

## Information Sheet for Research Study

**Principal Investigator:** Yoshi Ohno

**Study Title:** Maximum luminous intensity levels of airport signaling lights

**Study Site(s):** NIST Gaithersburg, Bldg. 220, Room C02E

### **Key Information**

*This is a brief summary of key information to describe the research study you are being invited to participate in. You will find more detailed information explained later in this document.*

- **Voluntary Consent:** You may be eligible to participate in this research study. Taking part in this study is completely voluntary. You may decide to participate or not participate.
- **Purpose:** We are doing this research to increase air traffic safety at airports. The experiment will be conducted to determine the intensity requirement for brightness levels of the heliport perimeter lights.
- **Duration:** This experiment for each participant will take approximately one hour.
- **List of Procedures and Activities:** You will be asked to sit in our dark room lab and view a model light source simulating heliport perimeter lights, presented several meters away in front of you. You will be asked whether you see the lights at comfortable brightness or too bright or causing glare, when we change its light levels at various conditions.
- **Risks or Discomforts; Reasonable, expected benefits:** This research is considered to be minimal risk. You will be in a dark environment for one hour and may feel some discomfort though we will take breaks between sessions. Benefit is that you will contribute to safety of air traffic.

### **Introduction**

You are being asked to take part in a research study. Research studies include only people who choose to take part. This document is called an information sheet for you to read carefully before you make your decision about participating in the study. Ask the researcher or study staff to discuss this information sheet with you, please ask him/her to explain any words or information you do not clearly understand. The nature of the study, risks, inconveniences, discomforts, and other important information about the study are provided below.

The person who is in charge of this research study is Dr. Yoshi Ohno. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge.

This research is being sponsored by Federal Aviation Administration.

## **Purpose of the study**

Light emitting diodes (LED) are widely introduced to airport signaling lights. The luminous intensity of these signaling lights are specified by FAA. Only the low limits of luminous intensity are specified. After LEDs were introduced, there were reports by pilots that the signal lights appear too bright and are causing glare and distraction. This study will conduct vision experiments to determine acceptable maximum luminous intensity levels for heliport LED perimeter lights to minimize glare and distraction. The results of this study will contribute to improved specifications for such signaling lights at airports, thus contributing to increased safety of air traffic.

## **Why are you being asked to take part?**

You are being asked to participate in this research because we need data of human visual perception, in particular, from experienced pilots who are familiar with heliport perimeter lights. There are individual variations in visual response, and we need to obtain meaningful average results from data of a number of subjects for the parameter we investigate.

## **Study Procedures:**

If you take part in this study, you will be asked to:

- You will be asked to complete a demographic questionnaire, for your gender, age, and race/ethnicity. Your demographic information is kept confidential. Your demographic data will be connected to your experimental data using an assigned participant number, and the number will never be linked to your name. If you choose not to provide your demographic information, we will withdraw you from participating in the experiments without any penalty.
- The experiment will take a total of approximately one (1) hour.
- We will have short breaks between sessions, but you are welcome to request taking breaks at any time if necessary.
- The experiments will take place at our lab located at the basement of Bldg. 220, Room C02E. This is a long-distance (30 m) dark room lab.
- There will be no recording of audio or video during experiment.
- During experiment, a model heliport perimeter light (lighted dots in a trapezoid shape) will be presented at various brightness. As you will look at the light, the investigator will ask you what level of glare and discomfort you feel, and you will answer verbally in scale 1 (not at all) to 5 (unacceptable). More exact instructions will be provided at the experiment. The investigator will record your answer on a spreadsheet on a laboratory computer and present next light. This will be repeated for a number of presentations of the model light at different intensity levels, at different distances and different light colors (green and blue).
- The data on the computer will not include your name, all data are anonymous and only connected to the assigned participant number.
- After the experiment, you are welcome to ask any additional general questions about signaling and airport lighting. The investigators will be happy to answer and discuss with you.

## **Total Number of Participants**

We expect a total of 50 subjects or less will participate in this study over a period of one or two years.

## **Alternatives / Voluntary Participation / Withdrawal**

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

If at any time you choose to withdraw, before the experiment starts or during experiment or after the experiment, you only have to inform it to the investigator. If you withdraw during or after the experiment, collected data from you will be deleted. If your participation is ended by the investigator without your consent for any reason, you will be informed so.

## **Risks or Discomfort**

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study. There might be some discomfort, as you will be in a dark room for one hour, but it may be similar condition as when you look at stars at night for some time. There is also a very small risk that someone who is not authorized would have access to the data we have stored about you. However, we describe how we will protect your privacy and confidentiality in a later section of this information sheet.

## **Compensation**

You will receive no payment or other compensation for taking part in this study.

The findings from this research may result in the future development of products that are of commercial value. There are no plans to provide you with financial compensation or for you to share in any profits if this should occur.

## **Costs**

It will not cost you anything to take part in the study.

## **Privacy and Confidentiality**

We will keep your study records private and confidential. Your name will not be linked to any of the demographic information or the experimental results. Even the investigators will not be able to identify which data and results belong to which participant. The demographic data will be linked with the experimental results using an assigned participant number. Your name will not be linked to this number. All records of email communications with you for scheduling purposes will be kept confidential and will not be disclosed to anyone to the extent permitted by law. No emails will be linked to your assigned participant number, experimental data, or demographic information.

Certain people may need to see the study records, which includes, demographic information and experimental data. Anyone who looks at your records must keep them confidential. These individuals include:

- The research team, including the Principal Investigator, study coordinator, and all other research staff.
- Certain government people who need to know more about the study, and individuals who provide oversight to ensure that we are doing the study in the right way.
- Any agency of the federal, state, or local government that regulates this research.
- The sponsor of this study, Federal Aviation Administration (FAA).

Your identity will be protected to the extent permitted by law, including the Freedom of Information Act. We may publish what we learn from this study. If we do, we will not include your name. We will not publish anything that would let people know who you are. Total confidentiality cannot be guaranteed, since all security measures have vulnerabilities and may be compromised.

### **Future use of research data and/or specimens**

The data collected in this study will be analyzed and the results will be reported to the sponsor of this study or be published in scientific journal. The raw data will be stored in the primary investigator's computer for conducting analysis and kept for future studies and will be accessed only by him. Note, also that the raw data stored are not connected to your name. The raw data will never be publicly posted.

### **You can get the answers to your questions, concerns, or complaints**

If you have any questions, concerns or complaints about this study, or experience an unanticipated problem, or research-related injury call Yoshi Ohno at NIST extension 2321 or 301-975-2321. If you have questions about your rights as a participant in this study, or have complaints, concerns or issues you want to discuss with someone outside the research team, call the Human Subjects Protection Office at (301) 975-5445.

**DO NOT SIGN THIS INFORMATION SHEET.  
PLEASE KEEP IT FOR YOUR RECORDS.**