

# TEST REPORT

**Test Report No.:** 317G0462.001  
**Report Date:** February 21, 2017

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**Client:** Alien Technology LLC  
 845 Embedded Way  
 San Jose, CA 95138 USA

**Project Number:** 146315  
**Date of Receipt:** 5 August 2015  
**Model Identification:** ALC-380, ALC-370, ALC-360 IC's  
**Item Description:** Higgs-EC, Higgs-4, Higgs-3 IC's  
**# of Samples Submitted:** 1  
**Product Code:** NA  
**Item Number:** NA  
**Style Number:** NA  
**Color:** Gold  
**Delivery condition:** Apparent good

**Customer Test Instructions:**

<i>Test specification:</i>	
1.	Total Lead Content in Substrates – Cal Prop 65
2.	Total Cadmium Content In Substrates – Cal Prop 65
3.	Total Phthalate Content – Cal Prop 65
4.	Total Bisphenol-A Content – Cal Prop 65

For and on behalf of  
 TUV Rheinland of North America



**Mark Smith / Laboratory Manager**  
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For and on behalf of  
 TUV Rheinland of North America



**Ashley Brown / Laboratory Technician**

*Test result is drawn according to the kind and extent of tests performed. This test report is not permitted to be duplicated in extracts without permission of the test facility. This test report does not entitle any safety mark on this or similar products.*

Testing Period: 5-Aug-15 to 21-Feb-17

**Material Breakdown List - Chemical Testing**

Material Number	Material	Color	Material Description
1	Nonmetal	Gold	Higgs EC ALC-380

**RESULTS****1. TOTAL LEAD CONTENT IN SUBSTRATES:**

Per client request, the samples were evaluated for total lead content with reference to Cal Prop 65 and client specifications. Any concentrations above 100 ppm will be noted.

**Test method:** The sample was analyzed by X-Ray Fluorescence Spectroscopy (XRF) according to CPSC-CH-E1002-08.1 / ASTM F2617

Test No.	Material or Component	Lead Content (mg/kg)
		MDL: 5 mg/kg
1	1	<6.4 mg/kg

Abbreviation: MDL = Method Detection Limit mg/kg denotes milligram per kilogram (ppm)

**2. TOTAL CADMIUM CONTENT IN SUBSTRATES:**

Per client request, the samples were evaluated for total cadmium content with reference to Cal Prop 65 and client specifications. Any concentrations above 75 ppm will be noted.

**Test method:** The sample was analyzed by High Definition X-Ray Fluorescence Spectrometry (HD-XRF) with reference to ASTM F2853-10.

Test No.	Material or Component	Cadmium Content (mg/kg)
		MDL: 5 mg/kg
1	1	<5.1 mg/kg

Abbreviation: MDL = Method Detection Limit mg/kg denotes milligram per kilogram (ppm)

**3. TOTAL PHTHALATE CONTENT:**

Per client request, the samples were evaluated for total phthalate content with reference to Cal Prop 65 and client specifications. Any concentrations above 1000 ppm (0.1%) will be noted.

**Test method:** The sample was analyzed by organic solvent extraction and GCMS according to CPSC-CH-C1001-09.3

Test No.	Material or Component	MDL: 0.005%					
		BBP (%)	DBP (%)	DEHP (%)	DIDP (%)	DINP (%)	DnHP (%)
1	1	<0.005%	<0.005%	<0.005%	<0.005%	<0.005%	<0.005%

Abbreviation: MDL = Method Detection Limit  
 DBP = Dibutyl phthalate  
 BBP = Butyl benzyl phthalate  
 DINP = Di-iso-nonyl phthalate  
 DEHP = Di-2-ethylhexyl phthalate  
 DnHP = Di-n-hexyl phthalate  
 DIDP = Di-iso-decyl phthalate

**4. TOTAL BISPHENOL-A CONTENT:**

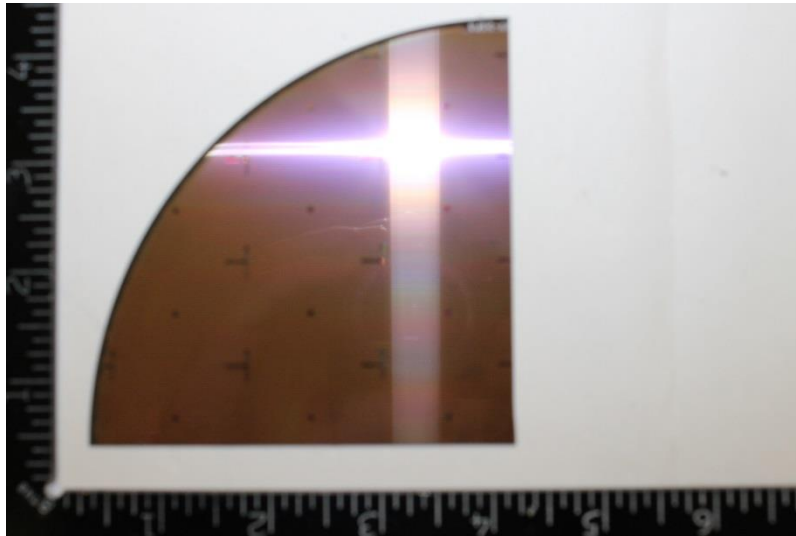
Per client request, the samples were evaluated for total bisphenol-A (BPA) content with reference to Cal Prop 65 and client specifications. Any concentrations above 100 ppm will be noted.

**Test method:** The sample was analyzed by organic solvent extraction, derivatization, and GCMS according to appropriate in-house method.

Test No.	Material or Component	BPA Content (mg/kg)
		MDL: 100 mg/kg
1	2	<100 mg/kg

Abbreviation: MDL = Method Detection Limit mg/kg denotes milligram per kilogram (ppm)

**Sample Photos**



Test Article(s)

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