# Civil Aviation Authority
# United Kingdom

# TYPE-CERTIFICATE DATA SHEET

**UK.TC.R.00024**

for

AW169

**Type Certificate Holder**

Leonardo S.p.A.

Helicopters

Piazza Monte Grappa, 4

00195 Rome

Italy

| | |
|---|---|
| Model(s): | AW169 |
| Issue: | 2 |
| Date of issue: | 09 June 2022 |

**TABLE OF CONTENTS**

# Section 1 AW169

## I General

### 1. Type / Variant / Model

#### 1.1. Type

AW169

#### 1.2. Model

AW169

#### 1.3. Variant

–

### 2. Airworthiness Category

Large Rotorcraft, Category A and B.

### 3. Type Certificate Holder

Leonardo S.p.A.
Helicopters
Piazza Monte Grappa, 4
00195 Rome,
Italy

### 4. Manufacturer

See Section 1.VI Note 2.

### 5. Type Certification Application Date

09 February 2011.

### 6. State of Design Authority

European Union Aviation Safety Agency (EASA).

### 7. EASA Type Certification Date

15 July 2015.

## II Certification Basis

### 1. Reference Date for determining the applicable requirements

For Airworthiness and Environmental Protection: 09 February 2011.

For Operational Suitability Data (OSD) elements: 07 October 2014.

### 2. Airworthiness Requirements

- Certification Specifications (CS) CS-29 Amendement (Amdt.) 2, dated 17 November 2008
- CS-29 Amdt. 3, dated 11 December 2012 for the following installations and affected areas only:
  - Kit Single Rescue Hoist P/N 6F2591F00111.
  - 50 meters Hoist P/N 6F2591F00211 except for CS 29.337 through 29.341, CS 29.571 and CS 29.29.865 (a), (f) of CS-29 Amdt. 6, dated 17 December 2018
  - CS-29 Amdt. 6, dated 17 December 2018 for Kit Enhanced Performance (P/N 6F0000F00511, 6F0000F00611) and affected areas only
- CS-ACNS Initial Issue dated 17 December 2013 (affected areas of Subpart A and D only) when Rockwell Collins integrated traffic surveillance system TSS-4100 is installed (see Section 1.VI Note 4)

### 3. Special Conditions

- SC E-12 Loss of Oil from Gearboxes Utilising a Pressurised Lubrication System.
- SC E-15 Extended Take-Off Power Duration.
- SC F-1 'HIRF Protection' in accordance with JAA Interim Policy INT/POL/27&29/1, Issue 3, dated 1 October 2003.
- SC F-21 Lithium Battery Installation.
- SC F-23 Non-Rechargeable Lithium Battery Installation.

### 4. Exemptions

None.

### 5. Deviations

CRI F-25 ADS-B Out Extended Squitter and ELS installation with TSS-4100

### 6. Equivalent Safety Findings

- ESF D-02 CS 29.813(c) –'Emergency Exit access'.
- ESF D-03 CS 29.807(c)(1) –'Passenger Emergency Exits other than side-of-fuselage'.
- ESF D-04 CS 29.811(d) 'Emergency Exit signs'.
- ESF D-05 CS 29.601, CS 29.603, CS 29.605, CS 29.865, CS 29.1301(d) – 'Hoist installation'.
- ESF D-07 CS 29.807(d)(2) – 'Ditching Emergency Exits for passengers'.
- ESF E-17 CS 29.923, CS 29.927 –'Rotor drive system and control mechanism tests: Endurance and additional tests by test rig'
- ESF F-16 CS 29.1305, CS 29.1521, CS 29.1549, CS 29.1309(c)'Power Index indicator'CS 29.903 Engine Isolation
- ESF F-18 CS 29.1305, CS 29.1521, CS 29.1549, CS 29.1309(c)'Standby Attitude indicator power supply'
- ESF G-01 CS 29 Subpart B, CS 29.1305, CS 29.1309, CS 29.1549 'Engine Training Mode'.
- ESF G-02 CS 29.1545(b)(4) 'Airspeed indicators green arcs'.
- ESF G-03 CS 29.1505(c)(2) 'Never Exceed Speed – Power OFF'.

### 7. Requirements elected to comply

- CS-36 Amendment 3.
- CS 29.1465 Vibration health monitoring, Amdt. 5.
- CS 29.337 through 29.341, CS 29.571 and CS 29.29.865 (a),(f) Amdt. 6 for installations and affected areas of the 50 meters Hoist, P/N 6F2591F00211.

## 8. Environmental Protection Requirements

### 8.1. Noise Requirements

See TCDSN UK.TC.R.00024.

### 8.2. Emission Requirements

Chapter 2 of International Civil Aviation Organization (ICAO) Annex 16 Volume II, Amdt. 6, Part II to Chicago Convention (as implemented in CS-34 Initial Issue).

## 9. Operational Suitability Data (OSD)

### 9.1. Master Minimum Equipment List (MMEL)

Certification Specifications and Guidance Material for Master Minimum Equipment List, CS-MMEL, initial issue, dated 31 January 2014.

### 9.2. Flight Crew Data (FCD)

Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data, CS-FCD, initial issue, dated 31 January 2014.

### 9.3. Simulation Data (SIMD)

Special Condition NPA 2013-17 (CS-SIMD), dated 27 August 2013.

### 9.4. Maintenance Certifying Staff Data (MCSD)

Reserved.

## III Technical Characteristic and Operating Limitations

## 1. Type Design Definition

Document (Doc.) Number (No.) 169F0272N002.

## 2. Description

Large twin-engine helicopter, conventional configuration, 5-blade fully articulated interblade main rotor, 3-blade fully articulated tail rotor, retractable tricycle landing gear

## 3. Equipment

As per compliance with certification basis and included in Type Design Definition Document.

## 4. Dimensions

### 4.1. Fuselage

| | |
|---|---|
| Length: | 12.19 m |
| Width hull: | 2.15 m |
| Height: | 3.88 m |

### 4.2. Main Rotor

| | |
|---|---|
| Diameter: | 12.12 m |

### 4.3. Tail Rotor

| | |
|---|---|
| Diameter: | 2.40 m |

## 5. Engine

### 5.1. Model

Pratt & Whitney Canada
2 x Model PW210A
or,
2 x Model PW210A1 (helicopters with Kit Enhanced Performance installed)

### 5.2. Type Certificate

TCCA TC/TCDS No.: E-36.
CAA TC/TCDS No.: UK.TC.E.00008.

### 5.3. Limitations

In accordance with PW210A Pratt & Whitney Canada Installation Manual (Ref. to 30L2374).

#### 5.3.1. Installed Engine Limits

PW210A

| Rating | | Max Torque [% (Nm)] | Max ITT [°C] | Max NG [% (rpm)] | Max NF [% (rpm)] |
|---|---|---|---|---|---|
| AEO | Continuous | 118.6 (395.9) | 868 | 96.5 (49 200) | 107 (28 120) |
| | Take-off 5 min | 125.9 (420.3) | 930 | 98.2 (50 100) | |
| | Take-off 30 min(*) | | | | |
| OEI | Continuous | 148.3 (494.9) | 941 | 98.9 (50 430) | 107 (28 120) |
| | 2.5 min | 174.7 (583) | 1 020 | 100.7 (51 360) | |

(*) if Core Avionic SW phase 4.0 P/N 6F4600A00114, or later, is installed.

PW210A1 (helicopters with Kit Enhanced Performance installed)

| Rating | | Max Torque [% (Nm)] | Max ITT [°C] | Max NG [% (rpm)] | Max NF [% (rpm)] |
|---|---|---|---|---|---|
| AEO | Continuous | 118.6 (395.9) | 868 | 96.5 (49 200) | 107 (28 120) |
| | Take-off 5 min | 125.9 (420.3) | 937 | 98.2 (50 100) | |
| | Take-off 30 min(*) | | | | |
| OEI | Continuous | 148.3 (494.9) | 937 | 98.8 (50 400) | 107 (28 120) |
| | 2.5 min | 185 (618.3) | 1 020 | 100.7 (51 360) | |

#### 5.3.2. Transmission Torque Limits

PW210A

| Rating | | Max Torque [% (Nm)] | Input speed [rpm] | Input power [hp] |
|---|---|---|---|---|
| AEO | Max continuous | 2 x 100 (334) | 14 400 | 1 350 (675 x 2) |
| | 5 min | 2 x 111 (371) | | 1 500 (750 x 2) |
| | 30 min(*) | | | 1 500 (750 x 2) |
| OEI | Max continuous | 140 (470) | 14 400 | 950 |
| | 2.5 min | 174 (583) | | 1 180 |

(*) if Core Avionic SW phase 4.0 p/n 6F4600A00114, or later, is installed.

PW210A1 (helicopters with Kit Enhanced Performance installed)

| Rating | | Max Torque [% (Nm)] | Input speed [rpm] | Input power [hp] |
|---|---|---|---|---|
| AEO | Max continuous | 2 x 100 (334) | 14 400 | 1 350 (675 x 2) |
| | 5 min | 2 x 122 (407) | | 1 650 (825 x 2) |
| | 30 min | | | 1 650 (825 x 2) |
| OEI | Max continuous | 148 (493) | 14 400 | 1000 |
| | 2.5 min | 185 (618) | | 1 250 |

## 6. Fluids (Fuel/Oil/Additives/Coolant)

### 6.1. Fuel

JET A, JET A1, JP8, JP8+100, No. 3 Jet Fuel (for code no. specification and more details refer to approved RFM).

### 6.2. Oil

Transmissions: AeroShell Turbo Oil 555 (DoD-L-85734). No different specification or brand allowed.

Engine: Refer to approved RFM.

Hydraulics: MIL-PRF-83282,
MIL-PRF-87257 (as alternative).

### 6.3. Additives

Refer to approved RFM.

### 6.4. Coolant

R134a.

## 7. Fluid Capacities

### 7.1. Fuel

| | Total capacity [litres (kg(*))] | Unusable [litres (kg(*))] |
|---|---|---|
| Two main fuel tanks (LH and RH) | 1 130 (904) | 20 (16) |
| (*) Fuel mass defined assuming a standard fuel density of 0.8 kg/litre | | |

### 7.2. Oil

| | Quantity [litres (kg(*))] |
|---|---|
| Engine (each) | min 5.25 (4.948) - max 5.78 (5.448) |
| Main gearbox (min/max) | min 17 (16.968) - max 19 (18.964) (16.8 + 2.2 for oil cooler, oil ducts and filter) |
| Intermediate gearbox | 0.77 (0.768) |
| Tail gearbox | 1.10 (1.098) |
| Hydraulic (per each Power Control Module) | 1.3 (1.1) |
| (*) Oil mass at 80°C | |

### 7.3. Coolant System Capacity

2.1 kg.

## 8. Air Speed Limitations

$V_{NE\ PWR\ ON\ AEO}$: 165 KIAS
$V_{NE\ PWR\ ON\ AEO}$*: 160 KIAS
$V_{NE\ PWR\ ON\ OEI}$: 135 KIAS
$V_{NE\ PWR\ OFF}$: 125 KIAS

For reduction of the VNE with density altitude (HP/OAT), refer to approved RFM.

(*) if Core Avionics SW Phase 6.0, or later is installed

## 9. Rotor Speed Limitations

| Power On AEO(*) | | |
|---|---|---|
| Condition | [rpm] | [%] |
| Minimum Continuous | 317.56 | 96.0 |
| Maximum Continuous | 354.72 | 103.0 |
| **Power On OEI** | | |
| Condition | [rpm] | [%] |
| Minimum Cautionary | 304.05 | 90.0 |
| Minimum Continuous | 341.21 | 101.0 |
| Maximum Continuous | 354.72 | 105.0 |
| **Power Off** | | |
| Condition | [rpm] | [%] |
| Minimum Continuous | 304.05 | 90.0 |
| Maximum Continuous | 371.61 | 110.0 |

(*) Maximum and minimum continuous values of the flight envelope. AVSR provides a governing of the rotor speed at different values depending on airspeed (TAS/IAS**) and density altitude. As the NR datum is variable, NR green band is variable as well (± 2% across the datum value).

(**) IAS if Core Avionics SW Phase 6.0, or later is installed.

Refer to approved RFM for additional rotor speed limitations.

## 10. Maximum Operating Altitude and Temperature

### 10.1. Altitude

Maximum operating altitude

15 000 ft* PA/DA (whichever occurs first)for operation at gross mass up to 4 600 kg, and, or

10 000 ft* for operation at gross mass above 4 600 kg without Kit Enhanced Performance installed, or,

15 000 ft* for operation at gross mass above 4 600 kg with Kit Enhanced Performance is installed

Maximum Take-off and Landing altitude

15 000 ft* PA/DA (whichever occurs first) ) for operation at gross mass up to 4 600 kg, andor,

10 000 ft* for operation at gross mass above 4 600 kg. without Kit Enhanced Performance installed, or,

15 000 ft* for operation at gross mass above 4 600 kg with Kit Enhanced Performance is installed

* altitude in PA/DA (whichever occurs first)

### 10.2. Temperature

-40°C ÷ +50°C (ISA+35°C)

-40°C ÷ +50°C (ISA+35°C) for Cat A operations

For variation of temperature limitations with altitude refer to approved RFM and applicable supplement.

**11. Operating Limitations**

VFR day and night and IFR operations in non-icing conditions.

**12. Maximum Mass**

| | |
|---|---|
| Take-off and landing: | 4 600 kg, or, |
| | 4 800 kg, if P/N 6F0000F00211 is installed |
| Taxi and Towing: | 4 650 kg, or, |
| | 4 850 kg, if P/N 6F0000F00211 is installed |

**13. Centre of Gravity Range**

Refer to approved RFM.

**14. Datum**

Longitudinal:

The datum plane (STA 0) is located at 3 528 mm forward to the front jack point

Lateral:

The datum plane (B.L. 0) is located at ±225 mm inboard of LH/RH front jack points.

**15. Levelling Means**

Plumb line from ceiling reference point to index plate on

floor of baggage compartment; clinometer.

**16. Minimum Flight Crew**

One (1) pilot for day and night VFR and IFR.

For NVG operations, two (2) pilots or one (1) pilot and one (1) crew member required. Both pilot and crew member must be equipped with NVGs (see Section 1.VI Note 3).

**17. Maximum Passenger Seating Capacity**

Eight (8).

Ten (10) (if the kit 10 Seats Internal Arrangement P/N 6F2520F00111 is installed).

**18. Passenger Emergency Exit**

Two (2) on each side of the passenger cabin

One (1) on each side of the passenger cabin, if the kit Sliding Aft Passenger Windows P/N 6F5630F00411 is installed.Two (2), one (1) on each side of the cabin.

**19. Maximum Baggage/ Cargo Loads**

250 kg located in the baggage/cargo compartment.

**20. Rotor Blade Control Movement**

For rigging information, refer to RFM.

**21. Auxiliary Power Unit (APU)**

None.

**22. Life-limited Parts**

Refer to the Airworthiness Limitation Section (ALS) of the Maintenance Manual.

**IV Operating and Service Instructions**

**1. Flight Manual**

Doc. No. 169F0290X001, initial issue, dated 8 July 2015, EASA approved 15 July 2015, or later approved revisions.

Doc. No. 169F0290X012, initial issue, dated 21 December 2021, EASA approved 21 December 2021, or later approved revisions, only for helicopters with Kit Enhanced Performance installed.Doc. No. 169F0290X012, initial issue, dated 21 December 2021, EASA approved 21 December 2021, or later approved revisions, only for helicopters with Kit Enhanced Performance installed

**2. Maintenance Manual**

'AW169 Maintenance Planning Information' Doc. No. 69-A-AMPI-00-P, EASA accepted 15 July 2015, or later revisions, including:

- Chapter 4 ALS, EASA approved dated 15 July 2015, or later approved revisions
- Chapter 5 with Scheduled Maintenance Requirements
- 'Maintenance Review Board Report AW169 Helicopter' Doc. No. 169F0000M005
- 'AW169 Maintenance Publication' Doc. No. 69-A-AMP-00-X
- 'AW169 Material Data Information' Doc. No. 69-A-AMDI-00-X
- 'AW169 Corrosion Control Publication' Doc. No. 69-A-ACCP-00-X
- 'AW169 Fault Isolation Publication' Doc. No. 69-A-AFIP-00-X
- 'AW169 Wiring Data Publication' Doc. No. 69-A-AWDP-00-X

**3. Structural Repair Manual**

'AW169 Structural Repair Publication' Doc. No. 69-A-ASRP-00-X

'AW169 Component Repair and Overhaul Publication' Doc. No. 69-A-CR&OP-00-X

**4. Weight and Balance Manual**

Refer to the Section 6 of the RFM and applicable RFMS.

**5. Illustrated Parts Catalogue**

'AW169 Illustrated Tool and Equipment Publication' Doc. No. 69-A-ITEP-00-X

'AW169 Illustrated Part Data' Doc. No. 69-A-IPD-00-X.

**6. Service Letters and Service Bulletins**

As published by AgustaWestland, Finmeccanica or Leonardo.

**7. Required Equipment**

As per compliance with certification basis and included in Type Design Definition standard.

Refer to approved RFM and MMEL.

Refer to EASA approved RFM and related supplements for other approved mandatory and optional equipment.

**V Operational Suitability Data (OSD)**

The OSD elements listed below were approved by the European Union Aviation Safety Agency (EASA) as per Commission Regulation (EU) 748/2012, as amended by Commission Regulation (EU) No 69/2014.

Future revisions will be approved by the UK CAA in accordance with Regulation (EU) No. 748/2012 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 and amended by the Aviation Safety (Amendment etc.) (EU Exit) Regulations 2019.

**1. Master Minimum Equipment List (MMEL)**

AW169 Master Minimum Equipment List - MMEL, Doc.169F0270Q003, issue A dated 16 July 2015, EASA approved on 21 July 2015, or later approved revision.

**2. Flight Crew Data**

AW169 Operational Suitability data – Flight Crew, Doc. OSD.FC AW169, issue A dated 10 July 2015, EASA approved on 21 July 2015, or later approved revision.

**3. SIM Data**

For Type Certificate Holder:

- AW169 FTD Validation Data Roadmap doc. THSS-169F1920U014, issue B, dated 7 May 2015, EASA approved on 19 January 2016, or later approved revisions.
- AW169 FTD Flight Test Results Report doc. THSS-169F1920N004, issue A, dated 7 May 2015, EASA approved on 19 January 2016, or later approved revisions.
- AW169 FFS Validation Data Roadmap doc. 169F1920U01, issue A, dated 19 May 2016, EASA approved on 13 December 2016, or later approved revisions.
- AW169 FFS Level D Flight Test Results Report doc. 169F1920N001, issue A, dated 25 May 2016, EASA approved on 13 December 2016, or later approved revisions.

**4. Maintenance Certifying Staff Data**

Reserved.

**VI Notes**

1. Manufacturer's eligible serial numbers: 69005, and subsequent.
2. Manufacturer:

   AgustaWestland S.p.A. in Italy(*)
   (*) Effective on 1 January 2016, AgustaWestland S.p.A. ownership was transferred to Finmeccanica S.p.A.; Effective on 28 July 2016, Finmeccanica S.p.A. name was changed into Leonardo S.p.A.
3. NVG Operations:

   Night Vision Goggle Operations are permitted according to RFM 169F0290X001 Supplement No. 16.

   The aircraft configuration involving internal/external emitting/reflecting equipment approved for use with NVG is described in the Report N. 169F3360A001 ‘AW169 NVG Compatibility Reference Handbook’.

   Subsequent modifications and deviations to the NVG helicopter configuration shall be managed in accordance with document 169F3360E001 ‘AW169 Helicopter NVG Policy’.
4. Installation of the Rockwell Collins TSS-4100 integrated traffic surveillance TSS-4100 system P/N 6F0630A03113, (Leonardo major not significant change NDC-169F3450-010, EASA Major Change Approval No. 10067915) has been demonstrated compliant with Certification Specifications for Airborne Communications Navigation and Surveillance, CS-ACNS initial issue, dated 17 December 2013, amended by deviation F-25 ‘ADS-B Out Extended Squitter and ELS installation with TSS-4100’.

## Section 2 Administration

### I. Acronyms and Abbreviations

| Acronym / Abbreviation | Definition |
|---|---|
| °C | Degree Celsius |
| AEO | All Engines Operative |
| ALS | Airworthiness Limitations Section |
| Amdt. | Amendment |
| B.L. | Buttock Line |
| C.G. | Centre of Gravity |
| CAA | Civil Aviation Authority |
| CRI | Certification Review Item |
| CS | Certification Specifications |
| DA | Density Altitude |
| Doc. | Document |
| EASA | European Union Aviation Safety Agency |
| FCD | Flight Crew Data |
| ft | Feet |
| IAS | Indicated Air Speed |
| ICAO | International Civil Aviation Organization |
| IFR | Instrumental Flight Rules |
| ITT | Interstage Turbine Temperature |
| HIRF | High intensity Radiated Field |
| HP | Pressure Altitude |
| JAA | Joint Aviation Authorities |
| KIAS | Knots Indicated Air Speed |
| LH | Left Hand |
| m | Metre(s) |
| mm | Millimetre(s) |
| MLG | Main Landing Gear |
| MMEL | Master Minimum Equipment List |
| p/n<br>Nf | Power turbine (free turbine) rotation speed |
| Ng | Gas generator rotation speed |
| NLG | Nose Landing Gear |
| Nm | Newton per metre |
| No. | Number |
| NVG | Night Vision Goggles |
| OAT | Outside Air Temperature |
| OSD | Operational Suitability Data |
| P/N | Part Number |
| PA | Pressure Altitude |
| PWR | Power |
| RFM | Rotorcraft Flight Manual |
| RFMS | Rotorcraft Flight Manual Supplement |
| RH | Right Hand |
| rpm | Revolution per minute |
| S/N | Serial Number |
| STA | Station |
| SW | Software |
| TAS | True Air Speed |
| TC | Type Certificate |
| TCCA | Transport Canada |
| TCDS | Type Certificate Data Sheet |
| TCDSN | Type Certificate Data Sheet for Noise |
| TCH | Type Certificate Holder |
| TOP | Take-Off Power |
| TR | Tail Rotor |
| UK | United Kingdom |
| VFR | Visual Flight Rules |
| $V_{NE}$ | Never Exceed Speed |
| $V_{NE\ PWR\ OFF}$ | Power-off Speed (Autorotation) |
| $V_{NE\ PWR\ ON}$ | Power-on speed |

## II. Type Certificate Holder Record

| TCH Record | Period |
|---|---|
| Leonardo S.p.A.<br>Helicopters<br>Piazza Monte Grappa, 4<br>00195 Rome<br>Italy | Present. No changes. |

## III. Amendment Record

| TCDS Issue No. | TCDS Issue Date | Changes | TC Issue and Date |
|---|---|---|---|
| 1 | 07 Dec 2021 | The content of the initial issue of this UK CAA TCDS was taken from EASA TCDS No. EASA.IM.R.509 Issue 10 dated 22 December 2020 which was the current EASA version at 31 December 2020 and therefore the version of the TCDS for the AW 169 accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement:<br>▪ Section 2 OSD moved to Section 1.II.9 and Section 1.V and associated references updated. | Issue 1<br>07 Dec 2021 |
| 2 | 01 June 2022 | The following sections have been amended as a result of the validation activities of Kit Enhanced Performance and Core Avionic Software Phase 7.0 (Leonardo change No. NDC-169F0000-014; EASA change approval No. 10078045). CAA Major Change Approval No. UK.MAJ.00117 refers.<br>▪ Section 1.II.2: amended to include Kit Enhanced Performance and Core Avionic Software Phase 7.0 change certification basis and CS-ACNS for Rockwell Collins TSS-4100 integrated traffic surveillance system change.<br>▪ Section 1.II.5: added CRI F-25 for Rockwell Collins TSS-4100 integrated traffic surveillance system change.<br>▪ Section 1.II.6: added ESF E-17 for Kit Enhanced Performance and Core Avionic Software Phase 7.0 change.<br>▪ Section 1.III.5.1: added Engine Model PW210A1.<br>▪ Section 1.III.5.3.1: added Installed Engine Limitations for PW210A1.<br>▪ Section 1.III.5.3.2: added Transmission Torque Limits for PW210A1.<br>▪ Section 1.III.10.1: revised maximum operating altitude for MTOM above 4 600 kg introduced for Kit Enhanced Performance and Core Avionic Software Phase 7.0 change.<br>▪ Section 1.IV.1: revised Flight Manual for Kit Enhanced Performance and Core Avionic Software Phase 7.0 change.<br>▪ Section 1.VI: added Note 4 for Rockwell Collins TSS-4100 integrated traffic surveillance system change. | Issue 1<br>07 Dec 2021 |

– END –