

2ALHR005Module

User's Manual



1. Features

- On-chip low power microcontroller
- 128KB of In-system programmable flash
- 8KB SRAM
- On board crystal and PCB Antenna

2. Application

- Mobile device accessories (Android/ iOS)
- Wireless data communication
- Remote sensors

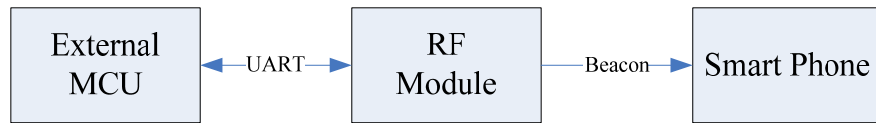
3. Pin definition (from right to left)

Pin No.	Description	Pin Type	Functions
1	BLE_RX	Digital I/O	UART RX
2	BLE_TX	Digital I/O	UART TX
3	WAKE_UP	Output	Digital I/O
4	STATUS	Input	Digital I/O
5	GND	Digital I/O	GND
6	V+	Digital I/O	VDD
7	BLE_EN	Digital I/O	VDD Enable

4. How to use:

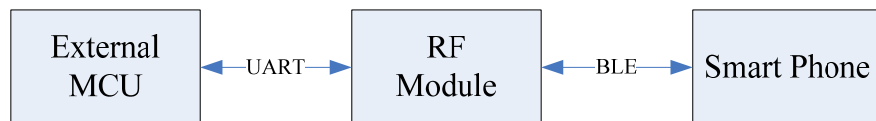
- Before sending any UART Command, "WAKE_UP 1 → 0" must be done by external MCU.
- If the RF module is connected to Smart Devices (Android/ iOS), the pin STATUS will be logic "1" to inform external MCU.

- Beacon



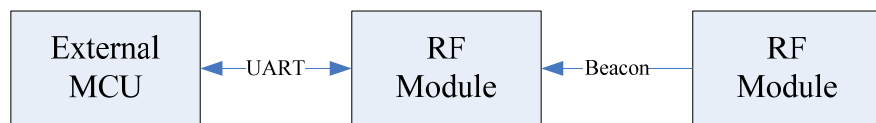
1. Send Command '**R**' to send live measured data from external through Beacon.
2. This is default mode, and RF module send data only. Cannot receive any data.

- BLE



1. Send Command '**M**' to switch mode from Beacon to BLE.
2. After the mode switch successfully, the external MCU can receive data from Smart phone.

- Receiver



1. Send Command '**E**'/'**G**'/'**I**' to switch mode from Beacon to Receiver.
2. Only specific Beacon data can be received, and the external MCU receives the data from UART

5. Protocol:

- UART Baud Rate: 115200, 8, N, 1
- Commands

'M': Mode Switch

External MCU → RF Module

Starter	Len	OP	S/N	CK	End
#		M			(0D 0A)h

External MCU ← RF Module

Starter	Len	OP	Indi	CK	End
>		M			(0D 0A)h

'I': Scan Product Information of multiple products

External MCU → RF Module

Starter	Len	OP	Filter1	Filter2	Filter3	Filter4	Filter5
'#'		'I'					
Filter6	Filter7	Filter8	CK	End			
				(0D 0A)h			

External MCU ← RF Module

Starter	Len	OP	Beacon Data	RSSI	CK	End
'>'		'I'				(0D 0A)h

'C': Scan stop

External MCU → RF Module

Starter	Len	OP	CK	End
'#'		'C'		(0D 0A)h

External MCU ← RF Module

Starter	Len	OP	CK	End
'>'		'C'		(0D 0A)h

'X': Setting RF Module parameter

External MCU → RF Module

Starter	Len	OP	Setting	FP	Prod.	S/N	Cal. Date	Tx Power	CK	End
#		X								(0D 0A)h

External MCU ← RF Module

Starter	Len	OP	FP	Prod	SN	Cal Date	Tx Power	BLE_Ver	CK	End
>		X								(0D 0A)h

'R': Send Beacon data

External MCU → RF Module

Starter	Len	OP	Beacon Data	CK	End
'#'		'R'			(0D 0A)h

External MCU ← RF Module

Starter	Len	OP	Indi	CK	End
'>'		'R'			(0D 0A)h

'E': Scan beacon information of one product

External MCU → RF Module

Starter	Len	OP	Product Code	CK	End
'#'		'E'			(0D 0A)h

External MCU ← RF Module

Starter	Len	OP	Beacon Data	RSSI	CK	End
'>'		'E'				(0D 0A)h

'G': Scan beacon information of all products

External MCU → RF Module

Starter	Len	OP	CK	End
'#'		'G'		(0D 0A)h

External MCU ← RF Module

Starter	Len	OP	Beacon Data	RSSI	CK	End
'>'		'G'				(0D 0A)h

FCC Compliance and Advisory Statement

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 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 device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

IMPORTANT NOTE:

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.

The module is limited to OEM installation ONLY.

This module is intended for OEM integrators under the following conditions:

1. This module is restricted to installation in products for use only in mobile and fixed applications.
2. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.
3. The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.

The OEM integrator is still responsible for

1. ensuring that the end-user has no manual instructions to remove or install module
2. the FCC compliance requirement of the end product, which integrates this module.
3. Appropriate measurements (e.g. 15 B compliance) and if applicable additional equipment authorizations (e.g. Verification, Doc) of the host device to be addressed by the integrator/manufacturer.
4. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations

Guidance to the Host Manufacturer:

1. Module grantee (the party responsible for the module grant) shall provide guidance to the host manufacturer for ensuring compliance with the Part 15 Subpart B requirements.

The user manual of the end product should include

1. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
2. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

3. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
4. The FCC part 15.19 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.

Label of the end product:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: **2ALHR005** ".

The end product shall bear the following 15.19 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 device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 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.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps

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.).

IMPORTANT NOTE: In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the IC authorization is no longer considered valid and the IC No. cannot 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 IC authorization.

Modular OEM Integrator Notice

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains transmitter module IC: IC: 22518-BT005".

Contient le module d'émission IC: IC: 22518-BT005

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

- 1) The antenna must be installed such that 20cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:
(Pour utilisation de dispositif module)

- 1) L'antenne doit être installée de telle sorte qu'une distance de 20cm est respectée entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

CAN ICES-3 (B)/NMB-3(B)