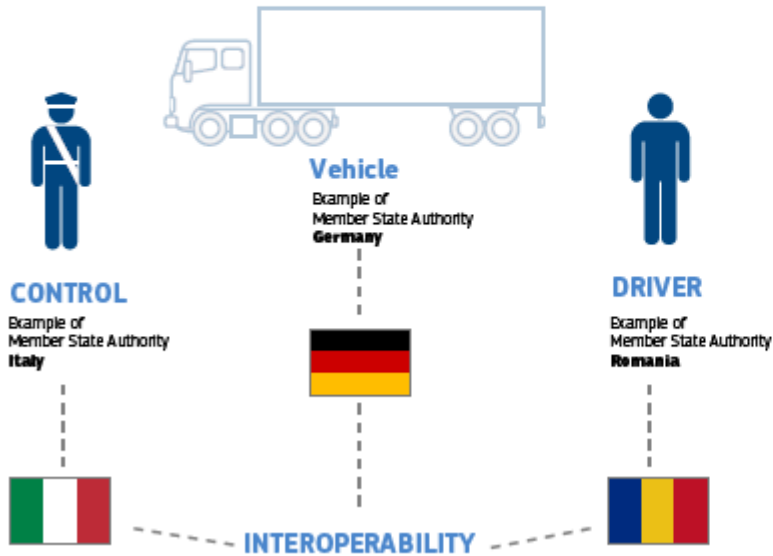
- **Functional** certification
- **Security** certification (according to ITSEC / Common Criteria)
- **Interoperability** certification

Certifications are made with TEST KEYS & CERTIFICATES provided by the JRC in its capacity of Root Certification Authority



Digital Tachograph Interoperability

Scope (example)



Scheme

VEHICLE UNITS



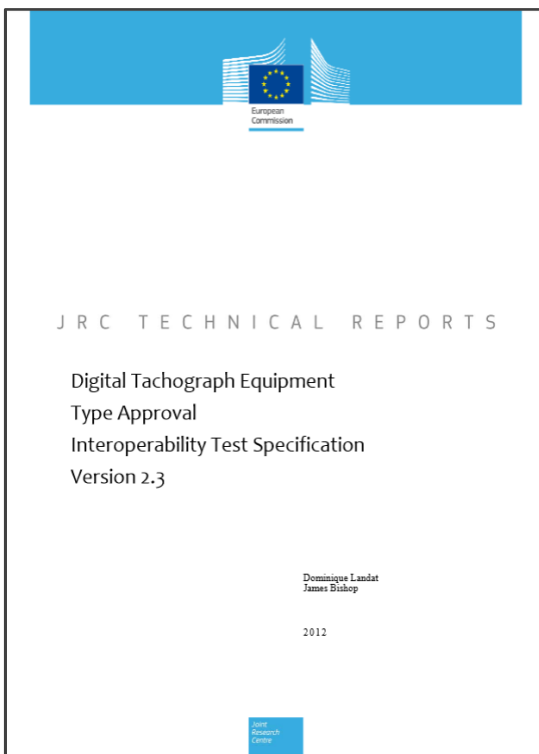
DT CARDS





Interoperability tests are performed according to Interoperability Test Specifications (JRC Tech Report - JRC75155 - Vers.2.3)

Tests are performed following documented and detailed procedures



LAB Requirements

- Test specifications & procedures
- Laboratory equipment (hardware + software)
- Expertise and trained staff
- **A full reference set**

EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for the Protection and Security of the Citizen (Ispis)
D.CT - Digital Citizen Security

Ref. Area(2015)04795 - 20/08/2015

DTLab

25 August 2015

Council Regulation (EC) 1360/2002
Interoperability Certificate N° JRC_DTC/A2-095/2015

Manufacturer :	Sinnerside Electronics AB Box 3133 150 03 Setaun SWEDEN		
Specimen under Test	Digital Tachograph SE5000 Release 7.6		
Test Specification:	Interoperability Test Specification v2.3 (JRC S&T Reports: JRC75155 EN - 2012). Interoperability of this Tachograph vehicle unit has been demonstrated with all types of Tachograph cards in our possess and with the following recording equipment and motion sensors:		
	Vehicle Unit	Security Certificate	
	Actia SMARTACH STDJ version 6.11	DCSSI 350514 and M-200610	
	Continental Automotive Group (DFCG) T581, Release 2.2	BSI-DSZ/CC-0196-2015	
	Titula GmbH - EFAS-4 v02	BSI-DSZ/CC-0726-2012	
	Sinnerside Electronics AB SE5000 Revision 7.5	BSI-DSZ/ITSEC-0605-2012	
Set of Reference:	Type Approved DT cards	13	items from 4 brands
Motion Sensors			
	Actia IS2000 SMARTACH LXRY	Siemens VDO KITAS 2171	Siemens VDO KITAS 2171 v2012
Validity of this certificate:	24/02/2016	(EC) 1360/2002 requirements 286 ¹ and 289 ²	
Public web site:	http://dte.jrc.ec.europa.eu	(EC) 1360/2002 requirement 290	
Remarks :	none		

Technical Responsible M. Chieramello	Head of Unit J.-P. Nordvik

¹ Requirement [286]: The interoperability certificate is valid for six months. It is revoked at the end of this period if the manufacturer has not received a corresponding type approval certificate. It is forwarded by the manufacturer to the type approval authority of the Member State who has delivered the functional certificate.
² Requirement [289]: The type approval certificate shall be copied by the type approval authority in the laboratory in charge of the interoperability tests at the time of delivery to the manufacturer.

Joint Research Centre - Institute for the Protection and Security of the Citizen
Digital Citizen Security Unit



- **New cards** are to be tested with all Vehicle Units in circulation, i.e. 4 currently

Every time new cards are type approved, industry provides the JRC with samples of DT cards.

- **A New VU** is to be tested with all types of cards in circulation, i.e. 14 currently, and all other VU's in circulation, for testing readability of new card records

Every time a new VU is type approved, industry provides the JRC with samples of the new VU.

- If the new equipment is type approved, samples received become part of the reference set.
- When a sample becomes obsolete, it is withdrawn from the reference set.

Digital Tachograph cards Classification 14 models

Manufacturer	DT Type	Chip	Description	Certification date	
Gemalto	A0	Infineon SLE66CX322P	ICitizen Tachograph V0.9.0 M256FCHRON_SI_A5_05_01	30-06-04	OUT 2016-2017
Gemalto	A1	Infineon SLE66CX322P	ICitizen Tachograph V0.9.0 M256FCHRON_SI_A5_05_01	30-06-04	OUT 2016-2017
Gemalto	A2	Infineon SLE66CX322P	ICitizen Tachograph V0.9.0 M256FCHRON_SI_A5_05_01 version B	22-05-06	OUT 2016-2017
Gemalto	A3	Infineon SLE66CX360PE	Carte MultiApp ID Tachograph 36K	01-12-08	
Gemalto	A4	Infineon SLE66CX360PE	MultiApp ID Tachograph 36K	05-10-09	
Gemalto	A5	P5CC081	MultiApp ID Tachograph V1.3 cards	26-02-13	
G&D	B0	Philips P8WE5032	Tachosmart v1.0	01-04-04	
G&D	B1	ATMEL AT90SC24036RCU Rév. B	STARCOS 3.4 ID Tachograph C1	19-01-11	
Morpho	C1	Philips P16WX064V0C	ORGA v1.1 128/64 Release .1.1	16-06-04	OUT 04/02/2014
Morpho	C2	Philips P16WX064V0C	ORGA v1.1 128/64 Release .1.2	06-12-05	OUT 04/02/2014
Morpho	C3	Philips SmartMX P5CC036V1D	ORGA Smart Tachograph N Micardo v1.0 Release 1.0	18-09-06	
Morpho	C4	NXP SmartMX P5CC037V0A	MICARDO Tachograph V3.6 R1.0 Tachograph V2.0	20-04-11	
Morpho	C5	Infineon SLE78CFX2000P	Morpho Haarlem Tachograph V1.0	01-09-15	
Trueb	D0	Infineon SLE66CX322P	TCOS v1.0 Release 1	30-01-04	OUT 01/06/2013
Trueb	D1	Infineon SLE66CX322P	TCOS v1.0 Release 2	17-09-04	
Trueb	D2	Infineon SLE78CX360	Tru/cos tachograph v1.0	25-09-12	OUT 2017-2018
Trueb	D3	Infineon SLE78CFX2000P	Tru/cos tachograph v1.1	05-08-13	



Steps

1. *Request from a Company (following web guidelines)*
https://dtc.jrc.ec.europa.eu/interoperability_laboratory.html
2. *Establishment of a Service Contract between the JRC and the Company*
3. *Legal prerequisites: reception of samples to be tested, a valid Functional Certificate and a valid Security Certificate*
4. *Recording of the test request on the DTC web site*
https://dtc.jrc.ec.europa.eu/test_requests.html
5. *Interoperability tests are performed*
6. *If conclusive an interoperability certificate is issued and published on*
https://dtc.jrc.ec.europa.eu/tachograph_cards_status.html
7. *Preparation of the technical report/attestation and of the original copy of the interoperability certificate for the Company*
8. *When type-approval is granted, the JRC web site is updated with type approval certificate* https://dtc.jrc.ec.europa.eu/tachograph_cards_status.html



Standard Interoperability Certification (see slide before)

10.000 EUROS for new cards interoperability testing – typically 5 days of tests & reporting

12.500 EUROS for Vehicle Unit interoperability testing - typically 5 days of tests + reporting

Interoperability of new personalisation of type approved cards

*5,200 EUROS for interoperability testing on cards (new personalisation of type approved cards)
– typically 3/4 days of tests & reporting*

Preliminary Interoperability Testing (*NEW* – ‘debugging’ test sessions)

5,000 EUROS for cards and 6,000 EUROS for VU’s

These costs are considered very convenient by the industry

Test requests

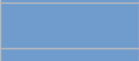





Status on tests

Registration of requests for interoperability testing according to:
Commission Regulation 1360/2002,
Annex I(B), requirements [279] and [280].

Legend of status

 Completed  Started

2015

Date	Status	Applicant	Functional Certificate	Security Certificate
14/12/2015		Pars Ar-Ge Ltd	Republic of Turkey - Ministry of Science, Industry and Technology - No: 0002 - 11/12/2015	TR-21.0.01/TSE-CCCS-018 - 11/12/2015
01/12/2015		Real Casa della Moneda	CERTIFICADO FUNCIONAL V-00598-S - 27/11/2014	ANSSI-CC-2012/28
15/10/2015		LEDA-SL	Kraftfahrt Bundesamt number 8108535938 (28/11/2011)	BSI-DSZ-0272-2004
04/08/2015		Stoneridge Electronics AB	TSTRYT 2014/49553 (21/07/2015)	BSI-DSZ-ITSEC-0959-2015
28/07/2015		Morpho	BSI-DSZ-ITSEC-0959-2015	BSI-DSZ-CC-0889-2013
20/07/2015		Imprimerie Nationale	Ministère de l'économie, de l'industrie et du numérique (France) n°15.00.271.001.1 (29/10/2015)	ANSI-CC-2012-28
17/06/2015		Gemalto	VCA - ESQ323703 - 28/05/2015	ANSSI-CC-2012/28
27/04/2015		Continental Automotive GmbH	Kraftfahrt Bundesamt number 8112186939-09/04/2015	BSI-DSZ-CC-0936-2015
07/01/2015		PJRT	VCA - ESP293678 - 24/02/2014	ANSSI-CC-2012/28

From 2004 ...

2-3 new VUs certified per year
4-8 new cards certified per year



Tachograph Cards Certificates

2015

Manufacturer	Card	Certificate	Date	EOV	Type Approval	VU used*
LEDA-SL	TCOS Version 1.0 R2.0	JRC_DTC/AC-040/69-096 /MA03/2015	13/11/2015	12/05/2016		B C D E
Imprimerie Nationale	MultiApp ID Tachograph V 1.3	JRC_DTC/A3-078/50-093 /MA06/2015	03/11/2015	02/05/2016	e2-37	B C D E
Morpho BV	Morpho Haarlem Tachograph V1.0	JRC_DTC/30-094/2015	01/09/2015	29/02/2016	e1-237	B C D E
Gemalto	MultiApp ID Tachograph V 1.3	JRC_DTC/A3-078/A3-092 /MA03/2015	25/06/2015	24/12/2015	e11-1002-04B	C D E
PJRT	MultiApp ID Tachograph V 1.3	JRC_DTC/A3-078/29-089 /MA04/2014	23/01/2015	22/07/2015	e7-0003	B C D E

2014

Manufacturer	Card	Certificate	Date	EOV	Type Approval	VU used*
DVLA	MultiApp ID Tachograph v1.3	JRC_DTC/A3-078/29-089 /MA04/2014	12/12/2014	11/06/2015	e11-1002	B C D E
Real Casa de la Moneda	STARCOS 3.4 ID Tachograph	JRC_DTC/40-057/38-088 /MA01/2014	03/12/2014	02/06/2015	e9-0004	B C D E
PWPW	MultiApp ID Tachograph V 1.3 cards	JRC_DTC/A3-078/89-087 /MA03/2014	02/09/2014	01/03/2015	e11-1003	B C D E

2013

Manufacturer	Card	Certificate	Date	EOV	Type Approval	VU used*
STC	MultiApp ID Tachograph v1.3	JRC_DTC/A3-078/A6-085 /MA02/2013	18/12/2013	17/06/2014	e8-002	B C D E
PWPW	Tachograph Card ARM vers.STXX-AETR - Release 1.2	JRC_DTC/89-064/89-084 /MA03/2013	26/11/2013	25/05/2014	e1-219-02	B C D E
PJRT	Micardo V3.6 R1.0 Tachograph V2.0	JRC_DTC/81-059a/48-083 /MA01/2013	27/09/2013	27/03/2014	e7-0002	B C D E
Trueb A.G.	Tru/cos Version 1.1 cards	JRC_DTC/AC-081/2013	05/08/2013	04/02/2014	e1-232 e1-227	B C D E
Gemalto	MultiApp ID Tachograph V 1.3 cards	JRC_DTC/A3-078/A3/082 /MA01/2013	31/07/2013	31/01/2014	e11-1002-02B	C D E
RUE Cryptotech	Digital tachograph cards for RUE Cryptotech, based on STARCOS 3.4ID	JRC_DTC/AE-066/22-079 /MA02/2013	27/02/2013	26/08/2013	e28-002	B C D E
Gemalto	MultiApp ID Tachograph V 1.3 cards	JRC_DTC/A3-078/2013	26/02/2013	25/08/2013	e11-1002-01B	C D E

2012

Manufacturer	Card	Certificate	Date	EOV	Type Approval	VU used*
Trueb AG	tru/cos tachograph v1.0	JRC_DTC/AC-076/2012	25/09/2012	24/03/2013	e1-226	B C D E
Asseco Central Europe a.s.	Digital Tachograph Cards for Asseco, based on STARCOS 3.4 ID.	JRC_DTC/43-070/88-074 /MA01/2012	04/06/2012	03/12/2012	e8-001	B C D E
Polska Wytwórnia Papierów Wartosciowych S.A. - PWPW	Tachograph Card ver. STXX v.2	JRC-DTC/89-064 /072/MA02/2012	30/01/2012	29/07/2012	e1-221	B C D E

Recording Equipment Certificates

2015

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Stoneridge Electronics AB	SE5000	Revision 7.6	JRC_DTC/A2-095/2015	01/09/2015	24/02/2016		D
Continental Automotive GmbH	DTCO 1381	Release 2.2	JRC_DTC/A1-091/2015	12/05/2015	11/11/2015	e1_84_20	B

2014

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Stoneridge Electronics AB	SE5000	Revision 7.5	JRC_DTC/A2-086/2014	28/03/2014	27/09/2014	e5-0002	D

2013

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Continental Automotive GmbH	DTCO 1381	Release 2.1	JRC_DTC/A1-080/2013	08/07/2013	07/01/2014	e1_84_19	B

2012

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Continental Automotive GmbH	DTCO 1381	Release 2.0	JRC_DTC/A1-075	20/06/2012	19/12/2012	e1_84_14	B
Stoneridge Electronics AB	SE5000	Revision 7.4 P5HH	JRC_DTC/A2-049 /073-MA02/2012	22/03/2012	21/09/2012	e5-0002	D
intellic GmbH	EFAS-4	Version 02	JRC_DTC/53-065	13/01/2012	12/07/2012	e1_222	E

2011

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Continental Automotive GmbH	DTCO 1381	Release 1.4	JRC_DTC/A1-063	18/04/2011	17/10/2011	e1_84_11	B
Stoneridge Electronics AB	SE5000	Revision 7.3	JRC_DTC/A2-049 /061-MA01/2011	04/04/2011	04/10/2011	e5-0002	D

2009

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Stoneridge Electronics AB	SE5000	Revision 7.1	JRC_DTC/A2_049	20/05/2009	19/11/2009	e5-0002	D
Continental Automotive GmbH	DTCO 1381	Release 1.3a	JRC_DTC/A1-048	02/04/2009	01/10/2009	e1_84_09	B
Stoneridge Electronics AB	SE5000	Revision 7.0	JRC_DTC/A2_046	16/01/2009	16/07/2009	e5-0002	D

2008

Brand	Model	ID.	IOT Certificate	Date	End of Validity (*)	Type Approval	ID
Continental Automotive GmbH	DTCO 1381	Release 1.3	JRC_DTC/A1-044	25/11/2008	24/05/2009	e1_84_08	B



- A large spectrum of activities is performed under the umbrella of the MoU between EU Commission **DG MOVE** and **DG JRC**, on one hand, and the **UNECE** on the other hand.
- The running costs of the Root Certification Authority services are covered by the European Commission.
- For interoperability, the budget is mainly provided by the Commission, with a fee paid by industry, covering 'real costs' only.
- JRC is often called to provide independent expertise when conflicts emerge between industry manufacturers (e.g. between a card and a VU manufacturer).
- A single trustworthy interoperability laboratory is a guarantee for all stakeholders to receive equal treatment. Responsibility is high as interoperability certification is the last one before type-approval. (Sometimes, interoperability certification detects functionality issues.)
- Until now, JRC services for interoperability certification have received an excellent customer feedback.



Thank you for your attention



Various scenarios have been evaluated:

SC1

Baseline: interoperability certification continues in JRC ISPRA. Costs are shared between the industry and the European Commission.

SC2

Interoperability certification continues in JRC ISPRA, but the laboratory becomes a Joint **UNECE/EU Commission** interoperability laboratory for the Tachograph System. With a **new identification** and **image**, the current JRC team is extended and open to external actors, possibly hosting experts from non EU-AETR countries.

SC3

A new single lab is created, following an open procedure based on a call for tender, with precise specifications and obligations for the candidate labs. When the new lab is identified, the JRC team will be involved in the knowledge and reference set transfer.

SC4

Creation of a **network** of interoperability labs.

Challenges:

- Full equivalence between the labs, including creation of new and complete reference sets
- Regular cross validation to ensure certification equivalence, conflict resolution mechanism
- Centralization of the information and certificates in a **centralized repository** (secured database & website)



In total, **51** countries are currently using or finalizing the implementation of the digital tachograph: the **28** EU countries and **23** non-EU AETR countries.

DG MOVE of the EU Commission appointed the JRC in **2004** to provide 2 important services: **ERCA** and Interoperability certification **LAB**.

The work carried out and the **services provided by the JRC** for non-EU AETR countries are identical to what provided to EU countries, notably:

- ERCA signing sessions for initial or renewal of national certificates;
- Follow-up and verification of national authorities audit;
- Interoperability certification of new tachograph equipment;
- Maintenance of the web database (national authorities details and certificates status)

This is agreed in the MoU established between **UNECE** and Commission **DG MOVE** and **DG JRC**.

With the MoU, the **UNECE** recognizes the **JRC** as the **AETR Authority for Root Certification** and for **Interoperability Certification** for the non-EU Contracting Parties to the AETR.

The MoU entered into force in **January 2009** and has been renewed until now (last renewal from **July 2015** till **June 2017**).