

EE/CprE/SE 492 BIWEEKLY REPORT 5

October 25 - November 8

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

○ **Summary**

For the flutter application, we are currently completing the Label Creator and finalizing the Word History and Word Viewer with adjustments and final features. We're also working to merge all active branches to begin assembling the final product. Additionally For the firmware, our main focus has been to filter the labels we send. This will be accomplished by receiving which labels we want to filter for from the flutter app, filtering the data, sending it, and removing unwanted filters. We have been able to filter by label and send it, and will continue to work on receiving filter information from the flutter app.

○ **Past weeks accomplishments/issues**

- Successful BLE connection from Flutter Application to ESP32 on iOS
 - Filters properly and everything
 - Labels are being received
- Continued work on Label Creator
 - Making final adjustments and tests
- Word Viewer working and mostly completed
 - Final tweaks and label descriptions still needed
- Word History is working and mostly completed
 - Final tweaks and features still needed
- Able to add labels to the label filter
- We have functions for removing labels from the filter and clearing the label filter
- Receive a list of labels from the flutter app
 - Work in progress
 - Received labels will be used for the label filter
 - Need to implement a BLE write function
- Issues:
 - Receiving labels from flutter application, removing them
 - Connecting via bluetooth on Android
 - Asynchronous functions are causing issues
 - Asynchronicity propagated further than expected

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Bi-weekly Hours</u>	<u>HOURS cumulative</u>
Eduardo Contreras	<ul style="list-style-type: none"> ● Sent ARINC-429 words from ESP32 to flutter app ● Helped make label filter ● Working on receiving labels from flutter app to add to label filter on ESP32 using BLE ● Debugging issues with ESP32 code working with testing device 	12	69
Riley Millam	<ul style="list-style-type: none"> ● Completed Word Viewer ● Started and completed word history ● Worked and improved BLE data page 	20	69
Nicholas Morgan	<ul style="list-style-type: none"> ● Label Creator Almost done ● Integrating label storage with creator ● Start working on Android BLE 	12	69
Jared Staskal	<ul style="list-style-type: none"> ● Started integrating label storage with label creator ● Began working on data translation 	14	69
Nate Trotter	<ul style="list-style-type: none"> ● Sending labels from testing device to client ● Helped to make label filter ● Looked into receiving and removing labels to filter ● Has been in charge of communication with the client and advisors 	16	69

○ **Plans for the upcoming weeks**

The flutter app side will continue to finalize Word History and add label descriptions to the Word Viewer. We'll also work to combine key parts of the App to begin assembling the final product. Additionally we'll finalize the label creator and work on testing. On the firmware side, we plan completing a filter for labels to its fullest application, being able to receive what labels to filter from the flutter app and removing unwanted ones.

- **Diagrams and Figures**

Filtering for label 324

```
// hi35981_add_label(&hi35981, 0, 0302);
// hi35981_add_label(&hi35981, 0, 0320);
hi35981_add_label(&hi35981, 0, 0324);
// hi35981_add_label(&hi35981, 0, 0325);
// hi35981_add_label(&hi35981, 0, 0326);
// hi35981_add_label(&hi35981, 0, 0327);
// hi35981_add_label(&hi35981, 0, 0330);
```

Looking for bits 14-29 to change

Octal Label 324 Pitch Angle			
Export to RTF			
Output Port	Octal Label	SDI	SDI Description
A429_AHC-1 (2,3,4)	324	00	4th AHC-3000
		01	Left AHC-3000
		10	Right AHC-3000
		11	Third AHC-3000
Output Label			
Label Name	Pitch Angle	Octal Label	324
Data Size (bytes)	4	Data Type	Periodic
ARINC 429 Type	BNR	Max TX Rate (Hz)	52
Number of Unique Bit Definitions	1	Max TX Copies	1
Label Type	ARINC-429		
Routing Type	Produced	Architecture	Pro Line Fusion
Package Comment			
BIT	Data Field	Data Variable	
1-8	Octal Label	324	
9-10	SDI		
	0 0	4th AHC-3000	
	0 1	Left AHC-3000	
	1 0	Right AHC-3000	
	1 1	Third AHC-3000	
11	Pad		
12	Pad		
13	Pad		
14-29	Pitch Angle	Pitch Angle	
	Data Type	BNR	
	Scaling (MSB)	-180.0	
	Full Scaled Range Lower Bound	-180	
	Full Scaled Range Upper Bound	179.999013671875	
	Functional Range Maximum	179.999013671875	
	Functional Range Minimum	-180	
	LSB Resolution	0.0054931640625	
	Negative Sense	nose down	
	Positive Sense	nose up	
	Units	degrees	
30-31	SSM		

Bits 14-29 changing, everything else staying relatively the same, exactly what we expect.
Label filter works!

I (8818) NimBLE: ARINC-429 Word is 0x784D83D4
I (8838) NimBLE: ARINC-429 Word is 0x784D83D4
I (8858) NimBLE: ARINC-429 Word is 0x784D83D4
I (8878) NimBLE: ARINC-429 Word is 0x784D83D4
I (8898) NimBLE: ARINC-429 Word is 0x784D83D4
I (8918) NimBLE: ARINC-429 Word is 0x784D83D4
I (8928) NimBLE: ARINC-429 Word is 0x784D83D4
I (8948) NimBLE: ARINC-429 Word is 0x784D83D4
I (8968) NimBLE: ARINC-429 Word is 0x784D83D4
I (8988) NimBLE: ARINC-429 Word is 0x784D83D4
I (9008) NimBLE: ARINC-429 Word is 0x784D83D4
I (9028) NimBLE: ARINC-429 Word is 0x784D83D4
I (9048) NimBLE: ARINC-429 Word is 0x784D83D4

I (44828) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44848) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44868) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44888) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44908) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44928) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44948) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44968) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44988) NimBLE: ARINC-429 Word is 0x6007C3D4
I (44998) NimBLE: ARINC-429 Word is 0x6007C3D4
I (45018) NimBLE: ARINC-429 Word is 0x6007C3D4
I (45038) NimBLE: ARINC-429 Word is 0x6007C3D4
I (45058) NimBLE: ARINC-429 Word is 0x6007C3D4

I (6518) NimBLE: ARINC-429 Word is 0xE768C3D4
I (6538) NimBLE: ARINC-429 Word is 0xE768C3D4
I (6558) NimBLE: ARINC-429 Word is 0xE76883D4
I (6578) NimBLE: ARINC-429 Word is 0xE76863D4
I (6598) NimBLE: ARINC-429 Word is 0xE76843D4
I (6618) NimBLE: ARINC-429 Word is 0xE76823D4
I (6638) NimBLE: ARINC-429 Word is 0xE76803D4
I (6658) NimBLE: ARINC-429 Word is 0xE76883D4
I (6668) NimBLE: ARINC-429 Word is 0xE768C3D4
I (6688) NimBLE: ARINC-429 Word is 0xE76923D4
I (6708) NimBLE: ARINC-429 Word is 0xE769A3D4
I (6728) NimBLE: ARINC-429 Word is 0xE76A63D4
I (6748) NimBLE: ARINC-429 Word is 0xE76AC3D4