ROLLING WIRELESS RW350-GL-16 Verizon Open Development Module User Guide

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Product Usage Instructions

Installation

1. Ensure the host system supports M.2 form factor interface.
2. Insert the RW350 module into the appropriate slot on the host system.
3. Secure the module in place using the provided fasteners.

Activation

1. Boot up the host system and navigate to the network settings.
2. Select the RW350 module as the preferred network connection.
3. Enter any necessary APN settings provided by your carrier.

Troubleshooting

If you encounter connectivity issues, try the following steps:

- Ensure the SIM card is properly inserted and activated.
- Check for any network outages in your area.
- Update the module firmware if available.

Contact Information
Website: **https://www.rollingwireless.com**

Foreword

Introduction

RW350-GL-16 (hereinafter referred to as RW350) is a highly integrated 4G WWAN module which uses M.2 form factor interface. It supports GNSS and LTE/WCDMA 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. When the host is in below OS mode, the module can work in IOT mode. This document describes the RW350 electrical characteristics and basic function.

Specification

RF Characteristics

RW350 RF characteristic is shown in Table 1.

- Operating Band
  - FDD-LTE B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71
  - TDD -LTE B341)/38/391)/402)/41/422)/432)/48
  - UMTS/HSPA+ B1/2/4/5/8
  - GNSS GPS/GLONASS/Galileo/BDS/QZSS
- Data Throughput
  - LTE Peak DL 1.0Gbps (CAT16)/UL 211Mbps (CAT18)

    DL UMTS: 384 kbps/ UL 384 kbps
  - UMTS/HSPA+ Peak DL DC-HSPA+: 42 Mbps (CAT24)/UL 11.5 Mbps (CAT7)
- Modulation Characteristic
  - LTE Modulation

    3GPP Release 1 15

    10 0MHz 5 DLCA, 256 QAM

    40MHz 2 ULCA, 256 QAM
- UMTS Modulation 3 GPP Release 8
- RF
- Characteristic
  - HPUE N ot S upported
  - MIMO LTE DL 2×2 MIMO
- Carrier Aggregation
  - LTE DL 5CA, UL 2CA

B34/39 is not supported in Japan
B40/42/43 is not supported in FCC
B40/42/43 48 is not supported in IC

Key Features

Specification	
CPU	MTK T700, 7nm process, ARM Cortex-A55, up to 1.5 GHz
Memory	4Gb LPDDR4X+4Gb NAND Flash
Supported OS	Windows 11/Linux
Power Supply	DC 3.135V to 4.4V, typical 3.3V
	Normal operating temperature: –10°C to +55°C
Temperature	Extended operating temperature: –30°C to +75°C1)
	Storage temperature: –40°C to +85°C
	Interface: M.2 Key-B
Physical Characteristics	Dimension: 30 mm x 52 mm x 2.3 mm
	Weight: TBD
Interface	
Antenna	WWAN Antenna x 2

Connector	Support 2×2 MIMO
	Dual SIM (one embedded eSIM), 1.8V/3V
	PCIe Gen3 x12)
	USB 2.0 (For debug, suggest NC)
	USB 3.1 Gen1 (Reserved, suggest NC)
Function Interface	W _ Disable#
	SAR trigger
	LED
	MIPI/GPO for Tunable antenna
	I2C (Reserved)
Software	
Protocol Stack	IPV4/IPV6
AT Commands	3GPP TS 27.007
Firmware Update	Over PCIe
Other Feature	Multiple carrier
	Windows update

- When temperature goes beyond normal operating temperature range of
  - 10°C to +55°C, RF performance of module may be slightly off 3GPP specifications.
- PCIe Gen1 speed is enough for 4G.

FCC Conformance information

Federal Communication Commission Interference Statement
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 complaint with the transmitter(s) rule(s).

The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed. 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 Rolling Wireless 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 removed. If not, a second label must be placed on the outside of the final device that contains the following text: “Contains FCC ID: 2AX2URW350GL16” 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
WCDMA Band 2	4	PIFA/Monopole	LTE Band 25	4	PIFA/Monopole
WCDMA Band 4	3		LTE Band 26	3	
WCDMA Band 5	3		LTE Band 30	1	
LTE Band 2	4		LTE Band 38	4	
LTE Band 4	3		LTE Band 41	4	
LTE Band 5	3		LTE Band 48	1	
LTE Band 7	4		LTE Band 66	3	
LTE Band 12	3		LTE Band 71	3	
LTE Band 13	3				
LTE Band 14	3				
LTE Band 17	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 20 cm between the radiator & your body.

IC Conformance information

Industry Canada Statement
This device complies with Industry Canada's licence-exempt RSSs.

Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

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

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 NOTE:
In the event that these conditions cannot be met (for example certain laptop configurations or colocation with another transmitter), then the Canada authorization is no longer considered valid and the IC 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 Canada authorization.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC:26644-RW350GL16".

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.

CE Conformance information

The device could be used with a separation distance of 20cm to the human body. Hereby, [Rolling Wireless S.a r.l.] declares that the radio equipment type [RW350-GL-16] is in compliance with Directive 2014/53/EU and RER 2017 (SI 2017/1206).

Transmitting Power of EU bands

The transmitting power for each band of the RW350 module is shown in the following table:

RAT	Band	3GPP Requirement (dBm)	Tx Power (dBm)
	Band 1	24+1.7/-3.7	23.5±1
WCDMA	Band 5	24+1.7/-3.7	23.5±1
	Band 8	24+1.7/-3.7	23.5±1
	Band 1	23±2.7	23±1
	Band 3	23±2.7	23±1
	Band 5	23±2.7	23+2/-1
	Band 7	23±2.7	23±1
	Band 8	23±2.7	23+2/-1
	Band 20	23±2.7	23+2/-1
LTE	Band 28	23+2.7/-3.2	23+2/-1
	Band 34	23±2.7	23±1
	Band 38	23±2.7	23±1
	Band 40	23±2.7	23±1
	Band 41	23±2.7	23±1
	Band 42	23+3/-4	23±1
	Band 43	23+3/-4	23±1

The max TX power is in primary RF path at ambient temperature 25°C.

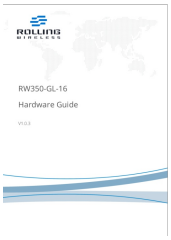
NCC Conformance information

NCC Statement
Support WCDMA B1,B8/LTE B1,B3,B7,B8,B28,B38,B41

Frequently Asked Questions (FAQ)

- **Q: Can the RW350 module be used with any mobile carrier?**
  A: The RW350 module can be applied to most cellular networks of mobile carriers worldwide. However, compatibility may vary, so it's recommended to check with your carrier for specific details.
- **Q: What should I do if the module is not detected by the host system?**
  A: If the module is not detected, ensure it is properly installed in the M.2 slot and that the host system supports the necessary interfaces. You may also need to update drivers or firmware for compatibility.

Documents / Resources

	**ROLLING WIRELESS RW350-GL-16 Verizon Open Development Module** [pdf] User Guide 2AX2URW350GL16, 2AX2URW350GL16, rw350gl16, RW350-GL-16 Verizon Open Development Module, RW350-GL-16, Verizon Open Development Module, Open Development Module, Development Module

References

- **Rolling Wireless | Automotive connectivity solutions**
- **User Manual**