

LaCie 300 & 500 Series Pixel Policy

LaCie asks its components suppliers to conform to tight quality criteria to ensure:

- No dead pixels
- Stringent exclusion criteria applied to Dot defects within ISO 13406-2 Class II framework

No Dead Pixels

The most disturbing kind of defect on TFT monitors is the presence of dark or bright pixels on the panel[1].

When this happens, some of the panel's pixels have their three R, G, and B dots blocked in an "always lit" or "always dark" state.

This case is excluded by our quality control criteria and should there be such a pixel on the monitor panel we will replace it.

Stringent Dot Defect exclusion criteria

Although TFT technology and manufacturing processes are constantly improving, there are still occasionally some defects present in TFT displays.

As a result TFT components & monitor manufacturers have sought to define international standards for TFT panel defects that are summarized in the ISO 13406-2 Class II standard.

The most common defects are called dot defects, where a Red, Green or Blue dot is stuck in "dark" or "bright" mode:

- A dot is considered **bright** if it appears brightly when the LCD displays a dark pattern.
This means its brightness should be more than 50% higher than the surrounding dots' brightness.
- A dot is considered **black** when it appears dark when the LCD displays a bright pattern.

LaCie's dot defect exclusion criteria respect and in some cases **exceed the standard** for dot defects.

Please refer to the corresponding table for the maximum accepted defects of each type in the LaCie 319, 320, 321 and 526 monitors.

[1] On TFT monitors each pixel is made up of a red, a green, and a blue dot (R,G,B dots are also occasionally called sub pixels)

324 LaCie Pixel Defect specifications (compliant with ISO13406-2 Pixel faults classII)

Defect Type	Accept	Reject
Bright dot (Fig. 1)		
Random	$N \leq 2$	$N > 2$
Two Adjacent	$N \leq 1$	$N > 1$
Three Adjacent	$N \leq 0$	$N > 0$
Dark dot (Fig. 2)		
Random	$N \leq 5$	$N > 5$
Two Adjacent	$N \leq 2$	$N > 2$
Three Adjacent	$N \leq 1$	$N > 1$
Maximum allowable number of dot defect	$N \leq 5$	$N > 5$
Minimum distance between defects, (Fig. 3)		
Bright dot – to – bright dot	$L \geq 15\text{mm}$	$L < 15\text{mm}$
Dark dot – to – dark dot	$L \geq 5\text{mm}$	$L < 5\text{mm}$

Notes: L = length, N = count

A bright dot: any Red, Green, or Blue pixel stuck in the "On" mode.

Refer to "Fig. 1" for detail information of bright dot defect definition.

A dark dot: any Red, Green, or Blue pixel stuck in the "Off" mode.

Fig. 1. Bright dot defect description

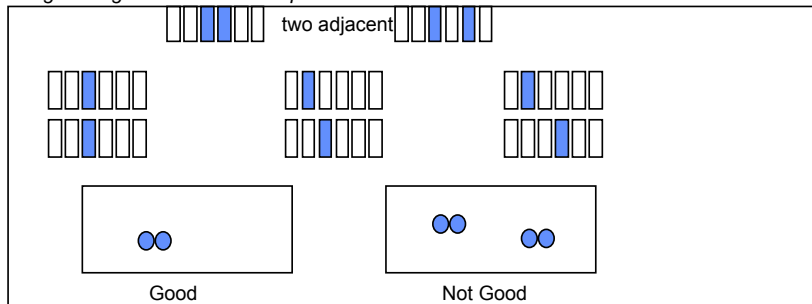
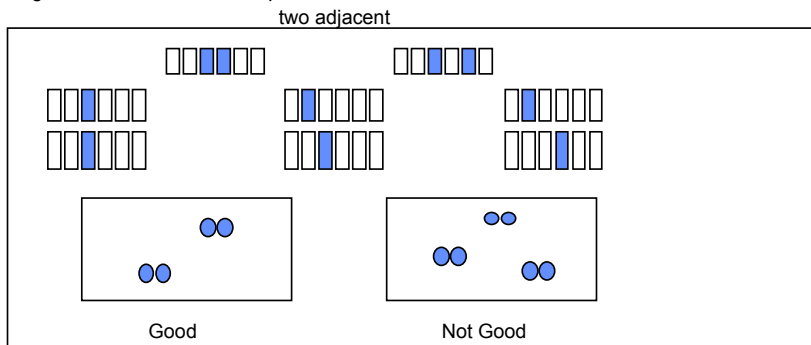


Fig. 2. Dark dot defect description



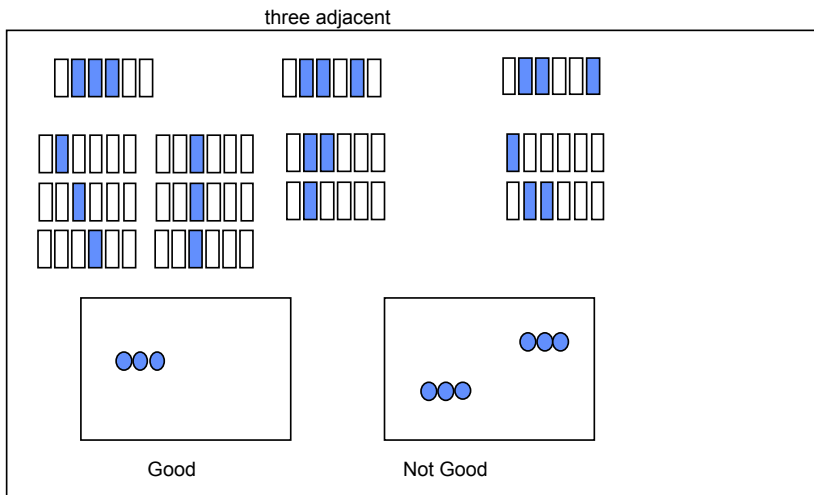
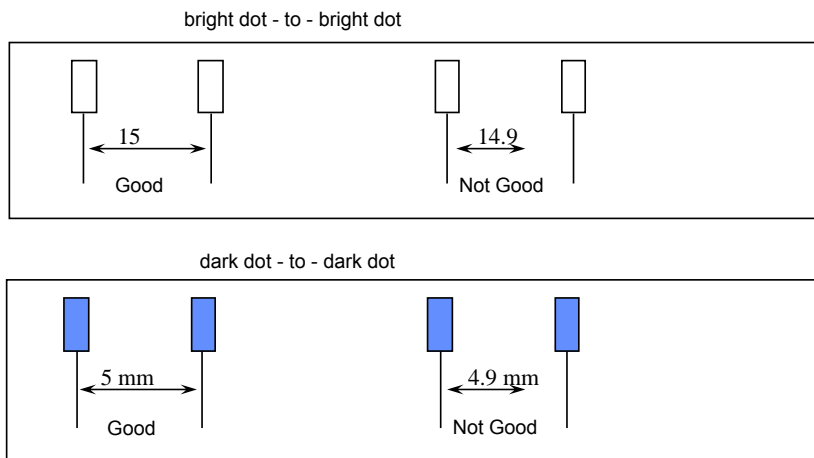


Fig. 3. Minimum distance between dot defects



- * Adjacent two & three dots in horizontal direction will be considered as one dot.
- * Minimum distance criteria is applied to the defects which are not defined as adjacent dot (two or three) in the spec.
- * Distance between bright dot & dark dot is not taken into account

526 LaCie Pixel Defect Display specifications (compliant with ISO13406-2 Pixel faults classII)

Items				Accept	Note
Adjacent Dots	1)	Bright Dots	Horizontally adjacent 2 dots (R+G, G+B)	Not Allowed	Note 1
	2)	Dark Dots		2	
	3)	Bright Dots	Horizontally, vertically or combined adjacent 3 dots (separately bright dots and dark dots)	Not Allowed	Note 2
	4)	Dark Dots		Not Allowed	
	5)	Bright Dots	R, G, B > 1/2 (size)	2	
Dot Defect	6)		1/20 < R, G, B ≤ 1/2 (size) within 10mm*10mm total	3	Note 3
	7)			8	
	8)	Dark dots		5	
	9)		Total 2) + 8)	6	
	10)	Total amount of dot defects		8	

Note 1. Horizontally adjacent 2 dots (R+G, G+B)

Count as horizontally adjacent 2 dots				
RG	GB	RG	GB	
Do not count as adjacent 2 dots				
RG	RG	RG	RG	RG
Combination with Bright & Dark Dot		Combination except horizontally adjacent 2 dots.		

Note 3. Do not count the horizontally adjacent 2 dots (R-G, G-B)

Note 2. Horizontally, Vertically or combined adjacent 3 dots

Count as adjacent 3 dots							
Do not count as adjacent 3 dots							

321 LaCie Pixel Defect Display specifications (compliant with ISO13406-2 Pixel faults classII)

		Item	Specification	Remarks
Adjacent defect dots	①	Adjacent 2 bright dots	R+G horizontal adjacent	≤ 4 sets Note 1
	②	Adjacent 2 dark dots	G+B horizontal adjacent	≤ 4 sets Note 2
	③	Adjacent 3 or more bright dots	Same color and different	≤ 0 set Note 3
	④	Adjacent 3 more dark dots	color	≤ 0 set
Defect dots	⑤	Defect dot other than ① and ②	R-G-B (Bright dots + Dark dots)	≤ 10 dots Note 4
Close defect dots	⑥	Close 2 same color bright dots	Distance between 2 same color bright dots < 6.5mm	R, G, B ≤ 4 sets each Note 5
	⑦	Close each set of ⑥	Distance between each set of 6 < 10mm	≤ 0 set Note 6
	⑧	Cluster	2 or more defect dots (⑤) in 5x5 pixels	≤ 4 clusters Note 7
			2 or more sets of ① in 5x5 pixels 2 or more sets of ② in 5x5 pixels	≤ 0 set Note 8
Total	Bright dots (R.G.B) + Dark dots (R.G.B)			≤ 22 dots
	G (Bright dots)			≤ 9 dots

Definition of defect dot: Defect area is out of 1/3 dot size. Defect size is confirmed by using 10 times of loupe.

□ Bright dot ■ Dark dot

Note 1: R+G horizontal adjacent and G+B horizontal adjacent

Counted as NG	Not counted	
	Combinations of bright and dark dots 	Combinations other than horizontal adjacent

321 LaCie Pixel Defect Display specifications (compliant with ISO13406-2 Pixel faults classII)

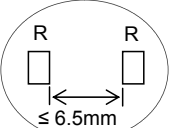
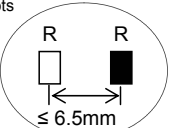
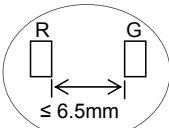
Note 2: ①+② ≤ 4 sets

Note 3: Adjacent 3 dots

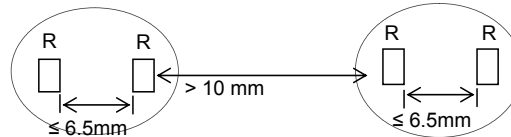
Counted as NG	Not counted
All of dots are bright dots and dark dots 	Combinations of different color dots

Note 4: Defect dots which make up ① and ② (R+G horizontal adjacent and G+B horizontal adjacent) are not counted.

Note 5: Close 2 same color bright dots

Counted as NG	Not counted	
	Combinations of bright and dark dots 	Combinations of different color dots 

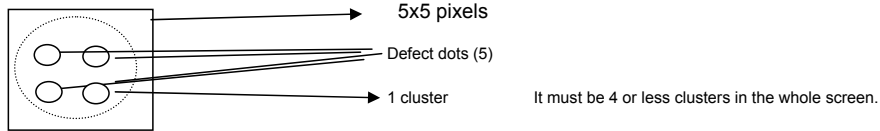
Note 6: Close each set of Ⓞ



Distance between each set of o must be more than 10 mm.

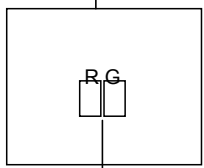
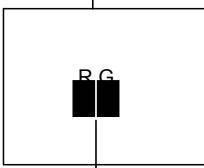
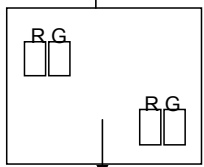
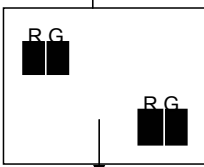
Note 7: 2 or more defect dots (Ⓞ) in 5x5 pixels

When 2 or more defect dots (Ⓞ) exist in 5x5 pixels, the set of the dot defects is counted as 1 cluster



321 LaCie Pixel Defect Display specifications (compliant with ISO13406-2 Pixel faults classII)

Note 8: 2 or more sets of Ⓞ and Ⓞ in 5x5 pixels

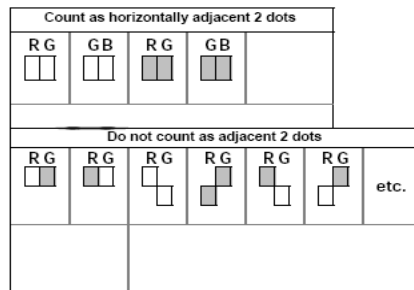
5x5 pixels 	5x5 pixels 	Allowed
Adjacent 2 bright dots (Ⓞ) ≤ 1 set	Adjacent 2 dark dots (Ⓞ) ≤ 1 set	
5x5 pixels 	5x5 pixels 	Not Allowed
Adjacent 2 bright dots (Ⓞ) ≥ 2 sets	Adjacent 2 dark dots (Ⓞ) ≥ 2sets	

319 (G2) & 320 LaCie Pixel Defect Display specifications (compliant with ISO13406-2 Pixel faults classII)

Items				Accept	Note
Adjacent dots	1)	Adjacent 2 bright dots	Horizontally adjacent 2 dots (R+G, G+B)	0	Note 1
	2)	Adjacent 2 dark dots		2	
	3)	Adjacent 3 or more bright dots	Horizontally, vertically or combined adjacent 3 dots	≤ 0 set	Note 2
	4)	Adjacent 3 more dark dots	(separately bright dots and dark dots)	≤ 0 set	
Dot Defect	5)	Bright Dots	R,G,B> 1/2 (size)	2	Note 3
	6)		1/20<R,G,B<=1/2 (size) within 10mm*10mm	3	
	7)		total	8	
	8)	Dark dots		5	
	9)		Total 2) + 8)	6	
	10)	Total amount of dot defects		8	
Fault Cluster and Min. Distance between bright dots	11)	Distance between bright dots	Distance between some colored bright dots: less than 5.9mm	2 (each color)	Note 4
	12)	Distance between 6's	Distance between 6's: less than 9mm	≤ 0 set	Note 5
	13)	Fault cluster	Two or more pixels or sub-pixels with more than one fault of 5)	3	Note 6
			Two or more pixels or sub-pixels with more than one fault of 1)	≤ 0 set	Note 7
			Two or more pixels or sub-pixels with more than one fault of 2)		

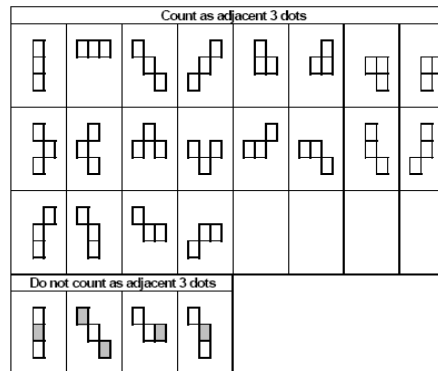
□ : Bright Dot ■ : Dark Dot

Note 1. Horizontally adjacent 2 dots (R+G, G+B)



Note 2. 1) + 2) : Max. 3

Note 3. Horizontally, Vertically or combined adjacent 3 dots (Separately bright dots and dark dots)



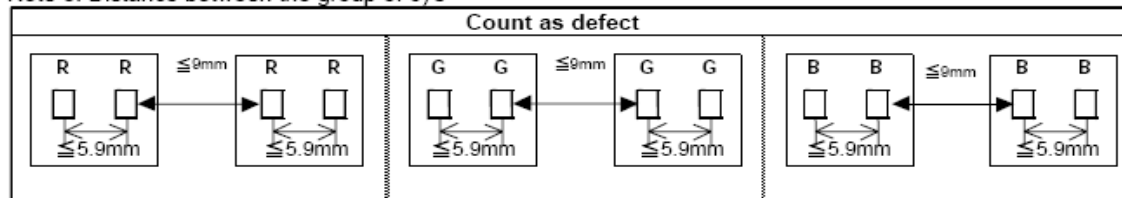
319 (G2) & 320 LaCie Pixel Defect Display specifications (compliant with ISO13406-2 Pixel faults classII)

Note 4. Do not count the horizontally adjacent 2 dots (R-G, G-B)

Note 5. Distance between bright dots

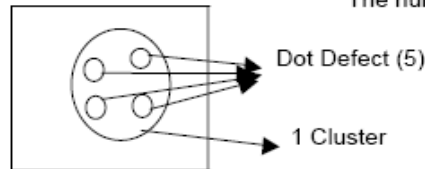
Count as defect	Do not count as defect		
Distance between the same color	Combination with Bright Dot & Dark Dot		Combination with the different color

Note 6. Distance between the group of 6's



Note 7. Count as 1 cluster : Two or more sub-pixels with fault of 5) within 5x5 pixels
5x5 pixels

The number of cluster within all screen : Max. 3



Note 8. Count as 1 cluster : Two or more pixels or sub-pixels with fault of 1) or 2) within 5x5 pixels

Count as defect		Do not count as defect

Pixel Defect For 319 G1 LaCie Display specifications (compliant with ISO13406-2 Pixel faults classII)

Items			Accept	Note
Adjacent dots	1) Bright Dots	Horizontally adjacent 2 dots (R+G, G+B)	3	Note 1
	2) Dark Dots		3	Note 2
	3) Bright Dots	Horizontally, vertically or combined adjacent 3 dots (separately bright dots and dark dots)	Not allowed	Note 3
	4) Dark Dots		Not allowed	
Dot Defect	5) Dot defect except 1), 2)	R or G or B (Bright Dot + Dark Dot)	7	Note 4
Min. Distance between bright dots	6) Distance between bright dots	Distance between bright dots (R-R) : less than 5.9mm	2 (each color)	Note 5
	7) Distance between 6)'s	Distance between (6)'s : less than 9mm	Not allowed	Note 6
	8) Fault Cluster	Two or more pixels or sub-pixels with more than one fault of (5)	3	Note 7
		Two or more pixels or sub-pixels with more than one fault of (1)	Not allowed	Note 8
		Two or more pixels or sub-pixels with more than one fault of (2)		
Total Amount of Dot defect	Total amount of Bright Dot (R,G,B) and Dark Dot (R,G,B)		13	
	Total amount of Bright Dot (G)		4	
Note 9. Every dot herein means sub-pixel (each Red, Green or Blue color)				
Note 10. Bright & Dark Dot are larger than one third of sub-pixel. (Judged by X10 loupe). (Dots smaller than one third of sub-pixel are not counted as a defect dots.) When ISO-13406-2 is amended, this definition is reconsidered if necessary.				
Note 11. Use 5%ND Filter for luminance defects.				

Pixel Defect For 319 G1 LaCie Display specifications (compliant with ISO13406-2 Pixel faults classII)

□ : Bright Dot ■ : Dark Dot

Note 1. Horizontally adjacent 2 dots (R+G, G+B)

Count as horizontally adjacent 2 dots					
R G	G B	R G	G B		
■ ■	■ ■	■ ■	■ ■		
Do not count as adjacent 2 dots					
R G	R G	R G	R G	R G	R G etc.
■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
Combination with Bright & Dark Dot			Combination except horizontally adjacent 2 dots.		

Note 2. 1) + 2) : Max. 3

Note 3. Horizontally, Vertically or combined adjacent 3 dots (Separately bright dots and dark dots)

Count as adjacent 3 dots							
■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Do not count as adjacent 3 dots							
■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■

Note 4. Do not count the horizontally adjacent 2 dots (R-G, G-B)

Note 5. Distance between bright dots

Count as defect	Do not count as defect		
R R G G B B	R R G G B B	G G B B	R G G B B R
Distance between the same color	Combination with Bright Dot & Dark Dot		Combination with the different color

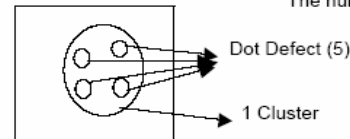
Note 6. Distance between the group of 6's

Count as defect			
R R	R R	G G	G G
B B	B B	B B	B B

Note 7. Count as 1 cluster : Two or more sub-pixels with fault of 5) within 5x5 pixels

5x5 pixels

The number of cluster within all screen : Max. 3



Note 8. Count as 1 cluster : Two or more pixels or sub-pixels with fault of 1) or 2) within 5x5 pixels

Count as defect	Do not count as defect	
5x5 pixels	5x5 pixels	5x5 pixels
R G	R G	R G
R G	R G	R G