



ORIGINAL

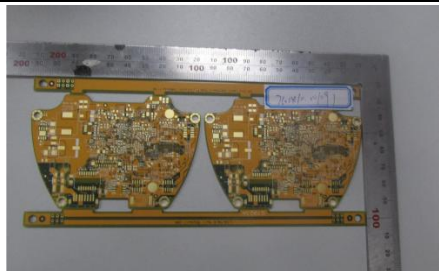
Report No. TC.14.10.001091

Date of Issue 11/11/2014

Applicant: VIVOTEK INC.

Applicant address: 6F, No.192, Lien-Cheng Rd., Chung-Ho, New Taipei City, 235, Taiwan, R.O.C.

Description of the test subject:

Sample	Description	Photo
001	Name: PCB Type : FR4_Tg140	

Receipt Date of Sample: 10/27/2014

Date of Testing: From 10/27/2014 to 11/05/2014

Sample submitted: The sample(s) was (were) submitted by applicant and identified.

Conclusion:

Test Items			HL1	HL2	HL3
No.	Items	Test method			
1	Plastics—determination of burning behavior by oxygen index Part 2: Ambient temperature test	EN 45545-2:2013 EN ISO 4589-2:2006	Pass	Pass	Pass
2	Glow-wire flammability test	EN 45545-2:2013 EN 60695-2-11:2000	Pass	Pass	Pass
3	Fire hazard testing –Part 11-10:Test flames –50 W horizontal and vertical flame test methods	EN 45545-2:2013 EN 60695-11-10:2003	Pass	Pass	Pass

Remark: Pass=Meet Standard's Requirement
Fail= Below Standard's Requirement
* = No Specified Requirement.

Note: (1) General Terms & Conditions as mentioned overleaf,(2)The results relate only to the items tested,(3)The test report shall not be reproduced except in full without the written approval of the company. (4) Samples are tested as received.

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Test Results

EN 45545-2:2013 Railway applications-Fire protection on railway vehiclesPart2: Requirements for fire behaviour of materials and components

1. EN ISO 4589-2:2006 Plastics—determination of burning behavior by oxygen index Part 2: Ambient temperature test

1.1 Sample details

Specimen size:	150mm*10mm*2mm		
	Temperature	Relative humidity	Duration
Precondition	23±2°C	50±5%R.H.	24

1.2 Test result

Section 1: Determination of oxygen concentration for one pair of “X” and “O” responses at ≤ 1 % (V/V) O₂ concentration interval

Oxygen concentration, % (V/V)	40.0	45.0	48.0	50.0					
Burning period, s	--	--	--	--					
Response (“X” or “O”)	O	O	O	O					

So: OI>50.0%

2. EN 60695-2-11:2000Fire hazard testing – part 2-11: glowing/hot-wire based test methods – glow-wire flammability test method for end-products

1.1 Sample details

Specimen size:	The actual sample		
Conditioning	Temperature	Relative humidity	Place
	15°C~35°C	45%~75%	24 hours

2.2 Test result

Application of the glow-wire, ta	30s
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glow-wire temp, °C	850
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Result	1	2	3
ti,(s)	0	0	0
te,(s)	0	0	0
h,(mm)	0	0	0
Ignite the wrapping tissue,(Y/N)	N	N	N

Remark:

ti-from the beginning of tip application up to the time at which the test specimen or the specified layer placed below it ignites;

te- from the beginning of tip application up to the time when flames extinguish during or after the period of application;

h-the maximum height of any flame rounded up to the next 5mm.

Requirement:

Unless otherwise specified in the relevant specification, the test specimen is considered to have passed the glow-wire test if there is no flaming or glowing, or if all of the following situations apply:

a): if flames or glowing of the test specimen extinguish within 30s after removal of the glow-wire, i.e. $te \leq ta + 30s$; and

b): when the specified layer of wrapping tissue is used there shall be no ignition of the wrapping tissue

Evaluation: Test sample is considered to have **passed** the glow-wire test.

3. DIN EN 60695-11-10: 2003 Fire hazard testing –Part 11-10: Test flames –50 W horizontal and vertical flame test methods

3.1 Sample details

Size of the samples	125mm*13mm*2mm
Number of the samples	10

Pre-conditioning	5 pieces	Temp : 70°C	168 h
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	5 pieces	Temp : 23±2 °C	48 h
		Humidity: 50±5 %	

3.2 Test Result

	Before aging					After aging				
	1	2	3	4	5	1	2	3	4	5
T1	0	0	0	0	0	0	0	0	0	0
T2	2	2	1	2	2	2	1	2	2	2
T3	0	0	0	0	0	0	0	0	0	0
Burn up to the holding clamp	N	N	N	N	N	N	N	N	N	N
Ignited the cotton	N	N	N	N	N	N	N	N	N	N

Remark:

- T1 - After flame time after first flame application
- T2 - After flame time after second flame application
- T3 - Afterglow time after the second flame application
- Y - Observed
- N - Not Observed

Requirement:

Criteria conditions	V-0	V-1	V-2
Afterflame time for each individual specimen (t ₁ or t ₂)	≤10s	≤30s	≤30s
Total afterflame time for any condition set (t ₁ plus t ₂ for the 5 specimens)	≤50s	≤250s	≤250s
Afterflame plus afterglow time after the second flame application (t ₂ plus t ₃)	≤30s	≤60s	≤60s
Afterflame or afterglow of any specimen up to the holding clamp	No	No	No
Cotton indicator ignited by flaming particles or drops	No	No	Yes

Comment: V-0

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Requirement (EN 45545-2:2013):

	Items	Test method	Parameter	HL1	HL2	HL3
R24	Oxygen index	EN 45545-2:2013 EN ISO 4589-2:2006	Oxygen Index%	28	28	32
R25	Glow-wire test	EN 45545-2:2013 EN 60695-2-11:2000	Glow Wire Temperature °C	850	850	850
R26	Vertical flame test	EN 45545-2:2013 EN 60695-11-10:2003	Class	V-0	V-0	V-0

Conclusion:

	Items	Test method	Record	HL1	HL2	HL3
R24	Oxygen index	EN 45545-2:2013 EN ISO 4589-2:2006	>50.0%	Pass	Pass	Pass
R25	Glow-wire test	EN 45545-2:2013 EN 60695-2-11:2000	Glow Wire Temperature 850°C	Pass	Pass	Pass
R26	Vertical flame test	EN 45545-2:2013 EN 60695-11-10:2003	V-0	Pass	Pass	Pass

Statement: The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential smoke and toxicity hazard of the product in use.

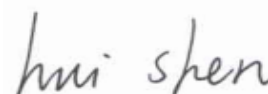
Changzhou Jinbiao Railway Transportation Technical Service Co., Ltd.

Drafted by:



Lynn liu

Approved by:



Shen hui

-End of Report-

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