Exemption No. 10761

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98057-3356

In the matter of the petition of **LIVETV** for an exemption from § 25.571(e)(1) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2013-0372**

GRANT OF TIME-LIMITED EXEMPTION

By letter dated April 16, 2013, Oscar Hernandez, Lead Certification Engineer, LiveTV, 8900 Hangar Boulevard, Orlando, FL, 32827, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of § 25.571(e)(1) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would permit installation of Ka Band radomes on Boeing Model 757-300 airplanes that do not meet FAA bird-strike damage-tolerance requirements.

The petitioner requests that the exemption remain valid for one year from the date that the Supplemental Type Certificate (STC) is issued. (The FAA will specify an exact date.) Within that time, the applicant would demonstrate full compliance to the applicable requirements.

The petitioner requests relief from the following regulation(s):

Section 25.571(e)(1) – Damage-tolerance (discrete source) evaluation. The airplane must be capable of successfully completing a flight during which likely structural damage occurs as a result of –

> (1) Impact with a 4-pound bird when the velocity of the airplane relative to the bird along the airplane's flight path is equal to V_c at sea level or $0.85V_c$ at 8,000 feet, whichever is more critical …

This section defines required structural requirements for damage to the airframe from a bird strike.

The petitioner supports its request with the following information:

This section quotes the relevant information from the petitioner's request. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at http://regulations.gov, in Docket No. FAA-2013-0372.

Safety and Public Interest

The petition would not adversely affect safety because of the extremely low probability of a bird strike as summarized below. This conclusion is supported by close to 10 million flight hours without a bird strike occurring to any LiveTV radome. These legacy radomes, installed on B-737s and A320s, are dimensionally identical and placed in the same relative airframe location, thus allowing LiveTV to combine their service experience to show an additional margin of safety. Moreover, the aircraft's frontal fuselage shadows the Ka Band radome due to the aircraft's angle of attack during all but the most extreme flight operations.

Public interest to grant the exemption is supported by the fact that LiveTV is currently working closely with the FAA on an airworthiness directive relating to the legacy radome which is experiencing in-service fatigue cracks. Having the Ka radome available to replace the legacy radome will support continued airworthiness and therefore be in the public interest. The two radomes have similar geometry and profiles and consequently the Ka radome is no more susceptible to a bird strike event.

Radome Design

The design of the new Ka Band radome is an aerodynamic shape, similar to previous designs, with minimal height. It is located on the crown of the fuselage and aft of the wing spar to reduce the aerodynamic influence on the original airframe. This location ensures that a bird strike event will not occur throughout the aircraft's normal flight operations due to the aircraft's angle of attack (AOA). In addition to these physical characteristics the new radome incorporates engineering advances in composite materials and lessons learned based on LiveTV's 13 years of experience in radome design, manufacturing, and maintenance.

LiveTV chose the radome design, its location on the aircraft and method of compliance for § 25.571(e)(1) over 18 months ago. A number of material tests, analyses, and reports have been prepared on the radome specifically and most of the engineering needed for the Ka Band Connectivity System has also been completed, placing this project in its final stages.

As part of the ongoing certification efforts for the referenced project LiveTV submitted a Composite Radome Hazard Assessment (CRHA) report to the Chicago and Atlanta Aircraft Certification Offices (ACO) to substantiate its position on the improbability of a bird strike to the radome based on an angle of attack greater than 0.59 degrees. The CRHA was based, in large part, on the 1978 preamble adopting § 25.571(e) in which the FAA recognized that the word "likely" (which also appears in the current rule) had a "substantive probability connotation ...." (43 FR 46240, October 5, 1978). This statement supports LiveTV's view that compliance with § 25.571(e) may be demonstrated by submitting a suitable probability analysis as recognized in other bird strike rules.

However, after further review of the Airbus A320 CRHA report submitted for another project using the same radome, the FAA informed LiveTV that additional substantiation for compliance with § 25.571(e)(1), Amendment 25-132, was required. Therefore, additional time is needed to re-evaluate and substantiate the Ka radome design. Pending the accomplishment of this work, the FAA indicated a willingness to consider granting an exemption for a limited period.

The affected operators have advised LiveTV that they will not make their aircraft available for the prototype installations unless an exemption has been granted. Accordingly, LiveTV requests that the exemption be issued as soon as possible and that it remain valid for a period of one year from the date of STC issuance.

International operations

The operators of U.S.-registered aircraft with earlier LiveTV IFE designs installed routinely fly to the Caribbean as well as North, Central and South America. The new Ka Band radome is expected to operate in the same regions. Therefore, in accordance with § 11.83 Live TV requests this exemption apply to both domestic and international operations.

As the State of Registry for most of the aircraft on which the modification will be installed the FAA will continue to be responsible for the airworthiness and continued airworthiness of these aircraft wherever they operate.

Good Cause Exists to Issue the Exemption without Notice and Comment

LiveTV requests that the FAA issue the exemption without publication for comment in the Federal Register.

Section 11.87 lists four factors considered by the agency in deciding whether a petitioner has shown good cause for the FAA not to delay action on the petition. Those factors are set forth below in italics along with the company's response in plain text:

(a) *Whether granting the petition would set a precedent:*

According to the FAA's exemption data base, eight exemptions have been granted to § 25.571(e)(1). Additionally, the FAA has permitted aircraft to operate for a limited period of time pending the installation of required modifications to address a compliance issue discovered late in the certification process.

(b) *Whether the relief requested is identical to exemptions previously granted:*

The relief requested in this petition is different from the other grants of exemption from § 25.571(e)(1) in which applicants requested an exemption to use 0.85 V_c at 8,000 feet rather than V_c from sea level to 8,000 feet as the rule required at that time.

(c) *Whether delaying action would adversely affect LiveTV:*

In light of the importance of the Ka band project to LiveTV's core business, the rapidly changing technology involved in this modification, the project's advanced stage, and the disruptions to operators that have contracted for the Ka Band system, delaying action on the petition would adversely affect LiveTV.

(d) *Whether the petition was filed in a timely manner:*

The petition is timely filed. LiveTV has had frequent discussions on this subject with the Chicago and Atlanta ACOs and the Transport Airplane Directorate for the last several weeks.

In light of the above considerations LiveTV submits that good cause exists not to delay action on this request.

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for Federal Register publication for public comment because any delay in acting on this petition would be detrimental to LiveTV. While the request is not identical to previously granted requests, it will not set a precedent in the long term because this is a unique situation. We agree that this petition was filed in a timely manner.

The FAA's analysis

The FAA recently became aware of the inconsistent application of bird strike requirement of § 25.571(e)(1) to radomes installed on airplanes. Section 25.571(e)(1) requires the bird strike assessment to be performed at V_c at sea level or $0.85V_c$ at 8,000 feet, whichever is more critical.

Some applicants had been limiting the speed at which bird strike is assessed to 'typical' operational speeds. By limiting speed, an applicant could show that the airplane is always at a positive-pitch attitude, and that the radome will always be effectively "shadowed" by the crown of the forward fuselage. The FAA recently reiterated to all applicants that the rule requires consideration up to the design speeds stated in the rule.

In support of its petition, LiveTV has presented a probability analysis showing that a bird strike on the radome is extremely improbable. We agree that the probability of a bird strike is low. However, the requirement itself does not allow probability to be used to avoid assessment of the bird strike, and therefore, an exemption is necessary. Limiting the exemption to one year does further diminish the safety risk.

The term "likely" in the rule qualifies the term "structural damage," rather than bird impacts. In FAA Policy Memo PS-ANM100-1993-00041, issued 9/1/1993, we provide guidance on the term "likely structural damage" in the context of uncontained engine failure:

> In responding to a commenter who thought the word "likely" in the lead-in of the proposed § 25.571(e) was not necessary, the FAA disagreed by saying that "the word likely has a substantive probability connotation in this context." The assumption is that the engine failure event will occur but there is some latitude in defining the location and extent of damage inflicted by the engine debris.

Probability cannot be applied to airspeed or to the probability of impact itself, because both the impact and the airspeed (V_c) are stated directly in the rule. The applicant must assume the bird strike will occur at V_c or $0.85V_c$ as stated in the rule, and then determine the likely structural damage that would result from that bird strike.

In consideration of the above, the FAA concludes that granting this exemption will not adversely affect safety. For the reasons stated earlier by the petitioner, the FAA concludes that granting this time-limited exemption would be in the public interest.

The FAA's decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, LiveTV is hereby granted an exemption from 14 CFR 25.571(e)(1). The exemption is granted to the extent necessary to allow LiveTV to install Ka radomes on Boeing Model 757-300 airplanes.

This exemption terminates one year from the date it is granted, unless sooner superseded or rescinded. On or prior to that date, LiveTV must demonstrate full compliance to the bird-strike requirements of § 25.571(e)(1), or the affected STC becomes void.

Issued in Renton Washington, on May 9, 2013.

/s/

Jeff Duven
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service