Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of	)	
	)	
ES 172 LLC	)	File No.: SAT-MOD-_____
	)	
Application to Modify Authorization for EUTELSAT 174A	)	Call Sign: S2610
	)	

MODIFICATION APPLICATION

ES 172 LLC, an indirect, wholly owned subsidiary of Eutelsat S.A., respectfully requests modification of its license to operate the EUTELSAT 174A satellite (Call Sign S2610)[1] pursuant to Section 25.117 of the Federal Communications Commission ("Commission") rules.[2] ES 172 LLC seeks to extend its license term for the EUTELSAT 174A satellite, and all previously granted waivers and modifications, until February 15, 2026, consistent with the Commission's Rules.[3]

I. REQUEST FOR EXTENSION OF LICENSE TERM

EUTELSAT 174A is a C/Ku-band hybrid satellite that is currently operating at the 174° E.L. orbital location with a license term that expires February 15, 2021.[4] ES 172 LLC hereby

[1] *See* ES 172 LLC, Call Sign S2610, File No. SAT-LOA-20031218-00358 (granted July 13, 2004) ("EUTELSAT 172A License"); *see also* ES 172 LLC, Call Sign S2610, File No. SATASG-20121227-00226 (granted July 11, 2013) ("ES 172 LLC Assignment"); *see also* ES 172 LLC License Modification to Operate the Eutelsat 172A Satellite at 174° E.L., Call Sign S2610, File No. SAT-MOD-20171122-00159 (grant Feb. 14, 2018) ("EUTELSAT 174A Modification") (authorizing the EUTELSAT 172A satellite to operate at 174° E.L and renaming the satellite EUTELSAT 174A). Updated ownership information for ES 172 LLC information is provided in Attachment A, hereto.

[2] 47 C.F.R. § 25.117.

[3] The Commission recently adopted a rule which codifies Commission practice regarding geostationary orbit satellite license extensions. *See* In the Matter of Mitigation of Orbital Debris in the New Space Age, *Report and Order and Further Notice of Proposed Rulemaking*, IB Docket No. 18-313, FCC 20-54 (rel. Apr. 24, 2020) (adopting 47 C.F.R. § 25.121(f)). Although that rule is not yet in effect, Eutelsat's application is consistent with both the Commission's current practices and the adopted rule.

[4] *See* EUTELSAT 174A Modification.

incorporates by reference the technical information previously provided regarding the operations of EUTELSAT 174A, which, with the exception of the EUTELSAT 174A Space Debris Mitigation Plan submitted herewith, remains unchanged by this modification.[5]

ES 172 LLC seeks to extend the license term for the EUTELSAT 174A satellite until February 15, 2026. Consistent with Section 1.62 of the Commission's rules, ES 172 LLC will continue to operate the EUTELSAT 174A satellite pursuant to the terms and conditions of its current license, as modified, until such time as the Commission makes a determination with respect to this application.[6]

ES 172 LLC previously calculated the estimated operational end-of-life of the satellite *in station-kept orbit* to be no earlier than mid-2022.[7] However, this conservative operational lifetime can be extended to early 2026 by commencing inclined orbit operations as permitted under Section 25.280.[8] Thus, Eutelsat could safely continue to provide service during the requested extension of the license term through February 15, 2026.

The EUTELSAT 174A satellite has no single point of failure and has not experienced malfunctions that could affect its ability to conduct end-of-life procedures as planned. Additionally, ES 172 LLC affirms that the satellite maintains sufficient fuel reserves to complete

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[5] *See generally* EUTELSAT 172A License; ES 172 LLC Assignment; EUTELSAT 174A Modification.

[6] 47 C.F.R. § 1.62. Permitting continued operations during the pendency of this modification application is consistent with Commission precedent. *See, e.g.*, File No. SAT-MOD-20140623-00074, DA 15-507 (rel. May 5, 2015).

[7] *See* EUTELSAT 174A Modification, EUTELSAT 174A Space Debris Mitigation Plan (Nov. 22, 2017) at 1. An updated EUTELSAT 174A Space Debris Mitigation Plan that removes the original estimated end-of-life time frame is submitted herewith. *See* Attachment B, hereto.

[8] *See generally* 47 C.F.R. § 25.280. Eutelsat will inform the Commission of inclined orbit operations of EUTELSAT 174A in accordance with this provision. Because the new estimated satellite end-of-life time frame depends on the commencement date of inclined orbit operations and other factors, Eutelsat has not included it in the updated Space Debris Mitigation Plan but instead will include such information in its notification to the Commission under Section 25.280. *See* 47 C.F.R. § 25.280(a)(5).

those end-of-life procedures, and that the satellite's telemetry, tracking, and command links are fully functional.

An extension of the license term of the EUTELSAT 174A satellite would not pose a risk to the satellite's end-of-life disposal procedures and would enable continued service to customers. As a result, grant of this modification would promote efficient use of spectrum and orbital resources and serve the public interest.

II. CONCLUSION

For the reasons set forth above, ES 172 LLC respectfully requests that the Commission modify the EUTELSAT 174A satellite license to extend its term until February 15, 2026.

Attachment A

FCC Form 312, Response to Questions 34 and 40:
Foreign Ownership, Officers, Directors, and Ten Percent or Greater Shareholders of ES 172 LLC

ES 172 LLC's ownership structure has been approved by the Commission in connection with the assignment of EUTELSAT 172A, Call Sign S2610, from Eutelsat America Corp. to ES 172 LLC. *See* SAT-ASG-20121227-00226. Updated ownership details are provided below.

ES 172 LLC is a limited liability company organized pursuant to and in accordance with the Delaware Limited Liability Company Act (6 Del. C. § 18-101 et seq.), as amended from time to time. ES 172 LLC has a single member, Eutelsat Asia (the "Member"). The Member, which has a registered office at 8 Marina Boulevard #05-02, Marina Bay Financial Centre, Singapore, 018981, wholly owns and controls ES172 LLC. The Member is a limited exempt private company organized under the laws of Singapore. The sole shareholder of the Member is Eutelsat S.A., a société anonyme organized under the laws of France. Eutelsat S.A. is the Eutelsat Group's main operating subsidiary. The address of Eutelsat S.A. is 32 boulevard Gallieni, 92130 Issy les Moulineaux, France. An organizational chart showing the ownership of ES 172 LLC is attached.

96.38% of Eutelsat S.A.'s share capital is held by Eutelsat Communications S.A., the publicly traded parent of Eutelsat S.A. In addition, the Russian Satellite Communications Company ("RSCC") holds 3.38% of the shares issued by Eutelsat S.A. and 0.24% of the shares of Eutelsat S.A. are held by other non-Eutelsat entities as set out on the ownership chart attached hereto. RSCC and these other entities have no control over Eutelsat S.A. All shareholdings of Eutelsat S.A. (other than the 0.04% of such shares held by Eutelsat S.A.'s employees and executives) are a result of the privatization of Eutelsat S.A., formerly an intergovernmental organization.

19. 98% of the share capital of Eutelsat Communications S.A. is held by Bpifrance Participations (formerly named Fonds Stratégique d'Investissement), a *société anonyme* formed in 2008 to enhance equity in France and help stabilize French companies during the economic crisis. Approximately 50% of Bpifrance Participations' share capital is held by the Caisse des Dépôts et Consignations (the "CDC") and approximately 50% of its share capital is held by the French State. Bpifrance Participations must present its strategic plans and annual report to the supervisory commission of the CDC. The Bpifrance Participations' board of directors has nine members. Three of the directors are representatives of the CDC, three of the directors are representatives of the French State and two of the directors are independent directors. The chief executive officer of Bpifrance Participations is appointed by its board of directors. The address of Bpifrance Participations is 27-31, avenue du Général Leclerc, 94710 Maisons-Alfort, Cedex, France.

The CDC is a financial institution wholly owned by the French State and under the supervision of the French Parliament that serves the general interest and the economic development of France. CDC has a mission of long-term investment. Approximately 50% of the CDC's recurring and non-recurring net profit is paid to the French State. The CDC is managed by a chief executive officer, who is appointed by the President of the French State. The CDC is supervised by a supervisory commission of thirteen members, all of which are appointed by various sectors of the French government.

7.58% of the share capital of Eutelsat Communications is held by Fonds Stratégique de Participation (FSP). Backed by six major French insurance companies (BNP PARIBAS CARDIF, CNP ASSURANCES, CREDIT AGRICOLE ASSURANCES, SOGECAP (SOCIETE GENERALE group), GROUPAMA and NATIXIS ASSURANCES), the FSP is a long-term equity investor in French companies. Through FSP, insurance companies and key institutional investors with long-term liabilities channel some of France's long-term savings into equity investments.

6.73% of the share capital of Eutelsat Communications S.A. is held by China Investment Corp. ("CIC") through Flourish Investment Corporation (0.014%), Best Investment Corporation (0.035%) and Fullbloom Investment Corporation (6.68%), all organized under the laws of the People's Republic of China. Information about CIC can be found on its website: www.china-inv.cn.

To the best of Eutelsat Communications S.A.'s knowledge, no other shareholders own, directly or indirectly, more than 10% of its share capital or voting rights. Eutelsat Communications S.A. is managed by a board of directors that currently has ten members, each of whom has a four-year renewable term of office. Currently, seven of the directors are independent, two are affiliated with the Bpifrance Participations. No decisions of the board of directors can be taken or be blocked by two directors. Neither the Bpifrance Participations, nor any of the CIC Entities or FSP, nor any foreign government or person controlled by or acting on behalf of a foreign government has or will have the right or power to appoint any of Eutelsat Communications S.A.'s principal officers. None of the CIC Entities or FSP has the right or power to appoint any of Eutelsat Communications S.A.'s directors.

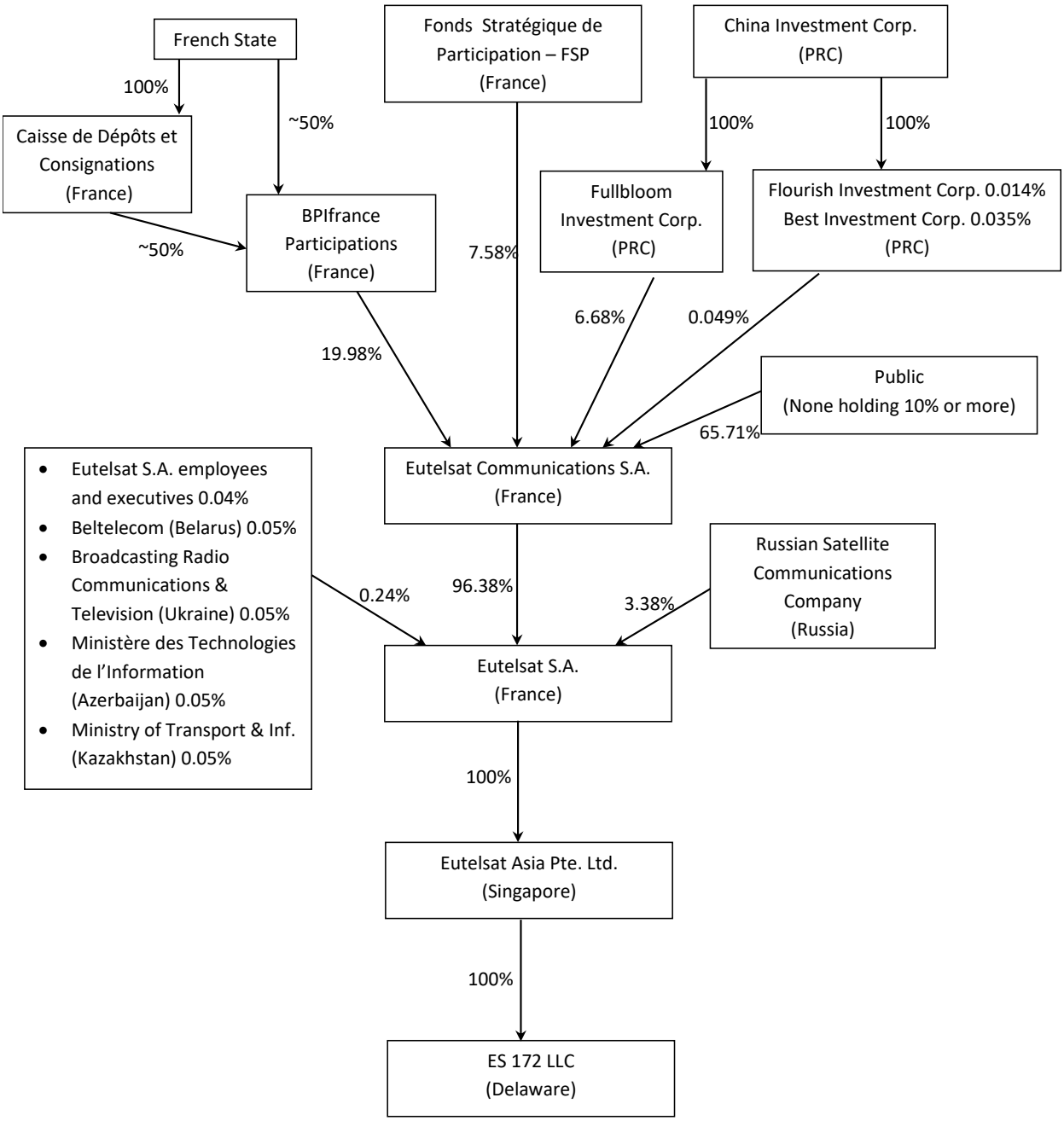
More information about Eutelsat Communications S.A., its shareholders, and its governance can be found on its website at www.eutelsat.com.

The following individuals are managers of ES 172 LLC:

Julie Burguburu, President

Michael Freundlich, Vice President

The individuals listed above can be contacted c/o Eutelsat Communications S.A., 32 boulevard Gallieni, 92130 Issy les Moulineaux, France. Ms. Burguburu is a citizen of the Republic of France and Mr. Freundlich is a dual citizen of the United States and the Republic of France.


French State
100%
~50%
Caisse de Dépôts et Consignations (France)
~50%
BPIfrance Participations (France)
Fonds Stratégique de Participation – FSP (France)
7.58%
China Investment Corp. (PRC)
100%
100%
Fullbloom Investment Corp. (PRC)
Flourish Investment Corp. 0.014%
Best Investment Corp. 0.035%
(PRC)
6.68%
0.049%
19.98%
Public
(None holding 10% or more)
65.71%
Eutelsat Communications S.A. (France)
Eutelsat S.A. employees and executives 0.04%
Beltelecom (Belarus) 0.05%
Broadcasting Radio Communications & Television (Ukraine) 0.05%
Ministère des Technologies de l'Information (Azerbaijan) 0.05%
Ministry of Transport & Inf. (Kazakhstan) 0.05%
0.24%
96.38%
3.38%
Russian Satellite Communications Company (Russia)
Eutelsat S.A. (France)
100%
Eutelsat Asia Pte. Ltd. (Singapore)
100%
ES 172 LLC (Delaware)

EUTELSAT 174A Space Debris Mitigation Plan
(prepared for the Federal Communications Commission)

ISSUE/REVISION: Issue 1, Rev. 1

ISSUE DATE: 13 January 2021

Prepared by:	*Position*	*Signature*	*Date*
D. Zamora	Head of Flight Dynamics		

Approved by:	*Position*	*Signature*	*Date*
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CHANGE RECORD

Date	*Issue/rev*	*Pages affected*	*Description*
22/11/2017	1/0	All	First issue.
13/01/2021	1/1	4	Remove end of life expected date. Update list of applicable and reference documents.

TABLE OF CONTENTS

1. Introduction

This document describes the space debris mitigation plan that Eutelsat Communications S.A ("Eutelsat") shall apply to the EUTELSAT 174A satellite at the 174° East Longitude (E.L.) orbital location. The satellite, formerly named EUTELSAT 172A and licensed by the Federal Communications Commission to operate at 172° E.L., is being replaced by the EUTELSAT 172B satellite at that location and is available for relocation to 174° E.L.

Eutelsat 174A is based on the Thales Alenia Space Spacebus 4000 bus and it was manufactured according to European standards and specifications. The satellite is 3-axis stabilised and uses bi-propellant chemical propulsion for attitude and on-station control.

Eutelsat 174A was launched in 2005.

2. Related documents

2.1. Applicable Documents

1. EUTELSAT Space Debris Mitigation Plan. Issue 3.0. EUT_CTL_SAT_QMS_PLN_00021, 6 April 2020.
2. FCC. Orbital Debris Mitigation Standard Practices. FCC 04-130. June 21, 2004.
3. Mitigation of Orbital Debris in the New Space Age. Doc. Number: 2020-13185. August 25 2020.

2.2. Reference Documents

1. European Code of Conduct for Space Debris Mitigation. Issue 1.0. 28 June 2004.
2. IADC Space Debris Mitigation Guidelines. IADC-02-01. Revision 2. March 2020.
3. Space Product Assurance. Safety. ECSS-Q-40C Rev. 1. 15 February 2017.
4. NASA. Process for Limiting Orbital Debris. NASA-STD-8719.14 (Revision B). 25 April 2019.
5. ITU Environment Protection of the Geostationary Orbit. S.1003-2 (12/2010).
6. 2007 UN COPUOS. Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space
7. U.S. Government Orbital Debris Mitigation Standard Practices November 2019 Update.

3. EUTELSAT 174A Operations

Eutelsat operates the satellite to control and limit the amount of debris released in a planned manner during normal operations, and assesses and limits the probability of the space station becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal.

Eutelsat has assessed the amount of debris released in a planned manner and no intentional debris will be released during normal operations of the EUTELSAT 174A

spacecraft. A safe operational configuration of the satellite system is ensured thanks to the hardware design and operational procedures

Eutelsat minimizes the probability of the satellite becoming a source of debris by collisions with large debris or other operational satellites. Eutelsat assessed and determined that, with the exception of the temporary colocation with EUTELSAT 172B at 172° E.L., there are no other satellites located at or sufficiently near EUTELSAT 174A's planned orbital location that might result in overlap of satellite orbit control windows.

EUTELSAT 174A will be controlled within its orbit control window (174.0° E.L. +/- 0.1°) by standard routine periodic orbit correction manoeuvres. In case of anticipated violation of the window, correction manoeuvres would be implemented to avoid such violation.

Eutelsat has assessed the probability of accidental explosions during and after completion of mission operations. Thanks to design safety margins, the probability of occurrence of accidental explosion of the EUTELSAT 174A satellite is negligible.

Satellite design is such that high levels of thruster activity and orbit perturbation do not result when foreseeable onboard events occur

4. EUTELSAT 174A End of life disposal

The post-mission disposal activities have been planned as follows:

1. The orbit of the satellite will be raised by 300 km in order to ensure that the spacecraft will not re-enter into the GEO protected region (GEO height +/- 200 km) in the long term. A mass of 13.3 kg of propellant have been allocated and reserved with a confidence level of 99% to carry out the post-mission disposal manoeuvres. The FCC will be informed of any significant change to the above quantity of propellant.

   The minimum perigee height to avoid re-entering into the GEO protected region can be computed using the IADC formula applied to this satellite:

   $$\Delta H\ (\text{km}) = 235 + 1000 \cdot (A/m) \cdot \text{eff} = 276\ \text{km}$$

   where the final term is the effective area/mass ratio of the satellite. Therefore, the planned 300 km above GEO height is sufficient to satisfy the 276 km requirement.

   Eutelsat will monitor the remaining propellant to ensure that sufficient fuel remains in the tanks to reach the 300 km minimum perigee.

2. The satellite tracking, telemetry and control operations are planned to avoid interference and coordinated with potentially affected satellite networks.

3. As part of the EOL activities, EUTELSAT 174A energy sources will be rendered inactive such that debris generation will not result from the conversion or dissipation

of energy sources onboard the satellite. For EUTELSAT 174A, this involves the following:

- Discharge the batteries during EOL operations and isolate them from the solar arrays to prevent further electrical energy storage.

- Switch off the momentum wheels.

- Deplete and eventually vent the propellant tanks, which allows depressurizing during passivation operations and results in only negligible residuals remaining in the tanks. In addition, the tanks are "leak before burst" designed. Therefore, the risk of break-up is negligible.

- All pyrotechnic systems are fired at initial stage of satellite operations. Those systems do not generate any debris.

5. Notifications

Eutelsat undertakes to provide the relevant bodies as required (UNCOPUOS, FCC, ITU, French ANFR, etc.) with all appropriate notifications as required by law or regulations for Eutelsat satellites including but not limited to those concerning initial entry of service, location, relocations, inclined orbit operations and de-orbiting operations.