



# **NRC7292 Standalone SDK**

## **Release Note**

**(version 1.3.2)**

**Ultra-low power & Long-range Wi-Fi**

**Ver 1.0**  
**Sep 16, 2020**

**NEWRACOM, Inc.**

## **NRC7292 Standalone SDK Release Note (version 1.3.2)**

### **Ultra-low power & Long-range Wi-Fi**

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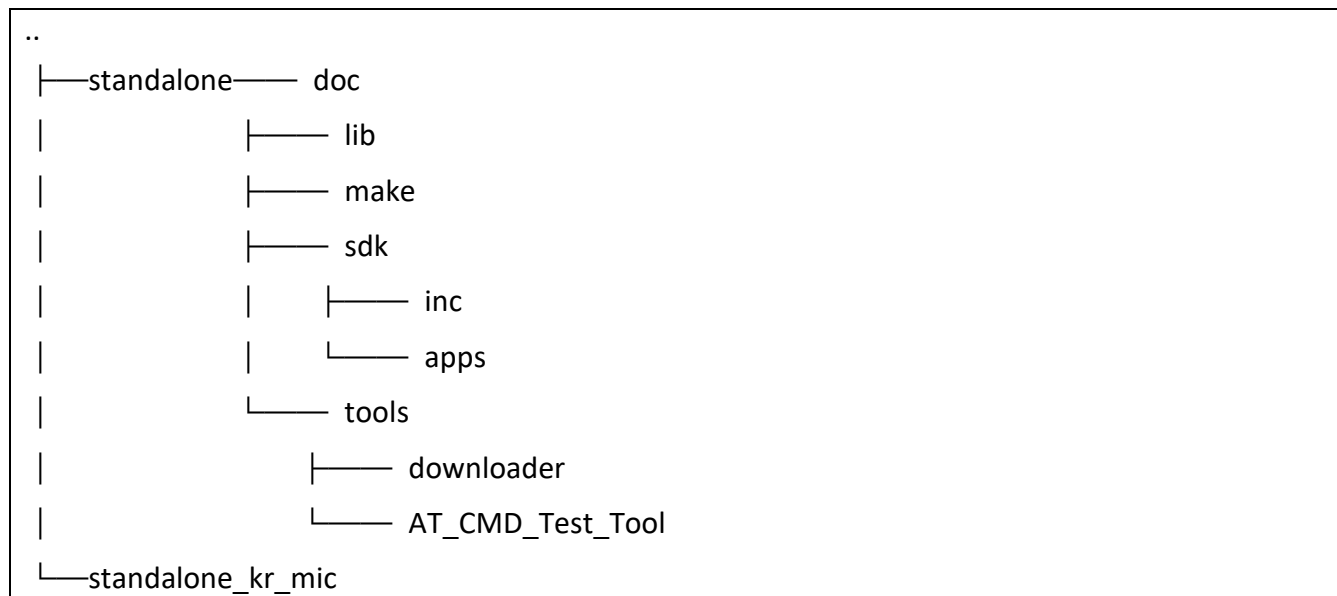
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# 1 Overview

Newracom's NRC7292 is world's first IEEE 802.11ah solution in the market. The IEEE 802.11ah is the new Wi-Fi standard targeting at various IoT applications. NRC7292 offers two different modes, a host and standalone mode. The host mode needs external host like a Raspberry Pi3 used in Newracom's EVK. In this mode, NRC7292 offers 11ah Wi-Fi connectivity. Unlike a host mode, users can write their applications with APIs provided along with a standalone package and build its binary with SDK and runs on NRC7292. By using various peripheral interfaces in NRC7292, users can read sensor data and send it to the server through 11ah network. NRC7292 also provides AT commands application in standalone mode. Users can use the AT commands to utilize the 11ah Wi-Fi.

## 2 Contents of software release package

The software release package contains all the necessary components including the firmware library, header files, api source codes, sample codes, downloader tool, makefile and documents to make use of the latest features. Figure 2.1 and Table 2.1 show the directory structure and contents of the package, respectively. 'standalone\_kr\_mic' package supports 925.5Mhz – 929.0Mhz channel in KR. Please reference 'UG-7292-003-S1G\_Channel.docx'



**Figure 2.1** NRC7292 standalone SDK package directory

**Table 2.1 Contents of NRC7292 standalone SDK package**

Directory	Description
doc	documents for standalone guide document and sdk api lists
lib	nrc7292 modem library and 3 <sup>rd</sup> party libraries.
make	makefiles and configuration files
sdk	standalone user sdk folder
inc	sdk api header files and sdk common header file.
apps	several kinds of reference sample applications. An AT command application is included.
tools	tools folder
downloader	firmware downloader
AT_CMD_Test_Tool	AT command test tool for UART interface

The information of the library released in this package is as follows.

- Library (including 3<sup>rd</sup> party)
  - Name : libmodem.a
  - Location : lib/modem
  - Version : 1.3.2
  - Build date : Sep 16, 2020

## 3 Standalone SDK Package

### 3.1 General guide

The developer can use the 'UG-7292-004-Standalone SDK.docx' document for general description. This document explained setup the S/W build environment, compiling standalone binary, download binary and sample applications.

Supported API list are explained in 'UG-7292-005-Standalone SDK API.docx'. The developer can use apis for NRC7292. The user can implement service related to wifi connection, peripherals. AT-Command guide document is 'UG-7292-006-AT\_Command.docx'.

### 3.2 Supported 3<sup>rd</sup> party Libraries

Followings are 3<sup>rd</sup> party libraries included in NRC7292 standalone SDK package. 'UG-7292-005-Standalone SDK API.docx' has the description and URL for 3<sup>rd</sup> party libraries. The FreeRTOS, LwIP and MbedTLS is mandatory 3<sup>rd</sup> party libraries for standalone SDK.

- FreeRTOS
- Lwip
- MbedTLS
- MQTT
- LibCoap
- cJSON
- Mini-XML
- AWS (Amazon web service)
- TINYCBOR



## 4 SW Release Package

### 4.1 Features in version 1.3.2

Followings are features included in NRC7292 software release package.

- **Build Environment**
  - Update linux based build environemnt (v.1.3.0)
- **ATCMD**
  - AP roaming command (v.1.3.2)
  - FOTA command (v.1.3.2)
  - AP Roaming command (v.1.3.2)

### 4.2 Resolved issues

The table is the resolve issues since v.1.3.0.

**Table 4.1 Resolved issues**

Version	Description
v1.3.1	<b>Sending block in softap tcp server</b> Sending block during multiple tcp receving and sending operations in non-blocking socket
	<b>Fix AT+ATZ operation</b>
	<b>Fix the system assert when the unsupported channel is assigned in softap</b>
v1.3.2	<b>Fix ToS(IP Header) to TID/AC mapping issue</b>
	<b>Fixed to reflect beacon rssi value in scan results</b>
	<b>Fixed Background scan issue in standalone STA</b>
	<b>Fix an issue where UART settings are not changed with the AT+UART set command.</b>
	<b>Improvement downlink throughput in 4MHz</b>
	<b>Fix Association Timeout Issue : Set Fragment Number to be 0</b>

## 4.3 Changed items

The table is the changed items since v.1.3.0.

**Table 4.2 Resolved issues**

Version	Description
v1.3.1	<b>Support KR MIC band (925.5-930.5) in host_kr_mic package</b> standalone_kr_mic package supports 925.5 – 930.5 Mhz for KR.
	<b>Enhancement ATCMD with uart</b> Increase the supported max baudrate (115200) using DMA
	<b>Added i2c sensor read operation in sample_ps_tcp_client</b>
	<b>Added Non-tim mode deep sleep in sample_ps_standalone &amp; sample_ps_tcp_client</b> Assign interval for deep sleep duration
	<b>Change temperature compensation value</b> Temperature power offset is now linearly interpolated, etc.
v1.3.2	<b>RX gain table, RSSI offset, LNA Switching point, 2Mhz mode threshold value</b>
	<b>Restructuring sf_sys_config_t data structure in FLASH</b>
	<b>Rename for add_network function and added remove_network in wifi api</b>
	<b>Added 'AT+WFOTA' and 'AT+WROAM'</b>

## 4.4 Known issues in the release package

Table 4.3 presents all know issues in the version 1.3.2.

**Table 4.3 Known issues**

Category	Description
sample apps	Sending block during multiple tcp receving and sending high throughput operations in blocking socket