

## CMT221xLH Configuration Guide

### Overview

This document provides parameter configuration instructions for users using the CMT2210LH and CMT2217LH RFPDK.

Notes:

The CMT2217LH is supported by RFPDK V1.48 and above.

The product models covered in this document are shown in the table below.

**Table 1. Product Models Covered in This Document**

Product Model	Frequency Range	Modulation Method	Chip Function	Package
CMT2210LH	300 - 960 MHz	OOK	Direct-Tie and transmitting-only	SOP8
CMT2217LH	300 - 960 MHz	OOK	Direct-Tie and transmitting-only	SOP8

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# 1 RFPDK Operating Principle

RFPDK is a software tool designed for users to have a quick start to use the CMOSTEK NextGenRF™ family products. Users can fulfill chip configuration by inputting a small number of easy-understandable parameters closely related to application on the RFPDK interface, then click the *Burn* button to burn the parameters to the internal memory unit of the chip. Another way, users can *Export* the register file then import it into the target application software, which allows users to use the target chip conveniently.

## 2 Software Installation

Download CMOSTEK RFPDK-Vxxx.exe from [www.cmostek.com](http://www.cmostek.com), click CMOSTEK RFPDK-Vxxx.exe to enter the software installation screen as shown in the below figure.



Figure 1. RFPDK Installation Wizard

Click *Next* to enter the next software installation screen and select *I agree to the terms of this license agreement* as shown in the below figure.

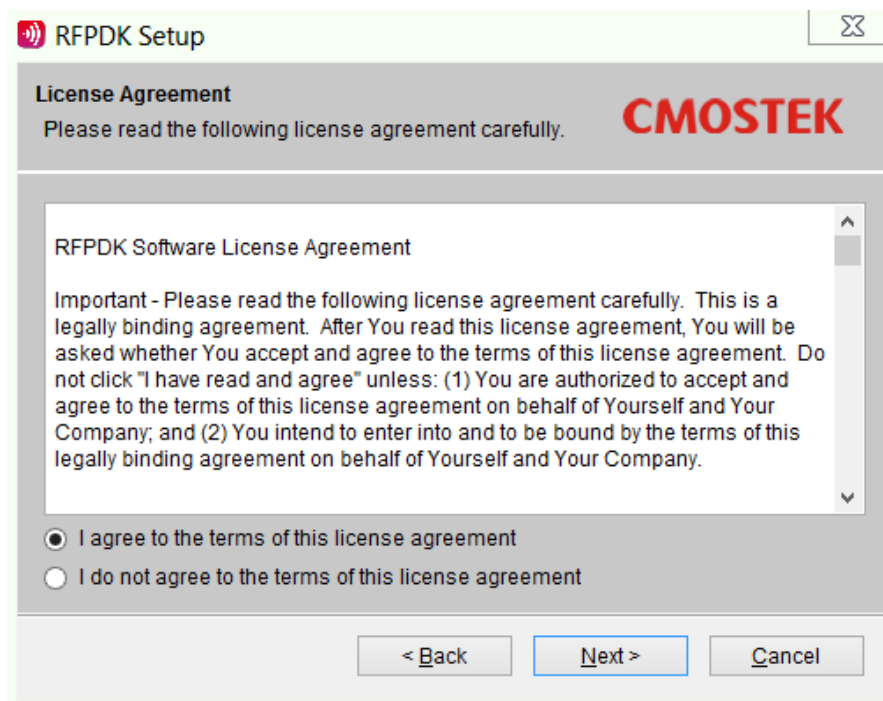


Figure 2. RFPDK License Agreement

Continue to click Next, until the below screen displays. Click *Finish* to complete the installation. The shortcut icon CMOSTEK RFPDK Vxxx will display on the desktop after a successful installation.

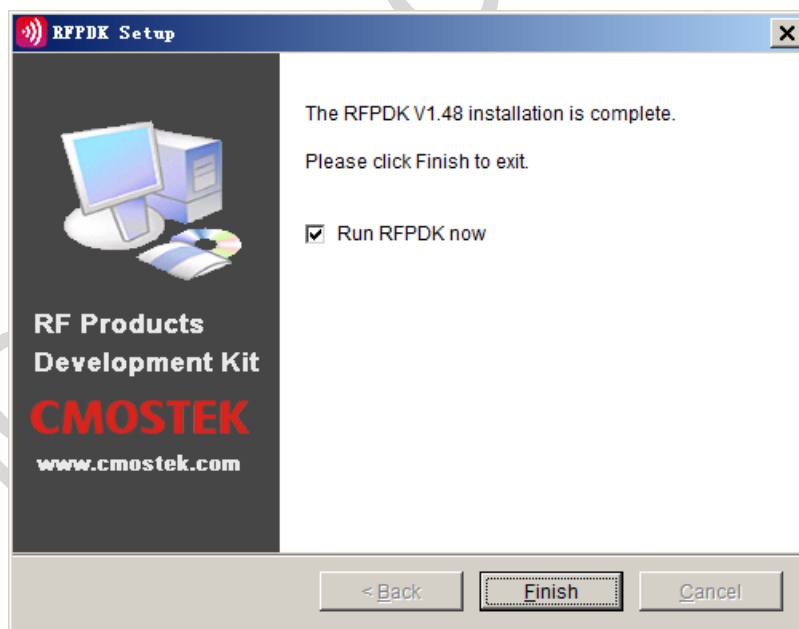


Figure 3. Finish RFPDK Installation

Notes:

1. It requires to close the RFPDK software with old version to avoid conflict.

## 3 Software Usage

### 3.1 Access Configuration Screen

The following uses CMT2210LH as an example to show how to enter the configuration interface screen of the required model. The configuration interface screen of the CMT2217LH is basically similar to this.

Double-click the CMOSTEK RFPDK Vxxx shortcut button on the desktop to enter the chip selection screen. Select *Receivers* in the menu bar, the CMT2210LH chip option displays in the list box as shown in the below figure. Users can select the corresponding chip, click *Next* as shown in the below figure to enter the chip parameters configuration screen.

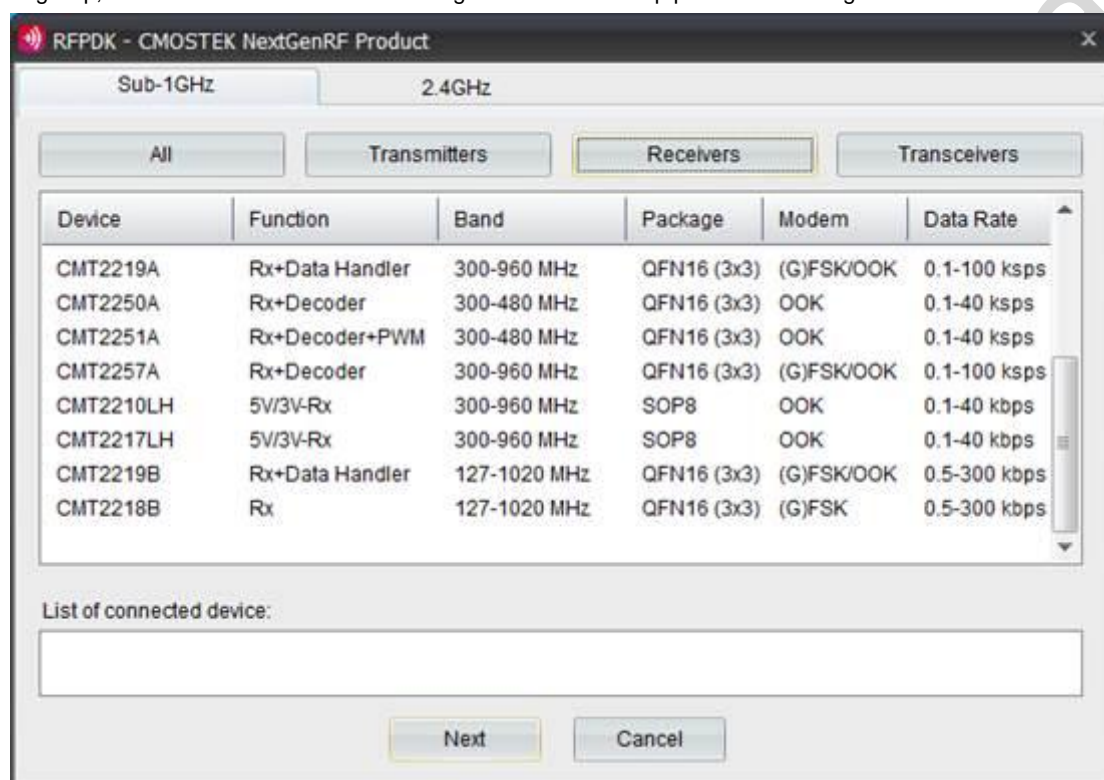


Figure 4. Chip Selection Screen

If no USB programmer or RF\_EB board connecting to the user computer, the below screen will display. Users can click *OK* button in the case.

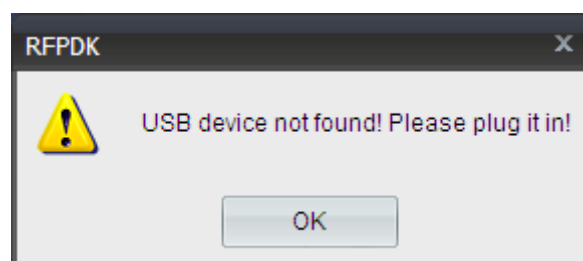


Figure 5. Indication for No USB Device Connecting

### 3.2 Parameter Configuration Screen

The parameter configuration screen is shown in the below figure.

**Configuration List**

Index	Frequency	Xtal Freq.	Demodulation	Data Rate	Tx Freq. Offset	Rx Xtal Tol.	AGC	Auto Reset Time	BW Options	Demod Method	Long-Zero Number
0	433.920 MHz	27.1412 MHz	OOK	2.4 kbps	75 kHz	20 ppm	On	16.8 Sec	Auto-Select	Middle	31

**Chip Parameters**

**RF Settings**

Frequency (300-480)  MHz

Xtal Freq.  MHz

Demodulation

Data Rate (0.5-40)  kbps

Tx Freq. Offset (0-150) +/-  kHz

Rx Xtal Tol. (0-300) +/-  ppm

AGC

Auto Reset Time

**OOK Demod Settings**

**OOK Settings**

BW Options  | Real BW

Demod Method

Long-Zero Number (4-255)

Auto Squelch Enable

Auto Squelch Options

Auto Squelch TH (-128-10)  dBm

List Export Burn

USB: Unconnected Device: Unknown Notice: www.cmostek.com

**Figure 6. CMT2210LH Parameter Configuration Screen**

The CMT2210LH parameters include 2 sections as listed in the below table.

**Table 2. RFPDK Related Sections**

RFPDK Section	Configuration Parameters	RFPDK Input Parameters and Corresponding Registers
RF Settings	RF parameters such as frequency and data rate	Input parameters are used to generate register contents after complicated calculations. Users do not need to understand the calculation process and results.
OOK Demod Settings	OOK demodulation parameters	Input parameters are used to generate register contents after complicated calculations. Users do not need to understand the register content and use default values in general.

### 3.1.1 RF Settings Screen

The RF settings screen is shown in the below figure.

**Figure 7. RF Settings Screen**

1. Frequency: set the RF operating frequency of the chip. The operating frequency range of the CMT2210/17LH is 300 - 960 MHz. It should be noted that the input frequency value should not exceed the frequency band specified on the screen. The input box will display in red for indication if the input is out of range.
2. Xtal Freq: the crystal frequency value required for operating at the target RF frequency, which is a calculated value and cannot be changed.
3. Demodulation: demodulation mode, fixed to OOK demodulation.
4. Data rate: set the data rate of the received data, namely 0.5 - 40 kbps.
5. Tx Freq Offset: set the RF frequency deviation range for transmitter, namely 0 -  $\pm 150$  kHz.
6. Rx Xtal Tol.: the corresponding value should be selected according to the deviation of the selected crystal.
7. AGC: set whether to enable the AGC function. Setting AGC to *On* is beneficial to improve the ability to resist co-channel interference.
8. Auto Reset Time: the chip resets periodically according to this time automatically. The reset time is 3 ms.

### 3.1.2 OOK Demodulation Settings

The OOK demodulation settings screen is shown in the below figure.

**Figure 8. OOK Demodulation Settings**

1. BW Options: configure the receiver IF bandwidth with a total of 5 options, 120 / 240 / 330 / 400 kHz and Auto-Select. User can select Auto-Select generally.
2. Demodulation Method: select the OOK demodulation method. *Middle* is the peak demodulation with high sensitivity and fast signal tracking, suitable for conditions when multiple consecutive 0 occurs in a data packet; *Average* is the average demodulation, used in the AC power supply case, with strong anti-interference ability. However it is not suitable for the condition when data packets contain multiple consecutive 0.

3. Long-Zero Number: configure the maximum number of consecutive 0 allowed in a packet.
4. Auto Squelch Enable: automatic squelch enabling.
5. Auto Squelch Options: auto squelch option (valid when *Auto Squelch Enable* is set as *On*).

ABS\_TH: use the absolute threshold to intercept noise

SNR\_TH: it is used to determine the current noise floor value. This value plus the input value of *Auto Squelch TH*, is used as the threshold for noise interception.

6. Auto Squelch TH: auto squelch threshold (valid when *Auto Squelch Enable* is set to *On*).

ABS\_TH range: -128 ~ 10 dBm

SNR\_TH range: 0 ~ 20 dB

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## 4 Revise History

Table 3. Revise History Records

Version No.	Chapter	Description	Date
0.9	All	Initial version	
1.0	All	CMT2210LH support full frequency band 300-960 MHz	2021/12/14

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## 5 Contacts

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