MAX3220

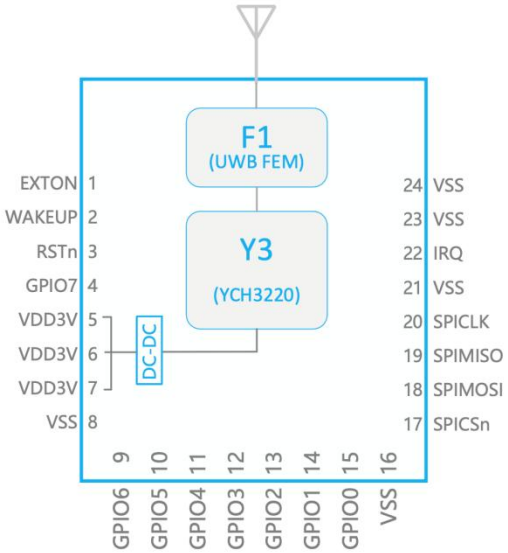
UWB high-power RF module

PRODUCT INTRODUCTION

YCHIOT ® MAX3220 is a product based on YCHIOT® The ultra wideband (UWB) RF module of YCH3220 IC. It integrates all RF circuits, front-end amplifiers, power management, and clock circuits into one module, greatly simplifying the design time and cost for users. This module can be used for TOF or TDOA positioning systems, with a positioning error of less than 10cm and supporting data transmission rates of up to 6.8 Mbps.

MAX3220 series module design complies with FiRa™ PHY and MAC specifications, compatible with other FiRa compliant devices™ Standard equipment enables mutual communication. There are currently two models of MAX3220 series modules, among which MAX3220-SMA is an SMA interface, and MAX3220-X antenna port can be externally led out.

FUNCTIONAL BLOCK DIAGRAM



MAX3220-SMA

FEATURES

- Compatible with IEEE 802.15.4-2015 and IEEE 802.15.4z BPRF protocols
- Compatible with FiRa™ Physical layer, MAC, and authentication
- Supports channel 5 (6.5 GHz) and channel 9 (8 GHz)
- Maximum distance measurement 500m
- Supports programmable output power
- Fully coherent receiver, achieving maximum range and accuracy
- Design in compliance with FCC and ETSI
- Input power supply voltage 3.0 V -3.6 V
- Low power consumption
- Supports data rates of 850 kbps and 6.8 Mbps
- High data throughput, with a maximum packet length of 1023 bytes
- SPI communication interface
- Compatible with DWM1000/ DWM3220/ MAX2001/ MAX5007 pins

APPLICATION

- High precision real-time location system (RTLS) based on TOF or TDOA scheme
- Location aware wireless sensor network (WSN)

ORDER INFORMATION

MODEL	PACKAGE STYLES
MAX3220-SMA	1PCS in bags / 50PCS box-packed
MAX3220-X	1PCS in bags / 50PCS box-packed
MAX3220-SMA-EVK	MAX3220-SMA evaluation board

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 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

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction

UWB devices may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited. The use of antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited. Antennas may be mounted only on the hand held UWB device

(1) List of applicable FCC rules

The MAX3220 is an UWB Module. It operates on the 6.5GHz,8GHz and, therefore, is within U.S. FCC part 15.519,part 15.521,part 15.209 standard

(2) Specific operational use conditions

The EUT is a UWB Module
Operation Frequency: 6.5GHz, 8GHz for UWB;
Modulation Type: BPM/BPSK
Number Of Channel: 2 channels
Antenna Designation: Double copper tube Antenna
Antenna Gain: 2.72dBi

(3) Summarize the specific operational use conditions

According to 15.519(a). antennas mounted on outdoor structures such,. as antennas mounted on the outside of a building or on a telephone pole or any fixed outdoors infrastructure are prohibited for use with this device.
According to 15.521(a), UWB devices may not be employed for the operation of toys. Operation onboard aircraft. a ship or a satellite is prohibited.
This module is limited to hand-held system hosts

(4) Limited module procedure

N/A

(5) Trace antenna designs

Not applicable The module has its own antenna, and doesn’ t need a hosts printed board micro strip trace antenna etc.

(6) RF exposure considerations

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction

(7) Antenna used

Antenna Designation: Double copper tube Antenna
Antenna Gain: 2.72dBi, Polarization: Linear, Impedance: 50 Ohm
Manufacturer: Dongguan lianzhao electronics CO.LTD
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 Sleeve monopole antenna(s) that has been originally tested and certified with this module.
- The antenna must be either permanently attached or employ a ‘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.). After certification, adding a different antenna type requires a C2/3 PC.

(8) Label and compliance information

Host product manufacturers need to provide a physical or e-label stating “Contains FCC ID: 2BLONMAX3220” with their finished product.

(9) Information on test modes and additional testing requirements

Host manufacturer must perform test of radiated & conducted emission and spurious emission, e.t.c 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.

(10) Additional testing, Part 15 Subpart B disclaimer

The host product manufacturer is responsible for compliance with any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

(11) Note EMI Considerations

Note EMI Considerations: D04 Module Integration Guide has been considered as “best practice” for RF design engineering testing and evaluation of non-linear interactions which can generate additional non-compliant limits due to module placement to host components or properties.
For standalone mode, D04 Module Integration Guide was referenced, and simultaneous mode considered for the host product to confirm compliance.

(12) How to make changes

Only the Grantee is permitted to make permissive changes.