Type Acceptance Report

TAR 4/21B/25 – Revision 4

Cessna 210 Series

TABLE OF CONTENTS

Executive Summary

New Zealand Type Acceptance has been granted to the Cessna Model 210 Series based on validation of FAA Type Certificate no 3A21. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.177, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(2).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.4/21B/25 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

(a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the models in New Zealand; and

(b) Identify any special conditions for import applicable to any models covered by the Type Acceptance Certificate; and

(c) Identify any additional requirements that must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

The report also notes the status of all models included under the foreign type certificate which have been granted type acceptance in New Zealand. Models covered by the type acceptance certificate issued under Part 21B are listed in Section 2 of this report. Models which were accepted prior to that under NZCAR Section B.9 are listed in Appendix 1.

2. ICAO Type Certificate Details

Manufacturer:	Cessna Aircraft Company
Type Certificate:	3A21
Issued by:	Federal Aviation Administration
Model:	210
MCTOW	2900 lb. (1315 kg.)
Max. No. of Seats:	4
Noise Standard:	Not Applicable
Engine:	Continental IO-470-E Type Certificate: 3E1 Issued by: Federal Aviation Administration

Propeller:	D3A36C33/90M-8 or D2A34C49/90A-8 or D2A34C58/90AT-8 Type Certificate: P47GL Issued by: Federal Aviation Administration
	Hartzell HC-A2XF-1/8433-2 Type Certificate: P-908 Issued by: Federal Aviation Administration
Model:	T210R
MCTOW	4100 lb. (1860 kg.)
Max. No. of Seats:	6
Noise Standard:	36 FAR Part at amendment 36-12
Engine:	Continental TSIO-520-CE Type Certificate: E8CE Issued by: Federal Aviation Administration
Propeller:	McCauley D3A36C410/80VMB-0 Type Certificate: P47GL Issued by: Federal Aviation Administration
Model:	P210N
MCTOW	4000 lb. (1860 kg.)
Max. No. of Seats:	6
Noise Standard:	FAR 36 including Amendment 36-6
Engine:	Continental TSIO-520-P (up to serial number 760); Continental TSIO-520-AF (serial number 761 and up) Type Certificate: E8CE Issued by: Federal Aviation Administration
Propeller:	McCauley D3A34C402/90DFA-10 Type Certificate: P47GL Issued by: Federal Aviation Administration
Model:	210R
MCTOW	3850 lb. (1746 kg.)
Max. No. of Seats:	6
Noise Standard:	FAR 36 including Amendment 36-4
Engine:	Continental IO-520-L Type Certificate: E5CE Issued by: Federal Aviation Administration
Propeller:	McCauley D3A34C404/80VA-0 Type Certificate: P47GL Issued by: Federal Aviation Administration

Model:	T210M
MCTOW	3800 lb.
Max. No. of Seats:	6
Noise Standard:	FAR 36 including Amendment 36-4
Engine:	Continental TSIO-520-R Type Certificate: E8CE Issued by: Federal Aviation Administration
Propeller:	McCauley D3A34C402/90DFA-10 Type Certificate: P47GL Issued by: Federal Aviation Administration

Model:	210G
MCTOW	3400 lb.
Max. No. of Seats:	4
Noise Standard:	Not Applicable
Engine:	Continental IO-520-A Type Certificate: E5CE Issued by: Federal Aviation Administration
Propeller:	McCauley E2A34C73/90AT-8 Type Certificate: P3EA Issued by: Federal Aviation Administration McCauley D3A32C88/82NC-2 Type Certificate: P21EA Issued by: Federal Aviation Administration

3. Type Acceptance Certificate

The application for New Zealand type acceptance of the 1960 Model 210 was from C H Mellsop dated 12 July 1995. The first-of-type example was serial number 57096 ZK-RJS.

The 210 Series is a four to six-seat single-engine high-wing all-metal touring aircraft with retractable undercarriage that is also available in turbocharged and pressurised versions.

Type Acceptance Certificate No.95/02 covering the 210 was granted on 1 August 1995 based on validation of FAA Type Certificate 3A21. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The application for New Zealand type acceptance of the T210R was from TRC Toyota dated 17 June 1996. The first-of-type example was 1985 Model serial number 21064918, registered ZK-TRC. Type Acceptance Certificate No. 96/07 was granted on 11 July 1996.

The application for type acceptance of the 1981 Model P210N was from the importer, Mr E Hagaman, dated 19 March 2004. The first-of-type example was serial no.P21000718, registered ZK-SCH. Type Acceptance Certificate 4/21B/25 was granted on 3 June 2004.

This report was raised to Revision 1 to include the Model 210R under Work Request number 5/21B/35. The opportunity was also taken to update the report to the latest format, and include all Models of the 210 Series previously type accepted under NZCAR Part 21B. The application was from Flightline Aviation Ltd dated 20 June 2005. The first-of-type example was serial number 21064923 registered ZK-KWI. Type acceptance of the Model 210R was granted on 14 July 2005.

This report was raised to Revision 2 to include the Model T210M. The applicant was Paul Muller Aircraft Ltd and the first-of-type example was serial number 210-62739 registered ZK-ZIO. Type acceptance was granted on 17 November 2008. Revision 3 added the 1980 Model P210N. The applicant was Air West Coast Ltd and the first-of-type example was serial number P21000482 registered ZK-VIR.

This report was raised to Revision 4 to include the Model 210G. The applicant was Dreamcraft Aviation Ltd and the first-of-type example was serial number 21058895 registered ZK-DCA. Type acceptance was granted on 6 July 2010.

AIRCRAFT HISTORY

The 210 was originally developed as a retractable-gear version of the 182 and introduced in 1960 with a 260 hp engine and gross weight of 2900 lb. Weight and power was gradually increased over successive model developments and the first turbocharged version was the 1966 T210F. A major redesign occurred with the 1966 210G which had an all-new cantilever wing and MTOW increased to 3400 lb. Engine power was increased to 300 hp with the 210K model and a pressurised version became available in the 1978 210N series with gross weight up to 4000 lb. The final model was the 210R series with a new horizontal tail and other further refinements, with MTOW up to 4100 lb. The first 1978 P210N was based on the then-current Cessna Model T210M incorporating the pressurisation system from the P337, with major structural and incidental changes to support the 3.5 psi cabin pressure differential. An extended rear baggage compartment of 200 lb. capacity was fitted, and gross weight was increased to 4000 lb.

4. Type Data

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) ICAO Type certificate:

FAA Type Certificate Number 3A21

FAA Type Certificate Data Sheet 3A21 at Revision 47 dated February 25, 2009
- Model 210-5A approved July 19, 1963
- Model 210 approved April 20, 1959
- Model 210G approved August 23, 1966
- Model 210L approved October 7, 1971
- Model 210M approved October 7, 1976
- Model 210N/T210N approved August 10, 1977
- Model T210M approved October 7, 1976
- Model P210N approved August 10, 1977
- Model T210R approved December 4, 1984
- Model 210R approved December 20, 1984

(2) Airworthiness design requirements:

(i) Airworthiness Design Standards:
The certification basis of the Cessna 210 Series is Part 3 of the Civil Air Regulations effective May 15, 1956 with no amendments. For the 210B and later Series paragraph 3.112 was updated to October 1, 1959. For the pressurised P210N and P210R models and the T210R some paragraphs of FAR 23 at various amendments were added, as listed in the TCDS. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, because CAR 3 is the predecessor of FAR Part 23, which is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*
Nil.

(iii) Equivalent Level of Safety Findings:

CAR 3.757	Airspeed Indicator	210L/T210L models and up
CAR 3.778(a)	Operating Limitations	Specific serials numbers as on TCDS
CAR 3.663	Airspeed Indicating System	210N and 210R s/n's as on TCDS

(iv) Airworthiness Limitations:
TCDS Note 5 gives retirement life of 13,000 hours for windshield, rear cabin top windows, side windows and ice detector light lens on P210N and P210R models.

(3) Aircraft Noise and Engine Emission Standards:

(i) Environmental Standard:
The Models 210M/T210M/210N/210R have been certificated under FAR Part 36 including Amendments 36-1 through 36-4, through 36-6 for the P210N and P210R, through 36-9 for the T210N and through 36-12 for the T210R.

(ii) Compliance Listing:
TCDS and Flight Manuals (see Section 4).

(4) Certification Compliance Listing:

Report DM-210-0 Model 210 – Type Inspection Report – Original Certification
Cessna Report 7100 – Model 210 – Basic Data
Cessna Report 7101 – Model 210 – Wing Analysis
Cessna Report 7102 – Model 210 – Fuselage Analysis
Cessna Report 7103 – Model 210 – Horizontal Tail Analysis
Cessna Report 7104 – Model 210 – Vertical Tail Analysis
Cessna Report 7105 – Model 210 – Aileron Analysis
Cessna Report 7106 – Model 210 – Flap Analysis
Cessna Report 7107 – Model 210 – Landing Gear Analysis
Cessna Report 7108 – Model 210 – Engine Mount Analysis
Cessna Report 7109 – Model 210 – Control System Analysis
Cessna Report 7111-1/2 – Model 210 – Wing Test Proposal/Results
Cessna Report 7112-1/2 – Model 210 – Fuselage Test Proposal/Results
Cessna Report 7113-1/2 – Model 210 – Horizontal Tail Test Proposal/Results
Cessna Report 7114-1/2 – Model 210 – Vertical Tail Test Proposal/Results
Cessna Report 7117-1/2 – Model 210 – Landing Gear Test Proposal/Results
Cessna Report 7118-1/2 – Model 210 – Engine Mount Test Proposal/Results
Cessna Report 7119-1/2 – Model 210 – Control System Test Proposal/Results
Cessna Report 7124-1/2 – Model 210 – Ground Vibration Test Proposal/Results
Cessna Report 7125-1/2 – Model 210 – Flutter Analysis Test Proposal/Results
Cessna Report 7127-1/2 – Model 210 – Retraction System Test Proposal/Results
Cessna Report 7128-1/2 – Model 210 – Windshield Test Proposal/Results

Report DM-T210R-0 – Certification of 1985 Model T210R (Original Certification)
Report S-T210R-33 Substantiation, Critical Loads & Structural Materials Summary

Delegation Option Manufacturer Flight Test Report Number DM-P210N-0 – New (1978) Model Certification – dated 5 August 1977
DM-P210N-0 Addendum #1 – 1979 Model Changes – dated September 15, 1978
DM-P210N-0 Addendum #2 – 1980 Model Changes – dated August 27, 1979
DM-P210N-0 Addendum #7 – 1982 Model Changes – dated October 28, 1981
DM-P210N-0 Addendum #9 – 1983 Model Changes – dated August 27, 1982

Report S-P210N-33 Substantiation, Critical Loads & Structural Materials Summary

Report S-210M-33(77) Substantiation, Critical Loads & Structural Materials Summary, Models 210M and T210M.
Delegation Option Manufacturer Flight Test Report Number DM-210M-0 1977 Model Changes, Model 210M.
Delegation Option Manufacturer Flight Test Report Number DM-T210M-0 1977 Model Changes, Model T210M.
Delegation Option Manufacturer Flight Test Report Number DM-210M-0 Add # 1 1978 Model Changes, Model 210M.
Delegation Option Manufacturer Flight Test Report Number DM-T210M-0 Add # 1 1978 Model Changes, Model T210M.

Cessna Report S-210G-1 – Wing Analysis
Cessna Report S-210G-2 – Fuselage Anaylsis
Cessna Report S-210G-3 – Horizontal Tail Analysis
Cessna Report S-210G-4 – Vertical Tail Analysis
Cessna Report S-210G-5 – Aileron Analysis
Cessna Report S-210G-6 – Flap Analysis
Cessna Report S-210G-7 – Landing gear Analysis
Cessna Report S-210G-9 – Control System Analysis

(5) Flight manual: 1960 Cessna 210 Owner's Manual – Part Number D190A-12
CAA Accepted as AIR 2536

Pilots Operating Handbook & FAA-Approved Airplane Flight Manual
1985 Model T210R P/N D1289-13PH – CAA Accepted as AIR 2565

Pilots Operating Handbook & FAA-Approved Airplane Flight Manual
1981 Model P210N P/N D1209-13PH – CAA Accepted as AIR 2867

Pilots Operating Handbook & FAA-Approved Airplane Flight Manual
1985 Model 210R P/N D1288-13PH – CAA Accepted as AIR 2923

Pilots Operating Handbook 1977 Model T210M P/N D1095-3-13PH
CAA Accepted as AIR 3072
Pilots Operating Handbook 1978 Model T210M P/N D1123-3-13PH
CAA Accepted as AIR 3073

Pilots Operating Handbook & FAA-Approved Airplane Flight Manual
1980 Model P210N P/N D1188-13PH – CAA Accepted as AIR 3092

1967 Cessna 210 Owners Manual – Part Number D442-13
CAA Accepted as AIR 3137

(6) Operating Data for Aircraft, Engine and Propeller:

(i) Maintenance Manual:
Cessna has provided access to web-based documentation through the CESSVIEW II software. This includes:

Model 210 and T210 Series Service Manual (1977 – 1984)
Model 210 and T210 Series Service Manual (1985 – 1986)
Model P210 Series Service Manual (1978 – 1983)
Model P210 Series Service Manual (1985 – 1986)

(ii) Current service Information:
Cessna has provided access to web-based documentation through the CESSVIEW II software. This includes all service documents such as Service Bulletins and Service Letters.

(iii) Illustrated Parts Catalogue:

Cessna has provided access to web-based documentation through the CESSVIEW II software. This includes:

Model 210 and T210 Series Parts Catalog (1970 – 1980)
Model 210 and T210 Series Parts Catalog (1981 – 1986)
Model P210 Series Parts Catalog (1978 – 1986)

(7) Agreement from manufacturer to supply updates of data in (4), (5) and (6):

Web access provides automatic updates.

5. Additional New Zealand Requirements

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance certificate.

Civil Aviation Rules Part 26

Subpart B - Additional Airworthiness Requirements

Appendix B - All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	***To be determined on an individual aircraft basis***
B.2	Crew Protection Requirements - CAM 8 Appdx. B # .35	Not Applicable – Agricultural aircraft only

Compliance with the following additional NZ operating requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 91

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:	
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training		***To be determined on an individual aircraft basis***	
91.507	Pax Information Signs - Smoking, safety belts fastened		Not Applicable – Less than ten passenger seats	
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	CAR §3.655(a)(1) – * N/A – No mach limitations CAR §3.655(a)(2) – * CAR §3.655(a)(3) – * CAR §3.655(b)(1)(i) – * CAR §3.655(b)(1)(iv) – * CAR §3.655(b)(1)(ii) – *	(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter	N/A – Air cooled engine CAR §3.655(b)(1)(iii) – * CAR §3.655(b)(2)(v) – * CAR §3.655(b)(2)(iii) – * Fitted as Standard – * CAR §3.359 – * CAR §3.687 – *
91.511 Night	(1)Turn and Slip (2) Position Lights	***Operational requirement – Compliance as applicable***	(3) Anti-collision Lights (4) Instrument Lighting	***Operational requirement – Compliance as applicable***
91.513	VFR Communication Equipment		***Operational requirement – Compliance as applicable***	
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	***Operational requirement – Compliance as applicable***	(5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent	***Operational requirement – Compliance as applicable***
	* See Pilot's Operating Handbook Section 7 – Airplane & Systems Descriptions or equivalent in the Owners Manual			
91.519	IFR Communication and Navigation Equipment		***Operational requirement – Compliance as applicable*** (See POH Section 9 Supplements for optional avionics)	
91.523 Emrgcy Eqpmt.	(a) More Than 10 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily acceptable to crew (c) More than 61 pax - Portable Megaphones per Table 9		Not Applicable – Less than 10 passenger seats Not Applicable – Less than 10 passenger seats Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats	
91.529	ELT - TSO C91a after 1/4/97 (or replacement)		***To be determined on an individual aircraft basis***	
91.531	Oxygen Indicators - Volume/Pressure/Delivery		***Operational requirement – Compliance as applicable***	
91.533	Oxygen Equipment for Unpressurised Aircraft		***Operational requirement – Compliance as applicable***	
91.535	Oxygen for Pressurized Aircraft: (1) Flight Crew Member On-Demand Mask; 15 min PBE (2) 1 Set of Portable 15 min PBE (3) Crew Member - Pax Oxygen Mask; Portable PBE 120l (4) Spare Oxygen Masks/PBE (5) Min Quantity Supplement Oxygen (6) Required Supplemental/Therapeutic Oxygen Above FL250 - Quick-Donning Crew On-Demand Mask		(P210 Only) Factory supplemental oxygen system comprises two solid chemical oxygen generators of 15 minute capacity each. Six disposable partial rebreathing type masks are provided in the overhead console, and incorporate flow indicators in the line. The system is designed to comply with FAR §23.1443. N/A – Maximum operating altitude is 23,000 ft.	
91.541	SSR Transponder and Altitude Reporting Equipment		***Operational requirement – Compliance as applicable***	
91.543	Altitude Alerting Device - Turbojet or Turbofan		Not Applicable – Reciprocating engine	
91.545	Assigned Altitude Indicator		***Operational requirement – Compliance as applicable***	
A.15	ELT Installation Requirements		***To be determined on an individual aircraft basis***	

Civil Aviation Rules Part 135

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness flight-crew seats		***Operational requirement – Compliance as applicable***
135.357	Additional Instruments (Powerplant and Propeller)		Has all instruments required by FAR §23.1305
135.359	Night Flight	Landing light, Pax compartment	Landing Light and Cabin Light fitted as standard
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses	***Operational requirement – Compliance as applicable***
135.363	Emergency Equipment (Part 91.523 (a) and (b))		***Operational requirement – Compliance as applicable***
135.367	Cockpit Voice Recorder		N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder		Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator		Not Applicable – Not turbo jet or turbofan powered

Attachments

The following documents form attachments to this report:

Photographs first-of-type example T210R serial no.21064918 ZK-TRC
Photographs first-of-type example P210N serial no.P21000718 ZK-SCH
Photographs first-of-type example 210R serial no.21064923 ZK-KWI
Three-view drawings Cessna Model 210 Series (various)
Copy of FAA Type Certificate Data Sheet Number 3A21

Sign off

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David Selby	Checked - David Gill
Airworthiness Engineer	Team Leader Airworthiness

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
210-5A (205)	Advisory Circular 21-1.2/NZCAR Part 21 Appendix A(c)		
210L	Advisory Circular 21-1.2/NZCAR Part 21 Appendix A(c)		
210M	Advisory Circular 21-1.2/NZCAR Part 21 Appendix A(c)		
210N	Advisory Circular 21-1.2/NZCAR Part 21 Appendix A(c)		
T210N	Advisory Circular 21-1.2/NZCAR Part 21 Appendix A(c)		
210	C H Mellsop	95/02	1 August 1995
T210R (1985)	TRC Toyota	96/07	11 July 1996
P210N (1981)	Aviation technology Limited	4/21B/25	3 June 2004
210R (1985)	Flightline Aviation Limited	5/21B/35	14 July 2005
T210M	Paul Muller Aircraft Limited	9/21B/8	12 November 2008
P210N (1980)	Air West Coast Limited	10/21B/1	17 July 2009
210G	Dreamcraft Aviation Limited	10/21B/27	6 July 2010