



## 1 Introduction

This document describes the most common PTC commands. These commands can be triggered via the Radio Console Control tool or implementing an application on top of the Test component driver dll [4].

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## 2 Command overview

Commands are split up into 3 categories: general commands, attributes and modes. General commands are commands providing the user extra information and features such as executing script containing a number of commands. Attributes define the configuration of the radio. Modes allow to change the radio state of the chip. Only one mode can be selected at a time.

*Note:* The set of supported attributes and modes is defined by the used PTC software. The radio console application dynamically loads the attributes and modes supported by the PTC software running on the DUT. The **HELP** command provides an overview of the supported attributes and modes of the used PTC component.

The Help command will show you what attributes belong to what modes. The order in which the attributes are supplied to the modes are based on alphabetical order and is also shown in this overview.

The Help command will also show what the possible values a certain attribute can have.

### 2.1.1 General commands

**Table 1: General commands**

Command	Summary	Comments
<b>INFO</b>	Specific information such as mac address and version of the firmware on the chip	
<b>I</b>	Print the current settings/state of the chip	
<b>H / HELP</b>	Show help on all possible commands	See note
<b>RUN</b>	Execute a script that contains a sequence of commands	
<b>Q / QUIT / EXIT</b>	Quit the application	

*Note:* The list of all possible commands is dependent on the gpPTC.dll and target firmware. Pressing **H** or **HELP** will list all possible attributes and modes.

### 2.1.2 Attributes

Attributes define the configuration of the radio. These can be set before or during execution of modes, except the attributes to change the RX mode which can only be set while RX is off. When there is no execution mode active, changing the attributes will have no effect. If there is an execution mode active, changing these attributes will have a direct impact on the currently executing mode.

The possible and valid values for each attribute are described by the **HELP** command.

*Note:* Some attributes can also be set when entering a mode command. This will have the same effect as setting the attributes separately. The **HELP** command gives an overview of what attributes are being used by a specific command.

**Table 2: Attribute commands**

Command	Summary	Example
<b>AD</b>	Switch antenna diversity on or off	AD ON
<b>AN</b> <sup>[1]</sup>	Select antenna	AN 1
<b>BLEDATARATE</b> <sup>[2]</sup>	Select the PHY BLE datarate (1Mbit/2Mbit)	BLEDATARATE 2
<b>BLETESTPACKET</b> <sup>[2]</sup>	Defines the BLE TestPacket Type to be used in Direct Test Mode Transmit	BLETESTPACKET 3
<b>CH</b>	Set channel	CH 15
<b>CSMA</b> <sup>[1]</sup>	Set the CSMA-CA mode	CSMA CCA
<b>CW</b>	Set the type of the Continuous Wave Mode	CW U
<b>MAPCLKIOPIN</b>	Set the GPIO number to be used to map the clock	MAPCLKIOPIN 15
<b>MAPCLKTYPE</b>	Set the clock type to be used to map the clock	MAPCLKTYPE
<b>MAXBE</b> <sup>[1]</sup>	Maximum MAC Backoff exponent	MAXBE 5
<b>MC</b> <sup>[1]</sup>	Maximum number of CSMA Backoffs	MC 4
<b>MINBE</b> <sup>[1]</sup>	Minimum MAC Backoff exponent	MINBE 3
<b>MR</b> <sup>[1]</sup>	Maximum number of MAC retries	MR 3
<b>PACKETCOUNT</b>	Set the number of packets to transmit	PACKETCOUNT 25
<b>PACKETINTERVAL</b> <sup>[1]</sup>	Set the interval between packets, in ms	PACKETINTERVAL 100
<b>PACKETLENGTH</b>	Set the packet length in bytes	PACKETLENGTH 50
<b>PHY</b>	Set the PHY access mode	PHY BLE
<b>PI</b>	Set Packet-In-Packet mode on or off	PI ON
<b>PM</b>	Set Promiscuous mode	PM ON
<b>RRADDRESS</b>	Set the address of the register to read	RRADDRESS 0x070D
<b>SCANCOUNT</b> <sup>[1]</sup>	Number of Energy Detect scans	SCANCOUNT 2
<b>SCANINTERVAL</b> <sup>[1]</sup>	Interval between Energy Detect scans, in ms	SCANINTERVAL 50
<b>SETTXDATA</b> <sup>[1]</sup>	Set transmit packet payload	See 3.21
<b>SPAN</b> <sup>[1]</sup>	Set the Pan ID	SPAN 0xCAFE
<b>SSA</b> <sup>[1]</sup>	Set the short MAC address	SSA 0xBEEF
<b>SLP</b>	Set the sleep mode configuration	SLP RC
<b>W</b>	Set the TX Power	W 3
<b>WRADDRESS</b>	Set the address of the register to write to	WRADDRESS 0x070D
<b>WRBITMASK</b>	Define a bit mask for the write register value	WRBITMASK 0x30
<b>WRVALUE</b>	Set the value to write to a register	WRVALUE 0x0
<b>RXMS</b>	Set the Multi Standard RX mode selector	RXMS ON
<b>RXHS</b> <sup>[1]</sup>	Set the High Sensitivity RX mode selector	RXHS ON
<b>RXMC</b> <sup>[1]</sup>	Set the Multi Channel RX mode selector	RXMC ON
<b>MIDLEVELAGCATT</b>	Enable the RX LNA AGC attenuation during timeout	MIDLEVELAGCATT ON

<sup>[1]</sup> RF4CE only

<sup>[2]</sup> BLE only

### 2.1.3 Modes

Modes define an execution state of the chip. The modes can be switched on or off. The modes that are switched on remain on until the off command has been issued. The On/Off switch always should be the last argument in case any arguments are given. An overview of the possible modes is given here and discussed in the next chapter.

**Table 3: Mode commands**

Command	Summary	Example
<b>ED</b> <sup>[1]</sup>	Do an energy detect scan	ED ON
<b>P</b>	Print packet statistics	P
<b>R</b>	Reset packet statistics	R
<b>RR</b>	Read register	RR
<b>RX</b>	Set the chip in Receive Mode	RX ON
<b>RXP</b> <sup>[1]</sup>	Print the received packets	RXP ON
<b>SETCW</b>	Turn on the continuous wave mode	SETCW ON
<b>SETCLKON GPIO</b>	Map a clock on a certain GPIO	SETCLKONGPIO 14 32KHZ ON
<b>SL</b>	Put the radio in sleep mode	SL ON
<b>TX</b>	Transmit packets with payload from SETTXDATA command	TX 100 10 ON
<b>TXR</b> <sup>[1]</sup>	Transmit packets with random payload	TXR 100 10 20 ON
<b>WR</b>	Write byte value to register	WR 0x70E 0
<b>WRB</b>	Write bits value to register	WRB 0x70D 0x30 0

<sup>[1]</sup> RF4CE only

<sup>[2]</sup> BLE only

### 3 Attribute Commands

#### 3.1 Switch Antenna Diversity On or Off

Command: **AD ON/OFF**

Available for: RF4CE

This command turns the antenna diversity ON or OFF. If antenna diversity is disabled, the antenna that was set via the **AN** command is used. If no value was set via **AN**, the default value is used (antenna 0).

#### 3.2 Select Antenna

Command: **AN *number***

Available for: RF4CE and BLE

This command allows to select the antenna used during transmit (continuous wave or packets). If antenna diversity is switched off, this also specifies which antenna to use to receive packets. If this command is used, the antenna diversity is turned off implicitly. To turn the antenna diversity back on use the **AD** command.

#### 3.3 Set BLE Datarate

Command: **BLEDATARATE *type***

Available for: BLE

This command defines the Data rate of BLE of the radio. Normal (1 Mbit) and High Data rate (2Mbit) are supported.

### 3.4 Set BLE test packet payload type

Command: **BLETESTPACKET *type***

Available for: BLE

This command defines the payload type of the BLE test packet as defined in [2].

**Table 4: BLE test packet types**

Type	Summary
0	PRBS9 sequence '11111111100000111101...' (in transmission order)
1	Repeated '11110000' (in transmission order)
2	Repeated '10101010' (in transmission order)
3	PRBS15 sequence
4	Repeated '11111111' (in transmission order) sequence
5	Repeated '00000000' (in transmission order) sequence
6	Repeated '00001111' (in transmission order) sequence
7	Repeated '01010101' (in transmission order) sequence

### 3.5 Set Channel

Command: **CH *channel***

*channel* = channel number

Available for: RF4CE and BLE

This command sets the RF channel to the specified channel number.

**!** RF channel does not equal the channel index used on higher layers of the BLE specification. The RF channel linearly maps on frequency (2402+ 2 x RF Channel) MHz. For details please check Vol 6 1.4.1 Advertising and Data Channel of [2].

### 3.6 Set the CSMA-CA Mode

Command: **CSMA *mode***

*mode* = **NOCCA** : no Clear Channel Assessment  
= **CCA** : CCA only; no retries if channel not clear  
= **CSMA** : CSMA-CA as defined in [1]

Available for: RF4CE

This command sets the clear channel assessment (CCA) mode to be used when transmitting a packet (see [1]).

By default, the applicationPTC Overviewbackoff periods or failing channel access.access.

### 3.7 Set Continuous Wave Mode

Command: **CW *mode***

*mode* = **U** : unmodulated continuous wave mode  
= **M** : modulated continuous wave mode

Available for: RF4CE and BLE

This command sets the chip in the continuous wave mode. It is possible to switch from modulated to un-

modulated mode and back.

*Note:* Continuous wave mode is disabled implicitly when the channel is changed (CH) or the device is power-cycled.

During continuous mode, the receiver will be disabled. When continuous mode is disabled, the state as it was before continuous wave was started will be set again. Also during continuous wave mode, some commands (i.e. transmitting data) will be disabled until the user disables the continuous wave mode.

### 3.8 Set Maximum Backoff Exponent

Command: **MAXBE *number***

*number* = the maximum value (1..5) of the backoff exponent  
(0 will be accepted as 1)

Available for: RF4CE

This command sets the maximum value of the backoff exponent used in the CSMA-CA algorithm described in the IEEE 802.15.4 specification [1].

### 3.9 Set Maximum Number of CSMA Backoffs

Command: **MC *number***

*number* = the maximum number of back-offs (0..5)

Available for: RF4CE

This command sets the maximum number of back-off procedures during the CSMA-CA algorithm as explained in the IEEE 802.15.4 specification [1].

### 3.10 Set Minimum Backoff Exponent

Command: **MINBE *number***

*number* = the minimum value (0..3) of the backoff exponent

Available for: RF4CE

This command sets the minimum value of the backoff exponent used in the CSMA-CA algorithm described in the IEEE 802.15.4 specification [1].

### 3.11 Set the Maximum Number of Retries

Command: **MR *number***

*number* = the maximum number of retries (0..5)

Available for: RF4CE

This command sets the number of times a frame will be retransmitted by the MAC if an acknowledgement was requested but not received.

### 3.12 Set the number of packets to transmit

Command: **PACKETCOUNT *number***

*number* = number of packets to transmit

Available for: RF4CE and BLE

This command sets the number of times a packet will be transmitted.

### 3.13 Set the interval between packets

Command: **PACKETINTERVAL** *interval*

*interval* = interval between packets, in ms

Available for: RF4CE

This command sets the interval between transmitted packets.

### 3.14 Set the packet length

Command: **PACKETLENGTH** *number*

*number* = - for RF4CE: total number of bytes in the packet  
- for BLE: number of bytes in the payload

Available for: RF4CE and BLE

This command sets the length of the packet to transmit.

**!** In BLE mode the maximum packet payload is 241 bytes.

### 3.15 Set the PHY access mode

Command: **PHY** *mode*

*mode* = RF4CE  
= BLE

Available for: RF4CE and BLE

This command sets the PHY access mode. It's only changeable if **RX** is set to **OFF**.

### 3.16 Set Packet-In-Packet resynchronization (PIP)

Command: **PI** *ON/OFF*

Available for: RF4CE

This command sets the Packet-In-Packet resynchronization ON or OFF.

### 3.17 Switch Promiscuous Mode On or Off

Command: **PM** *ON/OFF*

Available for: RF4CE

This command turns the Promiscuous Mode ON or OFF. In promiscuous mode the transceiver will not perform any address filtering on incoming packets; any packet will be received. In normal mode received packets will be filtered on Destination Address and PanID.

Default, the Promiscuous Mode is ON.

### 3.18 Sleep mode configuration

Command: **SLP** *mode*

Available for: RF4CE and BLE

This command configures the Sleep mode configuration that will be used when putting the radio into sleep.



### 3.19 Set the number of scans during Energy Detect

Command: **SCANCOUNT** *number*

*number* = number of scans during Energy Detect (ED)

Available for: RF4CE

This command sets the number of scans during Energy Detect.

### 3.20 Set the scan interval during Energy Detect

Command: **SCANINTERVAL** *interval*

*interval* = interval between scans during Energy Detect (ED), in ms

Available for: RF4CE

This command sets the interval between scans during Energy Detect.

### 3.21 Set Transmit Data

Command: **SETTXDATA** [*data*]

*data* = 6..max Character string where each character (0..9, a..f) is interpreted as a hexadecimal value for a nibble.  
Should not be prepended with "0x"!  
The maximum length is application/platform specific.

Available for: RF4CE

This command specifies the data to be used as payload when transmitting a packet using the **TX** command.

The data set using the **SETTXDATA** command is interpreted as the MAC Header and MAC Payload of the IEEE 802.15.4 data frame. This means the first 2 bytes (4 characters) will be interpreted as the MAC Frame Control field, the third byte (next 2 characters) will be interpreted as the MAC Sequence Number and the following bytes will be interpreted as Addressing fields (as the MAC Frame Control field specifies these to be present). All remaining bytes will be interpreted as the MAC Payload. Please refer to the general MAC frame format as specified in the IEEE 802.15.4 specification [1] for additional information on the format of a data packet.

*Note:* If no data is set using the **SETTXDATA** command, the transmit command will use a default data packet (see 4.8 below).

The maximum length that can be configured is application specific.

Examples:

(input:) SETTXDATA 01234567890ABCDEFabcdef

(output:) Make sure TX Data is in 1-byte (2 hex values - pairs)

(input:) SETTXDATA 00112233445566778899

(output:) Data set

### 3.22 Set PAN ID

Command: **SPAN *panId***

*panId* = the 16-bit PAN ID to be used (default 0xCAFE)

Available for: RF4CE

This command sets the PAN ID that, in normal mode (i.e. Promiscuous Mode is off), is used in combination with the Short Address to filter incoming packets, and to decide whether an acknowledgement for an incoming packet needs to be generated or not.

Example:

(input:) SPAN 0x1234

### 3.23 Set Short Address

Command: **SSA *address***

*address* = the 16-bit Short Address to be used (default 0xBEEF)

Available for: RF4CE

This command sets the Short Address that, in normal mode (i.e. Promiscuous Mode is off), is used in combination with the PAN ID to filter incoming packets, and to decide whether an acknowledgement for an incoming packet needs to be generated or not.

Example:

(input:) SSA 0x1234

### 3.24 Set Transmit Power

Command: **W *power***

*power* = transmit output power in dBm

Available for: RF4CE and BLE

This command sets the transmit power of the chip. Please refer to the chip's Data Sheet for the supported TX power control range.

### 3.25 Mapping Clock to IO Pin

Command : **MAPCLKIOPIN *gpio***

*Gpio* = the GPIO number that will have the clock mapped to it

Available for: RF4CE and BLE

This command sets the GPIO that will be used to put the clock out. Running the help command of the RadioControlConsole will show a list of GPIOs that can be used.

### 3.26 Mapping Clock Type

Command: **MAPCLKTYPE *type***

Available for: RF4CE and BLE

This command sets the clock that will be mapped onto a defined GPIO. Running the help command of the

RadioControlConsole will show a list of clocks that can be defined.

### 3.27 Register Read address

Command: **RRADDRESS *addr***

*Addr* = the register address that will be used by the Register read command

Available for: RF4CE and BLE

### 3.28 Write register Attributes

Command: **WRADDRESS *addr***

*Addr* = the register address that will be used by the Register write command

Available for: RF4CE and BLE

Command: **WRBITMASK *mask***

*mask* = a bitmask to use when setting a write register value

Available for: RF4CE and BLE

Command: **WRVALUE *value***

*Value* = byte-value to write to a register

Available for: RF4CE and BLE

### 3.29 Switch Multi Standard RX mode selector On or Off

Command: **RXMS *ON/OFF***

Available for: RF4CE and BLE

This command turns the RX Mode selector to Multi Standard. If set to **ON**, the attributes **RXHS** (High Sensitivity RX mode selector) and **RXMC** (Multi Channel RX mode selector) will be set to **OFF**. The attribute can only be changed if **RX** mode is set to **OFF**. The default value is **OFF**.

### 3.30 Switch Multi High Sensitivity RX mode selector On or Off

Command: **RXHS *ON/OFF***

Available for: RF4CE

This command turns the RX Mode selector to High Sensitivity. If set to **ON**, the attributes **RXMS** (Multi Standard RX mode selector) and **RXMC** (Multi Channel RX mode selector) will be set to **OFF**. The attribute can only be changed if **RX** mode is set to **OFF**. The default value is **OFF**.

### 3.31 Switch Multi Channel RX mode selector On or Off

Command: **RXMC *ON/OFF***

Available for: RF4CE

This command configures the RX Mode selector as Multi Channel. If set to **ON**, the attributes **RXMS** (Multi Standard RX mode selector) and **RXHS** (High Sensitivity RX mode selector) will be set to **OFF**. The attribute can only be changed if **RX** mode is set to **OFF**. The default value is **OFF**.

### 3.32 Switch automatic mid-level RX LNA AGC attenuation On or Off

**Command:** **MIDLEVELAGCATT ON/OFF**

Available for: RF4CE/BLE

This command enables automatic mid-level AGC (adaptive gain control) attenuation for RX if “noise” is received for a fixed time, when set to **ON**. This feature is disabled by default as it only shows benefits to counter high Wi-Fi interference. The other levels (not mid-level) of automatic RX AGC attenuation are always enabled. The default value is **OFF**.

## 4 Mode commands

### 4.1 Perform an Energy Detect scan

**Command:** **ED [scancount] [scaninterval] ON/OFF**

*scancount* = number of scans  
*scaninterval* = interval between scans, in ms

Available for: RF4CE

This command performs *scancount* Energy Detect (ED) scans, with a specified *scaninterval*. An indication of the amount of energy (linear scale) is shown for each ED scan. The ED scan is done on the channel currently set using the **CH** command.

Example:

```
(input:) ED 3 7
(output:) ED Scan Started
          ED 2C
          ED 2E
          ED 30
          ED Scan Finished
```

### 4.2 Show DUT info

**Command:** **INFO**

Available for: RF4CE and BLE

This command shows available DUT information like MAC/BLE dev address, software version and partnumber.

### 4.3 Show Packet Statistics

**Command:** **P**

Available for: RF4CE and BLE

This command shows the following packet statistics:

- RX - The number of packets received with correct FCS. This can be used to determine the Packet Error Rate (PER).
- TX OK - The number of packets transmitted successfully (triggered via the **TX** or **TXR** command).
- TX FAIL - The number of transmission failures (triggered via the **TX** or **TXR** command).
- Avg RSSI, LQI - The average RSSI and LQI measured over the received packets.

These statistics can be reset with the **R** command (see 4.4 below).

**!** In BLE mode, the values returned by the Show Packet Statistics are only valid after the RX/TX mode has been stopped explicitly by issuing the RX OFF or TX OFF command depending on which mode was activated (see 4.5 for RX and 4.9, 4.10 for TX).

**!** In BLE mode the Avg RSSI and LQI measurements are not supported.

Example:

```
(input:) P
(output:) Avg RSSI      : -34
          Avg LQI      : 237
          RX Packet Count : 84
          TX OK         : 100
          TX FAIL       : 0
```

## 4.4 Reset Packet Statistics

Command: **R**

Available for: RF4CE and BLE

This command resets the packet statistics (see 4.2 above).

## 4.5 Switch Receiver On or Off

Command: **RX ON/OFF**

Available for: RF4CE and BLE

This command turns the receiver ON or OFF.

If an invalid combination of RX mode selector (**RXMS**, **RXHS**, **RXMC**) and **PHY** is selected, **RX** won't turn **ON**.

Default, the application starts with the receiver OFF.

## 4.6 Switch Printing of Received Packets On or Off

Command: **RXP ON/OFF**

Available for: RF4CE

This command turns the display of received packets ON or OFF. The maximum packet length that can be displayed is application specific. Larger packets will be received, but are not displayed.

Default, this setting is turned OFF.

## 4.7 Set Continuous Wave Mode

Command: **SETCW mode ON/OFF**

```
mode = U : unmodulated continuous wave mode
      = M : modulated continuous wave mode
```

Available for: RF4CE and BLE

This command sets the chip in the continuous wave mode. It is possible to switch from modulated to unmodulated mode and back.

*Note:* Continuous wave mode is disabled implicitly when the channel is changed (**CH**) or the Power (**W**) or the device is power-cycled.

During continuous mode, the receiver will be disabled. When continuous mode is disabled, the state as it was before continuous wave was started will be set again. Also during continuous wave mode, some

commands (i.e. transmitting data) will be disabled until the user disables the continuous wave mode.

## 4.8 Put radio in sleep mode

Command: **SL *mode* ON / SL *mode* ON *time***

*mode* = the supported sleep modes by the radio  
*time* = number of milliseconds (ms) that the radio will sleep

Available for: RF4CE and BLE

This command will put the radio in sleep mode. The time is optional. When specified, the radio will put itself into sleep for that amount of time and will wake up and restore its attributes after the time has expired. If no time is specified, the chip will remain in sleep mode and some external action is required to wake the chip up. During the time that the chip is in sleep, no communication is possible.

## 4.9 Transmit Packets with Payload from SETTXDATA Command

Command: **TX [*packetcount*] [*packetinterval*] ON/OFF**

*packetcount* = number of transmit attempts ( $\geq 0$ )  
*packetinterval* = interval between transmit attempts, in ms ( $\geq 0$ )

Available for: RF4CE and BLE

In case of RF4CE, this command sends *packetcount* packets with the data that was specified by the last SETTXDATA command with a specified *packetinterval*.

In case of BLE, the command sends *packetcount* BLE test packets with a payload type specified by the BLETESTPACKET command and the last PACKETLENGTH command. The *packetinterval* parameter is not available for BLE.

Example 1:

(input:) TX 10 0 ON

(output:) TX set to ON

If you do not use the ON command, no packets will be transmitted.

Example 2:

(input:) TX 0xF1 0xA ON

(output:) TX set to ON

**Note:** The *packetinterval* parameter (only RF4CE) is used to define the time in milliseconds between the reception of the dataconfirm primitive of the previous packet and the trigger to send the new packet. The minimum value of the interval should be 5 ms. The software does not take into account the time required to write the packet over the serial bus to the chip and the actual transmit time. Therefore, the actual inter packet delay will always be larger than *interval*.

When *packetcount* equals 0xffff, the chip will start a continuous transmit loop. When *packetcount* equals 0, a previously started continuous transmission session will be stopped.

## 4.10 Transmit Packets with Random Payload

Command: **TXR** [*packetcount*] [*packetinterval*] [*packetlength*] **ON/OFF**

*packetcount* = number of transmit attempts (>0)  
*packetinterval* = interval between transmit attempts, in ms (≥0)  
*packetlength* = length of the random packet

Available for: RF4CE

This command sends *packetcount* packets with *packetlength* random data bytes with a specified *packetinterval*.

Example 1:

(input:) TXR 10 0 15 ON  
(output:) TXR set to ON

Example 2:

(input:) TXR 0xF1 0xA 0x5 ON  
(output:) TXR set to ON

**Note:** The *packetinterval* parameter is used in the application to define the time in milliseconds between the transmit confirmation of the previous packet and the trigger to send a new packet. The minimum value of the interval should be 5 ms. The software does not take into account any bus transfers and medium access delays. Therefore, the actual inter packet delay will always be larger than *interval*.

When *number* equals 0xffff, the chip will start a continuous transmit loop. When *number* equals 0, a previously started continuous transmission session will be stopped.

## 4.11 Map the Clock to a GPIO

Command: **SETCLKONGPIO [mapclkpin] [mapclktype] ON/OFF**

*mapclkpin* = GPIO on which the clock will be mapped  
*mapclktype* = type of clock that will be mapped

Available for: RF4CE and BLE

This command brings the clock to GPIO defined by the MapClkpin attribute..

## 4.12 Read a register

Command: **RR [raddress]**

*raddress* = the address of the register to be read

Available for: RF4CE and BLE

This command returns the content of a register.

## 4.13 Write a register byte

Command: **WR [waddress] [wvalue]**

*waddress* = the address of the register to write to

*wvalue* = the byte value that needs to be written to the register

Available for: RF4CE and BLE

This command writes a value to a register.

## 4.14 Write register bits

Command: **WRB [waddress] [wbitmask] [wvalue]**

*waddress* = the address of the register to write to

*wbitmask* = the mask to be used over the byte value

*wvalue* = the byte value that needs to be written to the register

Available for: RF4CE and BLE

This command writes a bit value to a register.



## 5 Custom Commands

Command: **EXECUTECUSTOMCOMMAND** *[byte array]*

Available for: RF4CE and BLE

The ExecCustomCommand command provides a two-directional tunnel allowing to transfer byte arrays from the RCC to the PTC running on the target and vice versa.

This command sends the byte array “as is” to the PTC component running on the target. The bytes can then be interpreted at the target side and execute a “custom command”. The default custom command the PTC implements, increments and returns all received bytes.

The PTC test component is integrated in SDK environment : it allows the user to implement its own custom commands. The byte array the embedded application receives can be structured as the user sees fit. The parsing of this byte array needs to be implemented by the user at the target side. E.g. : byte array = *[length]* *[commandID]* *[data arguments]*. The user then needs to interpret this and implement the required handling and functionality. For further information, see [3].

## References

- [1] IEEE Standard for Low-Rate Wireless Personal Area Networks (WPANs);  
IEEE Std 802.15.4 – 2015
- [2] Bluetooth 4.2 Specification
- [3] GP\_P330\_AN\_13550\_Integrate\_PTC\_into\_SDK.pdf
- [4] GP\_P864\_UM\_12253\_RadioControlConsoleUserManual.pdf

## Abbreviations

CCA	Clear Channel Assessment	PER	Packet Error Rate
CLI	Command Line Interface	PIP	Packet-In-Packet Resynchronization
CSMA-CA	Carrier Sense Multiple Access with Collision Avoidance	PTC	Product Test Component
DUT	Device Under Test	RCC	Radio Control Console
ED	Energy Detect	RF	Radio Frequency
FCS	Frame Check Sequence	RSSI	Received Signal Strength Indication
IO	Input Output	RX	Receive(r)
LQI	Link Quality Indication	TX	Transmit(ter)
PAN	Personal Area Network	UART	Universal Asynchronous Receiver and Transmitter

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## Document History

Version	Date	Section	Changes
1.0	4 Nov 2019	all	Section removed from RadioControlConsole User manual
1.2	4 Nov 2019		Update after review
1.3	07 Jan 2021	2.1.12 3.15 3.29 3.30 3.31 4.5	Added RX mode attributes selectors and validity checks on them Added Boldon James document control Updated footer with the right document reference number Updated copyright year on <i>Important Notice</i> section
1.4	08 Jul 2021	3.32	Added MIDLEVELAGCATT