OLED microdisplays enable enhanced digital image fusion

Grenoble, France, April 25, 2012— MicroOLED today announces that the company will demonstrate, at SPIE DSS in Baltimore, two prototype 5.4M dot 0.61-inch diagonal OLED microdisplays in bicolor and tricolor. The microdisplays are designed to enhance image resolution and lower the power consumption of digital image fusion used in defense, security and medical applications.

Digital image fusion, a process of combining video streams from multiple sensors into a single composite image, has important applications in thermal weapon sights, aviator night vision imaging systems and other emerging night sight and situational awareness equipment. Also, surgeons use image fusion systems to integrate and analyze preoperative images to plan and perform brain, spinal and other complex surgeries.

“MicroOLED’s bi- and tricolor OLED microdisplays broaden the performance attributes of our monochrome 5.4M pitch 0.61-inch diagonal microdisplay with a sub-pixel pitch of 4.7 microns by 4.7 microns operating at 0.2W, that we announced earlier this year. This megapixel pitch monochrome microdisplay was well received by professional camera and night vision system makers worldwide, so we are optimistic about the bicolor and tricolor 5.4M dot versions,” said Eric Marcellin-Dibon, CEO of MicroOLED. “In addition, with our quad pixel architecture, we have increasing flexibility to create new color filter arrangements. These will enable MicroOLED to develop new displays, which will further open up opportunities in the defense and medical markets. At SPIE DSS, we will demonstrate our 5.4M dot 0.61-inch bicolor and tricolor OLED microdisplays to the defense industry’s top researchers, scientists and market leaders and show what the next step will be in digital image fusion.”

Performance attributes
MicroOLED’s bicolor OLED microdisplays can merge a 4.0M pixel image from a night vision sensor with a 1.3M pixel image from a thermal sensor, and its 0.61 inch diagonal is directly compatible with existing systems. The tricolor version enables MicroOLED to merge up to three high resolution images or two images and a graphical overlay, with the following resolutions: a 2.6M pixel black and white image with a 1.3M pixel red image and a 1.3M pixel cyan image. They will provide system integrators and end-users all of the strengths of optical and digital image fusion systems with none of the trade-offs.

MicroOLED conserves energy in digital image fusion systems by merging the video input signals from multiple sensors directly in the microdisplay rather than the processor. Also, as the sub-pixels in the quad-pixel architecture are square, the same shape as pixels used in night vision and thermal sensors, each sub-pixel can be used as a full pixel. This is unlike the stripe pixel architecture where one needs

to use the full color triplet for each pixel.

Both optical and digital image fusion systems exist on the market.

The strength of optical image fusion is that it can combine images originating from tube intensifiers with a high resolution (up to 2000 pixels) and thermal sensors (up to 1280x1024 pixels) with a fraction of energy, but at the expense of producing a lower quality composite image.

The strength of digital image fusion is that it can record, compress and transmit data, as well as improve the quality of the composite image by adjusting visual parameters. However, it draws more heavily on energy. Current models have a limited image resolution of approximately 1000 line maximum. For existing models to process images at a higher resolution would require not only increasing the power consumption, but possibly enlarging the display, as well as other system optics, which run counter to the military market trend in Swap (Size, Weight and Power) reductions.

At SPIE DSS 2012
MicroOLED will make available the viewing of the bi- and tricolor 5.4M dot OLED microdisplay prototypes by invitation at SPIE DSS in Baltimore, April 23 – 27. MicroOLED CTO Gunther Haas will present a technical paper “A 5.4M dot OLED Microdisplay for Digital Night Vision and Image Fusion” during the “Head- and Helmet-Mounted Displays” session on Wednesday, April 25 at 2:00pm, at the Convention Center.

SPIE Defense, Security and Sensing 2012 is one of the defense and security industry’s leading meetings for optronics equipment, and brings together top researchers, scientists and engineers from the military, industry and academia. Programs cover the latest enabling technologies and applications in infrared, sensors, image analysis, and other systems and devices.

About MicroOLED
MicroOLED makes highly power-efficient microdisplays with superior image quality for mobile near-to-eye viewing devices used by consumers, medical professionals, and the defense and security industry. Through its microdisplays, MicroOLED makes it easier to integrate high definition in camera viewfinders, 3D goggles, head-mounted displays, and other visual devices. The company’s exclusive high efficiency OLED (organic light-emitting diode) technology license provides significant advantages in high efficiency, contrast, uniformity, and image sharpness making its microdisplays superior in quality to the full HD image in today’s flat screens. MicroOLED’s products also benefit from very low power consumption.

Founded in 2007, MicroOLED is a privately held company with headquarters, R&D and a new 300,000-unit production facility located in Grenoble, a renowned center of excellence in France for chipset and nanotechnology development. The company is led by a management team highly experienced in advanced technologies, including several years’ research and development in OLED technology from CEA-LETI, a leading European micro-and nanotechnology research center.

www.microoled.net [1]

Links:
[1] http://www.microoled.net