REYAX
TECHNOLOGY CORPORATION, LTD

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RYWDB02

Industrial grade 802.11a/b/g/n 2.4GHz & 5GHz 802.11j 1T1R Wi-Fi, dual-mode Bluetooth 5 M.2 card

Datasheet

PRODUCT DESCRIPTION

The RYWDB02 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

- Redpine Signals RS9116 Industrial grade core.

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 M.2 2230 KEY A E design.
- Temperature range: -40 to +85°C.
- M.2 Signal Type USB2.0 HS.

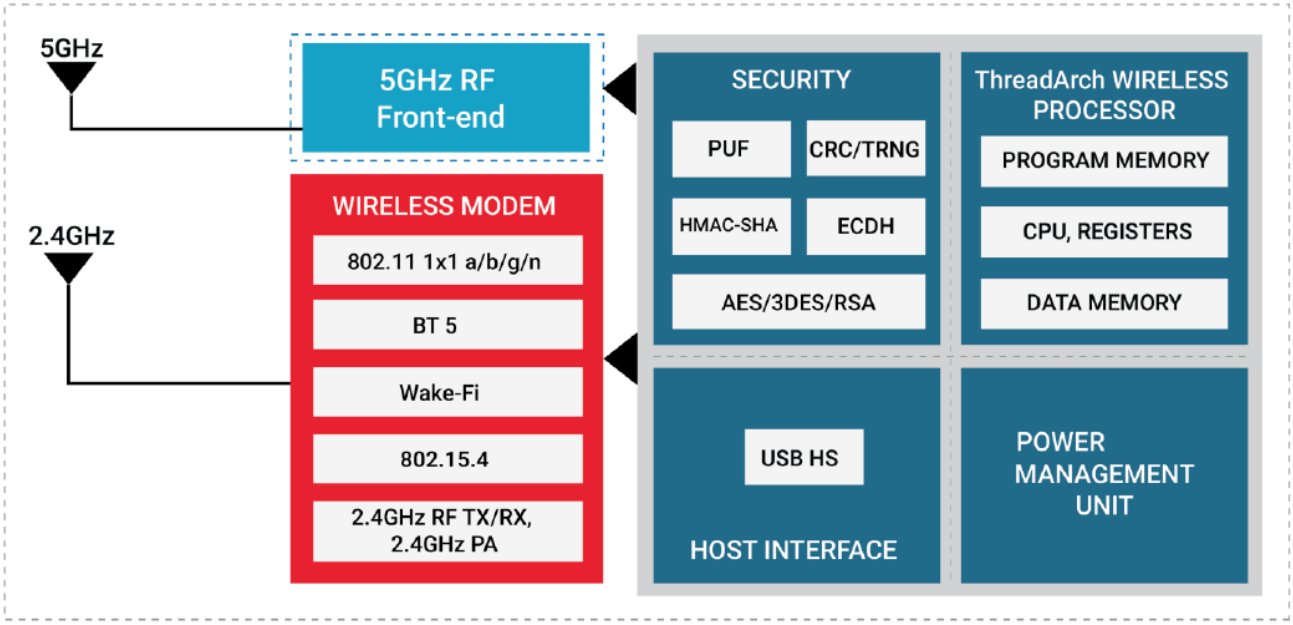
Bluetooth

- 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

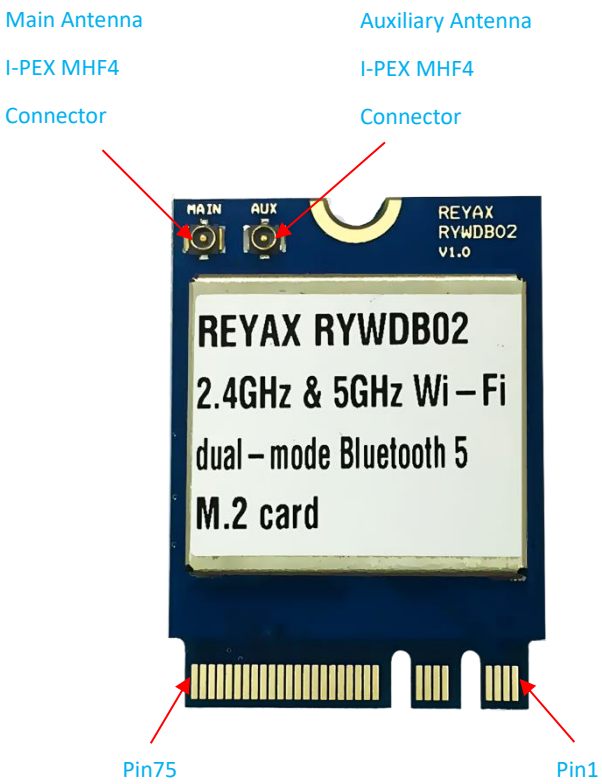
Hosted Mode

- 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



PIN DESCRIPTION

Pin	Name	Input/Output	Description
1	GND		Power Ground
2	VDD_3V3	Power	Power Input
3	USB_DP	Input/Output	USB Data Positive
4	VDD_3V3	Power	Power Input
5	USB_DN	Input/Output	USB Data Negative
6	NC		Not connected
7	GND		Power Ground
8~15			Module Key
16	NC		Not connected
17	NC		Not connected
18	GND		Power Ground
20~23	NC		Not connected
24~31			Module Key
32	NC		Not connected
33	GND		Power Ground
34~38	NC		Not connected
39	GND		Power Ground
40~44	NC		Not connected
45	GND		Power Ground
46~50	NC		Not connected
51	GND		Power Ground
52	RESET_N	Input	External reset input
53~56	NC		Not connected
57	GND		Power Ground
58~62	NC		Not connected
63	GND		Power Ground
64~68	NC		Not connected
69	GND		Power Ground
70	NC		Not connected
71	NC		Not connected
72	VDD_3V3	Power	Power Input
73	NC		Not connected
74	VDD_3V3	Power	Power Input
75	GND		Power Ground

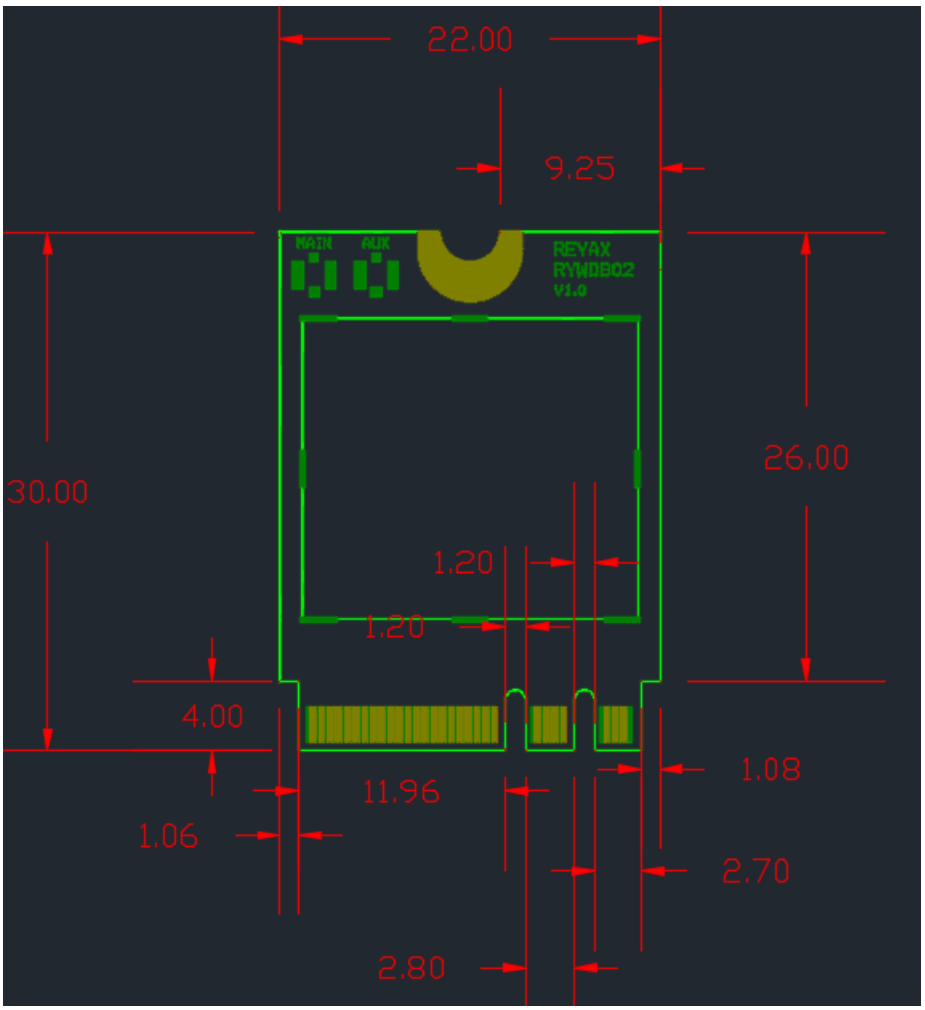
SPECIFICATION

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 Wi-Fi Client Wi-Fi Direct® Wi-Fi Client + Bluetooth Classic (EDR v 2.1)
WLAN Bandwidth	WLAN Bandwidth
WLAN Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g/a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS0 to MCS7
WLAN Operating Frequency Range	2412 MHz – 2484 MHz 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 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 WPA/WPA2 Enterprise for Client EAP-TLS EAP-FAST EAP-TTLS PEAP-MSCHAP-v2

Advanced Security Features	PUF Based Security AES 128/256 bit RSA 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 Supply Current	VDD_3V3 from +3.1V to +3.5V 450mA
WLAN Features	• Dynamic selection of fragment threshold, data rate, and antenna depending on the channel statistics • Hardware accelerators for WEP 64/128-bit, TKIP, AES and WPS • Support for WMM • 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. • Supports LE 1 Mbps and 2 Mbps and Long Range modes. • Supports Classic mode piconet with seven active slaves. (two slaves in current release) • Supports Low Energy mode with six active slaves. • Bluetooth security features: Authentication, Pairing and Encryption. • Supports low power connection states such as sniff (with selectable sniff intervals). • Adaptive Frequency Hopping (AFH), Interlaced scanning, Quality of Service • Proprietary FEC for DQPSK and 8-PSK modes • Provides finer granularity of range vs. throughput control. • BR/EDR secure connections, Train Nudging, Generalized interlaced scan, Low duty cycle directed adverting, Piconet clock adjustment, WMS coexistence, Slot availability mask (SAM) • 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	2g

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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