隔空智能

ATS58-1818 5.8GHz Microwave Motion sensor

FCC ID: 2AVK2-ATS58-1818

Made in China

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

隔空智能

Content

隔空智能

ATS58-1818 User Guide

1.Description

ATS58-1818 is a miniaturized 5.8G radar sensor launched by AirTouch Intelligent. The module size is 18 * 18mm and the size is equivalent to a 50 cent coin. The sensor uses AirTouch self-developed radar sensor chip AT5810. Because AT5810 has integrated 5.8G microwave Circuits and IF amplifier circuits, high integration and good production consistency, with small doubly-fed antennas in the periphery, which greatly reduces the overall size while ensuring the performance of the sensor. The sensor can be used in various scenarios where human presence or moving targets are sensed, including smart home, Internet of Things, and intelligent lighting. Especially in the lighting field, it has been widely used in standard lighting products such as induction bulbs and T8 lamps.
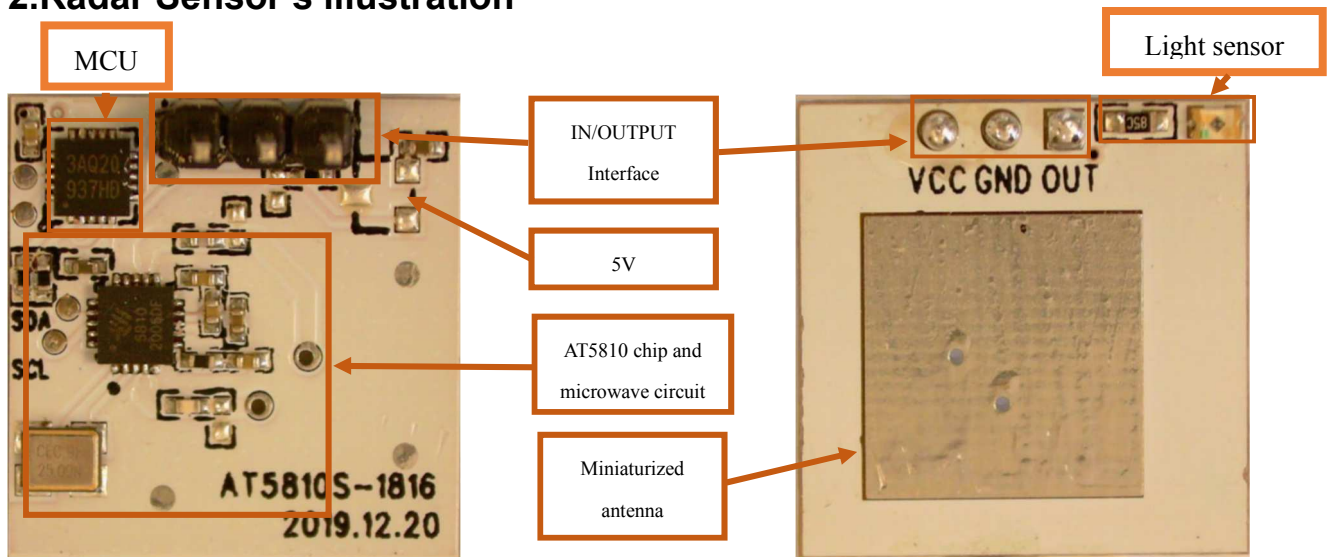
2.Radar Sensor's illustration

Figure 1 ATS58-1818 Radar Sensor

隔空智能

3.Input and Output Interface

ATS58-1818 can be embedded in end product with three contact PINs, the PIN space is 2.54mm, below is the detail description about the interface:

Pin Name	Function	Note
VCC	Power supply	LDO is not attached by default, VCC is 5V, the default power consumption of the module is 35mA, and the recommended power driving capacity is> 50mA
GND	Ground PIN	
OUT	Output control	Output is 5V TTL by default, could be PWM if needed

4.Specifications

Parameters	Min.	Typical	Max.	Unit	Note
Frequency	5750		5870	MHz	
TX Power		0.5	1	mW	
Input VCC	4.5	5	5.5	V	Without external LDO
Output High Level		5		V	
Output Low Level		0		V	
Current		35	50	mA	
Mounting Height		3	10	M	Can be tuned if needed
Detection Radius		5	10	M	Related to mounting height
Hold time		30		S	Can be tuned if needed
Daylight sensor		10		Lux	Can be tuned if needed
Operating TEMP	-30		105	° C	

隔空智能

5.Radar signal processing

AT5810 integrates a microwave circuit and an IF amplifier circuit. After the chip is powered on, the MCU first initializes it through the I2C interface. The configuration parameters include frequency and gain. After initialization, the MCU directly reads the quantized digital IF of the ADC through the I2C Signal, and then output the corresponding inductive control signal according to the characteristics of the intermediate frequency signal.The output voltage is 5V or 0V;

6.Sensing time and sensing distance adjustment

There are two resistors on the graph, one to adjust the output duration time and another to adjust the sensitivity. By default, both exist, the corresponding time is 2S (test mode) and the corresponding distance is 4 ~ 6m. If the time-dependent resistance 1 is removed, the output duration time will become 30S. If the resistance 2 is removed, the sensing distance will become 3 ~ 5m.
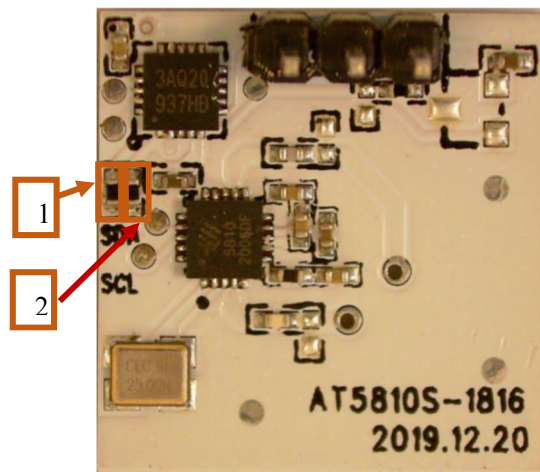

Figure2 adjust resistors

隔空智能

7.Detected distance

The sensing sensitivity of the radar sensor can be configured through the MCU and its maximum sensing distance is 10 meters. The actual sensing distance can be adjusted as needed. The figure below shows the radar detection range in the case of hanging. If the sensitivity is set higher, the detection range will be correspondingly larger. The dark area in the figure is the high sensitivity area, which can be fully detected in the area, and the light area is low sensitivity. Detection area, in which objects can be basically detected.
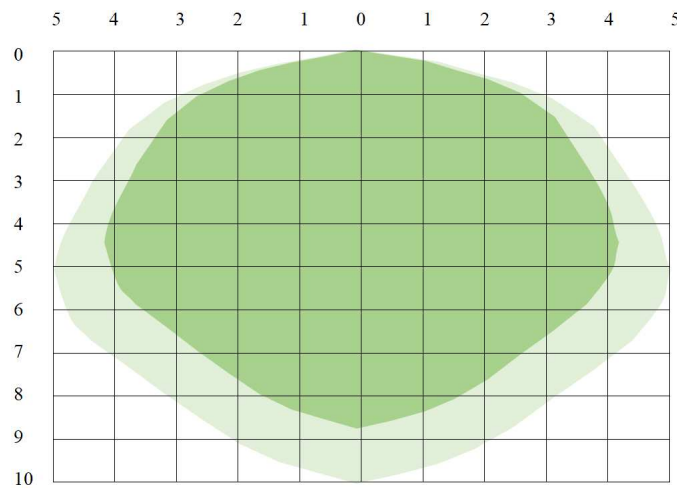
Figure 3 a example of ATS58-1818's detection pattern

隔空智能

8.Light-dependent detection

According to the Figure 1, there exists light sensor by default and the SDK also enable this function. If light-dependent detection are not necessary, disable on SDK or remove the light sensor.

9.Installation Notes

● Antenna is sensitive to metal, don't put anything with metal in front of the antenna, thin plastic and glass is acceptable, however, don't let the antenna cling to the cover, the gap between the antenna and the cover should be more than 2mm;

● Try to set the antennas in parallel to each other when there are multi radar sensors in the same space, make sure the gap between two sensors is more than 1m;

● Power frequency may cause serious interference for radar signal, try to put LED driver far away from the antenna, don't fix the LED driver in front of the antenna;

● Power consumption for the sensor is about 35mA, make sure the current-driving capability for LED driver is better than 50mA.

10.Revision history

Revision	Release Date	Description
1.0	2019/06/10	Initial version
1.1	2019/07/11	Update power supply parameters

隔空智能

11. Requirement of FCC KDB 996369 D03 for module certification:

11.1 List of applicable FCC rules:

The module complies with FCC Part 15.249

11.2 Summarize the specific operational use conditions:

The module has been certified for Fix, Mobile, Portable applications. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

11.3 Limited module procedures:

The module has not its own RF shielding, which belong to Limited module

Standard requires:

Clear and specific instructions describing the conditions, limitations and procedures for third-parties to use and/or integrate the module into a host device (see Comprehensive integration instructions below).

Resolve: Supply example as follows:

Installation Notes:

1) ATS58-1818 module Power supply range is DC 4.5~5.5V, when you use ATS58-1818 module design product, the power supply cannot exceed this range.

2) When connect ATS58-1818 module to the host device, the host device must be power off.

3) Make sure the module pins correctly installed.

4) Make sure that the module does not allow users to replace or demolition

11.4 Trace antenna designs:

Not applicable.

11.5 RF exposure considerations:

隔空智能

This equipment complies with FCC's RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter.

Note: the host product manuals must include a statement in order to alert the users of FCC RF exposure compliance.

11.6 Antennas:

Type	Gain	Impedance	Application
PCB type	2.3dBi	50Ω	Fixed, Mobile, Portable

The antenna is permanently attached, can't be replaced.

11.7 Label and compliance information

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.

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

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 andused 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

隔空智能

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.

The system integrator must place an exterior label on the outside of the final product housing the ATS58-1818 Modules. Below is the content that must be included on this label.

The host product Labeling Requirements:

NOTICE: The host product must make sure that FCC labeling requirements are met. This includes clearly visible exterior label on the outside of the final product housing that displays the contents shown in below:

Contains FCC ID: 2AVK2-ATS58-1818

11.8 Information on test modes and additional testing requirements:

When testing host product, the host manufacture should follow FCC KDB Publication 996369 D04 Module Integration Guide for testing the host products. The host manufacturer may operate their product during the measurements. In setting up the configurations, if the pairing and call box options for testing does not work, then the host product manufacturer should coordinate with the module manufacturer for access to test mode software.

11.9 Additional testing, Part 15 Subpart B disclaimer:

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.249) list on the grant, and that the host product manufacturer is responsible for compliance to any other

隔空智能

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 when contains digital circuity.

11.10 Information on test modes and additional testing requirements:

When testing host product, the host manufacture should follow FCC KDB Publication 996369 D04 Module Integration Guide for testing the host products.

The host product shall work normally, all the transmitters installed must be operating, investigate the fundamental and unwanted/spurious emissions with the modular transmitter(s) operating in a normal mode. When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode if possible, if receive mode only is not possible, test laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s).