Short MAS 555 ReadMe

(Short introduction)

Version A1

(C) 31/05/2016 femvenner GmbH

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1 History

Date	Version	Author	Comment
2016-05-31	A1	GH	• CCW exhibition version

2 The scanner

2.1 Starting the scanner

- Find the scanner page and set the "center frequency" in the mid.

- Set the wanted "Scan bandwidth" to 1MHz, 5Mhz or 10MHz at the right side.

- Push the start Button at the left side.
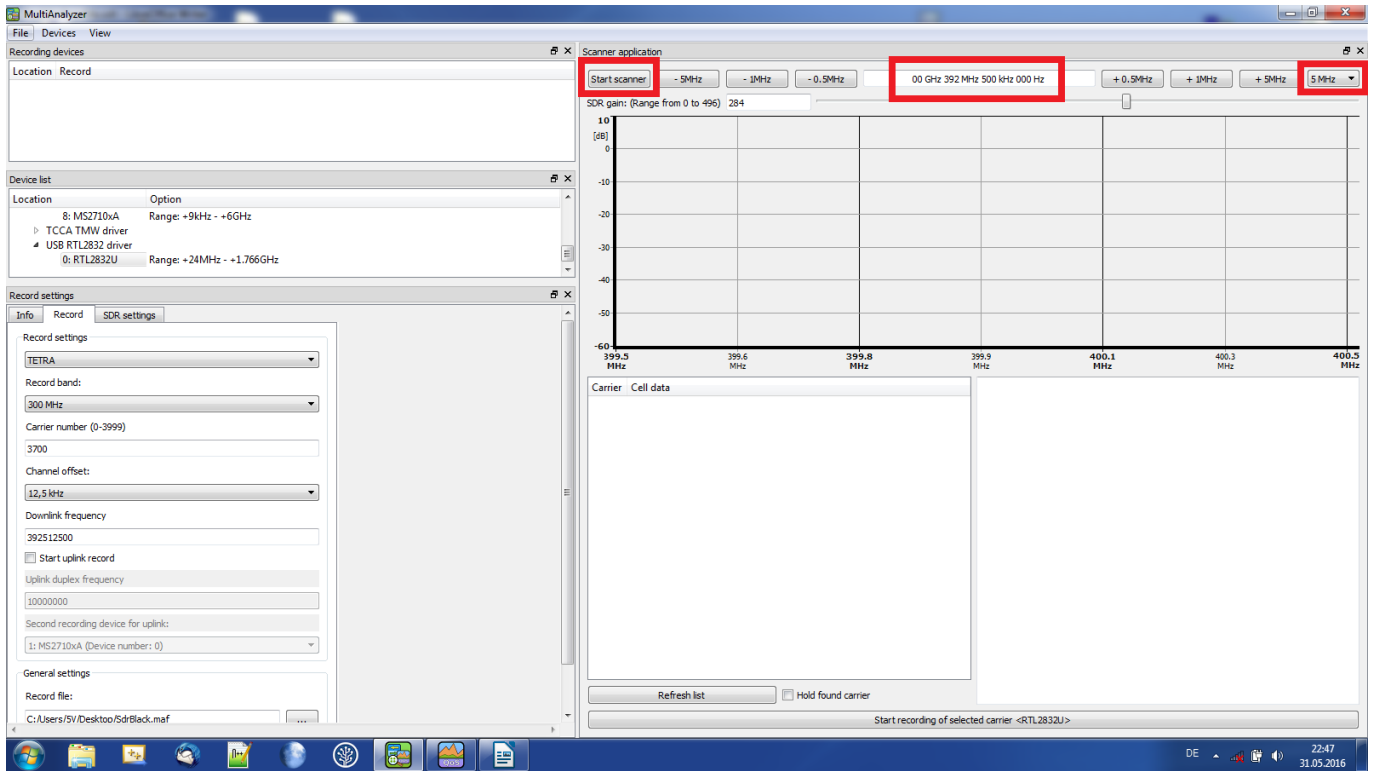
2.2 Scan result in spectrum

The carrier types are viewed in different colors.

- Light green: TETRA control channel (Channel for register, send SDS (like SMS) setup a call)

- Dark green: TETRA assigned channel (Channel for running calls sending/receiving voice.

- Blue: Scan candiates

- Red horizontal line: Noise level

- Blue horizontal line: Scan tresh hold level (13dBm over the noise level). This allows to decode TETRA channel also under none optimal conditions.
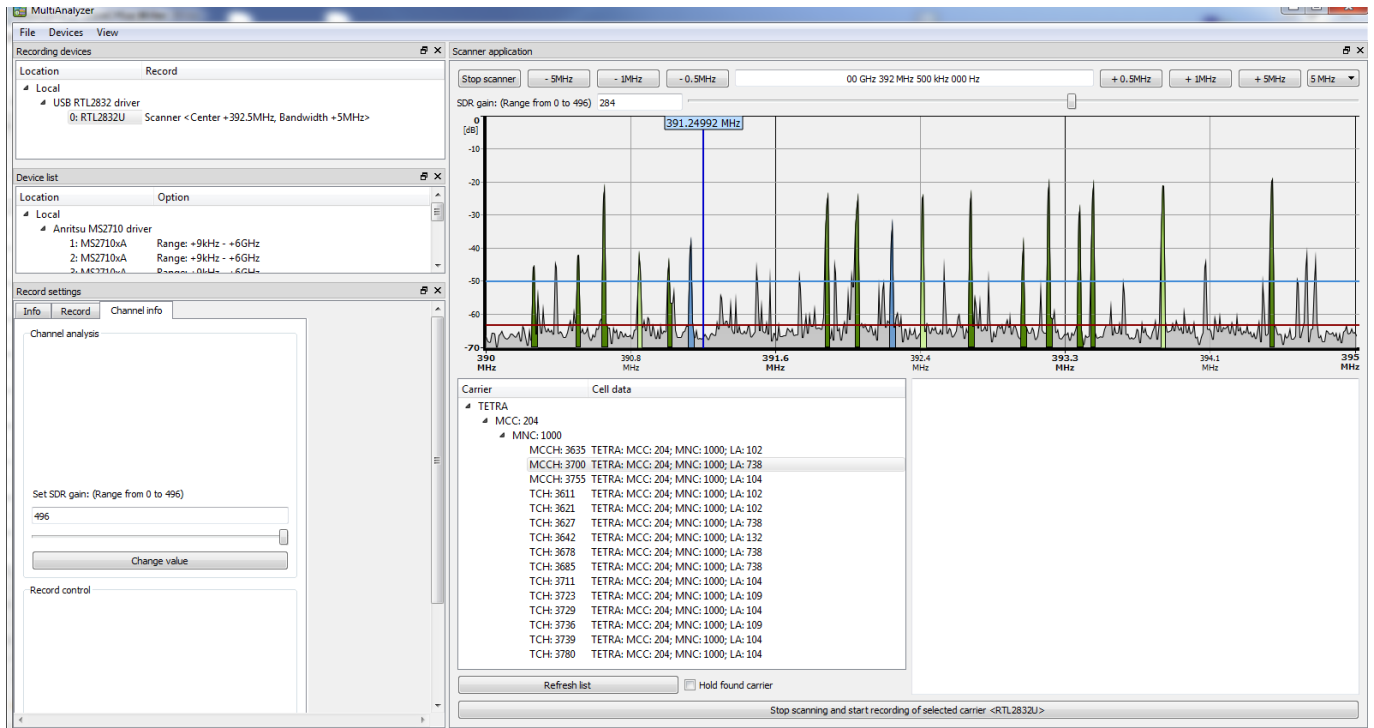

2.3 Channel scan results

In the left list below the spectrum the found TETRA channel are listed. They are sorted by Type, Country, Network, Type (Control channel=MCCH and assisgned channel=TCH) and Location Area.

A click on a channel in the list view the position in spectrum and the most important broad cast parameter:

- Where is the control channel (of course for control channel there own frequency)

- Country (MCC)

- Network (MNC)

- Location area (LAC)

- Access parameter (On which coverage conditions is the mobile allowed to access the cell)

- The Subscriber class (Which mobiles classes are allowed in the cell)

- The supported services like voice service, SNDCP (internet), encryption support.
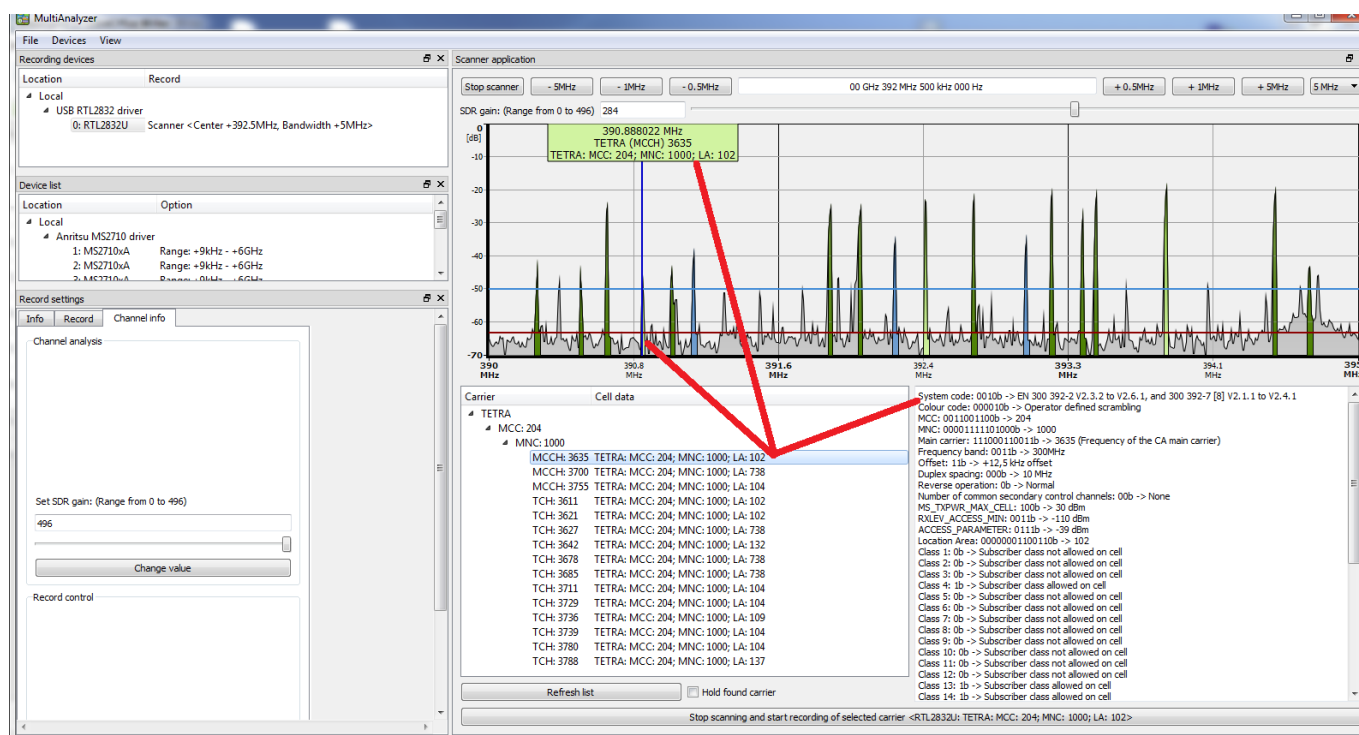
3 Starting a record

After scanning a found carrier can be selected for recording.

- Select the target recording device. (Can be the same, the scanning will stopped.)

- Selected the wanted carrier.

- Push the button at the bottom. The needed frequency settings will be copied to the start recording page.

- Check the settings like record file name, wanted uplink record option…
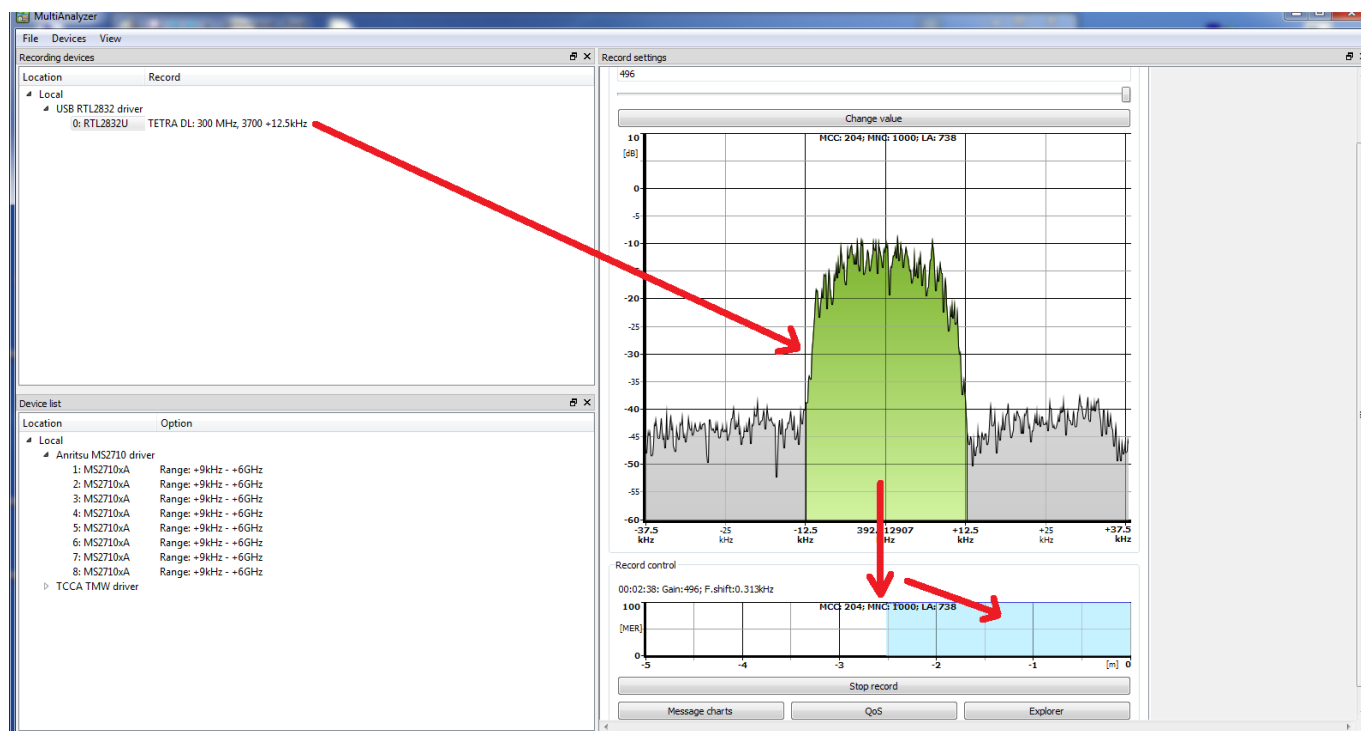
- And start the recording.
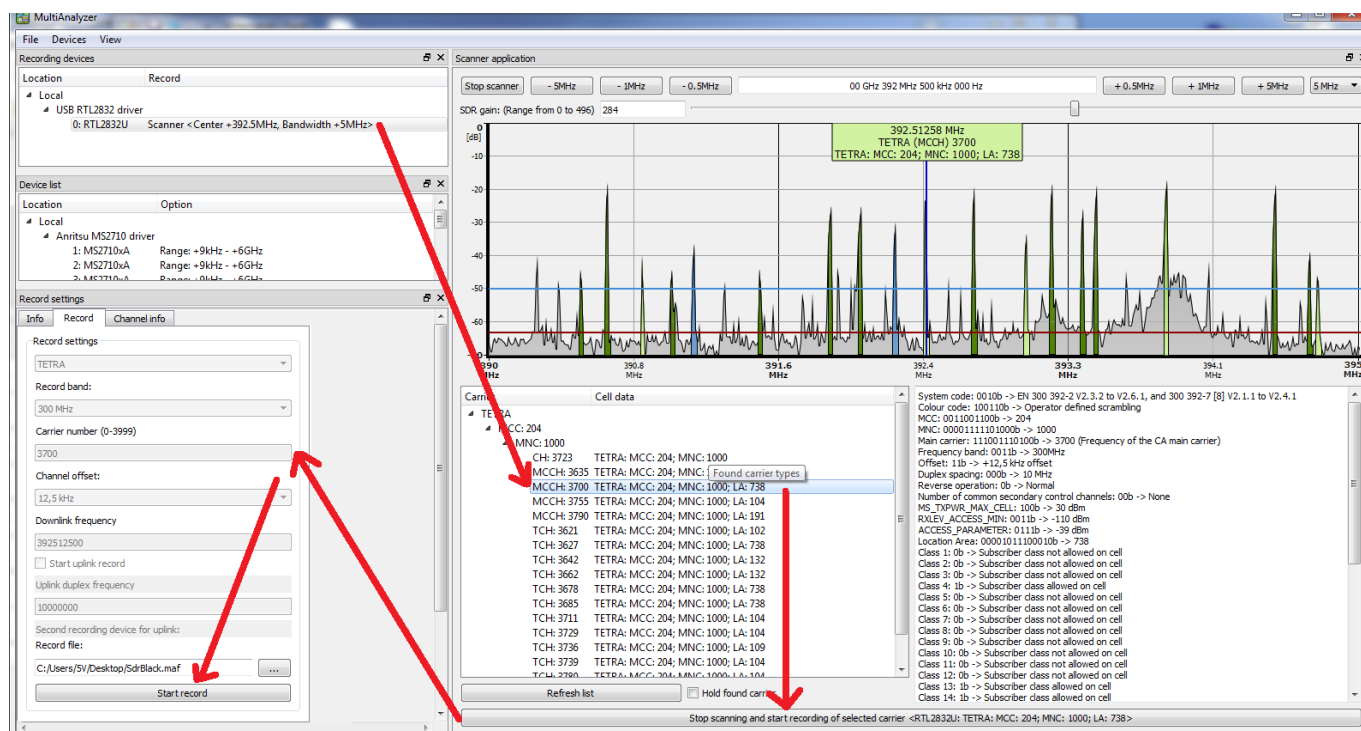
The second option is to set the frequency directly by entering the channel number or frequency in Hz.

4 Recording analysis

While recoding is running four types of data is viewed:

- The recording device

- The recording spectrum + the neighbour channels. Grey is noise, green is the signal.

- The TETRA channel with country network and location area.

- The MER (message error rate). 100% means all messages are decoded successful.

5 The viewer MSC

While recording the recorded protocol is viewed and updated in real time. The analysis of the protocol is showed until at the bit layer with human readable texts. For starting the program use the button "Message charts" in the record GUI.

1) With the space key the scrolling can switch on or off.

2) For viewing the neighbour channels:

   ○ Stop the scrolling with the space bar

   ○ Scroll to the top

   ○ Find the message "D-NWRK Broadcast"

   ○ At the text part find the carrier numbers of the neighbours and the location area.

# 6 The QoS viewer

Personalise you're own GUI

- Add new windows with the drop down box. Selected the item and push the button "Add".
- Close or move the windows to there target position. By taking it on there header line at the sub window top.
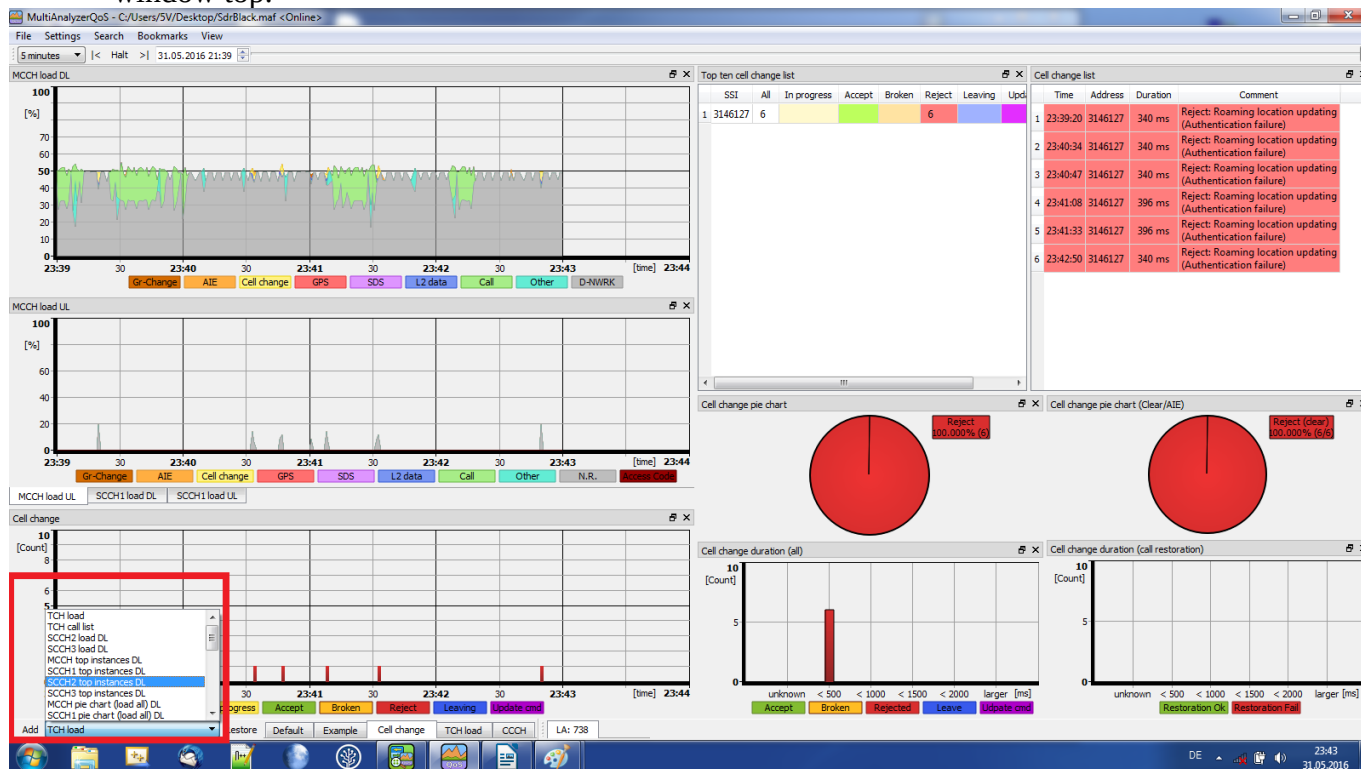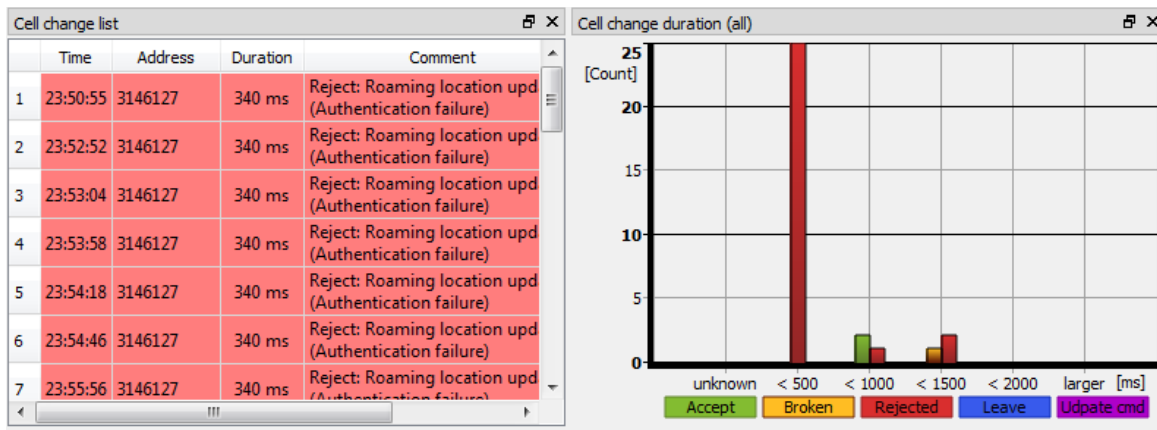
6.1 Find suspect mobiles

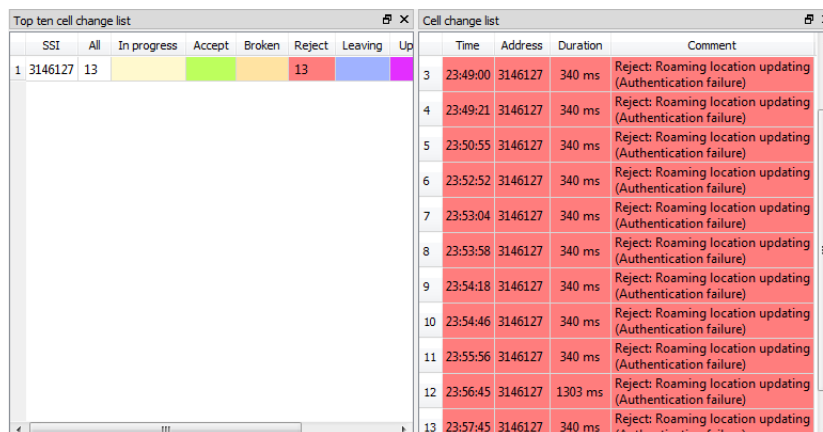With the top ten list can mobile instance found that are responsible for:

- High load traffic, window: "MCCH top instances DL", "MCCH top instances UL
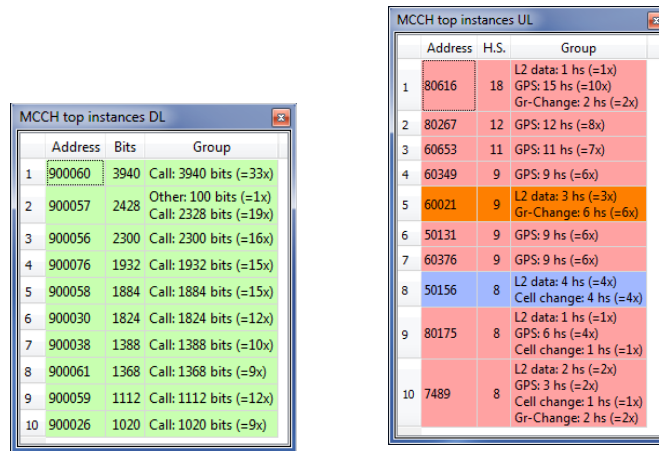
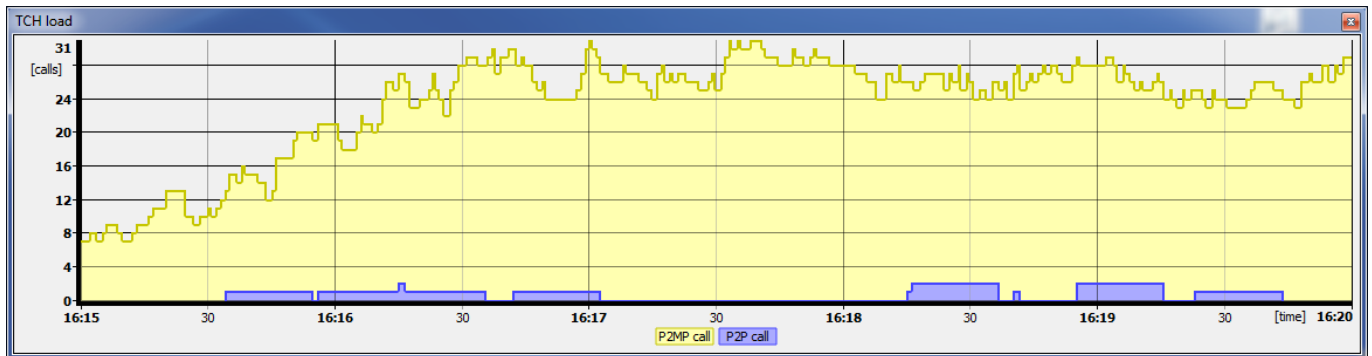- Cell change events like phones without authentication:

- Cell change events that can be mean poor coverage, broken antenna, problems with wiring:
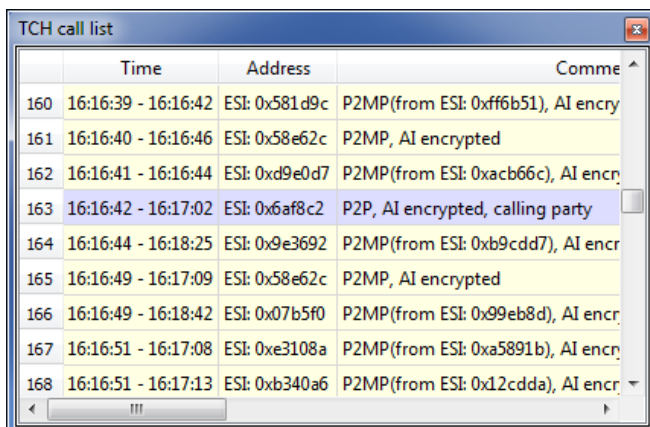
6.2 Analyse TCH load

Analyse if the channel radio resource for calls are in expected range:

- A cell with eight radio carrier up 31 call can made.

- We can see peaks of 31 used call resources, so the base-station handle maximum TCH load.

- Most of the calls are P2MP (group calls).

- Only some P2P (individual calls) occur.

Find calls:

- All calls are listed, by geninng, ending number and type

- The background is coloured into the call type, i.e. P2P is blue.

6.3 Analyse control channel load

Analyse if the control channel load is in expected ranges, find bottle necks, take a look of occurred load type, like load caused by cell change, calls announcing, acknowledgement, SDS, GPS transmission, AIE related management information.
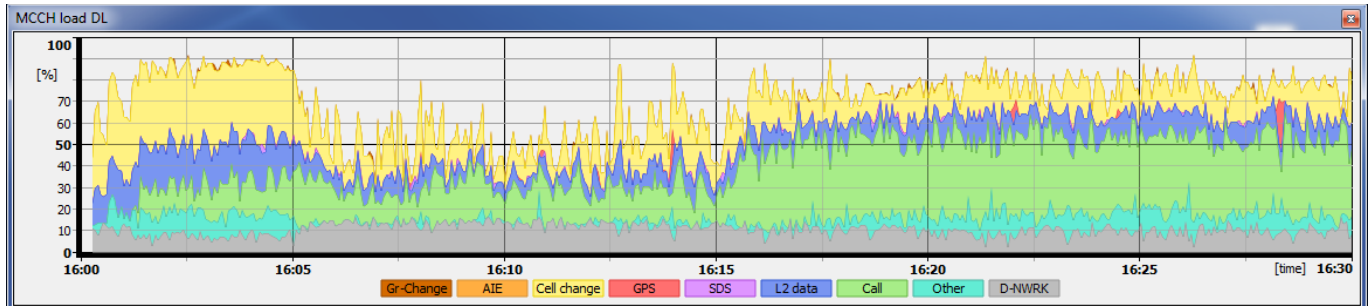
- At the beginning the large yellow area shows high cell change related traffic. Many mobile switching into the cell.

- In the mid usual traffic case some cell change some call related traffic (green)

- At the end usual cell change activity but high load of call related traffic.

6.4 Cell change duration

Find cell change events and the needed duration, measure audiophile gabs while cell change:
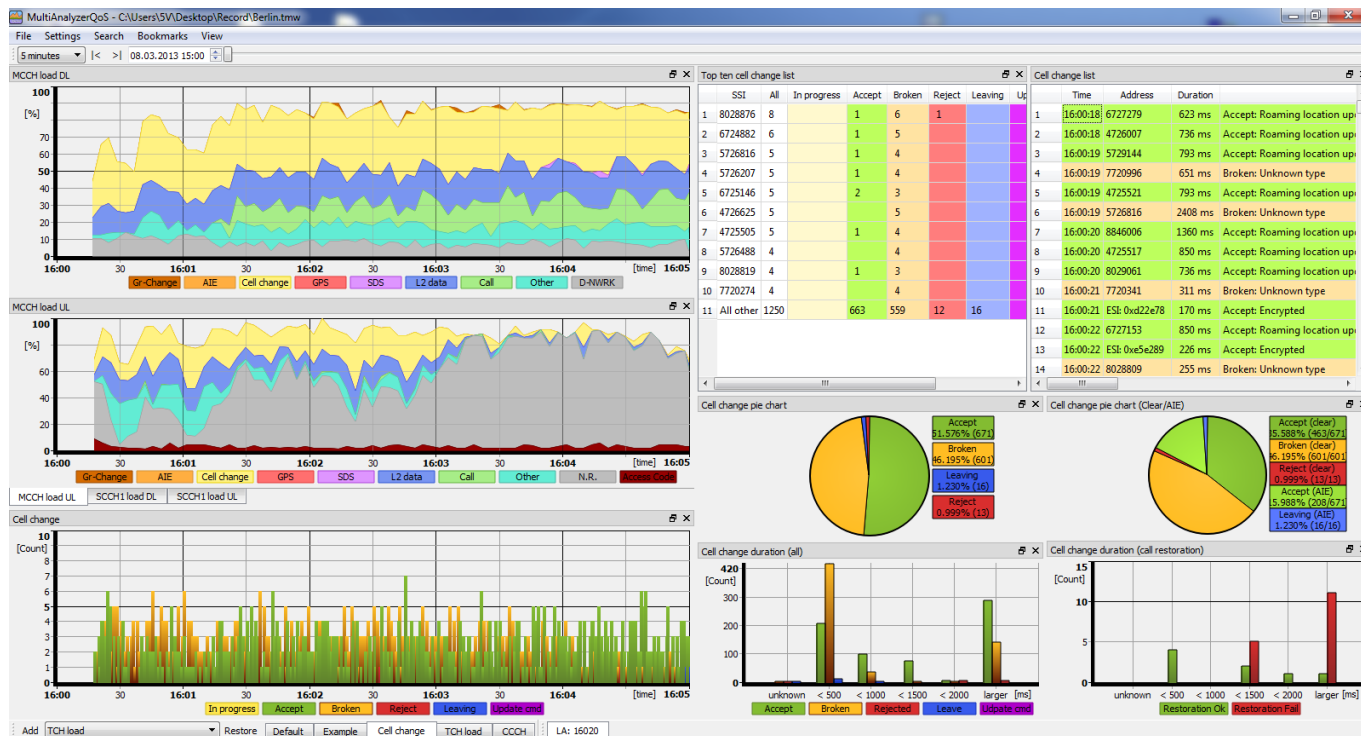
- Find successful cell changes (green) → Analyse the duration time

- Find broken cell changes (orange) → Mobile is a long time out of service

- Find rejected cell change (read) → Mobile is a long time out of service

- Find preparations for leaving the cell (blue) → Mobiles in call are effected by an audiophile gab.

- The needed duration by type (window cell change duration all)

- Measure occurred audiophile gaps while cell change (Cell change duration (call restoration))