Thermal 2 head
Chopping Pixels

Revision History

Revision	Date	Author	Comments
A-A	30 Nov 2004	Alvaro Ireta	Initial release
A-B	01 Oct 2007	Doug Jeffery (M Munroe)	Updated template. Minor edits throughout. Removed obsolete hyperlink.

When to chop pixels

You need to chop pixels on a thermal 2 head (TH2) when:

- You want to improve the laser profile, after running **beambalance.spt**
- A `stroke cal` has failed due to a stuck pixel, and you have confirmed this by running **bbsprofile.spt**
- The pixel that needs to be chopped is close to the beginning or the end of the swath (pixels in the middle of the swath may not be of any use when chopping pixels)

Procedure

1. Identify the bad pixel or pixel pair. A bad pixel or pixel pair can be identified by:
   - Running **bbsprofile.spt**, if `stroke cal` does not work
   - Running **beambalance.spt**, if you want to improve the laser profile
   - Using the results of a `stroke cal` (with `bbs` set to verbose level 7) to determine the bad pixel pair

   Sample readout:

```
TH2 > redirect enable
*** Command Success **
TH2 > eng
*** Command Success ***
TH2 > vbs enable bbs 7
*** Command Success ***
TH2 > stroke cal
The beam-pointing has settled!
The laser power has been calibrated!
…
 OffHeight=1511
BBS: Pulse heights @ maximum light level
016: 0949 0948 0961 0980 0991 1003 1005 0998 0996 1009 1022 102
040: 1037 1046 1038 1022 1015 1017 1018 1023 1025 1030 1026 101
064: 1004 1015 1016 1019 1021 1035 1041 1046 1050 1049 1033 102
```

When a pixel is stuck on or off, the value of that pixel pair is half the value of other pixel pairs.

```
088: 1030 1057 1059 1063 1053 1060 1039 1031 1030 1018 1022 1006
112: 1006 1030 0531 1074 1031 1039 1032 1026 1019 1024 1018 1013
136: 1016 1014 1003 0995 0995 1009 1014 1012 1002 1005 0995 0998
160: 1011 1029 1041 1031 1033 1043 1036 1024 1022 1024 1023 1023
184: 1018 1014 0994 1000 0996 0985 0962 0955 0949 0971 0986 0994
208: 0984 0962 0941 0931 0942 0962 0975 0972
```

2. Calculate the new values for stroke offset and stroke width.

Note: TH2 heads have physical beam blockers that are set up at the factory. Unlike Thermal 1.7 heads, these blockers cannot be accessed externally.

Sample swath diagram:

←offset→	←Lower part of swath→	←Higher part of swath→

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- To calculate the new values, use the Pixel Chopping Calculator, on the Troubleshooting page of the Thermal 2 TechPlanet site
- If you cannot use the pixel calculator, do the calculation manually using the following formulas:

Location of Bad Pixel	Formula
Lower part of swath	Calculate a new offset. Increase the offset (in increments of 8 only), then subtract the amount you incremented from the swath width.
Higher part of swath	Reduce the swath (by decrements of 8) until the bad pixel pair is out of the swath.

Note: Never change the values of `blockeroffset` and `blockerwidth`. These values are adjusted at the factory and are important for the power calculations.

3. Update `stroke offset` and `stroke width` with the new values. The values can be changed either on the head or on the host. Note that if you change them on the head you must reset the device.

- If the device has thermal head firmware version 1.01h or earlier:

On the head	1. Type the command:
	`TH2 > redirect enable`
	Wait for `*** Command Success ***` to display.
	2. Type the command:
	`TH2 > eng`
	Wait for `*** Command Success ***` to display.
	3. Type the command:
	`TH2 > set lvd`
	Wait for `*** Command Success ***` to display.
	4. Update the values for strokeoffset and strokewidth.

On the MPE	1. Type the command: `>> set head` 2. Update the values for swidth (full name: stroke_width) and soffset (full name: stroke_offset).

On the MCE	1. Type the command: `QUANTUM>> set head` 2. Update the values for swidth and soffset.

- If the device has thermal head firmware version 1.02 or later:

On the head	1. Type the command: `TH2 > set med x` Where x = the number of the active media (numbering starts at 0) 2. Update the values for strokewidth and strokeoffset.

4. To maintain throughput, you need to increase drum speed by the same percentage that you reduced the overall swath width. If it isn't possible to increase the drum speed by the same percentage:
   - Increase the drum speed as much as possible, then reduce the power to make up the difference

     Or

   - Reduce the power by the same percentage that you reduced the overall swath width

CAUTION: Throughput is reduced if you only reduce the power.

To accurately calculate the new drum speed and power values, see the Swath Reduction section of the CTP Media Imaging and Performance Database (on the Media Qualification page of the TechPlanet Media site http://techplanet.creo.com/consumables/media/nav/qualification.htm).

Note: The TH2 provides the same power output, even after pixels have been chopped. The drum speed must be increased to maintain the same power density.

5. Perform a plot to confirm that no pixels are stuck on or off. Also check for leakage light.