SDR in ORBIT: LTE-U

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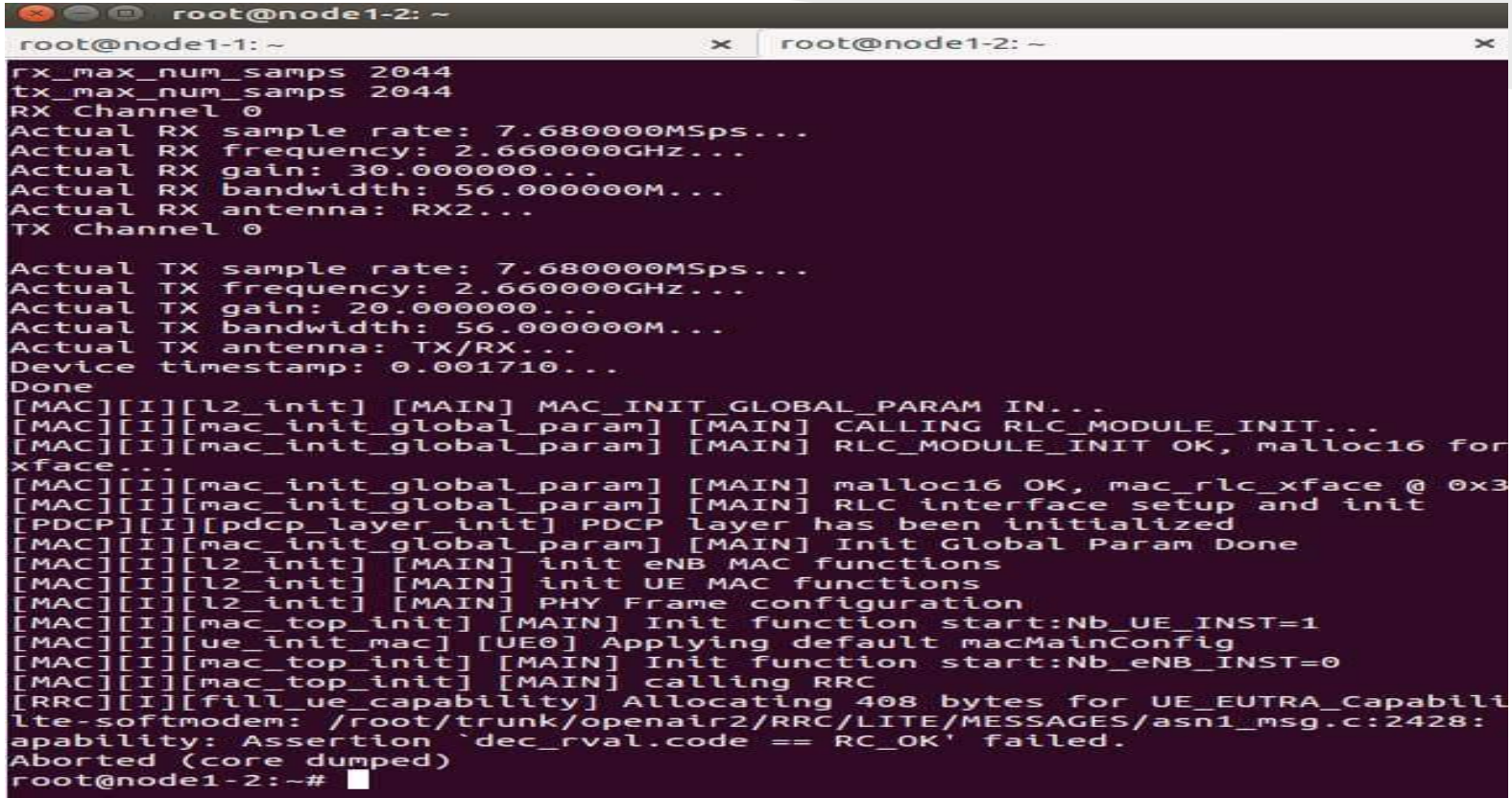
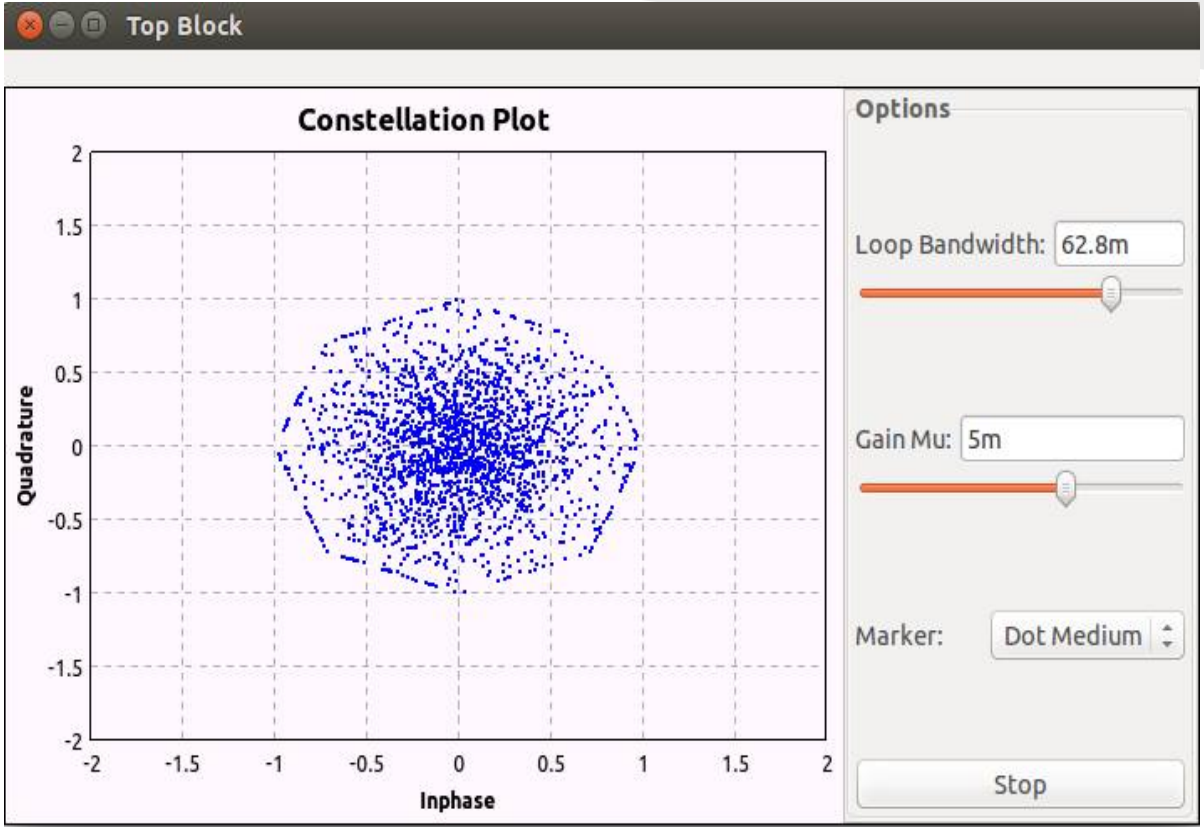
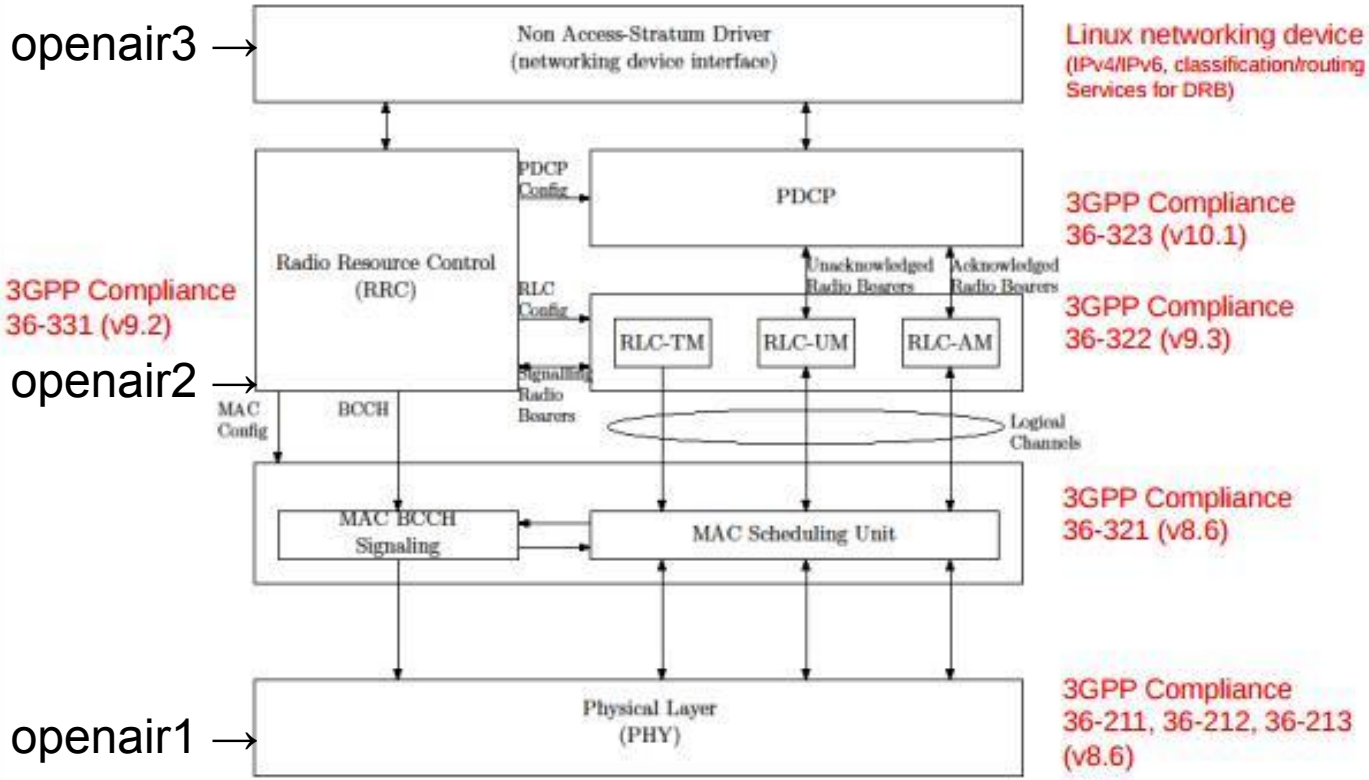
UE not functioning



Constellation Plot



OpenAirLTE PHY/MAC Protocol Stack



Network Layer

- Defines how *internetworks* function: *how to get data from one computer to another, even if it is on a remote network?*

  - **Logical Addressing** *label messages with network destination location*
  - **Routing** *handle incoming packets, determine their final destination*
  - **Datagram Encapsulation** *encapsulates messages by placing them into packets, with network layer header*
  - **Fragmentation and Reassembly** *split up the oversized packets*
  - **Error Handling and Diagnostics**

OpenAir3

- Open-source software suite for cellular, MESH network
- Provides scripts and adaptations for networking suite
- Contains OAI-MME (Mobility Management Entity), which is responsible for authentication of the mobile devices

OpenAir3 (cont')

- MME's functions, as the main control node in LTE
  - **Network Access Control** *manage authorization for UEs, allow to gain IP connectivity*
  - **Radio Resource Management** *decide radio resource management strategy (RRM)*
  - **Mobility Management** *provide seamless inter-working with multiple use cases such as Inter-eNB*
  - **Roaming Management** *support outbound/inbound roaming subscriber*
  - **UE Reach-ability** *manage communication with the UE and HSS*
  - **Tracking Area Management** *Allocate tracking area identity list to UE*
  - **Lawful Intercept**
  - **Load Balancing Between S-GWs**

Next Week

- Continue to work on UE (receiver)
- Figure out the way to transmit specific data
- Redo previous weeks experiment in Time Delay Duplex (TDD) with varying bandwidths