

Product Type Approval Certificate

Provisional

This certificate is issued to:

Supplier name and address:	Alstom Transport Pty Ltd 16 Giffnock Avenue North Ryde NSW 2113
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In respect of:

Manufacturer:	Alstom Transport Pty Ltd
Place of manufacture:	Europe
Product description:	<p>GATC ERTMS Trainborne System 6.8.1 R2.0 with associated trainborne subsystem passport V6.8.1 using GEOS software for SDMU function (preference) and using DMI SENSE 2.0.1 or 2.0.2.</p> <p>Implementation is limited to the <i>Schedule of associated items</i> for EVC cards, GATC ERTMS trainborne and Train Type Specific detailed on the following pages of this certificate. Other items required to use the listed items are included.</p> <p>Items outside the scope of this approval are: Train interface products; Train specific design and parameters; separate event recorders (TRU/JRU) modified for ETCS; radio communications equipment; Driver Machine Interface configuration for Human Factors.</p>
Use approved for:	<p>ETCS Level 1 Automatic Train Protection trainborne subsystem as defined by the Schedule of approved application on the following page.</p> <p>Usage in accordance with TfNSW standards, manuals and procedures as well as supplier documents and constraints.</p> <p>Conclusions about the suitability for use under any other circumstances are not made. Reliance on this approval by any other organisation is done so entirely at that organisation's own risk.</p>

Manufacturer:	Alstom Transport Pty Ltd
Conditions of approval:	<p>This type approval is based on compliance with the following conditions:</p> <ol style="list-style-type: none"> 1. The Technically Assured Organisation (TAO) is to have authorisation for the life cycle activity for the engineering service supported by specific competency and processes compliant with the product safety case. 2. The manufacturer and maintenance TAO are to regularly monitor and liaise regarding cyber security issues. Taking action as required to maintain the overall safety and reliability of the installed infrastructure. 3. Type Approval PTA SC 010/2018R7.1 is superseded by this approval. 4. The supplier supports the closure of defects identified during the initial operational service of the product. 5. The supplier must advise TfNSW AMB of any changes made to the product or system which may alter its identification, performance characteristics, form, fit, function, security or processes required for correct usage so that this approval can be reviewed and revised or reconfirmed.
Limitations:	N/A

Independent technical reviewer

Name:	Andrew Gardner
Position:	Director, Signals and Control Systems Engineering, Asset Management Branch, Transport for NSW
Signature:	
Date:	

Product approval pack reference number: [qT813132]

Schedule of Approved Application

Train Type	GATC ERTMS Baseline	Train Baseline	Installation	Test running ¹	Non Safety Application in revenue service	Safety Application in revenue service
C-Set	6.8.1 R2.0	1.7.6	Approved	Approved	Approved	Approved
H-Set (Oscar)	6.8.1 R0.0	1.4.8	Approved	Approved	Approved	Approved
K-Set	6.8.1 R2.0	1.4.5	Approved	Approved	Approved	Approved
M-Set (Millennium)	6.8.1 R2.0	1.6.6	Approved	Approved	Approved	Approved ²
T-Set (Tangara)	6.8.1 R2.0	1.6.7	Approved	Approved	Approved	Not Approved ³
V-Set (Intercity)	6.8.1 R0.0	1.4.4	Approved	Approved ⁴	Not Approved ⁵	Not Approved ⁵

1 Test running is test operation of the on-board ATP subsystem on the rail network under a Special Train Notice (STN).

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- I. The proposed EMC solution is assured to have resolved the issue and includes any residual BTM blinding events.
- II. When operating ATP in NORMAL MODE for revenue service, a quarterly performance report with details of EMC and BTM related incidents is to be submitted to the Rail Infrastructure Manager, Rolling Stock Operator/Maintainer and AMB.
- III. Both EMC and BTM issues must be resolved, and a final solution implemented across the fleet. This includes any additional controls identified as required during performance monitoring.
- IV. Operating the Millennium fleet with ATP in NORMAL MODE requires the ST Safety Assurance Report endorsed.

3 Series installation must be compliant with the installation design. Any project upgrading the T-Set will need assessment and potentially further compliance testing for any installation design alterations.

4 Specific Application Safety Case open points must be resolved prior to test running.

5 Fitment for revenue service is not planned.

Schedule of associated items – EVC Cards

Item	Version/ Revision ¹	Description	Conditions
NRD113019	B	FILIO B 24V TIU Card	
NRD108571	E	CIE Card	
NRD108028	F	CTE Card	
NRD109475	E	CPBI Card	
TRVC062520000	A	CPBI Card, centralised	
NRD113059	A	CPS B 24V Power supply board	<i>Not for new applications</i>
DTR0000329765	A	CPS2 24V Power supply board	
NRD113061	B	EAPS B 24V Power Supply Board	<i>Not for new applications</i>
DTR0000320543	A	EAPS2 24V Power Supply Board	
TRVC062440000	B	SMDU Card (Secheron)	
DTR0000280387	B	SDMU Card (KES)	
NRD109477	A	SIR Card	
NRD108033	I	SMART CORE Card	<i>Not for new applications</i>
DTR0000221790	D	SMART CORE 2 Card	
NRD108034	J	SMART TIU Card	<i>Not for new applications</i>
DTR0000329772	D	SMART TIU 2 Card	
NRD109478	B	TDMI Card	
NRD108031	F	RTM Card	
DTR0000336715	B	COMET MVB-less	<i>Existing train baselines only</i>
DTR0000436418	C	COMET MVB-less ACC	

1 All numeric minor index numbers are accepted as they do not affect functionality, performance, or interchangeability. Previous revisions used in a train baseline remain approved for use.

Schedule of associated items – GATC ERTMS Trainbourne

Item	Version/ Revision ¹	Description	Conditions
DTR0000251838	A	EVC 24V L1 Type J hardware configuration	
DTR0000332381	A	EVC 24V L2 Type N hardware configuration	<i>RTM added to Type J</i>
DTR2000013420	A	EVC2 Type AA	
DTR2000013423	A	EVC2 Type AD	
DTR0000228581	D	Sensorex Accelerometer	
DTR0000264363	A	Doppler Radar (DRS05/1S1a with SW51-032B software)	<i>Use for new applications to be phased out</i>
DTR0000317744	A	Doppler Radar (DRS05/1S1a with SW51-032C software)	
DTR0000168681	B	Doppler Radar	<i>V-Set test train only</i>
DTR0000297715	A	Hasler Rail Sensor Cell 5.8600120/43	
DTR0000321111	A	KES SWKP IG 20 Speed Sensor with Direction	
DTR0000182433	A	Eurobalise Antenna (Compact 100 m)	
DTR0000422405	B	DMI SENSE Touch screen <i>Versions B1 and B2²</i> <i>(B2 incorporates the resettable fuse)</i>	
DTR0000193330	A	Network Switch (unmanaged) (Harting eCon 4080-B1)	<i>Using physical security, no external connections</i>
NRD118753	N/A	Onboard Diagnostic Equipment (ODE)	<i>As per train release note</i>
DTR0000332421	D	TOMe Train Data Recorder (CPM)	

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- 2 The maintainer is responsible for managing the inventory as part of configuration change management.

Schedule of associated items – Train Type Specific

Item	Version/ Revision ¹	Description	Conditions
DTR0100013810	N/A	Hasler Rail Wheel Sensor 5.8600.032/52 with 1250 mm cable.	<i>Test V-Set only</i>
DTR0000397545	N/A	Hasler Rail Wheel Sensor 5.8600.094/43.	<i>Use on T/G-Set</i>
DTR0100011995	N/A	Hasler Rail Wheel Sensor 5.8600.032/53 with 2450 mm cable.	<i>Test V-Set only</i>
DTR0000447318	N/A	Hasler Speed Sensor with cable length & connector for V-Set	<i>Use on V-Set</i>
DTR0000454156	N/A	Hasler Speed Sensor with cable length & connector for C&K-Set	<i>Use on C&K-Set</i>
DTR0100022810	N/A	KES Speed Sensor (based on SWKP IG 20 sensor probe)	<i>Reuse of existing probe on H-Set</i>
DTR0000465045	N/A	KES Speed Sensor with cable length & connector for M-Set (based on SWKP IG 20 sensor probe)	<i>Use on M-Set</i>
DTR0000256432	A	DC/DC Converter 120VDC/24VDC (Martek Powertron ATG 2400A/1LSQ3)	
DTR0100031337	A	DC/DC Converter 120VDC/24VDC (Power-One HR2320-9RG)	<i>Use with EVC2</i>
DTR0100018996	G	ETCS Cubicle	<i>Use on H-Set</i>
DTR2000006910	B	ERTMS BL3 Cubicle (using EVC2 Type AA)	<i>Secheron SDMU, T&V</i>
DTR2000014257	A	ERTMS BL3 Cubicle (using EVC2 Type AA)	<i>Use on C-Set</i>
DTR2000014267	A	ERTMS BL3 Cubicle (using EVC2 Type AA)	<i>Use on K-Set</i>
DTR2000014274	A	ERTMS BL3 Cubicle (using EVC2 Type AD)	<i>Use on M-Set</i>
DTR0009713393	N/A	Emergency Brake exhaust valve (Goyen BW series) 120 V dc	

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