

User manual of BTM530A

1. Introduction

BTM530A is Bluetooth 4.2 products, including embedded UART interface optimized for Mac and compatible radio / low-power applications

The core chipset is from Qualcomm, part number CSR8811A12.

2. Hardware Architecture:

2.1 Main Chipset Information

Item	Vendor	Part Number
Bluetooth 4.2 mac/baseband/radio	Qualcomm	CSR8811A12

2.2 Circuit Block Diagram

The major internal and external block diagram of BTM530A is illustrated in Figure 1-1.

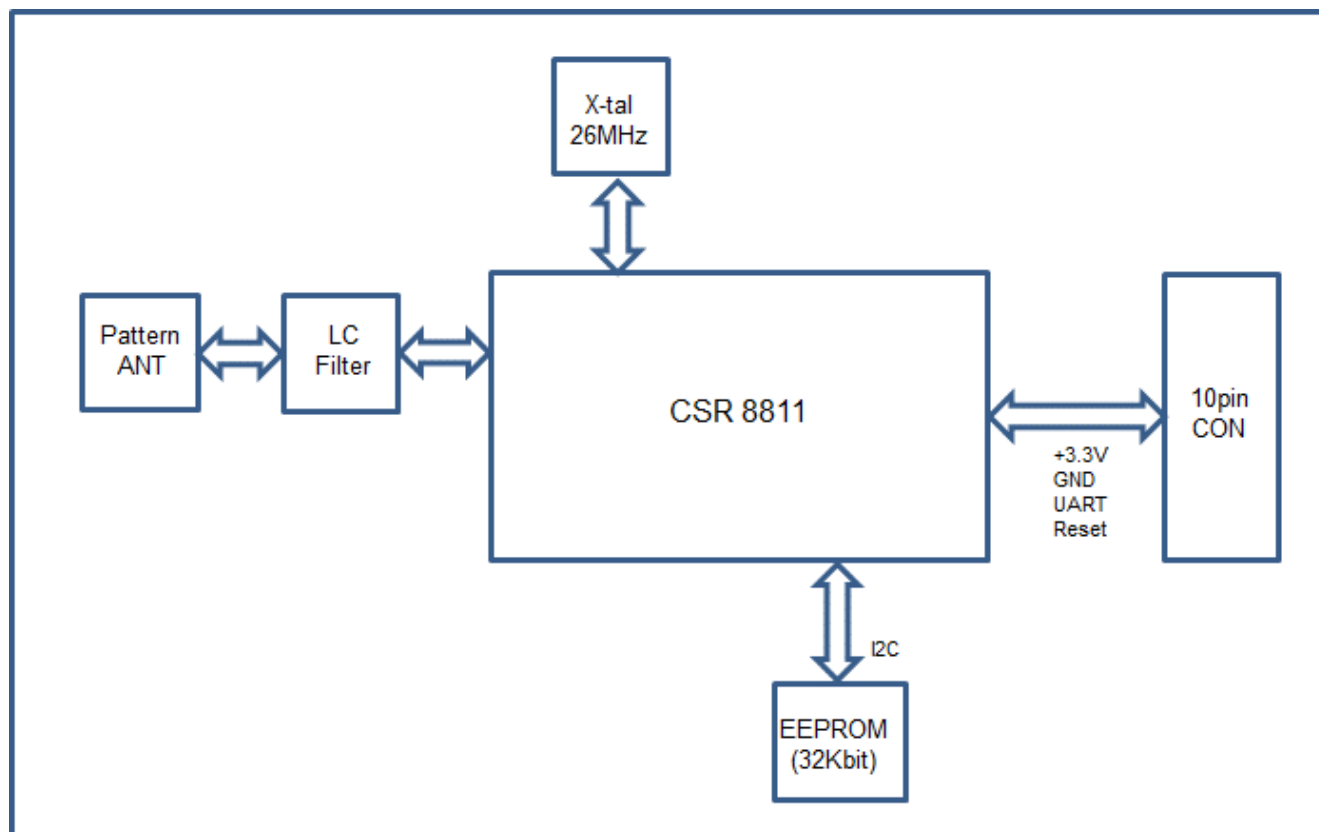


Figure 1-1 BTM530A block diagram and System Interface

3. Operational Description

It is mounted in the sound-bar communication controller for using a wireless device user the Bluetooth devices that act.

Channel based on the 802.15.1 / 1a of the Bluetooth standard IEEE 79 channels and frequency use the 2402MHz ~ 2480MHz band and channel interval is 1 MHz.

- Features

- >Bluetooth 4.2
- >Full-speed Bluetooth operation with full piconet and scatternet support
- >High-sensitivity Bluetooth receiver
- >On-chip balun
- > Support for IEEE 802.11 coexistence

- Time base of the RF frequency

For IF and RF frequency, a crystal(26MHz) is a clock reference.

- Synthesizer

Transceiver size is relatively fresh inside the internal voltage controlled oscillator (VCO) and the PLL system
To respond to a wide adjustment range.

- Transmission

Baseband processing FHSS (frequency hopping spread spectrum run) and (2FSK / DQPSK / 8DPSK) modulation, Data transfer speed is 1Mbps, 2Mbps (EDR), it will have a 3Mbps (EDR). It handles the digital data signal to 2FSK, 1MHz Data Rate by the DAC in the BBP IC TX IQ signal is input through the modulation process and a TX carrier frequency the amplifier stage shelter will be sent.

- Receiver

This transceiver IC is isolated to prevent unwanted noisy radiation by internal amplifier noise LOW month and the RF signal is through the intermediate frequency conversion and demodulation, and a RX IQ signal via a low-pass filter the input to baseband Processing.

- Product Specifications

- > Standards: Bluetooth 4.2
- > Data Modulation GFSK, 8DPSK
- > Frequency Range 2402-2480MHz
- > Module power output

Parameter	Min	Typ.	Max	Unit
RF Characteristics				
RF Frequency Range	2.402	-	2.480	GHz
Output power [TRM/CA/01/C] class1(0.25~10mW)	4.0	7.0	9.99	dBm
TX Spurious Emission 30.0MHz to 1.0GHz 1.0GHz to 12.5GHz 1.8GHz to 1.9GHz 5.15GHz to 5.3GHz	-	-	-35	dBm
TX Frequency Tolerance	-75	-	75	KHz
Receiver sensitivity BER at -70dBm	-	-	0.1	%
Maximum Input Level BER at -20dBm	-	-	0.1	%

- > Operating Voltage: 3.3V(3.0~3.6V)
- > Size: 18mm X 28.5mm X 5.1mm
- > Temperature, humidity range: -20 °C ~ +70 °C

4. Notice

Approval Statement

CE Statement

Contact Address: SEONG JI INDUSTRIAL CO., LTD, / 54-33, Dongtanhana 1-gil, Gyeonggi-do Hwaseong-si South Korea

FCC approval

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, and
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: 2BEK7BTM530A

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.
- 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.

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

FCC Part 15.19 Statements:

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.

FCC Part 15.21 statement

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment

Modular Approval Statement

Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual

This module has been granted modular approval as below listed FCC rule parts.

- FCC Rule parts 15C (15.247)

Summarize the specific operational use conditions

-The OEM integrator should use equivalent antennas which is the same type and equal or less gain than an antenna listed below this instruction manual.

Limited module Procedures

This module is single modular approval.

Antennas list

The antenna certified with this module is listed following.

-Type: Pattern antenna / Max. peak Antenna gain : 0 dBi

A host manufacturer must not use the other types of antenna and an antenna with a gain that exceeds the values listed in this documents.

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.

End Product Labeling

The module is labeled with its own FCC ID. If the FCC ID are 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. In that case, the final end product must be labeled in a visible area with the following:

Contains FCC ID: 2BEK7BTM530A

Contains IC: 32019-BTM530A

Information on test modes and additional testing requirements

-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, additional transmitter in the host, etc.).

Additional testing, Part 15 Subpart B disclaimer

-The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module or change RF related parameters in the user manual of the end product.

Note EMI Considerations

Note that a host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties

For standalone mode, reference the guidance in D04 Module Integration Guide and for simultaneous mode; see

D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

How to make changes

Since only Grantees are permitted to make permissive changes, when the module will be used differently than granted, please contact the module manufacture on below contact information.

-. Contact information: wskim@seongji.co.kr / +82-31-223-7048

ISED approval

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). L'opération est soumise aux deux conditions suivantes:

- (1) cet appareil ne peut causer d'interférences, et*
- (2) cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.*

The host device must be labeled to display the Industry Canada certification number of the module.

Contains transmitter module IC: 32019-BTM530A

Le dispositif d'accueil doit être étiqueté pour afficher le numéro de certification d'Industrie Canada du module.

Contient module émetteur IC : 32019-BTM530A

IMPORTANT NOTE

This device complies with FCC & IC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and must not be co-located or operating in conjunction with any other antenna or transmitter.

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

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

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements with this module installed. In the event that these conditions cannot be met, then the FCC & IC authorizations are no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product including this module and obtaining separate FCC & IC authorizations.

Cet appareil est conforme aux limites de la FCC et IC exposition aux radiations dans un environnement non contrôlé. Cet appareil doit être installé et ne doit pas être co-localisées ou opérant en conjonction avec une autre antenne ou un autre émetteur.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes :

- 1) L' antenne doit être installée de telle sorte que 20 cm est maintenue entre l'antenne et les utilisateurs .*
- 2) Ce module ne peut pas être co-localisé avec d'autres émetteurs ou des antennes .*

Aussi longtemps que deux conditions précitées sont remplies, le test du transmetteur supplémentaires ne seront pas tenus. Toutefois, l'intégrateur OEM est toujours responsable de tester leurs produits finis pour toutes les exigences de conformité supplémentaires avec ce module installé.

Dans le cas où ces conditions ne peuvent pas être remplies, alors la FCC et IC autorisations ne sont plus considérés comme valides et l'ID de la FCC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera responsable de réévaluer le produit final, y compris l'obtention de ce module et séparée de la FCC et IC Autorisations

User Information

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

Attention: Toute changé ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler l'utilisateur `autorité de faire fonctionner cet équipement.

ANATEL Statement

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados

NCC Statement

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性

及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。