UL-TDoA Positioning Testing Setup

### Step 1 Pull Core Network Functions

| 1. docker pull oaisoftwarealliance/ims:latest 2. docker pull oaisoftwarealliance/oai-amf:develop 3. docker pull oaisoftwarealliance/oai-nrf:develop 4. docker pull oaisoftwarealliance/oai-smf:develop 5. docker pull oaisoftwarealliance/oai-udr:develop 6. docker pull oaisoftwarealliance/oai-upf:develop 7. docker pull oaisoftwarealliance/oai-udm:develop 8. docker pull oaisoftwarealliance/oai-ausf:develop 9. docker pull oaisoftwarealliance/oai-lmf:develop   # Utility image to generate traffic   1. docker pull oaisoftwarealliance/trf-gen-cn5g:latest |
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### Step 2 Pull RAN Repository and Bulid gNB and nrUE

Create working folder for Example “OAI\_RAN”

Copy the conf folder provided with this tutorial in the OAI\_RAN folder

| 1. cd OAI\_RAN 2. git clone<https://gitlab.eurecom.fr/oai/openairinterface5g.git> 3. cd openairinterface5g/cmake\_targets 4. git checkout NRPPA\_Procedures 5. ./build\_oai -I # install dependencies 6. ./build\_oai --gNB --nrUE -w SIMU # compile gNB and nrUE |
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### Step 3 Start the 5G core

| 1. Cd OAI\_RAN/openairinterface5g/doc/tutorial\_resources/oai-cn5g   To Start the core   1. sudo docker compose -f docker-compose.yaml up -d    1. Check the status of the core if all NF are healthy       1. docker ps -a   To stop the core   1. sudo docker compose -f docker-compose.yaml down |
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### Step 4 Starting gnb

Open a terminal

| 1. cd OAI\_RAN/openairinterface5g/cmake\_targets/ran\_build/build 2. sudo RFSIMULATOR=server ./nr-softmodem --rfsim --sa -O ~/OAI\_RAN/conf/gnb1.sa.band78.106prb.rfsim4x4.conf |
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\* Make sure to have channelmod conf file in conf folder for rfsimulator testing

### Step 5 Starting UE

Open a terminal

| 1. cd OAI\_RAN/openairinterface5g/cmake\_targets/ran\_build/build 2. sudo RFSIMULATOR=127.0.0.1 ./nr-uesoftmodem -r 106 --numerology 1 --band 78 -C 3619200000 --rfsim --sa -O ~/OAI\_RAN/conf/ue.conf |
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### Step 6 External API to initiate Positioning request

Send the http post request at LMF address (as per our docker compose file <http://192.168.70.141:80>) to LMF determine location API to initiate the Positioning procedure

| 1. cd OAI\_RAN/conf 2. curl --http2-prior-knowledge -H "Content-Type: application/json" -d "@InputData.json" -X POST http://192.168.70.141:8080/nlmf-loc/v1/determine-location |
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