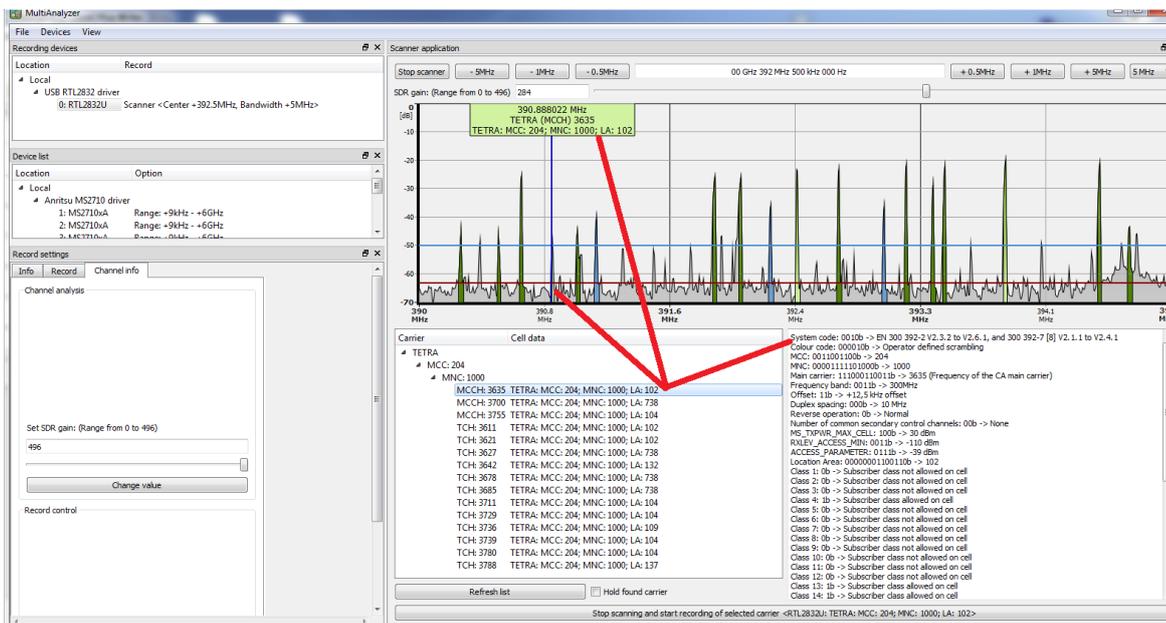


The intuitive operation of the software allows an in-depth analysis of load distribution (MCCH / TCH) and in particular of the "cell change parameters". The MAS is a unique product, which, moreover, the data received in real-time analyses and these in graphs (bar, pie, list view) illustrates. Shows the whole spectrum of records and neighbour channels.

- unlimited carrier could be simultaneously displayed (depending of the receiver)
- decryption supporting of static and dynamic encrypted messages
- the software works with various test receivers from renowned manufacturers as well as with Software Defined Radios (RTL283xU)
- Information of cell change parameter will be shown over the time as list and bar graphs
- TOP 10 of cell change subscriber will be shown by their kind of cell change
- User defined view of the MAS interface
 - View on several screens at the same time (floating and stackable Tabs)
 - variable size of the application
 - all functions could be shown at the same time
 - fully customize graphical view
 - transparency view possible

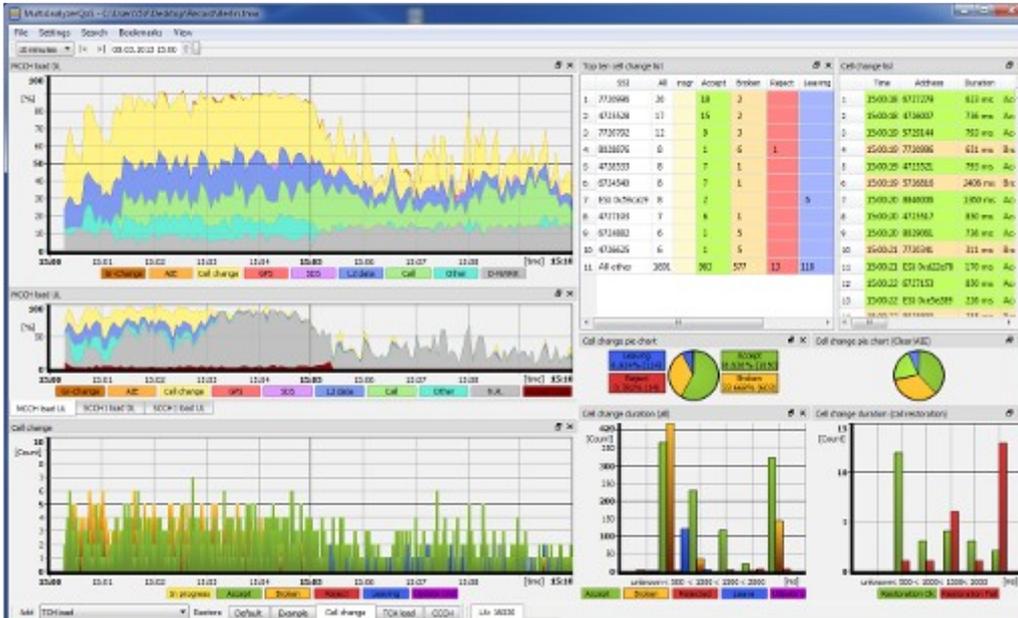
Scanner application

- demodulation and view of digital carrier (TETRA and DMR)
- differentiation of MCCH / TCH / CCH of TETRA signals or Types of DMR
- view of the carrier parameters as text field (TETRA / DMR TIER III)
- real time view of the Message Error Rate (MER) (TETRA and DMR TIER III)
- direct jump function from the scanner application into the protocol analysing (MSC) or Quality of Service module (QoS) of the chosen carrier from the list view possible



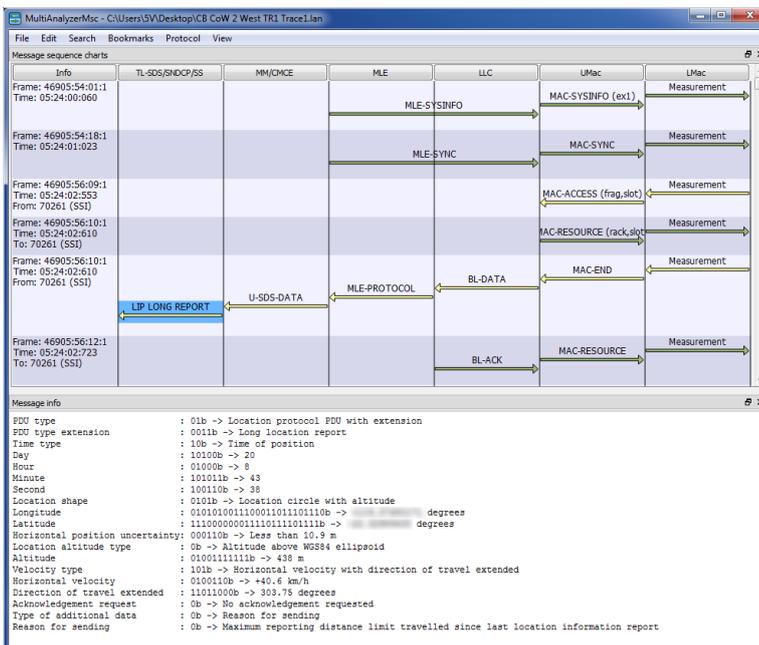
Quality of Service (QoS)

- graphical representation of load analysis of MCCH / SCCH 1-3 / TCH
- graphical view of the cell change parameter (un- and encrypted / accept / broken / request / reject / leaving / command update)
- TOP 10 list of subscriber



Message Sequence Chart (MSC)

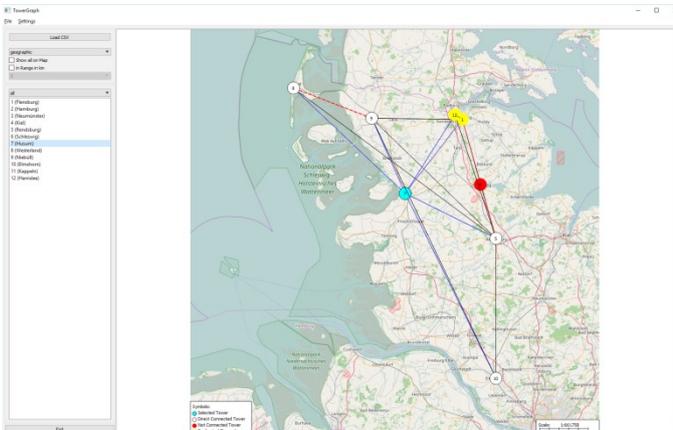
- view of all logical layers of the protocol (LMac \ UMac \ LLC \ MLE \ MMCMCE \ TL-SDS\SNDCP\SS)
- easy protocol analysis by direct jump function from MSC to QoS view and reverse
- information of the considered PDU will be shown in a text field below the protocol view



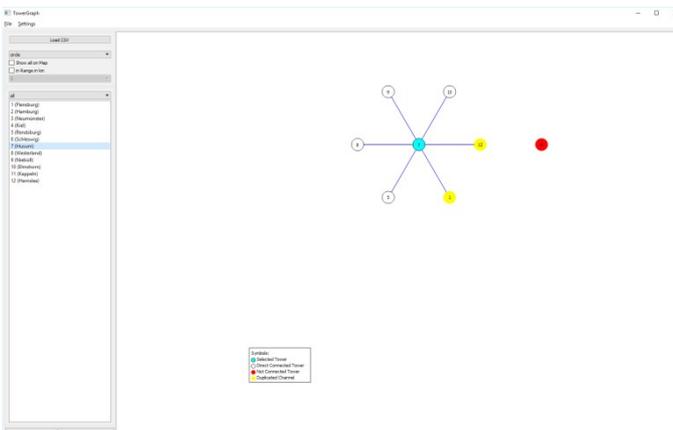
...and much more!

NetworkViewer

- Detailed target / actual analysis based on measured data from the real-time operation
- Display of problems, e.g. Doubled supply frequencies
- Verification of registered neighborhood relations

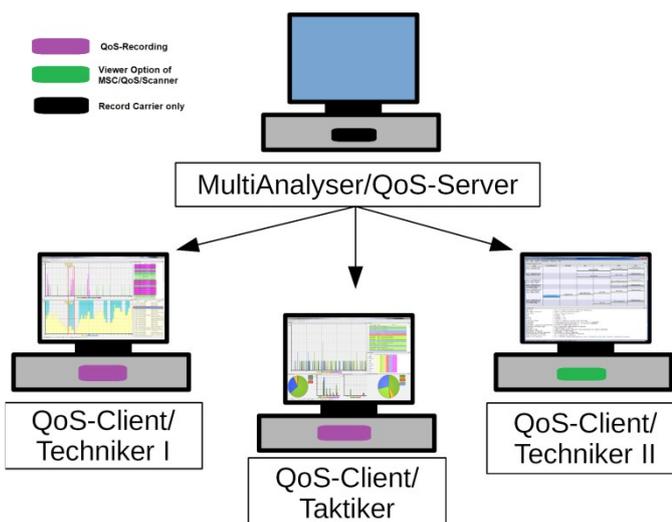


To standardize neighborcell relations of the basestations (pictured here on the left), the new NetworkViewer option is particularly useful. Neighborcells with identical channel numbers are yellow, further neighborcells are marked in white. Stations without direct connection are shown as a red circle. The connecting lines represent the relationship of the stations (e.g. red-painted lines show incorrect relationships).



As an alternative to the geographical view, there is also the option of a model view of the map display in order to map the connections of the considered base station and their relationships. The option provides a detailed comparison of the CURRENT with the DESIRED situation on the basis of measured data from the real-time operation, with display of the problems (for example, twice assigned frequencies in the object supply or incorrectly registered neighboring stations).

QoS Streaming Option



The QoS streaming option allows arbitrary views (layouts) which can be configured differently for the addressees.

For example, for a tactical employee, a layout is available, which allows a quick overview and for a technician, one with specialized displays for details.

Due to your manifold possibilities, the MultiAnalyser software solves your tasks!

MAS Specifications

Name	Description	
PC Requirements		
PC-Hardware (min)	Intel® Core™ i3, 4 GB Memory, 20 GB sufficient free space on the hard-drive	
OS	Windows 7, Windows 8, Windows 10 (32 or 64 bit Version)	
USB-ports	2.0 (used for chip set device connections)	
Ethernet	10/100/1000 Mbit/s (used for measurement device connection)	
Supported Recording Devices (subject to modifications)		
rfe 7504	Surveillance Monitor (USB receiver) for analysis of 4 frequency bands or 4 single frequencies simultaneously (also mixed possible) from rfe-global GmbH	
TCCA TMW	Receiving per UDP data formatted according to TCCA TTR 005-01, V 1.0.0 June 2014	
RTL2832	USB connected RTL283x chip set devices (also known as DVB-T Stick)	
R&S EM100, R&S PR100	Rohde&Schwarz® EM100 or PR100 device (Ethernet connected) with remote control option according to ANSI/VITA 49.0 VITA Radio Transport (VRT) Standard.	
R&S ESMD	Rohde&Schwarz® ESMD device (Ethernet connected) with remote control option according to ANSI/VITA 49.0 VITA Radio Transport (VRT) Standard. Support for DDC / no DDC option.	
AirSpy	USB connected AirSpy drive (firmware 1.0.0-rc-10 or higher)	
MS2710xA	Anritsu MS2710xA (for UL and DL recordings of a carrier a GPS-receiver is needed)	
SKY-i7000	GEW Technologies (a Hensoldt Company) SKY-i7000 (as Testversion implemented)	
Supported Protocols (further updates are planned)		
TETRA TMO	ETSI TS 100 392-2 V3.7.1 (2016-01)	Air Interface (AI)
	ETSI EN 300 392-7 V3.3.1 (2012-07)	Security
	ETSI TS 100 392-15 V1.5.1 (2011-02)	TETRA frequency bands, duplex spacing and channel numbering
	ETSI EN 300 395-2 V1.3.1 (2005-01)	TETRA codec
	ETSI TS 100 392-18-1 V1.4.1 (2008-07)	Location Information Protocol (LIP)
	ETSI EN 300 392-12-22 V1.3.1 (2005-04)	Dynamic Group Number Assignment (DGNA)
	TTR 001-17 V1.0.1 (2004-07) (+CR199_V1+CR286_V1)	Radio User Assignment (RUA)
TETRA DMO	ETSI EN 300 396-3 V1.4.1 (2011-12)	Mobile Station to Mobile Station (MS-MS)
	ETSI EN 300 396-4 V1.4.1 (2011-12)	Type 1 Repeater Air Interface
	ETSI EN 300 396-5 V1.3.1 (2011-12)	Gateway Air Interface
	ETSI EN 300 396-6 V1.5.1 (2012-09)	Security
DMR	ETSI TS 102 361-1	DMR Air Interface (AI) protocol
	ETSI TS 102 361-2	DMR Voice and General services and facilities
	ETSI TS 102 361-3	DMR Data protocol
	ETSI TS 102 361-4	DMR Trunking protocol

Validity of the data sheet, subject to any changes to the software.

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