

GSM LabKit™

GSM LabKit is a Radio Access Network solution for GSM/GPRS networks advanced studying.

It is intended for mobile network operators laboratory use, IoT and M2M application development, mobile phone vendors, and researchers.

It uses commodity hardware (Intel processors) and software defined radio (Nuand BladeRF) to implement all the functions and protocols of BTS in software.

Supports connection to standard SS7 networks via HostedCore, MiniCore or YateUCN.



Components

The LTE LabKit is a small factor PC computer that has preinstalled the following software components:

- YateBTS (BTS)
- YateLMI (Web management interface)

Features

- GSM NiPC mode (GSM Network in a PC)
 - Add/Edit individually subscribers via LMI
 - 2G authentication BTS ↔ MS (Mobile Stations)
 - Subscribers acceptance based on regular expression that matches the IMSI
 - Option to see in real time: online subscribers, accepted subscribers or rejected subscribers by the BTS
 - Call detailed records for each subscriber
- GSM roaming mode (GSM BTS connected to YateUCN/HostedCore for voice/sms services)
 - Register/Calls/SMS are send to YateUCN/MiniCore/HostedCore
- Capability to switch between working modes: GSM nipc, GSM roaming
- GPRS with Local breakout (MS receive data services using their LabKit internet connection)
- Wireshark monitoring traffic inside BTS and on ethernet interfaces.
- Outbound connection through SIP/IAX in NiPC mode
- Works both stand alone and with external components

GSM specifications

Radio interface	phase 2+ GSM/GPRS
Services support	GSM-FR speech, SMS
Operating band	GSM850/PGSM900/DCS1800/PCS1900
Call capacity	7 concurrent full rate call
Service range	30m
Power supply	12V 5A DC
Output power	6 dBm (4 mW)
Software	YateBTS public release
Network interface	Ethernet / IP
Management interfaces	Yate telnet console, SNMP (if configured)

Communication protocols

HTTP	<ul style="list-style-type: none"> - JSON API server for configuration and subscriber management - JSON API for monitoring and information retrieval - JSON and REST API for sending SMS
SNMP	<ul style="list-style-type: none"> - SNMP v2 or v3 for information retrieval - Traps sending for alarms
Telnet	<ul style="list-style-type: none"> - Management CLI - Optional SSL and password protection
Voice	<ul style="list-style-type: none"> - SIP and RTP - G711, GSM and AMR codecs
SIP	<ul style="list-style-type: none"> - Supported standards (RFC3261) - B2BUA for calls - RTP (RFC3550) with sideband DTMF (RFC2833) - SMS and USSD over IP
SMS	<ul style="list-style-type: none"> - BTS → RAN: Format: SMS PDU (MO and MT) - BTS → Core: SIP MESSAGE transport (SMS over IP, R-PDU format)
CDR	<ul style="list-style-type: none"> - Flexible file format - Automatic file rotation - Optional file transfer: FTP, SFTP

Communication interfaces

- SIP connects to YateUCN/MiniCore

Hardware Interfaces

- Dual Gigabyte ethernet
- DVI and HDMI video*
- USB for mouse and keyboard
- 12V Power supply, 100-240V AC, 50-60Hz (included)

*Due to radio interference, we strongly recommend to use DVI/HDMI connectors only for the initial setup

What you get

- 1 LabKit (mini-ITX PC + bladeRF + software)
- 1 LabKit power adapter
- 2 antennas for 850/900/1800/1900 MHz operation
- filters for LTE Band 5 (GSM 850) and LTE Band 8 (EGSM 900)
- 2 smartphones and chargers
- use of the hosted YateUCN core network
- 10 SIMs configured for Hosted Core and NiPC
- USB Wifi Adapter

About us

Legba, Inc. provides innovative infrastructure for mobile operators.
SS7ware Inc. provides 2.5G/4G mobile networks. The company is a subsidiary of Null Team, the creators of Yate.

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