CLAIMS

1. A method of generating a corrected full image of a planar matrix supporting a two-dimensional analyte array, the method comprising:

placing the planar matrix within 5 cm of a detector comprising one or more moveable solid-state image sensors, wherein a transparent faceplate is placed between the planar matrix and the detector, and wherein the transparent faceplate is deposited on or bonded directly to the solid-state image sensors;

producing a dark signal pattern for the detector;

positioning the image sensor(s) to two or more positions with respect to the planar matrix and acquiring with the image sensor(s) at the two or more positions a plurality of measurement patterns of electrical signals, wherein the electrical signals of the measurement patterns can be projected or otherwise made visible or detectable as sub-images of the planar matrix;

measuring a plurality of temperatures at different locations along the image sensor(s);

determining, using the plurality of measured temperatures, temperature variations among the different locations along the image sensor(s);

adjusting the dark signal pattern according to the temperature variations among the different locations along the image sensor(s), wherein the adjusting comprises applying a function characterizing a variation of the dark signal pattern with temperature;

subtracting the adjusted dark signal pattern from one or more of the plurality of measurement patterns; and

subsequently assembling the sub-images into a full image of the planar matrix in accordance with the positions occupied by the image sensor(s) when the sub-images

are acquired, wherein said assembling comprises stitching together at least two of the sub-images.

2. The method of claim **1**, wherein the length, width, or both length and width of the planar matrix measure a minimum of about 3 cm.

3. The method of claim **1**, wherein the solid state image sensor(s) are moved in discrete steps.

4. The method of claim **1**, wherein the transparent faceplate is a fiber faceplate or a fiber taper.

5. The method of claim **1**, wherein the transparent faceplate provides mechanical support to the analyte array.

6. The method of claim **1**, wherein the maximum thickness of the transparent faceplate is about 10 mm.

7. The method of claim **1** further comprising:

prior to the assembling of the sub-images into the full image, normalizing a first sub-image of the planar matrix and a second sub-image of the planar matrix, wherein the first and second sub-images each comprise two-dimensional arrays of pixels, wherein the first and second sub-images represent adjacent regions of the planar matrix, and wherein the first and second sub-images overlap at least one line of pixels.

8. The method of claim **1** further comprising:

prior to the assembling of the sub-images into the full image, applying flat field correction within a sub-image of the planar matrix.

9. The method of claim **1** further comprising:

prior to the assembling of the sub-images into the full image, applying flat field correction between two or more sub-images of the planar matrix.

10. The method of claim **1**, wherein the transparent faceplate guides light from the planar matrix to the one or more solid-state image sensors.

11. The method of claim **4**, wherein each of the one or more solid-state image sensors comprises a two-dimensional array of pixels, wherein the transparent faceplate comprises light pipes, and wherein each pixel receives light from a separate group of light pipes.

12. The method of claim **1**, wherein the plurality of analytes emit chemiluminescent light.

13. The method of claim **1**, further comprising:

cooling the sensor array to reduce dark signal noise.

14. The method of claim **13**, wherein a thermally insulating material is placed between the planar matrix and the sensor array.

15. The method of claim **13**, wherein the cooling is stopped prior to the placing of the planar matrix within 5 cm of the detector.

16. The method of claim **1**, wherein the solid-state image sensors are thin-film field effect transistors (TFT).

17. The method of claim **1**, wherein the solid-state image sensors are complementary metal-oxide-semiconductors (CMOS).

18. The method of claim **1**, wherein the solid-state image sensors are charge-coupled devices (CCD).