NRC7292 Standalone SDK Release Note (version 1.3.1)

Ultra-low power & Long-range Wi-Fi

Ver 1.0
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NEWRACOM, Inc.

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Ultra-low power & Long-range Wi-Fi

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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'

```
..
├──standalone─── doc
│               ├─── lib
│               ├─── make
│               ├─── sdk
│               │    ├─── inc
│               │    └─── apps
│               └─── tool
│                    └─── downloader
└──standalone_kr_mic
```

Figure 2.1 NRC7292 standalone SDK package directory

Table 2.1 Contents of NRC7292 standalone SDK package

Directory	Description
doc	documents for standalone guide ducoument and sdk api lists
lib	nrc7292 modem library and 3rd 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

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

- Library (including 3rd party)
  - Name : libmodem.a
  - Location : lib/modem
  - Version : 1.3.1
  - Build date : Aug 03, 2020

3 Standalone SDK Package

3.1 General guide

The developer can use the ‘UG-7292-004-Standalone SDK.docx’ docuement 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, pheriperals. AT-Commnad guide document is ‘UG-7292-006-AT_Command.docx’.

3.2 Supported 3rd party Libraries

Followings are 3rd party libraries included in NRC7292 standalone SDK package. ‘UG-7292-005-Standalone SDK API.docx‘ has the description and URL for 3rd party libaries. The FreeRTOS, LwIP and Mbedtls is mandatory 3rd party libraries for standalone SDK.

- **FreeRTOS**
- **Lwip**
- **Mbedtls**
- **MQTT**
- **LibCoap**
- **cJson**
- **Mini-XML**
- **AWS (Amazon web service)**
- **TINYCBOR**

4 SW Release Package Version 1.3.0

4.1 Features in version 1.3.1

Followings are features included in NRC7292 software release package version 1.3.0.

- **Build Environment**
  - Update linux based build environemnt (v.1.3.0)

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	**Sending block in softap tcp server** Sending block during multiple tcp receving and sending operations in non-blocking socket
	Fix AT+ATZ operation
	Fix the system assert when the unsupported channel is assigned in softap

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	**Support KR MIC band (925.5-930.5) in host_kr_mic package** standalone_kr_mic package supports 925.5 – 930.5 Mhz for KR.
	Enhancement ATCMD with uart Increase the supported max baudrate (115200) using DMA
	Added i2c sensor read operation in sample_ps_tcp_client
	Added Non-tim mode deep sleep in sample_ps_standalone & sample_ps_tcp_client Assign interval for deep sleep duration
	Change temperature compensation value

	Temperature power offset is now linearly interpolated, etc.

4.4 Known issues in the release package

Table 4.3 presents all know issues in the version 1.3.1.

Table 4.3 Known issues

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