





NON TRANSFERABLE

TEST REPORT

Test Report No: SHL/310/2019-2020/3000010729/RT/4580				DATE : 05.02.2020	
1.0	Name and address of applicant and manufacturer.		Collins Aerospace 4200 Airport Drive NW, Bldg. B Wilson NC 27896-9643 USA		
2.0	Applicant communication ref no.		E-mail application Dt: 10.07.2019		
3.0	Description of test component: Fire Detection and Alarm System (FDAS) and Fire Detection and Suppression System (FDSS) as a component referred under CI no 2.1.1d of Part – I and 2.1d, Part – II of AIS135: 2016). Model name – “Collins Aerospace Kidde Technologies Automatic Fire Suppression System” (For details, refer Sr. No. 5.0 of this report.)				
4.0	Test standard:		- AIS-135: 2016. (Test witnessed at RISE labs – Sweden.)		
	Reference notification.		- GSR 246 (E) Dt: 29.03.2019 125-C 7(a) (b)		
5.0	Technical documents for the suppression system “Collins Aerospace Kidde Technologies Automatic Fire Suppression System” as Component., declared by applicant.				
Suppression Agent: Purple K Name of manufacturer – M/s Collins Aerospace USA		Number of suppression Cylinder:	1 no	Number of nozzles :	5 no
Suppression agent mass :	8.5 (kg)	Suppression agent cyl. volume	9.8 (L)	Type of nozzles :	CONE 5 nos
Propellant gas-	Nitrogen	working pressure :	24 bar	Typical nozzle assembly drawing No. 474946 Name of nozzle manufacturer – M/s Collins Aerospace USA	
Suppression agent main delivery hose:	3/4" hose - 5.5 m		Fittings, number of each type		
Suppression agent delivery hose:	3/8" hose.		90° elbow	1	
Distance to most remote nozzle :	11.3 m		45° elbow	5	
			Straight coupling	5	
Total length of agent delivery system:	26 m		T coupling	1	
Detection cable: Name of manufacturer: M/s. Linesense Fire Detection Ltd, United Kingdom	Drq no.4575743-x (460°F) FM approved : Yes		Total number of connections:	12	
Electronic control unit :	Manufacturer – M/s Collins Aerospace USA, Model Name – KT 50				
Audio visual alarm device :	Model Name – KT 50				
Nozzle mounting locations in the test apparatus (dim in m)	1	[0.84; 0.25; 0.88]	3	[0.84; 0.93; 0.80]	5 [2.33; 1.36; 0.53]
	2	[0.86; 0.60; 0.84]	4	[2.19; 0.23; 0.92]	
PREPARED BY:			CHECKED BY:		
					
V. S. KHAIRATKAR DY. GENERAL MANAGER			U. A. KULKARNI DEPUTY DIRECTOR		



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6.0	Test Objective: To conduct Fire detection and Alarm system (FDAS) Fire detection and suppression system (FDSS) test as per corresponding test requirements specified in Annex IV and V of AIS-135:2016 as a component.		
6.1	Note 1 - This report is for component approval only. Note 2 - Separate vehicle level installation report needs to be issued by competent test agency under CMVR 1989, to verify and establish compliance for respective vehicle model and its variants as applicable under AIS-135: 2016.		
7.0	Test results		
	CI No.	Test Requirements as a Component Annex IV (FDAS), Annex V (FDSS)	Results
7.1	Annex IV 2.0	min:s Low Fire Load checking for Automatic fire detection and suppression activation.	
		00:00 Start Ignition	
		00:10 Alarm Activation within 10 s	09.03 s
		Suppression System should have activated automatically	Suppression System was activated
7.2	Annex V 2.0	min:s High Fire Load	
		00:00 Start Ignition	
		00:10 Alarm Activation within 10 s	8.87 s
		01:20 Ignition of Pool Fires complete	
		01:50 Starting Diesel Spray	
		02:00 Manual activation of Suppression System	Fire was Fully extinguished after activation of Suppression System at 02:04 s
		02:30 Suppression System should have suppressed the Fire	
7.3	Annex V 3.0	min:s Low Fire Load	
		00:00 Start Ignition	
		00:10 Alarm Activation within 10 s	8.85 s
		01:00 Ignition of Pool Fires complete	
		01:30 Fan Activation	
		02:00 Manual activation of Suppression System	Fire was Fully extinguished after activation of Suppression System at 02:04 s
		02:30 Suppression System should have suppressed the Fire	
PREPARED BY:		CHECKED BY:	
			
V. S. KHAIRATKAR DY. GENERAL MANAGER		U. A. KULKARNI DEPUTY DIRECTOR	



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	CI No.	Test Requirements as a Component Annex IV (FDAS), Annex V (FDSS)	Results
7.4	Annex V 4.0	min:s High Fire Load with Fan	
		00:00 Start Ignition	
		00:10 Alarm Activation within 10 s	8.34 s
		01:00 Ignition of Pool Fires complete	
		01:30 Fan Activation	
		01:50 Starting Diesel Spray	
		02:00 Manual activation of Suppression System	Fire was Fully extinguished after activation of Suppression System at 02:04 s
02:30 Suppression System should have suppressed the Fire			
7.5	Annex V 5.0	min:s Re-Ignition	
		Pre-heating of Re-Ignition tube to reach Temp. 600°C	15 min
		00:00 End of Preheating when reaching predefined Temp.	Pre-heating to 600 °C
		00:30 Start of oil dripping on Re-Ignition Tube	
		00:45 Manual activation of Suppression System, only after ensuring sustained flame on the tube)	Suppression System activation at 45 s
01:30 No Re-Ignition shall occur (within next 45 s after extinguishing the Fire)	No Re-Ignition occurred in 45 s after activation of Suppression System		
8.0	Conclusion – FDAS and FDSS system with model name: System “Collins Aerospace Kidde Technologies Automatic Fire Suppression System” referred in CI No. 5.0 manufactured by M/s Collins Aerospace. complied with the requirements specified under Annex IV and V of AIS-135:2016 as a component. Reference RISE test report no : 9P05327 St: 20.12.2019		
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Place of Issue: PUNE		Date of Issue: 05/02/2020	



3.2. Additional Information

The following information is provided as part of response from ARAI email sent 3Jan2020 re: Details for report preparations.

1. ARAI: Name of manufacturer for – KT 50, detector, nozzle, cylinder, suppression agent
Kidde: All fire protection components are sourced through Kidde Technologies.
2. ARAI: Any specific model name to be mentioned for FDSS system?
Kidde: Kidde AIS-135 Compliant Fire Detection and Suppression System
3. ARAI: Schematic drg
Kidde: Reference RI.SE Report 9P05327 page 41 for system schematic used for AIS-135. Individual system schematics are not created due to system design/BOM changes vehicle-to-vehicle.
4. ARAI: A list in following format would be helpful
Kidde: Provided a list in the requested format

Sr. No.	Part Number	Nomenclature	Identification / label photo
1. 00064, 00029, 6477, 6433	477126-1XYZ	Fire Extinguisher, 9.8L, Vertical	See figure 3 on page 3(6) or page 2 of appendix 3 of RISE Report
2. Not serialized	474946	Nozzle	See figure 4, page 3(6) or page 3 of appendix 3 of RISE Report
3. Not serialized	475743-X	Linear Thermal Detector (LTD)	LTD is marked with Kidde Part Number 475743-X, where X is specific detector length
4. Will be serialized in production. The test article was not.	477338	KT-50 Controller	See figure 2-13 on page 7(8) of appendix 3 of RISE Report



