My Project

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

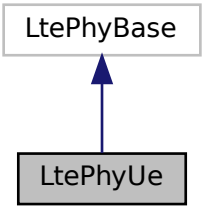
Chapter 4

Class Documentation

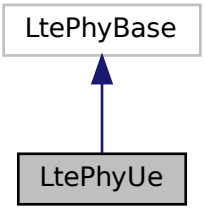
4.1 LtePhyUe Class Reference

`#include <LtePhyUe.h>`

Inheritance diagram for LtePhyUe:



Collaboration diagram for LtePhyUe:



Public Member Functions

- LtePhyUe ()
- virtual ~LtePhyUe ()
- DasFilter * getDasFilter ()
- virtual void sendFeedback (LteFeedbackDoubleVector fbDl, LteFeedbackDoubleVector fbUl, FeedbackRequest req)
- MacNodeId getMasterId () const
- omnetpp::simtime_t coherenceTime (double speed)
- void recordCqi (unsigned int sample, Direction dir)
- double getAverageCqi (Direction dir)
- double getVarianceCqi (Direction dir)

Protected Member Functions

- virtual void initialize (int stage) override
- virtual void handleSelfMessage (omnetpp::cMessage *msg) override
- virtual void handleAirFrame (omnetpp::cMessage *msg) override
- virtual void finish () override
- virtual void finish (cComponent *component, omnetpp::simsignal_t signalID) override
- virtual void handleUpperMessage (omnetpp::cMessage *msg) override
- double updateHysteresisTh (double v)
- void handoverHandler (LteAirFrame *frame, UserControlInfo *lteInfo)
- void deleteOldBuffers (MacNodeId masterId)
- virtual void triggerHandover ()
- virtual void doHandover ()

Protected Attributes

- MacNodeId masterId_
- omnetpp::simsignal_t servingCell_
- omnetpp::cMessage * handoverStarter_
- omnetpp::cMessage * handoverTrigger_
- double currentMasterRssi_
- MacNodeId candidateMasterId_
- double candidateMasterRssi_
- double hysteresisTh_
- double hysteresisFactor_
- double handoverDelta_
- double handoverLatency_
- double handoverDetachment_
- double handoverAttachment_
- double minRssi_
- bool enableHandover_
- DasFilter * das_
- double dasRssiThreshold_

  Threshold for antenna association.
- bool useBattery_
- double txAmount_
- double rxAmount_
- LteMacUe * mac_
- LteRlcUm * rlcUm_
- LtePdcpRrcBase * pdcp_

- omnetpp::simtime_t lastFeedback_
- std::vector< short int > cqiDlSamples_
- std::vector< short int > cqiUlSamples_
- unsigned int cqiDlSum_
- unsigned int cqiUlSum_
- unsigned int cqiDlCount_
- unsigned int cqiUlCount_

4.1.1 Constructor & Destructor Documentation

4.1.1.1 LtePhyUe()

```
LtePhyUe::LtePhyUe ( )
```

4.1.1.2 ~LtePhyUe()

```
LtePhyUe::~LtePhyUe ( )  [virtual]
```

4.1.2 Member Function Documentation

4.1.2.1 coherenceTime()

```
omnetpp::simtime_t LtePhyUe::coherenceTime (
            double speed )  [inline]
```

4.1.2.2 deleteOldBuffers()

```
void LtePhyUe::deleteOldBuffers (
            MacNodeId masterId )  [protected]
```

4.1.2.3 doHandover()

```
void LtePhyUe::doHandover ( )  [protected], [virtual]
```

4.1.2.4 finish() [1/2]

```
void LtePhyUe::finish ( )  [override], [protected], [virtual]
```

4.1.2.5 finish() [2/2]

```
virtual void LtePhyUe::finish (
            cComponent * component,
            omnetpp::simsignal_t signalID )  [inline], [override], [protected], [virtual]
```

4.1.2.6 getAverageCqi()

```
double LtePhyUe::getAverageCqi (
            Direction dir )
```

4.1.2.7 getDasFilter()

```
DasFilter * LtePhyUe::getDasFilter ( )
```

4.1.2.8 getMasterId()

```
MacNodeId LtePhyUe::getMasterId ( ) const  [inline]
```

4.1.2.9 getVarianceCqi()

```
double LtePhyUe::getVarianceCqi (
            Direction dir )
```

4.1.2.10 handleAirFrame()

```
void LtePhyUe::handleAirFrame (
            omnetpp::cMessage * msg )  [override], [protected], [virtual]
```

4.1.2.11 handleSelfMessage()

```
void LtePhyUe::handleSelfMessage (
            omnetpp::cMessage * msg )  [override], [protected], [virtual]
```

4.1.2.12 handleUpperMessage()

```
void LtePhyUe::handleUpperMessage (
            omnetpp::cMessage * msg )  [override], [protected], [virtual]
```

4.1.2.13 handoverHandler()

```
void LtePhyUe::handoverHandler (
            LteAirFrame * frame,
            UserControlInfo * lteInfo )  [protected]
```

4.1.2.14 initialize()

```
void LtePhyUe::initialize (
            int stage )  [override], [protected], [virtual]
```

4.1.2.15 recordCqi()

```
void LtePhyUe::recordCqi (
            unsigned int sample,
            Direction dir )
```

4.1.2.16 sendFeedback()

```
void LtePhyUe::sendFeedback (
            LteFeedbackDoubleVector fbDl,
            LteFeedbackDoubleVector fbUl,
            FeedbackRequest req )  [virtual]
```

Send Feedback, called by feedback generator in DL

4.1.2.17 triggerHandover()

```
void LtePhyUe::triggerHandover ( )  [protected], [virtual]
```

4.1.2.18 updateHysteresisTh()

```
double LtePhyUe::updateHysteresisTh (
            double v )  [protected]
```

Utility function to update the hysteresis threshold using hysteresisFactor_.

4.1.3 Member Data Documentation

4.1.3.1 candidateMasterId_

```
MacNodeId LtePhyUe::candidateMasterId_  [protected]
```

ID of not-master node from wich highest RSSI was received

4.1.3.2 candidateMasterRssi_

```
double LtePhyUe::candidateMasterRssi_  [protected]
```

Highest RSSI received from not-master node

4.1.3.3 cqiDlCount_

```
unsigned int LtePhyUe::cqiDlCount_  [protected]
```

4.1.3.4 cqiDlSamples_

```
std::vector<short int> LtePhyUe::cqiDlSamples_  [protected]
```

4.1.3.5 cqiDlSum_

```
unsigned int LtePhyUe::cqiDlSum_  [protected]
```

4.1.3.6 cqiUlCount_

```
unsigned int LtePhyUe::cqiUlCount_  [protected]
```

4.1.3.7 cqiUlSamples_

```
std::vector<short int> LtePhyUe::cqiUlSamples_  [protected]
```

4.1.3.8 cqiUlSum_

```
unsigned int LtePhyUe::cqiUlSum_  [protected]
```

4.1.3.9 currentMasterRssi_

```
double LtePhyUe::currentMasterRssi_  [protected]
```

RSSI received from the current serving node

4.1.3.10 das_

```
DasFilter* LtePhyUe::das_  [protected]
```

Pointer to the DAS Filter: used to call das function when receiving broadcasts and to retrieve physical antenna properties on packet reception

4.1.3.11 dasRssiThreshold_

```
double LtePhyUe::dasRssiThreshold_  [protected]
```

Threshold for antenna association.

4.1.3.12 enableHandover_

```
bool LtePhyUe::enableHandover_  [protected]
```

Handover switch

4.1.3.13 handoverAttachment_

```
double LtePhyUe::handoverAttachment_  [protected]
```

4.1.3.14 handoverDelta_

```
double LtePhyUe::handoverDelta_  [protected]
```

Time interval elapsing from the reception of first handover broadcast message to the beginning of handover procedure. It must be a small number greater than 0 to ensure that all broadcast messages are received before evaluating handover. Note that broadcast messages for handover are always received at the very same time (at bdcUpdateInterval_ seconds intervals).

4.1.3.15 handoverDetachment_

```
double LtePhyUe::handoverDetachment_  [protected]
```

4.1.3.16 handoverLatency_

```
double LtePhyUe::handoverLatency_  [protected]
```

4.1.3.17 handoverStarter_

```
omnetpp::cMessage* LtePhyUe::handoverStarter_  [protected]
```

Self message to trigger handover procedure evaluation

4.1.3.18 handoverTrigger_

```
omnetpp::cMessage* LtePhyUe::handoverTrigger_  [protected]
```

Self message to start the handover procedure

4.1.3.19 hysteresisFactor_

```
double LtePhyUe::hysteresisFactor_  [protected]
```

Value used to divide currentMasterRssi_ and create an hysteresisTh_ Use zero to have hysteresisTh_ == 0.

4.1.3.20 hysteresisTh_

```
double LtePhyUe::hysteresisTh_  [protected]
```

Hysteresis threshold to evaluate handover: it introduces a small polarization to avoid multiple subsequent handovers

4.1.3.21 lastFeedback_

```
omnetpp::simtime_t LtePhyUe::lastFeedback_  [protected]
```

4.1.3.22 mac_

```
LteMacUe* LtePhyUe::mac_  [protected]
```

4.1.3.23 masterId_

```
MacNodeId LtePhyUe::masterId_  [protected]
```

Master MacNodeId

4.1.3.24 minRssi_

```
double LtePhyUe::minRssi_  [protected]
```

4.1.3.25 pdcp_

```
LtePdcpRrcBase* LtePhyUe::pdcp_  [protected]
```

4.1.3.26 rlcUm_

```
LteRlcUm* LtePhyUe::rlcUm_  [protected]
```

4.1.3.27 rxAmount_

```
double LtePhyUe::rxAmount_  [protected]
```

4.1.3.28 servingCell_

```
omnetpp::simsignal_t LtePhyUe::servingCell_  [protected]
```

Statistic for serving cell

4.1.3.29 txAmount_

```
double LtePhyUe::txAmount_  [protected]
```

4.1.3.30 useBattery_

```
bool LtePhyUe::useBattery_  [protected]
```

set to false if a battery is not present in module or must have infinite capacity

The documentation for this class was generated from the following files:

- src/stack/phy/layer/LtePhyUe.h
- src/stack/phy/layer/LtePhyUe.cc

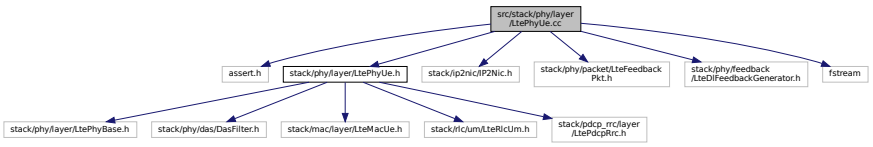
Chapter 5

File Documentation

5.1 src/stack/phy/layer/LtePhyUe.cc File Reference

```
#include <assert.h>
#include "stack/phy/layer/LtePhyUe.h"
#include "stack/ip2nic/IP2Nic.h"
#include "stack/phy/packet/LteFeedbackPkt.h"
#include "stack/phy/feedback/LteDlFeedbackGenerator.h"
#include <fstream>
```

Include dependency graph for LtePhyUe.cc:



Functions

- Define_Module (LtePhyUe)

5.1.1 Function Documentation

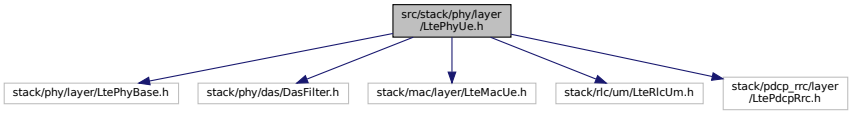
5.1.1.1 Define_Module()

```
Define_Module (
             LtePhyUe  )
```

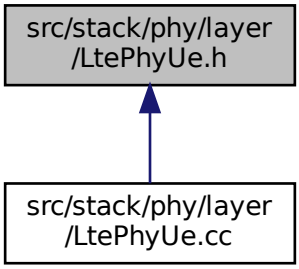
5.2 src/stack/phy/layer/LtePhyUe.h File Reference

```
#include "stack/phy/layer/LtePhyBase.h"
#include "stack/phy/das/DasFilter.h"
#include "stack/mac/layer/LteMacUe.h"
#include "stack/rlc/um/LteRlcUm.h"
#include "stack/pdcp_rrc/layer/LtePdcpRrc.h"
```

Include dependency graph for LtePhyUe.h:



This graph shows which files directly or indirectly include this file:



Classes

- class LtePhyUe

Macros

- #define OUTPUT_RAW_RSSI_DATA_PATH "/home/yspkm/simulation/data/raw.data.csv"

5.2.1 Macro Definition Documentation

5.2.1.1 OUTPUT_RAW_RSSI_DATA_PATH

```
#define OUTPUT_RAW_RSSI_DATA_PATH "/home/yspkm/simulation/data/raw.data.csv"
```

Index