

RW135-GL

Hardware Guide

V1.0

1 Overview

1.1 Introduction

RW135 is a highly integrated 5G Sub-6 WWAN module which uses M.2 form factor interface. It supports GNSS and RedCap/LTE systems which can be applied to most cellular networks of mobile carrier in the world. When the host is in above OS mode, the module works in MBB mode.

1.2 Specification

RW135 RF characteristic is shown in Table 1.

Table 1. RF characteristics	
Operating Band	
NR Sub-6	n1/2/3/5/7/8/12/13/14/18/20/25/26/28/30/38/401)/41/48/66/70/71/77/78
FDD-LTE	B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/30/66/70/71
TDD-LTE	B342)/38/39/401)/41/42/43/48
Data Throughput	
Sub-6 SA Peak	DL 220Mbps/UL 120Mbps
LTE Peak	DL 200Mbps (CAT4)/UL 75Mbps (CAT5)
Modulation Characteristic	
NR Sub6 Modulation	3GPP Release 17
20MHz DL, 256 QAM	
20MHz UL, 256 QAM	
15KHz/30KHz SCS for FDD/TDD	
LTE Modulation	3GPP Release 16
20MHz DL, 256 QAM	
20MHz UL, 64 QAM	
RF Characteristic	
MIMO	NR DL 2x2 MIMO
LTE DL 2x2 MIMO	
SRS	n41/77/78

1T2R	
	1) B/n40 is not supported in FCC 2) B34 is not supported in Japan

1.2.2 KeyFeatures

Table 2. Key features	
Specification	
CPU	SDX35, 4nm process, ARM Cortex-A7, up to 1.9 GHz
Memory	2Gb LPDDR2+2Gb NAND Flash
Supported OS	Chrome
Power Supply	DC 3.135V to 4.4V, typical 3.3V
Temperature	Normal operating temperature: -20°C to +60°C
Extended operating temperature: -30°C to +75°C1)	
Storage temperature: -40°C to +85°C	
Physical Characteristics	Interface: M.2 Key-B
Dimension: 30 mm x 42 mm x 2.3 mm	
Weight: 5.9g	
Interface	
Antenna Connector	WWAN Antenna x 2
	Support 2x2 MIMO
Function Interface	Dual SIM (one embedded eSIM), 1.8V/3V
	USB 2.0
	W_Disable#
	SAR trigger
	LED
	RF FE MIPI/GPO for Tunable antenna
	I2C (Reserved)
Software	
Protocol Stack	IPV4/IPV6
AT Commands	3GPP TS 27.007
Firmware Update	USB2.0
Other Feature	Multiple carrier
	Chrome update
	1) When temperature goes beyond normal operating temperature range of -20°C to +60°C, RF performance of module may be slightly off 3GPP specifications.

2 FCC Conformance information

Federal Communication Commission Interference Statement

This device complies with Part 22, 24, 27, 90, 96 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions: (For module device use) 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and 2) The transmitter module may not be co-located with any other transmitter or antenna. As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Important Notice to OEM integrators

1. This module is limited to OEM installation ONLY.
2. This module is limited to installation in mobile applications, according to Part 2.1091(b).
3. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations
4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the

Module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are compliant with the transmitter(s) rule(s).

The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed.

Important Notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify to RollingWireless S.a.r.l. that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the USI, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

End Product Labeling

When the module is installed in the host device, the FCC label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text:

“Contains FCC ID: VUIRW135GL”

The FCC ID can be used only when all FCC compliance requirements are met.

Antenna Installation

- (1) The antenna must be installed such that 20 cm is maintained between the antenna and users,
- (2) The transmitter module may not be co-located with any other transmitter or antenna.
- (3) Only antennas of the same type and with equal or less gains as shown below may be used with this module. Other types of antennas and/or higher gain antennas may require additional authorization for operation.

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Antenna information

Band	Gain(dBi)	Type	Band	Gain(dBi)	Type
LTE Band 2	4	PIFA/Molopole	5G NR Band 2	4	PIFA/Molopole
LTE Band 4	3		5G NR Band 5	3	
LTE Band 5	3		5G NR Band 7	3	
LTE Band 7	3		5G NR Band 12	3	
LTE Band 12	3		5G NR Band 13	3	
LTE Band 13	3		5G NR Band 14	3	
LTE Band 14	3		5G NR Band 25	4	
LTE Band 17	3		5G NR Band 26	3	
LTE Band 25	4		5G NR Band 30	1	
LTE Band 26	3		5G NR Band 38	3	

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Modular Regulatory Certification		
Country	Marking is on the board label	Model: RW135GL
USA 	(Due to size constraint, marking will be on packaging and User Guide)	FCC ID: VUIRW135GL