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Procedure

Checking TH2 parameters using parmcheck.spt

Note: This document includes a list of individual parameters and how to interpret them. Refer to the table in *Interpreting the results by variable*.

Background

Use **parmcheck.spt** to check the head parameters:

- Any time you troubleshoot a Thermal 2 (TH2) head
- Every time you install a TH2 head
- During preventive maintenance
- When you suspect that the parameters have changed

How the script works

When you run **parmcheck.spt**, the parameters on the local head are compared with the average values for the parameters of more than 600 other heads. The script indicates parameters on the local head that differ from these averages.

Refer to the following sample results. Note that this file was created to quickly and easily show anomalies in TH2 head variables and provide help in troubleshooting any issues.

Procedure

Note: Before running **parmcheck.spt**, you must run **NVSDump.spt**. If you do not, **parmcheck.spt** will fail.

1. In Service Shell or Splot, run the script **NVSDump.spt**. This requires TH2 service access level in Service Shell.
2. Copy the path for **PRMParms.txt**. This is where the NVSDump information is saved—you will need the path when you run **parmcheck.spt**. The path is shown in the output screen. See the sample output:

```
Reading parms from head...
Read parms from head OK
Writing parms to file...
Wrote 'c:\Results\T01402\NVSDump\0002\PRMParms.txt' OK
```

In this sample, you would highlight `c:\Results\T01402\NVSDump\0002\PRMParms.txt` and press CTRL + C to copy the path.

3. In Service Shell or Splot, run the script **parmcheck.spt**. This requires TH2 expert access level in Service Shell.
4. A window appears prompting you for the full path to **PRMparm.txt**. Paste the path you copied in step 2 and click **OK**.

   The script will continue running. It takes approximately 30 seconds to finish.

   When the script is finished, the following results display:

```
ParmCheck.data Location:
'c:\serviceshell\scripts\th2\includes\ParmCheck.data'

Input File Name: 'c:\Results\T00269\NVSDump\0002\PRMParms.txt'

Output File Path: 'c:\Results\\T01402\parmcheck\0002\'

Head Serial Number: t01402, Sample: 2

Done.
```

5. Open the results file located at the Output File Path in this example, **c:\Results\\T01402\parmcheck\0002**—and double-click the HTML file.

Use the following section to interpret the results.

Interpreting the results of parmcheck.spt

For a list of individual parameters and how to interpret them, refer to the table in *Interpreting the results by variable*.

Overview of parmcheck.spt results

The script lists the tested parameters in three different colors:

- Green variables are acceptable
- Orange variables should be investigated but may be OK
- Red variables may indicate errors and must be investigated closely

The parameters are displayed in three lists: globally checked variables, single-check variables, and lookup table (LUT) graphs.

Globally Checked Variables

These variables are shown in histograms of a large data set from more than 600 other heads. The magenta bin contains the values of the variables for the local head. Check the variable against the table in *Interpreting the results by variable* for possible actions and recommendations.

Single Check Variables

These variables are checked against known, valid values. Only variables that are flagged as errors or warnings are shown. Check any flagged variables against the table in *Interpreting the results by variable* for possible actions and recommendations.

Look Up Table (LUT) Graphs

These are graphs of LUT variables. The minimum and maximum acceptable ranges are shown on the graphs in red, and the actual line is shown in black. The max and min are generated from the same data set as the histograms for the globally checked variables.

If the graph is out of the acceptable limits, the actuator will have to be re-pinged. For more information, contact your PSS.

Notes:

- For new heads, the **FOC_actuatorLUT** shows in orange because the actuator has not been calibrated for current mode.
- If the **effective gap LUT** shows as red, disregard it. This variable is not yet properly handled by the script.

Interpreting the results by variable

Note: To access each variable, use the command structure `TH2>> set [module]`. For example, BBS_powerfactor[0] is the variable powerfactor[0], available under `TH2>> set bbs`.

Table 1: Globally-Checked Variables

Variable	Check for	Action	Command to access the variable
BBS_powerfactor[0]	Value different from zero. See the graph for the range of values	Confirm value with factory settings	`TH2>> set bbs`
BBS_powerfactor[1]	Value different from zero. See the graph for the range of values	Confirm value with factory settings	
BBS_powerfactor[2]	Value different from zero. See the graph for the range of values	Confirm value with factory settings	
BBS_powerfactor[3]	Value zero	N/A	
BBS_powerfactor[4]	Value zero	N/A	
BBS_powerfactor[5]	Value zero	N/A	
BPD_kp	Value different from zero. See the graph for the range of values	Confirm value with factory settings	`TH2>> set bpd`

Variable	Check for	Action	Command to access the variable
BPD_ki	Value different from zero. See the graph for the range of values	Confirm value with factory settings	
BPD_kd	Value different from zero. See the graph for the range of values	Confirm value with factory settings	
BPD_beamposition	Most likely zero (factory setting), but may be changed over time. See the graph for the range of values	To find the best value, run the script **Cntvbp.spt**	
BPD_holdcurrent	Normally anywhere from 90 mA to 125 mA. This may be changed over time. See the graph for the range of values	Check this value when there are problems with the bpd or when the laser is not detected	
BPD_highgain	Should be FALSE	If TRUE, check with the RC or your PSS	
FOC_k1	For new heads, the value is zero. See the graph for the range of values	None. The actuator is not configured for current mode	`TH2>> set foc`
FOC_k2			
FOC_ki			
FOC_a1			
FOC_a2			
FOC_a3			
FOC_a4			
FOC_offset	Any value from -40 to +40 microns	Value depends on the head setting. Any value higher than ±40 may be incorrect	
FOC_learngain	Value should be different from zero. See the graph for the range of values	Check the original value from the factory settings	
FOC_padvance	Value should be different from zero. See the graph for the range of values	Check the original value from the factory settings	

Variable	Check for	Action	Command to access the variable
FOC_dmodsync	Should be different from zero, around 69. This will be different for each head	To find the correct value, run the script **Fvdelay.spt .** An incorrect value will compromise focus performance, and in the extreme the servo will respond opposite to how it should.	
FOC_fkp	For new heads, the value is different from zero. See the graph for the range of values	The actuator is configured for Force mode	
FOC_fki	For new heads, the value is different from zero. See the graph for the range of values	The actuator is configured for Force mode	`TH2>> set foc`
FOC_fkd	For new heads, the value is different from zero. See the graph for the range of values	The actuator is configured for Force mode	
FOC_lposcal	For new heads, the value is different from zero. See the graph for the range of values	Check the original value from the factory settings	
FOC_errorcal	For new heads, the value is different from zero. See the graph for the range of values	Check the original value from the factory settings	
FOC_tfuture	For new heads, the value is different from zero. See the graph for the range of values	The actuator is configured for Force mode	
FOC_fck1			
FOC_fck2			
FOC_fcki			
FOC_fca1			
FOC_fca2			
FOC_fca3			
FOC_fca4			
LDD_calkp	Most be different from zero. See the graph for the range of values	Check the original value from the factory settings	`TH2>> set ldd`

Variable	Check for	Action	Command to access the variable
LDD_calki	Most be different from zero. See the graph for the range of values	Check the original value from the factory settings	
LDD_calkd	Normally zero. See the graph for the range of values	Check the original value from the factory settings	
LDD_powerkp	Different from zero. See the graph for the range of values	Check the original value from the factory settings	
LDD_powerki	Different from zero. See the graph for the range of values	Check the original value from the factory settings	
LDD_powerkd	Normally zero. See the graph for the range of values	Check the original value from the factory settings	
LDD_nominalcurrent	Different for zero. The value depends on write laser power (amps or Watts)	Check the original value from the factory settings	
LDD_currentfactor[0]	Must be different from zero. See the graph for the range of values	This value can be set in the field. Use the procedure How to Run LDD Calibrate	
LDD_currentfactor[1]	Must be different from zero. See the graph for the range of values	This value can be set in the field. Use the procedure How to Run LDD Calibrate	
LVD_hvbias	Must be zero. See the graph for the range of values	Check the original value from the factory settings	`TH2>> set lvd`
LVD_hvtrim	Should not be zero. The value should be around 60 to 80.	If this parameter is zero or out-of-range, it may create symptoms that can be falsely diagnosed as shutter- or laser-related problems. Run the script **contvhv.spt** to find the correct value.	
LVD_standbytrim	Must be zero	If the value is different from zero, contact your thermal PSS.	
POT_wiper[0]	Value should be different from zero. See the graph for the range of values	Check the original value from the factory settings	`TH2>> set pot`

Variable	Check for	Action	Command to access the variable
POT_wiper[1]	Value should be different from zero. See the graph for the range of values	Check the original value from the factory settings	

Table 2: Single Check Variables

Variable	Check for	Action	Command to access the variable
BBS_maximumerror	Normally 2. If the value is greater than 2, this may indicate problems with the beam profile	To confirm that the value needs to be greater than 2, run **beambalance.spt** or **bbsprofile.spt**	`TH2>> set bbs`
FOC_actmode	In new heads the value is normally 1. This indicates it is set for Force mode.	In new heads, if the value is different from 1 there are probably focus problems	`TH2>> set foc`
H1C_lrt	Expected value 5	IF different change the value to 5	`TH2>> set h1c`
H1C_brt	Expected value 40	If value bigger than 40. then ok, if smaller then make 40	`TH2>> set h1c`
LDD_laserontime	In seconds. Parmcheck.spt will show this variable if it is different from zero	Value will always be different from zero. This parameter is for your information, there is no action required.	`TH2>> set ldd`
LDD_standbycurrent	Expected value is 0. If it is different from zero, check the device specs before checking the factory settings	Call your product PSS, since some applications may require a value different from zero.	`TH2>> set ldd`
LDD_maximumerror	Expected value is 2	Check the original value from the factory settings.	`TH2>> set ldd`
LVD_strokeoffset	Head dependant. Some factory values are 0, 8, 16, and so on.		`TH2>> set lvd` or `TH2>> set med`
LVD_strokewidth	Expected value is 224. For 3200dpi the expected value is 208, but some new heads may have a value of 192.	Check the factory settings for the correct value.	`TH2>> set lvd` or `TH2>> set med`

Variable	Check for	Action	Command to access the variable
LVD_blockeroffset	Parmcheck.spt will show this variable if it is different from stroke offset. This is a factory setting	Check the factory settings for the correct value	`TH2>> set lvd`
LVD_blockerwidth	Parmcheck.spt will show this variable if it is different from stroke offset. This is a factory setting	Check for factory settings for correct value	`TH2>> set lvd`
MED[X]_focusmode	Expect a value of 0, or a value of 1 and 5 for troubleshooting. Any other value is not valid	Set to zero for focus learning, then run a normal plot.	`TH2>> set med`
MED[X]_focuslasermode	Expect a value of 0, but it can be 1 for specific reflective media. A value of 1 uses the focus LED mode	The incorrect value may cause problems due to a very low sum	`TH2>> set med`
SYS_serialnumber	Head dependant	Check the back of the head to confirm the serial number	`TH2>> set sys`
SYS_dpi	Head dependant	Check the back of the head to confirm the number	`TH2>> set sys`
SYS_plotenable	Expected value TRUE	If this is not set properly, there will be no image on plate	`TH2>> set sys`
SYS_laserenable	Expected value TRUE	If this is not set properly, there will be no image on plate	`TH2>> set sys`
SYS_ignorelaser	Expected value FALSE	If this is not set properly, there will be no image on plate	`TH2>> set sys`
SYS_powermonitor	Expected value TRUE	Need the host to support this feature	`TH2>> set sys`
SYS_powerloop	Expected value TRUE	If false, there will be laser stability problems	`TH2>> set sys`

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