DECODIO **NET**
FOR DMR, NXDN, DPMR, P25

Based on Decodio RED, **NET** is a highly flexible and extendable air interface analysis tool for digital mobile radio systems. Decodio NET allows interactive troubleshooting and fast identification of digital emissions.

Planning, deploying and maintaining digital communication networks can be challenging for PMR-consultants, network operators and users of mission-critical communication networks, such as police, fire-fighters or ambulance services. Decodio NET offers a detailed insight into the network traffic and configuration through an easy-to-use interface which does not require specialized skills to be operated, making maintaining a digital land mobile radio network a breeze.

ANALYZE YOUR NETWORK AND BASE STATION BROADCASTS

Decodio NET is a PC-based software solution able to perform channel extraction and processing from the physical layer to the protocol layer. It operates in conjunction with a spectrum analyzer or I/Q receiver and can extract and decode multiple channels in parallel.

Every important PDU (such as color code, radio access number or site ID) is decoded, allowing detailed analysis of the network traffic.

Reports containing all the decoded information can be generated for further processing in other software, such as Microsoft Excel.

DETECT INTERFERENCES ON THE AIR INTERFACE

Interferences on the air interface caused by signals from other systems or intentional jamming can become a serious problem for secure and reliable communications. When building an on-demand network in a remote or crisis area, one must ensure that the spectrum is clean for communications. In such a case, Decodio NET acts as a self-protection tool answering the question: does everything work as expected?

Continuous logging of both signal quality and signal power for all channels allows early detection of system outage, signal quality drop and external interferences. Besides, frequency planning can be easily verified by measuring the quality of each channel.
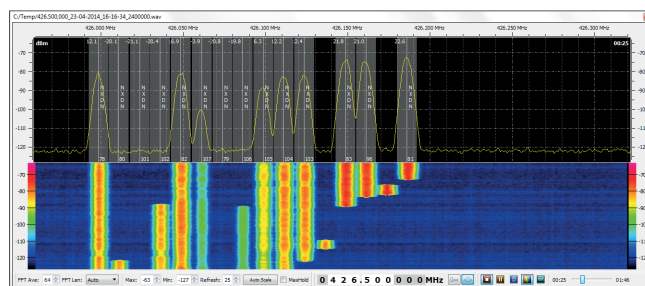
LIVE ANALYSIS AND DECODING

Get an overview of the network occupancy and record unencrypted voice content and data messages for quality assurance.

Voice recording, content decoding (short data messages, position reports) and database logging are available.

Calls and data messages can be searched and filtered, making it easy to analyze long recording sessions.

HIGHLIGHTS

- **Network monitoring via air interface**
- **Simple operation and clear visualization**
- **Monitoring of broadcasts and contents**
- **Signal quality and power monitoring**
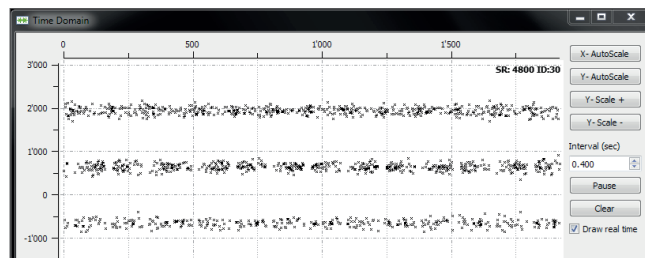- **Automatic detection of digital PMR emissions**

Parallel channel extraction

NXDN Cell list

DMR cell list

DMR symbol output

DMR live call list

DECODIO NET CONFIGURATIONS

Decodio NET supports DMR, dPMR, NXDN and P25.

Configuration	NET_16	NET_32	Custom
Supported protocol	DMR, NXDN, dPMR, P25		custom
Number of supported protocols	1 – 2	2 – 4	custom
Number of channels	16	32	custom
Support for multiple receivers	no	yes	custom
Remote control interface	optional	optional	optional

APPLICATIONS

- **Air interface signal quality analysis and interference detection**
- **Voice and data communication recording**
- **Load measurements**
- **Network coverage planning and verification**

FLEXIBLE EXTENSIONS

Decodio NET can be extended with the following features:

Decodio **RUNNER**	Drive test
Decodio **PINK/QoS**	Network monitoring and QoS
Decodio **BLUE**	Logging, visualization and post processing in the web-browser
Decodio Re**X**	Recording and analysis of unknown emissions and analog PMR
PDU-output	Comprehensive PDU output for protocol analysis
Decryption / Descrambling	Decryption options for DMR, NXDN, dPMR, P25 on request

TECHNICAL DATA

Decodio software components	RED (BLUE and PINK available as options)
Frequency range	9 kHz – 6 GHz
Bandwidth	up to 27 MHz in portable setups and 50 MHz in fixed setups
Hardware setup	Laptop + portable receiver, fixed setup

Protocol	Broadcast parameters	Call parameters
DMR ETSI TS 102 361-1 (Air interface) ETSI TR 102 398 (General system design) ETSI TS 102 361-4 (DMR trunking protocol)	MODEL, NET, SITE, Registration, Color Code, PARAMETER	Slot, SourceID, DestinationID, Broadcast, Emergency, Priority, FeatureID, FullLinkControlOpcode
NXDN NXDN Technical specifications NXDN TS 1-A Version 1.3 Remarks: Automatic 15 bit scrambling key decryption	RFChannelType, Direction, RAN, ManufacturerNo, LocationID, ServiceInfo, ChannelStructureInfo,VersionNo, Key	SourceID, DestinationID, Encryption, CallType, Key
dPMR ETSI TS 102 658 (Air Interface) ETSI TS 102 490 (Air Interface license free)	ChannelCode, SystemIdentityCode, Infill, ServiceFunction, NetConnection, Registration	SourceID, DestinationID, CommonID, CommFormat, Emergency
P25 TIA-102.BAAA-A - Project 25 FDMA – Common Air Interface TIA-102.AABC-B - Project 25 Trunking Control Messages	NAC, WACID, SYSID, RFSSID, SiteID, LRA, ServiceClass	SourceID, DestinationID, Encryption

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