Baseband

Service

BASEBAND (javadoc/org/arl/unet/Services.html#BASEBAND) – Baseband service

Agents offering the *Baseband* service are most commonly modem drivers (or simulators). They support a set of messages and parameters that are explained below. *Baseband* service providers may optionally support optional capabilities for timed transmissions or recordings.

Capability	Description
TIMED_BBTX (javadoc/org/arl/unet/bb/BasebandCapability.html#TIMED_TX)	Transmissions of signal at specified time
TIMED_BBREC (javadoc/org/arl/unet/bb/BasebandCapability.html#TIMED_REC)	Recording of signal at specified time

A preamble is usually added to a transmitted baseband signal, so that the receiving modem can identify the incoming signal. The receiving modem captures the signal when it detects the preamble, and then sends a `RxBasebandSignalNtf`. If a modem supports multiple preambles, the `TxBasebandSignalReq` can specify the `preamble` to be used. Setting the `preamble` to 0 results in a signal transmission without a preamble. Such a transmission will ordinarily not be received by any modem, unless it is recorded by an explicit `RecordBasebandSignalReq` at the appropriate time.

Implementations

- HalfDuplexModem (javadoc/org/arl/unet/sim/HalfDuplexModem.html) – simulates a half-duplex modem based on specified parameters
- `org.arl.modem.Physical` – driver for the ARL Unet-2 and Subnero modems (modems.html)

Requests and Responses

Request	Possible Responses	Description
TxBasebandSignalReq (javadoc/org/arl/unet/bb/TxBasebandSignalReq.html)	AGREE, REFUSE, FAILURE	Transmit a frame with a baseband signal
RecordBasebandSignalReq (javadoc/org/arl/unet/bb/RecordBasebandSignalReq.html)	AGREE, REFUSE, FAILURE	Record a baseband signal
ParameterReq (javadoc/org/arl/unet/ParameterReq.html)	ParameterRsp (javadoc/org/arl/unet/ParameterRsp.html)	Get/set/list parameters
CapabilityReq (javadoc/org/arl/unet/CapabilityReq.html)	CONFIRM, DISCONFIRM, CapabilityListRsp (javadoc/org/arl/unet/CapabilityListRsp.html)	Check/list capabilities

Notifications

Notification	Topic	Description

Notification	Topic	Description
RxBasebandSignalNtf (javadoc/org/arl/unet/bb/RxBasebandSignalNtf.html)	default	Frame with baseband signal recevied/recorded
ParamChangeNtf (javadoc/org/arl/unet/ParamChangeNtf.html)	PARAMCHANGE (javadoc/org/arl/unet/Topics.html#PARAMCHANGE)	Notification about the modified parameter

Parameters

Parameter	r/w	Description
carrierFrequency (javadoc/org/arl/unet/bb/BasebandParam.html#carrierFrequency)	rw	Default carrier frequency for baseband signals (Hz)
basebandRate (javadoc/org/arl/unet/bb/BasebandParam.html#basebandRate)	rw	Default sampling rate for baseband signals (Hz)
preambleDuration (javadoc/org/arl/unet/bb/BasebandParam.html#preambleDuration)	ro	Preamble duration (s)
maxSignalLength (javadoc/org/arl/unet/bb/BasebandParam.html#maxSignalLength)	ro	Maximum baseband signal length (in samples) for transmission/reception/recording
maxPreambleID (javadoc/org/arl/unet/bb/BasebandParam.html#maxPreambleID)	ro	Maximum preamble identifier supported by the agent
signalPowerLevel (javadoc/org/arl/unet/bb/BasebandParam.html#signalPowerLevel)	rw	Signal transmission power level in dB

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