HASP Monthly Status Report

Report Month:	April 2023
Submitted by:	Andrew Snowdy & Wookwon Lee
Submit Date:	04/28/2023
Institution:	Gannon University
Payload Number:	2023-12
Payload Name:	UHF-Band Video-Streaming Payload

I) Activities During Previous Month:

a) Video Source (Raspberry Pi) --- Kalkidan, Zoey: In-lab testing of a single Raspberry Pi 4B using 3 webcams to simultaneously video stream via a wideband radio has been successfully completed; Current testing has been with a pair of M5 (5.8 GHz) radios.

b) I5 CPU for DTA2115B – Sara, Jack: The i5 motherboard and CPU were damaged such that the DTA2115B was no longer recognized during lab testing. Much of the past month has been spent diagnosing the problem, which has now been remediated by using a new CPU and motherboard.

c) Front-end Power Amplifier – Andrew, Hannah, Sara: The damage to the power amplifier reported last month necessitated the purchase of a new power amplifier. The new amplifier is now on hand and we are ready to begin testing.

d) Auto start for video streaming at boot-up – Jack, Sara: Due to investigating the damage of the i5 described previously, we have only recently resumed work on this. A script has been written and tested that successfully starts the streaming software. Task scheduler has been used to begin this script when Windows boots. This script seems only to work correctly during a reboot, not a cold start, and we continue to investigate. We have identified several possible work arounds, including a script that automatically reboots the machine on a cold start and using an SSH connection between the Raspberry Pi and the i5 computer to initiate the stream.

e) Payload thermal control plan – Zack, N. Conklin: A 1/8" thick aluminum base plate has been cut to fit the payload mounting plate. Copper wires will be attached to the CPU heat sink via thermally conductive epoxy and run to the base plate and sides of the payload enclosure to function as a heat sink. Temperature sensors will also be mounted on a few key electronics, and the readout code for these sensors has been implemented on a R-Pi to collect and send temperature data to ground via HASP serial.

f) HAM Band Use Plans -- W. Lee, KC3GQE:

- UHF transmission will occur over the 1200-1300 GHz band. The vendor of DTA2115B confirmed that the intended 1200-1300 GHz transmission can be done with a slightly different setting of the device.

II) Issues Encountered:

- When the power amplifier was damaged last month, it also damaged the i5 motherboard and CPU such that they were not able to recognize the DTA2115B (but were otherwise functional) – this issue has been resolved.

III) Milestones Achieved:

- Completed PSIP and security clearance Excel sheet.

IV) Plans for Coming Month:

- Finalize payload hardware and software prior to end of the spring semester. Mechanical and thermal mitigation work will continue after the payload configuration finalized.

V) Other Comments or Questions for HASP Management:

- None at the moment.

VI) Team Composition and Organization:

Fill in text as necessary plus update table below.

Name [(i)]	Start Date	End Date	Role	Student Status	Race[(ii)]	Ethnicity[(iii)]	Gender [(i)]	Disabled
Wookwon Lee	1/9/23	Present	Faculty Advisor	Faculty	Asian	Non-Hispanic	Male	No
Nicholas Conklin	1/9/23	Present	Faculty Co-Advisor	Faculty	White	Non-Hispanic	Male	No
Andrew Snowdy	1/9/23	Present	Project Lead	Undergraduate	White	Non-Hispanic	Male	No
Kalkidan Lakew	1/9/23	Present	Video operation & integration	Undergraduate	Black	Non-Hispanic	Female	No
Hannah Jacobs	1/9/23	Present	UHF front-end electronics	Undergraduate	White	Non-Hispanic	Female	No
Zoey McClain	1/9/23	Present	Video operation & integration	Undergraduate	White	Non-Hispanic	Female	No
Sara Jones	1/9/23	Present	UHF modulator operation & testing	Undergraduate	White	Non-Hispanic	Female	No
John (Jack) White	1/9/23	Present	i5 CPU integration	Undergraduate	White	Non-Hispanic	Male	No
Zachary Dickinson	2/8/23	Present	R-Pi & Thermal control	Undergraduate	White	Non-Hispanic	Male	No
Damien Chu	3/20/23	Present	R-Pi & Thermal control	Undergraduate	Asian	Non-Hispanic	Male	No

i. Current NASA guidance requires information from up to date legal documentation (for instance, Driver's License, Passport)

ii. Accepted options include African-American/Black, Asian, American Indian/Alaskan Native, Native Hawaiian, Pacific Islander, White

iii. Accepted options are Hispanic on Non-Hispanic.