K&A WIRELESS, LLC
A subsidiary of ASSA Industries, LLC

K&A Wireless, LLC

Memorandum

To: Tri Luu – Ultratech, Inc

From: Kamil Agi – President-CEO K&A Wireless, LLC

CC: Steve Dayhoff – Federal Communications Commission

Date: 11/19/01

Re: FCC ID OPH-VBLAST2400

This memorandum is in response to correspondence reference number 21068 for 731 Confirmation number EA101939 dated 26 October 2001.

Table 1 shows the available cameras in the firefighting market that are used by the fire departments.

Table 1. Table of available manufacturers of thermal imaging cameras used by fire departments

Cairns Advanced Technology, LLC	www.cairnsiris.com
ISG Thermal Systems USA, Inc.	www.isgfire.com
Mine Safety Appliances Corporation	www.msanet.com
Bullard, Inc.	www.bullard.com
FLIR Systems, Inc.	www.fireflir.com
Scott Technologies, Inc.	www.scottaviation.com
Infrared Components Corporation	www.infraredcomponents.com
International Safety Instruments, Inc.	www.intsafety.com
Fire Research Corporation	www.fireresearch.com

In this group of manufacturers, we are currently targeting Cairns Advanced Technology, LLC and ISG Thermal Systems USA, Inc. These two companies are currently key customers of K&A Wireless, and we would like to provide them the analog system referenced in this response. We would like the option to market the system to other camera manufacturers as well in the firefighting market. For any new integration, we will work closely with the manufacturer to insure that the RF exposure conditions are met. I have also provided correspondence with the ISG Thermal Systems USA and Cairns Advanced Technology as reference.

Figure 1 shows the camera in the typical configuration in the fireman's hands. We believe that this is the worse case scenario for the exposure criterion. Figure 2 is the outside dimensions of the camera with the antenna located under a radome. The red button is an on/off switch. This location was chosen for mechanical stability and reliability in a fire scene.

Figure 1. Indicates the outer dimensions of the camera. The antenna is located 21.5 cm away from the edge of the camera maintaining the RF exposure limit.

The length

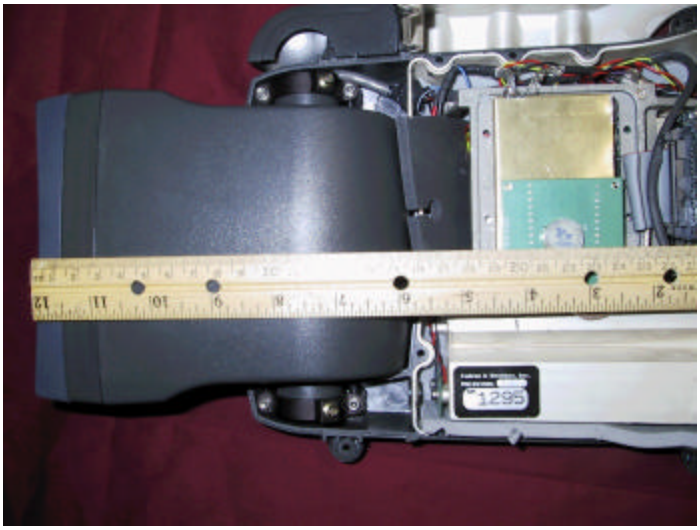

Figure 2. A photo indicating the location of the integrated transmitter. Note that the antenna is placed 22 cm away from the edge of the edge of the camera.

of the camera is 33 cm and the width across the antenna is 18 cm and 13.5 cm across the LCD. As shown the antenna is placed inside a radome with the edge of the radome approximately 21.5 cm away from the edge of the camera near the LCD. Keep in mind that the facemask of the firefighter will add an additional 3cm (minimum) distance to the actual body/head of the firefighter. Note that the radome for this camera system will be made of Ultem®, which has a dielectric constant of approximately 3 (www.cuflon.com/ultem.htm). This will further decrease the radiated power of the transmitter. Bystanders, we believe, will always be further than 20 cm.

Figure 3 shows the location of the integrated transmitter inside the camera. Note that the antenna is placed in the center of the radome. In this configuration, the 20 cm distance will be met.

Please find the correspondence with Mr. Kerry Gordon at Cairns Advanced Technology.

From: Kerry Gordon [kgordon@cairnsinc.com]
Sent: Thursday, November 15, 2001 1:45 PM
To: kagi@ka-wireless.com
Subject: FCC Compliance

Mr. Agi:

I have reviewed the material that you are preparing for the submission of the internal FM transmitter for the CairnsVIPER thermal imager and find that the material represents what we have agreed in our previou meetings.

The images and the dimensions agree with what Cairnsbeleives to be the requirements of the FCC for this class of product and we are confident that K&A has taken all the necessary precautions to make a function and safe product for the market.

Cairns is prepared to assist K@A in every way possible to achieve certification of this product with the FCC as well as getting the product certified for EMI/RFI as soon as possible.

If there is anything that we can do to assist you as our tranmitter development specialist contact me directly at 1-800-230-1600.

Regards,

Kerry W. Gordon
Vice President of Technology

The worse case exposure condition of the thermal imager currently available at ISG is shown in Figure 4. In this application, the firefighter is surveying a fire scene prior to entering a burning building. His gear is on, but his face shield is not down. Although this is the worse case configuration from an exposure standpoint, it is not considered normal use since typically the transmitter will be off. However, there is a possibility that it may be on.

Figure 3. ISG Thermal Systems USA Talisman line of thermal imagers shown in its typical application.

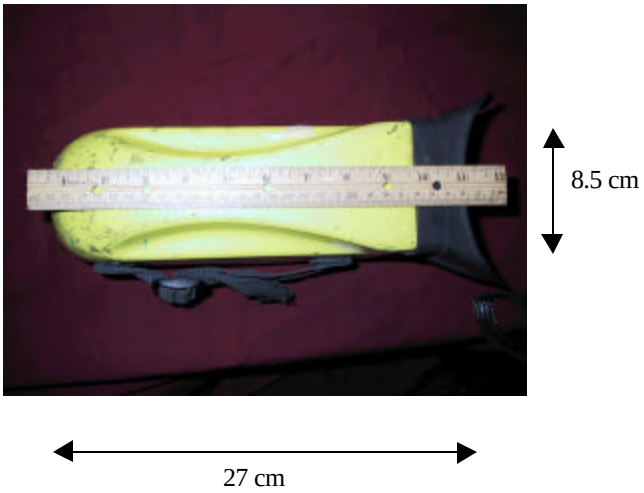

Figure 4. The dimensions of the Talisman are shown above. The antenna will be placed on the end of the camera with the detector and lens, opposite the display.

The dimensions of the Talisman are shown in Figure 5. The distance from the antenna to the LCD display is approximately 25cm. Keep in mind that the camera is internally shielded against electromagnetic interference (EMI). This will also provide additional safety from RF exposure. The proposed location of the antenna is shown

in Figure 6 (a). The antenna will be located on the tip of the camera furthest away from the LCD. An internal photograph of the antenna is shown in Figure 6(b).

(a)

(b)

Figure 5. (a.). Location of the internal antenna shown from the outside of the case. (b). Location of the internal antenna with the camera electronics removed. The distance from the antenna to the user exceeds the minimum 20 cm necessary for mobile devices.

The transmitter module is installed once the camera electronics are in place. Therefore, the photos do not include the module. With the antenna placed at that location, the minimum distance of 20cm will be met.

Below is the correspondence with Mr. John Baker at ISG Thermal Systems USA, Inc:

****

From: John Baker [djbakerisg@mindspring.com]
Sent: Thursday, November 15, 2001 2:02 PM
To: kagi@ka-wireless.com
Subject: RE: FCC Information...

Kamil,
Thanks for providing the details of what the issues are regarding RF exposure and antenna placement. From what you sent me it appears we should be in compliance. If there are any points we need to discuss or adjustments that need to be made in order for this to work please let me know.

Regards,

John