

# Parts and Material Analysis Report

<b>Customer</b>	Technology Solutions Ltd	<b>Part Number</b>	PEX8613-BA50BIG
<b>Customer PO</b>	1628-A	<b>Manufacturer</b>	BROADCOM
<b>Customer Address</b>	6 Odem Street, Petach Tikva 4951789 Israel	<b>Date/Lot Code</b>	1505
<b>Report Date</b>	7/18/2018 5:32:12 PM	<b>Quantity Revd</b>	total: 2 test: 2
<b>Revision</b>	0	<b>TS WO #</b>	W1807120002

## Summary

Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

Test-Process Operation	Test Quantity	Result	Comments
<b>Documentation &amp; Packaging (AS6081, Section 4.2.6.4.1)</b>			
Contract Review Items	1	C	
Box/Content Condition	1	C	
<b>General Visual Inspection (AS6081, Section 4.2.6.4.2.1)</b>			
Single Shipment	1	C	
<b>Detailed Visual Inspection (AS6081, Section 4.2.6.4.2.2)</b>			
Package Condition	2	C	
Lead Condition	2	C	
Dimensions	2	C	
<b>Re-Marking/Re-Surfacing Test (AS6081, Section 4.2.6.4.3)</b>			
3:1 Marking Permanency	1	C	
Acetone Swap Test	1	C	
HCT-1 (1-Methyl, 2-Pyrrolidinone)	1	C	
HCT-2 (Dynasolve 750)	1	C	
<b>X-Ray Inspection (AS6081, Section 4.2.6.4.4)</b>			
Internal Construction	2	C	
<b>XRF Evaluation (AS6081, Section 4.2.6.4.5)</b>			
Lead Finish	2	C	
<b>Internal Visual Inspection (AS6081, Section 4.2.6.4.6)</b>			
Observed Defects	1	C	
<b>Electrical Testing (TS 622-001 Section 8.0)</b>			
Electrical Test	NA	NA	
<b>Solderability Test (JEDEC J-STD-02)</b>			
Solderability		NA	
<b>Baking (JEDEC J-STD-033)</b>			
Bake/Dry Pack		NA	
<b>Tape and Reel</b>			
Tape/Reel		NA	

## Assessment

**No non-conformities observed.**

## Analysis Summary

### External Visual Inspection

External Visual Inspection on (2) sample(s) marked with D/C: 1505 revealed legible device markings consistent with the lot traveler and published data related to the part. No secondary coating, sanding marks, cracks, or chips were observed on all devices inspected. Leads were in acceptable condition.

Device package characteristics and dimensions matched manufacturer's specification.

No records of suspect counterfeit parts were found for this part number in the ERAI/GIDEP data bases.

NOTE: All inspections in this section performed in accordance with VÙ Test Procedure Manual, 622-001, Sections 1-3; microscope magnification = 10X to 30X unless otherwise noted.

### Internal Visual Inspection

Internal Visual Inspection on (1) sample(s) marked with D/C: 1505 revealed markings PEX8618-Bx marked on the die. Die marking correlated with device's external marking.

No information in the VÙ die bank data base for this part number.

Testing performed in accordance with VÙ Test Procedure Manual, 622-001, Section 4

### X-Ray Inspection

X-Ray Analysis of (2) random sample(s) revealed the same internal structure on all the samples. No internal damages were observed during inspection.

X-Ray inspection performed in accordance with VÙ Test Procedure Manual, 622-001, Section 5

Dosage = 80 kEV, Exposure = 3 Seconds

Represented images are typical. All images are available on request.

### XRF Test

XRF Analysis performed on (2) random sample(s) revealed the devices are not RoHS Compliant.

NOTE: Niton XL3t XRF spectrometer analyzers do not conclusively measure the elemental composition of any samples but do measure the % of each element relative to the others being measured. No comparison to actual manufacturer composition declarations should be made or implied.

XRF testing performed in accordance with VÙ Test Procedure Manual, 622-001, Section 6

### Solvent Test

Marking Permanency Test results were negative - no markings were removed.

Acetone Test results for resurfacing were negative - no residue was deposited on the swab.

HCT-1 Test results for resurfacing were negative - no residue was deposited on the swab. (Part markings only were removed)

HCT-2 Test results for resurfacing were negative - no residue was deposited on the swab.

Acetone Test results for resurfacing were negative - no residue was deposited on the swab.  
HCT-1 Test results for resurfacing were negative - no residue was deposited on the swab. (Part markings only were removed)  
HCT-2 Test results for resurfacing were negative - no residue was deposited on the swab.

Note: HCT-1: 1-Methyl 2-Pyrrolidinone; HCT-2: Dynasolve 715

Testing performed in accordance with VÙ

Test Procedure Manual, 622-001, Section 3

## Device Description

Device	<b>PCIe Gen 2, 5.0GT/s 12-lane, 3-part Switch</b> <b>PCN Obsolescence/ EOL   OBS 15/Aug/2015</b> <b>Moisture Sensitivity Level (MSL)       3 (168 Hours)</b> <b>Package:                           324 FBGA (19 x 19 mm)</b>
Case	<b>324-Pin FBGA</b>
PDF	<a href="https://www.usbid.com/assets/datasheets/4E/pex8613-ba50big.pdf">https://www.usbid.com/assets/datasheets/4E/pex8613-ba50big.pdf</a>
Datasheet	<b>NA</b>

# Receiving - Documentation and Package Inspection

Detailed Criteria: Per AS6081 4.2.6.4.2.1

Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

Date	Weight	ESD Bag	Date/Lot Code	Part Count	Vacuum Sealed	Carrier Type	Moisture protection
7/12/2018 12:00:06 PM	1.0000 lbs	Not Present	1505	2		Bulk	Not Present

Criteria	Result	Comments
<b>Receiving - Documentation and Package Inspection</b>		
Lot/Date Code information consistent with published data	C	
Manufacturer label/logo are present and matches datasheet and prev orders	C	
Documentation review	C	
Barcode data scans and matches	NA	
Consistent package materials	C	
<b>General Visual Inspection</b>		
Parts received in a single shipment	C	
Consistent part markings throughout lot	C	
Consistent appearance	C	
Consistent handling, packaging and storage	C	
No evidence parts have been separated	C	
Box received in acceptable condition. Devices were received in acceptable condition. Part markings were consistent throughout the samples inspected and did match customer order information.		



**Incoming Box**



**Package Condition**

## Receiving Inspection ( Continued )



Package Type



Package



Label



2 Devices Received

## Detailed External Visual Inspection

Detailed Criteria: Per AS6081 4.2.6.4.2.2

Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

Criteria	Sample Size	Result	Comments
<b>General Conditions</b>			
Pin/Lead Count	2	C	324
Package Type	2	C	BGA
Verify Pin 1 placement	2	C	
Part Markings	2	C	
Package Conditions	2	C	
Mold Cavities	2	NA	
Plating	2	C	
Lead/Ball Conditions	2	C	
Dimensions	2	C	
GIDEP Verification	2	C	
ERAI Verification	2	C	

External Visual Inspection on (2) sample(s) marked with D/C: 1505 revealed legible device markings consistent with the lot traveler and published data related to the part. No secondary coating, sanding marks, cracks, or chips were observed on all devices inspected. Leads were in acceptable condition.

Device package characteristics and dimensions matched manufacturer's specification.

No records of suspect counterfeit parts were found for this part number in the ERAI/GIDEP data bases.

**NOTE:** All inspections in this section performed in accordance with TS Test Procedure Manual, 622-001, Sections 1-3; microscope magnification = 10X to 30X unless otherwise noted.

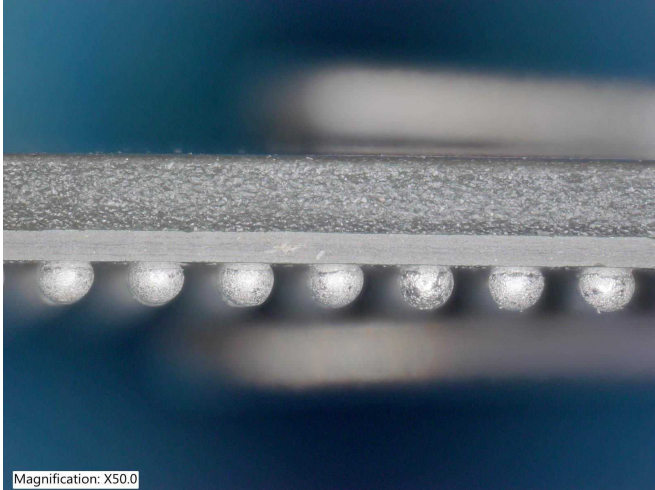


**Top**

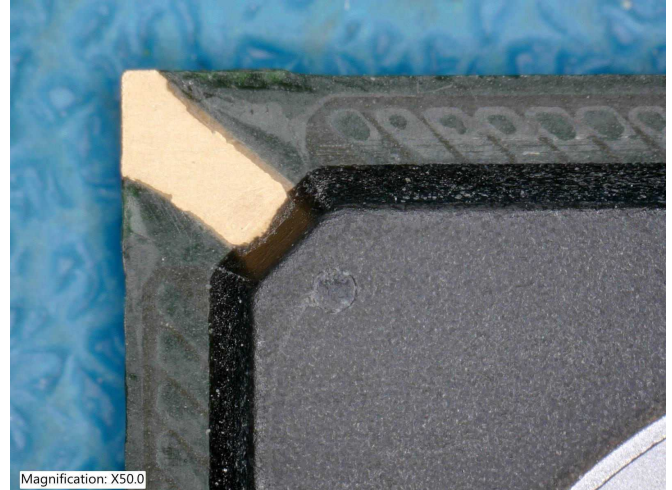


**Bottom**

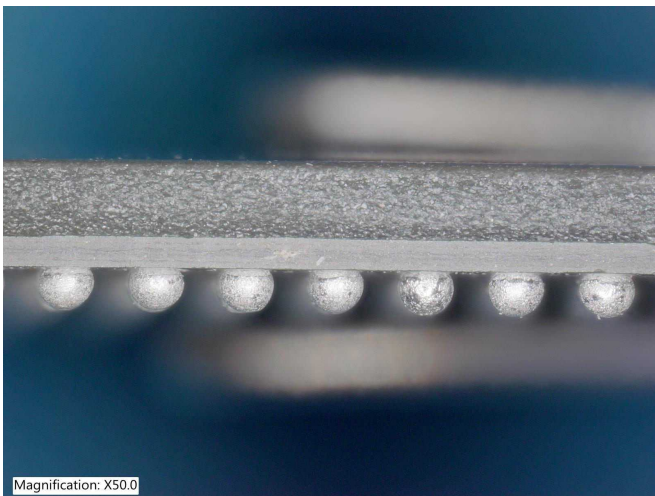
## Detailed External Visual Inspection ( Continued )



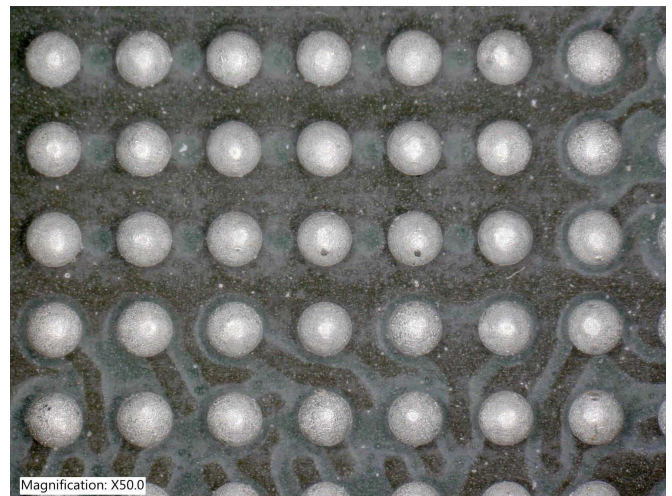
Side



Top Pin



Leads View 1



Leads View 2



Length (19 BSC)



Width (19 BSC)



## Detailed External Visual Inspection ( Continued )



**Thickness (2.2 MAX)**

## Solvent/Chemical Testing

### Inspection for Remarking and Resurfacing Per AS6081 4.2.6.4.3

Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

Criteria	Sample Size	Result	Comments
Marking Permanency	1	C	
Acetone Swab Test	1	C	
HCT-1 (1-Methyl, 2-Pyrrolidione)	1	C	
HCT-2 (Dynasolve 750)	1	C	

Marking Permanency Test results were negative - no markings were removed.  
 Acetone Test results for resurfacing were negative - no residue was deposited on the swab.  
 HCT-1 Test results for resurfacing were negative - no residue was deposited on the swab. (Part markings only were removed)  
 HCT-2 Test results for resurfacing were negative - no residue was deposited on the swab.

Note: HCT-1: 1-Methyl 2-Pyrrolidinone; HCT-2: Dynasolve 715

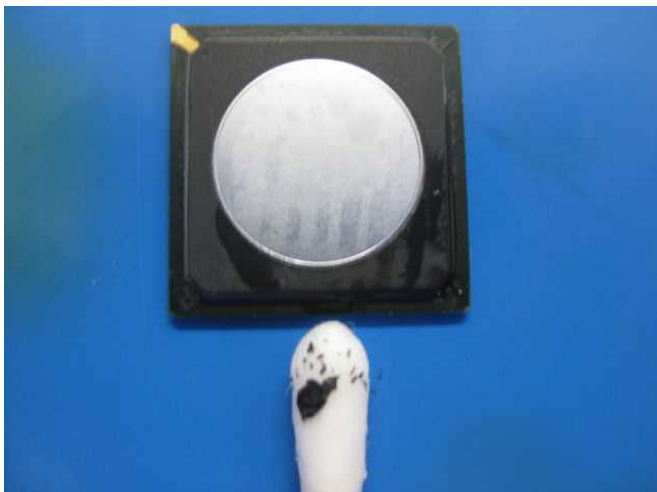
Testing performed in accordance with TS Test Procedure Manual, 622-001, Section 3



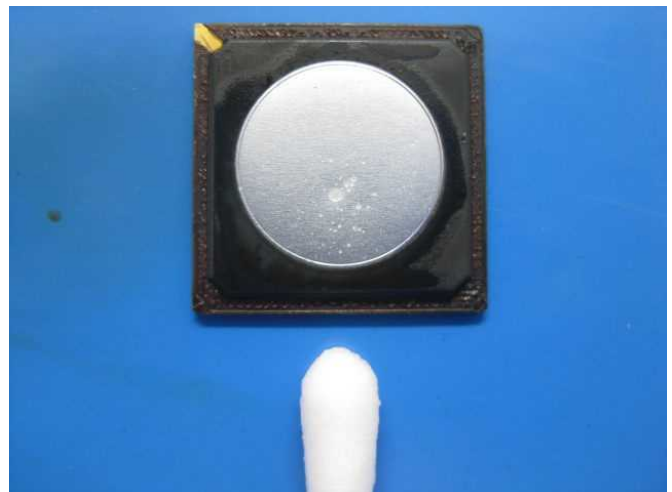
**After Permanency**



**After Acetone**



**After HCT-1**



**After HCT-2**

# Internal Visual Inspection

## Internal Analysis Per AS6081 4.2.6.4.3

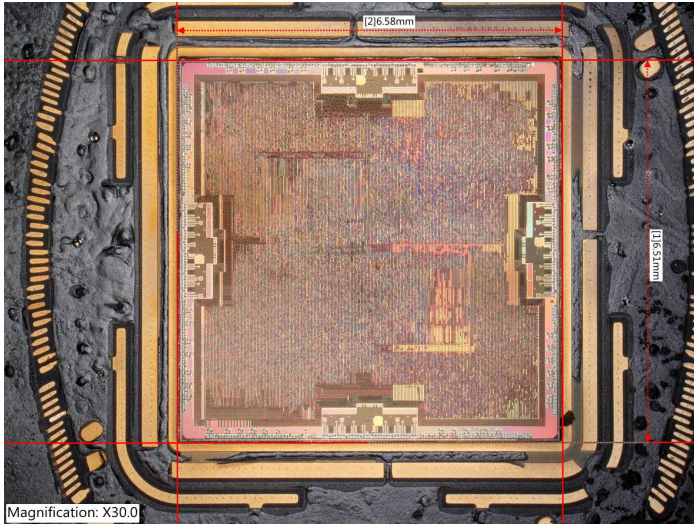
Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

Criteria	Sample Size	Result	Comments
Die Verification	1	NA	
Observed Defects	1	C	
Topography/Markings Match "Known Good" or TS Data Base	1	NA	

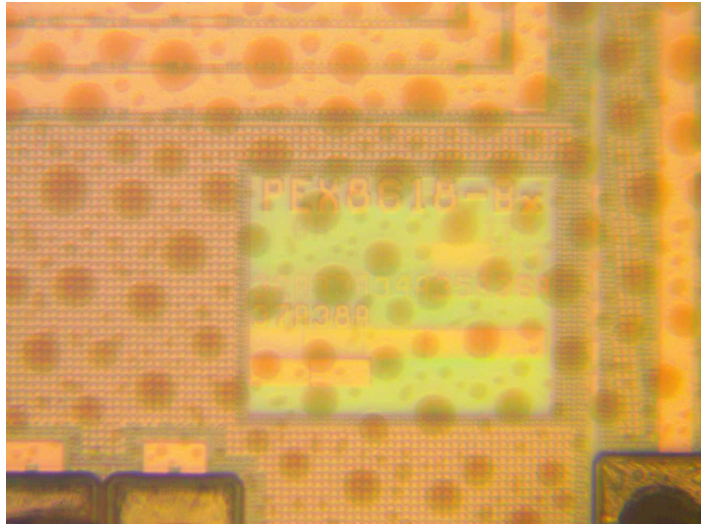
Internal Visual Inspection on (1) sample(s) marked with D/C: 1505 revealed markings PEX8618-Bx marked on the die. Die marking correlated with device's external marking.

No information in the TS die bank data base for this part number.

Testing performed in accordance with TS Test Procedure Manual, 622-001, Section 4



Die Topography



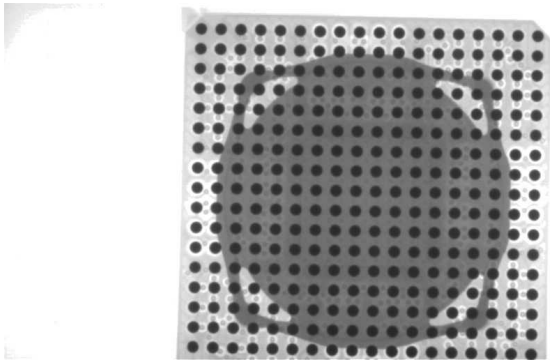
Die Markings

# X-Ray Inspection

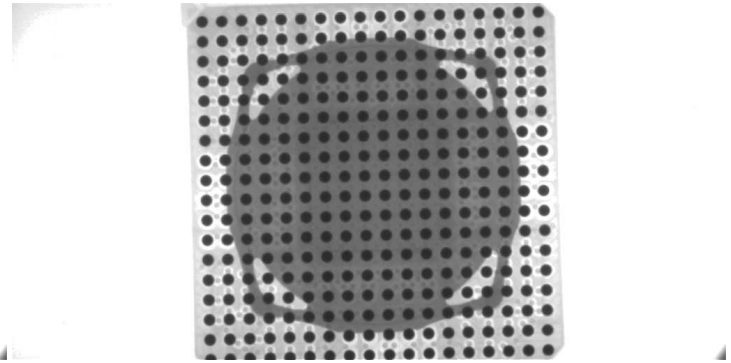
## X-Ray Inspection Per AS6081 4.2.6.4.4

Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

Criteria	Sample Size	Result	Comments
<b>Consistent Internal Contents</b>	2	C	
<b>Consistent Dosage &amp; Exposure Time</b>	2	C	Dosage = 80kEV, Exposure = 3 Seconds
<p>X-Ray Analysis of (2) random sample(s) revealed the same internal structure on all the samples. No internal damages were observed during inspection.</p> <p>X-Ray inspection performed in accordance with TS Test Procedure Manual, 622-001, Section 5</p> <p>Dosage = 80 kEV, Exposure = 3 Seconds</p> <p>Represented images are typical. All images are available on request.</p>			



**X-Ray Analysis - Sample 1**



**X-Ray Analysis - Sample 2**

# XRF Inspection

## Lead Finish Inspection Per AS6081 4.2.6.4.5

Result: C: Conforming, NC: Non Conforming, S: Suspect, NA: Not Applicable

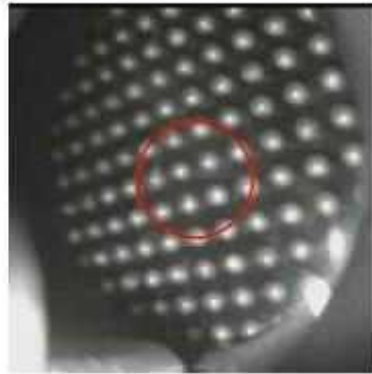
Criteria	Sample Size	Result	Comments
Consistent Lead Finish per Published Data	2	C	
<p>XRF Analysis performed on (2) random sample(s) revealed the devices are not RoHS Compliant.</p> <p>NOTE: Niton XL3t XRF spectrometer analyzers do not conclusively measure the elemental composition of any samples but do measure the % of each element relative to the others being measured. No comparison to actual manufacturer composition declarations should be made or implied.</p> <p>XRF testing performed in accordance with TS Test Procedure Manual, 622-001, Section 6</p>			

# XRF Inspection ( Continued )

## Certificate of Verification

XL3t-80606

Reading No 6038  
 Mode Electronics Metals  
 Time 2018-07-18 10:07  
 Duration 60.67  
 Units ppm  
 Sigma Value 2  
 Sequence Final  
 Alloy1 No Match : \*7.32  
 Result **Fail**  
 Flags  
 SAMPLE PEX8613-BA5081G  
 HEAT Technology Solutions  
 LOT W1807120002  
 BATCH  
 MISC JL  
 NOTE Sample 1



	ppm	#	Error
Cd	< LOD	:	446.369
Pb	25429.895	#	1087.519
V	30074.707	#	3895.783
Cr	< LOD	:	2941.619
Mn	1774.087	#	884.326
Fe	< LOD	:	825.624
Co	< LOD	:	528.886
Ni	< LOD	:	803.459
Cu	584054.125	#	4347.006
Zn	< LOD	:	1008.846
Se	420.590	#	145.992
Br	123.727	#	46.674
Zr	< LOD	:	149.853
Nb	< LOD	:	211.061
Mo	< LOD	:	316.989
Pd	< LOD	:	97.486
Aq	13931.646	#	426.177
Al	< LOD	:	800000.000
In	< LOD	:	320.257
Sn	210322.938	#	3037.189
Sb	< LOD	:	342.643
Ba	15996.746	#	841.507
W	< LOD	:	2.000
Pt	< LOD	:	845.341
Au	< LOD	:	644.901
Hg	< LOD	:	380.079
Tl	115684.547	#	6827.620
Bi	< LOD	:	460.478

Supervised by: AAA Test Lab Inc \_\_\_\_\_

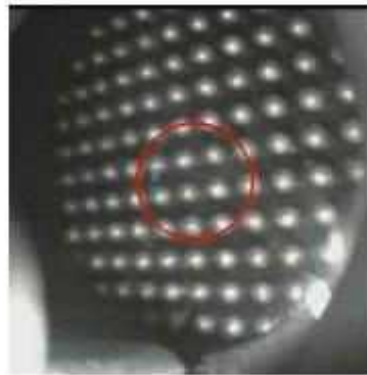
### XRF Results - Sample 1

# XRF Inspection ( Continued )

## Certificate of Verification

XL3t-80606

Reading No 6039  
 Mode Electronics Metals  
 Time 2018-07-18 10:09  
 Duration 61.52  
 Units ppm  
 Sigma Value 2  
 Sequence Final  
 Alloy1 No Match : \*7.50  
 Result **Fail**  
 Flags  
 SAMPLE PEX8613-BA50BIG  
 HEAT Technology Solutions  
 LOT W1807120002  
 BATCH  
 MISC JL  
 NOTE Sample 2



	ppm	#	Error
Cd	< LOD	:	293.568
Pb	26288.801	#	1082.657
V	29743.000	#	3827.678
Cr	< LOD	:	2843.168
Mn	< LOD	:	1712.735
Fe	< LOD	:	795.535
Co	< LOD	:	544.359
Ni	< LOD	:	829.471
Cu	577271.063	#	4278.825
Zn	< LOD	:	966.403
Se	402.030	#	143.407
Br	< LOD	:	98.744
Zr	< LOD	:	141.421
Nb	< LOD	:	203.859
Mo	< LOD	:	315.551
Pd	< LOD	:	99.916
Aq	19907.537	#	516.302
Al	< LOD	:	800000.000
In	< LOD	:	311.258
Sn	203922.703	#	2925.829
Sb	< LOD	:	345.772
Ba	13801.529	#	800.102
W	< LOD	:	2.000
Pt	< LOD	:	858.251
Au	< LOD	:	568.085
Hg	< LOD	:	472.463
Tl	125219.094	#	6760.089
Bi	< LOD	:	502.915

Supervised by: AAA Test Lab Inc

## XRF Results - Sample 2

## Shipping

Carrier	UPS	Service	Worldwide Expedited

Approved by :



Gary Heyes  
General Manager