
WT5518 LoRa Module

Overview

WT5518 integrates Semtech RF transceiver chip SX1276, which adopts LoRa Spread Spectrum modulation frequency hopping technique. Compare with the FSK and GFSK module, The WT5518 has extremely low RX sensitivity to improve link performance. It can be widely used in wireless meter reading, remote industrial control filed.



Features

- Frequency Range: 915MHz
- Sensitivity up to -126dBm
- Maximum output power: 18dBm±1dB
- Follow FCC15.247
- 1.8-3.7 V Power supply

- Ultra-low consumption shut down mode
- Digital received signal strength indicator(RSSI)
- Configurable date packet structure
- Operating Temperature Range: -40 ~ +85°C

Applications

- Automated Meter Reading
- Home and Building Automation
- Wireless Alarm and Security Systems
- Industrial Monitoring and Control
- Long range Irrigation Systems

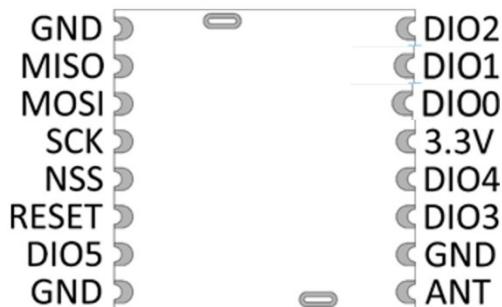
Electrical Characteristics

Test Conditions: $T_A = 25^\circ\text{C}$, $V_C = 3.3\text{V}$, $F_C = 915\text{ MHz}$

Parameter	Value	Note
Frequency range	862-960MHz ¹	
Frequency error	$\pm 10\text{ppm}$	
Frequency drift	$\pm 20\text{ppm}$	-40°C~85°C
Modulation	FSK/GFSK/MSK/ GMSK/LoRa/OOK	
Date Rate	0.18-37.5kbps ²	Working at LoRa Mode
TX Power	18dBm $\pm 1\text{dB}$	862-960MHz
Spurious Emission	$\leq -30\text{dBm}$	
TX Current	$\leq 130\text{mA}^3$	862-960MHz
RX Sensitivity	-134dBm ⁴	BW=250K, SF=12

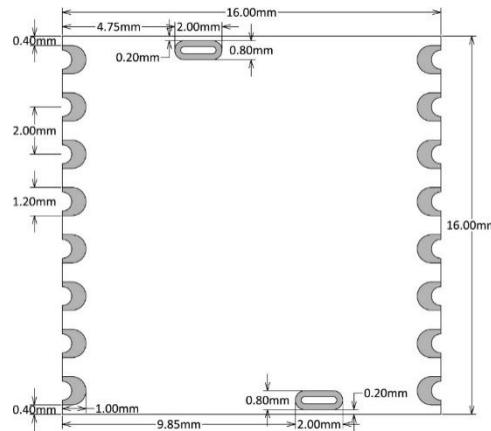
RX Current	$\leq 14.5\text{mA}$	
Sleep Current	$\leq 1\text{uA}$	
Working Voltage	1.8 ~3.7V	
Working Temperature	-40°C~85°C	
Dimension	16.0*16.0*2.0mm	

Pin Definition



Pin Name	Pin Type	Pin Description
3.3V	Power	DC Input:1.8-3.7V
GND	Ground	Ground
nRESET	Input	Reset input, Keep low
DIO0	Input /output	Digital I/O,
DIO1	Input /output	Digital I/O,
DIO2	Input /output	Digital I/O,
DIO3	Input /output	Digital I/O,
DIO4	Input /output	Digital I/O,
DIO5	Input /output	Digital I/O,
SCK	Input	Serial clock for SPI
MISO	Output	Date Output for SPI
MOSI	Input	Date in put for SPI
NSS	Input	Chip select for SIP
ANT	ANT port	Connect with 50 ohm antenna

Dimensions



Accessory



Parameter	Value	Note
Part Number	ANT-915-A1	
Type	Helical Spring Antenna	
Frequency range	800-960MHz	
standing-wave ratio (SWR)	<2	
Impedance	50 ohm	
The Max input Power	2 W	
Gain	0 dbi	
Polarization	Circular polarization	
Working Temperature	-40°C~85°C	
Dimension	φ5.5mm*17.5mm	

Integration instructions

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

2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247 & 15.207 & 15.209

2.3 Specific operational use conditions

The module is a module with LoRa functions.

- Operation Frequency: 902-928MHz
- Number of Channel: 1
- Modulation: FSK/GFSK/MSK/GMSK/LoRa/OOK
- Type: Helical Spring Antenna
- Gain: 0 dBi Max.

The module can be used for mobile or portable applications with a maximum 0dBi 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 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 shown in this manual.

2.4 Limited module procedures

Applicable. The module is a Limited Single module and complies with the requirement of FCC Part 15.212.

The product is a limited module. Since there is no shielding shell, no permanently attached antenna and does not contain an independent power supply adjustment, C2PC or New FCC ID

certification procedures are required when the module is placed in the host device.

2.5 Trace antenna designs

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

2.6 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 FCCID 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.

2.7 Antenna

Antenna Specification are as follows:

Type: Helical Spring Antenna

Gain: 0 dBi

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 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.).

2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID: 2AYSD_WT5518" with their finished product.

2.9 Information on test modes and additional testing requirements

Host manufacturer must perform 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 product can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

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.

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

Radiation Exposure Warning:

- The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.
- The equipment must not be co-located or operating in conjunction with any

other antenna or transmitter.

- This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

- 1) This device is intended for OEM integrators only.
- 2) Please see the full Grant of Equipment document for other restrictions installed .

IMPORTANT NOTE:

In the event that these conditions can not 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 can not 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.