CTOUCH MT7921AU-FRX Bluetooth v5.2 Combo USB 3.0 Module User Manual

USER MANUALS
802.11a/b/g/n/ac/ax 1200Mbps WLAN + Bluetooth v5.2 Combo USB3.0 Module
Model No. MT7921AU-FRX

Contents

Safety precautions:

1. It is not allowed to change the transmission frequency at will and increase the transmission power (including the installation of RF power amplifier).
2. It is prohibited to cause harmful interference to various legitimate radio communications. Once interference is found, it shall be stopped immediately, and measures can be taken to eliminate interference before continuing to use.
3. It must be able to resist the radiation interference of various radio or industrial/scientific/medical applications.
4. It shall not be used near the aircraft or airport.
5. Article 12 of the Administrative Measures for Low Power Radio Wave Radiative Motors: The company, firm or user shall not change the frequency, increase the power or change the characteristics and functions of the

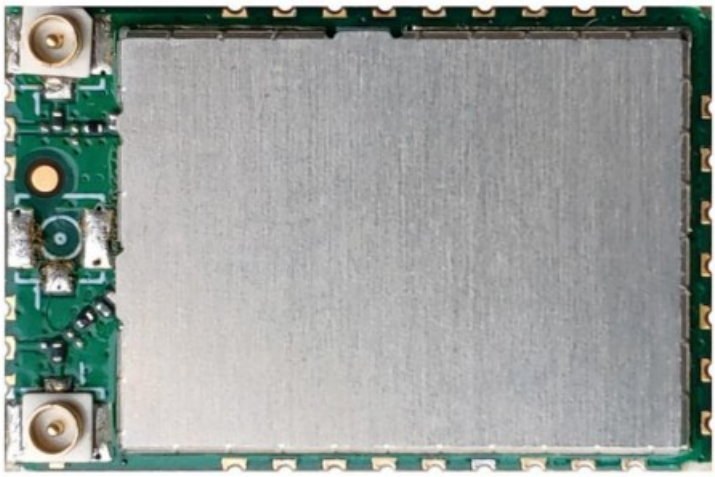
design of low power RF motors that have passed the form certification without permission.

6. Article 14 of the Administrative Measures for Low Power Radio Wave Radiative Motors: The use of low power radio frequency motors shall not affect flight safety and interfere with legal communications. If interference is found, they shall be immediately stopped and improved to no interference before continuing to use.
7. The legal communication referred to in the preceding paragraph means that the radio communication low power radio frequency motor operated in accordance with the provisions of the Telecommunications Act must withstand the interference of legal communication or industrial, scientific and medical radio wave radiation motor equipment.
8. Avoid affecting the operation of nearby radar systems. High gain directional antennas can only be used in fixed point-to-point systems.

Warning:

1. Please keep the product and accessories away from children.
2. Do not splash water or other liquids on this product, otherwise it may cause damage.
3. Please do not place this product near the heat source or in the direct sunlight to avoid deformation or failure.
4. Keep away from flammable or open flame.
5. Do not repair this product by yourself.

Product appearance:



Product features and parameters:

1. FRX-M79AU-21 is a highly integrated dual band WLAN+ Bluetooth v5.2 Combomomodule. It combines a 2T2R dual band WLAN subsystem and a Bluetooth v5.2 subsystem with dual BT controller function. This is a module compatible IEEE 802.11a/b/g/n/ac/ax standard, which provides the maximum PHYrate up to 1200Mbps. It supports BT/BLE dual mode compatibility with BT v5.2/v4.2/v2.1, provides high standard wireless connectivity with rich functions, and provides reliable, cost-effective throughput from a long distance.
2. Compatible with IEEE 802.11b standard, providing wireless data rate of 11Mbps. Compatible with IEEE 802.11g standard, providing wireless data rate of 54Mbps. Compatible with IEEE 802.11a standard, providing wireless data rate of 54Mbps. Compatible with IEEE 802.11n standard, providing wireless data rate of 300Mbps. Compatible with IEEE 802.11ac and IEEE 802.11ax standards, providing wireless data rate of 1200Mbps.

3. Support 20MHz, 40MHz, 80MHz bandwidth in 5GHz band, 20MHz, 40MHz bandwidth in 2.4GHz band.
4. Supported frequency bands: WLAN: 2.412 – 2.462 GHz, 5.180 – 5.240 GHz, 5.745 – 5.825 GHz.
   Support dual band 2T2R mode, with bandwidth of 20/40/80Mhz
   Support MU-MIMO RX, MU-OFDMA TX/RX
   Support TX/RX beamformer
   Support DBDC (dual band dual concurrent)
   Bluetooth support frequency band: 2.402-2.480GHz
   Support BT classic/BT low-power dual frequency mode
   Including dual BT controller
   Bluetooth 2.1/3.0/4.0/4.2/5.2
5. Provide a simple legacy and 20MHz/40MHz/80MHz coexistence mechanism to ensure future and network compatibility.
6. User friendly configuration and diagnostic tools.
7. Driver support: Linux/Android/Windows.
8. High speed USB 3.0 interface for WLAN and USB.
9. The transmission power shall not exceed 1000mW.
10. Voltage 3.3V.

Operating environment:

Operating Temperature:	-20℃ to+70℃
Relative Humidity:	10%-90%non-condensing)

Storage:

Temperature:	-55℃to+125℃ (no-operating)
Relative Humidity:	10-90%non-condensing)

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.
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.

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, Human proximity to the antenna shall not be less than 20cm(8 inches)during normal operation.
That changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

1. **List of applicable FCC rules**

   FCC Part 15 Subpart C 15.247 & 15.209 & 15.407

2. **Specific operational use conditions**

   The module with BT/WIFI function.

   Operation Frequency: BT/BLE 2402-2480MHz;

   Wi-Fi 2412-2462MHz; 5180-5240MHz; 5745-5825MHz

   Number of Channel:

   BT : 79 Channel, BLE: 40 Channel, 2.4G Wi-Fi :11 Channel, 5G Wi-Fi 5180-5240MHz: 7 Channel, 5G Wi-Fi 5745-5825MHz: 8 Channel Modulation: GFSK, π/4-DQPSK, 8-DPSK, DSSS, OFDM, OFDMA

   Type: External Antenna

   Gain:

   BT/BLE:1.5dBi, 2.4G wifi:4.82dBi, 5G Wi-Fi 5180-5240 MHz:3.43dBi,5745-5825 MHz:4.62dBi

   The module can be used for mobile or portable applications with a maximum 2.55dBi antenna.

   The host manufacturer installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer has to be aware not to provide information

3. **Limited module procedures**

   Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

4. **Trace antenna designs**

   Not applicable. The module has its own antenna, and doesn't need a host's printed board microstrip trace antenna etc.

5. **RF exposure considerations**

   The module must be installed in the host equipment such that at least 20cm is maintained between the antenna and users' body; and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application. The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

6. **Antennas**

   Antenna Specification are as follows:

   Type: External Antenna

   Gain:

   BT/BLE:1.5dBi, 2.4G wifi:4.82dBi, 5G Wi-Fi 5180-5240 MHz:3.43dBi,5745-5825 MHz:4.62dBi

   This device is intended only for host manufacturers under the following conditions:

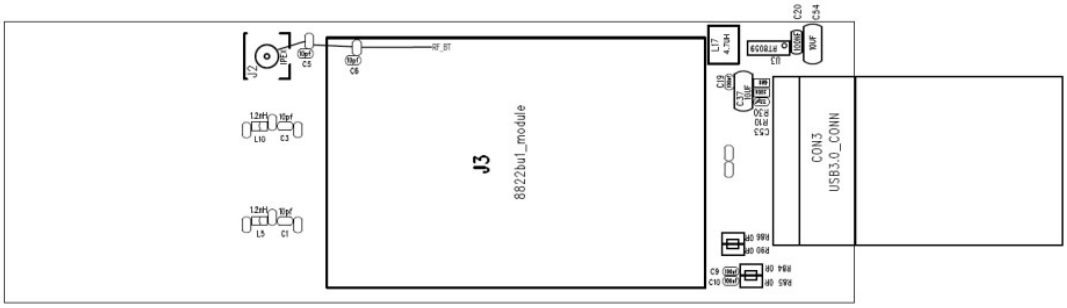
   The transmitter module may not be co-located with any other transmitter or antenna;

   The module shall be only used with the internal antenna(s) that has been originally tested and certified with this

module. The antenna must be either permanently attached or employ ‘unique’ antenna coupler.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

To facilitate Bluetooth antenna connection, use the Bluetooth cable board to set the Bluetooth port on the cable board.



7. **Label and compliance information**

   Host product manufacturers need to provide a physical or e-label stating “Contains FCC ID: 2APQQ-MT7921AU-FRX” with their finished product.

8. **Information on test modes and additional testing requirements**

   Operation Frequency: 2402-2480MHz, 2412-2462MHz; 5180-5240MHz; 5745-5825MHz

   Number of Channel:

   BT: 79 Channel, BLE: 40 Channel, 2.4G Wi-Fi :11 Channel,

   5G Wi-Fi 5180-5240MHz: 7 Channel, 5G Wi-Fi 5745-5825MHz: 8 Channel

   Modulation: GFSK, π/4-DQPSK, 8-DPSK, DSSS, OFDM, OFDMA

   Host manufacturer must preform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

   Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

9. **Additional testing, Part 15 Subpart B disclaimer**

   The modular transmitter is only FCC authorized for FCC Part 15 Subpart C 15.247 & 15.209 and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Federal Communication Commission Statement (FCC, U.S.)

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.

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.

FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTES

Co-location warning:

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

OEM integration instructions:

This device is intended only for OEM integrators under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module.

As long as the 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 (for example, digital device emissions, PC peripheral requirements, etc.).

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or colocation with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for reevaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End product labeling:

The final end product must be labeled in a visible area with the following: "Contains Transmitter Module **FCC ID: 2APQQ-MT7921AU-FRX".**

Information that must be placed in the end user manual:

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.

CTOUCH

Documents / Resources

	CTOUCH MT7921AU-FRX Bluetooth v5.2 Combo USB 3.0 Module [pdf] User Manual MT7921AU-FRX, MT7921AUFRX, 2APQQ-MT7921AU-FRX, 2APQQMT7921AUFRX, MT7921 AU-FRX Bluetooth v5.2 Combo USB 3.0 Module, Bluetooth v5.2 Combo USB 3.0 Module, Com bo USB 3.0 Module, USB 3.0 Module, Module