SAMSUNG ACAU711R Bluetooth 5.2 IoT Module User Manual

User manual for ACAU711R

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Operational Description

ACAU711R is the 802.11a/b/g/n/ax +Bluetooth 5.2 IoT Module that acts as a communication controller for users of a wireless device to connect to SMART Home

– Features

>IEEE 802.11ax Draft compliant.

>Dual-band 2.4GHz /5 GHz

>Dual-stream spatial multiplexing up to 114Mbps data rate

>On-chip power amplifiers and low –noise amplifiers for both bands

>Complies with Bluetooth Core Specification Version 5.2

>Supports BT/Wi-Fi coexistence.

>Adaptive frequency hopping (AFH) for reducing radio frequency interference

– Time base of the RF frequency

For IF and RF frequency, 40MHz crystal is a clock reference.

– Synthesizer

Synthesizer inside Transceiver. Internal voltage controlled oscillator (VCO) provides the desired LO signal base on the phase-locked loop (PLL) with a relatively wide tuning range for this application. Internal fractional nPLL allows support for a wide range of reference clock frequencies

– Wi-Fi Transmission

Baseband data is modulated and up converted to the 2.4GHz ISM and 5-GHz U-NII bands, respectively. Linear on chip power amplifier are included, which are capable of delivering high output powers while Meeting IEEE802.11ax and IEEE802.a/b/g/n specifications without the need for external PAs.

– Wi-Fi Receiver

The SDA8702PAH has a wide dynamic range, direct conversion receiver that employs high-order on-chip channel filtering to ensure reliable operation in the noisy 2.4GHz ISM band or the entire 5GHz U-NII band. Control signals are available that can support the use of optional LNAs for each band,which can increase the receive sensitivity by several decibels. Reverse direction isolation of LNA inside Transceiver IC suppresses unwanted radiation.

-Bluetooth Low Energy

The ACAU711R support the Bluetooth5.2 LE and 5.2 BLE 2Mbps

Product Details

-Data Modulation

DSSS:CCK,BPSK,QPSK for 802.11b

OFDM:BPSK,QPSK,16QAM,64QAM,256QAM for 802.11a,g,n,ax

FHSS:GFSK,OQPSK, 8DPSK, π/4DPSK for Bluetooth

-Frequency Range

2412-2484MHz

5180-5885MHz

-Output Power tolerance

Output power ± 1dBm

-Recommended Operating conditions

	Min	Typ.	Max	Unit
Operating voltage	2.97	3.3	3.63	V
Operating	−20	25	85	°C

-Max target Power

e.i.r.p. 18 dBm

-Power

DC 5, 12V

Approval Statement

● FCC approval statement

RF Software restrictions

1. **Contention-Based Protocol, as demonstrated in the FCC test report, is permanently embedded in the module and is not host-dependent and can't be changed by anyone.**
2. **Operation of transmitters in the 5.25-5.35GHz, 5.47-5.725GHz bands in this Modular device will only associate and connect with a low-power indoor access point or subordinate device and never directly connect to other client devices. This feature is included in its firmware and can't be changed by anyone.**
3. **Operation of transmitters in the 5.25-5.35GHz, 5.47-5.725GH bands in this Modular device will always initiate transmission under t he control of a low-**

power indoor AP or subordinate except for brief trans missions before joining a network. These short messages will only occur if the client has detected an indoor AP or subordinate operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.

This device complies with Part 15 of the FCC's Rules. Operation is subject to the following two Conditions:

1. **This device may not cause harmful interference.**
2. **This device must accept any interference received, including interference that may cause undesirable operation.**

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end-product.

Contains Transmitter module FCC ID: A3LACAU711R

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 b y 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 OEM integrator is responsible for ensuring the end-user has no manual instruction to remove or install module.
-The module is limited to installation in mobile or fixed applications.

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 meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

– RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

-The antenna(s) must be installed such that a minimum separation distance of at least 20cm is maintained between the radiator(antenna) and all persons at all times.
-The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

This device can support Ad-hoc and Wi-Fi Direct for 2.4GHz, UNII 1, and UNII 3 bands.

The device operates strictly as a client in DFS channels (with passive sca n). It does not support ad-hoc, Wi-Fi Direct Group Owner, Hotspot, or any other peer-to-peer modes that may initiate a network in DFS channels (U NII2-2A and UNII2-2C band)

<Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual v01>

List of applicable FCC rules
This module has been granted modular approval as below listed FCC rule parts.

-FCC Rule parts 15C (15.247, 15.407)

Summarize the specific operational use conditions

-The OEM integrator should use equivalent antennas which is the same type and equal or less gain then an antenna which installed an original module.

RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

– The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.
– The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.
– Mobile use
As long as the three conditions above are met, further transmitter testing will not be required. OEM integrators should provide the minimum separation distance to end users in their end- product manuals.

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module.

The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be place d on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment.

IMPORTANT: The final host product must have an integral antenna that is not removable by the end user.

● Canada IC approval statement

IC approval

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exe mpt 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.

Caution: Any changed or modifications not expressly approved by the party responsible for compliance could void the user`s authority to operate t his equipment.

Please notice that if the ISED certification 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 foll owing: "Contains IC: 649E-ACAU711R" any similar wording that expresses the same meaning may be used.

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

User should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE- LAN devices.

The device meets the exemption from the routine evaluation limits in sect ion 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

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

antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

IMPORTANT: The final host product must have an integral antenna that is not removable by the end user.

> Frequency Range: 2412-2472MHz, 5180-5825MHz

> RF power output

Mode	Frequency	Target Power [dBm]				
		a	b	g	n	ac
2.4 GHz	2412 ~ 2462 MHz		**17.0**	16.0	16.0	
	2467 MHz		16.0	**13.0**	14.0	
	2472 MHz		**13.0**	10.0	11.0	
5 GHz (20 MHz)	5180 ~ 5720 MHz	16.0			15.0	15.0
	5745 ~ 5825 MHz	**13.0**			14.0	14.0

Mode	Freq(MHz)	Target Power [dBm]			
		26T	52T	106T	242T/SU
2.4 GHz	2412	13	16	16	14
	2437	16	16	16	16
	2442	13	16	16	16
	2462	16	16	16	16
	2467	16	16	16	13
	2472	13	16	16	6
5 GHz (20 MHz)	5180-5200	15	15	15	15
	5240	7	10	13	15
	5260	15	15	15	15
	5280	15	15	15	15
	5320	9	12	15	15
	5500-5720	15	15	15	15
	5745-5825	14	14	15	15

> Output Power tolerance

Output power +/-1dB

Approval Statement

● Europe CE approval statement

Restircted countries :

AT BE BG CH CY CZ DE DK
EE ES EL FI FR HR HU IE IS
IT LI LT LU LV MT NL NO PL
PT RO SE SI SK TR UK(NI)

5150-5350MHz indoor use only.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

CE RED_EU declaration

This product can be used in which EU members, in accordance with Article 10(10) / or this product can be used in at least one EU country, in accordance with Article 10(2)

Documents / Resources

	SAMSUNG ACAU711R Bluetooth 5.2 IoT Module [pdf] User Manual ACAU711R, A3LACAU711R, ACAU711R Bluetooth 5.2 IoT Module, ACAU 711R, Bluetooth 5.2 IoT Module, 5.2 IoT Module, IoT Module

References

- User Manual

Samsung

5.2 IoT Module, A3LACAU711R, ACAU711R, ACAU711R Bluetooth 5.2 IoT Module, Bluetooth 5.2 IoT Module, IoT Module, Samsung

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