

Shenzhen USEER Robotics Co., Ltd.

User Manual

Project name: UM_MR133

Version: V1.0

Data: 2020.06.24

Revision History

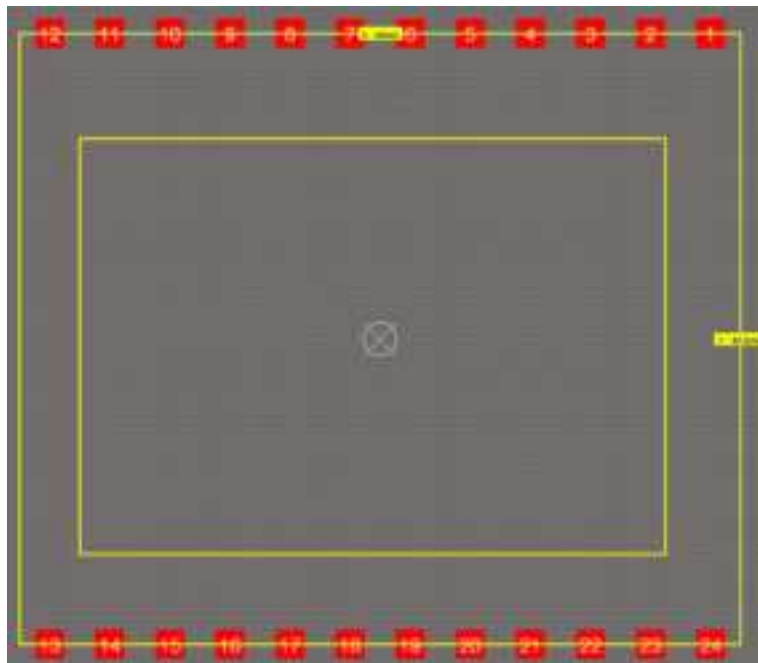
Date	Revision	Description
2021.06.24	V1.0	Initial Release Version

1. Product introduction:

The product is the core algorithm board for sweeper data analysis and calculation. With power amplifier circuit, WIFI circuit, can achieve voice broadcast and WIFI networking functions. Applicable to sweeping robot project.

2. Pin description

UM_MR133_CORE algorithm board has 2 rows of pins, the pin spacing is 4MM, and the pin number is arranged as follows:



PIN	Symbol	IO Types	Function
1	VDDIN	P	Module power supply PIN(5V)
2	VDDIN	P	
3	NC		
4	USB_D+	I/O	External USB communication D+
5	USB_D-	I/O	External USB communication D-
6	GND	P	Ground plane
7	UTO_TX_CPU	I/O	CPU communication TX
8	UTO_RX_CPU	I/O	CPU communication RX
9	MR133_AWAKE	I/O	CPU awakens the foot
10	SPKER +	I/O	audio amplifier+
11	GND	P	Ground plane
12	SPKER -	I/O	- audio amplifier-
13	RADR_TX	I/O	UART4_TXD(user serial port)
14	RADR_RX	I/O	UART4_TXD(user serial port)
15	GPI01	I/O	GPI01
16	MCU_AWAKE	I/O	MCU awakens the foot
17	USB_ID	I/O	USB line ID

18	GPI02	I/O	GPI02
19	GND	P	Ground plane
20	GPI03	I/O	GPI03
21	GPI04	I/O	GPI04
22	DUBUG_RX	I/O	UART_Log_RXD (for printing the internal information of the module)
23	DUBUG_TX	I/O	UART_Log_TXD (for printing the internal information of the module)
24	LDS_PWRON_OUT	I/O	Output high level control radar power supply

3. Electrical characteristics:

1	Rated voltage	5V
2	Operating voltage range	DC 4V-6V
3	Working current	Max≤1A
4	Operating temperature	- 20-70℃
5	Electrostatic discharge voltage	±10KV
6	Sleep working current	10mA-80mA

4. RF Characteristics

Algorithm board WiFi operating frequency from 2.4GHz to 2.4835GHz, support IEEE 802.11b /g/ N, need to use an external antenna.

US Operation Frequency: 2412-2462MHz

Japan Operation Frequency: 2412-2472MHz

5.1 List of applicable FCC rules

Parameter	Description
Operation band	2.400 to 2.4835GHz
Power	<5W
FCC rules	FCC Part15 Subpart C, Section 15.247

5.2 Limited module procedures

This module is an unrestricted module

5.3 Summarize the specific operational use conditions

The module is limited to OEM installation ONLY. The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application; A separate approval is required for all other operating configuration.

5.4 Trace antenna designs

The module is connected with an external antenna through a RF connector.

Product specification: 41x7x0.6mm(No glue and cable)

5.5 RF exposure considerations

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

5.6 Antennas

The WIFI part of the module needs an external antenna, and the gain of each frequency band of the antenna is:

	Frequency (MHz)	Value (dBi)
Gain	2400	2.2
	2410	2.4
	2420	2.5
	2430	2.6
	2440	2.7
	2450	2.7
	2460	2.6
	2470	2.5
	2480	2.5
	2490	2.4
	2500	2.2

5.7 Label and compliance information

This Label contains: The product name :

Model: UM-MR133

FCC ID: 2AZ2R-UMMR133

FCC regulatory 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 not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

End Device Labelling

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: Z4T-WM1302-A and Z4T-WM1302-B" any similar wording that expresses the same meaning may be used.

RF Exposure Compliance

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Installation Notice

The module is limited to OEM installation ONLY. The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application; A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

FCC Part 15B Compliance of End Device

The OEM integrator is responsible for ensuring that the host product which is installed and operating with the module is in compliant with Part 15B unintentional Radiator requirements, please note that For a Class B digital device or peripheral, the instructions furnished the user manual of the end-user product shall include the following or similar statement, placed in a prominent location in the text of the manual: 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.

5.8 Information on test modes and additional testing requirements

The module can be connected to the computer through an external USB interface and send ADB commands to open different test modes.

5.9 Additional testing, Part 15 Subpart B disclaimer

A statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, 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 circuitry), 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.