FLIR Systems
Advanced Thermal Solutions

BPR VIEWER
USER MANUAL

SUMMARY

Overview

BPRViewer enables you to edit and modify BPR files created with BPRViewer or the camera.
This manual will describe the use of BPRViewer.

BPR VIEWER MAIN SCREEN

Start BPRViewer by double clicking on the icon  or a .pix file.

The following window appears:

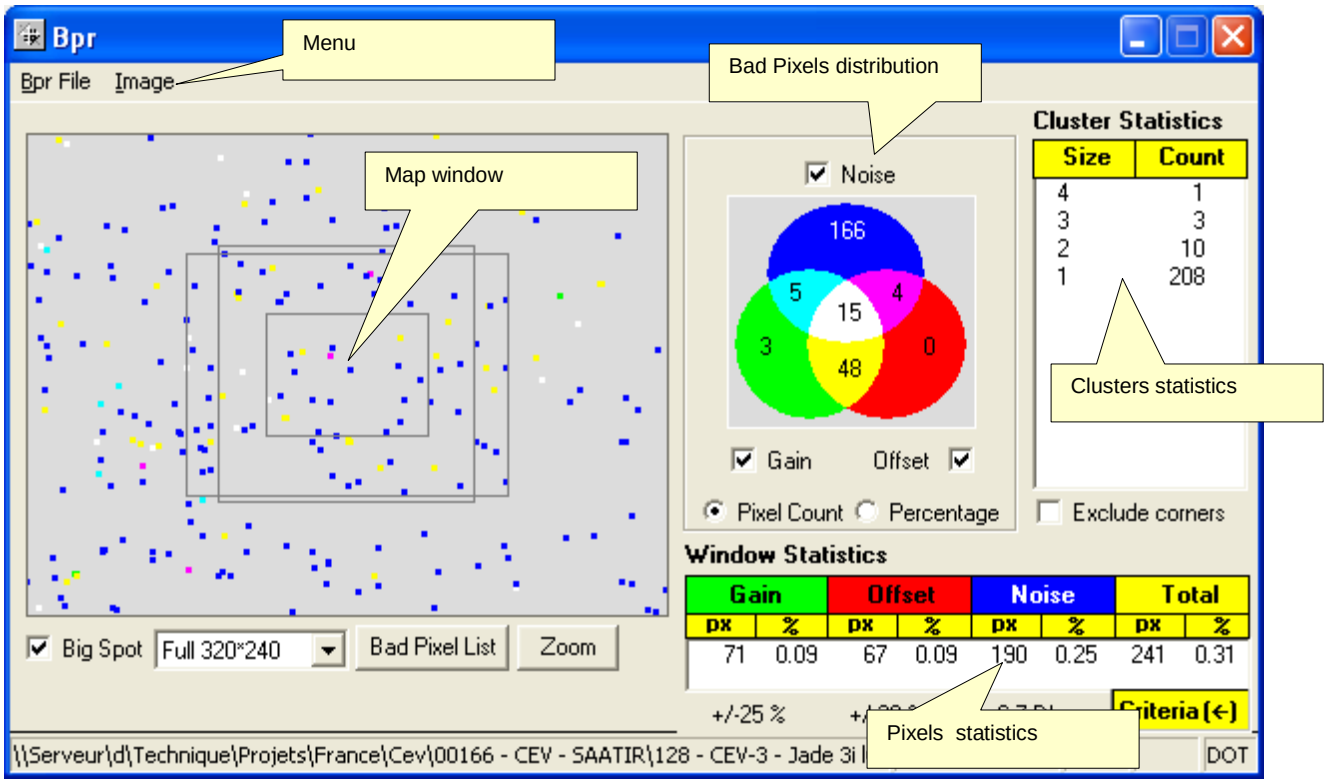
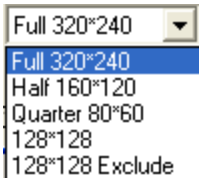


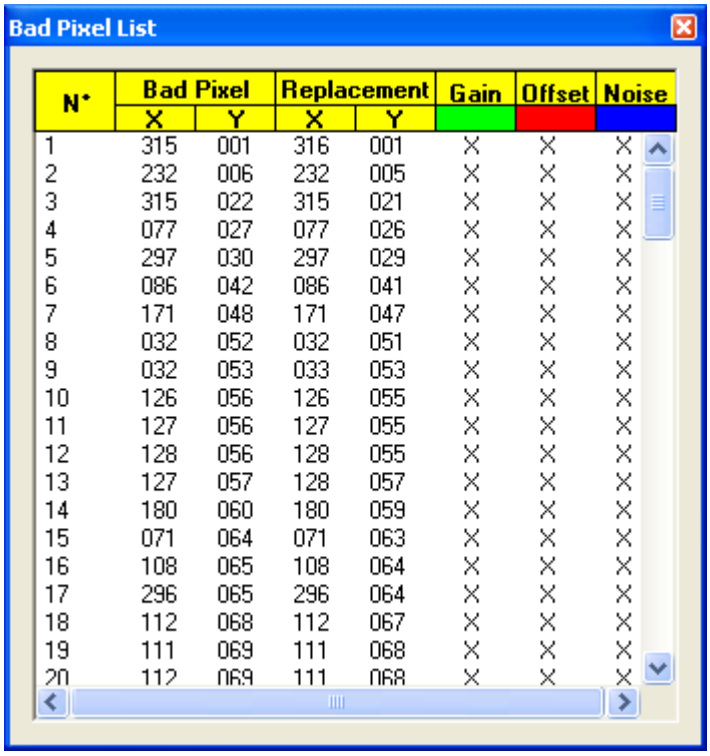
Figure 1 : BPRViewer Main Screen

Big Spot: Displays BPR using large spots

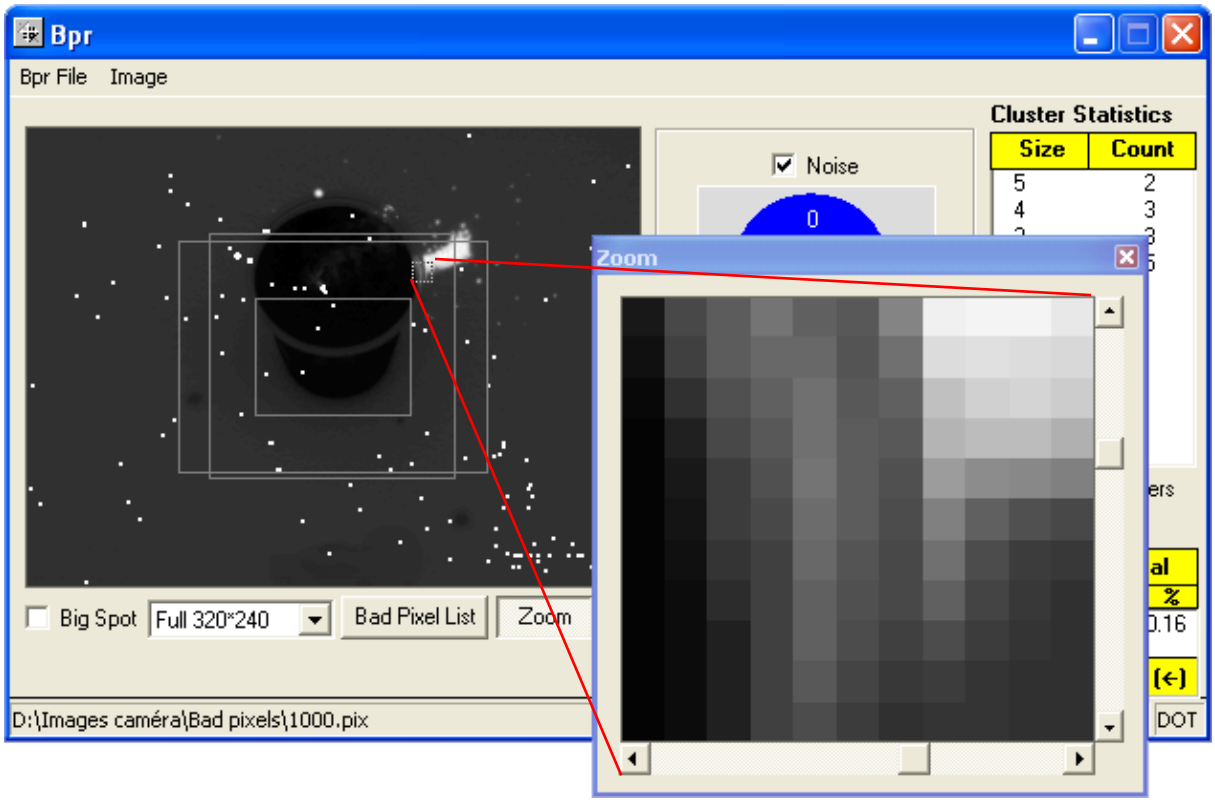


Select the area of the map to display. Statistics refers to this area.

Bad Pixel List: Open a window that displays the list of bad pixels, their coordinates and replacement coordinates. It also shows the type of Bad pixel.

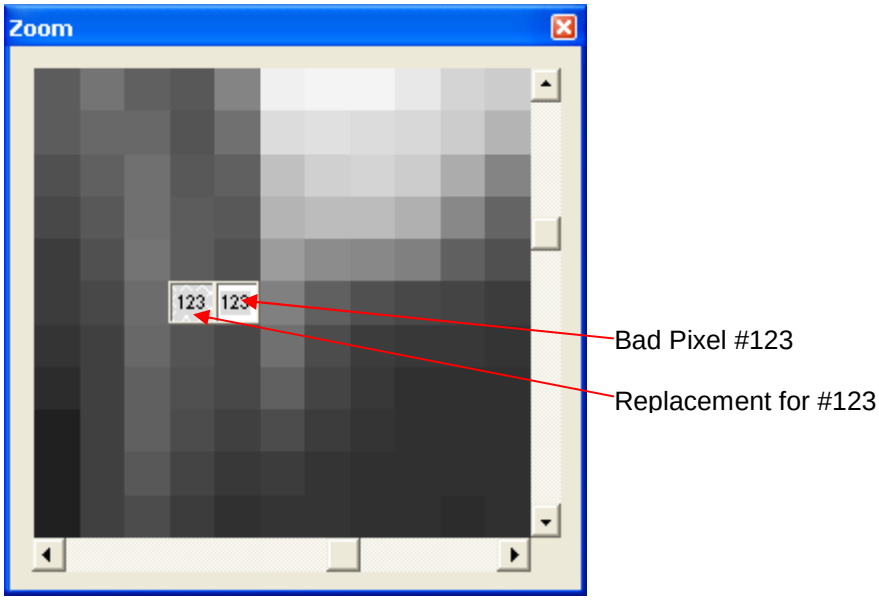


Zoom: Open a window that displays a zoom of the map.



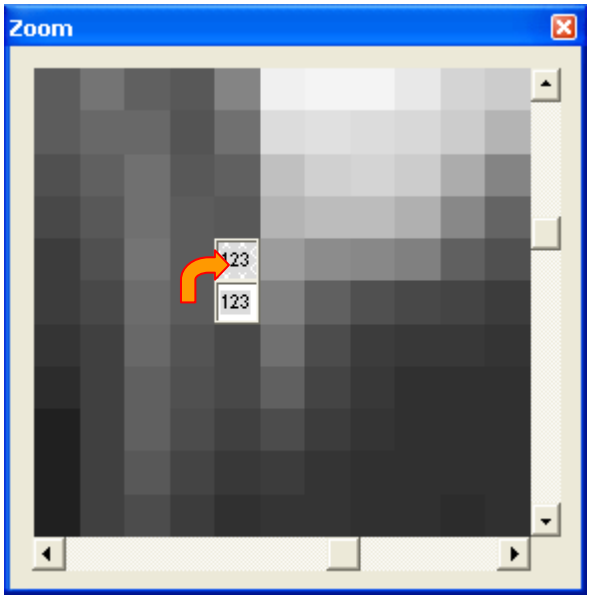
The zoomed area can be moved through the map using the left and bottom scroll bar of the zoom window.

Bad pixels are represented by a white square with a number; replacement pixel is represented by dashed square with the corresponding number.



It is possible to set a pixel as bad by right-clicking on the pixel, then selecting "Mark as Bad Pixel". It is also possible to remove a bad pixel by doing the opposite action.

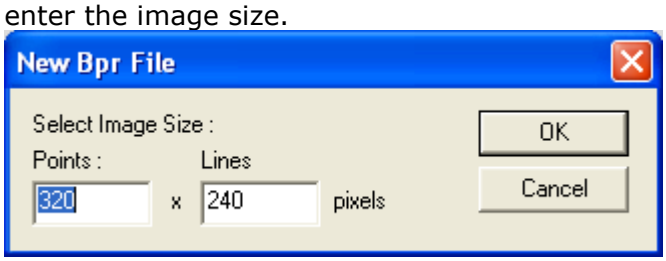
Replacement coordinates are automatically chosen. However, it is possible to force replacement coordinates by drag and drooping the replacement square.



Menu

Menu BPR File:

New: Create a new empty BPR file . The following window appears to enter the image size.



Open...: Open an existing BPR File.

Save: Save current BPR File

Save As: Save current BPR File in a new file.

Save ASCII: Save current BPR File in an ASCII file that can be read by excel or other tool.
The file looks like following :

Bad Pixel File : \\Serveur\d\Technique\Projets\France\Cev\00166 - CEV - SAATIR\128 - CEV-3 - Jade 3i lw\Caractérisation\2003-10-17\010324_BPR_GON0.txt

Detector Format:

Horz : 320
Vert : 240

Window Coordinates:

Left : 1
Top : 1
Right : 320
Bottom : 240
Width : 320
Height : 240
Pixels are INSIDE this window

Detection Criterias:

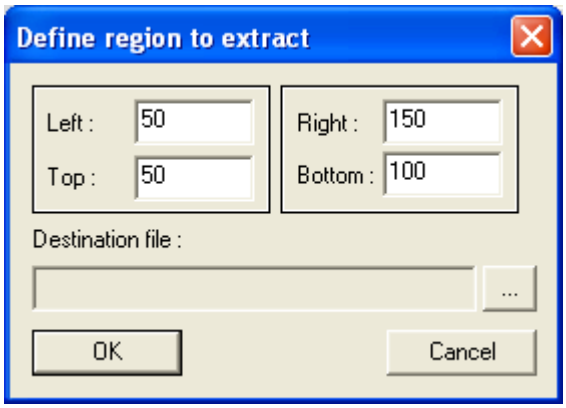
Noise : 6.7 DL
Gain : +/-25 %
Offset : +/-30 %

Criteria Statistics	#	%
Gain	3	0.00
Offset	0	0.00
Noise	166	0.22
Gain & Offset	48	0.06
Offset & Noise	4	0.01
Gain & Noise	5	0.01
Gain & Offset & Noise	15	0.02
Total	241	0.31

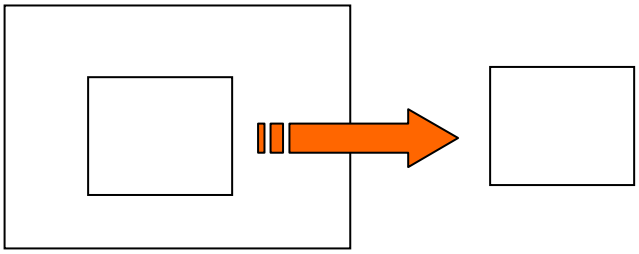
Gain : selected
Offset : selected
Noise : selected

BPR#	Bad(X,Y)	Repl.(X,Y)	Crit.		
1	205	1	1	1	GO
2	205	2	1	1	GO
3	17	4	1	1	GO
4	21	6	1	1	GON
5	98	13	1	1	GON
6	213	15	1	1	GO
7	214	15	1	1	GO
8	213	16	1	1	GO
9	214	16	1	1	GO
10	147	29	1	1	GO

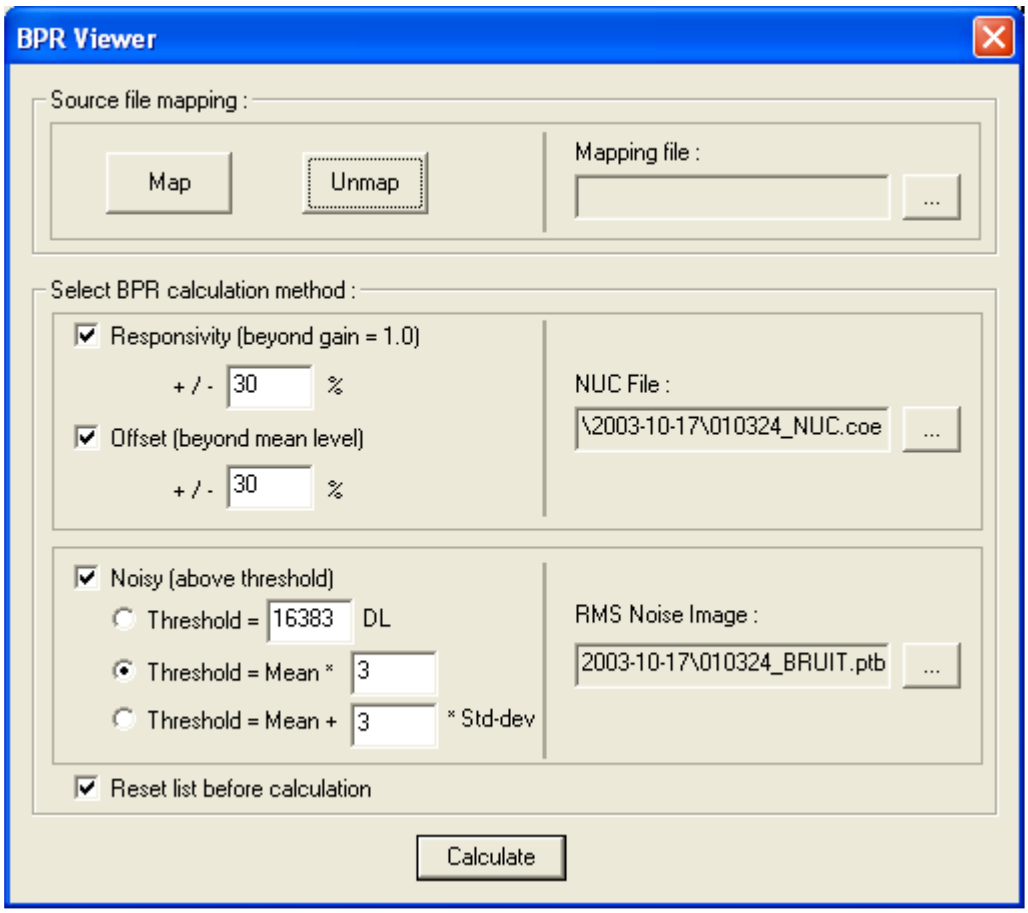
Extract Region: Allows creating a new file from a part of current file.



Select coordinates of region of interest and select a destination file. Click OK to create the new BPR file.



Calculate BPR…: Calculates BPR from films using different algorithms.



Responsivity Method Click this option to detect bad pixel by the responsivity method. In this case the system will consider pixel as bad if the gain coefficient from the NUC table is lower or higher the predefined percentage. For instance if the threshold is 25%, the system will determine pixel as bad if gain < 0.75 and gain > 1.25.

Offset Method Click this option to detect bad pixel by the offset method. In this case the system will consider pixel as bad if the offset coefficient from the NUC table is lower or higher the predefined threshold. For instance if the threshold is 30% and if the range of digitization is 16 384 DL, the system will determine pixel as bad if offset < -4 915 DL and offset > 4 915 DL.

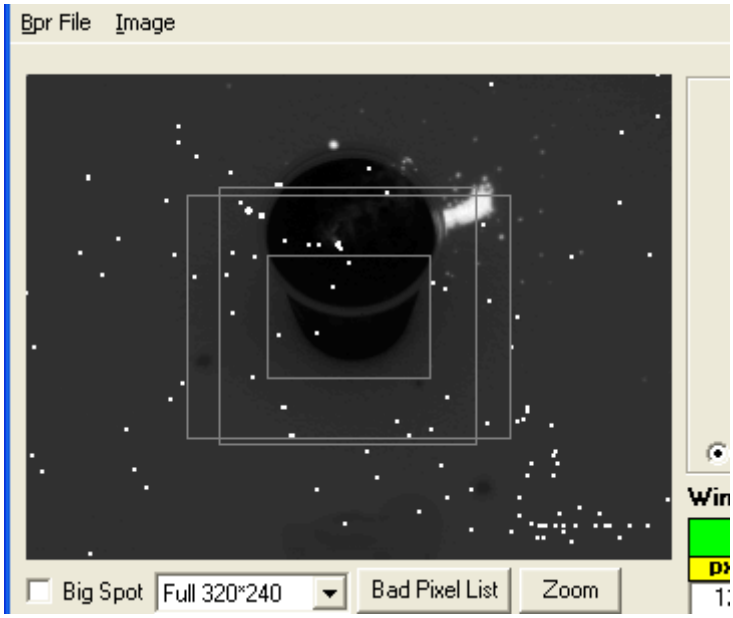
Noisy Method Click this option to detect bad pixel by the noisy method. In this case the system will consider pixel as bad if the RMS noise is lower or higher the predefined threshold. For instance if the threshold is 3.5 and the mean and standard-deviation of the noise image are respectively 5.0 and 1.0, the system will determine pixel as bad if RMS noise > 8.5.
With the absolute threshold, the system considers a pixel as bad if its value is higher than this threshold.

Reset list before: Check this option if you want to remove current pixels in file.

Menu Image :

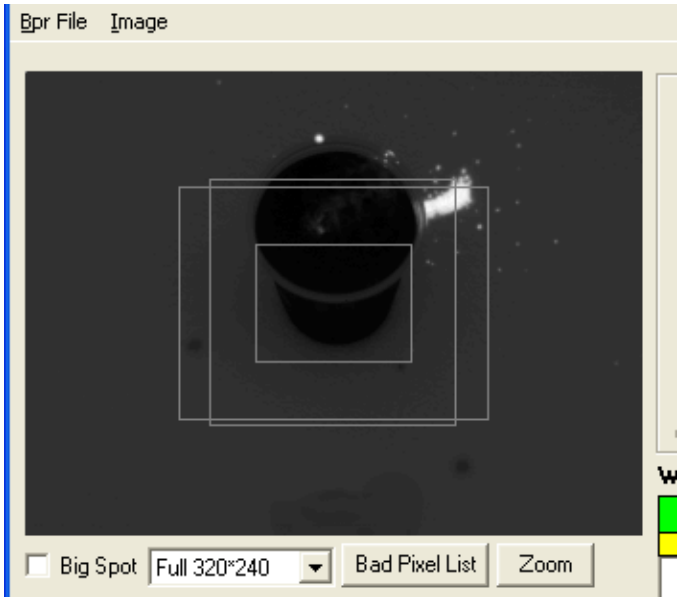
Select Image: Select the background image of the map. This image can help evaluating the correction and determining bad pixels.
This option can be directly acceded using <Ctrl> + I.

View Image Layer: Check this option to see the background image without correction.
This option can be directly acceded using <Ctrl> + L.

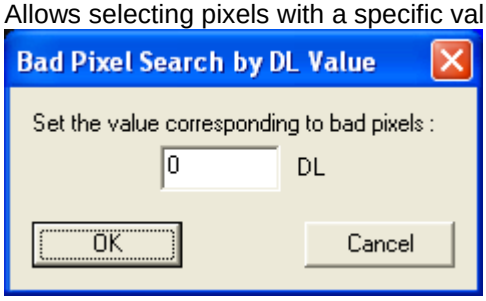


Corrected image: Check this option to see the background image with the BPR correction applied.
This option can be directly acceded using <Ctrl> + M.

Display dots: Uncheck this option to remove BPR spots. It is then more comfortable to evaluate the correction.
This option can be directly acceded using <Ctrl> + D.



Search bad pixels: Allows selecting pixels with a specific value as bad.



Recent images; A list of recently opened images.

How to?

How to create a BPR file?

There is two ways for creating a Bad Pixels file. First is to calculate Bad Pixels from NUC correction files and noise image. The second consists of selecting all pixels one by one. First method is the fastest way to create BPR file.

First method:

Select **New** from Bpr File Menu, enter the dimensions of the Bad Pixels files and click **OK**. It creates an empty BPR file. Now select **Calculate BPR** from the same menu. A window appears and allows you to select parameters for bad pixels detection. Please refer to corresponding paragraph for description of these parameters. Click **OK** when ready, the bad pixels are detected. It is possible to affine or modifies the results using the second method.

Second method:

Please refer to “How to add or remove a pixel to the BPR File”. You have to repeat the procedure for all pixels that needs to be marked as bad.

How to add or remove a pixel to the BPR File?

It is possible to add or remove a pixel to BPR file using the **zoom** window.
Use the scrollbars of the zoom window to display the area in which you want to remove bad pixels.
Select a pixel identified by you as bad with the mouse’s right button. A menu appears. Select “**Mark as Bad Pixel**” to set the pixel as bad. The bad pixel is now displayed with a white square and the replacement pixel with a dashed square.

Please refer to “How to change the replacement pixel for a given pixel” to modify the replacement pixel.

To remove a bad pixel, use the zoom window scrollbars to find the pixel to remove. Then right click on it and select “**Mark as Bad Pixel**”. The pixel is then removed with its corresponding replacement pixel.

How to change the replacement pixel for a given Bad pixel?

Use the zoom window scrollbars to find the pixel and its replacement. Click on the replacement pixel identified by a dashed square and, without releasing the mouse button, move the replacement pixel to its new position.

How to create a BPR file for a windowed image?

This is used to create BPR files that fit windowed images.

Open the full size BPR file. Select Menu **BPR File > Extract region**. A window appears to select coordinates of the new file. Please refer to Extract region menu description.