VERIZON FIRE RESISTANCE TEST CRITERIA

ACCEPT/ REJECT POSITION

ANSI T1.319-2002: Telecom Equipment Assemblies - Fire Propagation Risk Assessment Criteria

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The following table shows the position that Verizon is taking on the ANSI T1.319-2002 Fire Propagation Test Standard.

Section	Description	Verizon Comment
4	Fire propagation hazard objectives	
	Fire propagation hazard assessment criteria	
4.1	General	
4.2	Materials, components, cables, and wires	ACCEPT
4.3	Constructional assessment criteria	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
4.3.1	Limited power and passive equipment	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
4.3.2	Physical construction	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED
4.3.3	Equipment or compartments containing horizontally oriented printed circuit boards	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED.
4.4	Equipment subjected to fire propagation test	ACCEPT

Section	Description	Verizon Comment
5	Fire propagation hazard test apparatus and calibration	
5.1	Test apparatus	
5.1.1	Test building	ACCEPT
5.1.2	Collection hood and exhaust duct	ACCEPT
5.1.2.1	Collection hood	ACCEPT
5.1.2.2	Exhaust duct	ACCEPT
5.1.3	Instrumentation	TEST INSTRUMENTATION SHALL INCLUDE MEASUREMENTS OF HEAT RELEASE, SMOKE, AND EVOLVED GASES AS DESCRIBED IN GR-63-CORE SEC. 5.2.2.
5.1.3.1	Flow rate	ACCEPT
5.1.3.2	Gas sampling equipment	ACCEPT
5.1.3.3	Oxygen analyzer	ACCEPT
5.1.3.4	Data acquisition	ACCEPT
5.1.3.5	Video recording equipment	MUST PROVIDE THERMAL IMAGING VIDEO RECORDINGS OF THE EUT

Section	Description	Verizon Comment
		PER THE VERIZON CHECKLIST.
5.1.3.6	**Line burner**	ACCEPT
5.1.4	**Methane flow control system**	ACCEPT
5.1.4.1	**Automated mass flow control system**	ACCEPT
5.1.4.2	**Manual mass flow control**	ACCEPT
5.1.4.3	**Methane Gas Flow**	ACCEPT FOR HORIZONTALLY ORIENTED BOARDS, LINE BURNER SHALL BE ROTATED 90^0 OVER TOP OF CIRCUIT BOARD.
5.1.5	**Ignition indicators – Shelf Level (SLIIM) and Frame Level (FLIIM)**	
5.1.5.1	**SLIIM ignition indicator construction details**	ACCEPT
5.1.5.1.2	**Ignition Modules:**	ACCEPT
5.1.5.2	**FLIIM ignition indicator construction details:**	ACCEPT
5.2	**Calibration of equipment**	
5.2.1	**Heat release rate calibration**	ACCEPT

Section	Description	Verizon Comment
5.2.2	Pretest instrument calibration	ACCEPT
5.2.3	Line burner calibration	
5.2.3.1	Calibration using a cone calorimeter	ACCEPT
5.2.3.2	Calibration of the methane mass flow controller	ACCEPT
5.2.4	Qualification of ignition indicator modules for use as ignition indicators	ACCEPT
6	Test setups	
6.1	Frame level equipment tests	FRAME-LEVEL SETUP SHALL INCLUDE THE SETUP REQUIREMENTS IN GR-63-CORE SEC. 5.2.3 ITEM 2.
6.2	Shelf level equipment tests	SHELF-LEVEL SETUP SHALL INCLUDE THE SETUP REQUIREMENTS IN GR-63-CORE SEC. 5.2.3 ITEM 3. THERMOCOUPLES SHALL BE PLACED ON THE IGNITION INDICATOR MODULES THAT ARE LOCATED APPROXIMATELY 2" EITHER SIDE OF THE PLANE OF THE IGNITION BURNER. RADIOMETERS SHALL BE PLACED AS SPECIFIED IN GR-63-CORE, AT A DISTANCE OF 2" FROM THE SIDE OF THE

Section	Description	Verizon Comment
		EUT AT A HEIGHT EQUAL TO THE TOP SURFACE OF THE EUT. THE IGNITION MODULE SHALL BE PLACED AT A DISTANCE OF 2.5" FROM THE OUTSIDE OF THE FRAMEWORK AND VERTICALLY ALIGNED WITH THE AIR EXHAUST MIDPOINT.
6.3	**Sub-assembly tests**	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
6.3.2	**Sub-assembly tests - forced air cooling**	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
6.3.3	**Sub-assembly tests utilizing a horizontal baffle**	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
6.3.4	**Sub-assemblies mounted in a cabinet**	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
7	**Test specimens**	
7.1	**General**	ACCEPT - SEE VERIZON CHECKLIST FOR ADDITIONAL NOTES ON FAN OPERATION DURING FIRE SPREAD TESTS

Section	Description	Verizon Comment
7.2	**Conditioning**	ACCEPT
8	**Test procedure**	ACCEPT
8.2	**Procedure**	ACCEPT
8.2.1	**Subassembly Tests**	**DO NOT ACCEPT** - ALL ENERGIZABLE AND PASSIVE EQUIPMENT SHALL BE TESTED AS PER GR-63-CORE
8.2.2	**Frame and shelf level tests**	ACCEPT – SEE VERIZON CHECKLIST FOR ADDITIONAL NOTES ON FAN OPERATION DURING FIRE SPREAD TESTS.
8.2.3	**Line burner placement** Burner placement Number of tests required Opening size for line burner insertion Vertical circuit card testing Fan cooled equipment with multiple circuit cards	 ACCEPT ACCEPT ACCEPT CIRCUIT CARD TO BE REMOVED ONLY IF WIDTH IS <1". IF WIDTH IS >1", THEN CIRCUIT CARD SHALL BE LEFT IN PLACE AND THE LINE BURNER INSERTED ADJACENT TO THE COMPONENT SIDE OF THE

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	Non fan cooled, horizontal PCB test	PACK OR UNDERNEATH THE PACK. SEE VERIZON CHECKLIST FOR FUTHER CLARIFICATION. ACCEPT
8.2.3.1	**Airflow characteristics**	ACCEPT
8.2.3.2	**Chassis design**	MAY USE AIRFLOW MEASUREMENT RESULTS TO DETERMINE LINE BURNER PLACEMENT. HOWEVER, IF NO AIRLFOW MEASUREMENTS ARE AVAILABLE, THEN ALL QUADRANTS AND COMPARTMENTS MUST BE TESTED. AIRFLOW DATA SHALL BE SUBMITTED AS PART OF THE TEST REPORT. REFER TO ANNEX B AND VERIZON CHECKLIST FOR LINE BURNER PLACEMENT.
8.2.4	**Start of test**	EQUIPMENT SHALL BE CONDITIONED AS PER GR-63-CORE. PROCEDURE IS ACCEPTABLE WITH THE FOLLOWING EXCEPTION: IF IGNITION OF THE LINE BURNER IS

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		NOT SUSTAINED BY THE PROCEDURE OUTLINED FOR THE START OF TEST, THEN THE FANS SHALL BE TURNED OFF, AND THE FIRE TEST SHALL BE PERFORMED STARTING WITH THE INITIAL FLOW RATE AS SPECIFIED IN SECTION 5.1.4.3.
8.2.5	**Data collection and observations during test**	THE EVENT SHALL BE VIDEO TAPED WITH THE SPLIT SCREEN IMAGE INCLUDING THE THERMAL IMAGE AS DESCRIBED IN THE VERIZON CHECKLIST.
8.2.6	**End of test**	THE TEST DURATION SHALL BE FIFTEEN MINUTES OR UNTIL FLAMMING AND SMOKE HAS COMPLETELY CEASED, WHICHEVER IS LONGER.
9	**Calculations**	
9.1	**Heat release rate**	ACCEPT
10	**Performance Criteria**	
10.1	**Shelf Level**	IN ADDITION TO THESE PERFORMANCE CRITERIA, THE EQUIPMENT SHALL ALSO MEET THE FRAME OR SHELF-LEVEL FIRE-RESISTANCE CRITERIA IN GR-63-CORE, SECTION 4.2.2, AS WELL AS

Section	Description	Verizon Comment
		THE ADDITIONAL VERIZON CRITERIA IN THE VERIZON CHECKLIST, SECTION 3.2.7.6.
10.2	**Frame Level**	IN ADDITION TO THESE PERFORMANCE CRITERIA, THE EQUIPMENT SHALL ALSO MEET THE FRAME OR SHELF-LEVEL FIRE-RESISTANCE CRITERIA in GR-63-CORE, SECTION 4.2.2, AS WELL AS THE ADDITIONAL VERIZON CRITERIA IN THE VERIZON CHECKLIST, SECTION 3.2.7.6.
11	**Report of risk assessment**	THE REPORT SHALL INCLUDE THE THERMAL IMAGE OF THE EQUIPMENT, AS DESCRIBED IN THE VERIZON CHECKLIST.