REYAX
TECHNOLOGY CORPORATION, LTD

05-OCT-2020 56312E33

# RYWDB00

## Industrial grade 802.11a/b/g/n 2.4GHz & 5GHz 802.11j 1T1R Wi-Fi, dual-mode Bluetooth 5 mini PCIe card

**Datasheet**

# PRODUCT DESCRIPTION

The RYWDB00 provides a comprehensive multi-protocol wireless connectivity solution including 802.11 a/b/g/n (2.4 GHz & 5 GHz), 802.11j, dual-mode Bluetooth® 5

# FEATURES

### Wi-Fi

- Compliant to single-spatial stream IEEE 802.11 a/b/g/n, 802.11j (hosted mode) with dual band (2.4 and 5 GHz) support
- Support for 20 MHz and 40 MHz channel bandwidths
- Transmit power up to +18 dBm with integrated PA
- Receive sensitivity as low as -96.5 dBm
- Application data throughput up to 100 Mbps (Hosted Mode) in 802.11n with 40 MHz bandwidth and up to 50 Mbps with 20 MHz bandwidth
- Standard mini PCIe and plug PCB design.
- Temperature range: -40 to +85°C.
- Mini PCIe Signal Type USB2.0 HS.

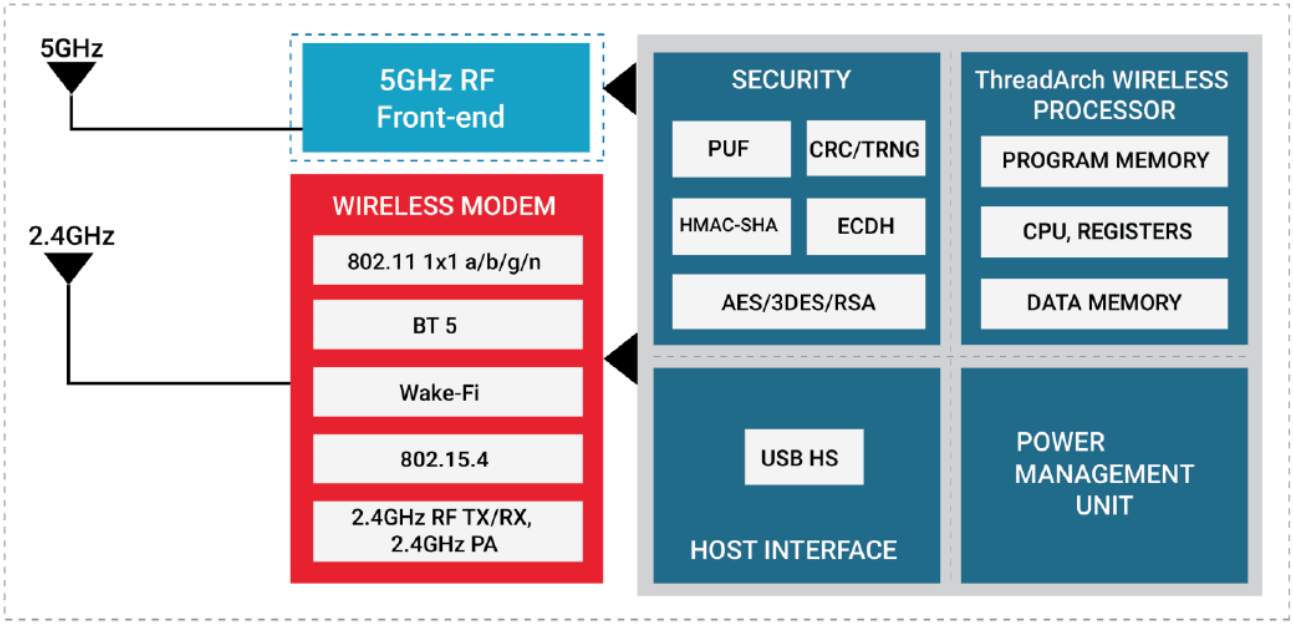
### Bluetooth

- Compliant to dual-mode Bluetooth 5
- Transmit power up to +17 dBm with integrated PA
- Receive sensitivity as low as -104 dBm
- Data rates: 125 kbps, 500 kbps, 1 Mbps, 2 Mbps, 3 Mbps

### Hosted Mode

- Host drivers for Linux.
- Support for Client mode, Access point mode, Wi-Fi Direct, Concurrent client and access point mode, Enterprise Security.
- Support for concurrent Wi-Fi, dual-mode Bluetooth 5

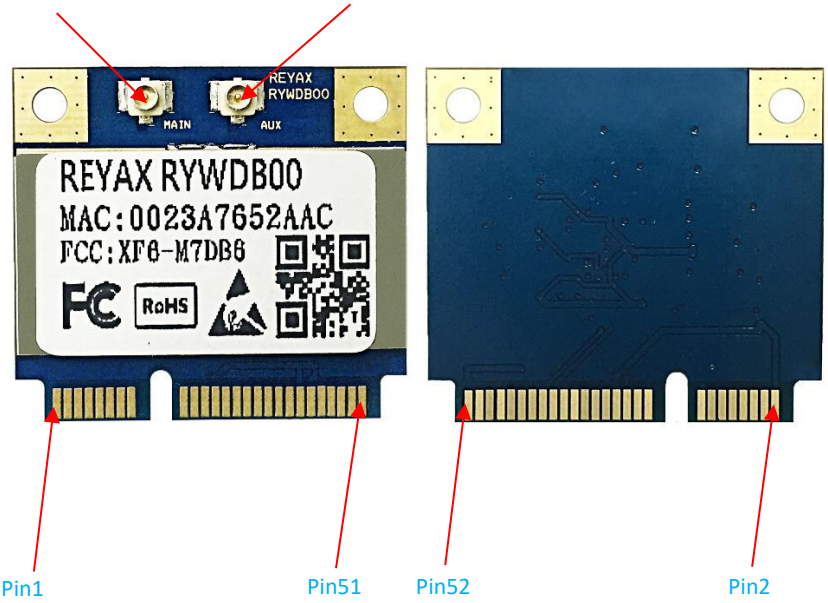
# BLOCK DIAGRAM




# PIN CONNECTOR

Main Antenna
U.FL-R-SMT-1
Connector

Auxiliary Antenna
U.FL-R-SMT-1
Connector



# PIN DESCRIPTION

| Pin | Name | Input/Output | Description |
|---|---|---|---|
| 1 | NC | | Not connected |
| 2 | VCC | Power | Power Input |
| 3 | NC | | Not connected |
| 4 | GND | | Power Ground |
| 5 | NC | | Not connected |
| 6 | NC | | Not connected |
| 7 | NC | | Not connected |
| 8 | NC | | Not connected |
| 9 | GND | | Power Ground |
| 10 | NC | | Not connected |
| 11 | NC | | Not connected |
| 12 | NC | | Not connected |
| 13 | NC | | Not connected |
| 14 | NC | | Not connected |
| 15 | GND | | Power Ground |
| 16 | NC | | Not connected |
| 17 | NC | | Not connected |
| 18 | GND | | Power Ground |
| 19 | NC | | Not connected |
| 20 | NC | | Not connected |
| 21 | GND | | Power Ground |
| 22 | RESET_N | Input | External reset input |
| 23 | NC | | Not connected |
| 24 | VCC | Power | Power Input |
| 25 | NC | | Not connected |
| 26 | GND | | Power Ground |
| 27 | GND | | Power Ground |
| 28 | NC | | Not connected |
| 29 | GND | | Power Ground |
| 30 | NC | | Not connected |
| 31 | NC | | Not connected |
| 32 | NC | | Not connected |
| 33 | NC | | Not connected |
| 34 | GND | | Power Ground |

| | | | |
|---|---|---|---|
| 35 | GND | | Power Ground |
| 36 | USB_DN | Input/Output | USB Data Negative |
| 37 | GND | | Power Ground |
| 38 | USB_DP | Input/Output | USB Data Positive |
| 39 | VCC | Power | Power Input |
| 40 | GND | | Power Ground |
| 41 | VCC | Power | Power Input |
| 42 | NC | | Not connected |
| 43 | GND | | Power Ground |
| 44 | NC | | Not connected |
| 45 | NC | | Not connected |
| 46 | NC | | Not connected |
| 47 | NC | | Not connected |
| 48 | NC | | Not connected |
| 49 | NC | | Not connected |
| 50 | GND | | Power Ground |
| 51 | NC | | Not connected |
| 52 | VCC | Power | Power Input |

# SPECIFICATION

| Feature | Description |
|---|---|
| Wireless Protocols | IEEE 802.11b, 802.11g, 802.11n, 802.11a Bluetooth 5 (2.1+EDR, LE, LE 2 Mbps, Long Range (125/500 Kbps)) |
| Operational Modes Supported | Wi-Fi Access Point with support for up to 32 clients<br>Wi-Fi Client<br>Wi-Fi Direct®<br>Wi-Fi Client + Bluetooth Classic (EDR v 2.1) |
| WLAN Bandwidth | WLAN Bandwidth |
| WLAN Data Rates | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g/a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: MCS0 to MCS7 |
| WLAN Operating Frequency Range | 2412 MHz – 2484 MHz<br>4.9 GHz – 5.975 GHz |
| WLAN Modulation | OFDM with BPSK, QPSK, 16-QAM, and 64-QAM 802.11b with CCK and DSSS |
| Maximum WLAN Transmit Power | 2.4 GHz: 18 dBm, 5 GHz: 13.5 dBm |
| Minimum WLAN Receive Sensitivity | 2.4 GHz: -96.5 dBm, 5 GHz: -89 dBm |
| Bluetooth Data Rates | 1, 2, 3 Mbps, 125 Kbps and 500 Kbps |
| Bluetooth Operating Frequency | 2.402 GHz - 2.480 GHz |
| Bluetooth Channel Spacing | BR, EDR, LE 1 Mbps, LR - 1 MHz<br>LE 2 Mbps - 2 MHz |
| Bluetooth Modulation | GFSK, DQPSK, 8DPSK |
| Maximum Bluetooth Transmit Power | 17 dBm (Class-1) |
| Minimum Bluetooth Receive Sensitivity | LE: -93 dBm, LR 125 Kbps: -104 dBm |
| Wireless Security Features | WPA/WPA2-Personal<br>WPA/WPA2 Enterprise for Client<br>EAP-TLS<br>EAP-FAST<br>EAP-TTLS<br>PEAP-MSCHAP-v2 |

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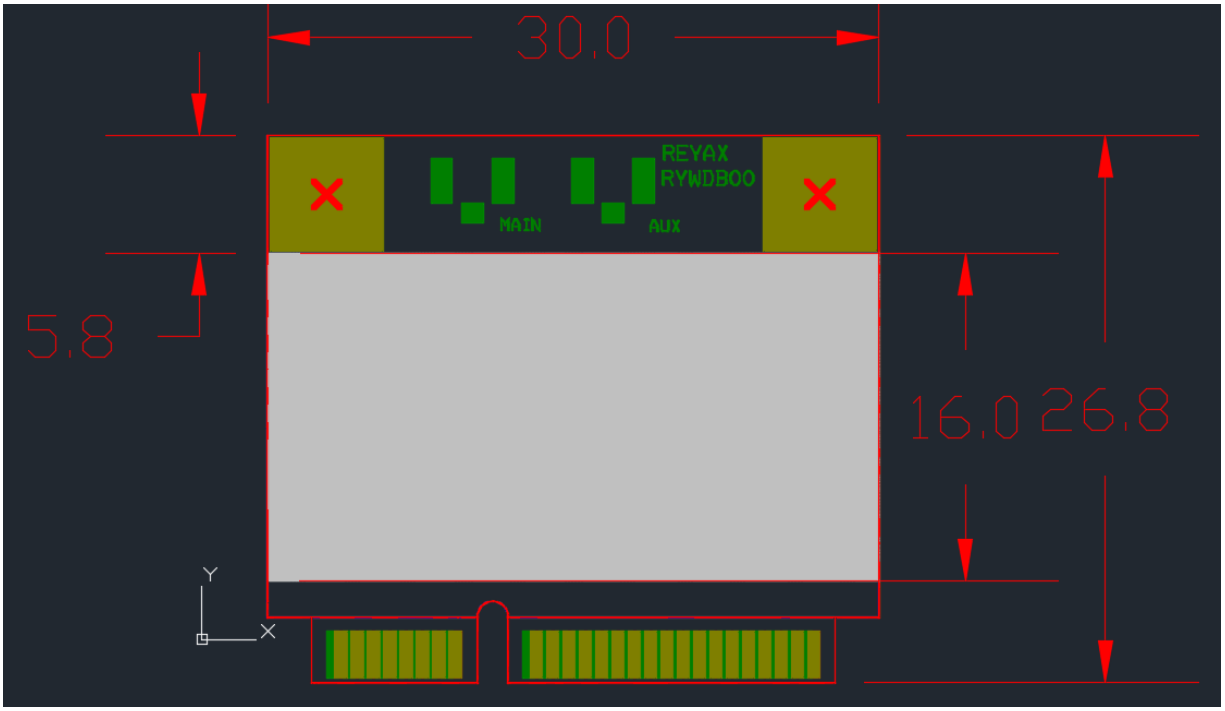
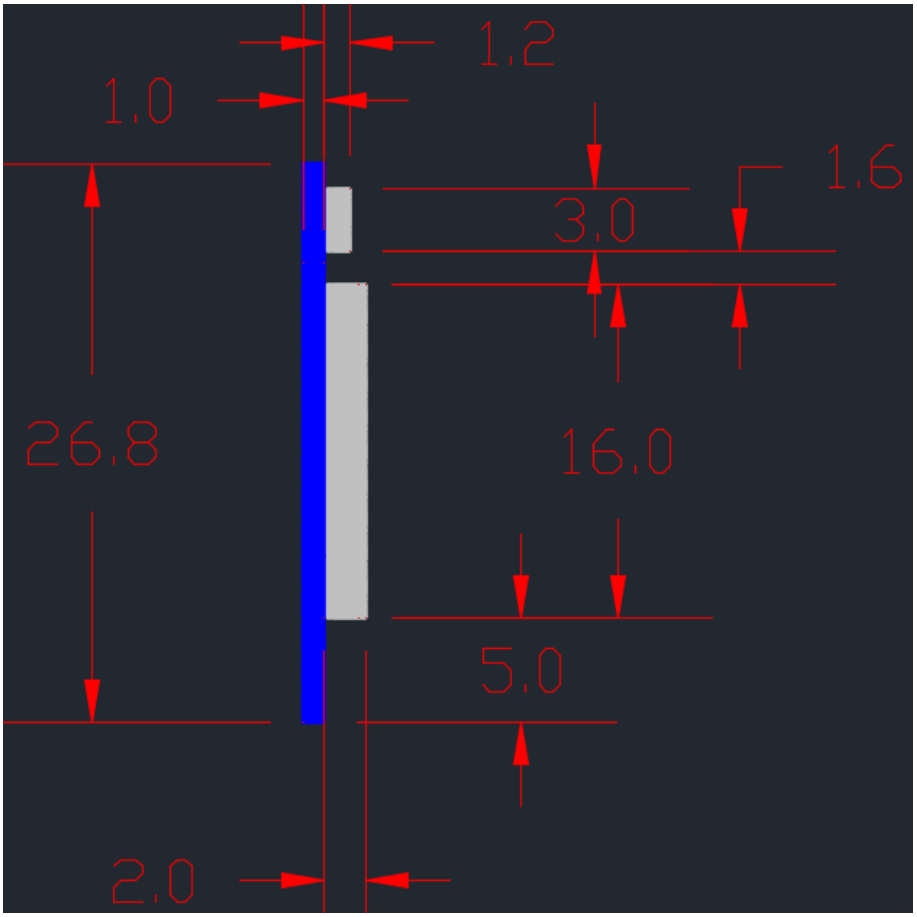
|---|---|
| Advanced Security Features | PUF Based Security<br>AES 128/256 bit<br>RSA<br>SHA, SHA256, SHA384 |
| Application throughputs | Up to 40 Mbps (As measured in ideal environment. Note that throughput degrades in the presence of interference and reduces with range) |
| Operating Temperature Range | -40 ℃ to +85 ℃ |
| Supply Voltages<br>Supply Current | +3.1V to +3.5V<br>450mA |
| WLAN Features | • Dynamic selection of fragment threshold, data rate, and antenna depending on the channel statistics<br>• Hardware accelerators for WEP 64/128-bit, TKIP, AES and WPS<br>• Support for WMM<br>• Support for AMPDU Aggregation/De-aggregation and AMSDU De-aggregation |
| Bluetooth Features | • Supports EDR+2.1, 4.0, 4.1, 4.2 and 5.0.<br>• Supports LE 1 Mbps and 2 Mbps and Long Range modes.<br>• Supports Classic mode piconet with seven active slaves. (two slaves in current release)<br>• Supports Low Energy mode with six active slaves.<br>• Bluetooth security features: Authentication, Pairing and Encryption.<br>• Supports low power connection states such as sniff (with selectable sniff intervals).<br>• Adaptive Frequency Hopping (AFH), Interlaced scanning, Quality of Service<br>• Proprietary FEC for DQPSK and 8-PSK modes<br>• Provides finer granularity of range vs. throughput control.<br>• BR/EDR secure connections, Train Nudging, Generalized interlaced scan, Low duty cycle directed adverting, Piconet clock adjustment, WMS coexistence, Slot availability mask (SAM)<br>• Dual mode support, 32-bit UUID in LE, LE privacy, LE ping, LE L2CAP connection oriented channel, Connectionless slave broadcast, Fast advertising interval, LE data packet extension, LE secure connections, Link layer privacy, LE advertising |

| | |
|---|---|
| | extensions, LE channel selection algorithm2, high duty cycle non-connectable advertising. |
| Bluetooth Profiles | GAP, GATT, SPP, SDP, SMP, L2CAP, RFCOMM |
| Weight | 4g |

# DIMENSIONS




unit: mm Tolerance : ±0.2mm

**FCC 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.

NOTE: 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 or more 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.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following " Contains TX FCC ID : XF6-M7DB6". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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.

**XF6-M7DB6**

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