



September 2013

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## **WATS Server 4.2 Release Note**

## Release WATS Server 4.2

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This release overview contains information about new features in WATS Server 4.2

For more information about WATS, please visit [www.virinco.com/wats](http://www.virinco.com/wats)

## Major Feature Areas

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This document describes the following major feature areas of WATS 4.2:

- WATS Reporting
  - Process Capability Analysis (BETA)
  - Connection & Execution Time Report
  - Dashboard release
    - Replacing Captains View
    - New data warehouse
  - NEW Root Cause module (BETA)
- WATS Operator Interface
  - Unit Verification Report
- Miscellaneous

# WATS Reporting



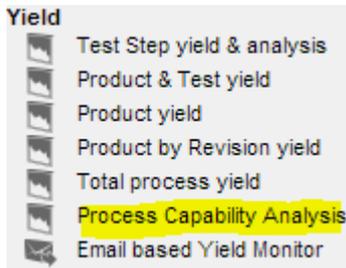
WATS 4.2 Reporting includes the following improvements and new functionality.

TIP: To drill down and jump between reports in WATS, use the menu icon as shortcut. When using this menu, WATS will use the parameters from the selected record and auto fills the filter options.

## Process Capability Analysis (BETA)

The new *Process Capability Analysis* report is designed for high volume (hundreds of thousands of units) and deep SPC analysis. The data warehouse pre-aggregates measurements down to a 1 hour resolution (meaning that if you test 100 UUTs within one hour, all measurements will be aggregated into a few calculated values).

The well-known WATS filter is present and you start the report by selecting parameters and applying the filter.



Yield **Process Capability Analysis (Beta)**

Product Group: (Any) Test Operation: PCBA  
 Site: (Any) From Date (UTC): 00 : 00  
 Part Number: OLC-140-P;OLC-140-C To Date (UTC): 23 : 59  
 Batch Number: (range)  
 Station Name:  
 Top Count (max results):  
 Min Count (units):

| Part-Number                         | Produ Name | Process | Tot#  | FPY#  | FPY  | SPY  | TPY  | Cpk <sub>1</sub> | wo/f | #   | Cpk <sub>2</sub> | wo/f | #   | Cpk <sub>3</sub> | wo/f | #    | Cpk <sub>4</sub> | wo/f | #    | Cpk <sub>5</sub> | wo/f | # |
|-------------------------------------|------------|---------|-------|-------|------|------|------|------------------|------|-----|------------------|------|-----|------------------|------|------|------------------|------|------|------------------|------|---|
| <input checked="" type="checkbox"/> | OLC-140-P  | PCBA    | 6,262 | 5,406 | 86.3 | 94.2 | 96.6 | 0.33             | 0.33 | 0   | 0.33             | 0.36 | 97  | 0.37             | 0.37 | 0    | 0.50             | 0.50 | 0    | 0.63             | 0.63 | 0 |
| <input checked="" type="checkbox"/> | OLC-140-C  | PCBA    | 6,157 | 5,338 | 86.7 | 96.2 | 98.1 | 0.26             | 0.26 | 300 | 0.23             | 0.52 | 198 | 1.02             | 33   | 0.02 | 1.29             | 49   | 0.21 | 1.30             | 17   |   |

The first result level is a list of Part Numbers matching your filter options. Each record is matching Part Number and Process. The list display Tot# (Unique UUTs tested), FPY# (number of passed UUTs), FPY (First Pass Yield), SPY (Second Pass Yield), TPY (Third Pass Yield), CPK1 (test step with worst CPK value first), wo/F (CPK with step status = PASSED), # (number of step failures).

TIP: Hold the mouse over a CPK value to see test step name.

YIELD KPI Targets:

Red colour = Alarm

Orange colour = Warning

Green colour = Good

To edit the KPI Targets, browse to *Control Panel > Configure/settings > KPI Targets*

Select one or several records and *Apply Selected*. A list with all test steps will be displayed (only test steps returning a numeric value (NLT, MNL))

**Process Capability Analysis (Beta)**

| Apply selected                      |             |              |         |       |       |      |      |      |                  |      |     |                  |      |     |                  |      |    |                  |      |    |                  | 1    |    |
|-------------------------------------|-------------|--------------|---------|-------|-------|------|------|------|------------------|------|-----|------------------|------|-----|------------------|------|----|------------------|------|----|------------------|------|----|
| <input type="checkbox"/>            | Part-Number | Product Name | Process | Tot#  | FPY#  | FPY  | SPY  | TPY  | Cpk <sub>1</sub> | wo/f | #   | Cpk <sub>2</sub> | wo/f | #   | Cpk <sub>3</sub> | wo/f | #  | Cpk <sub>4</sub> | wo/f | #  | Cpk <sub>5</sub> | wo/f | #  |
| <input checked="" type="checkbox"/> | OLC-140-P   |              | PCBA    | 5,160 | 4,524 | 87.7 | 95.0 | 97.2 | 0.33             | 0.36 | 72  | 0.37             | 0.37 | 0   | 0.39             | 0.39 | 0  | 0.63             | 0.63 | 0  | 0.64             | 0.64 | 0  |
| <input type="checkbox"/>            | OLC-140-C   |              | PCBA    | 5,155 | 4,413 | 85.6 | 95.7 | 97.9 | 0.26             | 0.26 | 192 | 0.26             | 0.52 | 132 |                  | 1.02 | 33 | 0.02             | 1.29 | 49 | 0.18             | 1.35 | 16 |

| Apply selected |                          |     |                          |          |          |                |               |                     |                     |        |             |         |        |           |            |      |      | 1 |
|----------------|--------------------------|-----|--------------------------|----------|----------|----------------|---------------|---------------------|---------------------|--------|-------------|---------|--------|-----------|------------|------|------|---|
|                | Step Name / Measure Name | Cpk | Cp                       | Cp lower | Cp upper | Cpk w/o Failed | Cp w/o Failed | Cp lower w/o Failed | Cp upper w/o Failed | Yield  | Total Count | Mean    | Stdev. | Low limit | High limit |      |      |   |
|                |                          |     | Charge rate C31 (220µF)  | 0.36     | 0.41     | 0.36           | 0.47          | 1.55                | 1.97                | 1.55   | 2.39        | 98.8 %  | 2,192  | 4.93      | 0.69       | 4.2  | 5.9  |   |
|                |                          |     | Charge rate C31 (220µF)  | 0.47     | 0.51     | 0.55           | 0.47          | 2.25                | 2.38                | 2.51   | 2.25        | 97.6 %  | 2,968  | 5.12      | 0.56       | 4.2  | 5.9  |   |
|                |                          |     | Charge rate C41 (4700µF) | 0.51     | 0.72     | 0.51           | 0.92          | 1.94                | 2.78                | 1.94   | 3.62        | 99.5 %  | 2,192  | 2.71      | 0.39       | 2.1  | 3.8  |   |
|                |                          |     | Charge rate C41 (4700µF) | 1.18     | 1.74     | 1.18           | 2.30          | 2.11                | 3.14                | 2.11   | 4.17        | 99.3 %  | 2,968  | 2.68      | 0.16       | 2.1  | 3.8  |   |
|                |                          |     | Discharge test C31       | 0.64     | 85.32    | 0.64           | 170.00        | 0.64                | 85.32               | 0.64   | 170.00      | 100.0 % | 2,192  | 0.00      | 0.00       | 0    | 0.2  |   |
|                |                          |     | Discharge test C31       | 0.63     | 60.86    | 0.63           | 121.09        | 0.63                | 60.86               | 0.63   | 121.09      | 100.0 % | 2,968  | 0.00      | 0.00       | 0    | 0.2  |   |
|                |                          |     | Discharge test C41       | 0.39     | 0.92     | 0.39           | 1.46          | 0.39                | 0.92                | 0.39   | 1.46        | 100.0 % | 2,192  | 0.04      | 0.04       | 0    | 0.2  |   |
|                |                          |     | Discharge test C41       | 0.37     | 0.98     | 0.37           | 1.59          | 0.37                | 0.98                | 0.37   | 1.59        | 100.0 % | 2,968  | 0.04      | 0.03       | 0    | 0.2  |   |
|                |                          |     | Measure 1-10V continuity | 0.33     | 0.36     | 0.40           | 0.33          | 0.36                | 0.39                | 0.41   | 0.36        | 98.3 %  | 4,290  | 2.64      | 2.68       | -0.6 | 5.25 |   |
|                |                          |     | Measure 1-10V continuity | 0.26     | 0.83     | 1.40           | 0.26          | 23.18               | 69.77               | 116.35 | 23.18       | 99.8 %  | 2,859  | 5.05      | 0.25       | 4    | 5.25 |   |

The step list shows CPK calculations with and without failures, step yield, total (test) count, mean value, standard deviation, low limit and high limit.

CPK:

Red colour = CPK below 1.32

Green colour = CPK between 1.33 and 4

Blue colour = CPK above 4

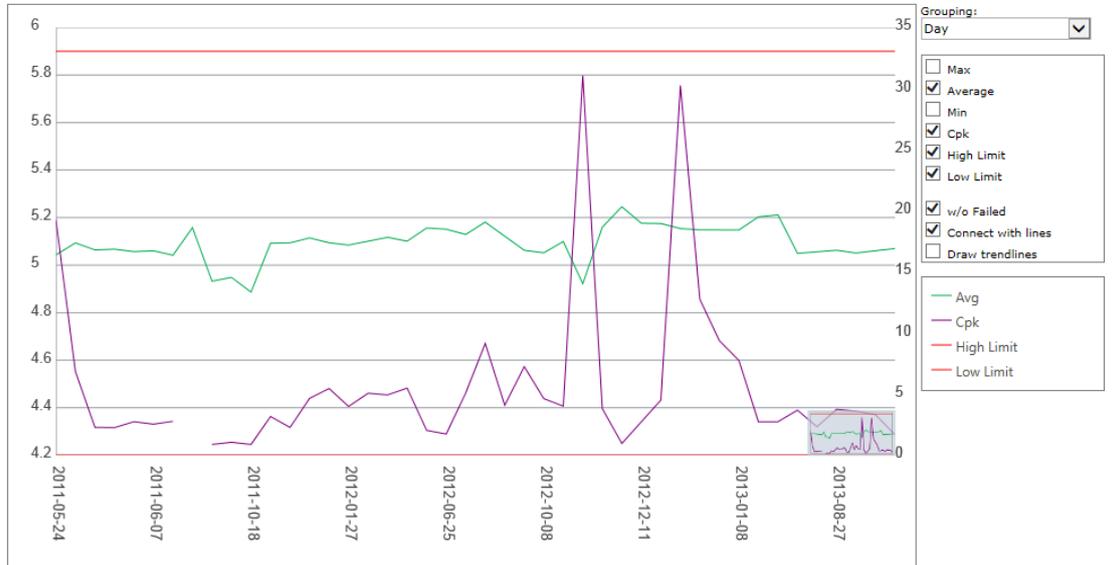
The left margin gives 2 "View Details" option.

1. Unit View. Presents data from the relation database equal to the detail report view in the *Test Step Yield & Analysis* report. Can plot every single measurement and drill down on serial numbers
2. Aggregated View. Presents data from the data warehouse. More usable when large data sets. No serial number details.

NOTE: You must add steps for monitoring. Click the + icon in the list to add step to the data warehouse load.

The aggregated view shows a zoom able chart where you can select grouping method and different calculation options. It will also list SPC calculations below the chart.

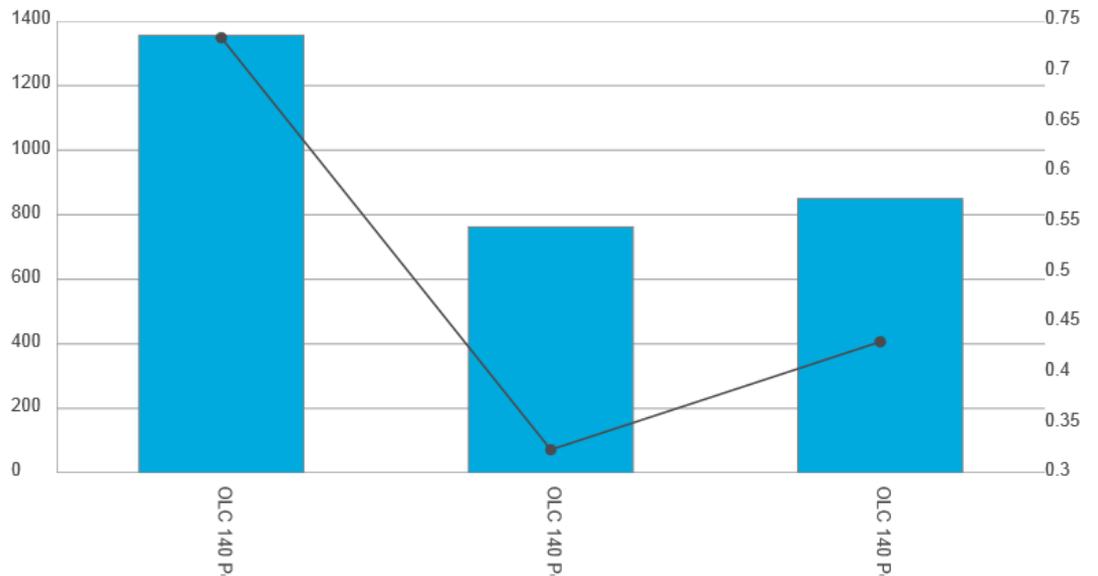
UTC From Date: 2010-Aug-20 00:00:00  
 UTC To Date: 2013-Sep-19 23:59:00



|               |                  | w/o Failed       |
|---------------|------------------|------------------|
| Unit Count    | 2,968            | 2,896            |
| Max           | 11.8             | 5.87             |
| Avg           | 5.12             | 5.1              |
| Min           | -0.000792        | 4.32             |
| High limit    | 5.9              | 5.9              |
| Low limit     | 4.2              | 4.2              |
| Cpk           | 0.47             | 2.25             |
| Cp            | 0.51             | 2.38             |
| Cp lower      | 0.55             | 2.51             |
| Cp upper      | 0.47             | 2.25             |
| Stdev         | 0.558            | 0.119            |
| Stdevp        | 0.558            | 0.119            |
| var           | 0.312            | 0.0141           |
| varp          | 0.311            | 0.0141           |
| Max step time | 6.73             | 3.23             |
| Avg step time | 2.04             | 2.03             |
| Min step time | 2.01             | 2.01             |
| Comparison    | GELE (>= AND <=) | GELE (>= AND <=) |

Further, it will list distribution charts for SW filename and version, Revision and Station Name.

SW Filename distribution (volume/Cpk):



**Station**

- Station report
- OEE analysis
- GR&R analysis

### Connection & Execution Time Report

To be able to see handling time between executions (typically time spent replacing the UUT in a fixture), a new Connection & Execution Time Report has been added. Browse to *Survey > Station report* and apply the filter. Select the Station (name) and click the *View report* icon. Scroll down to the bottom of the "Station Report" popup.

**Connection & Execution Time**

Calculated average: **01 m 38 s**

Min connection time:  h  m  s

Max connection time:  h  m  s

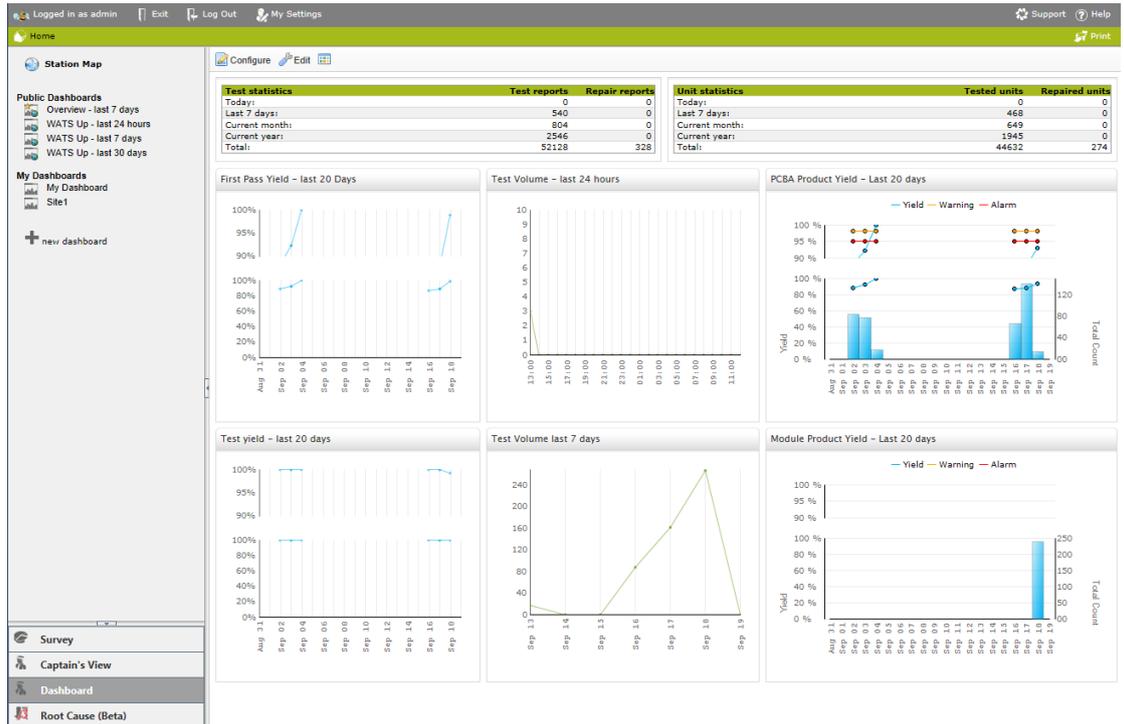
| Serial Number | Status     | PartNum   | Revision | Process | Socket | Operator | UTC Start Datetime | UTC End Datetime | Connection Time | Execution Time |
|---------------|------------|-----------|----------|---------|--------|----------|--------------------|------------------|-----------------|----------------|
| 10353045      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 00 s            | 02 m 33 s      |
| 10352764      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 06 m 15 s       | 05 m 53 s      |
| 10352764      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 15 m 36 s       | 01 m 35 s      |
| 10306002      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 01 m 01 s       | 02 m 18 s      |
| 10353045      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 54 s            | 02 m 22 s      |
| 10352764      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 47 s            | 01 m 38 s      |
| 10306002      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 08 m 27 s       | 07 m 31 s      |
| 10306002      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 19 s            | 02 m 25 s      |
| 10306002      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 46 s            | 03 m 22 s      |
| 10306002      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 24 s            | 03 m 08 s      |
| 10306002      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 05 m 15 s       | 02 m 16 s      |
| 10353045      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 01 m 57 s       | 02 m 10 s      |
| 10353045      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 06 m 12 s       | 02 m 30 s      |
| 10352764      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 03 m 50 s       | 01 m 40 s      |
| 10352764      | Terminated | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 18 m 14 s       | 02 m 09 s      |
| 12450944      | Passed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 17 h 02 m       | 02 m 29 s      |
| 12450945      | Failed     | OLC-140-C | 8        | PCBA    |        | Janis    | 2013-Aug-1         | 2013-Aug-1       | 04 m 09 s       | 02 m 06 s      |

The average Connection Time is calculated in the header of the report. By default, the minimum and maximum connection time available in the table below is use for calculation. You can modify these values and recalculate the average time.

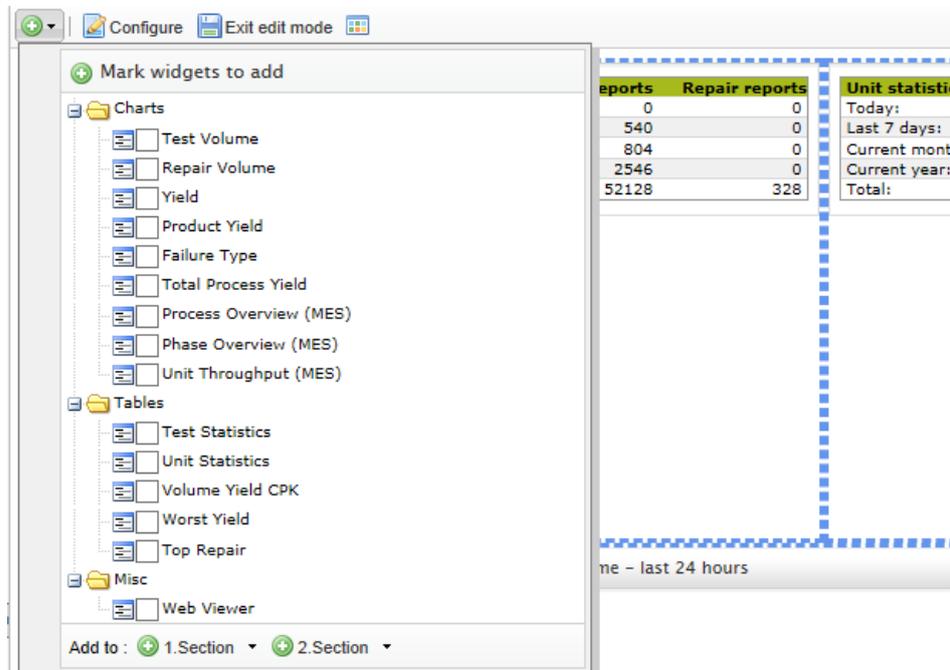
### Dashboard

The dashboard module is now released. You can easily create customizable dashboards with refresh capabilities and custom filters. Each user can create their own private dashboards, or a super-user can create and share public dashboards.

# WATS Server 4.2 Release Note



You may select among several different charts/tables and combine them with your own WATS filters. With this flexibility, you can arrange and set up dashboards that suite your needs.



## Replacing Captains View

**Public Dashboards**

- Overview
- WATS Up - last 24 hours
- WATS Up - last 7 days
- WATS Up - last 30 days

The Dashboard Module will replace the Captains View reporting tool. In the Public Dashboards area, 3 predefined dashboards are listed (WATS UP).

Configure Edit Default

Volume Yield CPK - Last 30 days

| Part-Number | Product Name | Process | Tot# | FPY# | FPY     | SPY     | TPY     | Cpk 1 | wo/f | # | Cpk 2 | wo/f | # | Cpk 3 | wo/f | # | Cpk 4 | wo/f | # | Cpk 5 | wo/f  | # |
|-------------|--------------|---------|------|------|---------|---------|---------|-------|------|---|-------|------|---|-------|------|---|-------|------|---|-------|-------|---|
| OLC-140-P   |              | PCBA    | 330  | 307  | 93.0 %  | 97.3 %  | 98.8 %  | 0.30  | 0.30 | 0 | 0.70  | 0.70 | 0 | 0.69  | 3.03 | 2 | 1.35  | 4.47 | 4 | 35.92 | 35.92 | 0 |
| OLC-140-C   |              | PCBA    | 316  | 239  | 75.6 %  | 92.4 %  | 93.4 %  | 1.03  | 1.15 | 6 | 0.16  | 1.21 | 6 | -0.01 | 1.71 | 3 | 0.01  | 2.05 | 2 | -0.02 | 2.15  | 2 |
| OLC-140     | Product Int  |         | 89   | 89   | 100.0 % | 100.0 % | 100.0 % |       |      |   |       |      |   |       |      |   |       |      |   |       |       |   |

Worst Yield - Last 30 days

| Part Number | Product Name | Process | Total Count | FPY Count | FPY     | SPY     | TPY     |
|-------------|--------------|---------|-------------|-----------|---------|---------|---------|
| OLC-140-C   |              | PCBA    | 316         | 239       | 75.6 %  | 92.4 %  | 93.4 %  |
| OLC-140-P   |              | PCBA    | 330         | 307       | 93.0 %  | 97.3 %  | 98.8 %  |
| OLC-140     | Product Int  |         | 89          | 89        | 100.0 % | 100.0 % | 100.0 % |

Worst Repair - Last 30 days

No records returned.

The default view is similar to Captains View. The top report is identical with the *Process Capability Analysis* report. By clicking on one of the CPK values, it will automatically open the *Process Capability Analysis* report and highlight the selected step. You can also click on the menu icon in the top left corner and select "open as report" for full filter options.

Apply selected

| Part-Number                         | Product Name | Process   | Tot# | FPY# | FPY | SPY    | TPY    | Cpk 1  | wo/f | #    | Cpk 2 | wo/f | #    | Cpk 3 | wo/f | #    | Cpk 4 | wo/f | #    | Cpk 5 | wo/f  | #     |   |
|-------------------------------------|--------------|-----------|------|------|-----|--------|--------|--------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|-------|-------|---|
| <input checked="" type="checkbox"/> |              | OLC-140-P | PCBA | 330  | 307 | 93.0 % | 97.3 % | 98.8 % | 0.30 | 0.30 | 0     | 0.70 | 0.70 | 0     | 0.69 | 3.03 | 2     | 1.35 | 4.47 | 4     | 35.92 | 35.92 | 0 |

Apply selected

| Step Name / Measure Name | Cpk  | Cp    | Cp lower | Cp upper | Cpk w/o Failed | Cp w/o Failed | Cp lower w/o Failed | Cp upper w/o Failed | Yield   | Total Count | Mean | Stdev. | Low limit | High limit |
|--------------------------|------|-------|----------|----------|----------------|---------------|---------------------|---------------------|---------|-------------|------|--------|-----------|------------|
| Charge rate C31 (220µF)  | 0.69 | 0.71  | 0.73     | 0.69     | 3.03           | 3.06          | 3.09                | 3.03                | 99.4 %  | 330         | 5.07 | 0.40   | 4.2       | 5.9        |
| Charge rate C41 (4700µF) | 1.35 | 2.18  | 1.35     | 3.02     | 4.47           | 7.16          | 4.47                | 9.84                | 98.8 %  | 330         | 2.63 | 0.13   | 2.1       | 3.8        |
| Discharge test C31       | 0.70 | 54.46 | 0.70     | 108.22   | 0.70           | 54.46         | 0.70                | 108.22              | 100.0 % | 330         | 0.00 | 0.00   | 0         | 0.2        |
| Discharge test C41       | 0.30 | 1.67  | 0.30     | 3.05     | 0.30           | 1.67          | 0.30                | 3.05                | 100.0 % | 330         | 0.02 | 0.02   | 0         | 0.2        |

Use the menu icon in the top left corner for the other 2 reports for drill down.

### NEW Root Cause module (BETA)

- Survey
- Captain's View
- Dashboard
- Root Cause (Beta)**

The Root Cause Analysis (RCA) module is integrated into the WATS Reporting tool. It is a general tool following the D8 RCA setup and can be used for any cases, not only WATS related. To create a ticket (a case is called a ticket), either click on the + New ticket icon in the Root Cause main menu, or use the action menu icon from one of the reports (Create RCA ticket). By using the action menu, WATS will use the parameters in the selected record as searchable tags and if created from the UUT or UUR report, add a link to the "Referenced UUT/UUR report".

- Tickets**
- My tickets
  - All tickets
  - Unsolved tickets
  - Unassigned tickets
  - Closed tickets
  - + New ticket**

**New ticket**

**Subject**

**Tags**

**Priority**

Further start the D8 process with defining a team (D1) - ticket creator and assigned user will be added by default - and describe the problem (D2). Either directly in the text box or by opening the HTML editor with image upload support. Other files can also be uploaded using the "Attach File" option below the text box.

**D1: Define Team**

Add e-mail addresses (separate with semicolon). Recipients will receive an e-mail notification when the ticket is created or updated.

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**D2: Describe the Problem**

Add comment

Assign the ticket to a WATS User and click Submit as New

**Assigned to**

The ticket will now be available in the "My Tickets" list for the creator and the assignee.

**#27: Why keeps this unit failing the same test step?**  
Open • Created today 13:01 (UTC) by Tom Andres Lomsdalen • Last updated today 13:20 (UTC)

Tags:    Priority:

D1: Define Team ▲

**D2: Describe the Problem** ▲

D3: Implement Immediate Actions ▼

Add comment

Looks like the label was misplaced at the bottom of the PCB bord. Replaced label.

Richard Pettersen wrote Sep 19 2013 13:02 (UTC)

Looks like the label was misplaced at the bottom of the PCB bord. Replaced label.

D4: Perform Root Cause Analysis ▲

D5: Implement Corrective Actions ▲

D6: Confirm Action Effect ▲

D7: Implement Preventive Actions ▲

D8: Approve and Close ▲

Assigned to

The module now allows team members to follow through the complete RCA analysis and Solve/Close tickets. For details, please visit our Resource Center at <http://support.virinco.com>

# WATS Operator Interface



## Unit Verification Report

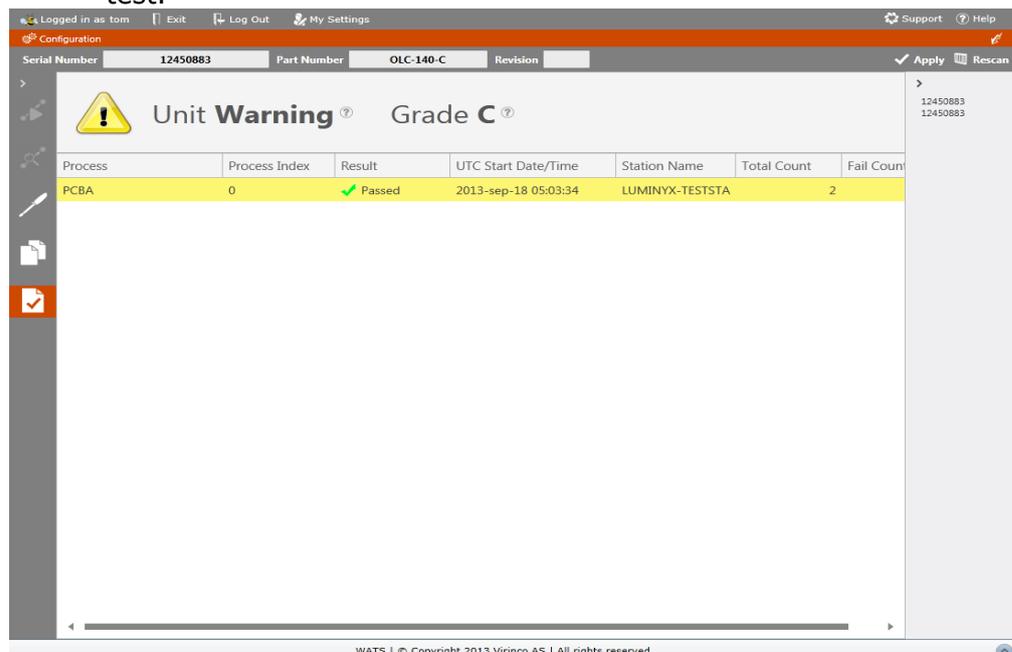
This report verifies whether a unit has been correctly processed or not, based on its current history against a set of rules defined in Product Test Operation (Control Panel), to determine its status and grade.

The status gives a high level indication if the unit has succeeded through its processes or not.

- **OK** - All tests are passed.
- **Warning** - All tests are passed, but not in order of process index (process index is configured in WATS CP).
- **NOT OK** - If one or more of the listed reports are not passed.

The grade gives a more detailed explanation to why the unit has the given status

- **A** - All processes have passed their tests, and they have been executed in correct order.
- **B** - All processes have passed their tests, but they have not been executed in correct order.
- **C** - All processes have passed their last test, one or earlier run failed, but unit has not been repaired. No Failure Found does not count as repaired.
- **D** - All processes have passed their last test, but the unit has been repaired. No Failure Found does not count as repaired.
- **N/A** - Some of the processes have not passed their last test.



Logged in as tom | Exit | Log Out | My Settings | Support | Help

Configuration

Serial Number: 12450883 | Part Number: OLC-140-C | Revision: | Apply | Rescan

**Unit Warning** Grade C

| Process | Process Index | Result | UTC Start Date/Time  | Station Name    | Total Count | Fail Count |
|---------|---------------|--------|----------------------|-----------------|-------------|------------|
| PCBA    | 0             | Passed | 2013-sep-18 05:03:34 | LUMINYX-TESTSTA | 2           |            |

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## WATS Control Panel

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### ***Product Test Operation (Last test operation)***

Product Test Operation is a rename of "Last Test Operation". The specifications is used for the "Total process yield" and "Unit Verification" reports.

E.g. The "Unit Verification" report will check if a scanned unit has completed and PASSED all Test Operations (Process) specified. The "Total process yield" will use the Test Operation (Process) with highest Index to calculate Yield.

Product test operation can be specified for a Product Group, Part Number or Part Number and Revision, then select one or several Test Operations applicable for the selection

## Miscellaneous

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- UUT report. Execution time is now formatted (DD.HH.MM.SS) and presented in addition to seconds.
- Operator Interface. When scanning a Serial Number that matches multiple Part Numbers, a dialog pop up allow the operator to select correct Part Number.
- Software Module.
  - GUI enhancements to the Software Manager
  - Added API functionality
- Miscellaneous query and database enhancements