This document describes the following software options:

- R&S®SMBVB-K47
  1423.7776.02
- R&S®SMBVB-K87
  1423.7930.02

This manual describes firmware version FW 4.60.112.xx and later of the R&S®SMBV100B.
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1 Preface

1.1 About this Manual

This User Manual provides all the information specific to the digital standard 1xEV-DO Rev. A, Rev. B. All general instrument functions and settings common to all applications and operating modes are described in the main R&S SMBV100B User Manual.

The main focus in this manual is on the provided settings and the tasks required to generate a signal. The following topics are included:

- **Welcome to the 1xEV-DO options R&S SMBVB-K47/-K87.**
  Introduction to and getting familiar with the option

- **About 1xEV-DO**
  Background information on basic terms and principles in the context of the signal generation

- **1xEV-DO Configuration and Settings**
  A concise description of all functions and settings available to configure signal generation with their corresponding remote control command

- **Remote Control Commands**
  Remote commands required to configure and generate signals in a remote environment, sorted by tasks
  (Commands required to set up the instrument or to perform common tasks on the instrument are provided in the main R&S SMBV100B User Manual)
  Programming examples demonstrate the use of many commands and can usually be executed directly for test purposes

- **List of remote commands**
  Alphabetical list of all remote commands described in the manual

- **Index**

1.2 Documentation Overview

This section provides an overview of the R&S SMBV100B user documentation. Unless specified otherwise, you find the documents on the R&S SMBV100B product page at:

www.rohde-schwarz.com/manual/smbv100b

1.2.1 Getting Started Manual

Introduces the R&S SMBV100B and describes how to set up and start working with the product. Includes basic operations, typical measurement examples, and general information, e.g. safety instructions, etc. A printed version is delivered with the instrument.
1.2.2 User Manuals and Help

Separate manuals for the base unit and the software options are provided for download:

- **Base unit manual**
  Contains the description of all instrument modes and functions. It also provides an introduction to remote control, a complete description of the remote control commands with programming examples, and information on maintenance, instrument interfaces and error messages. Includes the contents of the getting started manual.

- **Software option manual**
  Contains the description of the specific functions of an option. Basic information on operating the R&S SMBV100B is not included.

All user manuals are also available for download or for immediate display on the Internet.

1.2.3 Service Manual

Describes the performance test for checking the rated specifications, module replacement and repair, firmware update, troubleshooting and fault elimination, and contains mechanical drawings and spare part lists.

The service manual is available for registered users on the global Rohde & Schwarz information system (GLORIS, https://gloris.rohde-schwarz.com).

1.2.4 Instrument Security Procedures

Deals with security issues when working with the R&S SMBV100B in secure areas. It is available for download on the Internet.

1.2.5 Basic Safety Instructions

Contains safety instructions, operating conditions and further important information. The printed document is delivered with the instrument.

1.2.6 Data Sheets and Brochures

The data sheet contains the technical specifications of the R&S SMBV100B. It also lists the options and their order numbers and optional accessories.

The brochure provides an overview of the instrument and deals with the specific characteristics.

See [www.rohde-schwarz.com/brochure-datasheet/smbv100b](http://www.rohde-schwarz.com/brochure-datasheet/smbv100b)
1.2.7 Release Notes and Open Source Acknowledgment (OSA)

The release notes list new features, improvements and known issues of the current firmware version, and describe the firmware installation.

The open source acknowledgment document provides verbatim license texts of the used open source software.

See www.rohde-schwarz.com/firmware/smbv100b

1.2.8 Application Notes, Application Cards, White Papers, etc.

These documents deal with special applications or background information on particular topics.

See www.rohde-schwarz.com/application/smbv100b
2 Welcome to the 1xEV-DO Digital Standard

The R&S SMBV100B-K47/-K87 is a firmware application that adds functionality to generate signals in accordance to the CDMA2000® 1xEV-DO (Evolution-Data Optimized), Rev. A and Rev. B.

CDMA2000® 1xEV-DO is the North American standard for the third mobile radio generation (3G). CDMA2000® 1xEV-DO is a high-speed packet-switched transmission technique with forward peak data rates of 4.9152 Mbps per carrier, designed and optimized for a data-centric broadband network.

The R&S SMBV100B simulates 1xEV-DO signal at the physical layer. In forward link (downlink) mode, the signal is generated in real time. Parameter changes during active signal output take effect immediately without signal interruption. In reverse link (uplink) mode, the signal is precalculated and played from the ARB memory. Parameter changes result in a recalculation of the signal.

The following list gives an overview of the main feature provided by the R&S SMBV100B for generating an 1xEV-DO signal in accordance with 3GPP2 C.S0024-B.v3.0.

- Generation of 1xEV-DO signals with a chip rate of 1.2288 Mcps
- Independent configuration of up to four traffic channels or four access terminals
- Support of physical layer subtypes 0, 1, 2 and 3
- Support of multi-carrier operation with up to 16 simultaneous carriers
- Operating modes “Traffic” and “Access” on the uplink
- Simulation of up to 360 additional MAC users
- Generation of standard compliant forward/downlink and reverse/uplink channel types
- Supports configuration of public data as defined in the standard, such as Long Code Masks for I and Q channel, Preamble Length, DRCLength.
- Filling the data files for data channels from the following standard sources: pattern (all1, all0, user-defined up to 64 bits), PN data or data lists
- Clipping for reducing the crest factor

This user manual contains a description of the functionality that the application provides, including remote control operation.

All functions not discussed in this manual are the same as in the base unit and are described in the R&S SMBV100B user manual. The latest version is available at: www.rohde-schwarz.com/manual/SMBV100B

Installation

You can find detailed installation instructions in the delivery of the option or in the R&S SMBV100B service manual.
2.1 Accessing the 1xEV-DO Dialog

To open the dialog with 1xEV-DO settings

► In the block diagram of the R&S SMBV100B, select "Baseband > 1xEV-DO".

A dialog box opens that display the provided general settings.

The signal generation is not started immediately. To start signal generation with the default settings, select "State > On".

2.2 Scope

Tasks (in manual or remote operation) that are also performed in the base unit in the same way are not described here.

In particular, it includes:

● Managing settings and data lists, like storing and loading settings, creating and accessing data lists, or accessing files in a particular directory.

● Information on regular trigger, marker and clock signals and filter settings, if appropriate.

● General instrument configuration, such as checking the system configuration, configuring networks and remote operation

● Using the common status registers

For a description of such tasks, see the R&S SMBV100B user manual.

2.3 Notes on Screenshots

When describing the functions of the product, we use sample screenshots. These screenshots are meant to illustrate as many as possible of the provided functions and possible interdependencies between parameters. The shown values may not represent realistic usage scenarios.

The screenshots usually show a fully equipped product, that is: with all options installed. Thus, some functions shown in the screenshots may not be available in your particular product configuration.
# About the 1xEV-DO Options

The following table gives an overview of parameters of the modulation system 1xEV-DO.

Table 3-1: Parameters of the modulation system 1xEV-DO

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chip rate</td>
<td>1.2288 Mcps</td>
</tr>
<tr>
<td>Channel types Forward</td>
<td>• Pilot Channel</td>
</tr>
<tr>
<td></td>
<td>• Forward Traffic Channel (Rev. A)</td>
</tr>
<tr>
<td></td>
<td>• Reverse Activity</td>
</tr>
<tr>
<td></td>
<td>• DRCLock</td>
</tr>
<tr>
<td></td>
<td>• Reverse Power Control</td>
</tr>
<tr>
<td></td>
<td>• ARQ (Rev. A)</td>
</tr>
<tr>
<td></td>
<td>• Control Channel</td>
</tr>
<tr>
<td>Reverse link, access</td>
<td>• Pilot Channel</td>
</tr>
<tr>
<td></td>
<td>• Data Channel</td>
</tr>
<tr>
<td>generation</td>
<td>• Pilot Channel</td>
</tr>
<tr>
<td></td>
<td>• Auxiliary Pilot Channel (Rev. A)</td>
</tr>
<tr>
<td></td>
<td>• Reverse RateIndicator</td>
</tr>
<tr>
<td></td>
<td>• Data Rate Control</td>
</tr>
<tr>
<td></td>
<td>• Data Source Control (Rev. A)</td>
</tr>
<tr>
<td></td>
<td>• ACK Channel</td>
</tr>
<tr>
<td></td>
<td>• Data Channel</td>
</tr>
<tr>
<td>Generation mode</td>
<td>• Realtime mode</td>
</tr>
<tr>
<td></td>
<td>• Arbitrary waveform mode</td>
</tr>
<tr>
<td></td>
<td>• Multicarrier operation</td>
</tr>
<tr>
<td></td>
<td>Up to 16 concurrent carriers supported</td>
</tr>
<tr>
<td>Data rates</td>
<td>• 38.4 .. 2457.6 kbps (Rev. 0)</td>
</tr>
<tr>
<td></td>
<td>• 4.8 .. 3072 kbps (Rev. A)</td>
</tr>
<tr>
<td></td>
<td>• 4.8 .. 4915 kbps (Rev. B)</td>
</tr>
<tr>
<td></td>
<td>Requires option R&amp;S SMBVB-K87</td>
</tr>
<tr>
<td>Frame length</td>
<td>26.67 ms (1 frame = 16 slots)</td>
</tr>
<tr>
<td>Slot duration</td>
<td>1.67 ms (1 slot = 2048 PN chips)</td>
</tr>
<tr>
<td>PN offset</td>
<td>0 .. 511</td>
</tr>
<tr>
<td>Channel coding</td>
<td>All channel coding modes defined in the standard (channel encoding,</td>
</tr>
<tr>
<td></td>
<td>block interleaving, repetition, modulation, orthogonal spreading by</td>
</tr>
<tr>
<td></td>
<td>Walsh function)</td>
</tr>
<tr>
<td>Modulation</td>
<td>BPSK, QPSK, 8PSK, 16QAM, 64QAM</td>
</tr>
<tr>
<td></td>
<td>Requires option R&amp;S SMBVB-K87</td>
</tr>
<tr>
<td>Multi-code modulation</td>
<td>B4, Q2, Q4, Q4Q2, E4E2</td>
</tr>
</tbody>
</table>
### 3.1 Traffic Scheduling Process

In the 1xEV-DO system, the Forward Link is governed by a time division multiple access technique. Access to Forward Link bandwidth by a user channel is governed by a scheduling process. The schedule process determines who gets access to Forward Link slots to carry user data.

The traffic scheduling process in this instrument follows a number of rules to schedule which user's data is sent for each slot.

The rules are listed in order of priority, with the highest priority rules being listed first. In the event that two rules contradict each other, the circumstances invoking the lower priority rule must be altered to resolve the contradiction.

- A channel with "State = Off" is never transmitted.
- The first slot of the control channel packet is always transmitted at its specified offset at the start of the control channel cycle.
- Once the first slot of a multiple slot packet is sent, the remaining slots are always transmitted with the proper interlace (three slots skipped after one slot sent).
- Packets for a user can be transmitted on 1 to 4 interlaces (there are a total of 4 interlaces in the 1xEV-DO system). Packets on the different interlaces are duplicates of the packets sent on the other interlaces for a given user. The interleave factor user interface parameter is used to control the number of interlaces used for each user.
- Immediately after the transmission of the last slot of a multiple slot packet, a lockout period of three slots is created. No additional packets from the same source can be scheduled before the three slot period expires.
- A control channel packet has priority over all other traffic channels. This excludes transmission of user channels in advance of the control channel packet, if the other channel would require a slot that the control channel packet would require.
- User1 traffic has priority over User2, User3, and User4 traffic.
- User2 traffic has priority over User3 and User4 traffic.
- User3 traffic has priority over User4 traffic.
- If no traffic is scheduled for a slot, an idle slot is transmitted.
4 1xEV-DO Configuration and Settings

Access:

► Select "Baseband > 1xEV-DO".

The remote commands required to define these settings are described in Chapter 5, "Remote-Control Commands", on page 61.

4.1 General Settings

The tab provides access to the default and the "Save/Recall" settings. The selected link direction determines the available parameters.

State
Activates the standard and deactivates all the other digital standards and digital modulation modes in the same path.
Remote command:
\[:SOURce<hw>]:BB:EVDO:STATe on page 67

**Set To Default**
Calls the default settings. The values of the main parameters are listed in the following table.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Not affected by &quot;Set to default&quot;</td>
</tr>
<tr>
<td>Link Direction</td>
<td>Downlink/ Forward</td>
</tr>
<tr>
<td>PN Offset</td>
<td>0</td>
</tr>
<tr>
<td>System Time</td>
<td>0</td>
</tr>
<tr>
<td>Predefined Settings</td>
<td>User Defined</td>
</tr>
<tr>
<td>Multicarrier State</td>
<td>off</td>
</tr>
<tr>
<td>Filter</td>
<td>CdmaOne + Equalizer</td>
</tr>
<tr>
<td>Clipping</td>
<td>Off</td>
</tr>
</tbody>
</table>

Remote command:
\[:SOURce<hw>]:BB:EVDO:PRESet on page 65

**Save/Recall**
Accesses the "Save/Recall" dialog, that is the standard instrument function for saving and recalling the complete dialog-related settings in a file. The provided navigation possibilities in the dialog are self-explanatory.

The filename and the directory, in which the settings are stored, are user-definable; the file extension is however predefined.

See also, chapter "File and Data Management" in the R&S SMBV100B user manual.

Remote command:
\[:SOURce<hw>]:BB:EVDO:SETTING:CATalog? on page 66
\[:SOURce<hw>]:BB:EVDO:SETTING:LOAD on page 66
\[:SOURce<hw>]:BB:EVDO:SETTING:STORE on page 66
\[:SOURce<hw>]:BB:EVDO:SETTING:DELETE on page 66

**Generate Waveform**
With enabled signal generation, triggers the instrument to store the current settings as an ARB signal in a waveform file. Waveform files can be further processed by the ARB and/or as a multi-carrier or a multi-segment signal.

The filename and the directory it is stored in are user-definable; the predefined file extension for waveform files is *.wv.

Remote command:
\[:SOURce<hw>]:BB:EVDO:WAVef orm:CREate on page 68

**1xEV-DO Version**
Displays the current version of the standard.
The default settings and parameters provided are oriented towards the specifications of the version displayed.

Remote command:
[:SOURce<hw>]:BB:EVDO:VERSion? on page 68

**Link Direction**
Selects the link direction.
The settings of the traffic channels per user and the access terminals are provided in the following menu section in accordance with the selection.

"Downlink/Forward"
The link direction selected is base station to access terminal. The signal corresponds to that of a base station.

"Uplink/Reverse"
The link direction selected is access terminal to base station. The signal corresponds to that of an access terminal.

Remote command:
[:SOURce<hw>]:BB:EVDO:LINK on page 65

**PN Offset**
Sets the PN Offset of the 1xEV-DO signal.

Remote command:
[:SOURce<hw>]:BB:EVDO:PNOFfset on page 65

**System Time**
Sets the system time value of the 1xEV-DO signal and the base station. The system time is expressed in units of 1.67 ms intervals (80 ms/48).

**Note:** In uplink, the value selected for system time must be multiple of 16.

Remote command:
[:SOURce<hw>]:BB:EVDO:STIMe on page 67

**Multicarrier Configuration**
Provides access to the "Multicarrier Configuration" dialog, see Chapter 4.7, "Multi-Carrier Configuration Settings", on page 34.

**Access Network Settings**
In downlink direction, provides access to the "Access Network Settings" dialog, see Chapter 4.8, "Access Network Settings", on page 36.

**Filter / Clipping / ARB Settings**
Provides access to the settings dialogs for configuring baseband filtering, clipping and the sequence length of the arbitrary waveform component, see Chapter 4.10, "Filter / Clipping / ARB Settings", on page 55.
4.2 Trigger Settings

Access:

► Select "Baseband > 1xEV-DO > Trigger In".

This tab provides access to the settings necessary to select and configure the trigger, like trigger source, mode, trigger delay, trigger suppression, as well as to arm or trigger an internal trigger manually. The current signal generation status is displayed in the header of the tab together with information on the enabled trigger mode. As in the "Marker" and "Clock" tabs, this tab provides also access to the settings of the related connectors.

This section focuses on the available settings.

For information on how these settings affect the signal, refer to section "Basics on ..." in the R&S SMBV100B user manual.

Routing and enabling a trigger

The provided trigger signals are not dedicated to a particular connector. Trigger signals can be mapped to one or more User x connectors.

Use the Global Connector Settings to configure the signal mapping, the polarity, the trigger threshold and the input impedance of the input connectors.

To route and enable a trigger signal, perform the following general steps:

● Define the signal source and the effect of a trigger event.
  Select the "Trigger In > Mode" and "Trigger In > Source".

● Define the connector where the selected signal is provided.
  Use the Global Connector Settings.

Settings:

- Trigger Mode .......................................................... 16
- Signal Duration Unit .................................................. 16
- Trigger Signal Duration .............................................. 16
- Running/Stopped .................................................... 16
- Arm ........................................................................... 17
Execute Trigger

Trigger Source

Sync. Output to External Trigger/Sync. Output to Trigger

External Trigger Inhibit

Trigger Delay

Trigger Mode
Selects trigger mode, i.e. determines the effect of a trigger event on the signal generation.

- "Auto"
  The signal is generated continuously.
- "Retrigger"
  The signal is generated continuously. A trigger event (internal or external) causes a restart.
- "Armed Auto"
  The signal is generated only when a trigger event occurs. Then the signal is generated continuously.
  An "Arm" stops the signal generation. A subsequent trigger event (internal or external) causes a restart.
- "Armed Retrigger"
  The signal is generated only when a trigger event occurs. Then the signal is generated continuously.
  Every subsequent trigger event causes a restart.
- "Single"
  The signal is generated only when a trigger event occurs. Then the signal is generated once to the length specified at "Signal Duration".
  Every subsequent trigger event (internal or external) causes a restart.

Remote command:
[:SOURce<hw>]:BB:EVDO[:TRIGger]:SEQuence on page 73

Signal Duration Unit
Defines the unit for describing the length of the signal sequence to be output in the "Single" trigger mode.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:SLUNit on page 75

Trigger Signal Duration
Enters the length of the signal sequence to be output in the "Single" trigger mode.
Use this parameter to output part of the signal deliberately, an exact sequence of the signal, or a defined number of repetitions of the signal.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:SLENgth on page 74

Running/Stopped
With enabled modulation, displays the status of signal generation for all trigger modes.
- "Running"
The signal is generated; a trigger was (internally or externally) initiated in triggered mode.

- "Stopped"
  The signal is not generated and the instrument waits for a trigger event.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:RMODe? on page 74

Arm
Stops the signal generation until subsequent trigger event occurs.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:ARM:EXECute on page 74

Execute Trigger
For internal trigger source, executes trigger manually.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:EXECute on page 74

Trigger Source
The following sources of the trigger signal are available:

- "Internal"
  The trigger event is executed manually by the "Execute Trigger".
- "External Global Trigger"
  The trigger event is the active edge of an external trigger signal provided and configured at the User x connectors.
- "Baseband Sync In"
  In master-slave mode, slave instruments are triggered by the active edge of the synchronization signal.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:SOURce on page 75

Sync. Output to External Trigger/Sync. Output to Trigger
Enables signal output synchronous to the trigger event.

- "On"
  Corresponds to the default state of this parameter.
  The signal calculation starts simultaneously with the trigger event. Because of the processing time of the instrument, the first samples are cut off and no signal is output. After elapsing of the internal processing time, the output signal is synchronous to the trigger event.
"Off"

The signal output begins after elapsing of the processing time. Signal output starts with sample 0. The complete signal is output. This mode is recommended for triggering of short signal sequences. Short sequences are sequences with signal duration comparable with the processing time of the instrument.

In master-slave mode, this setting ensures that once achieved, synchronization is not lost if the baseband signal sampling rate changes.

Remote command:
[:SOURce<hw>:BB:EVDO:TRIGger:EXTernal:SYNChronize:OUTPut on page 74

External Trigger Inhibit

Applies for external trigger signal.

Sets the duration with that any following trigger event is suppressed. In "Retrigger" mode, for example, a new trigger event does not cause a restart of the signal generation until the specified inhibit duration does not expire.

For more information, see chapter "Basics" in the R&S SMBV100B user manual.

Remote command:
[:SOURce<hw>:BB:EVDO:TRIGger[:EXTernal]:INHibit on page 76

Trigger Delay

Delays the trigger event of the signal from:
- The external trigger source
Use this setting to:
● Synchronize the instrument with the device under test (DUT) or other external devices
● Compensate delays and align the signal generation start in multi-instrument setup
For more information, see chapter "Basics on ..." in the R&S SMBV100B user manual.
Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger[:EXTernal]:DElay on page 75

4.3 Marker Settings

This tab provides access to the settings necessary to select and configure the marker output signal, like the marker mode or marker delay settings.

Routing and enabling a marker

The provided marker signals are not dedicated to a particular connector. They can be mapped to one or more User x connectors.

To route and enable a marker signal, perform the following general steps:
● Define the shape of the generated marker, i.e. select the "Marker > Mode".
● Define the connector where the selected signal is provided.
Use the Global Connector Settings.
**Marker Mode**
Marker configuration for up to 3 markers. The settings are used to select the marker mode defining the shape and periodicity of the markers. The contents of the dialog change with the selected marker mode; the settings are self-explanatory.

"Slot (1.67 ms)"
A marker signal is generated at the start of each slot (every 1.67 ms).

"PN Sequence Period (26.67 ms)"
A marker signal is generated every 26.67 ms (PN Sequence Period).

"Even Second Mark (2 s)"
A marker signal is generated every 2 seconds.

"Chip Sequence Period (ARB)"
(For reverse link mode)
A marker signal is generated at the beginning of every Arbitrary Waveform sequence (depending on the set sequence length). The marker signal is generated regardless of whether an ARB component is used.

"On/Off Ratio"
A regular marker signal that is defined by an On/Off ratio is generated. A period lasts one ON and OFF cycle.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:ONTime on page 77
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:OFFTime on page 77

"User Period"
A marker signal is generated at the beginning of every user-defined period ("Period").

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:PERiod on page 77

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:MODE on page 76

**Marker x Delay**
Delays the marker signal at the marker output relative to the signal generation start. Variation of the parameter "Marker x Delay" causes signal recalculation.

Remote command:
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DELay on page 77

4.4 Clock Settings
This tab provides access to the settings necessary to select and configure the clock signal, like the clock source and clock mode.
This section focuses on the available settings. For information on how these settings affect the signal, refer to section "Basics on ..." in the R&S SMBV100B user manual.

Defining the Clock

The provided clock signals are not dedicated to a particular connector. They can be mapped to one or more User x connectors.

Use the Global Connector Settings to configure the signal mapping, the polarity, the trigger threshold, and the input impedance of the input connectors.

To route and enable a trigger signal, perform the following general steps:

- Define the signal source, that is select the "Clock > Source".
- Define the connector where the selected signal is provided.

Use the Global Connector Settings.

Clock Source

Selects the clock source.

- "Internal"
  The instrument uses its internal clock reference.

Remote command:

[:SOURce<hw>]:BB:EVDO:CLOCK:SOURce on page 78

4.5 Global Connector Settings

Each of the "Trigger In", "Marker" and "Clock" dialogs as well as the "Trigger Marker Clock" dialog provides a quick access to the related connector settings.

For more information, refer to the description R&S SMBV100B user manual, section "Global Connector Settings".
4.6 Traffic Channel Settings

Access:

1. Select “Baseband > 1xEV-DO > Link Direction > Downlink”
2. Select “Traffic Channels”.

Four "User (1..4)" are available.

3. To activate a user, set e.g. "User 1 > On".
4. To access the settings of a user, select the corresponding field, e.g. "User 1". The corresponding "Configure Traffic User 1 .. 4" dialog opens. The user number is indicated in the panel headline.
The dialog comprises the settings of the traffic channel and of the forward MAC channel settings, such as Reverse Power Control (RPC) and DRCLock.

**Common**
Comprises the common traffic channel settings:

**State (User) ← Common**
Enables or disables the selected user.
If the user is enabled, the proper "MAC Index" is placed within the MAC channel and packets can be sent to the user. If disabled, the "MAC Index" is not present within the MAC channel and packets cannot be sent to the user.

*Note:* Disabling the state of a user during a transfer aborts all transfers to the user.

Remote command:
```
[:SOURCe<hw>]:BB:EVDO:USER<st>:STATe
```
on page 94

**Physical Layer Subtype (User) ← Common**
Displays the physical layer subtype selected in the menu "Access Network Settings".

Remote command:
```
[:SOURCe<hw>]:BB:EVDO:ANETwork:SUBType
```
on page 82

**Number of Packets to Send - Infinite ← Common**
Enables or disables sending an unlimited number of packets to the selected user.
If "Infinite" is enabled, there is no limit to the number of packets sent to the user. If "Infinite" is disabled, the number of packets to be sent to the selected "User" can be specified.

Remote command:
[:SOURce<hw>]:BB:EVD:USER<st>:PACKet:INFinite on page 90

**Number of Packets to Send - Value ← Common**

Sets the number of packets to send to the selected user.

The number of packets to be sent depends on whether the parameter "Infinite" is enabled or disabled. If "Infinite" is enabled, there is no limit to the number of packets sent to the user.

If "Infinite" is disabled and a value is specified while packets are being sent, the new count value is used at the end of transmission of the current packet. If a value of zero is specified, the transmission to the user is stopped at the end of the current packet.

Remote command:
[:SOURce<hw>]:BB:EVD:USER<st>:PACKet:INFinite on page 90
[:SOURce<hw>]:BB:EVD:USER<st>:PACKet:COUNT on page 89

**Packet Start Offset ← Common**

Sets the minimum number of slots between the end of one packet and the beginning of the next.

For single slot packets, a value of zero will cause the next packet to be sent in the immediate next slot (subject to scheduling).

Example:
Single Slot Packets
SOff=0

For multiple slot packets, a value of zero will cause the next packet transmission to start three slots after the end of the previous packet. The three slot delay is identical to the interleaving delay between slots for multiple slot packets. The offset value is attached to the end of the preceding packet.

Example:
Multiple Slot Packets
SOff=0

![Diagram showing packet start offset](image)
Note: An offset value of zero with a rate change from a single slot packet to multiple slot packets causes the first slot of the multiple slot packets to be transmitted in the slot immediately following the single slot packet.

Example:
Rate change
SOFF=0

See Chapter 3.1, "Traffic Scheduling Process", on page 11 for an explanation on how the control and traffic channels are transmitted over time.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:SOFFset on page 90

Rate Index ← Common
Sets an index into the table of rates and slot counts.

Note: Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.

For physical layer 0&1, the parameter "Rate Index" alone automatically set the packet size, data rate and the slot count for the packets sent to the selected user. Parameters "Packet Size", "Data Rate" and "Slot Count" are read-only.

Table 4-1: Rate index for Physical Layer subtype 0&1

<table>
<thead>
<tr>
<th>Rate index</th>
<th>Packet size index</th>
<th>Packet size, bits</th>
<th>Data Rate, kbps</th>
<th>Slot count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1024</td>
<td>38.4</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1024</td>
<td>76.8</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>1024</td>
<td>153.6</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>2048</td>
<td>307.2</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>1024</td>
<td>614.4</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>2048</td>
<td>614.4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>3072</td>
<td>921.6</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>2048</td>
<td>1228.8</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>4096</td>
<td>1228.8</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>3072</td>
<td>1843.2</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>4096</td>
<td>2457.6</td>
<td>1</td>
</tr>
</tbody>
</table>

For physical layer subtype 2, a combination of the parameters "Rate Index" and "Packet Size" sets the data rate and the slot count for the packets sent to the selected user.
### Table 4-2: Rate index for Physical Layer subtype 2

<table>
<thead>
<tr>
<th>Rate index</th>
<th>Packet size index</th>
<th>Packet size, bits</th>
<th>Data Rate, kbps</th>
<th>Slot count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>128</td>
<td>4.8</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>256</td>
<td>9.6</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>512</td>
<td>19.2</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1024</td>
<td>38.4</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>128</td>
<td>9.6</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>256</td>
<td>19.2</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>512</td>
<td>38.4</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1024</td>
<td>76.8</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>128</td>
<td>19.2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>256</td>
<td>38.4</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>512</td>
<td>76.8</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>1024</td>
<td>153.6</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>128</td>
<td>38.4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>256</td>
<td>76.8</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>512</td>
<td>153.6</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>512</td>
<td>76.8</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1024</td>
<td>153.6</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>2048</td>
<td>307.2</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>128</td>
<td>76.8</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>256</td>
<td>153.6</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>512</td>
<td>307.2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>1024</td>
<td>614.4</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>512</td>
<td>153.6</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>2048</td>
<td>614.4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
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<td>2</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>512</td>
<td>307.2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>1024</td>
<td>614.4</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
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<td>1</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>4096</td>
<td>1228.8</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>1024</td>
<td>614.4</td>
<td>1</td>
</tr>
</tbody>
</table>
## Traffic Channel Settings

### Table 4-3: Rate index for Physical Layer subtype 3 (requires the appropriate Rev. B option)

<table>
<thead>
<tr>
<th>Rate index</th>
<th>Packet size index</th>
<th>Packet size, bits</th>
<th>Data Rate, kbps</th>
<th>Slot count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>128</td>
<td>4.8</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>256</td>
<td>9.6</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>512</td>
<td>19.2</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1024</td>
<td>38.4</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>128</td>
<td>9.6</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>256</td>
<td>19.2</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>512</td>
<td>38.4</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1024</td>
<td>76.8</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>128</td>
<td>19.2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>256</td>
<td>38.4</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>512</td>
<td>76.8</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>1024</td>
<td>153.6</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>128</td>
<td>38.4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>256</td>
<td>76.8</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>512</td>
<td>153.6</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>512</td>
<td>76.8</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1024</td>
<td>153.6</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>2048</td>
<td>307.2</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>128</td>
<td>76.8</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>256</td>
<td>153.6</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>512</td>
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<td>1</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>1024</td>
<td>614.4</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>512</td>
<td>153.6</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>2048</td>
<td>614.4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1024</td>
<td>307.2</td>
<td>2</td>
</tr>
</tbody>
</table>
### Remote command:

```
[:SOURce<hw>]:BB:EVDO:USER<st>:RATE:INDex
```


### Packet Size ← Common

Sets the packet size for the packets sent to the selected user.

For physical layer 0&1, the parameter "Packet Size" is read-only. The value is automatically set depending on the selection for the parameter "Rate Index". (see Table 4-1)

For physical layer subtypes 2 and 3, a combination of the parameter "Packet Size" and the parameter "Rate Index" sets the data rate and the slot count for the packets sent to the selected user, see Table 4-2.

**Note:** Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.

<table>
<thead>
<tr>
<th>Rate index</th>
<th>Packet size index</th>
<th>Packet size, bits</th>
<th>Data Rate, kbps</th>
<th>Slot count</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>3072</td>
<td>921.6</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>512</td>
<td>307.2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>1024</td>
<td>614.4</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>2048</td>
<td>1228.8</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>4096</td>
<td>1228.8</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>1024</td>
<td>614.4</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>3072</td>
<td>1843.2</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>4096</td>
<td>2457.6</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
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<tr>
<td>15</td>
<td>0</td>
<td>1024</td>
<td>153.6</td>
<td>4</td>
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<tr>
<td>16</td>
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<td>2048</td>
<td>307.2</td>
<td>4</td>
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<tr>
<td>17</td>
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<td>3072</td>
<td>460.8</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>0</td>
<td>4096</td>
<td>614.4</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>0</td>
<td>5120</td>
<td>768</td>
<td>4</td>
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<tr>
<td>20</td>
<td>0</td>
<td>6144</td>
<td>921.6</td>
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<tr>
<td>21</td>
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</tr>
<tr>
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<td>28</td>
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<td>8192</td>
<td>4915.2</td>
<td>1</td>
</tr>
</tbody>
</table>
Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:PSIZe on page 90

**Data Rate ← Common**
Displays the data rate of the packets sent to the selected user. This parameter is read-only. The value is set automatically, depending on the selected "Rate Index" and "Packet Size", see Table 4-1 and Table 4-2.

**Note:** Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:RATE? on page 91

**Slot Count ← Common**
Displays the slot count of the packets sent to the selected user.

This parameter is read-only. The value is set automatically, depending on the selected "Rate Index" and "Packet Size", see Table 4-1 and Table 4-2.

**Note:** Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.

Remote command:

**Data Pattern (hex) ← Common**
Sets the data pattern for the data portion of the packets sent to the user.

The most significant bit (MSB) of this value is the MSB of the packet and the word is repeated to fill all space within the packet. This parameter is in a hexadecimal format.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:DATA:PATTern on page 86

**MAC Index ← Common**
Sets the MAC index used for the selected user.

MAC indexes have to be different for the different users. However, in case that two users are using the same value for MAC index, the lower priority user is disabled, or be unable to enable.

The values for the MAC indexes for the other users (see parameter Other Users Count) are assigned from a pool of valid MAC indexes, that exclude the MAC indexes specified for each of the four configurable users.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:INDex on page 88

**MAC Level ← Common**
Sets the power within the MAC channel that is dedicated to the selected user.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:LEVel on page 89

**Interleave Factor ← Common**
Controls the number of interleave slots used for the selected user on the forward link.
Four interleave slots are defined in the 1xEV-DO system. By default, only 1 interleave slot ("Interleave Factor" = 1) for an access terminal is configured and transmission to that access terminal every fourth slot is selected. For an interleave factor > 1, packets on multiple interleave slots are sent, increasing the data throughput to the access terminal.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:IFACtor on page 88

RPC (MAC)
Access: "Baseband > 1xEV-DO > Traffic Channels > User > RPC (MAC)".

RPC Mode ← RPC (MAC)
Sets the operation mode for the Reverse Power Control (RPC) Channel within the MAC channel for the selected user.

"Hold"  An alternating series of up and down power control bits are transmitted. The intent is to hold the access terminal at a constant power level. This mode always starts with an up bit, and ends with the following down bit. This mode is 2 bits long.

"All up"  A continuous stream of up (0) power control bits are transmitted. The intent is to force the access terminal to the highest transmit power level.
This mode is a single bit long.

"All down"  A continuous stream of down (1) power control bits are transmitted. The intent is to force the access terminal to the lowest transmit power level.
This mode is a single bit long.
"Range"  A sequence of up power control bits is sent followed by an equal number of down power control bits. The intent is to force the access terminal to ramp its power from one extreme to another. The number of power control bits in each direction is specified by the "RPC Range Count" parameter. (see RPC Range Count ). Each time that the range mode is specified, the sequence is restarted. The range mode starts with the first up bit and ends with the last down bit. The length of the mode is two times the RPC range Count.

"Pattern"  A user-defined sequence of RPC bits is sent. The mode starts with the bit defined in the first (0) zone, and ends with the last bit of the last (3) zone. The length of the pattern is the sum of the Count values for each RPC zone.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:MODE on page 92

RPC Range Count ← RPC (MAC)
Sets the number of Reverse Power Control (RPC) bits sent in each direction when the "RPC Mode" is set to "Range". The specified value is used immediately.

Note: This parameter is displayed in RPC mode "Range" only.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:RANGe on page 93

RPC Pattern ← RPC (MAC)
Defines the Reverse Power Control (RPC) pattern in form of table with four zones (zone 0 .. 3).

For each zone, a bit and a count can be defined.

"Bit"  Defines the RPC bits sent within the specific zone of the RPC pattern.

"Count"  Defines the number of RPC bits sent within the specific zone of the RPC pattern.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:ZONE<ch0>:BIT on page 93
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:ZONE<ch0>:COUNt on page 94

DRC Lock (MAC)
Access: "Baseband > 1xEV-DO > Traffic Channels > User > DRC Lock (MAC)".
DRC Lock State ← DRC Lock (MAC)
Sets the state of the DRC (Data Rate Control) lock bit for the selected user.

**Note:** Changes in the DRC lock state are only considered at the interval defined by the parameter DRC lock length.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:STATe on page 87

DRC Lock Period ← DRC Lock (MAC)
Sets the period (measured in slots) of time between successive transmissions of the DRC (Data Rate Control) lock bit for the selected user.

**Example:**
DRCLockLength = 4
DRCLockPeriod = 8

**Note:** A value of zero disables the DRC lock subchannel and the MAC RPC channel of the selected user is not punctured with the DRC lock subchannel.

Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:PERiod on page 87
**DRC Lock Length ← DRC Lock (MAC)**
Sets the number of DRC (Data Rate Control) lock Periods that the state of the DRC lock for the selected user is held constant.

**Note:** Changes in the DRC lock state are only considered at the interval defined by the parameter "DRC Lock Length".
A value of one allows updating of the DRC lock bit at anytime.

Remote command:
```
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:LENGth on page 86
```

**Frame Offset ← DRC Lock (MAC)**
Sets the reverse link frame offset for the reverse link.
The frame offset is used to position the DRC lock bit within the MAC channel.

Remote command:
```
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:OFFSet on page 86
```

**ARQ (MAC)**
Access: "Baseband > 1xEV-DO > Traffic Channels > User > ARQ (MAC)".

**H-ARQ Mode ← ARQ (MAC)**
Enables or disables the H-ARQ Channel.
The H-ARQ channel is used by the access network to transmit positive acknowledgement (ACK) or a negative acknowledgement (NAK) in response to a physical layer packet.

**Note:** This parameter is enabled for Physical Layer "Subtype 2" only.

- "Off" Enables transmission of the H-ARQ channel.
- "ACK" The channel is transmitted with all bits set to ACK.
- "NAK" The channel is transmitted with all bits set to NAK.
Remote command:
[:SOURce<hw>]:BB:EVDO:USER<st>:HARQ:MODE on page 87

### 4.7 Multi-Carrier Configuration Settings

Multi-Carrier Configuration requires option R&S SMBVB-K87

In multi-carrier mode, up to 16 modulated carriers can be generated with one baseband. Each carrier’s center frequency is input via its "CDMA Channel Number" or by directly entering the RF “Center Frequency / MHz”. The carriers can be activated or deactivated separately.

![Multi-Carrier Configuration (Downlink)](image)

- **State**: Enables or disables multi-carrier operation.
  
  Remote command:
  [:SOURce<hw>]:BB:EVDO:UP:MC:CARRIER<ch>:STATE on page 84
  [:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRIER<ch>:STATE on page 84

- **Center Frequency (band)**: Shows the center frequency of the band resulting from the set active carriers.

State..............................................................................................................................34
Center Frequency (band).............................................................................................. 34
Band Class....................................................................................................................35
Carrier Delay................................................................................................................. 35
State..............................................................................................................................35
CDMA Channel Number............................................................................................... 35
Center Frequency......................................................................................................... 35

**State**
Enables or disables multi-carrier operation.

**Center Frequency (band)**
Shows the center frequency of the band resulting from the set active carriers.
Remote command:

**Band Class**
Selects the band class for operation, as defined in 3GPP2 C.S0057-E.
Remote command:

**Carrier Delay**
Applies a delay to each carrier in order to reduce the crest factor of the sum signal.
The delay increases by the given value on each active carrier. Inactive carriers are not accounted.

**Example:**
"Carrier Delay = 1000 ns"
The first active carrier is delayed by 0 ns, the second by 1000 ns, the third by 2000 ns, etc.
Remote command:

**State**
Switches the selected carrier on or off.
Remote command:
`:SOURce<hw>:BB:EVDO:UP:MC:CARRier<ch>:STATe` on page 84
`:SOURce<hw>:BB:EVDO:DOWN:MC:CARRier<ch>:STATe` on page 84

**CDMA Channel Number**
Selects the carrier's channel number.
The selected channel numbers are directly translated into center frequencies, according to the used band class. In some cases, not all channel numbers in the range that is indicated by the tool tip are allowed. In case a non-existing channel is selected, the software selects the next available channel.
Remote command:
`:SOURce<hw>:BB:EVDO:UP:MC:CARRier<ch>:CHANnel` on page 84
`:SOURce<hw>:BB:EVDO:DOWN:MC:CARRier<ch>:CHANnel` on page 84

**Center Frequency**
Sets the center frequency of the carrier.
In some cases, not all center frequencies in the range that is indicated by the tool tip are defined by the selected band class. In case a non-existing frequency is selected, the software selects the next available frequency.
4.8 Access Network Settings

The "Access Network Settings" dialog is available at Downlink only and allows configuration of physical layer subtype, the pilot and control channels and reverse activity bit.

"Access Network Settings" consists of three main sections, "Pilot Channel", "Control Channel" and "Reverse Activity Bit (MAC)".

### Physical Layer Subtype (Access Network Settings)
 Defines the physical layer subtype for the forward link direction.

- Physical layer subtype 0 is the original (release "0").
- Physical layer subtype 1 and 2 are the revision "A" physical layers.
- Physical layer subtype 3 is the revision "B" physical layer.

Remote command:
{:SOURce<hw>:BB:EVDO:ANETwork:SUBType on page 82

### Continuous Pilot Mode
 Enables or disables a special mode within the 1xEV-DO generator. When the state is off, normal operation is selected. When the state is on, a special mode is selected.

In this special mode, the 1xEV-DO generator generates a pilot signal only.

**Note:** During the special mode, all other parameters do not affect the signal output.
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:CPMode on page 80

Other Users Count
Sets the number of additional users (beyond the four defined users) that appear in the MAC Channel.
These additional users never have a packet addressed to them, but are used to fill in the MAC channel code domain.
These Other Users are used to distribute the excess power (beyond what is required by the "User 1..4" and RAB channels).
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:OUCount on page 80

Pilot Channel
Access:
"Baseband > 1xEV-DO > General > Access Network Settings > Pilot Channel"

State ← Pilot Channel
Displays the state of the pilot channel. Pilot channel is transmitted by sector on each active forward channel. It is present always and transmitted at the full sector power.
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:PChannel:STATE? on page 80

Control Channel
Access:
"Baseband > 1xEV-DO > General > Access Network Settings > Control Channel"
### State → Control Channel
Enables or disables the control channel messages. The only control channel message that is ever sent is the Sync Message. When this is enabled, the control channel messages have the highest priority for placement within the slots. The Sync Message is updated constantly, even when the control channel is not enabled.

Remote command:
```
[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:STATe
```

### Rate → Control Channel
Sets the rate that the control channel messages are transmitted at.

Remote command:
```
[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:RATE
```

### Packet Start Offset → Control Channel
Sets the offset (in slots) from the start of control channel cycle to the start of the synchronous message capsule that contains the Sync Message.

See Chapter 3.1, "Traffic Scheduling Process", on page 11 for an explanation on how the control and traffic channels are transmitted over time.

Remote command:
```
[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:PSOFfset
```

### Minimum Revision → Control Channel
Sets the value of the minimum revision field within the control channel message.

Remote command:
```
[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:REVision:MINimum
```
Maximum Revision ← Control Channel
Sets the value of the maximum revision field within the control channel message.
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:REVision:MAXimum
on page 79

Reverse Activity Bit
Access:
“Baseband > 1xEV-DO > General > Access Network Settings > Reverse Activity Bit”

State ← Reverse Activity Bit
Activates or deactivates the reverse activity bit (RAB).
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:STATe on page 82

RAB Level ← Reverse Activity Bit
Sets the power within the MAC block for the Reverse Activity Channel.
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:LEVel on page 81

RAB Length ← Reverse Activity Bit
For physical layer subtype 0&1 only
Sets the duration (in slots) of a Reverse Activity bit.
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:LENGth on page 81

RAB Offset ← Reverse Activity Bit
For physical layer subtype 0&1 only
Sets the starting time offset of the Reverse Activity (RA) bit in slots. The command is specified in Reverse Activity Length/8 units.
The RA bit starts when the following equation is satisfied:
- System Time mod RAB length = RAB Offset,
  where System Time is expressed in slots.

Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:OFFSet on page 81

**RAB MAC Index — Reverse Activity Bit**
For physical layer subtype 3 only sets the RAB MAC Index.
Remote command:
[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:MAC:INDex on page 81

### 4.9 Access Terminal Settings

**Access:**

1. Select "Baseband > 1xEV-DO > Link Direction > Uplink"
2. Select "Access Terminals".
   Four terminals are available.

3. To enable a subset of predefined settings for faster configuration, select "Predefined Settings".
4. To activate a terminal, set its state to "On", e.g. "Terminal 1 > On".
5. To access the settings of a terminal, select the corresponding field, e.g. "Terminal 1".
   The corresponding "Configure Access Terminal 1 .. 4" dialog opens. The access terminal number is indicated in the panel headline.
The dialog comprises the settings of the access terminal mode, of the data channel and configuration of the different channels.

The available channels depend on the selected "Physical Layer Subtype" and the selected "Access Terminal Mode", see Table 4-4.

**Table 4-4: Overview on available channels, depending on physical layer subtype and access terminal mode**

<table>
<thead>
<tr>
<th>Physical layer subtype</th>
<th>Access terminal mode</th>
<th>Pilot channel</th>
<th>Auxiliary pilot channel</th>
<th>RRI channel</th>
<th>DSC channel</th>
<th>DRC channel</th>
<th>ACK channel</th>
<th>Data channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&amp;1</td>
<td>Traffic</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Packet 1</td>
</tr>
<tr>
<td></td>
<td>Access</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Packet 1</td>
</tr>
</tbody>
</table>
Physical layer subtype | Access terminal mode | Pilot channel | Auxiliary pilot channel | RRI channel | DSC channel | DRC channel | ACK channel | Data channel
---|---|---|---|---|---|---|---|---
2 | Traffic | X | X | X | X | X | X | Packet 1..3
| Access | X | - | - | - | - | - | - | Packet 1

Predefined Settings
Uplink only
Enables selection of UL predefined settings for Terminal 1 for faster configuration.
The predefined settings are made according to 3GPP2 C.S0032-A to allow easy receiver testing.
Remote command:
`:SOURce<hw>]:BB:EVDO:PREDefined` on page 96

State
Enables or disables the selected access terminal.
Remote command:
`:SOURce<hw>]:BB:EVDO:TERminal<st>:STATe` on page 116

Mode
Sets the mode ("Traffic" or "Access") of the selected access terminal.
Remote command:
`:SOURce<hw>]:BB:EVDO:TERminal<st>:MODE` on page 114

Physical Layer Subtype
Selects the physical layer subtype for the selected access terminal.
Remote command:
`:SOURce<hw>]:BB:EVDO:TERminal<st>:SUBType` on page 116

Disable Quadrature Spreading
Disables the quadrature spreading (complex multiply) with PN sequences and long code.
Remote command:
`:SOURce<hw>]:BB:EVDO:TERminal<st>:DQSPreading` on page 110

Long Code Mask I (hex)
Sets the long code mask of the I channel.
Remote command:
`:SOURce<hw>]:BB:EVDO:TERminal<st>:IMASk` on page 114

Long Code Mask Q (hex)
Sets the long code mask of the Q channel.
Remote command:
`:SOURce<hw>]:BB:EVDO:TERminal<st>:QMASk` on page 115
## Preamble Length
(enabled for access terminal working in access mode only)

Specifies the length of the preamble in frames (16 slots each) of the access probe (see figure below).

![Access Cycle Diagram]

Remote command:
```plaintext
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:PLENgth
```
on page 115

## Access Cycle Duration
(enabled for access terminal working in access mode only)

Sets the access cycle duration in slots. Access probes are repeated with a period of access cycle duration slots.

Remote command:
```plaintext
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACYCle:DURation
```
on page 99

## Access Cycle Offset
(enabled for access terminal working in access mode only)

The access channel transmission starts with this number of slots relative to the beginning of each access cycle duration.

Remote command:
```plaintext
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACYCle:OFFSet
```
on page 99

## Pilot Channel

Access:

Select "Baseband > 1xEV-DO > Access Terminals > Terminal > Pilot Channel".

### State ← Pilot Channel
Displays the state of the pilot channel.

**Note:** The pilot channel is always switched on.

Remote command:
```plaintext
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:PCHannel:STATe?
```
on page 115

### Gain ← Pilot Channel
Sets the gain of the pilot channel.
Gains of other channels are relative to the pilot channel power. This setting is used to distinguish the power between access terminals, when more than one access terminal is active.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:PChannel:GAIN on page 114

Auxiliary Pilot Channel
Access:
Select "Baseband > 1xEV-DO > Access Terminals > Terminal > Auxiliary Pilot Channel".

State ← Auxiliary Pilot Channel
(enabled for Physical Layer subtype 2 and an access terminal working in traffic mode only)
Enables or disables the state of the auxiliary pilot channel.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:APChannel:STATe on page 100

Relative Gain ← Auxiliary Pilot Channel
Sets the gain of the auxiliary pilot channel relative to the data channel power.
Note: All other channel gains are specified relative to the pilot channel power, but the auxiliary pilot gain is specified relative to the data channel power. This parameter is only enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:APChannel:GAIN on page 100

Minimum Payload ← Auxiliary Pilot Channel
(enabled for Physical Layer subtype 2 and an access terminal working in traffic mode only)
Sets the minimum payload size in bits of the data channel that activates the transmission of the auxiliary pilot channel.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:APChannel:PAYLoad:MINimum on page 100

RRI Channel
Access:
Select "Baseband > 1xEV-DO > Access Terminals > Terminal > RRI Channel".

**State ← RRI Channel**  
(enabled for access terminal working in traffic mode only)  
Enables or disables the state of the reverse rate indicator (RRI) channel.  
Remote command:  
\[:SOURce<hw>:BB:EVDO:TERMinal<st>:RRIChannel:STATe\] on page 116

**Relative Gain ← RRI Channel**  
(enabled for access terminal working in traffic mode only)  
Sets the gain of the reverse rate indicator (RRI) channel relative to the pilot channel power.  
Remote command:  
\[:SOURce<hw>:BB:EVDO:TERMinal<st>:RRIChannel:GAIN\] on page 115

**DSC Channel**  
Access:  
Select "Baseband > 1xEV-DO > Access Terminals > Terminal > DSC Channel".

**State ← DSC Channel**  
(enabled for Physical Layer subtype 2 and an access terminal working in traffic mode only)  
Enables or disables the state of the data source control (DSC) channel.  
Remote command:  
\[:SOURce<hw>:BB:EVDO:TERMinal<st>:DSCChannel:STATe\] on page 113

**Relative Gain ← DSC Channel**  
(enabled for Physical Layer subtype 2 and an access terminal working in traffic mode only)  
Sets the gain of the data source control (DSC) channel relative to the pilot channel power.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DSCChannel:GAIN on page 112

**Length ← DSC Channel**
(enabled for Physical Layer subtype 2 and an access terminal working in traffic mode only)
Specifies the transmission duration of the data source control (DSC) channel in slots.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DSCChannel:LENGth on page 113

**Values (OCT) ← DSC Channel**
(enabled for Physical Layer subtype 2 and an access terminal working in traffic mode only)
Specifies the pattern transmitted on the data source control (DSC) Channel.
The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. Each specified value is transmitted for DSC length slots.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DSCChannel:VALues on page 113

**DRC Channel**
Access:
Select "Baseband > 1xEV-DO > Access Terminals > Terminal > DRC Channel".

![1xEV-DO: Configure Access Terminal 1](image)

**State ← DRC Channel**
(enabled for access terminal working in traffic mode only)
Enables or disables the state of the data rate control (DRC) channel.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DRCChannel:STATe on page 112

**Relative Gain ← DRC Channel**
(enabled for access terminal working in traffic mode only)
Sets the gain of the data rate control (DRC) channel relative to the pilot channel power.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DRCChannel:GAIN on page 111
**Length – DRC Channel**
(enabled for access terminal working in traffic mode only)
Specifies the transmission duration of the data rate control (DRC) channel in slots.
Remote command:
`[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:LENGth` on page 111

**Values (hex) – DRC Channel**
(enabled for access terminal working in traffic mode only)
Specifies the pattern transmitted on the data rate control (DRC) channel.
The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. Each specified value is used for DRC length slots.
Remote command:
`[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:VALues` on page 112

**Cover – DRC Channel**
(enabled for access terminal working in traffic mode only)
Selects the data rate control (DRC) channel Walsh cover.
Remote command:
`[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:COVer` on page 110

**Gating Active – DRC Channel**
(enabled for access terminal working in traffic mode only)
Activates or deactivates the data rate control (DRC) Channel gating.
With deactivated gating, each DRC value is repeated for DRC length slots.

Example:
DRCLength = 4
Gating OFF
Forward traffic channel
```
<table>
<thead>
<tr>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
</tr>
</thead>
</table>
```
DRC channel
```
<table>
<thead>
<tr>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
</tr>
</thead>
</table>
```

If gating is active, each value of the DRC channel is transmitted for one slot followed by DRCLength-1 empty slots.

Example:
DRCLength = 4
Gating ON
Forward traffic channel
```
<table>
<thead>
<tr>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
</tr>
</thead>
</table>
```
DRC channel
```
<table>
<thead>
<tr>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
<th>Slot</th>
</tr>
</thead>
</table>
```

Remote command:
`[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:GATing[:STATe]` on page 111
ACK Channel

Access:
Select "Baseband > 1xEV-DO > Access Terminals > Terminal > ACK Channel".

State ← ACK Channel
(enabled for access terminal working in traffic mode only)
Enables or disables the ACK channel.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:ACKChannel:STATe on page 98

Relative Gain ← ACK Channel
(enabled for access terminal working in traffic mode only)
Sets the gain of the ACK channel relative to the pilot channel power.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:ACKChannel:GAIN on page 97

Mode ← ACK Channel
(enabled for access terminal working in traffic mode only)
Specifies the modulation mode of the ACK channel.
"BPSK"  Sets the modulation to BPSK (Binary Phase Shift Keying).
         With BPSK modulation, a 0 (ACK) is mapped to +1 and a 1 (NAK) to -1 respectively.
"OOK"   Sets the modulation to OOK (On/Off keying). With OOK modulation, a 0 (ACK) is mapped to ON and a 1 (NAK) to OFF.
         Note: OOK modulation is only enabled for physical layer subtype 2.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:ACKChannel:MODE on page 98

Gating (bin) ← ACK Channel
(enabled for access terminal working in traffic mode only)
Sets the active and inactive slots of the ACK channel.
The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern.
A 0 gates the ACK channel off for the corresponding slot, a 1 activates the channel.
**1xEV-DO Configuration and Settings**

**Remote command:**
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:GATing on page 97

**Values → ACK Channel**
(enabled for access terminal working in traffic mode only)

Specifies the data pattern transmitted on the ACK Channel.
The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. A 0 specifies an ACK, a 1 specifies a NAK. This pattern is only read for slots that are gated on.

**Remote command:**
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:VALues on page 99

**Data Channel**

Access:
Select "Baseband > 1xEV-DO > Access Terminals > Terminal > Data Channel".

**State → Data Channel**
(enabled for access terminal working in traffic mode only)

Enables or disables the state of the packets.
There are three configurable packets ("Packet 1... 3") for physical layer subtype 2.
When more than one packet is active, packet 1 is sent on the first subframe (first four slots). Packets 2 and 3 are sent respectively on the second and the third subframe (see figure below).
When only one packet is active and "Number of Subpackets" is set to 1, no interleaving is performed between the packets. In this case, the data channel is active continuously (see figure below).

When only one packet is active but the number of subpackets is larger than one, interleave subframe. In this case, two subframes are left empty in-between every two subpackets (see figure below).

Only one configurable packet is available for physical layer subtype 0&1, the data channel is continuously active for the number of packets to send.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DChannel:PACKet<ch>:STATe
on page 109

**Gain/db** ← Data Channel
(enabled for access terminal working in traffic mode only)
Sets the gain in dB of the selected packet relative to the pilot channel power.

**Note:** Configuration of "Packet 2" and "Packet 3" transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DChannel:PACKet<ch>:GAIN
on page 107
Infinite Packets ← Data Channel
(enabled for access terminal working in traffic mode only)
Enables or disables sending an unlimited number of packets.
If "Infinite Packets" is disabled, the number of packets to send can be specified with the parameter "Number of Packets to Send".

Note: Configuration of "Packet 2" and "Packet 3" transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:INFinite
on page 107

Packets To Send ← Data Channel
(enabled for access terminal working in traffic mode only)
Sets the number of packets to be sent.
The number of packets to send depends on whether the parameter "Infinite Packets" is enabled or disabled. If "Infinite Packets" is enabled, there is no limit to the number of packets sent.
If "Infinite Packets" is disabled, the number of packets can be specified. The data channel will be switched off after the specified "Number of Packets" have been sent.

Note: Configuration of "Packet 2" and "Packet 3" transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:COUNT
on page 104

Subpackets ← Data Channel
(enabled for physical layer subtype 2 and an access terminal working in traffic mode only)
Sets the number of subpackets to be sent.

Example:
If number of subpackets is 4, then subpacket 0, 1, 2 and 3 of a packet is sent in a subframe each (with two subframes interleaving between). Afterward the next packet is started. It simulates a situation where three times NAK has been received from the base station with an ACK after the fourth subpacket.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:
SUBPackets[:COUNT] on page 109

Payload Size/bits ← Data Channel
(enabled for access terminal working in traffic mode only)
Sets the payload size in bits for the selected packet.

Note: Configuration of "Packet 2" and "Packet 3" transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.
Remote command:
[:SOURce<hw>]:BB:EVDOD:TERMinal<st>:_DChannel:PACKet<ch>:PSIZe on page 108

Modulation — Data Channel
(enabled for physical layer subtype 2 and an access terminal working in traffic mode only)
Displays the modulation type per packet.
The modulation type is set automatically according to the selected payload size. The value is read-only.
"B4" The modulation type is set to BPSK modulation with 4-ary Walsh cover.
"Q4" The modulation type is set to QPSK modulation with 4-ary Walsh cover.
"Q2" The modulation type is set to QPSK modulation with 2-ary Walsh cover.
"Q4Q2" Sum of Q4 and Q2 modulated symbols.
"E4E2" Sum of E4 (8-PSK modulated with 4-ary Walsh cover) and E2 (8-PSK modulated with 2-ary Walsh cover) modulated symbols.

Remote command:
[:SOURce<hw>]:BB:EVDOD:TERMinal<st>:_DChannel:PACKet<ch>:MODulation? on page 108

Data Rate/kbps ← Data Channel
(enabled for access terminal working in traffic mode only)
Displays the resulting data rate for the selected packet.
The data rate is the effective data rate achieved for the specific packet. Sum up the data rates of all three packets to obtain the total effective data rate for the uplink data channel.
Remote command:
[:SOURce<hw>]:BB:EVDOD:TERMinal<st>:_DChannel:PACKet<ch>:DRATe? on page 106

Channel Coding ← Data Channel
(enabled for access terminal working in traffic mode only)
Activates or deactivates channel coding, including scrambling, turbo encoding and channel interleaving.
Note: Configuration of "Packet 2" and "Packet 3" transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.
Remote command:
[:SOURce<hw>]:BB:EVDOD:TERMinal<st>:_DChannel:PACKet<ch>:CCODing on page 104
**Data Source ↔ Data Channel**
(enabled for access terminal working in traffic mode only)

Selects the data source.

The number of bits read from the data source for each packet depends on the payload size, channel coding state and FCS state. The following table gives an overview on the number of bits read.

<table>
<thead>
<tr>
<th></th>
<th>FCS ON</th>
<th>FCS OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Coding ON</td>
<td>PayloadSize - FCSSize - 6</td>
<td>PayloadSize - 6</td>
</tr>
<tr>
<td>Channel Coding OFF</td>
<td>(PayloadSize/CodeRate) - FCSSize</td>
<td>(PayloadSize/CodeRate)</td>
</tr>
</tbody>
</table>

FCSSize and code rate depend on the physical layer subtype (see that table below).

<table>
<thead>
<tr>
<th></th>
<th>Physical layer subtype 0&amp;1</th>
<th>Physical layer subtype 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCSSize</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Code rate</td>
<td>1/4 or 1/2</td>
<td>1/5 or 1/3</td>
</tr>
</tbody>
</table>

**Note:** Configuration of "Packet 2" and "Packet 3" transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

The following standard data sources are available:

- "All 0, All 1"
  An internally generated sequence containing 0 data or 1 data.
- "PNxx"
  An internally generated pseudo-random noise sequence.
- "Pattern"
  An internally generated sequence according to a bit pattern.
  Use the "Pattern" box to define the bit pattern.
- "Data List/Select DList"
  A binary data from a data list, internally or externally generated.
  Select "Select DList" to access the standard "Select List" dialog.
  - Select the "Select Data List > navigate to the list file *.dm_iqd > Select" to select an existing data list.
  - Use the "New" and "Edit" functions to create internally new data list or to edit an existing one.
  - Use the standard "File Manager" function to transfer external data lists to the instrument.

See also:

- Section "Modulation Data" in the R&S SMBV100B user manual.
- Section "File and Data Management" in the R&S SMBV100B user manual.
- Section "Data List Editor" in the R&S SMBV100B user manual.
Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA
on page 105
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA:
DSElection on page 105
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA:
PATTern on page 105

FCS ← Data Channel
(enabled for access terminal working in traffic mode only)
Enables or disables appending a standard frame check sequence (FCS) to the MAC
layer packet.

Note: Configuration of "Packet 2" and "Packet 3" transmitted on the second and the
third subframe, is only enabled for physical layer subtype 2.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:FCS[:
STATe] on page 106

State ← Data Channel
(enabled for access terminal working in access mode only)
Enables or disables the state of the data channel.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:STATe on page 110

Relative Gain ← Data Channel
(enabled for access terminal working in access mode only)
Sets the gain in dB of the data channel relative to the pilot channel power.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:GAIN on page 103

Capsule Length ← Data Channel
(enabled for access terminal working in access mode only)
Sets the number of frames (16 slots each) to be transmitted after the preamble. Each
frame contains one data packet.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:CLENgth on page 101

Data Rate ← Data Channel
(enabled for access terminal working in access mode only)
Selects the data rate for the data channel.

Remote command:
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DRATe on page 102

Data Source ← Data Channel
(enabled for access terminal working in access mode only)
Selects the data source.

The following standard data sources are available:

- "All 0, All 1"
  An internally generated sequence containing 0 data or 1 data.
- "PNxx"
  An internally generated pseudo-random noise sequence.
- "Pattern"
  An internally generated sequence according to a bit pattern.
  Use the "Pattern" box to define the bit pattern.
- "Data List/Select DList"
  A binary data from a data list, internally or externally generated.
  Select "Select DList" to access the standard "Select List" dialog.
  - Select the "Select Data List > navigate to the list file *.dm_iqd > Select" to select an existing data list.
  - Use the "New" and "Edit" functions to create internally new data list or to edit an existing one.
  - Use the standard "File Manager" function to transfer external data lists to the instrument.

See also:

- Section "Modulation Data" in the R&S SMBV100B user manual.
- Section "File and Data Management" in the R&S SMBV100B user manual.
- Section "Data List Editor" in the R&S SMBV100B user manual.

Remote command:

```
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DATA on page 101
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DATA:PATTern
```

on page 102

**Append FCS ← Data Channel**

(enabled for access terminal working in access mode only)

Enables or disables appending a standard frame check sequence (FCS) to the MAC layer packet.

Remote command:

```
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:FCS[:STATe]
```

on page 103

### 4.10 Filter / Clipping / ARB Settings

**Access:**

- Select "General > Filter/Clipping/ARB/IQ Settings".

  The dialog comprises the settings, necessary to configure the baseband filter, sample rate variation and clipping.
4.10.1 Filter Settings

Settings:

Filter
Selects the baseband filter.
Remote command:
[:SOURce<hw>]:BB:EVDO:FILT:TYPE on page 72

Roll Off Factor or BxT
Sets the filter parameter.
The filter parameter ("Roll off Factor" or "BxT") depends on the currently selected filter type. This parameter is preset to the default for each of the predefined filters.
Remote command:
[:SOURce<hw>]:BB:EVDO:FILT:PAR:APCO25 on page 70
[:SOURce<hw>]:BB:EVDO:FILT:PAR:COSine on page 70
[:SOURce<hw>]:BB:EVDO:FILT:PAR:GAUS on page 71
[:SOURce<hw>]:BB:EVDO:FILT:PAR:PGAuss on page 71
[:SOURce<hw>]:BB:EVDO:FILT:PAR:RCOSine on page 72
[:SOURce<hw>]:BB:EVDO:FILT:PAR:SPHase on page 72

Cut Off Frequency Factor
Sets the value for the cutoff frequency factor. The cutoff frequency of the filter can be adjusted to reach spectrum mask requirements.
Remote command:
[:SOURce<hw>]:BB:EVDO:FILT:PAR:LPAS on page 71
[:SOURce<hw>]:BB:EVDO:FILT:PAR:LPASSEVM on page 71
Chip Rate Variation
Enters the chip rate.
The chip rate entry changes the output clock and the modulation bandwidth.
Remote command:
[:SOURce<hw>]:BB:EVDO:CRATe:VARiation on page 70

4.10.2 Clipping Settings

► Access:
Select "Baseband > 1xEV-DO > General > Filter/Clipping/ARB/IQ Settings > Clipping"

Provided are the following settings for configuring the clipping settings:

Clipping State
(For reverse link mode only)
Switches baseband clipping on and off.
Baseband clipping is a simple and effective way of reducing the crest factor of the signal. Since clipping is done before to filtering, the procedure does not influence the spectrum. The EVM however increases.
1xEV-DO signals can have high crest factors particularly with many channels and long sequences.
Remote command:
[:SOURce<hw>]:BB:EVDO:CLIPping:STATe on page 69
Clipping Level
(For reverse link mode only)
Sets the limit for clipping.
This value indicates at what point the signal is clipped. It is specified as a percentage, relative to the highest level. 100% indicates that clipping does not take place.

Remote command:
[:SOURce<hw>]:BB:EVDO:CLIPPING:LEVEL on page 68

Clipping Mode
(For reverse link mode only)
Selects the clipping method. The dialog displays a graphical illustration on how this two methods work.

- "Vector | i + jq |
  The limit is related to the amplitude | i + q |. The I and Q components are mapped together, the angle is retained.
- "Scalar | i | , | q |
  The limit is related to the absolute maximum of all the I and Q values | i | + | q |. The I and Q components are mapped separately, the angle changes.

Remote command:
[:SOURce<hw>]:BB:EVDO:CLIPPING:MODE on page 69

4.10.3 ARB Settings

Access:
Select "Baseband > 1xEV-DO > General > Filter/Clipping/ARB/IQ Settings > ARB"
Provided are the following settings for configuring the ARB settings:

**Sequence Length ARB**
(For reverse link mode only)
Changes the sequence length of the arbitrary waveform component of the 1xEV-DO signal. This component is calculated in advance and output in the arbitrary waveform generator. It is added to the realtime signal components.

The number of chips is determined from this sequence length. One slot of 1.67ms duration equals 2048 chips.

Remote command:
`:SOURce<hw>:BB:EVDO:SLENgth` on page 67

### 4.10.4 I/Q Setting

**Access:**
Select "Baseband > 1xEV-DO > General > Filter/Clipping/ARB/IQ Settings > IQ"

**Invert Q for Correct Baseband Output**
With its default 1xEV-DO settings, the R&S SMBV100B generates a standard compliant RF signal.

If a standard compliant baseband signal is required, enable this parameter to invert the Q-part of the baseband signal.

If both, the RF signal and baseband signal have to be compliant with the 1xEV-DO standard:
- Set "Invert Q for Correct Baseband Output > On"
• Set "I/Q Mod > I/Q Settings > I/Q Swap > On"
  See also R&S SMBV100B user manual, section "Applying I/Q Vector Modulation".
  Remote command:
  [:SOURce<hw>]:BB:EVDO:IQSWap:STATe on page 73
5 Remote-Control Commands

The following commands are required to generate signals with the 1xEV-DO options in a remote environment. We assume that the R&S SMBV100B has already been set up for remote operation in a network as described in the R&S SMBV100B documentation. A knowledge about the remote control operation and the SCPI command syntax are assumed.

Conventions used in SCPI command descriptions

For a description of the conventions used in the remote command descriptions, see section “Remote Control Commands” in the R&S SMBV100B user manual.

Common Suffixes

The following common suffixes are used in remote commands:

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Value range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTity&lt;ch&gt;</td>
<td>1</td>
<td>Optional keyword, provided for compatibility with R&amp;S®SMW200A ENTity1:SOURcel = SOURcel</td>
</tr>
<tr>
<td>SOURce&lt;ch&gt;</td>
<td>1</td>
<td>available baseband signals</td>
</tr>
<tr>
<td>OUTPut&lt;ch&gt;</td>
<td>1 to 3</td>
<td>available markers</td>
</tr>
<tr>
<td>CARRier&lt;Ch&gt;</td>
<td>0 to 21</td>
<td>band class</td>
</tr>
<tr>
<td>USER&lt;ST&gt;</td>
<td>1 to 4</td>
<td>user</td>
</tr>
<tr>
<td>TERMINal&lt;ST&gt;</td>
<td>1 to 4</td>
<td>terminal</td>
</tr>
</tbody>
</table>

The following commands specific to the 1xEV-DO are described here:

- Programming Examples........................................................................................................62
- General Commands............................................................................................................65
- Filter/Clipping/ARB Commands........................................................................................68
- Trigger Commands..............................................................................................................73
- Marker Commands...............................................................................................................76
- Clock Commands................................................................................................................78
- Access Network Commands................................................................................................78
- Multi-Carrier Configuration Commands.............................................................................82
- Configure Traffic User Commands.....................................................................................85
- Configure Access Terminal Commands.................................................................................95
5.1 Programming Examples

Example: Performing general tasks
This example shows how to enable the option with predefined settings as basis for further customization (e.g. defining the transmission direction, etc.). Results and configuration are stored with the save/recall function.

```plaintext
// ******************************************************************
// Reset instrument first
// ************************************************************************
*RST; *CLS
SOURce1:BB:EVDO:PRESet
SOURce1:BB:EVDO:STATe ON
SOURce1:BB:EVDO:SETTing:STORe "/var/user/1xEVDO_def"

// ************************************************************************
// Recall settings
// ************************************************************************
MMEM:CDIR "/var/user/"
SOURce1:BB:EVDO:SETTing:CATalog?
// 1xEVDO_def,1xEVDO_dl,1xEVDO_test
SOURce1:BB:EVDO:SETTing:DELeTe "1xEVDO_test"
SOURce1:BB:EVDO:SETTing:LOAD "1xEVDO_dl"

// ************************************************************************
// Change the data transmission direction
// queries PN offset, sets the system time
// queries version and ARB sequence length
// generates and stores an waveform file in the current directory
// ************************************************************************
SOURce1:BB:EVDO:LINK?
// DOWN
SOURce1:BB:EVDO:LINK UP
SOURce1:BB:EVDO:PNOFfset?
// 0
SOURce1:BB:EVDO:STIMe 32
SOURce1:BB:EVDO:SLENgth?
// 48
SOURce1:BB:EVDO:VERSion?
// Release B
SOURce1:BB:EVDO:WAVeform:CREate "wv1xEVDO_ul"
```

Example: Adjusting clock and trigger settings
The following example lists the provided commands:

```plaintext
// ************************************************************************
// Clock settings
// ************************************************************************
```
Remote-Control Commands

SOURce1:BB:EVDO:CLK:SOURCE INTERNAL

Configure and enable signal generation

SOURce1:BB:EVDO:TRIGger:SOURCE INTERNAL
SOURce1:BB:EVDO:TRIGger:SEQUence ARETrigger
SOURce1:BB:EVDO:STAT ON
SOURce1:BB:EVDO:TRIGger:EXECute
SOURce1:BB:EVDO:TRIGger:ARM:EXECute
SOURce1:BB:EVDO:TRIGger:SEQUence SING
SOURce1:BB:EVDO:TRIGger:SLNIt CHIP
SOURce1:BB:EVDO:TRIGger:SLNgt 2
SOURce1:BB:EVDO:TRIGger:RMODE?
  // Stopped
SOURce1:BB:EVDO:TRIGger:EXECute
SOURce1:BB:EVDO:TRIGger:RMODE?
  // Run

SOURce1:BB:EVDO:TRIGger:SOURCE EGT1
SOURce1:BB:EVDO:TRIGger:EXTernal:SYNChronize:OUTPut ON
SOURce1:BB:EVDO:TRIGger:EXTernal:INHibit 200
SOURce1:BB:EVDO:TRIGger:EXTernal:DELay 100

Example: Configure and enable standard marker signals

SOURce1:BB:EVDO:TRIGger:OUTPut1:MODE RATio
SOURce1:BB:EVDO:TRIGger:OUTPut1:ONTime 40
SOURce1:BB:EVDO:TRIGger:OUTPut1:OFFTime 20
SOURce1:BB:EVDO:TRIGger:OUTPut3:MODE USER
SOURce1:BB:EVDO:TRIGger:OUTPut3:PERiod 100
Example: Generating a downlink multicarrier signal

This example shows how to enable the multi-carrier configuration and generate a signal composed of four carriers within a selected band class.

```plaintext
// ******************************************************************
// Reset instrument first
// ******************************************************************
*RST; *CLS

SOURce1:BB:EVDO:LINK?
// DOWN


:SOURce1:BB:EVDO:DOWN:MC:CARRier1:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:CARRier2:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:CARRier4:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:CARRier5:CHANnel 100
// 871 (channel 1200 is not allowed; the software selects the next available channel)
:SOURce1:BB:EVDO:DOWN:MC:CARRier7:CHANnel 1536
:SOURce1:BB:EVDO:DOWN:MC:CARRier8:CHANnel 1700
:SOURce1:BB:EVDO:DOWN:MC:CARRier8:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:STATe 1

:SOURce1:BB:EVDO:STAtE 1

// 456900000
:SOURce1:BB:EVDO:DOWN:MC:CARRier1:FREQuency?
// 460000000
// 460225000
// 420700000
:SOURce1:BB:EVDO:DOWN:MC:CARRier8:FREQuency?
//493100000

// apply a carrier delay to reduce the crest factor
:SOURce1:BB:EVDO:DOWN:MC:CDElay 0.000001
// Carrier#1 is delayed by 0 ns, carrier#2 by 1000 ns, carrier#4 by 2000 ns, carrier#8 by 3000 ns
```
5.2 General Commands

This section contains commands for the primary and general settings of the 1xEV-DO standard. These settings concern activation of the standard, setting the transmission direction, defining the chip rate and the sequence length, as well as the preset and power adjust setting.

[:SOURce<hw>]:BB:EVDO:LINK

Defines the transmission direction.

Parameters:

- `<Link>`
  - FORward/DOWN | REVerse/UP
  - *RST: DOWN

Example: see Example "Performing general tasks" on page 62

Manual operation: See "Link Direction" on page 14

[:SOURce<hw>]:BB:EVDO:PNOFfset <PnOffset>

Sets the PN Offset of the 1xEV-DO signal.

Parameters:

- `<PnOffset>`
  - integer
  - Range: 0 to 511
  - *RST: 0

Example: see Example "Performing general tasks" on page 62

Manual operation: See "PN Offset" on page 14

[:SOURce<hw>]:BB:EVDO:PRESet

Sets the parameters of the digital standard to their default values (*RST values specified for the commands).

Not affected is the state set with the command SOURce<hw>:BB:EVDO:STATe.
Example: see Example "Performing general tasks" on page 62
Usage: Event
Manual operation: See "Set To Default" on page 13

[:SOURce<hw>]:BB:EVDO:SETTING:CATalog?
Queries the files with 1xEV-DO settings (file extension *.1xevdo) in the default or the specified directory.
Return values:
<Catalog> "<filename1>,<filename2>,..."
Returns a string of filenames separated by commas.
Example: See Example "Performing general tasks" on page 62
Usage: Query only
Manual operation: See "Save/Recall" on page 13

[:SOURce<hw>]:BB:EVDO:SETTING:DELETE <Filename>
Deletes the selected file from the default or specified directory. Deleted are files with the file extension *.1xevdo.
Setting parameters:
<Filename> string
Example: See Example "Performing general tasks" on page 62
Usage: Setting only
Manual operation: See "Save/Recall" on page 13

[:SOURce<hw>]:BB:EVDO:SETTING:LOAD <Filename>
Loads the selected file from the default or the specified directory. Loads are files with extension *.1xevdo.
Setting parameters:
<Filename> string
Example: See Example "Performing general tasks" on page 62
Usage: Setting only
Manual operation: See "Save/Recall" on page 13

[:SOURce<hw>]:BB:EVDO:SETTING:STORE <Filename>
Stores the current settings into the selected file; the file extension *.1xevdo is assigned automatically.
Setting parameters:
FILENAME: string
Example: See Example "Performing general tasks" on page 62
Usage: Setting only
Manual operation: See "Save/Recall" on page 13

[:SOURce<hw>:BB:EVDO:SLENgh <SLength>

(For reverse link mode only)

Sets the sequence length of the arbitrary waveform component of the 1XEV-DO signal in number of frames. This component is calculated in advance and output in the arbitrary waveform generator. It is added to the real time signal components. The number of chips is determined from this sequence length. One slot of 1.67ms duration equals 2048 chips.

Parameters:
<SLength> integer
Range: 4 to dynamic
Increment: 4
*RST: 48

Example: See Example "Performing general tasks" on page 62
Manual operation: See "Sequence Length ARB" on page 59

[:SOURce<hw>:BB:EVDO:STATe <State>

Activates the standard and deactivates all the other digital standards and digital modulation modes in the same path.

Parameters:
<State> 0 | 1 | OFF | ON
*RST: 0

Example: see Example "Performing general tasks" on page 62
Manual operation: See "State" on page 12

[:SOURce<hw>:BB:EVDO:STIMe <STime>

Sets the System Time value of the 1xEV-DO signal and the base station. The System Time value is expressed in units of 1.67 ms intervals (80 ms/48).

Note: In uplink, the value selected for system time must be multiple of 16.

Parameters:
<STime> integer
Range: 0 to 219902325551
*RST: 0
Example: see Example "Performing general tasks" on page 62
Manual operation: See "System Time" on page 14

[:SOURce<hw>]:BB:EVDO:VERSION?
Queries the version of the 1xEV-DO standard underlying the definitions

Return values:
<string>
Example: see Example "Performing general tasks" on page 62
Usage: Query only
Manual operation: See "1xEV-DO Version" on page 13

[:SOURce<hw>]:BB:EVDO:WAViform:CREate <Filename>
Creates a waveform using the current settings. The file is stored with the predefined file extension *.wv. The filename and the directory it is stored in are user-definable.

Setting parameters:
<string>
Example: See Example "Performing general tasks" on page 62
Usage: Setting only
Manual operation: See "Generate Waveform" on page 13

5.3 Filter/Clipping/ARB Commands

[:SOURce<hw>]:BB:EVDO:CLIPping:LEVEL
[:SOURce<hw>]:BB:EVDO:CLIPping:MODE
[:SOURce<hw>]:BB:EVDO:CLIPping:STATE
[:SOURce<hw>]:BB:EVDO:CRATe:VARiation
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:APCO25
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:COSine
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:GAUSs
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:LPASs
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:LPASSEVM
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:PGAuss
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:RCOSine
[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:SPHase
[:SOURce<hw>]:BB:EVDO:FILTer:TYPE

[:SOURce<hw>]:BB:EVDO:CLIPping:LEVEL <Level>
(For reverse link mode only)
The command sets the limit for level clipping (Clipping). This value indicates at what point the signal is clipped. It is specified as a percentage, relative to the highest level. 100% indicates that clipping does not take place.

Level clipping is activated with the command **SOUR:BB:EVDO:CLIP:STAT ON**

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Range</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Level&gt;</td>
<td>integer</td>
<td>0 PCT to 100 PCT</td>
<td>1 PCT</td>
</tr>
</tbody>
</table>

*RST:* 100 PCT

**Example:**

```
BB:EVDO:CLIP:LEV 80PCT
```

sets the limit for level clipping to 80% of the maximum level.

**Manual operation:** See "Clipping Level" on page 58

**[:SOURce<hw>]:BB:EVDO:CLIPping:MODE <Mode>**

(For reverse link mode only)

Sets the method for level clipping.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Mode&gt;</td>
<td>VECTor</td>
</tr>
</tbody>
</table>

**VECTor**

The reference level is the amplitude \( |i+jq| \)

**SCALar**

The reference level is the absolute maximum of the I and Q values.

*RST:* VECTor

**Example:**

```
BB:EVDO:CLIP:MODE SCAL
BB:EVDO:CLIP:LEV 80PCT
```

Sets the limit for level clipping to 80% of this maximum level.

**Manual operation:** See "Clipping Mode" on page 58

**[:SOURce<hw>]:BB:EVDO:CLIPping:STATe <State>**

(For reverse link mode only)

The command activates level clipping (Clipping). The value is defined with the command **BB:EVDO:CLIPping:LEVel**, the mode of calculation with the command **BB:EVDO:CLIPping:MODE**.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>*RST:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;State&gt;</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Off
Remote-Control Commands

Example:  
```
BB:EVDO:CLIP:STAT ON
```
activates level clipping.

Manual operation:  
See "Clipping State" on page 57

[:SOURce<hw>:]:BB:EVDO:CRATe:VARiation <Variation>

Enters the output chip rate.

The output chip rate changes the output clock and the modulation bandwidth, as well as the synchronization signals that are output. It does not affect the calculated chip sequence.

Parameters:  
```
<Variation>
float
Range:  1 Mcps to 5 Mcps
Increment:  1E-6 Mcps (1cps)
*RST:  1.2288 Mcps
```

Example:  
```
BB:EVDO:CRAT:VAR 4086001
```
sets the chip rate to 4.08 Mcps.

Manual operation:  
See "Chip Rate Variation" on page 57

[:SOURce<hw>:]:BB:EVDO:FILTer:PARameter:APCO25 <Apco25>

Sets the rolloff factor for filter type APCO25.

Parameters:  
```
<Apco25>
float
Range:  0.05 to 0.99
Increment:  0.01
*RST:  0.2
```

Example:  
```
BB:EVDO:FILT:PAR:APCO25 0.2
```
Sets the rolloff factor to 0.2 for filter type APCO25.

Manual operation:  
See "Roll Off Factor or BxT" on page 56

[:SOURce<hw>:]:BB:EVDO:FILTer:PARameter:COSine <Cosine>

Sets the rolloff factor for the Cosine filter type.

Parameters:  
```
<Cosine>
float
Range:  0.05 to 1
Increment:  0.01
*RST:  0.1
```

Example:  
```
BB:EVDO:FILT:PAR:COS 0.35
```
Sets the rolloff factor to 0.35 for filter type Cosine.

Manual operation:  
See "Roll Off Factor or BxT" on page 56
[:SOURce<hw>]:BB:EVDO:FILT:PAR:GAUS <Gauss>

Sets the rolloff factor for the Gauss filter type.

**Parameters:**

- `<Gauss>`: float
  - Range: 0.15 to 2.5
  - Increment: 0.01
  - *RST: 0.5

**Example:**

```
BB:EVDO:FILT:PAR:GAUS 0.5
```

Sets BxT to 0.5 for the Gauss filter type.

**Manual operation:** See "Roll Off Factor or BxT" on page 56

[:SOURce<hw>]:BB:EVDO:FILT:PAR:LPA <LPass>

Sets the cutoff frequency factor for the lowpass filter (ACP Opt.) type.

**Parameters:**

- `<LPass>`: float
  - Range: 0.05 to 2
  - Increment: 0.01
  - *RST: 0.5

**Example:**

```
BB:EVDO:FILT:PAR:LPA 0.5
```

The cut off frequency factor is set to 0.5.

**Manual operation:** See "Cut Off Frequency Factor" on page 56

[:SOURce<hw>]:BB:EVDO:FILT:PAR:LPAEVM <LPassEvm>

Sets the cutoff frequency factor for the lowpass filter (EVM Opt.) type.

**Parameters:**

- `<LPassEvm>`: float
  - Range: 0.05 to 2
  - Increment: 0.01
  - *RST: 0.5

**Example:**

```
BB:EVDO:FILT:PAR:LPAEVM 0.5
```

The cut of frequency factor is set to 0.5.

**Manual operation:** See "Cut Off Frequency Factor" on page 56

[:SOURce<hw>]:BB:EVDO:FILT:PAR:PGA <PGauss>

Sets the rolloff factor for the Pure Gauss filter type.
Parameters:
<PGauss> float
Range: 0.15 to 2.5
Increment: 0.01
*RST: 0.5

Example: BB:EVDO:FILT:PAR:GAUS 0.5
Sets BxT to 0.5 for the Pure Gauss filter type.

Manual operation: See "Roll Off Factor or BxT" on page 56

[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:RCOSine <RCosine>
Sets the rolloff factor for the Root Cosine filter type.

Parameters:
<RCosine> float
Range: 0.05 to 1
Increment: 0.01
*RST: 0.15

Example: BB:EVDO:FILT:PAR:RCOS 0.22
Sets the rolloff factor to 0.22 for filter type Root Cosine.

Manual operation: See "Roll Off Factor or BxT" on page 56

[:SOURce<hw>]:BB:EVDO:FILTer:PARameter:SPHase <SPhase>
Sets BxT for the Split Phase filter type.

Parameters:
<SPhase> float
Range: 0.15 to 2.5
Increment: 0.01
*RST: 2

Example: BB:EVDO:FILT:PAR:SPH 0.5
Sets BxT to 0.5 for the Split Phase filter type.

Manual operation: See "Roll Off Factor or BxT" on page 56

[:SOURce<hw>]:BB:EVDO:FILTer:TYPE <Type>
The command selects the filter type.

Parameters:
<Type> RCOSine | COSine | GAUSs | LGAuss | CONE | COF705 | COEQualizer | COFequalizer | C2K3x | APCO25 | SPHase | RECTangle | PGAuss | LPASs | DIRac | ENPShape | EWPShape | LPASSEVM
*RST: Downlink: COEQ; Uplink: CONE
Example:  

```
BB:EVDO:FILT:TYPE CONE
```

Sets the filter type CdmaOne. This filter type is defined by the standard for the uplink.

**Manual operation:** See "Filter" on page 56

---

[:SOURce<hw>]:BB:EVDO:IQSWap:STATE <State>

Inverts the Q-part of the baseband signal

**Parameters:**

| <State> | 0 | 1 | OFF | ON |

*RST: 0*

**Manual operation:** See "Invert Q for Correct Baseband Output" on page 59

---

## 5.4 Trigger Commands

[:SOURce<hw>]:BB:EVDO[:TRIGger]:SEQuence <Sequence>

Selects the trigger mode:

- **AUTO** = auto
- **RETRigger** = retrigger
- **AAUTo** = armed auto
- **ARETrigger** = armed retrigger
- **SINGle** = single

**Parameters:**

| <Sequence> | AUTO | RETRigger | AAUTo | ARETrigger | SINGle |

*RST: AUTO*

**Example:** See Example "Adjusting clock and trigger settings" on page 62.

**Manual operation:** See "Trigger Mode" on page 16
Remote-Control Commands

[:SOURce<hw>]:BB:EVDO:TRIGger:ARM:EXECute

Stops signal generation; a subsequent internal or external trigger event restart signal generation.

Example: see Example "Adjusting clock and trigger settings" on page 62
Usage: Event
Manual operation: See "Arm" on page 17

[:SOURce<hw>]:BB:EVDO:TRIGger:EXECute

Executes a trigger.

Example: see Example "Adjusting clock and trigger settings" on page 62
Usage: Event
Manual operation: See "Execute Trigger" on page 17

[:SOURce<hw>]:BB:EVDO:TRIGger:EXTernal:SYNChronize:OUTPut <Output>

Enables signal output synchronous to the trigger event.

Parameters:
<Output> 0 | 1 | OFF | ON
*RST: 1

Example: See Example "Adjusting clock and trigger settings" on page 62

[:SOURce<hw>]:BB:EVDO:TRIGger:RMODe?

Queries the signal generation status.

Return values: <RMode> STOP | RUN

Example: see Example "Adjusting clock and trigger settings" on page 62
Usage: Query only
Manual operation: See "Running/Stopped" on page 16

[:SOURce<hw>]:BB:EVDO:TRIGger:SLENgth <SLength>

Defines the length of the signal sequence that is output in the SINGle trigger mode.
Remote-Control Commands

Parameters:
<SLength> integer
  Range: 1 to 4294967295
  *RST: 1

Example: See Example "Adjusting clock and trigger settings" on page 62

Manual operation: See "Trigger Signal Duration" on page 16

[:SOURce<hw>]:BB:EVDO:TRIGger:SLUNit <SLunit>
Defines the unit for the entry of the length of the signal sequence.

Parameters:
<SLunit> SLOT | CHIP | SEQuence
  *RST: SEQuence

Example: See Example "Adjusting clock and trigger settings" on page 62

Manual operation: See "Signal Duration Unit" on page 16

[:SOURce<hw>]:BB:EVDO:TRIGger:SOURce <Source>
Selects the trigger signal source and determines the way the triggering is executed.
Provided are:
  • Internal triggering by a command (INTernal)
  • External trigger signal via one of the User x connectors
    – EGT1: External global trigger
    – EGC1: External global clock
  • In master-slave mode, the external baseband synchronization signal (BBSY)
  • EXTernal: Setting only
    Provided only for backward compatibility with other Rohde & Schwarz signal generators.
The R&S SMBV100B accepts this value and maps it automatically as follows:
  EXTernal = EGT1

Parameters:
<Source> INTernal|EGT1|EGC1|EXTernal|BBSY
  *RST: INTernal

Example: See Example "Adjusting clock and trigger settings" on page 62

Manual operation: See "Trigger Source" on page 17

[:SOURce<hw>]:BB:EVDO:TRIGger[:EXTernal]:DELay <Delay>
Sets the trigger delay.
### 5.5 Marker Commands


Defines the signal for the selected marker output.

**Parameters:**

**<Mode>**

- SLOT
- PNSPeriod
- ESM
- CSPeriod
- USER
- RATio

**SLOT**

Each slot (every 1.67 ms)

**PNSPeriod**

Every 26.67 ms (PN Sequence Period)

**ESM**

Every 2 s (even second mark).

**CSPeriod**

Each arbitrary waveform sequence

**RATio**

Regular marker signal
USER
Every user-defined period.
*RST: SLOT

Example: SOURce:BB:EVDO:TRIGger:OUTPut2:MODE ESM
selects the even second mark clock (every 2 seconds) on the output for marker signal 2

Manual operation: See "Marker Mode" on page 20

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:ONTime <OnTime>
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:OFFTime <OffTime>
Sets the duration during which the marker output is on or off.

Parameters:
<OffTime> integer
Range: 1 to 16777215
*RST: 1

Example: See Example "Configure and enable standard marker signals" on page 63.

Manual operation: See "Marker Mode" on page 20

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:PERiod <Period>
Sets the repetition rate for the signal at the marker outputs.

Parameters:
<Period> integer
Range: 1 to 16777215
*RST: 2

Example: See Example "Configure and enable standard marker signals" on page 63.

Manual operation: See "Marker Mode" on page 20

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DELay <Delay>
Defines the delay between the signal on the marker outputs and the start of the signals.

Parameters:
<Delay> float
Range: 0 to 16777215
Increment: 1
*RST: 0

Example: See Example "Configure and enable standard marker signals" on page 63
5.6 Clock Commands

[:SOURce<hw>]:BB:EVDO:CLOCk:SOURce <Source>

Selects the clock source:

- INTernal: Internal clock reference

Parameters:

- <Source>  
  - INTernal

*RST:  
  - INTernal

Example:  
See Example "Adjusting clock and trigger settings" on page 62.

Manual operation:  
See "Clock Source" on page 21

5.7 Access Network Commands

[:SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:PSOFfset <PSoffset>

Sets the offset (in slots) from the start of control channel cycle to the start of the synchronous message capsule that contains the Sync Message.

Parameters:

- <PSoffset>  
  - integer
  - Range: 0 to 3
  - *RST: 0

Example:  
BB:EVDO:ANET:CCH:PSOF 2  
sets the packet start offset for the control channel to 2.
Remote-Control Commands

Manual operation:  See "Packet Start Offset" on page 38

[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:RATE <Rate>
Sets the rate that the control channel messages are transmitted at.

Parameters:
<Rate>  DR4K8 | DR9K6 | DR19K2 | DR38K4 | DR76K8 | DR153K6 |
        DR307K2 | DR614K4 | DR1228K | DR1536K |
        DR1843K2 | DR2457K6 | DR3072K | DR460K8 | DR768K |
        DR1075K2 | DR1536K | DR1843K2 | DR2457K6 | DR3072K |
        DR4300K8 | DR4915K2
*RST:  38.4 kbps

Example:  BB:EVDO:ANET:CCH:RATE DR76K8
sets the control channel rate to 76.8 kbps.

Manual operation:  See "Rate" on page 38

[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:REVision:MAXimum <Maximum>
Sets the value of the maximum revision field within the control channel message.

Parameters:
<Maximum>  integer
Range:  0 to 255
*RST:  1

sets the value of the maximum revision field to 10.

Manual operation:  See "Maximum Revision" on page 39

[:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:REVision:MINimum <Minimum>
Sets the value of the minimum revision field within the control channel message.

Parameters:
<Minimum>  integer
Range:  0 to 255
*RST:  1

Example:  BB:EVDO:ANET:CCH:REV:MIN 1
sets the value of the minimum revision field to 1.

Manual operation:  See "Minimum Revision" on page 38

 [:SOURce<hw>]:BB:EVDO:ANETwork:CChannel:STATE <State>
Enables or disables the control channel messages.
Remote-Control Commands

Access Network Commands

Parameters:

<State> 0 | 1 | OFF | ON
*RST: 0

Example: BB:EVDO:ANET:CCH:STAT ON
enables the control channel message.

Manual operation: See "State" on page 38

[:SOURce<hw>]:BB:EVDO:ANETwork:CPMode <CpMode>

Enables or disables a special mode within the 1xEV-DO generator.

Note: During the special mode, all other parameters do not affect the signal output.

Parameters:

<CpMode> 0 | 1 | OFF | ON
*RST: 0

Example: BB:EVDO:ANET:CPM ON
enables the special mode.

Manual operation: See "Continuous Pilot Mode" on page 36

[:SOURce<hw>]:BB:EVDO:ANETwork:OUCount <OuCount>

Sets the number of additional users (beyond the four defined users) that appear in the MAC Channel.

Parameters:

<OuCount> integer
Range: 0 to 55 for physical layer subtype 0&1, 0 to 110 for physical layer subtype 2, 0 to 360 for physical layer subtype 3
*RST: 1

Example: BB:EVDO:ANET:OUC 5
sets the number of additional users to 5.

Manual operation: See "Other Users Count" on page 37

[:SOURce<hw>]:BB:EVDO:ANETwork:PChannel:STATe?

Displays the state of the pilot channel. Pilot channel is transmitted by sector on each active forward channel. It is present always and transmitted at the full sector power.

Return values:

<State> 0 | 1 | OFF | ON
*RST: ON

Example: BB:EVDO:ANET:PCH:STAT?
displays the state of the pilot channel.
Usage: Query only
Manual operation: See “State” on page 37

[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:LENGth <Length>
Sets the duration (in slots) of a Reverse Activity bit.
Note: This parameter is available for physical layer subtype 0&1 only.
Parameters:
<Length> RL8 | RL16 | RL32 | RL64
*RST: 8
Example: BB:EVDO:ANET:RAB:LENG RL16
sets the duration of the Reverse Activity Bit (RAB) to 16 slots.
Manual operation: See “RAB Length” on page 39

[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:LEVel <Level>
Sets the power within the MAC block for the Reverse Activity channel.
Parameters:
<Level> float
Range: -25 to -7
Increment: 0.01
*RST: -7
Example: BB:EVDO:ANET:RAB:LEV -7.0
sets the power of the MAC block for the Reverse Activity Channel to -7.0 dB.
Manual operation: See “RAB Level” on page 39

[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:MAC:INDex <Index>
For physical layer, subtype 3 only sets the RAB MAC Index.
Parameters:
<Index> integer
Range: 4 to 127
*RST: 4
Manual operation: See “RAB MAC Index” on page 40

[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:OFFSet <Offset>
Sets the starting time offset of the Reverse Activity bit in slots. The command is speci-
fied in Reverse Activity Length/8 units. The RA bit starts when the following equation is
satisfied:
System Time mod RAB length = RAB Offset, where System Time is expressed in slots.
Note: This parameter is available for physical layer subtype 0&1 only.

Parameters:
<Offset> integer
Range: 0 to 7
*RST: 0

Example: BB:EVDO:ANET:RAB:OFFS 1
Sets the starting time offset of the Reverse Activity bit to 1.

Manual operation: See "RAB Offset" on page 39

[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:STATe <State>
Activates or deactivates the reverse activity bit (RAB).

Parameters:
<State> 0 | 1 | OFF | ON
*RST: OFF

Example: BB:EVDO:ANET:RAB:STAT ON
activates the Reverse Activity Bit.

Manual operation: See "State" on page 39

[:SOURce<hw>]:BB:EVDO:ANETwork:SUBType <Subtype>
Selects the physical layer subtype.

Note: The physical layer subtype settings can be queried per user.

Parameters:
<Subtype> S1 | S2 | S3
*RST: S2

Example: BB:EVDO:ANET:SUBT S2
sets the physical layer subtype to 2.

Options: S3 requires option R&S SMBVB-K87

Manual operation: See " Physical Layer Subtype (User) " on page 23
See "Physical Layer Subtype (Access Network Settings)"
on page 36

5.8 Multi-Carrier Configuration Commands

Multi-Carrier Configuration requires option R&S SMBVB-K87

[:SOURce<hw>]:BB:EVDO:UP:MC:BClass.................................................................83
[:SOURce<hw>]:BB:EVDO:DOWN:MC:BClass......................................................83
[:SOURce<hw>]:BB:EVDO:UP:MC:CFRequency?...................................................83
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CFRequency?.............................................83
Multi-Carrier Configuration Commands

[:SOURce<hw>]:BB:EVDO:UP:MC:CDELay <CarrierDelay> ................................................................. 83
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CDELay ................................................................. 83
[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:STATe ..................................................... 84
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRier<ch>:STATe ............................................... 84
[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:CHANnel .................................................84
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRier<ch>:CHANnel ........................................... 84
[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:FREQuency .............................................85
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRier<ch>:FREQuency ....................................... 85
[:SOURce<hw>]:BB:EVDO:UP:MC:STATe .......................................................................... 85
[:SOURce<hw>]:BB:EVDO:DOWN:MC:STATe .................................................................... 85
[:SOURce<hw>]:BB:EVDO:UP:MC:BCLass <BandClass> ...................................................... 85
[:SOURce<hw>]:BB:EVDO:DOWN:MC:BCLass <BandClass> .................................................. 85

Selects the band class for operation, as defined in 3GPP2 C.S0057-E.

BC17 is supported in downlink only.

Parameters:

<BandClass>

BC0 | BC1 | BC2 | BC3 | BC4 | BC5 | BC6 | BC7 | BC8 | BC9 |
| BC10 | BC11 | BC12 | BC13 | BC14 | BC15 | BC16 | BC17 |
| BC18 | BC19 | BC20 | BC21

*RST: BC0

Example:

see Example "Generating a downlink multicarrier signal" on page 64

Options: R&S SMBVB-K87

Manual operation: See "Band Class" on page 35


Queries the center frequency of the band resulting from the set active carriers.

Return values:

<CenterFrequency> integer

Example:

see Example "Generating a downlink multicarrier signal" on page 64

Usage: Query only

Options: R&S SMBVB-K87

Manual operation: See "Center Frequency (band)" on page 34

[:SOURce<hw>]:BB:EVDO:UP:MC:CDELay <CarrierDelay>
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CDELay <CarrierDelay>

Sets a delay to each active carrier.
### Multi-Carrier Configuration Commands

#### Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Range</th>
<th>Increment</th>
<th>Reset</th>
<th>Example</th>
<th>Options</th>
<th>Manual operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;CarrierDelay&gt;</td>
<td>float</td>
<td>0 to 10E-6</td>
<td>1E-9</td>
<td>0</td>
<td>see Example &quot;Generating a downlink multicarrier signal&quot; on page 64</td>
<td>R&amp;S SMBVB-K87</td>
<td>See &quot;Carrier Delay&quot; on page 35</td>
</tr>
</tbody>
</table>

#### [:SOURce<hw>:BB:EVDO:UP:MC:CARRier<ch>:STATe <State>](#)

Switches the selected carrier on or off.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Values</th>
<th>Reset</th>
<th>Example</th>
<th>Options</th>
<th>Manual operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;State&gt;</td>
<td>0</td>
<td>1</td>
<td>OFF</td>
<td>ON</td>
<td>R&amp;S SMBVB-K87</td>
</tr>
<tr>
<td>RST</td>
<td>0</td>
<td></td>
<td>see Example &quot;Generating a downlink multicarrier signal&quot; on page 64</td>
<td>R&amp;S SMBVB-K87</td>
<td>See &quot;State&quot; on page 35</td>
</tr>
</tbody>
</table>

#### [:SOURce<hw>:BB:EVDO:DOWN:MC:CARRier<ch>:CHANnel <Channel>](#)

Sets carrier’s CDMA channel number.

The available Channel values depend on the selected Band Class.

In some cases, not all channel numbers can be used. In case a non-existing channel is input, the next available channel is used.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Range</th>
<th>Reset</th>
<th>Example</th>
<th>Options</th>
<th>Manual operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Channel&gt;</td>
<td>integer</td>
<td>0 to 3000</td>
<td>1</td>
<td>see Example &quot;Generating a downlink multicarrier signal&quot; on page 64</td>
<td>R&amp;S SMBVB-K87</td>
<td>See &quot;CDMA Channel Number&quot; on page 35</td>
</tr>
</tbody>
</table>
Remote-Control Commands

Configure Traffic User Commands

[:SOURce<hw>]:BB:EVDO:UP:MC:Carrier<ch>:FREQuency <Frequency>
[:SOURce<hw>]:BB:EVDO:DOWN:MC:Carrier<ch>:FREQuency <Frequency>

Sets the center frequency of the carrier in MHz. In some cases, not all center frequencies are defined by the selected band class. In case a non-existing frequency is input, the next available frequency is used.

Parameters:

- **<Frequency>**
  - Type: float
  - Range: 100 to 3000
  - Increment: 1E-4
  - *RST: 870.03

Example:
See Example "Generating a downlink multicarrier signal" on page 64

Options:
R&S SMBVB-K87

Manual operation: See "Center Frequency" on page 35

[:SOURce<hw>]:BB:EVDO:UP:MC:STATe <State>
[:SOURce<hw>]:BB:EVDO:DOWN:MC:STATe <State>

Enables or disables multi-carrier operation.

Parameters:

- **<State>**
  - Values: 0 | 1 | OFF | ON
  - *RST: 0

Example:
See Example "Generating a downlink multicarrier signal" on page 64

Options:
R&S SMBVB-K87

5.9 Configure Traffic User Commands

[:SOURce<hw>]:BB:EVDO:USER<st>:DATA:PA TTern
[:SOURce<hw>]:BB:EVDO:USER<st>:DRClock:LENGth
[:SOURce<hw>]:BB:EVDO:USER<st>:DRClock:OFFSet
[:SOURce<hw>]:BB:EVDO:USER<st>:DRClock:PERiod
[:SOURce<hw>]:BB:EVDO:USER<st>:HARQ:MODE
[:SOURce<hw>]:BB:EVDO:USER<st>:IFAc tor
[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:INDex
[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:LEVel
[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:COUNT
[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:FINfinite
[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:SOFFset
[:SOURce<hw>]:BB:EVDO:USER<st>:PSIZe
[:SOURce<hw>]:BB:EVDO:USER<st>:RATE:INDex
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:INJect..............................................................92
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:MODE.............................................................92
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:RANGe............................................................93
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:ZONE<ch0>:BIT..................................................93
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:ZONE<ch0>:COUNT........................................94
[:SOURce<hw>]:BB:EVDO:USER<st>:SCOunt?...................................................................94
[:SOURce<hw>]:BB:EVDO:USER<st>:STATe.....................................................................94
[:SOURce<hw>]:BB:EVDO:USER<st>:DATA:PATTern <Pattern>, <BitCount>

Sets the data pattern for the data portion of the packets sent to the user. The most significant bit (MSB) of this value is the MSB of the packet and the word is repeated to fill all space within the packet.

Parameters:
- `<Pattern>` numeric
  - *RST: #H00000000
- `<BitCount>` integer
  - Range: 32 to 32
  - *RST: 32

Example:
BB:EVDO:USER2:DTA:PATT #H55aa55aa
Sets the data pattern for user 2.

Manual operation: See "Data Pattern (hex)" on page 29

[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:LENGth <Length>

Sets the number of DRC (Data Rate Control) Lock periods that the state of the DRC Lock for the selected user is held constant.

Note: Changes in the DRC Lock state are only considered at the interval defined by the parameter DRC Lock Length.

A value of one allows updating of the DRC Lock bit at anytime.

Parameters:
- `<Length>` DL1 | DL4 | DL8 | DL16 | DL32 | DL64
  - *RST: 1

Example:
BB:EVDO:USER2:DRCL:LENG DL8
Sets eight DRCLock periods for holding the state of user 2 constant.

Manual operation: See "DRC Lock Length" on page 33

[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:OFFSet <Offset>

Sets the reverse link frame offset for the reverse link. The frame offset is used to position the DRC Lock bit within the MAC channel.
Remote-Control Commands

Configure Traffic User Commands

**Parameters:**

<Offset>  
integer  
Range: 0 to 15  
*RST: 0

**Example:**  
Sets the reverse link frame offset to 5.

**Manual operation:**  
See "Frame Offset" on page 33

**[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:PERiod <Period>**

Sets the period (measured in slots) of time between successive transmissions of the DRC (Data Rate Control) Lock bit for the selected user.

**Note:** A value of zero disables the DRC Lock subchannel and the MAC RPC channel of the selected user is not punctured with the DRC Lock subchannel.

**Parameters:**

<Period>  
DP0 | DP4 | DP8 | DP16  
*RST: DP4

**Example:**  
BB:EVDO:USER2:DRCL:PER DP8  
Sets the DRC Lock period for user 2 to 8 slots.

**Manual operation:**  
See "DRC Lock Period" on page 32

**[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:STATe <State>**

Sets the state of the DRC (Data Rate Control) Lock bit for the selected user.

**Note:** Changes in the DRC Lock state are only considered at the interval defined by the parameter DRC Lock Length.

**Parameters:**

<State>  
0 | 1 | OFF | ON  
*RST: OFF

**Example:**  
BB:EVDO:USER2:DRCL:STAT ON  
activates the DRC Lock bit for user 2.

**Manual operation:**  
See "DRC Lock State" on page 32

**[:SOURce<hw>]:BB:EVDO:USER<st>:HARQ:MODE <Mode>**

Enables or disables the H-ARQ Channel. The H-ARQ channel is used by the access network to transmit positive acknowledgement (ACK) or a negative acknowledgement (NAK) in response to a physical layer packet.

**Note:** This parameter is enabled for Physical Layer Subtype 2 only.

**Parameters:**

<Mode>  
OFF | ACK | NAK
Configure Traffic User Commands

**OFF**
Disables transmission of the H-ARQ channel.

**ACK**
Enables transmission of H-ARQ. The channel is transmitted with all bits set to ACK.

**NAK**
Enables transmission of H-ARQ. The channel is transmitted with all bits set to NAK

*RST: OFF

**Example:**

BB:EVDO:USER2:SUBT S2
Sets the physical layer subtype for user 2 to 2.

BB:EVDO:USER2:HARQ:MODE ACK
Enables ARQ channel. The channel is transmitted with all bits set to ACK.

**Manual operation:** See "H-ARQ Mode" on page 33

**[:SOURce<hw>]:BB:EVDO:USER<st>:IFACtor <IFactor>**

Controls the number of interleave slots used for the selected user on the forward link.

Four interleave slots are defined in the 1xEV-DO system.

By default, only 1 Interleave slot (Interleave Factor = 1) for an access terminal is configured and transmission to that access terminal every fourth slot is selected.

For an interleave factor > 1, packets on multiple interleave slots are sent, increasing the data throughput to the access terminal.

**Parameters:**

<IFactor>
integer

Range: 1 to 4

*RST: 1

**Example:**

BB:EVDO:USER2:IFAC 2
Sets two interleaved slots for user 2 on the forward link.

**Manual operation:** See "Interleave Factor" on page 29

**[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:INDex <Index>**

Sets the MAC Index used for the selected user.

MAC Index has to be different for the different users. However, in case that two users are using the same value for MAC Index, the lower priority user is disabled, or be unable to enable.

The values for the MAC Indexes for the other users (see [:SOURce<hw>]:BB:EVDO:ANETwork:OUCount) are assigned from a pool of valid MAC Indexes.
Configure Traffic User Commands

**Remote-Control Commands**

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Index&gt;</td>
<td>integer</td>
<td>5 to 63 for physical layer subtype 0&amp;1, 6 to 127 for physical layer subtype 2, 4 to 383 for physical layer subtype 3</td>
</tr>
<tr>
<td>*RST:</td>
<td></td>
<td>Physical layer subtype 0&amp;1: 5 for user 1; 6 for user 2; 7 for user 3; 8 for user 4; Physical layer subtype 2: 6 for user 1; 7 for user 2; 8 for user 3; 9 for user 4</td>
</tr>
</tbody>
</table>

**Example:**

```
BB:EVDO:USER2:MAC:IND 6
```

Sets the MAC index for user 2 to 16.

**Manual operation:** See "MAC Index" on page 29

**[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:LEVel <Level>**

Sets the power within the MAC channel that is dedicated to the selected user.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Range</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Level&gt;</td>
<td>float</td>
<td>-25 to -7</td>
<td>0.01</td>
</tr>
<tr>
<td>*RST:</td>
<td></td>
<td>-7</td>
<td></td>
</tr>
</tbody>
</table>

**Example:**

```
BB:EVDO:USER2:MAC:LEV -7.0
```

sets the power within the MAC channel to -7.0 dB.

**Manual operation:** See "MAC Level" on page 29

**[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:COUNt <Count>**

Sets the number of packets to send to the selected user.

The number of packets to be send depends on whether the parameter "Infinite" is enabled or disabled.

If "Infinite" is enabled, there is no limit to the number of packets sent to the user.

If "Infinite" is disabled and a value is specified while packets are being sent, the new count value is used at the end of transmission of the current packet. If a value of zero is specified, the transmission to the user is stopped at the end of the current packet.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Count&gt;</td>
<td>integer</td>
<td>0 to 65536</td>
</tr>
<tr>
<td>*RST:</td>
<td></td>
<td>65536</td>
</tr>
</tbody>
</table>

**Example:**

```
BB:EVDO:USER2:PACK:INF OFF
BB:EVDO:USER2:PACK:COUNT 10
```

Disables sending of unlimited number of packets.

Sets the number of packets to be sent to 10.

**Manual operation:** See "Number of Packets to Send - Value" on page 24
[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:INFinite <Infinite>

Enables or disables sending an unlimited number of packets to the selected user.

Parameters:

<Infinite>  0 | 1 | OFF | ON

ON
Enables sending of an unlimited number of packets to the user.

OFF
Disables sending of an unlimited number of packets to the user.

The number of packets to be sent can be specified.

*RST: 1

Example:

BB:EVDO:USER2:PACK:INF OFF
Disables sending of unlimited number of packets for user 2.
BB:EVDO:USER2:PACK:COUNT 10
Sets the number of packets to be sent to user 2 to 10.

Manual operation:
See "Number of Packets to Send - Infinite" on page 23
See "Number of Packets to Send - Value" on page 24

[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:SOFFset <SOffset>

Sets the minimum number of slots between the end of one packet and the beginning of the next.

For single slot packets, a value of zero will cause the next packet to be sent in the immediate next slot (subject to scheduling).

For multiple slot packets, a value of zero will cause the next packet transmission to start three slots after the end of the previous packet. The three slot delay is identical to the interleaving delay between slots for multiple slot packets. The offset value is attached to the end of the preceding packet.

Parameters:

<SOffset> integer

Range: 0 to 255

*RST: 0

Example:

BB:EVDO:USER2:PACK:SOFF 10
Sets the packet start offset for user 2 to 10.

Manual operation:
See "Packet Start Offset" on page 24

[:SOURce<hw>]:BB:EVDO:USER<st>:PSIZe <PSize>

Sets the packet size for the packets sent to the selected user.

Note: Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.
Parameters:

**<PSize>**

- PS128
- PS256
- PS512
- PS768
- PS1024
- PS1536
- PS2048
- PS3072
- PS4096
- PS5120
- PS6144
- PS8192
- PS12288
- PS7168

*RST: PS128*

**Example:**

- **BB:EVDO:ANET:SUBT S2**
  sets the physical layer subtype to 2.
- **BB:EVDO:USER2:RATE:IND 4**
  sets the rate index of user 2 to 4.
- **BB:EVDO:USER2:PSIZ PS256**
  sets the packet size for user 2 to 256.
- **SOUR:BB:EVDO:USER2:RATE?**
  queries the data rate for user 2.
  Response: 76.8 kbps

**Manual operation:** See "Packet Size" on page 28

---

**[:SOURce<hw>]:BB:EVDO:USER<st>:RATE?**

Queries the data rate of the packets sent to the selected user.

**Note:** Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.

**Return values:**

**<Rate>**

- DR4K8
- DR9K6
- DR19K2
- DR38K4
- DR76K8
- DR153K6
- DR307K2
- DR614K4
- DR921K6
- DR1228K8
- DR1536K
- DR1843K2
- DR2457K6
- DR3072K
- DR460K8
- DR768K
- DR1075K2
- DR2150K4
- DR3686K4
- DR4300K8
- DR4915K2

*RST: DR4K8*

**Example:**

- **BB:EVDO:ANET:SUBT S2**
  sets the physical layer subtype.
- **BB:EVDO:USER2:RATE:IND 4**
  sets the rate index of user 2.
- **BB:EVDO:USER2:PSIZ PS256**
  sets the packet size for user 2.
- **SOUR:BB:EVDO:USER2:RATE?**
  queries the data rate for user 2.
  Response: 76.8 kbps

**Usage:** Query only

**Manual operation:** See "Data Rate" on page 29

---

**[:SOURce<hw>]:BB:EVDO:USER<st>:RATE:INDex <Index>**

Determines the rate index.

**Note:** Selected rate becomes effective at the beginning of the next packet transmitted to the selected user.
Remote-Control Commands

Configure Traffic User Commands

Parameters:

<Index>
integer

Range: 1 to 12 (physical layer subtype 0&1), 1 to 14 (physical layer subtype 2), 1 to 28 (physical layer subtype 3)

*RST: 1

Example:

BB:EVDO:ANET:SUBT S2
sets the physical layer subtype.

BB:EVDO:USER2:RATE:IND 4
sets the rate index of user 2.

BB:EVDO:USER2:PSIZ PS256
sets the packet size for user 2.

SOUR:BB:EVDO:USER2:RATE?
queries the data rate for user 2.

Response: 76.8 kbps

Manual operation: See "Rate Index" on page 25

[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:INJect

Enables sending of user defined Reverse Power Control (RPC) pattern at the end of the current RPC mode.

The former RPC mode is restart at the end of the pattern transmission.

Example:

BB:EVDO:USER2:RPC:MODE PATT
Sets the mode of the Reverse Power Control (RPC) Channel within the MAC channel for user 2 to pattern, i.e. a user-defined sequence is transmitted.

BB:EVDO:USER2:RPC:ZONE0:BIT 1
Sets the bit for zone 0 to 1

BB:EVDO:USER2:RPC:ZONE0:COUNT 10
Sets the number of RPC bits for zone 0 to 10.

BB:EVDO:USER2:RPC:ZONE1:BIT 0
BB:EVDO:USER2:RPC:ZONE1:COUNT 100
BB:EVDO:USER2:RPC:ZONE2:BIT 1
BB:EVDO:USER2:RPC:ZONE2:COUNT 50
BB:EVDO:USER2:RPC:ZONE3:BIT 0
BB:EVDO:USER2:RPC:INJ

The user defined RPC pattern is inserted at the end of the current RPC mode.

Usage: Event

[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:MODE <Mode>

Sets the operation mode for the Reverse Power Control (RPC) Channel within the MAC channel for the selected user.
Parameters:

**<Mode>**

**HOLD | UP | DOWN | RANGE | PATTERN**

*RST: HOLD*

**Example:**

```
BB:EVDO:USER2:RPC:MODE UP
```

A continuous stream of Up (0) are transmitted on the Reverse Power Control (RPC) Channel within the MAC channel for user 2.

Manual operation: See "RPC Mode" on page 30

[[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:RANGe <Range>]

Sets the number of Reverse Power Control (RPC) bits sent in each direction when the "RPC Mode = Range". The specified value is used immediately.

Parameters:

**<Range>**

integer

Range: 1 to 256

*RST: 1*

**Example:**

```
BB:EVDO:USER2:RPC:MODE RANG
```

Sets the mode of the Reverse Power Control (RPC) Channel within the MAC channel for user 2 to range.

```
```

Sets the number of RPC bits to 200.

Manual operation: See "RPC Range Count" on page 31

[[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:ZONE<ch0>:BIT <Bit>]

The Reverse Power Control (RPC) pattern is defined in form of table with four zones (zone 0..3). For each zone, a bit and a count can be defined.

This parameter defines the RPC bits sent within the specific zone of the RPC Pattern.

Parameters:

**<Bit>**

0 | 1

Range: 0 to 1

*RST: 0*

**Example:**

```
BB:EVDO:USER2:RPC:MODE PATT
```

Sets the mode of the Reverse Power Control (RPC) Channel within the MAC channel for user 2 to pattern, i.e. a user-defined sequence is transmitted.

```
BB:EVDO:USER2:RPC:ZONE1:BIT 1
```

Sets the bit for zone 1 to 1.

Manual operation: See "RPC Pattern" on page 31
[:SOURce<hw>]:BB:EVDO:USER<st>:RPC:ZONE<ch0>:COUNt <Count>

The Reverse Power Control (RPC) pattern is defined in form of table with four zones (zone 0 .. 3). For each zone, a bit and a count can be defined.

This parameter defines the number of RPC bits sent within the specific zone of the RPC Pattern.

**Parameters:**
- **<Count>**
  - **integer**
  - **Range:** 1 to 128
  - **RST:** 0

**Example:**
- **BB:EVDO:USER2:RPC:MODE PATT**
  - Sets the mode of the Reverse Power Control (RPC) Channel within the MAC channel for user 2 to pattern, i.e. a user-defined sequence is transmitted.
- **BB:EVDO:USER2:RPC:ZONE1:COUNt 10**
  - Sets the number of RPC bits for zone 1 to 10.

**Manual operation:** See "RPC Pattern" on page 31

[:SOURce<hw>]:BB:EVDO:USER<st>:SCOunt?

Queries the slot count of the packets sent to the selected user.

**Return values:**
- **<SCount>**
  - **integer**

**Example:**
- **BB:EVDO:ANET:SUBT S2**
  - Sets the physical layer subtype to 2.
- **BB:EVDO:USER2:RATE:IND 4**
  - Sets the rate index of user 2 to 4.
- **BB:EVDO:USER2:PSIZ PS256**
  - Sets the packet size for user 2 to 256.
- **SOUR:BB:EVDO:USER2:SCO?**
  - Queries the number of slots for user 2.
  - **Response:** 2

**Usage:**
- Query only

**Manual operation:** See "Slot Count" on page 29

[:SOURce<hw>]:BB:EVDO:USER<st>:STAte <State>

Enables or disables the selected user. If the user is enabled, the proper MAC Index is placed within the MAC channel and packets can be sent to the user. If disabled, the MAC Index is not present within the MAC channel and packets cannot be sent to the user.

**Note:** Disabling the state of a user during a transfer aborts all transfers to the user.
Parameters:

<State> 0 | 1 | OFF | ON

*RST: ON (user 1); OFF (user 2 .. 4)

Example: BB:EVDO:USER2:STAT ON
Activates user 2.

Manual operation: See "State (User)" on page 23

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[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:GATing......................................97
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:MODE.........................................98
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:STATe..........................................98
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:VALues........................................99
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACYCle:DURation...........................................99
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[:SOURce<hw>]:BB:EVDO:TERMinal<st>:APChannel:GAIN............................................100
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:APChannel:PAYLoad:MINimum..........................100
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:APChannel:STATe...........................................100
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:CLENgth.........................................101
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DATA..............................................101
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DSELection.....................................102
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DATA:PATTern..................................102
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:DRATe............................................102
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:GAIN..............................................103
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:GAIN[STATe].....................................103
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:CCODing..........................104
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:COUNT................................104
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA................................105
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA:DSELection.................105
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA:PATTern........................105
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DRATe?..............................106
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:FCS[STATe]........................106
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:GAIN................................107
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:INFinite............................107
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:MODulation?........................108
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:PSIZe..............................108
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:STATe................................109
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:SUBPackets[COUNT]................109
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:STATe.............................................110
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DQSPreading..................................................110
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:COVer.........................................110
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:GAIN..........................................111
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:GATing[STATe]................................111
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:LENGTH.......................................111
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:STATe..........................................112
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:VALues
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DSCChannel:GAIN
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DSCChannel:LENGTH
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DSCChannel:STATE
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DSCChannel:VALues
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:IMASK
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:MODE
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:PChannel:GAIN
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:PChannel:STATE?
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:PLENgth
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:QMASK
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:RRICchannel:GAIN
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:RRICchannel:STATE
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:STATe
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:SUBType

[:SOURce<hw>]:BB:EVDO:PREDefined <Predefined>

Sets the UL setting of Terminal 1 to one of the predefined configurations.

The predefined settings are made according to 3GPP2 C.S0032-A to allow easy receiver testing.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER</td>
<td>There are no predefined settings</td>
</tr>
<tr>
<td>ULS1D9K6</td>
<td>UL, Subtype 1, 9.6 kbps.</td>
</tr>
<tr>
<td>ULS1D19K2</td>
<td>UL, Subtype 1, 19.2 kbps.</td>
</tr>
<tr>
<td>ULS1D38K4</td>
<td>UL, Subtype 1, 38.4 kbps.</td>
</tr>
<tr>
<td>ULS1D76K8</td>
<td>UL, Subtype 1, 76.8 kbps.</td>
</tr>
<tr>
<td>ULS1R153K6</td>
<td>UL, Subtype 1, 153.6 kbps.</td>
</tr>
<tr>
<td>ULS2PS128LL</td>
<td>UL, Subtype 2, 128 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS256HC</td>
<td>UL, Subtype 2, 256 bits payload, High Capacity.</td>
</tr>
<tr>
<td>ULS2PS256LL</td>
<td>UL, Subtype 2, 256 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS512LL</td>
<td>UL, Subtype 2, 512 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS768LL</td>
<td>UL, Subtype 2, 768 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS1024LL</td>
<td>UL, Subtype 2, 1024 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS1536LL</td>
<td>UL, Subtype 2, 1536 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS2048LL</td>
<td>UL, Subtype 2, 2048 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS3072LL</td>
<td>UL, Subtype 2, 3072 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS4096LL</td>
<td>UL, Subtype 2, 4096 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS6144LL</td>
<td>UL, Subtype 2, 6144 bits payload, Low Latency.</td>
</tr>
</tbody>
</table>
### Configure Access Terminal Commands

#### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULS2PS8192LL</td>
<td>UL, Subtype 2, 8192 bits payload, Low Latency.</td>
</tr>
<tr>
<td>ULS2PS12288LL</td>
<td>UL, Subtype 2, 12288 bits payload, Low Latency.</td>
</tr>
</tbody>
</table>

**Parameters:**

<Predefined>

- USER
- ULS1DR9K6
- ULS1DR19K2
- ULS1DR38K4
- ULS1DR76K8
- ULS1DR153K6
- ULS2PS128LL
- ULS2PS256HC
- ULS2PS256LL
- ULS2PS512LL
- ULS2PS768LL
- ULS2PS1024LL
- ULS2PS1536LL
- ULS2PS2048LL
- ULS2PS3072LL
- ULS2PS4096LL
- ULS2PS6144LL
- ULS2PS8192LL
- ULS2PS12288LL

*RST: USER

**Example:**

BB:EVDO:PRED ULS2PS256HC

Sets the UL settings of Terminal 1 to UL of Subtype 2 with 256 bits payload and High Capacity.

BB:EVDO:TERM1:SUBT?

Response: S2.

BB:EVDO:TERM1:DCH:PACK1:PSIZ?

Response: 256

**Manual operation:** See "Predefined Settings" on page 42

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:GAIN <Gain>

(enabled for access terminal working in traffic mode)

Sets the gain of the ACK channel relative to the pilot channel power.

**Parameters:**

<Gain>

- float
- Range: -80 to 30
- Increment: 0.01
- *RST: 0

**Example:**

BB:EVDO:TERM2:ACKC:GAIN -10

Sets the relative gain of ACK channel to -10 dB

**Manual operation:** See "Relative Gain" on page 48

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:GATing <Gating>

(enabled for access terminal working in traffic mode)

Sets the active and inactive slots of the ACK channel. This parameter is in binary format and has a maximal length of 16 bits.

The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. A 0 gates the ACK channel off for the corresponding slot, a 1 activates the channel.
Parameters:
<Gating> integer
*RST: 0001

Example: BB:EVDO:TERM2:ACKC:GAT #B11001100, 8
Sets slots 3, 4, 7 and 8 of ACK channel as inactive.

Manual operation: See "Gating (bin)" on page 48

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:MODE <Mode>
(enabled for access terminal working in traffic mode)
Specifies the modulation mode of the ACK channel.
With BPSK modulation, a 0 (ACK) is mapped to +1 and a 1 (NAK) to -1. With OOK modulation, a 0 (ACK) is mapped to ON and a 1 (NAK) to OFF.

Parameters:
.Mode> BPSK | OOK
BPSK
Sets the modulation to BPSK (Binary Phase Shift Keying).
OOK
Sets the modulation to OOK (On-Off Keying).
*Note: This value is only enabled for physical layer subtype 2.
*RST: BPSK

Example:
BB:EVDO:TERM2:MODE TRAF
sets the mode of terminal 2 to traffic.
BB:EVDO:TERM2:SUBT S2
sets the physical layer subtype of terminal 2 to 2.
BB:EVDO:TERM2:ACKC:MODE OOK
selects OOK modulation for ACK channel of terminal 2.

Manual operation: See "Mode" on page 48

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:STATe <State>
(enabled for access terminal working in traffic mode)
Enables or disables the ACK channel.

Parameters:
<State> 0 | 1 | OFF | ON
*RST: 1

Example:
BB:EVDO:TERM2:ACKC:STAT OFF
Deactivates the ACK channel for terminal 2.

Manual operation: See "State" on page 48
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACKChannel:VALUES <Values>

(enabled for access terminal working in traffic mode)

Specifies the data pattern transmitted on the ACK Channel.

The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. A 0 specifies an ACK, a 1 specifies a NAK. The pattern is only read for slots that are gated on. This parameter is in binary format and has a maximal length of 16 bits.

Parameters:
<Values> integer
*RST: #H1

Example:
BB:EVDO:TERM2:ACK:VAL #B011,3
Sets the data pattern transmitted on the ACK channel for terminal 2.

Manual operation: See "Values " on page 49

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACYCLE:Duration <Duration>

(enabled for access terminal working in access mode)

Sets the access cycle duration in slots. Access probes are repeated with a period of access cycle duration slots.

Parameters:
<Duration> integer
Range: 1 to 255
*RST: 16

Example:
BB:EVDO:TERM2:MODE ACC
enables terminal 2 to work in access mode.
BB:EVDO:TERM2:ACYC:DEL 20
sets the duration of the access cycle for terminal 2 to 20 slots.

Manual operation: See "Access Cycle Duration " on page 43

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:ACYCLE:Offset <Offset>

(enabled for access terminal working in access mode)

The Access Channel transmission starts with this number of slots relative to the beginning of each access cycle duration.

Parameters:
<Offset> integer
Range: 0 to 12
Increment: 4
*RST: 0
Example:

```
BB:EVDO:TERM2:MODE ACC
Enables terminal 2 to work in access mode.
BB:EVDO:TERM2:ACYC:OFFS 10
Sets the offset of the Access Channel to 10.
```

Manual operation: See "Access Cycle Offset" on page 43

---

```
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:APCHannel:GAIN <Gain>
```

Sets the gain of the auxiliary pilot channel relative to the data channel power.

**Note:** All other channel gains are specified relative to the pilot power, but the auxiliary pilot gain is specified relative to the data channel power.

**Parameters:**

- `<Gain>`
  - Type: float
  - Range: -80 to 30
  - Increment: 0.01
  - *RST:* 0

**Example:**

```
BB:EVDO:TERM2:APCH:GAIN -10
sets the relative gain of auxiliary pilot channel to -10 dB
```

Manual operation: See "Relative Gain" on page 44

---

```
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:APCHannel:PAYLoad:MINimum <Minimum>
```

Sets the minimum payload size in bits of the data channel that activates the transmission of the auxiliary pilot channel.

**Parameters:**

- `<Minimum>`
  - Possible values: PS128 | PS256 | PS512 | PS768 | PS1024 | PS1536 | PS2048 | PS3072 | PS4096 | PS6144 | PS8192 | PS12288
  - *RST:* PS128

**Example:**

```
BB:EVDO:TERM2:APCH:PAYL:MIN PS256
Sets the minimum payload of the auxiliary pilot channel to 256 bits.
```

Manual operation: See "Minimum Payload" on page 44

---

```
[:SOURce<hw>]:BB:EVDO:TERMinal<st>:APCHannel:STATe <State>
```

Sets the state of the auxiliary pilot channel.

**Parameters:**

- `<State>`

**Example:**

```
BB:EVDO:TERM2:APCH:STATe 1
Sets the state of the auxiliary pilot channel to 1.
```

Manual operation: See "State" on page 44
Enables or disables the auxiliary pilot channel.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt;State&gt;</strong></td>
<td>0</td>
</tr>
</tbody>
</table>

*RST:* 1

**Example:**

BB:EVDO:TERM2:APCH:STAT OFF

Deactivates the auxiliary pilot channel for terminal 2.

**Manual operation:**

See "State" on page 44

---

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:CLENgth <CLength>

(_enabled for access terminal working in access mode)

Sets the number of frames (16 slots each) to be transmitted after the preamble. Each frame contains one data packet.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt;CLength&gt;</strong></td>
<td>integer</td>
</tr>
</tbody>
</table>

Range: 1 to 15

*RST:* 1

**Example:**

BB:EVDO:TERM2:MODE ACC

Enables terminal 2 to work in access mode.

BB:EVDO:TERM2:DCH:CLEN 10

For terminal two, ten frames will be transmitted after the preamble.

**Manual operation:**

See "Capsule Length" on page 54

---

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:DATA <Data>

Selects the data source, e.g. a sequence of 0 or 1, a pseudo-random sequence with different length, a pattern or a data list (DLIST).

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt;Data&gt;</strong></td>
<td>ZERO</td>
</tr>
</tbody>
</table>

*RST:* PN9

**Example:**

SOURce:BB:EVDO:TERminal2:DCHannel:DATA PATtern

Sets the data source of terminal 2 to pattern.

SOURce:BB:EVDO:TERminal2:DChannel:DATA:PATtern #H3F,8

Sets the pattern for the data source of terminal 2.
Example: `SOURce:BB:EVDO:TERminal2:DCHannel:DATA DLISt`
Sets the data source of terminal 2 to data list.

`MMEM:CDIR "datalists"`
Selects the directory for the data lists.

`SOURce:BB:EVDO:TERminal2:DCHannel:DATA: DSELection "datalist.dm_iqd"`
Selects `datalist.dm_iqd` file as data source. This file must be in the directory `/var/user/datalists` and have a file extension `*.dm_iqd`.

Manual operation: See "Data Source" on page 54

`[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:DATA:DSELection <Filename>`
Selects the data list for the data source.

Parameters:
- `<Filename>`: string

Example: see `[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:DATA` on page 101

`[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:DATA:PATTern <Pattern>, <BitCount>`
Selects the bit pattern for the data source.

Parameters:
- `<Pattern>`: numeric
  *RST: #H0
- `<BitCount>`: integer
  Range: 1 to 64
  *RST: 1

Example: see `[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:DATA` on page 101

Manual operation: See "Data Source" on page 54

`[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:DRATe <DRate>`
(enabled for an access terminal working in access mode)
Selects the data rate for the Data Channel.
Remote-Control Commands

Parameters:

### <DRate>

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR4K8</td>
</tr>
<tr>
<td>DR9K6</td>
</tr>
<tr>
<td>DR19K2</td>
</tr>
<tr>
<td>DR38K4</td>
</tr>
<tr>
<td>DR76K8</td>
</tr>
<tr>
<td>DR153K6</td>
</tr>
<tr>
<td>DR307K2</td>
</tr>
<tr>
<td>DR614K4</td>
</tr>
<tr>
<td>DR921K6</td>
</tr>
<tr>
<td>DR1228K8</td>
</tr>
<tr>
<td>DR1536K</td>
</tr>
<tr>
<td>DR1843K2</td>
</tr>
<tr>
<td>DR2457K6</td>
</tr>
<tr>
<td>DR3072K</td>
</tr>
<tr>
<td>DR460K8</td>
</tr>
<tr>
<td>DR768K</td>
</tr>
<tr>
<td>DR1075K2</td>
</tr>
<tr>
<td>DR2150K4</td>
</tr>
<tr>
<td>DR3686K4</td>
</tr>
<tr>
<td>DR4300K8</td>
</tr>
<tr>
<td>DR4915K2</td>
</tr>
</tbody>
</table>

*RST: DR9K6

**Example:**

```
BB:EVDO:TERM2:MODE ACC
```

Enables terminal 2 to work in access mode.

```
BB:EVDO:TERM2:DCH:DRAT DR19K2
```

Sets the data rate of the data channel for terminal 2 kbps to 19.2 kbps.

**Manual operation:** See "Data Rate" on page 54

---

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:FCS[:STATe] <State>

(Enabled for an access terminal working in access mode)

Enables or disables appending a standard frame check sequence (FCS) to the MAC layer packet.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;State&gt;</td>
<td>0</td>
</tr>
</tbody>
</table>

*RST: 1

**Example:**

```
BB:EVDO:TERM2:MODE ACC
```

Enables terminal 2 to work in access mode.

```
BB:EVDO:TERM2:DCH:FCS:STAT OFF
```

Disables appending of FCS to the MAC layer for terminal 2.

**Manual operation:** See "Append FCS" on page 55

---

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:GAIN <Gain>

(Enabled for an access terminal working in access mode)

Sets the gain in dB of the data channel relative to the pilot channel power.

**Parameters:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Gain&gt;</td>
<td>float</td>
</tr>
</tbody>
</table>

| Range:    | -80 to 30          |
| Increment:| 0.01                |

*RST: 0

**Example:**

```
BB:EVDO:TERM2:MODE ACC
```

Enables terminal 2 to work in access mode.

```
BB:EVDO:TERM2:DCH:GAIN -10
```

Sets the relative gain of data channel to -10 dB

**Manual operation:** See "Relative Gain" on page 54
[:SOURce<hw>:]:BB:EVDO:TERminal<st>:DChannel:PACKet<ch>:CCODing
<CCoding>

(enabled for an access terminal working in traffic mode)
Activates or deactivates channel coding, including scrambling, turbo encoding and channel interleaving.

Parameters:
<CCoding> 0 | 1 | OFF | ON
*RST: 1

Example:
BB:EVDO:TERM2:MODE TRAF
Enables terminal 2 to work in traffic mode.
BB:EVDO:TERM2:SUBT S2
Sets physical layer subtype 2 for terminal 2.
BB:EVDO:TERM2:DCH:PACK3:CCOD OFF
Disables channel coding for packet 3.

Manual operation: See "Channel Coding" on page 52

[:SOURce<hw>:]:BB:EVDO:TERminal<st>:DChannel:PACKet<ch>:COUNt
<Count>

(enabled for an access terminal working in traffic mode)
Sets the number of packets to be sent.
The number of packets to be send depends on whether the parameter "Infinite Packets" is enabled or disabled. If "Infinite Packets" is enabled, there is no limit to the number of packets sent.
If "Infinite Packets" is disabled, the number of packets can be specified. In this case, the data channel will be switched off after the specified number of packets have been sent.

Note: Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

Parameters:
<Count> integer
Range: 0 to 65536
*RST: 65536

Example:
BB:EVDO:TERM2:MODE TRAF
Enables terminal 2 to work in traffic mode.
BB:EVDO:TERM2:SUBT S2
Sets physical layer subtype 2 for terminal 2.
BB:EVDO:TERM2:DCH:PACK3:INF OFF
Disables sending of unlimited number of packets.
Sets number of packets to be sent to 2000.

Manual operation: See "Packets To Send" on page 51
[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:DATA <Data>

Selects the data source of an access terminal working in traffic mode

Parameters:
<Data>
- ZERO
- ONE
- PATtern
- PN9
- PN11
- PN16
- PN20
- PN21
- PN23
- DLiSt

*RST: PN9

Example:
SOURce:BB:EVDO:TERminal2:MODE TRAFflic
Enables terminal 2 to work in traffic mode.
SOURce:BB:EVDO:TERminal2:SUBType 52
Sets physical layer subtype 2 for terminal 2.
Sets the data source of terminal 2 to pattern.
SOURce:BB:EVDO:TERminal2:DCHannel:PACKet3: PATtern #F3,8
Sets the pattern for the data source of terminal 2.

Example:
SOURce:BB:EVDO:TERminal2:DCHannel:PACKet1:DATA DLiSt
Sets the data source of terminal 2, packet 1 to data list.
MMEM:CDIR "/var/user/datalists"
Selects the directory for the data lists.
SOURce:BB:EVDO:TERminal2:DCHannel:PACKet1:DATA: DSELection "datalist.dm_iqd"
Selects dataist.dm_iqd file as data source. This file must be in the directory /var/user/datalists and have a file extension *.dm_iqd.

Manual operation: See "Data Source" on page 53

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:DATA: DSELection <Filename>

(enabled for an access terminal working in traffic mode)

Selects the data list for the data source.

Parameters:
<Filename>
- string

Example: See [:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel: PACKet<ch>:DATA on page 105

Manual operation: See "Data Source" on page 53

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:DATA: PATTern <Pattern>, <BitCount>

(enabled for an access terminal working in traffic mode)
Selects the bit pattern for the data source.

**Note:** Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

**Parameters:**

- **<Pattern>**
  - numeric
  - *RST:* #H0
- **<BitCount>**
  - integer
  - Range: 1 to 64
  - *RST:* 1

**Example:**
see [:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DATA on page 105

**Manual operation:** See "Data Source" on page 53

---

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:DRATe?

(enabled for an access terminal working in traffic mode)

Displays the data rate in kbps of the selected packet.

**Note:** Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

**Return values:**

- **<DRate>**
  - float
  - Range: 0 to ...

**Example:**
BB:EVDO:TERM2:MODE TRAF enables terminal 2 to work in traffic mode.
BB:EVDO:TERM2:DCH:PACK2:DRAT?
queries the data rate of the packet number 2 for terminal 2.
Response: '6.4'
the data rate of packet 2 is 6.4 kbps.

**Usage:** Query only

**Manual operation:** See "Data Rate/kbps" on page 52

---

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DChannel:PACKet<ch>:FCS[:STATe]<State>

(enabled for an access terminal working in traffic mode)

Enables or disables appending a standard Frame Check Sequence (FCS) and tail to the MAC layer packet.

**Note:** Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.
Configure Access Terminal Commands

Parameters:
<State>  
0 | 1 | OFF | ON
*RST: ON

Example: 
BB:EVDO:TERM2:MODE ACC
enables terminal 2 to work in access mode.
disables appending of FCS to the MAC layer for terminal 2, packet 1.

Manual operation: See "FCS" on page 54

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:GAIN <Gain>
(enabled for an access terminal working in traffic mode)

Sets the gain in dB of the Data Channel relative to the pilot channel power.

Note: Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

Parameters:
<Gain>  
float
Range: -80 to 30
Increment: 0.01
*RST: 0

Example: 
BB:EVDO:TERM2:MODE TRAF
Enables terminal 2 to work in traffic mode.
BB:EVDO:TERM2:SUBT S2
Sets the physical layer subtype of terminal 2 to 2.
Sets the relative gain of packet 3 dB to -10 dB

Manual operation: See "Gain/db" on page 50

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:INFinite <Infinite>
(enabled for an access terminal working in traffic mode)

Enables or disables sending an unlimited number of packets.

The parameter "Number of Packets to be Send" depends on whether the parameter "Infinite Packets" is enabled or disabled. If "Infinite Packets" is enabled, there is no limit to the number of packets sent.

If "Infinite Packets" is disabled, the number of packets can be specified.

Note: Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.
Parameters:

**<Infinite>**

0 | 1 | OFF | ON

*RST:* ON

**Example:**

BB:EVDO:TERM2:MODE TRAF

Enables terminal 2 to work in traffic mode.

BB:EVDO:TERM2:SUBT S2

Sets physical layer subtype 2 for terminal 2.

BB:EVDO:TERM2:DCH:PACK3:INF OFF

Disables sending of unlimited number of packets.


Sets number of packets to be sent to 2000.

**Manual operation:** See "Infinite Packets" on page 51

**[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:MODulation?**

(enabled for physical layer subtype 2 and for an access terminal working in traffic mode)

Displays the modulation type per packet.

**Return values:**

**<Modulation>**

<table>
<thead>
<tr>
<th>B4</th>
<th>Q4</th>
<th>Q2</th>
<th>Q4Q2</th>
<th>E4E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>B4</td>
<td>Q4</td>
<td>Q2</td>
<td>Q4Q2</td>
<td>E4E2</td>
</tr>
</tbody>
</table>

**Example:**

BB:EVDO:TERM2:DCH:PACK3:MOD?

queries the modulation for packet 3 of terminal 2.

**Usage:** Query only

**Manual operation:** See "Modulation" on page 52

**[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:PSIZe <PSize>**

(enabled for an access terminal working in traffic mode)
Sets the Payload Size in bits for the selected packet.

**Note:** Configuration of Packet 2 and Packet 3 transmitted on the second and the third subframe, is only enabled for physical layer subtype 2.

**Parameters:**

*<Psize>*

**Example:**

BB:EVDO:TERM2:MODE TRAF

*BB:EVDO:TERM2:SUBT S2*

**Manual operation:** See "Payload Size/bits" on page 51

**[:SOURce<hw>]:BB:EVDO:TERminal<st>:DCHannel:PACKet<ch>:STATe <State>**

For an access terminal working in traffic mode, enables or disables the state of the packets.

**Parameters:**

*<State>*

**Example:**

BB:EVDO:TERM2:MODE TRAF

**Manual operation:** See "State" on page 49


(enabled for physical layer subtype 2 and for an access terminal working in traffic mode)

Sets the number of subpackets to be sent.

**Parameters:**

*<Count>*

integer

**Range:** 1 to 4

*RST: 1*
Example:  
BB:EVDO:TERM2:MODE TRAF  
Enables terminal 2 to work in traffic mode. 
BB:EVDO:TERM2:SUBT S2  
Sets physical layer subtype 2 for terminal 2. 
Sets the number of subpackets to 4, i.e. subpacket 0, 1, 2 and 3 of a packet is sent in a subframe each (with two subframes interleaving between). Afterward the next packet is started. This is to simulate a situation where three times NAK has been received from the base station with an ACK after the fourth subpacket.

Manual operation:  See "Subpackets" on page 51

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:STATe <State>  
(enabled for an access terminal working in access mode)  
Enables or disables the state of the Data Channel.

Parameters:  
<State>  
0 | 1 | OFF | ON  
*RST: OFF

Example:  
BB:EVDO:TERM2:MODE ACC  
enables terminal 2 to work in access mode. 
BB:EVDO:TERM2:DCH:STAT OFF  
disables data channel for terminal 2.

Manual operation:  See "State" on page 54

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DQSPreading <DqSpreading>  
Disables the quadrature spreading (complex multiply) with PN sequences and long code.

Parameters:  
<DqSpreading>  
0 | 1 | OFF | ON  
*RST: OFF

Example:  
BB:EVDO:TERM2:DQSP ON  
enables using quadrature spreading with PN sequence and long code.

Manual operation:  See "Disable Quadrature Spreading" on page 42

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:COVer <Cover>  
(enabled for an access terminal working in traffic mode)  
Selects the Data Rate Control (DRC) Channel Walsh cover.
Parameters:
<Cover> integer
Range: 0 to 7
*RST: 7

Example: BB:EVDO:TERM2:DRCC:COV 1
Sets the DRC cover to 1.

Manual operation: See "Cover" on page 47

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DRCCChannel:GAIN <Gain>
(enabled for an access terminal working in traffic mode)
Sets the gain of the Data Rate Control (DRC) channel relative to the pilot channel power.

Parameters:
<Gain> float
Range: -80 dB to 10 dB
Increment: -
*RST: 0 dB

Example: BB:EVDO:TERM2:DRCC:GAIN 10
sets the relative gain for DRC to 10 dB.

Manual operation: See "Relative Gain" on page 46

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DRCCChannel:GATing[:STATe] <State>
(enabled for an access terminal working in traffic mode)
Activates or deactivates the Data Rate Control (DRC) Channel gating.
If gating is active, each value of the DRC channel is transmitted for one slot followed by DRCLenght-1 empty slots.
With deactivated gating, each DRC value is repeated for DRC length slots.

Parameters:
<State> 0 | 1 | OFF | ON
*RST: ON

Example: BB:EVDO:TERM2:DRCC:GAT:STAT OFF
deactivates DRC gating.

Manual operation: See "Gating Active" on page 47

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DRCCChannel:LENGth <Length>
(enabled for an access terminal working in traffic mode)
Specifies the transmission duration of the Data Rate Control (DRC) channel in slots.
Remote-Control Commands

Configure Access Terminal Commands

Parameters:

<Length>  DL1 | DL2 | DL4 | DL8

*RST:  DL1

Example:  BB:EVDO:TERM2:DRCC:LENG DL2
Sets the transmission duration of DRC to two slots.

Manual operation:  See "Length" on page 47

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:STATe <State>

(enabled for an access terminal working in traffic mode)
Enables or disables the state of the Data Rate Control (DRC) channel.

Parameters:

<State>  0 | 1 | OFF | ON

*RST:  ON

Example:  BB:EVDO:TERM2:DRCC:STAT OFF
deactivates DRC channel.

Manual operation:  See "State" on page 46

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCChannel:VALues <Values>

(enabled for an access terminal working in traffic mode)
Specifies the pattern transmitted on the Data Rate Control (DRC) Channel. The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. Each specified value is used for DRC length slots.

Parameters:

<Values>  integer

*RST:  #H0

Example:  BB:EVDO:TERM2:DRCC:VAL #H7,4
sets transmitted pattern on DRC to #H7,4.

Manual operation:  See "Values (hex)" on page 47

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DSCChannel:GAIN <Gain>

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)
Sets the gain of the Data Source Control (DSC) channel relative to the pilot channel power.
Parameters:

<Gain> float
- Range: -80 dB to 10 dB
- Increment: *
- RST: 0 dB

Example: 
BB:EVDO:TERM2:DSCC:GAIN 10
sets the relative gain for DSC to 10 dB.

Manual operation: See "Relative Gain" on page 45

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DSCChannel:LENGth <Length>

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)

Specifies the transmission duration of the Data Source Control (DSC) channel in slots.

Parameters:

<Length> integer
- Range: 8 to 256
- Increment: *
- RST: 8

Example: 
BB:EVDO:TERM2:DSCC:LEN 16
sets the transmission duration of DSC to 16 slots.

Manual operation: See "Length" on page 46

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DSCChannel:STATe <State>

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)

Enables or disables the state of the Data Source Control (DSC) channel.

Parameters:

<State> 0 | 1 | OFF | ON
- RST: ON

Example: 
BB:EVDO:TERM2:DSCC:STAT OFF
deactivates DSC channel.

Manual operation: See "State" on page 45

[:SOURce<hw>]:BB:EVDO:TERminal<st>:DSCChannel:VALues <Values>

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)

Specifies the pattern transmitted on the Data Source Control (DSC) Channel.

The sequence starts at frame 0 and slot 0 and is repeated with the length of the pattern. Each specified value is transmitted for DSC length slots.
Configure Access Terminal Commands

**Parameters:**

*Values* integer
*RST: 0*

**Example:**

```
BB:EVDO:TERM2:DSCC:VAL #H147,12
```
sets transmitted pattern on DSC to #H147,12.

**Manual operation:** See "Values (OCT)" on page 46

### [:SOURce<hw>]:BB:EVDO:TERMinal<st>:IMASk <IMask>

Sets the long code mask of the I channel.

**Parameters:**

*IMask* 44 bits
*RST: #H00000000000

**Example:**

```
BB:EVDO:TERM2:IMAS #H2FFFFFFF,42
```
sets the long code mask for I channel to #H2FFFFFFF,42.

**Manual operation:** See "Long Code Mask I (hex)" on page 42

### [:SOURce<hw>]:BB:EVDO:TERMinal<st>:MODE <Mode>

Sets the mode (Traffic or Access) of the selected access terminal.

**Parameters:**

*Mode* ACCESS | TRAFFIC
*RST: TRAFFIC

**Example:**

```
BB:EVDO:TERM2:MODE ACC
```
sets the mode of terminal 2 to access.

**Manual operation:** See "Mode" on page 42

### [:SOURce<hw>]:BB:EVDO:TERMinal<st>:PCHannel:GAIN <Gain>

Sets the gain of the pilot channel.

Gains of other channels are relative to the Pilot Channel power.

This setting is used to distinguish the power between access terminals, when more than one access terminal is active.

**Parameters:**

*Gain* float
*Range: -80 to 10 dB*
*Increment: 0.01*
*RST: 0 dB

**Example:**

```
BB:EVDO:TERM2:PCH:GAIN 10
```
sets the gain of pilot channel to 10 dB.

**Manual operation:** See "Gain" on page 43
[:SOURce<hw>]:BB:EVDO:TERMINal<st>:PCHannel:STATe?

Displays the state of the pilot channel.

**Note:** The pilot channel is always switched on.

**Return values:**

<table>
<thead>
<tr>
<th>&lt;State&gt;</th>
<th>0</th>
<th>1</th>
<th>OFF</th>
<th>ON</th>
</tr>
</thead>
</table>

**Example:**

BB:EVDO:TERM2:PCH:STAT?

queries the state of the pilot channel.

**Usage:** Query only

**Manual operation:** See " State " on page 43

[:SOURce<hw>]:BB:EVDO:TERMINal<st>:PLENgth <PLength>

(enabled for access terminal working in access mode)

Specifies the length of the preamble in frames (16 slots each) of the access probe.

**Parameters:**

<table>
<thead>
<tr>
<th>&lt;PLength&gt;</th>
<th>integer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range:</td>
<td>1 to 7</td>
</tr>
<tr>
<td>*RST:</td>
<td>1</td>
</tr>
</tbody>
</table>

**Example:**

BB:EVDO:TERM2:PLEN 7

Sets the preamble length to seven frames.

**Manual operation:** See " Preamble Length " on page 43

[:SOURce<hw>]:BB:EVDO:TERMINal<st>:QMASK <QMask>

Sets the long code mask of the Q channel.

**Parameters:**

| <QMask> | 44 bits |

| *RST: | #H00000000000 |

**Example:**

BB:EVDO:TERM2:IMAS #H3FFFFFFFFFFF,42

sets the long code mask for I channel to #H3FFFFFFFFFFF,42.

**Manual operation:** See " Long Code Mask Q (hex) " on page 42

[:SOURce<hw>]:BB:EVDO:TERMINal<st>:RRIChannel:GAIN <Gain>

(enabled for an access terminal working in traffic mode)

Sets the gain of the Reverse Rate Indicator (RRI) channel relative to the pilot channel power.
Parameters:

**<Gain>**
- **Type:** float
- **Range:** -80 to 10 dB
- **Increment:** 0.01
- **RST:** 0 dB

**Example:**
```
BB:EVDO:TERM2:RRIC:GAIN 10
```
sets the gain of pilot channel to 10 dB.

**Manual operation:** See "Relative Gain" on page 45

\[[:SOURce<hw>:BB:EVDO:TERminal<st>:RRIChannel:STATe <State>\]

(enabled for an access terminal working in traffic mode)

Enables or disables the state of the Reverse Rate Indicator (RRI) channel.

**Parameters:**

**<State>**
- 0 | 1 | OFF | ON
- **RST:** ON

**Example:**
```
BB:EVDO:TERM2:RRIC:STAT OFF
```
Disables the RRI channel.

**Manual operation:** See "State" on page 45

\[[:SOURce<hw>:BB:EVDO:TERminal<st>:STATe <State>\]

(enabled for an access terminal working in traffic mode)

Enables or disables the state of the Reverse Rate Indicator (RRI) channel.

**Parameters:**

**<State>**
- 0 | 1 | OFF | ON
- **RST:** ON (access terminal 1)

**Example:**
```
BB:EVDO:TERM2:RRIC:STAT OFF
```
Disables the RRI channel.

**Manual operation:** See "State" on page 42

\[[:SOURce<hw>:BB:EVDO:TERminal<st>:SUBType <Subtype>\]

Selects the physical layer subtype for the selected access terminal.

**Parameters:**

**<Subtype>**
- S1 | S2
- **RST:** 2

**Example:**
```
BB:EVDO:TERM2:SUBT S2
```
sets the physical layer subtype 2.

**Manual operation:** See "Physical Layer Subtype" on page 42
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<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:APChannel:PAYLoad:MINimum</td>
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<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:DSCChannel:LENGTH</td>
<td>113</td>
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<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:DSCChannel:STATE</td>
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<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:PChannel:GAIN</td>
<td>114</td>
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<tr>
<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:PChannel:STATE</td>
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<tr>
<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:QMASK</td>
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<td>[:SOURce&lt;hw&gt;]:BB:EVDO:TERminal&lt;st&gt;:RRIChannel:GAIN</td>
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