

EE/CprE/SE 491 WEEKLY REPORT 9

April 10 - April 16

Group number: 9

Project title: Arinc429 Portable Receiver APP and Firmware

Client &/Advisor: Colin Cox & Daji Qiao, Mathew Wymore

Team Members: Eduardo Contreras, Riley Millam, Nicholas Morgan, Jared Staskal, Nate Trotter

- **Weekly Summary** *This week the firmware team continued to make progress in becoming comfortable and familiar with the hardware and the software that will be used to run and write the firmware. The Flutter team continued to familiarize themselves with the Flutter environment as well as updating the application prototype. This week we met with our client to discuss the progress we'd made.*

- **Past week accomplishments**
 - Getting familiar with the Hardware from the client - All
 - Now that we've received the hardware we have started to test things with it to get more comfortable thinking about developing with it.
 - Have attempted some ESP32 IDF firmware programming starter examples to familiarize ourselves with different ESP32-S3 functionality and hardware pin layout.
 - Getting familiar with ESP32 development environment
 - Experimenting with the development tools and available framework
 - Getting familiar with the Flutter development environment
 - Exploring the features and abilities of Flutter
 - Worked on our GATT Service API documentation - Jared
 - Updated the Figma Prototype - Jared

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Eduardo Contreras	<ul style="list-style-type: none"> ● Tested examples in ESP-IDF that use BLE ● Experimented with ESP32 microcontroller 	6	62
Riley Millam	<ul style="list-style-type: none"> ● Has been in charge of communication with the client and advisors. ● ESP32 programming <ul style="list-style-type: none"> ○ BLE programming 	7	66
Nicholas Morgan	<ul style="list-style-type: none"> ● Went over BLE modules and protocols ● Flashed and tested some projects into the ESP32S3 	9	69
Jared Staskal	<ul style="list-style-type: none"> ● Updated the Figma prototype based on client feedback ● Updated the BLE GATT API document based on client feedback 	7	74
Nate Trotter	<ul style="list-style-type: none"> ● Familiarized, researched, experimented, with new hardware ● Experimented with BLE and ESP32 	6	65

○ **Plans for the upcoming week**

We intend to continue exploring the various technologies and working on prototypes for this next week. Additionally we plan to focus on our EPS32 BLE implementation and solidifying our BLE communication prototype.

Default Screen(data display/entry)

Label Name		▼
273		▼
SSM	SDI	Info Rate
01	01	150 Hz
Data		
Bit Field 1 Name		
15.3 or smth, idk		
Bit Field 2 Name		
4		
Bit Field 3 Name		
4		

Connect/Disconnect

Send/Receive

Define Label

Service	Arinc 429 BLE			
UUID	48c174f7-6e8c-493d-9138-71a0602e57d6			
Characteristic	Set Label			
Description	Set the Label that is being communicated			
UUID	9f2ee2a8-3dfb-405d-8658-9bc14d6808a0			
Properties	Write			
Size	1 byte			
Attributes:				
Attribute Name	Type	Size	Description	Possible Values
64s digit	unsigned int	2 bits	The leftmost digit	0-3
8s digit	unsigned int	3 bits	The middle digit	0-7
1s digit	unsigned int	3 bits	The rightmost digit	0-7
Characteristic	Receive			
Description	Receive the Arinc 429 word from the chip over BLE			
UUID	81429dc5-2b11-420a-83ab-b61626fca73e			
Properties	Read			
Size	4 bytes			
Attributes:				
Attribute Name	Type	Size	Description	Possible Values
Parity	boolean	1 bit	The parity bit	0 - False 1 - True
SSM	unsigned int	2 bits	The Sign Status Matrix	0 - 3
Data	bit[19]	19 bits	The data from the word	19 bits

SDI	unsigned int	2 bits	The Source Destination Indicator	0 - 3	
Label	3 digits Octal	8 bits	The label that determines how the data is interpreted	0-377	
Characteristic	Send				
Description	Send the Arinc 429 word from the Flutter app over BLE				
UUID	9bf802ff-d75d-46a0-891b-c38003897fa3				
Properties	Write				
Size	4 bytes				
Attributes:					
Attribute Name	Type	Size	Description	Possible Values	
Parity	boolean	1 bit	The parity bit	0 - False 1 - True	
SSM	unsigned int	2 bits	The Sign Status Matrix	0 - 3	
Data	bit[19]	19 bits	The data from the word	19 bits	
SDI	unsigned int	2 bits	The Source Destination Indicator	0 - 3	
Label	3 digits Octal	8 bits	The label that determines how the data is interpreted	0-377	