

August 25 (Wed)

CMPE245

Introduction.

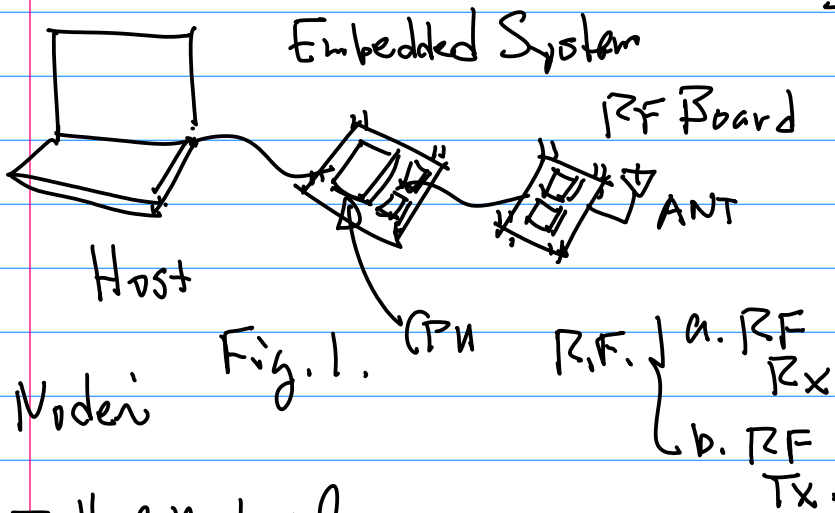
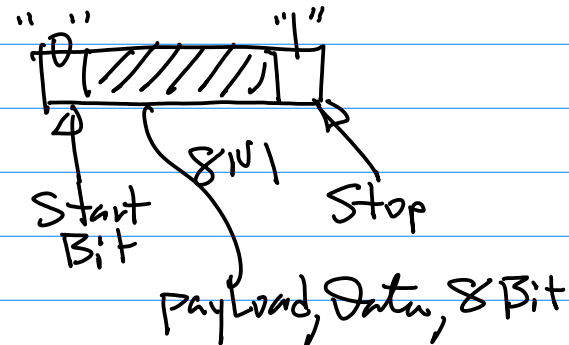
Today's Topics

Bill of Materials  
Target platform  
For Prototyping

Note: Your RF module(s)  
is to be interfaced to GPIO  
of your target Board.

Why? General Purpose  $\rightarrow$  No  
Data Framing.

for UART, Data Frame



Node

a. RF Rx  
b. RF Tx.

Note: CPU Target

Option to use NVDA Jetson  
NANO

Guide Line for Selection  
of target Platform.

Bill of Material

1. Target CPU NXP LPC1769  
OR NANO (NVDA)

2. RF modules, physical Layer only.

(1) ASK R.F. module, frequency  $\sim 433\text{MHz}$   
(2) F.C.C. Certified

Amplitude Switching

(3) Open Spectrum.  
Power  $\leq 1000\text{mW. (1W)}$   
Tx: Transmitter

(4) No MAC (media Access Control)  
Needed

1. Register Level Control  
of GPIO, SPI Controllers

For LPC1769  $\checkmark$

For NANO  $\rightarrow$  Devices  
Drivers.

(1) Datasheet 400+ pages

(2) Software Dev.  
Environment, tools.

Jetpack (OS +  
Libs)

(3) O.S. Distr.



CMPE245

August 25 (Wed)

Note: ON your RF Board.

2

2° Access to CPU pins, e.g.  
GPIO pins, SPI pins.

Homework: Purchase ASK RF  
Module By Sept. 8th (Wed)  
OR ideally Sept 3rd (Fri)

Note: To provide Hardware Debugging CKT. on  
the RF Board

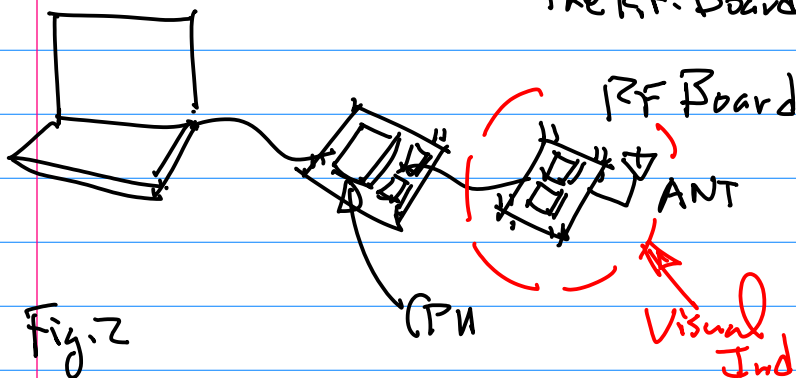


Fig. 2

Debugging Capability on the R.F.  
Board:

(1) Objective: To visualize/observe  
GPIO output.

Means: LED.

Material:

a LED (Red, Green), 4~10mA

Connectors (to cable to RF Board)

b RJ45 Right Angle Connectors

(2)

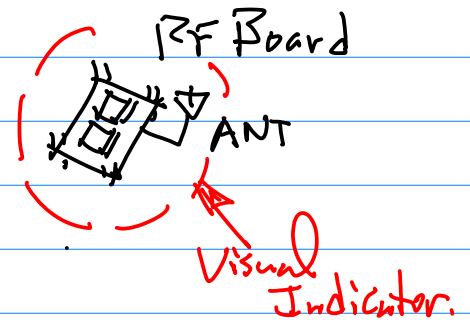
A piece of CAT 5 Cable (Ethernet)

c Components  
Resistors  
Chps.

(1117?)

7805, 7812 OR

Fig. 3.



2 Blocks { Rx  
Tx

Both Need to Be Powered.

You may want to have the  
DC PWR Delivered via  
CAT5 Cable from your  
Embedded Board.

RJ45 Pins (Pin): 8

August 30th.

RF module, to Build  
RF Board.

1° ASK RF.

Amplitude Switch Keying

2° Rx: Receiving

TX: Transmission

3° GPIO JF

Regulator Data Pin

Homework: Identify/Bring Your  
Wire Wrapping Board for RFB  
Design. 4x3 Inch;

To Build RFB

1° Board

2° 4 standoffs

3° Build I/O I/F Testing CKT.

To Light up LED when CPU output "1"

To Turn off LED when CPU output "0"

Output Testing

SW Toggles to Vcc, when Vcc, CPU  
Reads as "1"

SW " " to GND, CPU  
Reads as "0"

Input Testing

4° CAT-5 Ethernet Cable

RJ45 Right Angle Connectors (2)

One for Embedded;

One for RF Board,

5. Power Distribution to RF  
Board:

a 5VDC is adequate

= But RF module can  
be operated with

Bigger Power, 9VDC

OR 7.5VDC may be  
needed during Debugg-

ing;