July 15, 2021

Federal Specification for the Star-of-Life Ambulance
KKK-A-1822F
Dated 1 August 2007
Change Notice 14

THIS CHANGE NOTICE IS NOT CUMULATIVE AND SHALL BE RETAINED UNTIL SUCH TIME AS THE SPECIFICATION IS REVISED.

The following changes, which form a part of FED-STD KKK-A-1822F, dated 1 August 2007, are approved by the General Services Administration, for use by all agencies.

If you have technical questions regarding this change notice, please contact John McDonald at jmcdonald@gsa.gov for assistance.

JOHN HAMPSON

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2.2 OTHER PUBLICATIONS.

Delete the following publications:

AUTOMOTIVE MANUFACTURERS EQUIPMENT COMPLIANCE AGENCY(AMECA): Approval of Motor Vehicle Safety Equipment (emergency lights and sirens)

AMD 026 Ambulance Emergency Lighting System Configuration

SAE J541 Voltage Drop for Starting Motor Circuits
SAE J689 Approach, Departure, and Ramp Break over Angles
SAE J1054 Warning Lamp, Alternating Flashers
SAE J1318 Strobe Warning Lights

Add the following publications:

TMC RP 186 WIRE AND CABLE REPAIR GUIDELINES
TMC RP 142 High-Speed Data Link Cable Repair Guidelines
SAE J845 Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles

3.4.10.6 FLOOR HEIGHT.

Delete the existing text and replace it with the following:

The finished floor (loading) height shall be compatible with the litter fastener assembly system specified by the purchaser in 3.11.6 for the cot system(s) they intend to utilize.

3.7.2.1 WIRING CRITERIA.

Add the following text:

13. All splices to OEM wiring shall be made in accordance with TMC RP 186
14. All splices to OEM data cables shall be made in accordance with TMC RP 142

3.7.11 MARKING OF SWITCHES, INDICATORS, AND CONTROL DEVICES.

Delete the existing text and replace it with the following:

All switches, indicators, and control devices supplied by the FSAM shall be visible to the EMSP. They shall be permanently identified with symbols and/or at least 12-point letters for the noun or function, and 8-point letters for the remainder of the legend**.** The identifications shall be contrasting colors grouped according to function and mounted in illuminated or backlit panel(s) or the console.

3.8.2 AMBULANCE EMERGENCY LIGHTING

Delete the existing text and all subsections and replace them with the following:

An optical emergency lighting system shall provide the ambulance with 360° of conspicuity for safety during its missions.

The optical warning system shall include an upper and a lower warning level of optical warning devices. The optical power requirements for each level shall be met by the warning devices in that particular level without consideration of the warning devices in the other level.
The maximum continuous electrical load for the optical warning system shall not exceed 40 Amperes at 12.8 VDC.

The system shall not impair the effectiveness of the ambulance's exterior lighting with conformity to the requirements of FMVSS No. 108.

3.8.2.1 EMERGENCY LIGHTING SYSTEM CONFIGURATION.

For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four warning zones.

The four warning zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the ambulance.

Each optical warning device shall be installed and connected to the ambulance electrical system in accordance with the requirements of this specification and the requirements of the manufacturer of the device.

3.8.2.2 PHOTOMETRIC, CHROMATICITY, AND PHYSICAL REQUIREMENTS

The flash rate of any optical source shall be between 60 and 240 flashes per minute.

The optical warning light system shall have sufficient optical sources on each level and in each zone so that failure of a single optical source does not create a photometric measurement point in the zone as the failed optical source without a visible warning signal at a distance of 100 ft from the geometric center of the ambulance.

The optical energy provided by nonflashing optical sources, or the steady burning part of an optical flash characteristic, shall not be included in the calculations of the zone's total optical power.

Permissible optical source colors or combinations of colors in each zone, within the constraints imposed by applicable laws and regulations, shall be as shown in Table 2.

Table 2 Zone Colors

Color	Calling for Right-of-Way	Blocking Right-of-Way
Red	Any Zone	Any Zone
Blue	Any Zone	Any Zone
Yellow	Any zone except A	Any Zone
White	Any zone except C	Not Permitted
Green	Any zone	Any zone

Optical energy provided by green optical sources shall not be included in the calculations of the zone's total optical power or meeting the requirements for any required lights.

All colors shall be as specified in SAE J578, *Chromaticity Requirements of Ground Vehicle Lamps and Lighting Equipment*, for red, blue, yellow, green, or white.

The optical center of all upper-level optical warning devices shall be 102 in or less and lower-level optical warning devices shall be between 18 in to 48 in above level ground.

3.8.2.2.1 Upper-Level Optical Warning Devices.

The upper-level optical warning devices shall be mounted as high as practicable, but not over 102 in , at the optical center.

To define the clearance lines of the ambulance, the optical center of the upper-level optical warning devices shall be mounted as high and as close to the corner points of the ambulance as is practicable

3.8.2.2.2 Lower-Level Optical Warning Devices.

One or more lower-level optical warning devices shall be visible from the front and the side of the ambulance.

To define the front clearance lines of the vehicle, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted on or forward of the

front wheel centerline and as close to the front corner points of the ambulance as is practicable.

The optical center of the device(s) shall be between 18 in and 48 in above level ground.

For each operating mode, the combined optical power of all the optical sources shall meet or exceed the zone's total optical power requirements shown in Table 1

Table 1 Optical Power Requirements

		Mode of Operation					
		Calling for Right-of-Way			Blocking-Right-of-Way		
Zone	Level	H Total	At Any H Point	At Any Point 5 Degrees Up or 5 Degrees Down from H	H Total	At Any H Point	At Any Point 5 Degrees Up or 5 Degrees Down from H
A	Upper	1,000,000	10,000	3,500	400,000	10,000	3,500
B	Upper	200,000	8,000	3,500	200,000	8,000	3,500
C	Upper	400,000	10,000	3,500	800,000	10,000	3,500
D	Upper	200,000	8,000	3,500	200,000	8,000	3,500
A	Lower	150,000	3,750	1,300	150,000	3,750	1,300
B	Lower	75,000	1,875	650	75,000	1,875	650
C	Lower	0	0	0	0	0	0
D	Lower	75,000	1,875	650	75,000	1,875	650

Notes:
1. All values are in candela-seconds/minute.
2. H = Horizontal plane passing through the optical center.
3. The values in the H Total columns are the total of 19 data point values for each light, with data points on the boundary between zones counted in both zones.

4. No individual photometric measurement point shall be less than that shown in table 1.

3.8.2.2.3 Tests of Optical Warning Devices.

3.8.2.2.3.1 Mechanical and Environmental Test.

All optical warning devices and components shall be tested in conformance with SAE J845, *Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles*

3.8.2.2.3.2 Photometric Test Procedures for Optical Devices.

Testing shall be performed by, or on behalf of, the device manufacturer to ensure compliance with the requirements in this specification.

The results of the testing shall be used to determine compliance with this specification, and all required photometric data shall be available, upon request, from the optical warning device manufacturer.

All optical warning devices shall be tested with the test procedures of SAE J845, *Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles*

(1) Optical measurements shall be made for the photometric measurement points defined in 3.8.2.2.3.3

3.8.2.2.3.3 Photometric Measurement Points

Measurements shall be made along the horizontal plane that passes through the optical center, beginning at the optical center and repeated at 5-degree intervals to the left and to the right of the optical center throughout the active horizontal angle of light emission of the optical source.

Measurements shall be repeated at 5 degrees up and 5 degrees down from the horizontal plane that passes through the optical center, beginning at a point on the vertical plane passing through the optical center and repeated at 5-degree intervals to the left and to the right of this vertical plane throughout the active horizontal angle of light emission of the optical source.

If the optical warning device contains more than one optical source, the test shall be permitted to be done with multiple optical sources active in the device or repeated for each optical source.

3.8.2.2.3.4 Compliance Documentation. The ambulance manufacturer shall demonstrate compliance of the optical warning system optical power requirements by one of the following methods:

(1) Certification that the optical warning devices were installed within the geometric parameters specified by the manufacturer of the devices and referencing the certification by the optical warning device manufacturer that the system meets or exceeds the minimum optical power requirements for the specified zone and level.

(2) Certification that a mathematical calculation based on photometric test reports for individual optical sources provided by the manufacturer of the devices and performed by the FSAM to demonstrate that the combination of individual devices as installed meets the requirements for the specified zone and level

3.8.2.3 SWITCHING ARRANGEMENTS

At least one master optical warning system switch that energizes all the optical warning devices shall be provided.

The optical warning system shall be capable of at least two separate signaling modes during emergency operations.

One mode shall signal to drivers and pedestrians that the ambulance is responding to an emergency and is calling for the right-of-way.

One mode shall signal that the ambulance is stopped and is blocking the right-of-way.

The use of some or all of the same warning lights shall be permitted for multiple modes provided the other requirements of this section are met.

The optical signaling characteristics shall be permitted to change within each of the signaling modes, provided the other requirements of this section are met.

3.10.16 INTERIOR SURFACES.

Delete the existing text and replace it with the following:

The interior of the body shall be free of all sharp projections. All hangers or supports for equipment and devices shall be mounted as flush as possible with the surrounding surface. Interior body lining and cabinetry materials, excluding the cab compartment, shall be selected to minimize dead weight.

The finish of the entire patient compartment, including interiors of storage cabinets, shall be:

1. resistant to soap, water and disinfectants.
2. mildew resistant.
3. fire resistant.
4. easily cleaned/disinfected (carpeting, cloth, and fabrics are not acceptable).

3.15 ADDITIONAL SYSTEMS, EQUIPMENT, ACCESSORIES, AND SUPPLIES.

Add the following text:

NOTE: SELECTION OF OPTIONS MAY REQUIRE CHANGES THAT RESULT IN NON-COMPLIANCE WITH THE MINIMUM REQUIREMENTS FOR A STANDARD ITEM.

THIS APPLIES TO MINIMUMS DIRECTLY IMPACTED BY THE OPTION

3.15.1 ADDITIONAL AND OPTIONAL EQUIPMENT.

Delete the following text:

In no event shall the specified or furnished optional item(s) reduce the quality and intent of the ambulance but shall enhance its design and purpose.

3.15.3 CONFIGURATION WORKSHEET

Delete the existing text in item 33 and replace it with the following:

33. If a specific emergency lighting system is required in Section 3.8.2, list the emergency lighting manufacturer(s) to be used. State if there are specific state or local jurisdiction requirements (such as California steady burning red, etc.) The alternate approved lighting systems are NFPA 1901 and 1917.

If the length of the ambulance is over 25 feet or the optical center of the upper warning lights is over 102 in, utilize the alternate approved lighting systems listed above.

4.3.3 CRITERIA OF CERTIFICATIONS.

Delete the existing text and replace it with the following:

The initial testing and inspections required for certification shall be performed by:

1. A Nationally recognized testing laboratory, recognized by OSHA under Appendix A to 29 CFR 1910.7.

OR:

2. An ISO/IEC 17025 accredited laboratory by an accreditation body that is recognized by the National Cooperation for Laboratory Accreditation (NACLA) or is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of accreditation shall include AMD tests 005-025, 28 and the annex.

The individual certifications issued by the ISO/IEC 17025 accredited laboratory will remain valid for 5 years as long as the type of ambulance tested remains in production. Design changes during the 5 year certification period must be tested at the time of production release.

Certifications that appear on the ambulance need not be re-submitted (i.e.; DOT, EPA, etc.). Certification(s) will be acceptable in lieu of actual verification test during inspections providing supporting verifying data complying with 4.3.3 is on file for examination.

Certification from OEM and individual equipment manufacturers are acceptable providing they are not part of a system(s) or altered and in accordance with 4.3.4.

Type certifications of individual components and equipment products are acceptable.

Each ambulance constructed shall be tested by the FSAM to demonstrate compliance with AMD STM 5, 9, 10, 15, 21, & 25 and the annex. This is in addition to the initial type testing certification required.

4.2.1 QUALITY CONFORMANCE INSPECTION

Delete the existing text and replace it with the following:

Quality conformance inspection applies to all ambulance(s) offered for acceptance under the contract.

Quality conformance inspection shall consist of:

1. Workmanship inspection
2. Operational checks
3. Examination of the ambulance handbook
4. Verification of successful completion of AMD tests 005-025 and 28 and the Annex
5. Verification of successful completion of SAE standards, recommended practices and information reports J3026, J3027, J3043, J3057, J3058, J3102

4.4.1 TEST CRITERIA

Delete the existing text and replace it with the following:

The ambulance shall be prepared for operation in accordance with OEM’s recommendations, and AMD STM 005-025 & 28 and the annex. The ambulance shall successfully complete all parts of the quality conformance inspection

END OF CHANGE NOTICE 14