

Section 1: General Information

0. Identification of the type

0.1 0.2 0.4 Type ID:	71-069-0001-7-001-001
0.3 Date of record:	2020-11-19

1. General Information

1.1 Type name:	EMV 97 LGV-2R (STM)
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1.2 Alternative type name:	
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1.3 Manufacturer:

1.3.1 Manufacturer identification data:

1.3.1.1 Name of organisation:	Framafer
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1.3.1.2 Registered business number:	
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1.3.1.3 Organisation code:	
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1.3.2 Manufacturer contact data:

1.3.2.1 Address of organisation, street and number:	77 rue de la Gare CS30061
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1.3.2.2 Town:	FREYMING-MERLEBACH
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1.3.2.3 Country code:	87
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1.3.2.4 Post code:	57800
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1.3.2.5 E-mail address:	
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Registration Method:	New Type
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Registered Vehicle Type:	
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1.4 Category:	Special Vehicles
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1.5 Subcategory:	Self-propelled special vehicle
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1.6 Platform:	EMV 97 LGV-2R
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Section 2: Conformity with TSI

2.1 Conformity with TSI and Sections not complied with:

1435mm / Autonomous / Crocodile	Not conform to any TSI
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1435mm / Autonomous / DAAT	Not conform to any TSI
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1435mm / Autonomous / KVB	Not conform to any TSI
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2.3 Applicable specific cases (specific cases conformity with which has been assessed)

2.2 Reference of 'EC type examination certificates'

Reference of 'EC type examination certificates' - if module SB applied - and/or 'design verification certificate' - if module SH1 applied	None
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Section 3: Authorisations

France

3.0 Area Of Use:	FR(France)
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3.1.1 Member state of authorisation:	France(FR)
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3.1.2.1 Status:	Valid
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3.1.2.2 Validity of Authorisation (until):	
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3.1.2.3 Coded conditions for use and other restrictions:	
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1435mm / Autonomous / Crocodile

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 150

1.2 Track circuit restrictions: True

1.3 Speed restrictions in Km/h: 100

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.5 B System on board

2.5.1 Class B signalling system: 2.5.107 Crocodile

2.5.1 Class B signalling system: 2.5.112 KVB

2.5.1 Class B signalling system: 2.5.130 DAAT

2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise

3 Environmental restrictions

3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1

4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

5 On-board equipment

5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

1435mm / Autonomous / DAAT

- 1 Technical restriction related to construction
 - 1.1 Minimum curve radius in meters: 150
 - 1.2 Track circuit restrictions: True
 - 1.3 Speed restrictions in Km/h: 100
 - 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0
- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1
 - 2.2 Wheelset gauge: 2.2.4 Gauge 1435
 - 2.4 ERTMS on board: 2.4.2 GSM-R voice
 - 2.5 B System on board
 - 2.5.1 Class B signalling system: 2.5.107 Crocodile
 - 2.5.1 Class B signalling system: 2.5.112 KVB
 - 2.5.1 Class B signalling system: 2.5.130 DAAT
 - 2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise
- 3 Environmental restrictions
 - 3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1
- 4 Restrictions on use
 - 4.1 Time based: True
 - 4.2 Condition based (distance travelled, wear, etc.): True
- 5 On-board equipment
 - 5.1 Recording device: 5.1.02 "Acquisition et Traitement des Événements de Sécurité en Statique" (ATESS)

1435mm / Autonomous / KVB

- 1 Technical restriction related to construction
 - 1.1 Minimum curve radius in meters: 150
 - 1.2 Track circuit restrictions: True
 - 1.3 Speed restrictions in Km/h: 100
 - 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0
- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1
 - 2.2 Wheelset gauge: 2.2.4 Gauge 1435
 - 2.4 ERTMS on board: 2.4.2 GSM-R voice
 - 2.5 B System on board
 - 2.5.1 Class B signalling system: 2.5.107 Crocodile

2.5.1 Class B signalling system: 2.5.112 KVB
2.5.1 Class B signalling system: 2.5.130 DAAT
2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise
3 Environmental restrictions
3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1
4 Restrictions on use
4.1 Time based: True
4.2 Condition based (distance travelled, wear, etc.): True
5 On-board equipment
5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

3.1.2.4 Non-coded conditions for use and other restrictions:

3.1.3.1.1 Date of the original authorisation: 2020-10-15

3.1.3.1.2 Authorisation holder:

3.1.3.1.2.1 Authorisation holder identification data:

3.1.3.1.2.1.1 Name of organisation: FRAMAFER SA

3.1.3.1.2.1.2 Registered business number: FR35656780541

3.1.3.1.2.1.3 Organisation code:

3.1.3.1.2.2 Authorisation holder contact data:

3.1.3.1.2.2.1 Address of organisation, street and number: 77 rue de la gare

3.1.3.1.2.2.2 Town: BENING LES SAINT AVOLD

3.1.3.1.2.2.3 Country code: 87

3.1.3.1.2.2.4 Post code: 57800

3.1.3.1.2.2.5 E-mail address: infodirection@framafer.com

3.1.3.1.3 Authorisation document reference: FR8020200017

3.1.3.1.4 Certificate of verification : Reference of type examination or design examination type:

DCE383 révision 1 du 13/10/2020

3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:

1435mm / Autonomous / Crocodile

0.0 None

1435mm / Autonomous / DAAT

0.0 None

1435mm / Autonomous / KVB

0.0 None

3.1.3.1.6 Comments:

3.1.3.1.7 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:

DDR_EMV 97 LGV-2R version 0 du 06/08/2019

3.1.3.1 Initial Registration

3.1.2.3 Coded conditions for use and other restrictions:

1435mm / Autonomous / Crocodile

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 150

1.2 Track circuit restrictions: True

1.3 Speed restrictions in Km/h: 100

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0

2 Geographical restriction

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3 Environmental restrictions

3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1

4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

5 On-board equipment

5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

1435mm / Autonomous / DAAT

1 Technical restriction related to construction

- 1.1 Minimum curve radius in meters: 150
- 1.2 Track circuit restrictions: True
- 1.3 Speed restrictions in Km/h: 100
- 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0
- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1
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- 1 Technical restriction related to construction
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 - 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0
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4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

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5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

3.1.2.4 Non-coded conditions for use and other restrictions:

3.1.3.1.1 Date of the original authorisation: 2020-10-15

3.1.3.1.2 Authorisation holder:

3.1.3.1.2.1 Authorisation holder identification data:

3.1.3.1.2.1.1 Name of organisation: FRAMAFER SA

3.1.3.1.2.1.2 Registered business number: FR35656780541

3.1.3.1.2.1.3 Organisation code:

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3.1.3.1.2.2.3 Country code: 87

3.1.3.1.2.2.4 Post code: 57800

3.1.3.1.2.2.5 E-mail address: infodirection@framafer.com

3.1.3.1.3 Authorisation document reference: FR8020200017

3.1.3.1.4 Certificate of verification : Reference of type examination or design examination type:

DCE383 révision 1 du 13/10/2020

3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:

1435mm / Autonomous / Crocodile

0.0 None

1435mm / Autonomous / DAAT

0.0 None

1435mm / Autonomous / KVB

0.0 None

3.1.3.1.7 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:

DDR_EMV 97 LGV-2R version 0 du 06/08/2019

Section 4: Technical Characteristics

4.1.3 Wheel set gauge RC	1435	mm
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4.1.12 Number of vehicles composing the fixed formation (for fixed formation only)	2
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4.13.1 Signalling

4.13.1.1 ETCS equipment on-board and the set of specifications from CCS TSI Annex A RC	None
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4.13.1.5 Class B or other train protection control and warning systems installed (system and if applicable version) RC	Crocodile KVB DAAT
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4.13.1.8 ETCS System Compatibility	Not applicable
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4.13.2 Radio

4.13.2.1 GSM-R Radio voice on board and its Baseline RC	None (GSMR conforme EN14033-1)
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4.13.2.3 Class B or other radio systems installed (system and if applicable version) RC	None
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4.13.2.5 Radio Voice System Compatibility	Not applicable
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4.13.2.7 GSM-R Radio Data communication on board and its Baseline RC	None
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4.13.2.8 Radio Data System Compatibility	Not applicable
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4.10.1 Energy supply system (voltage and frequency) RC	Autonomous
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4.1.2 Speed

4.1.2.1 Maximum design speed	1435mm / Autonomous / Crocodile	100	km/h
	1435mm / Autonomous / DAAT	100	km/h
	1435mm / Autonomous / KVB	100	km/h
4.2.1 Reference profile RC		G1 GI2	
4.3.1 Temperature range		T1 (-25 to +40)	
4.3.3 Snow, ice and hail conditions		Nominal	
4.4.1 Fire safety category RC		OTM	
4.5.2 Design mass			
4.5.2.1 Design mass in working order RC		52670	kg
4.5.2.2 Design mass under normal payload RC		57200	kg
4.5.2.3 Design mass under exceptional payload RC		57200	kg
4.5.3 Static axle load			
4.5.3.1 Static axle load in working order RC		19220	kg
4.5.3.2 Static axle load under normal payload RC		20600	kg
4.5.3.3 Static axle load under exceptional payload RC		20600	kg
4.5.3.4 Position of the axles along the unit (axle spacing) :	1435mm / Autonomous / Crocodile	a: 0016,00 b: 0003,80 c: 0008,50	m
a: Distance between axles	1435mm / Autonomous / DAAT	a: 0016,00 b: 0003,80 c: 0008,50	m
b: Distance from end axle to the end of the nearest coupling plane	1435mm / Autonomous / KVB	a: 0016,00 b: 0003,80 c: 0008,50	m
c: distance between two inside axles			
RC			

4.5.5 Total vehicle mass (for each vehicle of the unit) RC	1435mm / Autonomous / Crocodile	57200	kg		
	1435mm / Autonomous / DAAT	57200	kg		
	1435mm / Autonomous / KVB	57200	kg		
4.5.6 Mass per wheel RC	1435mm / Autonomous / Crocodile	11440	kg		
	1435mm / Autonomous / DAAT	11440	kg		
	1435mm / Autonomous / KVB	11440	kg		
4.6.4 Combination of maximum speed and maximum cant deficiency for which the vehicle was assessed RC	1435mm / Autonomous / Crocodile	0100,00	km/h	0130,00	mm
	1435mm / Autonomous / DAAT	0100,00	km/h	0130,00	mm
	1435mm / Autonomous / KVB	0100,00	km/h	0130,00	mm
4.6.5 Rail inclination RC	1435mm / Autonomous / Crocodile	1/20			
	1435mm / Autonomous / DAAT	1/20			
	1435mm / Autonomous / KVB	1/20			
4.7.1 Maximum average deceleration		0.77	m/s ²		
4.7.2.1 Brake performance on steep gradients with normal payload					
4.7.2.1.1 Reference case of TSI		Reference case (60 km/h, 21‰ (mm/m), 45 min)			
4.7.2.1.6 Maximum brake thermal energy capacity	1435mm / Autonomous / Crocodile	684	kJ		
	1435mm / Autonomous / DAAT	684	kJ		
	1435mm / Autonomous / KVB	684	kJ		
4.7.3 Parking brake					
4.7.3.3 Maximum gradient on which the unit is kept immobilized by the parking brake alone (if the vehicle is fitted with it)		45	‰ (mm/m)		
4.7.4.1 Eddy current brake					

4.7.4.1.1 Eddy current track brake fitted RC	False				
4.7.4.2 Magnetic brake					
4.7.4.2.1 Magnetic track brake fitted RC	False				
4.7.4.3 Regenerative brake (only for vehicles with electrical traction)					
4.7.4.3.1 Regenerative brake fitted RC	False				
4.7.5 Emergency brake : Stopping distance and deceleration profile for each load condition per design maximum speed	1435mm / Autonomous / Crocodile	a: 0447,00	m	0000,86	m/s ²
		b: 0464,00	m	0000,83	m/s ²
		c: 0501,00	m	0000,77	m/s ²
a: Load condition: working order	1435mm / Autonomous / DAAT	a: 0447,00	m	0000,86	m/s ²
b: Load condition: normal payload		b: 0464,00	m	0000,83	m/s ²
c: Load condition: exceptional payload		c: 0501,00	m	0000,77	m/s ²
	1435mm / Autonomous / KVB	a: 0447,00	m	0000,86	m/s ²
		b: 0464,00	m	0000,83	m/s ²
		c: 0501,00	m	0000,77	m/s ²
4.7.6 For general operation : Brake weight percentage (lambda) or Braked mass	1435mm / Autonomous / Crocodile	085,00	(%) or	00049,00	tonnes
	1435mm / Autonomous / DAAT	085,00	(%) or	00049,00	tonnes
	1435mm / Autonomous / KVB	085,00	(%) or	00049,00	tonnes
4.7.7 Service brake: At maximum service brake:	1435mm / Autonomous / Crocodile	0434,00	m	0000,89	m/s ²
Stopping distance, Maximum deceleration, for the load condition 'design mass under normal payload' at the design maximum speed.	1435mm / Autonomous / DAAT	0434,00	m	0000,89	m/s ²
	1435mm / Autonomous / KVB	0434,00	m	0000,89	m/s ²
4.7.8 Wheel slide protection system	1435mm / Autonomous / Crocodile	False			
	1435mm / Autonomous / DAAT	False			
	1435mm / Autonomous / KVB	False			
4.8.1 Vehicle length	22.95	m			
4.8.2 Minimum in-service wheel diameter RC	862	mm			

4.8.4 Minimum horizontal curve radius capability RC		150	m
4.8.5 Minimum vertical convex curve radius capability		900	m
4.8.6 Minimum vertical concave curve radius capability		900	m
4.9.1 Type of end coupling	Manual		
	Tensile force	0850.0000	kN
	Compressive force	1200.0000	kN
	crochet de traction		
	Tensile force	1000.0000	kN
	Compressive force		kN
4.9.2 Axle bearing condition monitoring (hot axles box detection) RC		Detectable by line side	
4.14.1 Type of train detection systems for which the vehicle has been designed and assessed RC		Track circuits Axle counters	