

The image features a stylized blue logo for 'Avionics for NextGen' overlaid on a semi-transparent view of an aircraft cockpit. The cockpit background shows various instruments, gauges, and control panels. The logo consists of the word 'Avionics' in a large, bold, blue, italicized sans-serif font. Below it, the word 'FOR' is written in a smaller, light blue, spaced-out sans-serif font, flanked by horizontal lines. At the bottom of the logo, the words 'NEXTGEN' are written in a large, bold, blue, spaced-out sans-serif font.

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Enhanced Flight Vision Systems

- EFVS regulation
- EFVS operational concept
- EFVS authorizations

EFVS Regulation

EFVS rule published: January 2004

Amended EFVS rule published: December 13, 2016

Effective date: March 21, 2017

Compliance date: March 13, 2018

What's in the new EFVS rule?

- Added definitions for EFVS and EFVS Operation
- Permits EFVS to be used in lieu of natural vision to descend to touchdown and rollout.
- Establishes training, recent flight experience, and proficiency requirements for EFVS.
- Addresses provisions that permit Parts 121, 125, or 135 operators who use EFVS-equipped aircraft to dispatch, release a flight, or takeoff under IFR in accordance with the operational minimums specified in their EFVS authorization.
- Permits Parts 121, 125, or 135 operators who use EFVS-equipped aircraft to initiate or continue an approach when weather is below minimums specified in the instrument approach procedure
- Reorganizes the current EFVS regulations. 91.175(l) and (m) moved to § 91.176(b).
- Requires FAA authorization for Part 91 Operators conducting EFVS operations under § 91.176(a).

What is an EFVS?

- The definition of EFVS is in § 1.1 and EFVS equipment requirements are in § 91.176
- An installed aircraft system that uses a HUD or equivalent display to present:
 - Real-time sensor image of the outside scene
 - Flight information & flight symbology
 - Command guidance for the approach to be flown



An EFVS is not ...

The following vision systems are not an EFVS and cannot be used to conduct EFVS operations under § 91.176:

- Enhanced Vision System (EVS)
- Head-down display (HDD)
- Synthetic Vision System (SVS) / Synthetic Vision Guidance System (SVGS)
- Night Vision Imaging System / Night Vision System (NVIS/NVG)



Enhanced Flight Visibility

“...the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent topographical objects may be clearly distinguished and identified by day or night by a pilot using an enhanced flight vision system.”



EFVS Image



Outside View

EFVS Operation

“...an operation in which visibility conditions require an EFVS to be used in lieu of natural vision to perform an approach or landing, determine enhanced flight visibility, identify required visual references, or conduct a rollout.”

EFVS Operations to 100ft above the TDZE § 91.176(b)

- An operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA/DH or MDA down to 100 feet above the TDZE.
- To continue the approach below 100 feet above the TDZE, a pilot must have sufficient flight visibility to identify the required visual references specified in § 91.176(b)(3)(iii) with natural vision and must continue to use the EFVS to maintain the enhanced flight visibility.
- Conducted on straight in precision and non-precision approaches
- Not permitted on circling approaches

EFVS Operations to Touchdown and Rollout

§ 91.176(a)

- An operation in which the pilot uses EFVS in lieu of natural vision to provide enhanced flight visibility and identify required visual references to descend below DA/DH and land
- Conducted on precision approaches

EFVS Situation Awareness



An EFVS may provide safety benefits during aircraft operations that are not defined as an EFVS operation. Using an EFVS for situation awareness in these cases does not require an authorization.



EFVS Operational Concept

Equivalent Visual Operations

EFVS visual advantage is the difference between a pilot's natural visibility and the pilot's enhanced visibility using the EFVS.

EFVS Operational Minimums are minimum visibilities that should provide a high expectation that a pilot using an EFVS will have enhanced flight visibility equal to or greater than the IAP visibility at DA/DH/MDA.

OpSpec C048 (part 121,125 and 135) authorizes the use of a visual advantage to determine and use EFVS Operational Minimums for operators seeking to depart for a destination or begin an approach when weather is reported below IAP minimums.

Authorization C048

- EFVS Operations to touchdown and rollout - § 91.176(a)
 - Authorization required for Parts 91, 91K, 121, 125, 129, and 135 operators

- EFVS Operations to 100 feet above the TDZE – § 91.176(b)
 - Authorization required for Parts 91K, 121, 125, 129, and 135 operators
 - LOA not required for Part 91 operators (other than 91K); optional LOA for int’l ops at operator’s request

Table 1 – Authorized Airplanes, Equipment, and EFVS Operations

Airplane (M/M/S)	EVS Sensor	Authorized EFVS Operation	EFVS Visual Advantage	Limitations and Provisions
(With sub-list attribute)	(Drop Down)	(Drop Down)	(Text Box)	(Drop Down)

Operational Provisions

Provisions in the authorization are based on the amount of enhanced flight visibility an EFVS provides

- Authorization may be obtained to dispatch an airplane when the forecast visibility at destination is below minimums
- Authorization may be obtained to continue an approach beyond the Final Approach Fix when reported visibility is below minimums

Guidance Material and Resources

AC 90-106A operational approval criteria

AC 20-167A airworthiness criteria

FSB / OSR supplemental training on EFVS and visual advantage

AFM EFVS certification information / limitations

**FAA Flight Standards - Flight Technologies
and Procedures Division** - policy support