

R&S® SMW-K47/-K87

1xEV-DO Rev. A, Rev. B

User Manual



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ROHDE & SCHWARZ

Test & Measurement

User Manual

This document describes the following software options:

- R&S®SMW-K47/-K87
1413.3932.xx, 1413.6519.xx

This manual describes firmware version FW 3.20.324.xx and later of the R&S®SMW200A.

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The following abbreviations are used throughout this manual: R&S®SMW200A is abbreviated as R&S SMW, R&S®WinIQSIM2™ is abbreviated as R&S WinIQSIM2; the license types 02/03/07/11/13/16/12 are abbreviated as xx.

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1 Preface

1.1 Documentation Overview

The user documentation for the R&S SMW consists of the following parts:

- Getting Started printed manual
- Online Help system on the instrument, incl. Tutorials
- Documentation CD-ROM with:
 - Getting Started
 - Online help system (Web Help and *.chm) as a standalone help
 - User Manuals for base unit and options
 - Service manual
 - Data sheet and product brochure
 - Links to useful sites on the Rohde & Schwarz internet

Online Help

The Online Help is embedded in the software. It offers quick, context-sensitive access to the complete information needed for operation and programming. The online help contains help on operating the R&S SMW and all available options.

Getting Started

The Getting Started is delivered with the instrument in printed form and in PDF format on the documentation CD. It provides the information needed to set up and start working with the instrument. Basic operations and typical signal generation examples are described. Safety information is also included.

This manual is available in several languages. You can download these documents from the Rohde & Schwarz website, on the R&S SMW product page at <http://www.rohde-schwarz.com/product/SMW200A.html> > Downloads > Manuals.

User Manual

User manuals are provided for the base unit and each additional (software) option.

The User Manual for the base unit is a supplement to the Getting Started manual and provides basic information on operating the R&S SMW in general. In this manual, all instrument functions are described in detail. Furthermore, it provides a complete description of the remote control commands with programming examples. An introduction to remote control is provided, as well as information on maintenance, instrument interfaces and troubleshooting.

In the user manuals for the individual software options, the specific instrument functions of this option are described in detail. For additional information on default settings and parameters, refer to the data sheets. Basic information on operating the R&S SMW is not included in these user manuals.

The user manuals are available in PDF format - in printable form - on the Documentation CD-ROM delivered with the instrument.

All user manuals are also available for download from the Rohde & Schwarz website, on the R&S SMW product page at <http://www.rohde-schwarz.com/product/SMW200A.html> > Downloads > Manuals.

Service Manual

The service manual is available in PDF format on the CD delivered with the instrument. It describes how to check compliance with rated specifications, instrument function, repair, troubleshooting and fault elimination. It contains all information required for repairing the R&S SMW by replacing modules.

Release Notes

The release notes describe the installation of the firmware, new and modified functions, eliminated problems, and last minute changes to the documentation. The corresponding firmware version is indicated on the title page of the release notes.

The latest versions are available for download from the R&S SMW product page, at <http://www.rohde-schwarz.com/product/SMW200A.html> > Downloads > Firmware.

Web Help

The web help provides online access to the complete information on operating the R&S SMW and all available options, without downloading. The content of the Web Help corresponds to the user manuals for the latest product version.

The web help is available from the R&S SMW product page, at <http://www.rohde-schwarz.com/product/SMW200A.html> > Downloads > Web Help.

Tutorials

A set of tutorials is embedded in the software. The tutorials offer guided examples and demonstrations on operating the R&S SMW.

Application Notes

Application notes, application cards, white papers and educational notes are further publications that provide more comprehensive descriptions and background information.

A subset of application notes is provided on the documentation CD-ROM delivered with the instrument.

The latest versions are available for download from the Rohde & Schwarz website, at <http://www.rohde-schwarz.com/apnotes>.

1.2 Conventions Used in the Documentation

1.2.1 Typographical Conventions

The following text markers are used throughout this documentation:

Convention	Description
"Graphical user interface elements"	All names of graphical user interface elements on the screen, such as dialog boxes, menus, options, buttons, and softkeys are enclosed by quotation marks.
KEYS	Key names are written in capital letters.
File names, commands, program code	File names, commands, coding samples and screen output are distinguished by their font.
<i>Input</i>	Input to be entered by the user is displayed in italics.
Links	Links that you can click are displayed in blue font.
"References"	References to other parts of the documentation are enclosed by quotation marks.

1.2.2 Conventions for Procedure Descriptions

When describing how to operate the instrument, several alternative methods may be available to perform the same task. In this case, the procedure using the touchscreen is described. Any elements that can be activated by touching can also be clicked using an additionally connected mouse. The alternative procedure using the keys on the instrument or the on-screen keyboard is only described if it deviates from the standard operating procedures.

The term "select" may refer to any of the described methods, i.e. using a finger on the touchscreen, a mouse pointer in the display, or a key on the instrument or on a keyboard.

1.2.3 Notes on Screenshots

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

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.

2 Welcome to the 1xEV-DO Digital Standard

The R&S SMW-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 SMW simulates 1xEV-DO signal at the physical layer. In forward link (downlink) mode the signal is generated in realtime. 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 SMW 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 4 traffic channels or 4 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, PreambleLength, DRCLength etc.
- 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 SMW user manual. The latest version is available for download at the [product homepage](#).

Installation

You can find detailed installation instructions in the delivery of the option or in the R&S SMW 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 SMW, 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, this includes:

- Managing settings and data lists, i.e. storing and loading settings, creating and accessing data lists, accessing files in a particular directory, etc.
- Information on regular trigger, marker and clock signals as well as 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 SMW user manual.

3 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

Parameter	Value
Chip rate	1.2288 Mcps
Channel types	Forward link: • Pilot Channel • Forward Traffic Channel (Rev. A) • Reverse Activity • DRCLock • Reverse Power Control • ARQ (Rev. A) • Control Channel Reverse link, access mode: • Pilot Channel • Data Channel Reverse link, traffic mode: • Pilot Channel • Auxiliary Pilot Channel (Rev. A) • Reverse Rate Indicator • Data Rate Control • Data Source Control (Rev. A) • ACK Channel • Data Channel
Generation mode	Forward link: • Realtime mode Reverse link: • Arbitrary waveform mode • Multicarrier operation up to 16 concurrent carriers supported requires option R&S SMW-K87
Data rates	Forward link: • 38.4 .. 2457.6 kbps (Rev. 0) • 4.8 .. 3072 kbps (Rev. A) • 4.8 .. 4915 kbps (Rev. B) requires option R&S SMW-K87 Reverse link: • 9.6 .. 153.6 kbps (Rev. 0) • 4.8 .. 1843.2 kbps (Rev. A)
Frame length	26.67 ms (1 frame = 16 slots)
Slot duration	1.67 ms (1 slot = 2048 PN chips)
PN offset	0 .. 511
Channel coding	All channel coding modes defined in the standard (channel encoding, block interleaving, repetition, modulation, orthogonal spreading by Walsh function)
Modulation	BPSK, QPSK, 8PSK, 16QAM, 64QAM requires option R&S SMW-K87

Parameter	Value
Multi-code modulation	B4, Q2, Q4, Q4Q2, E4E2
Long Code Mask	Separate Long Code Masks for I and Q channel. The Long Code Generator is reloaded at every PN rollover with 0x24B91BFD3A8.
Walsh covers	Different Walsh functions for the different channels

3.1 Traffic Scheduling Process

In the 1xEV-DO system, the Forward Link is govern 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 (3 slots skipped after 1 slot sent).
- Packets for a user can be transmitted on 1-4 interlaces (there are a total of 4 interlaces in the 1xEV-DO system). Packets on the different interlaces will be duplicates of those 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 lock-out period of three slots is created. No additional packets from the same source may be scheduled before the three slot period expires.
- A control channel packet has priority over all other traffic channels. This may exclude 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 will be transmitted.

4 1xEV-DO Configuration and Settings

- To access the 1xEV-DO settings, select "Baseband > 1xEV-DO".

The remote commands required to define these settings are described in [chapter 5](#), "Remote-Control Commands", on page 59.

4.1 General Settings

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

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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 65

Set To Default

Calls the default settings. The values of the main parameters are listed in the following table.

Parameter	Value
State	Not affected by "Set to default"
Link Direction	Downlink/ Forward
PN Offset	0
System Time	0
Predefined Settings	User Defined
Multicarrier State	off
Filter	CdmaOne + Equalizer
Clipping	Off
Trigger	Auto
Clock	Internal

Remote command:

[:SOURce<hw>] :BB:EVDO:PRESet on page 63

Save/Recall

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

The file name and the directory it is stored in are user-definable; the file extension is however predefined.

See also, chapter "File and Data Management" in the R&S SMW User Manual.

Remote command:

[:SOURce<hw>] :BB:EVDO:SETTing:CATalog? on page 64

[:SOURce<hw>] :BB:EVDO:SETTing:LOAD on page 64

[:SOURce<hw>] :BB:EVDO:SETTing:STORe on page 64

[:SOURce<hw>] :BB:EVDO:SETTing:DELeTe on page 64

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 file name 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:WAVEform:CREate on page 66

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 66

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 63

PN Offset

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

Remote command:

[:SOURce<hw>] :BB:EVDO:PNOffset on page 63

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 66

Multicarrier Configuration

Provides access to the "Multicarrier Configuration" dialog, see [chapter 4.7, "Multi Carrier Configuration Settings"](#), on page 36.

Access Network Settings

In downlink direction, provides an access to the "Access Network Settings" dialog, see [chapter 4.8, "Access Network Settings"](#), on page 38.

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

This tab provides an 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 an 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 SMW user manual.

1xEV-DO A

General **Trigger In Retrig** Marker Clock Internal Traffic Channels

Mode: Retrigger

Source: External Local Trigger

Sync. Output To Ext. Trigger: ☒ On

External Delay: 0.00 Chips

External Inhibit: 0 Chips

Local Connector Settings...

Global Connector Settings...



Routing and Enabling a Trigger

The provided trigger signals are not dedicated to a particular connector but can be mapped to one or more globally shared USER or local T/M/(C) connectors.

Use the [Local and Global Connector Settings](#) to configure the signal mapping as well as 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, i.e. select the "Trigger In > Mode" and "Trigger In > Source"
- Define the connector, USER or T/M/(C), the selected signal is provided at, i.e. configure the [Local and Global Connector Settings](#).

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Trigger Settings Common to All Basebands

To enable simultaneous signal generation in all basebands, the R&S SMW couples the trigger settings in the available basebands in any instrument's configuration involving signal routing with signal addition (e.g. MIMO configuration, routing and summing of basebands and/or streams).

The icon  indicates that common trigger settings are applied.

You can access and configure the common trigger source and trigger mode settings in any of the basebands. An arm or a restart trigger event applies to all basebands, too. You can still apply different delay to each of the triggers individually.

Trigger Mode ← Trigger Settings Common to All Basebands

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

For more information, refer to chapter "Basics" in the R&S SMW user manual.

- "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 with 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.

An "Arm" stops signal generation. A subsequent trigger event (internal with or external) 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 72

Signal Duration Unit ← Trigger Settings Common to All Basebands

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 74

Trigger Signal Duration ← Trigger Settings Common to All Basebands

Enters the length of the signal sequence to be output in the "Single" trigger mode.

Use this parameter to deliberately output part of the signal, 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 ← Trigger Settings Common to All Basebands

For 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 73

Arm ← Trigger Settings Common to All Basebands

Stops the signal generation until subsequent trigger event occurs.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TRIGger:ARM:EXECute` on page 72

Execute Trigger ← Trigger Settings Common to All Basebands

For internal trigger source, executes trigger manually.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TRIGger:EXECute` on page 72

Trigger Source ← Trigger Settings Common to All Basebands

The following sources of the trigger signal are available:

- "Internal"
The trigger event is executed manually by the "Execute Trigger".
- "Internal (Baseband A/B)"
The trigger event is provided by the trigger signal from the other basebands.
If common trigger settings are applied, this trigger source is disabled.
- "External Global Trigger 1 / 2"
The trigger event is the active edge of an external trigger signal provided and configured at the global USER connectors.
- "External Global Clock 1 / 2"
The trigger event is the active edge of an external global clock signal provided and configured at the global USER connectors.
- "External Local Trigger"
The trigger event is the active edge of an external trigger signal provided and configured at the local T/M/(C) connector.
With coupled trigger settings, the signal has to be provided at the T/M/C 1/2/3 connectors.
- "External Local Clock"
The trigger event is the active edge of an external local clock signal provided and configured at the local T/M/C connector.
With coupled trigger settings, the signal has to be provided at the T/M/C 1 connector.

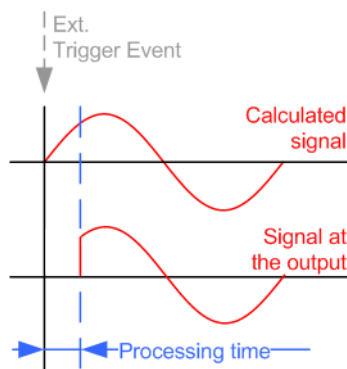
Remote command:

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

Sync. Output to External Trigger ← Trigger Settings Common to All Basebands

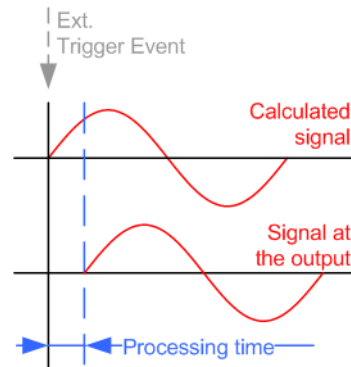
For an external trigger signal, enables/disables the output of a signal synchronous to the external trigger event.

- "On" Corresponds to the default state of this parameter.
The signal calculation starts simultaneously with the external trigger event but because of the instrument's processing time 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 and starts with sample 0, i.e. the complete signal is output. This mode is recommended for triggering of short signal sequences with signal duration comparable with the processing time of the instrument.



Remote command:

`[ :SOURce<hw> ] :BB:EVD0:TRIGger:EXTeRnal:SYNChronize:OUTPut`
on page 72

External Trigger Inhibit ← Trigger Settings Common to All Basebands

For external trigger signal or trigger signal from the other path, sets the duration a new trigger event subsequent to triggering is suppressed. In "Retrigger" mode for example, a new trigger event will 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 SMW User Manual.

Remote command:

`[ :SOURce<hw> ] :BB:EVD0:TRIGger[:EXTeRnal]:INHibit` on page 76
`[ :SOURce<hw> ] :BB:EVD0:TRIGger:OBASeband:INHibit` on page 73

Trigger Delay

Delays the trigger event of the signal from:

- the external trigger source
- the other path
- the other basebands (internal trigger), if common trigger settings are used.

Use this setting to:

- synchronize the instrument with the device under test (DUT) or other external devices
- postpone the signal generation start in the basebands compared to each other

For more information, see chapter "Basics on ..." in the R&S SMW User Manual.

Remote command:

`[ :SOURce<hw> ] :BB:EVD0:TRIGger[:EXTeRnal]:DELay` on page 75
`[ :SOURce<hw> ] :BB:EVD0:TRIGger:OBASeband:DELay` on page 73

4.3 Marker Settings

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



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 SMW user manual.

1xEV-DO A

General **Trigger In** **Marker** Clock Traffic Channels

Marker Mode

Marker 1 Slot (1.67 ms)

Marker 2 Slot (1.67 ms)

Marker 3 Slot (1.67 ms)

Marker Delay

Marker 1 0.000 Chips

Marker 2 0.000 Chips

Marker 3 0.000 Chips

Current Range Without Recalculation

0 2000 Chips

0 2000 Chips

0 2000 Chips

Fix Marker Delay To Current Range ☐

Local Connector Settings...

Global Connector Settings...



Routing and Enabling a Marker

The provided marker signals are not dedicated to a particular connector but can be mapped to one or more globally shared USER or local T/M/(C) 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, USER or T/M/(C), the selected signal is output at, i.e. configure the [Local and Global Connector Settings](#).

Marker Mode	21
Marker x Delay	22

Marker Mode

Marker configuration for up to 3 marker channels. 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 only)
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 or not an ARB component is actually used.

"ON/OFF Period"
A regular marker signal that is defined by an ON/OFF ratio is generated. A period lasts one ON and OFF cycle.
The "ON Time" and "OFF Time" are each expressed as a number of samples and are set in an input field which opens when ON/OFF ratio is selected.



Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TRIGger:OUTPut<ch>:ONTime` on page 78

`[ :SOURCE<hw> ] :BB:EVDO:TRIGger:OUTPut<ch>:OFFTime` on page 78

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

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TRIGger:OUTPut<ch>:PERiod` on page 78

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TRIGger:OUTPut<ch>:MODE` on page 77

Marker x Delay

Defines the delay between the marker signal at the marker outputs relative to the signal generation start.

"Marker x" For the corresponding marker, sets the delay as a number of symbols.

Remote command:

`[ :SOURCE<hw> ] :BB:EVD0:TRIGger:OUTPut<ch>:DElay` on page 76

"Current Range without Recalculation"

Displays the dynamic range within which the delay of the marker signals can be set without restarting the marker and the signal.

Move the setting mark to define the delay.

Remote command:

`[ :SOURCE<hw> ] :BB:EVD0:TRIGger:OUTPut<ch>:DElay:MINimum?`

on page 77

`[ :SOURCE<hw> ] :BB:EVD0:TRIGger:OUTPut<ch>:DElay:MAXimum?`

on page 77

"Fix marker delay to current range"

Restricts the marker delay setting range to the dynamic range.

Remote command:

`[ :SOURCE<hw> ] :BB:EVD0:TRIGger:OUTPut:DElay:FIXed` on page 76

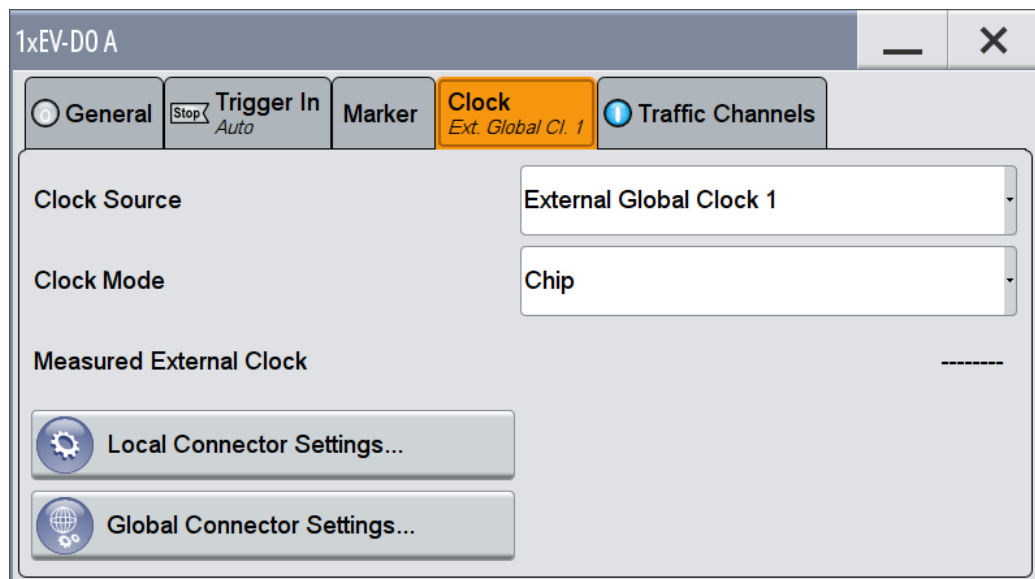
4.4 Clock Settings

This tab provides an 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 SMW user manual.



Defining the Clock

The provided clock signals are not dedicated to a particular connector but can be mapped to one or more globally shared USER and the two local T/M/C connectors.

Use the [Local and Global Connector Settings](#) to configure the signal mapping as well as 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, i.e. select the "Clock > Source"
- Define the connector, USER or T/M/C, the selected signal is provided at, i.e. configure the [Local and Global Connector Settings](#).

Clock Source	23
Clock Mode	24
Chip Clock Multiplier	24
Measured External Clock	24

Clock Source

Selects the clock source.

- "Internal"
The instrument uses its internal clock reference.
- "External Global Clock 1/2"
The instrument expects an external clock reference at the global USER connector, as configured in the "Global Connector Settings" dialog.
- "External Local Clock"
The instrument expects an external clock reference at the local T/M/C connector.

Remote command:

[:SOURce<hw>] :BB:EVDO:CLOCK:SOURce on page 79

Clock Mode

Enters the type of externally supplied clock.

Remote command:

[:SOURce<hw>] :BB:EVDO:CLOCK:MODE on page 79

Chip Clock Multiplier

Enters the multiplication factor for clock type "Multiple".

Remote command:

[:SOURce<hw>] :BB:EVDO:CLOCK:MULTIplier on page 79

Measured External Clock

Provided for permanent monitoring of the enabled and externally supplied clock signal.

Remote command:

CLOCK:INPut:FREQuency?

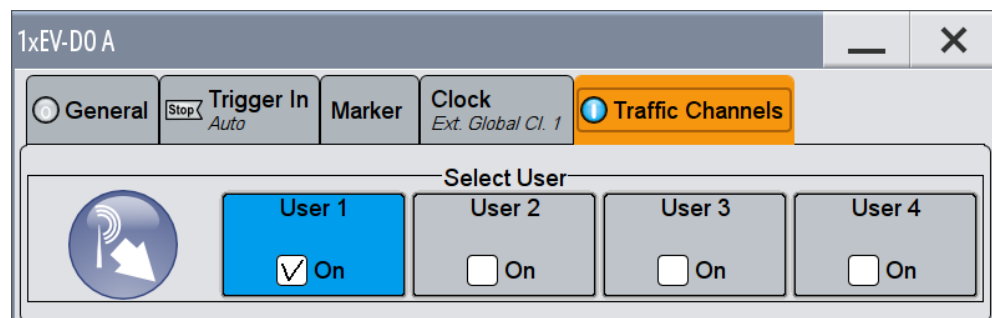
4.5 Local and Global Connector Settings

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

For more information, refer to the description R&S SMW User Manual, section "Local and Global Connectors".

4.6 Traffic Channel Settings

1. To access this dialog, select "Baseband > 1xEV-DO > Link Direction > Downlink"
2. Select "Traffic Channels".



Four users are available.

3. To activate a user, set its state to "On", 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.

1xEV-DO A: Configure Traffic User 1

State Off ☒ On

Physical Layer Subtype 2

Number Of Packets To Send ☒ Infinite 65 536

Packet Start Offset 0

Rate Index 1

Packet Size 128

Rate 4.8 kbps

Slot Count 16

Data Pattern (hex) 0000 0000

MAC Index 6

MAC Level -7.00 dB

1xEV-DO A: Configure Traffic User 1

RPC (MAC)

RPC Mode: Hold

RPC Pattern

	Bit	Count
Zone 0	0	1
Zone 1	0	1
Zone 2	0	1
Zone 3	0	1

DRC Lock (MAC)

DRC Lock State: Off ☐ On

DRC Lock Period: 4

DRC Lock Length: 1

Frame Offset: 0

ARQ (MAC)

H-ARQ Mode: Off

The dialog comprises the settings of the traffic channel and of the forward MAC channel settings, such as Reverse Power Control (RPC) and DRCLock.

State (User)

Enables or disables the selected user.

If the user is enabled, the proper MAC Index will be placed within the MAC channel and packets may be sent to the user. If disabled, the MAC Index will not be present within the MAC channel and packets may not 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 96

Physical Layer Subtype (User)

Displays the physical layer subtype selected in the menu "Access Network Settings".

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:ANETwork:SUBType` on page 84

Number of Packets to Send

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 will be used at the end of transmission of the current packet. If a value of zero is specified, the transmission to the user will be stopped at the end of the current packet.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:USER<st>:PACKet:INFinite` on page 91

`[ :SOURce<hw> ] :BB:EVDO:USER<st>:PACKet:COUNt` on page 91

Infinite

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:

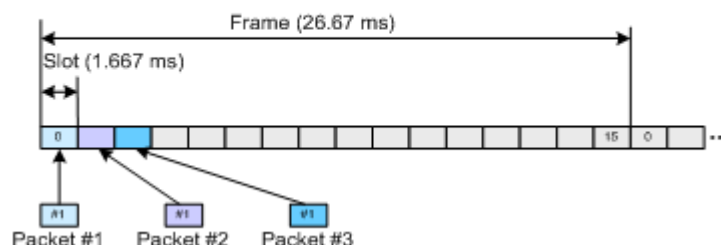
`[ :SOURce<hw> ] :BB:EVDO:USER<st>:PACKet:INFinite` on page 91

Packet Start Offset

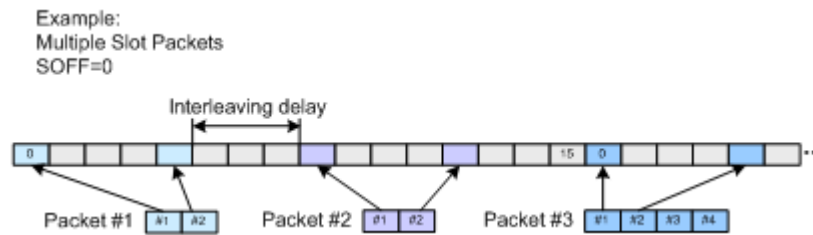
Sets the minimum number of slots between the end of one packet and the beginning of the next.

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

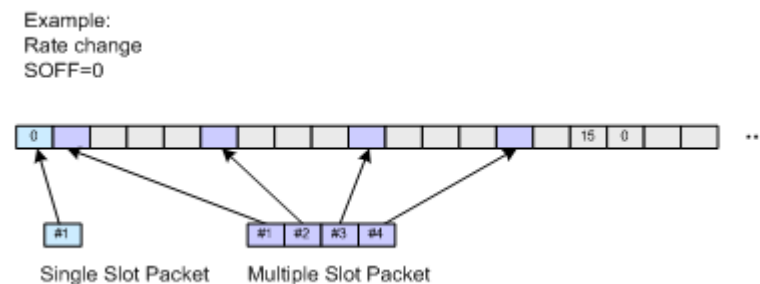
Example:
Single Slot Packets
SOFF=0



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.



Note: An offset value of zero with a rate change from a single slot packet to multiple slot packets will cause the first slot of the multiple slot packets to be transmitted in the slot immediately following the single slot packet.



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 92

Rate Index

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

Rate Index	Packet Size Index	Packet Size, bits	Data Rate, kbps	Slot count
1	0	1024	38.4	16
2	0	1024	76.8	8
3	0	1024	153.6	4
4	0	1024	307.2	2
5	0	2048	307.2	4
6	0	1024	614.4	1
7	0	2048	614.4	2
8	0	3072	921.6	2
9	0	2048	1228.8	1

Rate Index	Packet Size Index	Packet Size, bits	Data Rate, kbps	Slot count
10	0	4096	1228.8	2
11	0	3072	1843.2	1
12	0	4096	2457.6	1

For physical layer subtype 2 however, a combination of the parameters Rate Index and the parameter 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

Rate Index	Packet Size Index	Packet Size, bits	Data Rate, kbps	Slot count
1	3	128	4.8	16
1	2	256	9.6	16
1	1	512	19.2	16
1	0	1024	38.4	16
2	3	128	9.6	8
2	2	256	19.2	8
2	1	512	38.4	8
2	0	1024	76.8	8
3	3	128	19.2	4
3	2	256	38.4	4
3	1	512	76.8	4
3	0	1024	153.6	4
4	3	128	38.4	2
4	2	256	76.8	2
4	1	512	153.6	2
4	0	1024	307.2	2
5	2	512	76.8	4
5	1	1024	153.6	4
5	0	2048	307.2	4
6	3	128	76.8	1
6	2	256	153.6	1
6	1	512	307.2	1
6	0	1024	614.4	1
7	2	512	153.6	2
7	1	1024	307.2	2
7	0	2048	614.4	2

Rate Index	Packet Size Index	Packet Size, bits	Data Rate, kbps	Slot count
8	1	1024	307.2	2
8	0	3072	921.6	2
9	2	512	307.2	1
9	1	1024	614.4	1
9	0	2048	1228.8	1
10	0	4096	1228.8	2
11	1	1024	614.4	1
11	0	3072	1843.2	1
12	0	4096	2457.6	1
13	0	5120	1536	2
14	0	5120	3072	1

Table 4-3: Rate Index for Physical Layer Subtype 3 (requires the appropriate Rev. B option)

Rate Index	Packet Size Index	Packet Size, bits	Data Rate, kbps	Slot count
1	3	128	4.8	16
1	2	256	9.6	16
1	1	512	19.2	16
1	0	1024	38.4	16
2	3	128	9.6	8
2	2	256	19.2	8
2	1	512	38.4	8
2	0	1024	76.8	8
3	3	128	19.2	4
3	2	256	38.4	4
3	1	512	76.8	4
3	0	1024	153.6	4
4	3	128	38.4	2
4	2	256	76.8	2
4	1	512	153.6	2
4	0	1024	307.2	2
5	2	512	76.8	4
5	1	1024	153.6	4
5	0	2048	307.2	4
6	3	128	76.8	1

Rate Index	Packet Size Index	Packet Size, bits	Data Rate, kbps	Slot count
6	2	256	153.6	1
6	1	512	307.2	1
6	0	1024	614.4	1
7	2	512	153.6	2
7	1	1024	307.2	2
7	0	2048	614.4	2
8	1	1024	307.2	2
8	0	3072	921.6	2
9	2	512	307.2	1
9	1	1024	614.4	1
9	0	2048	1228.8	1
10	0	4096	1228.8	2
11	1	1024	614.4	1
11	0	3072	1843.2	1
12	0	4096	2457.6	1
13	0	5120	1536	2
14	0	5120	3072	1
15	0	1024	153.6	4
16	0	2048	307.2	4
17	0	3072	460.8	4
18	0	4096	614.4	4
19	0	5120	768	4
20	0	6144	921.6	4
21	0	6144	1843.2	2
22	0	6144	3686.4	1
23	0	7168	1075.2	4
24	0	7168	2150.4	2
25	0	7168	4300.8	1
26	0	8192	1228.8	4
27	0	8192	2457.6	2
28	0	8192	4915.2	1

Remote command:

[:SOURce<hw>] :BB:EVDO:USER<st>:RATE:INDEX on page 93

Packet Size

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 subtype 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.

Remote command:

[:SOURce<hw>] :BB:EVDO:USER<st>:PSIZE on page 92

Data Rate

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 93

Slot Count

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:

[:SOURce<hw>] :BB:EVDO:USER<st>:SCOUNT? on page 96

Data Pattern (hex)

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 87

MAC Index

Sets the MAC Index used for the selected user.

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

The values for the MAC Indexes for the 'OtherUsers' (see parameter [Other Users Count](#)) will be 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 90

MAC Level

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 90

Interleave Factor

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 4th slot is selected. For an interleave factor > 1, packets on multiple interleave slots will be sent, increasing the data throughput to the access terminal.

Remote command:

[:SOURCE<hw>] :BB:EVDO:USER<st>:IFACTor on page 89

RPC Mode

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 two 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 are 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 will be 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 94

RPC Range Count

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 94

RPC Pattern

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 95

[:SOURce<hw>] :BB:EVDO:USER<st>:RPC:ZONE<ch0>:COUNT on page 95

DRC Lock State

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

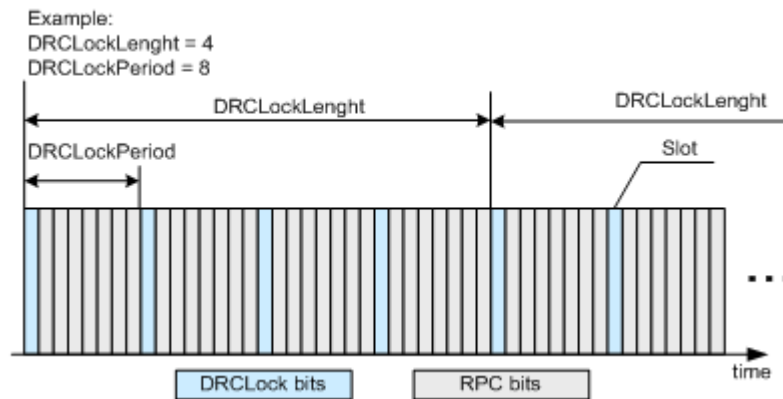
Note: Changes in the DRC Lock state are only considered at the interval defined by the parameter DRC Lock Length.

Remote command:

[:SOURce<hw>] :BB:EVDO:USER<st>:DRClock:STATe on page 89

DRC Lock 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 will disable the DRC Lock subchannel and the MAC RPC channel of the selected user will not be punctured with the DRC Lock subchannel.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:USER<st>:DRClock:PERiod` on page 88

DRC Lock Length

Sets the number of DRC (Data Rate Control) Lock Periods that the state of the DRC Lock for the selected user will be 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 88

Frame Offset

Sets the reverse link frame offset for the reverse link.

The frame offset is used to properly position the DRC Lock bit within the MAC channel.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:USER<st>:DRClock:OFFSet` on page 88

H-ARQ 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.

"Off" Disables transmission of the H-ARQ channel.

"ACK" The channel will be transmitted with all bits set to ACK.

"NAK" The channel will be transmitted with all bits set to NAK.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:USER<st>:HARQ:MODE` on page 89

4.7 Multi Carrier Configuration Settings



Multi Carrier Configuration requires option R&S SMW-K87

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

1xEV-DO A: Multicarrier Configuration (Downlink)

State Off ☒ On

Center Frequency 456.900 0 MHz

Band Class Band Class 11 (400 MHz European PAMR Band)

Carrier Delay 10 ns

	State	CDMA Channel Number	Center Frequency /MHz
1	On	1	460.000 0
2	On	10	460.225 0
3	Off	5	460.100 0
4	On	500	420.700 0
5	Off	100	462.475 0
6	Off	871	429.975 0
7	Off	1 536	489.000 0
8	On	1 700	493.100 0
9	Off	240	465.975 0

State.....	37
Center Frequency (band).....	37
Band Class.....	37

Carrier Delay.....	37
State.....	37
CDMA Channel Number.....	37
Center Frequency.....	38

State

Enables or disables multi carrier operation.

Remote command:

[:SOURce<hw>] :BB:EVDO:UP:MC:CARRier<ch>:STATe on page 85

[:SOURce<hw>] :BB:EVDO:DOWN:MC:CARRier<ch>:STATe on page 85

Center Frequency (band)

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

Remote command:

[:SOURce<hw>] :BB:EVDO:DOWN:MC:CFrequency? on page 85

[:SOURce<hw>] :BB:EVDO:UP:MC:CFrequency? on page 85

Band Class

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

Remote command:

[:SOURce<hw>] :BB:EVDO:UP:MC:BCLass on page 84

[:SOURce<hw>] :BB:EVDO:DOWN:MC:BCLass on page 84

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 taken into account.

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:

[:SOURce<hw>] :BB:EVDO:UP:MC:CDElay on page 85

[:SOURce<hw>] :BB:EVDO:DOWN:MC:CDElay on page 85

State

Switches the selected carrier on or off.

Remote command:

[:SOURce<hw>] :BB:EVDO:UP:MC:CARRier<ch>:STATe on page 85

[:SOURce<hw>] :BB:EVDO:DOWN:MC:CARRier<ch>:STATe on page 85

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 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 86

[:SOURce<hw>] :BB:EVDO:DOWN:MC:CARRier<ch>:CHANnel on page 86

Center Frequency

Sets the the center frequency of the carrier.

In some cases not all center frequencies in the range 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.

Remote command:

[:SOURce<hw>] :BB:EVDO:UP:MC:CARRier<ch>:FREQuency on page 86

[:SOURce<hw>] :BB:EVDO:DOWN:MC:CARRier<ch>:FREQuency on page 86

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)".

1xEV-DO A: Access Network Settings

Physical Layer Subtype: 2

Continuous Pilot Mode: ☒ On

Other Users Count: 1

Pilot Channel

State: Off ☒ On

Control Channel

State: Off ☒ On Rate: 38.4 kbps

Packet Start Offset: 0 Minimum Revision: 1

Maximum Revision: 1

Reverse Activity Bit (MAC)

State: Off ☒ On RAB Level: -7.00 dB

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 84

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 81

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:PCChannel:STATe?` on page 82

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 will have the highest priority for placement within the slots. The Sync Message will be updated constantly, even when the control channel is not enabled.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:CChannel:STATe` on page 81

Rate (Control Channel)

Sets the rate that the control channel messages are transmitted at.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:CChannel:RATE` on page 80

Packet Start Offset

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` on page 80

Minimum Revision

Sets the value of the minimum revision field within the control channel message.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:CChannel:REVision:MINimum`
on page 81

Maximum Revision

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 81

State (Reverse Activity Bit)

Activates or deactivates the reverse activity bit (RAB).

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:RAB:STATe` on page 83

RAB Level

Sets the power within the MAC block for the Reverse Activity Channel.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:RAB:LEVel` on page 83

RAB Length

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 82

RAB Offset

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:

- $\text{System Time mod RABLength} = \text{RABOffset}$,
where System Time is expressed in slots.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:RAB:OFFSet` on page 83

RAB MAC Index

For physical layer subtype 3 only sets the RAB MAC Index.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:RAB:MAC:INDeX` on page 83

Other Users Count

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

These additional users will never have a packet addressed to them, but are used to fill in the MAC channel code domain.

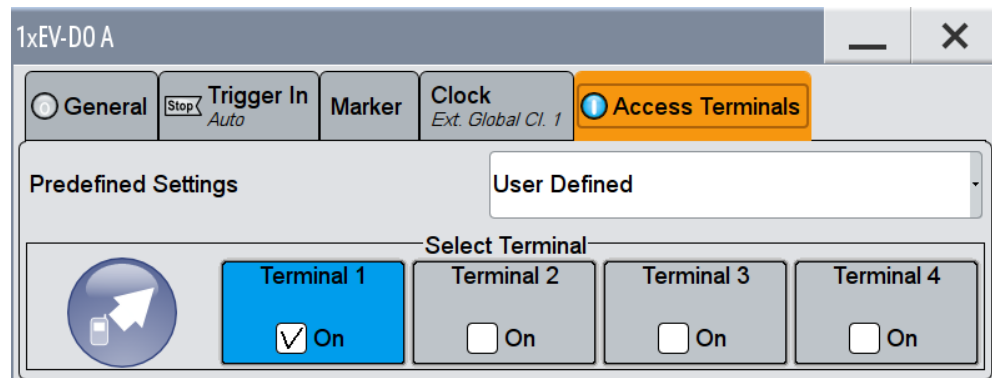
These Other Users are used to evenly distribute the excess power (beyond what is required by the "User 1..4" and RAB channels).

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:ANETwork:OUCount` on page 82

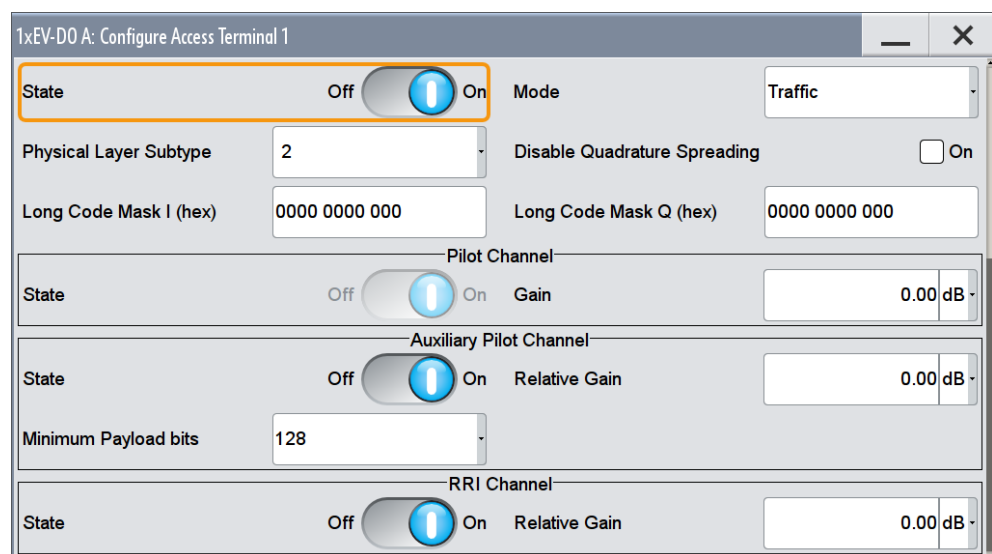
4.9 Access Terminal Settings

1. To access this dialog, 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.



1xEV-DO A: Configure Access Terminal 1

DSC Channel

State: Off ☒ On Relative Gain: 0.00 dB

Length: 8 Slots Values (oct): 0000 0000 0000 0000

DRC Channel

State: Off ☒ On Relative Gain: 0.00 dB

Length: 1 Values (hex): 0000 0000 0000 0000

Cover: 7 Gating Active: ☒ On

ACK Channel

State: Off ☒ On Relative Gain: 0.00 dB

Mode: BPSK Gating (bin): 0001

Values (bin): 01

Data Channel

	State	Gain /dB	Infinite Packets	Packets To Send	Sub-packets	Payload Size /bits	Mod	Data Rate /kbps	Chan Cod	Data Source	DList/Pattern	FCS
Packet 1	On	0.00	On	65 536	1	128	B4	6.40	On	PN 9		On

The dialog comprises the settings of the access terminal mode, of the data channel and configuration of the different channels, such as Pilot Channel, Auxiliary Pilot Channel, Reverse Rate Indicator (RRI) Channel, Data Source Control (DSC) Channel, Data Rate Control (DRC) Channel and ACK channel.

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

Physical Layer Subtype	Access Terminal Mode	Pilot Channel	Auxiliary Pilot Channel	RRI Channel	DSC Channel	DRC Channel	ACK Channel	Data Channel
0&1	Traffic	X	-	X	-	X	X	Packet 1
	Access	X	-	-	-	-	-	Packet 1
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 97

State (Access Terminal)

Enables or disables the selected access terminal.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:STATe` on page 117

Mode (Access Terminal)

Sets the mode (Traffic or Access) of the selected access terminal.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:MODE` on page 115

Physical Layer Subtype (Access Terminal)

Selects the physical layer subtype for the selected access terminal.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:SUBType` on page 117

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 111

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 115

Long Code Mask Q (hex)

Sets the long code mask of the Q channel.

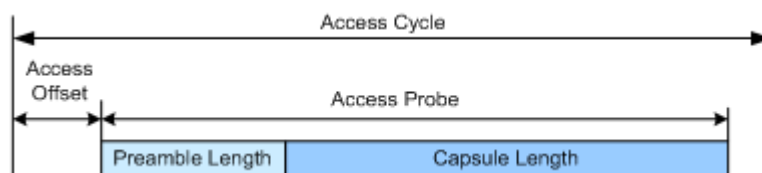
Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:QMASK` on page 116

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).



Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:PLENgtH` on page 116

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:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:ACYCLe:DURation` on page 100

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:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:ACYCLe:OFFSet` on page 101

State (Pilot Channel)

Displays the state of the pilot channel.

Note: The pilot channel is always switched on.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:PCHannel:STATe?` on page 116

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 115

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 102

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 101

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 102

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>:RRICChannel:STATe` on page 117

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>:RRICChannel:GAIN` on page 116

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 114

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 113

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 114

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 114

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 113

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 112

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 113

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 113

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 112

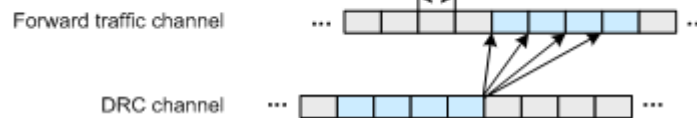
Gating Active (DRC Channel)

(enabled for access terminal working in traffic mode only)

Activates or deactivates the data rate control (DRC) Channel gating.

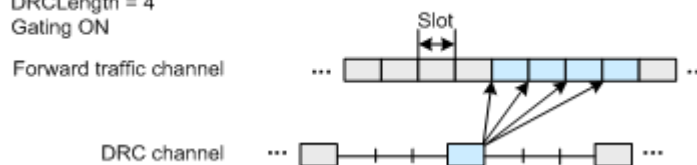
With deactivated gating, each DRC value is repeated for DRC length slots.

Example:
DRCLength = 4
Gating OFF



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



Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:DRCChannel:GATING[:STATE]`
on page 112

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 100

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 99

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: OKK modulation is only enabled for physical layer subtype 2.

Remote command:

`[ :SOURCE<hw> ] :BB:EVDO:TERMinal<st>:ACKChannel:MODE` on page 99

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.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:ACKChannel:GATing` on page 99

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 100

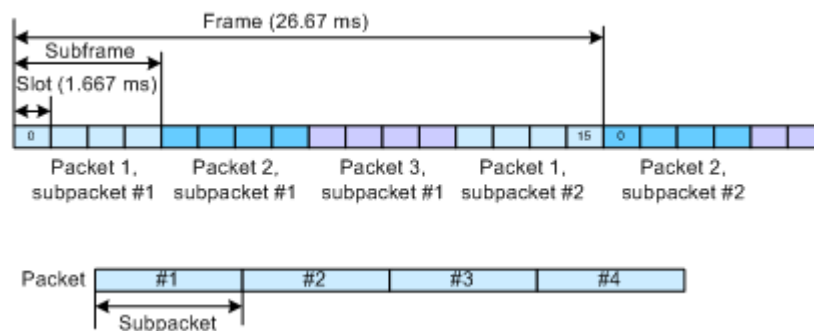
State (Packet)

(enabled for access terminal working in traffic mode only)

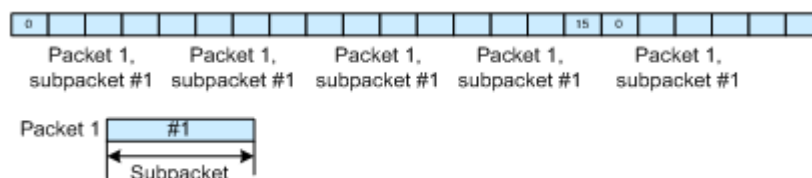
Enables or disables the state of the packet(s).

There are three configurable packets (Packet 1... 3) for physical layer subtype 2.

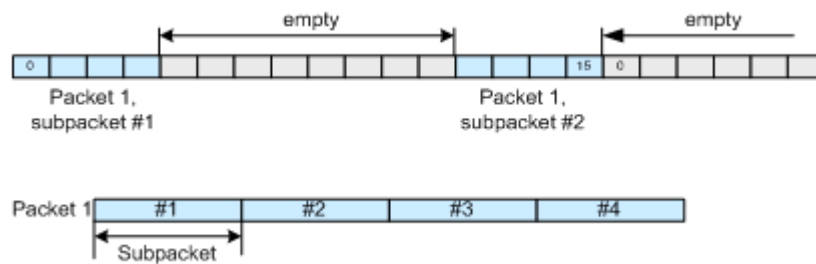
When more than one packet is active, packet 1 is sent on the first subframe (first 4 slots), packets 2 and 3 are sent respectively on the second and the third subframe (see figure below).



When only one packet is active and Number of Sub-packets is set to 1, no interleaving will be 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, subframe interleaving has to be performed. In this case 2 subframes will be left empty inbetween 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 110

Relative Gain (Packet)

(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 108

Infinite Packets (Packet)

(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 108

Number of Packets to Send (Packet)

(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 105

Number of Sub-packets (Packet)

(enabled for physical layer subtype 2 and an access terminal working in traffic mode only)

Sets the number of sub-packets to be sent.

Example:

If number of sub-packets is 4, then subpacket 0, 1, 2 and 3 of a packet will be sent in a subframe each (with 2 subframes interleaving between) before the next packet is started. This is to simulate a situation where 3 times NAK has been received from the base station with an ACK after the 4th subpacket.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:SUBPackets [ :COUNT ]` on page 110

Payload Size (Packet)

(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:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:PSIZE`
on page 110

Modulation (Packet)

(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.

Remote-control command: SOUR:BB:EVDO:TERM2:DCH:PACK3:MOD?

"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:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:MODulation? on page 109

Data Rate (Packet)

(enabled for access terminal working in traffic mode only)

Displays the resulting data rate for the selected Packet.

This is the effective data rate achieved for the specific packet. Sum up the data rates of all 3 packets to obtain the total effective data rate for the uplink data channel.

Remote command:

[:SOURce<hw>] :BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DRATe? on page 107

Channel Coding (Packet)

(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:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:CCODing on page 105

Data Source (Packet)

(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.

	FCS ON	FCS OFF
Channel Coding ON	PayloadSize - FCSSize - 6	PayloadSize - 6
Channel Coding OFF	(PayloadSize/CodeRate) - FCSSize	(PayloadSize/CodeRate)

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

	Physical layer subtype 0&1	Physical layer subtype 2
FCSSize	16	24
Code rate	1/4 or 1/2	1/5 or 1/3

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 SMW user manual.
- section "File and Data Management" in the R&S SMW user manual.
- section "Data List Editor" in the R&S SMW user manual

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DATA`

on page 106

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DATA:`

`DSElection` on page 106

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DATA:`

`PATtern` on page 107

FCS (Packet)

(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 108

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 111

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 104

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 102

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 104

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 SMW user manual.
- section "File and Data Management" in the R&S SMW user manual.
- section "Data List Editor" in the R&S SMW user manual

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:DCHannel:DATA` on page 103

`[ :SOURce<hw> ] :BB:EVDO:TERMinal<st>:DCHannel:DATA:PATtern`

on page 103

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 ]`

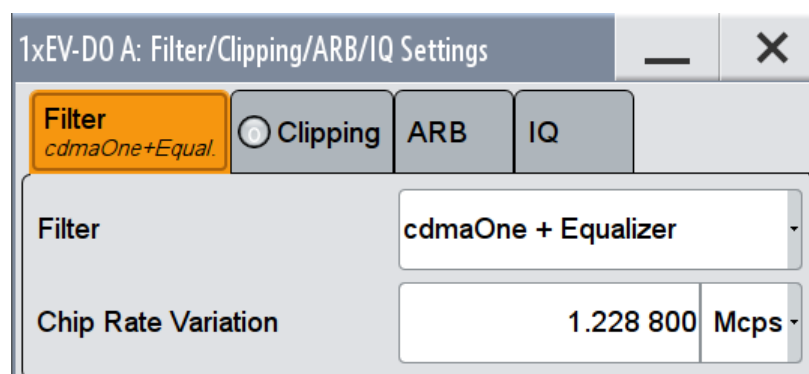
on page 104

4.10 Filter / Clipping / ARB Settings

- To access this dialog, 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



Provided are the following settings for configuring the baseband filter:

Filter

Selects the baseband filter.

Remote command:

`[ :SOURce<hw> ] :BB:EVDO:FILTer:TYPE` on page 71

Roll Off Factor or BxT

Sets the filter parameter.

The filter parameter offered ("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:FILTer:PARAmeter:APCO25 on page 68

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:COSine on page 69

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:GAUSS on page 69

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:PGAuss on page 70

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:RCOSine on page 70

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:SPHase on page 71

Cut Off Frequency Factor

Sets the value for the cut off frequency factor. The cut off frequency of the filter can be adjusted to reach spectrum mask requirements.

Remote command:

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:LPASs on page 69

[:SOURce<hw>] :BB:EVDO:FILTer:PARAmeter:LPASSEVM on page 70

Chip Rate Variation

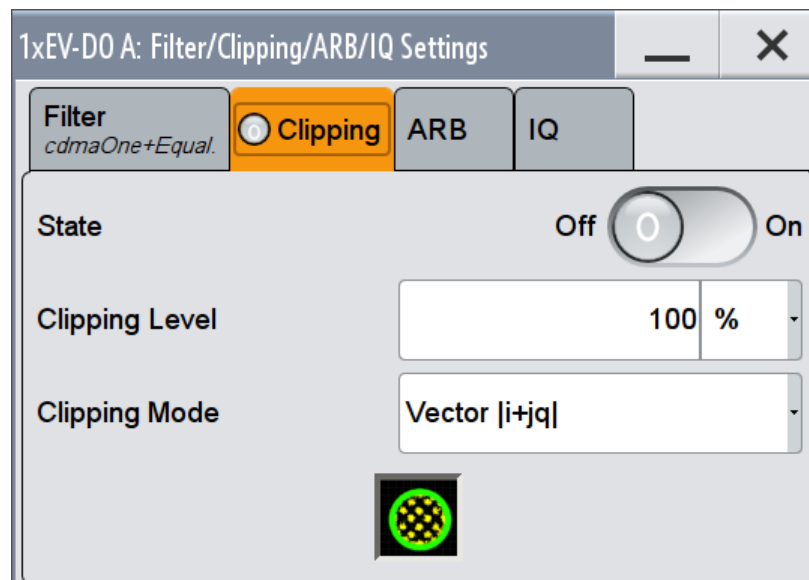
Enters the chip rate.

The chip rate entry changes the output clock and the modulation bandwidth.

Remote command:

[:SOURce<hw>] :BB:EVDO:CRATe:VARiation on page 68

4.10.2 Clipping Settings



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 very simple and effective way of reducing the crest factor of the signal. Since clipping is done prior to filtering, the procedure does not influence the spectrum. The EVM however increases.

1xEV-DO signals may have very high crest factors particularly with many channels and long sequences.

Remote command:

[:SOURce<hw>]:BB:EVD0:CLIPping:STAtE on page 68

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:EVD0:CLIPping:LEVel on page 67

Clipping Mode

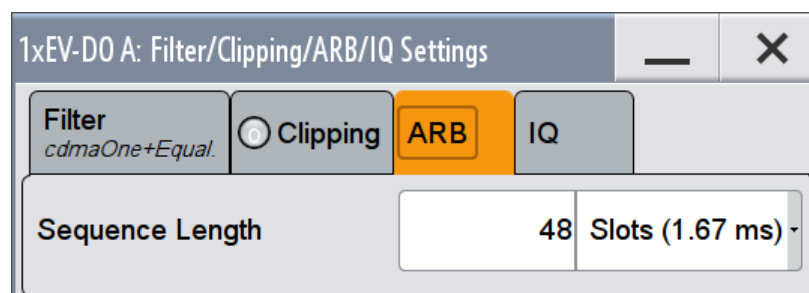
(For reverse link mode only)

Selects the clipping method. A graphic illustration of the way in which these two methods work is given in the dialog.

- "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:EVD0:CLIPping:MODE on page 67

4.10.3 ARB Settings

Provided are the following settings for configuring the ARB settings:

Sequence Length ARB

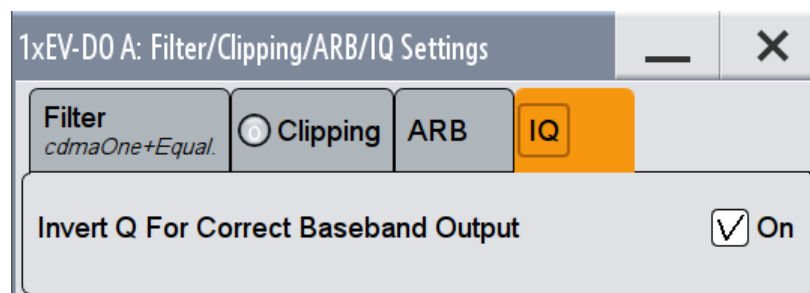
(For reverse link mode only)

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:SEnGth on page 65

4.10.4 I/Q Setting

Provided are the following settings for configuring the IQ settings:

Invert Q for Correct Baseband Output

With its default 1xEV-DO settings, the R&S SMW 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 SMW user manual, section "Applying I/Q Vector Modulation".

Remote command:

[:SOURce<hw>] :BB:EVDO:IQSWap:STATe on page 71

5 Remote-Control Commands

The following commands are required to perform signal generation with the 1xEV-DO options in a remote environment. We assume that the R&S SMW has already been set up for remote operation in a network as described in the R&S SMW 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 SMW user manual.

Common Suffixes

The following common suffixes are used in remote commands:

Suffix	Value range	Description
ENTity<ch>	1 .. 4	entity in a multiple entity configuration with separate baseband sources ENTity3 4 require option R&S SMW-K76
SOURce<ch>	[1] 4	available baseband signals only SOURce1 possible, if the keyword ENTity is used
OUTPut<ch>	1 .. 3	available markers
CARRier<Ch>	0 .. 21	band class
USER<ST>	1 .. 4	user
TERMinal<ST>	1 .. 4	terminal



Using SCPI command aliases for advanced mode with multiple entities

You can address multiple entities configurations by using the SCPI commands starting with the keyword `SOURce` or the alias commands starting with the keyword `ENTity`.

Note that the meaning of the keyword `SOURce<hw>` changes in the second case.

For details, see section "SCPI Command Aliases for Advanced Mode with Multiple Entities" in the R&S SMW user manual.

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

- [Programming Examples](#).....60
- [General Commands](#).....63
- [Filter/Clipping/ARB Commands](#)..... 66
- [Trigger Commands](#)..... 71
- [Marker Commands](#).....76
- [Clock Commands](#).....78
- [Access Network Commands](#).....80

• Multi Carrier Configuration Commands.....	84
• Configure Traffic User Commands.....	87
• Configure Access Terminal Commands.....	96

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.

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

SOURcel:BB:EVDO:PRESet
SOURcel:BB:EVDO:STATe ON
SOURcel:BB:EVDO:SETTing:STORe "/var/user/temp/1xEVDO_def"

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

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

SOURcel:BB:EVDO:PRESet
SOURcel:BB:EVDO:STATe ON
// *****
// Save and Recall settings
// *****

SOURcel:BB:EVDO:SETTing:STORe "/var/user/temp/1xEVDO_def"
MME:CDIR "/var/user/temp/"

SOURcel:BB:EVDO:SETTing:CATalog?
// 1xEVDO_def,1xEVDO_dl,1xEVDO_test
SOURcel:BB:EVDO:SETTing:DELeTe "1xEVDO_test"
SOURcel: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:SENGth?
// 48
SOURCE1:BB:EVDO:VERSion?
// Release B
SOURCE1:BB:EVDO:WAVEform:CREate "wv1xEVDO_ul"
```

Example: Adjusting clock, marker and trigger settings

The following example lists the provided commands:

```
// *****
// Clock settings
// *****
SOURCE1:BB:EVDO:CLOCK:SOURce INTERNAL

// *****
// Configure and enable standard marker signal
// *****
SOURCE1:BB:EVDO:TRIGGER:OUTPUT1:MODE RATIO
SOURCE1:BB:EVDO:TRIGGER:OUTPUT1:ONTime 40
SOURCE1:BB:EVDO:TRIGGER:OUTPUT1:OFFTime 20

// *****
// 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:RMODE?
// Stopped
SOURCE1:BB:EVDO:TRIGGER:EXECute
SOURCE1:BB:EVDO:TRIGGER:RMODE?
// Run
```

Example: Generating a downlink multi carrier signal

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

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

SOURce1:BB:EVDO:LINK?
// DOWN

:SOURce1:BB:EVDO:DOWN:MC:BCLass BC11

:SOURce1:BB:EVDO:DOWN:MC:CARRier1:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:CARRier2:CHANnel 10
:SOURce1:BB:EVDO:DOWN:MC:CARRier2:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:CARRier3:CHANnel 5
:SOURce1:BB:EVDO:DOWN:MC:CARRier4:CHANnel 500
:SOURce1:BB:EVDO:DOWN:MC:CARRier4:STATe 1
:SOURce1:BB:EVDO:DOWN:MC:CARRier5:CHANnel 100
:SOURce1:BB:EVDO:DOWN:MC:CARRier6:CHANnel 1200
:SOURce1:BB:EVDO:DOWN:MC:CARRier6:CHANnel?
// 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:CARRier9:CHANnel 240
:SOURce1:BB:EVDO:DOWN:MC:STATe 1

:SOURce1:BB:EVDO:STATe 1

:SOURce1:BB:EVDO:DOWN:MC:CFRequency?
// 456900000
:SOURce1:BB:EVDO:DOWN:MC:CARRier1:FREQuency?
// 460000000
:SOURce1:BB:EVDO:DOWN:MC:CARRier2:FREQuency?
// 460225000
:SOURce1:BB:EVDO:DOWN:MC:CARRier4:FREQuency?
// 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, carrie#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 and deactivation of the standard, setting the transmission direction, defining the chip rate and the sequence length, as well as the preset and power adjust setting.

<code>[SOURce<hw>]:BB:EVDO:LINK</code>	63
<code>[SOURce<hw>]:BB:EVDO:PNOFFset</code>	63
<code>[SOURce<hw>]:BB:EVDO:PRESet</code>	63
<code>[SOURce<hw>]:BB:EVDO:SETTing:CATalog?</code>	64
<code>[SOURce<hw>]:BB:EVDO:SETTing:DELeTe</code>	64
<code>[SOURce<hw>]:BB:EVDO:SETTing:LOAD</code>	64
<code>[SOURce<hw>]:BB:EVDO:SETTing:STORe</code>	64
<code>[SOURce<hw>]:BB:EVDO:SETTing:STORe:FAST</code>	65
<code>[SOURce<hw>]:BB:EVDO:SLENgth</code>	65
<code>[SOURce<hw>]:BB:EVDO:STATe</code>	65
<code>[SOURce<hw>]:BB:EVDO:STIMe</code>	66
<code>[SOURce<hw>]:BB:EVDO:VERSion?</code>	66
<code>[SOURce<hw>]:BB:EVDO:WAVEform:CREate</code>	66

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

Defines the transmission direction.

Parameters:

`<Link>` FORWARD/DOWN | REVERSE/UP
 *RST: DOWN

Example: see [example "Performing general tasks"](#) on page 60

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 60

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 60

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 file names separated by commas.

Example: see [example "Performing general tasks"](#) on page 60

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 60

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. Load are files with extension *.1xevdo.

Setting parameters:

<Filename> string

Example: see [example "Performing general tasks"](#) on page 60

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 60**Usage:** Setting only**Manual operation:** See ["Save/Recall"](#) on page 13**[:SOURce<hw>]:BB:EVDO:SETTing:STORe:FAST <Fast>**

Determines whether the instrument performs an absolute or a differential storing of the settings.

Enable this function to accelerate the saving process by saving only the settings with values different to the default ones.

Note: This function is not affected by the "Preset" function.

Parameters:

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

[:SOURce<hw>]:BB:EVDO:SLENgth <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 60**Manual operation:** See ["Sequence Length ARB"](#) on page 58**[: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 60

Manual operation: See ["State"](#) on page 13

[[: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 21.99E11
 *RST: 0

Example: see [example "Performing general tasks"](#) on page 60

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:

<Version> string

Example: see [example "Performing general tasks"](#) on page 60

Usage: Query only

Manual operation: See ["1xEV-DO Version"](#) on page 14

[[:SOURce<hw>]:BB:EVDO:WAVEform:CREate <Filename>

Creates a waveform using the current settings. The file is stored with the predefined file extension *.wv. The file name and the directory it is stored in are user-definable.

Setting parameters:

<Filename> string

Example: see [example "Performing general tasks"](#) on page 60

Usage: Setting only

Manual operation: See ["Generate Waveform"](#) on page 13

5.3 Filter/Clipping/ARB Commands

[:SOURce<hw>]:BB:EVDO:CLIPping:LEVel.....	67
[:SOURce<hw>]:BB:EVDO:CLIPping:MODE.....	67
[:SOURce<hw>]:BB:EVDO:CLIPping:STAtE.....	68
[:SOURce<hw>]:BB:EVDO:CRATe:VARiation.....	68
[:SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:APCO25.....	68

<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:COsine</code>	69
<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:GAUSS</code>	69
<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:LPASs</code>	69
<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:LPASSEVM</code>	70
<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:PGAuss</code>	70
<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:RCOSine</code>	70
<code>[SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:SPHase</code>	71
<code>[SOURce<hw>]:BB:EVDO:FILTer:TYPE</code>	71
<code>[SOURce<hw>]:BB:EVDO:IQSWap:STATe</code>	71

`[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:

`<Level>` integer
 Range: 0 PCT to 100 PCT
 Increment: 1 PCT
 *RST: 100 PCT

Example:

`BB:EVDO:CLIP:LEV 80PCT`
 sets the limit for level clipping to 80% of the maximum level.
`BB:EVDO:CLIP:STAT ON`
 activates level clipping.

Manual operation: See ["Clipping Level"](#) on page 57

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

(For reverse link mode only)

The command sets the method for level clipping (Clipping).

Parameters:

`<Mode>` VECTor | SCALar
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
selects the absolute maximum of all the I and Q values as the reference level.
BB:EVDO:CLIP:LEV 80PCT
sets the limit for level clipping to 80% of this maximum level.
BB:EVDO:CLIP:STAT ON
activates level clipping.

Manual operation: See ["Clipping Mode"](#) on page 57

[[: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:

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

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> integer
Range: 400 to 5E+6
*RST: 1.2288E6

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

Manual operation: See ["Chip Rate Variation"](#) on page 56

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

Sets the roll-off 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 roll-off factor to 0.2 for filter type APCO25.

Manual operation: See ["Roll Off Factor or BxT"](#) on page 55

[:SOURce<hw>]:BB:EVDO:FILT:PAR:Parameter:COsine <Cosine>

Sets the roll-off 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 roll-off factor to 0.35 for filter type Cosine.

Manual operation: See ["Roll Off Factor or BxT"](#) on page 55

[:SOURce<hw>]:BB:EVDO:FILT:PAR:Parameter:GAUSSs <Gauss>

Sets the roll-off 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 B x T to 0.5 for the Gauss filter type.

Manual operation: See ["Roll Off Factor or BxT"](#) on page 55

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

Sets the cut off 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:LPAS 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:LPASSEVM <LPassEvm>

Sets the cut off 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:LPASSEVM 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:PGAuss <PGauss>

Sets the roll-off 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 B x T to 0.5 for the Pure Gauss filter type.

Manual operation: See ["Roll Off Factor or BxT"](#) on page 55

[[:SOURce<hw>]:BB:EVDO:FILT:PAR:RCOSine <RCosine>

Sets the roll-off 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 roll-off factor to 0.22 for filter type Root Cosine.

Manual operation: See ["Roll Off Factor or BxT"](#) on page 55

[[:SOURce<hw>]:BB:EVDO:FILTer:PARAmeter:SPHase <SPHase>

Sets B x T 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 B x T to 0.5 for the Split Phase filter type.

Manual operation: See ["Roll Off Factor or BxT"](#) on page 55

[[:SOURce<hw>]:BB:EVDO:FILTer:TYPE <Type>

The command selects the filter type.

Parameters:

<Type> RCOSine | COSine | GAUSSs | 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 55

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

Inverts the Q-part of the baseband signal

Parameters:

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

Example: SOURce1:BB:EVDO:IQSWap:STATe ON
 inverts the Q-part of the baseband signal
 SOURce:IQ:SWAP:STATe ON
 swaps the I and Q signals

Manual operation: See ["Invert Q for Correct Baseband Output"](#) on page 58

5.4 Trigger Commands

The following commands are described here:

<code>[SOURce<hw>]:BB:EVDO:TRIGger:SEquence</code>	72
<code>[SOURce<hw>]:BB:EVDO:TRIGger:ARM:EXECute</code>	72
<code>[SOURce<hw>]:BB:EVDO:TRIGger:EXECute</code>	72
<code>[SOURce<hw>]:BB:EVDO:TRIGger:EXTernal:SYNChronize:OUTPut</code>	72
<code>[SOURce<hw>]:BB:EVDO:TRIGger:OBASeband:DELay</code>	73
<code>[SOURce<hw>]:BB:EVDO:TRIGger:OBASeband:INHibit</code>	73
<code>[SOURce<hw>]:BB:EVDO:TRIGger:RMODE?</code>	73
<code>[SOURce<hw>]:BB:EVDO:TRIGger:SLENgth</code>	74
<code>[SOURce<hw>]:BB:EVDO:TRIGger:SLUNit</code>	74
<code>[SOURce<hw>]:BB:EVDO:TRIGger:SOURce</code>	74
<code>[SOURce<hw>]:BB:EVDO:TRIGger[:EXTernal]:DELay</code>	75
<code>[SOURce<hw>]:BB:EVDO:TRIGger[:EXTernal]:INHibit</code>	76

`[SOURce<hw>]:BB:EVDO:TRIGger:SEquence <Sequence>`

Selects a regular trigger mode.

Parameters:

`<Sequence>` AUTO | RETRigger | AAUTo | ARETrigger | SINGLE
 *RST: AUTO

Example: see [example "Adjusting clock, marker and trigger settings"](#)
 on page 61

Manual operation: See ["Trigger Mode"](#) on page 16

`[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, marker and trigger settings"](#)
 on page 61

Usage: Event

Manual operation: See ["Arm"](#) on page 17

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

Executes a trigger.

Example: see [example "Adjusting clock, marker and trigger settings"](#)
 on page 61

Usage: Event

Manual operation: See ["Execute Trigger"](#) on page 17

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

For an external trigger signal, enables/disables the output of a signal synchronous to the external trigger event.

Parameters:

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

Example:

BB:EVDO:TRIG:SOUR EXT
 sets external triggering.
 BB:EVDO:TRIG:EXT:SYNC:OUTP ON
 enables synchronous output to external trigger

Manual operation: See ["Sync. Output to External Trigger"](#) on page 18

[[:SOURce<hw>]:BB:EVDO:TRIGger:OBASeband:DELay <Delay>

Specifies the trigger delay (expressed as a number of samples) for triggering by the trigger signal from the second path.

Parameters:

<Delay> float
 Range: 0 to 16777215
 Increment: 0.01
 *RST: 0

Example:

BB:EVDO:TRIG:SOUR OBAS
 sets for path A the internal trigger executed by the trigger signal from the second path (path B).
 BB:EVDO:TRIG:OBAS:DEL 50
 sets a delay of 50 symbols for the trigger.

Manual operation: See ["Trigger Delay"](#) on page 19

[[:SOURce<hw>]:BB:EVDO:TRIGger:OBASeband:INHibit <Inhibit>

Specifies the number of chips by which a restart is to be inhibited following a trigger event. This command applies only for triggering by the second path.

Parameters:

<Inhibit> integer
 Range: 0 to 67108863
 *RST: 0

Example:

BB:EVDO:TRIG:SOUR OBAS
 sets triggering by the other path
 BB:EVDO:TRIG:INH 200
 sets a restart inhibit for 200 chips following a trigger event.
 BB:EVDO:TRIG:OBAS:DEL 50
 sets a delay of 50 symbols for the trigger.

Manual operation: See ["External Trigger Inhibit"](#) on page 19

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

Queries the status of signal generation.

Return values:

<RMode> STOP | RUN

Example:see [example "Adjusting clock, marker and trigger settings"](#) on page 61**Usage:**

Query only

Manual operation: See ["Running/Stopped"](#) on page 17**[:SOURce<hw>]:BB:EVDO:TRIGger:SEnLength <SLength>**

Defines the length of the signal sequence to be output in the SINGLE trigger mode.

Parameters:

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

Example:

SOURce:BB:EVDO:TRIGger:SEquence SINGLE
 SOURce:BB:EVDO:TRIGger:SLUnit CHIP
 sets unit chips for the entry of sequence length.
 SOURce:BB:EVDO:TRIGger:SEnLength 200
 sets a sequence length of 200 chips. The first 200 chips of the current frame will be output after the next trigger event.

Manual operation: See ["Trigger Signal Duration"](#) on page 17**[: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 [\[:SOURce<hw>\]:BB:EVDO:TRIGger:SEnLength](#) on page 74

Manual operation: See ["Signal Duration Unit"](#) on page 17**[: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 means of a command, external trigger signal via one of the provided local or global connectors and triggering by a signal from the other paths.

Parameters:

<Source>

INTB | INTernal | OBASeband | EGT1 | EGT2 | EGC1 | EGC2 |
ELTRigger | INTA | ELClock | BEXternal | EXternal**INTernal**

Internal

INTA | INTB

Internal trigger from the other baseband

EGT1 | EGT2

External global trigger

EGC1 | EGC2

External global clock

ELTRigger

External local trigger

ELClock

External local clock

OBASeband|BEXternal|EXternal

Provided only for backward compatibility with other R&S signal generators.

The R&S SMW accepts these values und maps them automatically as follow:

EXternal = EGT1, BEXternal = EGT2, OBASeband = INTA or INTB (depending on the current baseband)

*RST: INTernal

Example:BB:EVDO:TRIG:SOUR INT
selects an internal trigger.**Manual operation:** See ["Trigger Source"](#) on page 18

[:SOURce<hw>]:BB:EVDO:TRIGger[:EXTernal]:DELay <Delay>

Sets the trigger delay.

Parameters:

<Delay>

float

Range: 0 to 16777215

Increment: 0.01

*RST: 0

Default unit: samples

Example:BB:EVDO:TRIG:SOUR EXT
sets an external trigger.

BB:EVDO:TRIG:EXT:DEL 50

sets a delay of 50 symbols for the trigger.

Manual operation: See ["Trigger Delay"](#) on page 19

[[:SOURce<hw>]:BB:EVDO:TRIGger[:EXtErnal]:INHibit <Inhibit>

Specifies the number of samples by which a restart is to be inhibited following an external trigger event.

Parameters:

<Inhibit> integer
 Range: 0 to 21.47*chipRate
 *RST: 0

Example:

BB:EVDO:TRIG:SOUR EXT
 selects an external trigger.
 BB:EVDO:TRIG:EXT:INH 200
 sets a restart inhibit for 200 samples following a trigger event.

Manual operation: See ["External Trigger Inhibit"](#) on page 19

5.5 Marker Commands

The following commands are described here:

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut:DElay:FIXed	76
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DElay	76
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DElay:MINimum?	77
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DElay:MAXimum?	77
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:MODE	77
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:ONTime	78
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:OFFTime	78
[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:PERiod	78

[[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut:DElay:FIXed <Fixed>

Restricts the marker delay setting range to current range.

Parameters:

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

Example:

SOURce2:BB:EVDO:TRIGger:OUTPut:DElay:FIXed ON

Manual operation: See ["Marker x Delay"](#) on page 22

[[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DElay <Delay>

Defines the delay between the signal on the marker outputs and the start of the signal, expressed in terms of the signal units.

Parameters:

<Delay> integer
 Range: 0 to 16777215
 Increment: 0.001
 *RST: 0

Example: SOURce2:BB:EVDO:TRIGger:OUTPut2:DElay 16000

Manual operation: See "Marker x Delay" on page 22

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DElay:MINimum?

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:DElay:MAXimum?

Queries the minimum/maximum marker delay for fixed marker delay setting.

Return values:

<Maximum> float
 Range: 0 to max
 Increment: 0.001

Example: SOURce:BB:EVDO:TRIGger:OUTPut1:DElay:FIXed ON
 restricts the marker signal delay setting range to the dynamic range.

SOURce:BB:EVDO:TRIGger:OUTPut1:DElay:MINimum?
 SOURce:BB:EVDO:TRIGger:OUTPut1:DElay:MAXimum?
 queries the maximum of the dynamic range.

Usage: Query only

Manual operation: See "Marker x Delay" on page 22

[:SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:MODE <Mode>

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 21

[SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:ONTime <OnTime>
[SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:OFFTime <OffTime>

Sets the number of symbols in a period (ON time + OFF time) for marker `RATio`

Parameters:

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

Example: `SOURce:BB:EVDO:TRIGger:OUTPut2:MODE RATio`
`SOURce:BB:EVDO:TRIGger:OUTPut2:OFFTime 2000`
sets an OFF time of 2000 chips for marker signal 2.
`SOURce:BB:EVDO:TRIGger:OUTPut2:ONTime 200`
sets an ON time of 200 chips for marker signal 2.

Manual operation: See "[Marker Mode](#)" on page 21

[SOURce<hw>]:BB:EVDO:TRIGger:OUTPut<ch>:PERiod <Period>

Sets the repetition rate for the signal at the marker outputs, expressed in terms of chips.

Parameters:

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

Example: `SOURce:BB:EVDO:TRIGger:OUTPut2:MODE USER`
selects the user marker
`SOURce:BB:EVDO:TRIGger:OUTPut2:PERiod 1600`
sets a period of 1600 chips, i.e. the marker signal is repeated every 1600th chip.

Manual operation: See "[Marker Mode](#)" on page 21

5.6 Clock Commands

The following commands are described here:

<code>[SOURce<hw>]:BB:EVDO:CLOCK:MODE</code>	79
<code>[SOURce<hw>]:BB:EVDO:CLOCK:MULTiplier</code>	79
<code>[SOURce<hw>]:BB:EVDO:CLOCK:SOURce</code>	79

[:SOURce<hw>]:BB:EVDO:CLOCK:MODE <Mode>

Sets the type of externally supplied clock.

Parameters:

<Mode> CHIP | MCHip
 *RST: CHIP

Example: see [:SOURce<hw>]:BB:EVDO:CLOCK:SOURce on page 79

Manual operation: See "Clock Mode" on page 24

[:SOURce<hw>]:BB:EVDO:CLOCK:MULTIplier <Multiplier>

Sets the multiplier for clock type Multiplied.

Parameters:

<Multiplier> integer
 Range: 1 to 64
 *RST: 4

Example: see [:SOURce<hw>]:BB:EVDO:CLOCK:SOURce on page 79

Manual operation: See "Chip Clock Multiplier" on page 24

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

Selects the clock source.

Parameters:

<Source> INTernal | EGC1 | EGC2 | ELCLock | EXTernal

INTernal

The instrument uses its internal clock reference

EGC1|EGC2

External global clock

ELCLock

External local clock

EXTernal

EXTernal = EGC1

Setting only; provided for backward compatibility with other R&S signal generators.

*RST: INTernal

Example: BB:EVDO:CLOC:SOUR: INT
 selects an internal clock reference.

Manual operation: See "Clock Source" on page 23

5.7 Access Network Commands

<code>[SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:PSOffset</code>	80
<code>[SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:RATE</code>	80
<code>[SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:REVision:MAXimum</code>	81
<code>[SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:REVision:MINimum</code>	81
<code>[SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:STATE</code>	81
<code>[SOURce<hw>]:BB:EVDO:ANETwork:CPMode</code>	81
<code>[SOURce<hw>]:BB:EVDO:ANETwork:OUCount</code>	82
<code>[SOURce<hw>]:BB:EVDO:ANETwork:PCHannel:STATE?</code>	82
<code>[SOURce<hw>]:BB:EVDO:ANETwork:RAB:LENGth</code>	82
<code>[SOURce<hw>]:BB:EVDO:ANETwork:RAB:LEVel</code>	83
<code>[SOURce<hw>]:BB:EVDO:ANETwork:RAB:MAC:INDeX</code>	83
<code>[SOURce<hw>]:BB:EVDO:ANETwork:RAB:OFFSet</code>	83
<code>[SOURce<hw>]:BB:EVDO:ANETwork:RAB:STATE</code>	83
<code>[SOURce<hw>]:BB:EVDO:ANETwork:SUBType</code>	84

`[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.

Manual operation: See "[Packet Start Offset](#)" on page 40

`[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 | DR921K6 | DR1228K8 | DR1536K |
 DR1843K2 | DR2457K6 | DR3072K | DR460K8 | DR768K |
 DR1075K2 | DR2150K4 | DR3686K4 | 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 \(Control Channel\)](#)" on page 40

[: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

Example: BB:EVDO:ANET:CCH:REV:MAX 10
 sets the value of the maximum revision field to 10.

Manual operation: See ["Maximum Revision"](#) on page 40

[: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 40

[:SOURce<hw>]:BB:EVDO:ANETwork:CCHannel:STATe <State>

Enables or disables the control channel messages.

Parameters:

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

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

Manual operation: See ["State \(Control Channel\)"](#) on page 40

[: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 39

[: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 41

[: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 \(Pilot Channel\)"](#) on page 40

[: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 41

[: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 41

[: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 41

[:SOURce<hw>]:BB:EVDO:ANETwork:RAB:OFFSet <Offset>

Sets the starting time offset of the Reverse Activity 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 RABlength = RABOffset, 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 41

[: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 \(Reverse Activity Bit\)"](#) on page 40

[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 SMW-K87

Manual operation: See ["Physical Layer Subtype \(User\)"](#) on page 27

5.8 Multi Carrier Configuration Commands

Multi Carrier Configuration requires option

R&S SMW-K87

[:SOURce<hw>]:BB:EVDO:UP:MC:BCLass	84
[:SOURce<hw>]:BB:EVDO:DOWN:MC:BCLass	84
[:SOURce<hw>]:BB:EVDO:UP:MC:CFRequency?	85
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CFRequency?	85
[:SOURce<hw>]:BB:EVDO:UP:MC:CDElay	85
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CDElay	85
[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:STATE	85
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRier<ch>:STATE	85
[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:CHANnel	86
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRier<ch>:CHANnel	86
[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:FREquency	86
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CARRier<ch>:FREquency	86
[:SOURce<hw>]:BB:EVDO:UP:MC:STATE	87
[:SOURce<hw>]:BB:EVDO:DOWN:MC:STATE	87

[SOURce<hw>]:BB:EVDO:UP:MC:BCLass <BandClass>

[SOURce<hw>]:BB:EVDO:DOWN:MC:BCLass <BandClass>

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 multi carrier signal"](#)
on page 62

Options: R&S SMW-K87

Manual operation: See ["Band Class"](#) on page 37

[:SOURce<hw>]:BB:EVDO:UP:MC:CFRequency?
[:SOURce<hw>]:BB:EVDO:DOWN:MC:CFRequency?

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

Return values:

<CenterFrequency> integer

Example: see [example "Generating a downlink multi carrier signal"](#)
on page 62

Usage: Query only

Options: R&S SMW-K87

Manual operation: See ["Center Frequency \(band\)"](#) on page 37

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

Sets a delay to each active carrier.

Parameters:

<CarrierDelay> float
Range: 0 to 10E-6
Increment: 1E-9
*RST: 0

Example: see [example "Generating a downlink multi carrier signal"](#)
on page 62

Options: R&S SMW-K87

Manual operation: See ["Carrier Delay"](#) on page 37

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

Switches the selected carrier on or off.

Parameters:

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

Example: see [example "Generating a downlink multi carrier signal"](#) on page 62

Options: R&S SMW-K87

Manual operation: See ["State"](#) on page 37

[:SOURce<hw>]:BB:EVDO:UP:MC:CARRier<ch>:CHANnel <Channel>
[: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 will be used.

Parameters:

<Channel> integer
 Range: 0 to 3000
 *RST: 1

Example: see [example "Generating a downlink multi carrier signal"](#) on page 62

Options: R&S SMW-K87

Manual operation: See ["CDMA Channel Number"](#) on page 37

[: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 will be used.

Parameters:

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

Example: see [example "Generating a downlink multi carrier signal"](#) on page 62

Options: R&S SMW-K87

Manual operation: See ["Center Frequency"](#) on page 38

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

Enables or disables multi carrier operation.

Parameters:

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

Example: see [example "Generating a downlink multi carrier signal"](#)
 on page 62

Options: R&S SMW-K87

5.9 Configure Traffic User Commands

[:SOURce<hw>]:BB:EVDO:USER<st>:DATA:PATtern.....	87
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:LENGth.....	88
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:OFFSet.....	88
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:PERiod.....	88
[:SOURce<hw>]:BB:EVDO:USER<st>:DRCLock:STATe.....	89
[:SOURce<hw>]:BB:EVDO:USER<st>:HARQ:MODE.....	89
[:SOURce<hw>]:BB:EVDO:USER<st>:IFACtor.....	89
[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:INdex.....	90
[:SOURce<hw>]:BB:EVDO:USER<st>:MAC:LEVel.....	90
[:SOURce<hw>]:BB:EVDO:USER<st>:PACKet:COUNT.....	91
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[:SOURce<hw>]:BB:EVDO:USER<st>:DATA:PATtern <Pattern>

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 32 bits and in a hexadecimal format.

Parameters:

<Pattern> 32 bits
 *RST: #H00000000,32

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

Manual operation: See ["Data Pattern \(hex\)"](#) on page 32

[[: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 will be 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 8 DRCLock periods for holding the state of user 2 constant.

Manual operation: See ["DRC Lock Length"](#) on page 35

[[: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 properly position the DRC Lock bit within the MAC channel.

Parameters:

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

Example: `BB:EVDO:USER2:DRCL:OFFS 5`
sets the reverse link frame offset to 5.

Manual operation: See ["Frame Offset"](#) on page 35

[[: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 will disable the DRC Lock subchannel and the MAC RPC channel of the selected user will not be punctured with the DRC Lock subchannel.

Parameters:

<Period> DP0 | DP4 | DP8 | DP16
*RST: 4

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 34

[[: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 34

[[: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
 OFF
 Disables transmission of the H-ARQ channel.
 ACK
 Enables transmission of H-ARQ. The channel will be transmitted with all bits set to ACK.
 NAK
 Enables transmission of H-ARQ. The channel will be 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 will be transmit with all bits set to ACK.

Manual operation: See ["H-ARQ Mode"](#) on page 35

[[: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 4th slot is selected.

For an interleave factor > 1, packets on multiple interleave slots will be 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 2 interleaved slots for user 2 on the forward link.

Manual operation: See "[Interleave Factor](#)" on page 33

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

Sets the MAC Index used for the selected user.

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

The values for the MAC Indexes for the 'OtherUsers' (see [:SOURce<hw>]:BB:EVDO:ANETwork:OUCount) will be assigned from a pool of valid MAC Indexes, that exclude the MAC Indexes specified for each of the four configurable users.

Parameters:

<Index> integer
 Range: 5 to 63 for physical layer subtype 0&1, 6 to 127 for physical layer subtype 2, 4 to 383 for physical layer subtype 3
 *RST: Physical layer subtype 0&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

Example:

BB:EVDO:USER2:MAC:IND 6
 sets the MAC index for user 2 to 16.

Manual operation: See "[MAC Index](#)" on page 32

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

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

Parameters:

<Level> float
 Range: -25 to -7
 Increment: 0.01
 *RST: -7

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 33

[[: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 will be used at the end of transmission of the current packet. If a value of zero is specified, the transmission to the user will be stopped at the end of the current packet.

Parameters:

<Count> integer
Range: 0 to 65536
*RST: 65536

Example: `BB:EVDO:USER2:PACK:INF OFF`
disables sending of unlimited number of packets.
`BB:EVDO:USER2:PACK:COUNT 10`
sets the number of packets to be send to 10.

Manual operation: See ["Number of Packets to Send"](#) on page 27

[[: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: 65536

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 send to user 2 to 10.

Manual operation: See ["Number of Packets to Send"](#) on page 27

[[: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.

Note: An offset value of zero with a rate change from a single slot packets to a multiple slot packets will cause the first slot of the multiple slot packet to be transmitted in the slot immediately following the single slot 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 27

[[: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 32

[: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 32

[: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.

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 28

[[: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 will be 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 will be 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:ZONE3:COUNT 10
```

```
BB:EVDO:USER2:RPC:INJ
```

the user defined RPC pattern will be 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 33

[[: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" is set to Range. The specified value is used immediately.

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

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.
 BB:EVDO:USER2:RPC:RANG:COUN 200
 sets the number of RPC bits to 200.

Manual operation: See "RPC Range Count" on page 34

[: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 will be transmitted.
 BB:EVDO:USER2:RPC:ZONE1:BIT 1
 sets the bit for zone 1 to 1.

Manual operation: See "RPC Pattern" on page 34

[: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 will be 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 34

[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 32

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

Enables or disables the selected user. If the user is enabled, the proper MAC Index will be placed within the MAC channel and packets may be sent to the user. If disabled, the MAC Index will not be present within the MAC channel and packets may not 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 26

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[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.

Parameter	Description
USER	there are no predefined settings
ULS1DR9K6	UL, Subtype 1, 9.6 kbps.
ULS1DR19K2	UL, Subtype 1, 19.2 kbps.
ULS1DR38K4	UL, Subtype 1, 38.4 kbps.
ULS1DR76K8	UL, Subtype 1, 76.8 kbps.
ULS1DR153K6	UL, Subtype 1, 153.6 kbps.
ULS2PS128LL	UL, Subtype 2, 128 bits payload, Low Latency.
ULS2PS256HC	UL, Subtype 2, 256 bits payload, Hight Capacity.
ULS2PS256LL	UL, Subtype 2, 256 bits payload, Low Latency.
ULS2PS512LL	UL, Subtype 2, 512 bits payload, Low Latency.
ULS2PS768LL	UL, Subtype 2, 768 bits payload, Low Latency.
ULS2PS1024LL	UL, Subtype 2, 1024 bits payload, Low Latency.
ULS2PS1536LL	UL, Subtype 2, 1536 bits payload, Low Latency.
ULS2PS2048LL	UL, Subtype 2, 2048 bits payload, Low Latency.
ULS2PS3072LL	UL, Subtype 2, 3072 bits payload, Low Latency.
ULS2PS4096LL	UL, Subtype 2, 4096 bits payload, Low Latency.
ULS2PS6144LL	UL, Subtype 2, 6144 bits payload, Low Latency.
ULS2PS8192LL	UL, Subtype 2, 8192 bits payload, Low Latency.
ULS2PS12288LL	UL, Subtype 2, 12288 bits payload, Low Latency.

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 Hight Capacity.
 BB:EVDO:TERM1:SUBT?
 Response: S2.
 BB:EVDO:TERM1:DCH:PACK1:PSIZ?
 Response: 256

Manual operation: See "[Predefined Settings](#)" on page 43

[: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 dB
 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 \(ACK Channel\)"](#) 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 \(bin\) \(ACK Channel\)"](#) 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 (ACK Channel)" 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: ON

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

Manual operation: See "State (ACK Channel)" 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:ACKC:VAL #B011, 3
sets the data pattern transmitted on the ACK channel for terminal 2.

Manual operation: See "Values (ACK Channel)" 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:DUR 20
 sets the duration of the access cycle for terminal 2 to 20 slots.

Manual operation: See ["Access Cycle Duration"](#) on page 44

[: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: -
 *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 45

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

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)

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> 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 \(Auxiliary Pilot Channel\)"](#) on page 45

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

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)

Sets the minimum payload size in bits of the Data Channel that activates the transmission of the Auxiliary Pilot Channel.

Parameters:

<Minimum> 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 \(Auxiliary Pilot Channel\)](#)" on page 45

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

(enabled for Physical Layer subtype 2 and for an access terminal working in traffic mode)

Enables or disables the auxiliary pilot channel.

Parameters:

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

Example: BB:EVDO:TERM2:APCH:STAT OFF
 deactivates the auxiliary pilot channel for terminal 2.

Manual operation: See "[State \(Auxiliary Pilot Channel\)](#)" on page 45

[: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:

<CLength> integer
 Range: 1 to 15 frames
 *RST: 1 frame

Example: BB:EVDO:TERM2:MODE ACC
 enables terminal 2 to work in access mode.
 BB:EVDO:TERM2:DCH:CLEN 10
 for terminal 2, 10 frames will be transmitted after the preamble.

Manual operation: See "[Capsule Length \(Data Channel\)](#)" 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:

<Data> ZERO | ONE | PATtern | PN9 | PN11 | PN15 | PN16 | PN20 |
PN21 | PN23 | DLIST
*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 "/var/user/temp/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/temp/datalists and have a file
extension *.dm_iqd.

Manual operation: See ["Data Source \(Data Channel\)"](#) 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 103

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:DATA:PATtern <Pattern>

Selects the bit pattern for the data source.

Parameters:

<Pattern> 64 bits
*RST: #H0,1

Example:

see [:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:
DATA on page 103

Manual operation: See ["Data Source \(Data Channel\)"](#) 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.

Parameters:

<DRate> DR4K8 | DR9K6 | DR19K2 | DR38K4 | DR76K8 | DR153K6 |
 DR307K2 | DR614K4 | DR921K6 | DR1228K8 | DR1536K |
 DR1843K2 | DR2457K6 | DR3072K | DR460K8 | DR768K |
 DR1075K2 | DR2150K4 | DR3686K4 | DR4300K8 | DR4915K2
 *RST: 9.6 kbps

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 to 19.2 kbps.

Manual operation: See ["Data Rate \(Data Channel\)"](#) 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:

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

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 \(Data Channel\)"](#) 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:

<Gain> float
 Range: -80 to 10 dB
 Increment: 0.01
 *RST: 0 dB

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 \(Data Channel\)"](#) on page 53

[: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.

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:

<CCoding> 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:CCOD OFF
 disables channel coding for packet 3.

Manual operation: See ["Channel Coding \(Packet\)"](#) 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.
BB:EVDO:TERM2:DCH:PACK3:COUN 2000
sets number of packets to be send to 2000.
```

Manual operation: See ["Number of Packets to Send \(Packet\)"](#) on page 50

[[: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 | PN15 | PN16 | PN20 |
PN21 | PN23 | DLISt
*RST: PN9

Example:

```
SOURce:BB:EVDO:TERMinal2:MODE TRAFFIC
enables terminal 2 to work in traffic mode.
SOURce:BB:EVDO:TERMinal2:SUBType S2
sets physical layer subtype 2 for terminal 2.
SOURce:BB:EVDO:TERMinal2:DCHannel:PACKet3:DATA
PATtern
sets the data source of terminal 2 to pattern.
SOURce:BB:EVDO:TERMinal2:DCHannel:PACKet3:
PATtern #H3F,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/temp/datalists"
selects the directory for the data lists.
SOURce:BB:EVDO:TERMinal2:DCHannel:PACKet1:DATA:
DSELection "datalist.dm_iqd"
selects datalist.dm_iqd file as data source. This file must be
in the directory /var/user/temp/datalists and have a file
extension *.dm_iqd.
```

Manual operation: See ["Data Source \(Packet\)"](#) on page 52

**[[: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.

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:

<Filename> string

Example: see `[ :SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DATA` on page 106

Manual operation: See "Data Source (Packet)" on page 52

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DATA: PATtern <Pattern>

(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> 64 bits

*RST: #H0,1

Example: see `[ :SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:DATA` on page 106

Manual operation: See "Data Source (Packet)" on page 52

[: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 (Packet)" 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.

Parameters:

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

Example:

BB:EVDO:TERM2:MODE ACC
enables terminal 2 to work in access mode.
BB:EVDO:TERM2:DCH:PACK:FCS:STAT OFF
disables appending of FCS to the MAC layer for terminal 2,
packet 1.

Manual operation: See ["FCS \(Packet\)"](#) on page 53

[: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 dB to 10 dB
Increment: -
*RST: 0 dB

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.
BB:EVDO:TERM2:DCH:PACK3:GAIN -10
sets the relative gain of packet 3 to -10 dB

Manual operation: See ["Relative Gain \(Packet\)"](#) 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.
BB:EVDO:TERM2:DCH:PACK3:COUN 2000
sets number of packets to be send to 2000.
```

Manual operation: See ["Infinite Packets \(Packet\)"](#) on page 50

[[: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> B4 | Q4 | Q2 | Q4Q2 | E4E2

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.

*RST: B4

Example:

```
BB:EVDO:TERM2:DCH:PACK3:MOD?
queries the modulation for packet 3 of terminal 2.
```

Usage: Query only

Manual operation: See "[Modulation \(Packet\)](#)" on page 51

[: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> PS128 | PS256 | PS512 | PS768 | PS1024 | PS1536 | PS2048 | PS3072 | PS4096 | PS6144 | PS8192 | PS12288

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.
BB:EVDO:TERM2:DCH:PACK3:PSIZ PS512
sets the payload size for packet 3 to 512.

Manual operation: See "[Payload Size \(Packet\)](#)" 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 packet(s).

Parameters:

<State> 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 the physical layer subtype of terminal 2 to 2.
BB:EVDO:TERM2:DCH:PACK2:STAT OFF
deactivates packet 2 of terminal 2.

Manual operation: See "[State \(Packet\)](#)" on page 49

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DCHannel:PACKet<ch>:SUBPackets[:COUNT] <Count>

(enabled for physical layer subtype 2 and for an access terminal working in traffic mode)

Sets the number of sub-packets 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.
 BB:EVDO:TERM2:DCH:PACK3:SUBP:COUN 4
 sets the number of sub-packets to 4, i.e. subpacket 0, 1, 2 and 3 of a packet will be sent in a subframe each (with 2 subframes interleaving between) before the next packet is started.
 This is to simulate a situation where 3 times NAK has been received from the basestation with an ACK after the 4th sub-packet

Manual operation: See ["Number of Sub-packets \(Packet\)"](#) 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: ON

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 \(Data Channel\)"](#) on page 53

[: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 44

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCCChannel: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 \(DRC Channel\)"](#) 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 \(DRC Channel\)"](#) on page 47

[: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 \(DRC Channel\)"](#) 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.

Parameters:

<Length> DL1 | DL2 | DL4 | DL8
 *RST: DL1

Example: BB:EVDO:TERM2:DRCC:LENG DL2
 sets the transmission duration of DRC to 2 slots.

Manual operation: See "[Length \(DRC Channel\)](#)" on page 47

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCCChannel: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 \(DRC Channel\)](#)" on page 47

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:DRCCChannel: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 \(hex\) \(DRC Channel\)](#)" 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 \(DSC Channel\)"](#) on page 46

[: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: 8
 *RST: 8

Example:

BB:EVDO:TERM2:DSCC:LENG 16
 sets the transmission duration of DSC to 16 slots.

Manual operation: See ["Length \(DSC Channel\)"](#) 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 \(DSC Channel\)"](#) on page 46

[: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.

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 \(oct\) \(DSC Channel\)"](#) on page 46

[:SOURce<hw>]:BB:EVDO:TERMinal<st>:IMASK <IMask>

Sets the long code mask of the I channel.

Parameters:

<IMask> integer
 *RST: #H000000000000

Example:

BB:EVDO:TERM2:IMAS #H2FFFFFFFFFFFF,42
 sets the long code mask for I channel to #H2FFFFFFFFFFFF,42.

Manual operation: See ["Long Code Mask I \(hex\)"](#) on page 44

[: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 \(Access Terminal\)"](#) on page 44

[: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 \(Pilot Channel\)"](#) on page 45

[[: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:

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

Example: BB:EVDO:TERM2:PCH:STAT?
 queries the state of the pilot channel.

Usage: Query only

Manual operation: See ["State \(Pilot Channel\)"](#) on page 45

[[:SOURce<hw>]:BB:EVDO:TERMinal<st>:PLENgt <PLength>

(enabled for access terminal working in access mode)

Specifies the length of the preamble in frames (16 slots each) of the acces probe.

Parameters:

<PLength> integer
 Range: 1 frame to 7 frames
 *RST: 1 frame

Example: BB:EVDO:TERM2:PLEN 7
 sets the preamble length to 7 frames.

Manual operation: See ["Preamble Length"](#) on page 44

[[:SOURce<hw>]:BB:EVDO:TERMinal<st>:QMASK <QMask>

Sets the long code mask of the Q channel.

Parameters:

<QMask> integer
 *RST: #H000000000000

Example: BB:EVDO:TERM2:IMAS #H3FFFFFFFFFFFF,42
 sets the long code mask for I channel to #H3FFFFFFFFFFFF,42.

Manual operation: See ["Long Code Mask Q \(hex\)"](#) on page 44

[[:SOURce<hw>]:BB:EVDO:TERMinal<st>:RRICchannel: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> 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 \(RRI Channel\)"](#) on page 46

[: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 \(RRI Channel\)"](#) on page 46

[: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 \(Access Terminal\)"](#) on page 44

[: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 \(Access Terminal\)"](#) on page 44

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