

TEST REPORT



ARAI/AED/20252026/3000048675/CT/1854 Date of Issue: 08-Dec-2025
ULR No.TC508525000001393F Discipline: Electronics

CONFIDENTIAL
Group: EMC

1.0	Name and address of the customer	HEELIX PROTECH LLP 1 st Floor, D-112, ANSA Industrial Estate, Saki Vihar Road Sakinaka, Mumbai Suburban-400076 Maharashtra	
2.0	Test Location	Test Location 1 The Automotive Research Association of India S.No. 102, Vetal Hill Off Paud Road, Kothrud,Pune 411038 India)	
3.0	Customer letter reference	PO No: 4300428955, Date: 12.08.2025	
4.0	Description of the Device Under Test (DUT)	DUT name	Fire Detection and Alarm Systems
		Manufacturer name	Vighnaharta Technologies Pvt Ltd.
		Model Name	Bus Fire Suppression System (BFSS-22 Mini)
		Model Number	HEX1224VDC
		Hardware Version	VTPL_1262 & VTPL_1263
		Software Version	V1.00.001
5.0	Test objective	To carry out Tests as per AIS-004 (Part 3), as amended from time to time. Details given in table 10.0	
6.0	Condition of the test component		

			Digitally signed by ADITYA AJIT PAPADE Date: 2025.12.08 19:18:49 +05'30'
A. R. POSTURE Dy. Engineer	S. H. JANAGOND Dy. General Manager	A. A. PAPADE General Manager	
Prepared By	Reviewed By	Approved By	

<p>7.0 FUNCTIONALITY VERIFICATION</p> <p>The DUT is Bus Fire alarm protection system with 24V supply and it consumes < 1 A. DUT have 3 zones: Zone 1 is for Engine Part, Zone 2 and 3 are for passenger area. At the time of testing, the fire control panel (which is the DUT) was observed for any false trigger. On the fire control panel, two LEDs were ON, One LED was for Battery indication and another for control panel status. The three zones had the below LED indications. LED 1: Fire, LED 2: Actuator, LED 3: Sensor fault (System fault) Zone 1: Engine compartment Zone 2 & 3: Passenger/ Occupant compartment At the ancillary side, one hooter to observe any fault/ false trigger, and 2 smoke detectors were present. Before and after test, smoke was induced to verify the working of smoke detector.</p>

<p>8.0 FUNCTIONAL STATUS CLASSIFICATION</p>
<p>8.1 Class A</p> <p>All functions of a device/system perform as designed during and after exposure to disturbance.</p>
<p>8.2 Class B</p> <p>All functions of a device/system perform as designed during exposure: however, one or more of them can go beyond specified tolerance. All functions return automatically to within normal limits after exposure is removed. Memory functions remain Class A.</p>
<p>8.3 Class C</p> <p>One or more functions of a device/system does not perform as designed during exposure but returns automatically to normal operation after exposure is removed.</p>
<p>8.4 Class D</p> <p>One or more functions of a device/system does not perform as designed during exposure and does not return to normal operation until exposure is removed and the device/system is reset by simple operator/use action.</p>
<p>8.5 Class E</p> <p>One or more functions of a device/system does not perform as designed during and after exposure and cannot be returned to proper operation without repairing or replacing the device/system.</p>

	
<p>A. R. POSTURE Dy. Engineer</p>	<p>S. H. JANAGOND Dy. General Manager</p>
<p>Prepared By</p>	<p>Reviewed By</p>

9.0 TEST DETAILS						
Sr. no.	Test title	Annexure no.	Number of pages	Reference standard	Acceptance Criteria	Functional status classification
9.1 Conducted transient immunity on supply line						
9.1.1	Pulse 1	01	08	AIS-004 (Part 3), as amended from time to time)	Class C	Class C
9.1.2	Pulse 2a				Class B	Class A
9.1.3	Pulse 2b					
9.1.3.1	Pulse 2b(12 V)				Class C	Class C
9.1.3.2	Pulse 2b(24 V)				Class C	Class C
9.1.4	Pulse 3a				Class A	Class A
9.1.5	Pulse 3b				Class A	Class A
9.1.6	Pulse 4					
9.1.6.1	Pulse 4 (12 V)				Class C	Class A
9.6.1.2	Pulse 4(24 V)				Class C	Class A
9.2 Radiated immunity test						
9.2.1	Radiated Immunity (BCI Method)	02	05	AIS-004 (Part 3), as amended from time to time	There shall be no degradation of performance of "immunity-related functions"	Meets the requirements.
9.2.2	Radiated Immunity (ALSE Method)	03	08			Meets the requirements.
9.3 Radiated emission test						
9.3.1	Radiated emission test	04	09	AIS-004 (Part 3), as amended from time to time)	Shall meet the limit line	Emission within the limit line.
9.4 Conducted transient emission test						
9.4.1	Positive Transient Emission	05	08	AIS-004 (Part 3), as amended from time to time	+150V for 24V	Emission within the limit line.
					+75V for 12V	
9.4.2	Negative Transient Emission				- 450V for 24V	Emission within the limit line.
					-100V for 12V	

10.0 CONCLUSION
DUT complies with the requirements of AIS-004 (Part 3), as amended from time to time.

		
A. R. POSTURE Dy. Engineer	S. H. JANAGOND Dy. General Manager	A. A. PAPADE General Manager
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