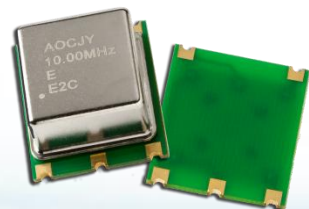
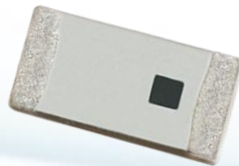
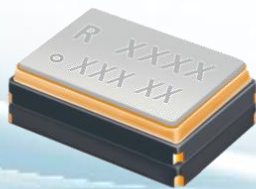


# ABBTM Series; Bluetooth Modules



**ABRACON<sup>®</sup>**  
**CORPORATION**

*The Power of Linking Together*





# Introduction

**Purpose:** To provide an overview of Abracon's Bluetooth Modules

**Objective:**

- Introduce Bluetooth & Bluetooth Low Energy (BLE) basics
- Describe features and applications of the ABBTM series of products

**Content:** 13 pages

**Learning Time:** ~20 minutes



# Bluetooth Basics

- A wireless technology for exchanging data over short distances and low power consumption
- Uses short-wavelength radio transmissions in the ISM band from 2400-2480 MHz
- Uses frequency-hopping technology @ 1600 hops/s
- A unique 48-bit address: e.g. 00 1d 43 9a e0 71
- Device Name: e.g. ABBTM
- BT standards version: v1.1, v1.2, v2.0, v2.1, v3.0, v4.0, v4.1

## Power consumption and working range:

Class	Power Consumption Max. (mW)	Range (m)
1	100	100
2	2.5	10
3	1	1



# Bluetooth Low Energy (BLE) Basics

- A subset of Bluetooth Core Specification v4.0
- Ultra-low peak, average and idle mode power consumption
- Aimed at devices running off coin-cell batteries
- Not backward compatible with the previous “Classic” BT protocols
- Two types of implementation:
  - Single Mode: BLE  
(“Bluetooth SMART” devices, e.g. BLE heart rate monitor; BLE proximity sensor)
  - Dual Mode: Classic BT + BLE  
(“Bluetooth SMART READY” devices, e.g. smart phone, tablet, PC)



# ABBTM-NVC series BLE Module

*ABBTM-NVC-MDCS71* (19.5\*12.5\*2.4 mm)

## Main Features:

- Bluetooth v4.0, single mode
- CSR1010 core
- Ultra low current consumption
  - Transmit: 16mA (0 dBm)
  - Deep Sleep mode: 0.6uA
- Supply voltage: +1.8V ~ +3.6V
- Operating temp. range: -30 ~ +70°C
- Support GATT-based profiles: Proximity, Find Me, Heart Rate, HOGP, iBeacon
- Support UART, I<sup>2</sup>C, SPI interfaces
- On-board chip antenna
- FCC certified
- Custom firmware available on a case by case basis
- Eval kit available (ABBTM-NVC-EVK-71)

## Typical Applications:

- Sport and fitness sensors
- Health and medical sensors
- Smartphone accessories
- Key fobs
- Security tags
- Wireless keys
- Proximity sensors
- BT keyboards and mice





# ABBTM-NVC series Data Module

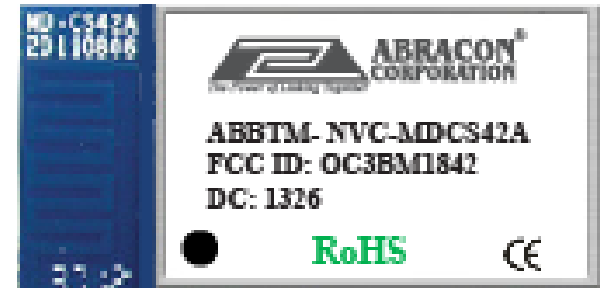
*ABBTM-NVC-MDCS42A* (25.8\*13.4\*2.2 mm)

## Main Features:

- Bluetooth v2.1+EDR, Class 2
- CSR BC04-External core
- Supply voltage: +2.7V ~ +3.7V
- Operating temp. range: -40 ~ +85°C
- Support Bluetooth profiles: SPP, HID, iAP, DUN, OPP
- 8Mbit onboard flash memory
- Support UART, USB, I<sup>2</sup>C, PCM interfaces
- Configurable Baudrate: 1200 - 3686400
- Onboard meander line antenna
- FCC/CE certified
- Custom firmware available on a case by case basis
- Eval kit available (ABBTM-NVC-EVK-42A)

## Typical Applications:

- Cable replacement
- Barcode and RFID scanners
- Measurement and monitoring systems
- Industrial sensors and controls
- Medical devices
- Industrial PCs and laptops
- Automotive inspection and measurement systems





# ABBTM-NVC series Audio Module

*ABBTM-NVC-MDCS56* (23.24\*11.93\*2.05 mm)

## Main Features:

- Bluetooth v2.1+EDR, Class 2
- CSR BC05-Multimedia core
- Supply voltage: +2.7V ~+3.6V
- Operating temp. range: -40 ~ +85°C
- Support Bluetooth profiles: A2DP, AVRCP, SPP, HFP, iAP
- Support MP3, Apt-X, Apt-XLL, AAC, SBC Codec
- Support UART, I<sup>2</sup>C, PCM/I<sup>2</sup>S/SPDIF interfaces
- CVC software library available
- Configurable Baudrate: 1200 ~ 3686400
- 16Mbit onboard flash memory
- FCC/CE certified using 1dBi PCB antenna (the same antenna used on ABBTM-NVC-MDCS56-CON Eval adapter board)
- Custom firmware available on a case by case basis
- Eval kit available (ABBTM-NVC-EVK-56)

## Typical Applications:

- Automobile Hands free applications
- High quality Stereo Headset
- Bluetooth speakers
- VoIP handsets
- MP3 players





# ABBTM-NVC series Evaluation Kits

## *ABBTM-NVC-EVK-XXXX*

- Each Kit includes: 1 Main Board; 1 adaptor board with the selected BT module installed on board; 1 Mini B USB cable
- Main Board Interfaces: DB9 RS232, USB UART, 3.5mm jack audio input/output
- Mounting places reserved on the main board for Apple authentication coprocessor (2.0B or 2.0C).
- Power Supply: +5V (from USB port)
- Application: For engineering evaluation of the ABBTM-NVC series BT modules



*ABBTM-NVC-Main Board*



*ABBTM-NVC-MDCS71  
adaptor board*



*ABBTM-NVC-MDCS42A  
adaptor board*



*ABBTM-NVC-MDCS56  
adaptor board*





# ABBTM-NVC series Evaluation Kits

## *ABBTM-NVC-EVK-xxx Ordering Information*

Part Number	Description
ABBTM-NVC-EVK-42A	Kit includes 1 main board;1 ABBTM-NVC-MDCS42A adaptor board with 1pc ABBTM-NVC-MDCS42A mounted on the adaptor board; Mini B USB cable
ABBTM-NVC-EVK-56	Kit includes 1 main board;1 ABBTM-NVC-MDCS56 adaptor board with 1pc ABBTM-NVC-MDCS56 mounted on the adaptor board; Mini B USB cable
ABBTM-NVC-EVK-71	Kit includes 1 main board;1 ABBTM-NVC-MDCS71 adaptor board with 1pc ABBTM-NVC-MDCS71 mounted on the adaptor board; Mini B USB cable
ABBTM-NVC-MB-EVK	Evaluation kit main board
ABBTM-NVC-MDCS42A-CON	ABBTM-NVC-MDCS42A adaptor board, BT module is mounted on board
ABBTM-NVC-MDCS56-CON	ABBTM-NVC-MDCS56 adaptor board, BT module is mounted on board
ABBTM-NVC-MDCS71-CON	ABBTM-NVC-MDCS71 adaptor board, BT module is mounted on board



# ABBTM-2.4GHz series Data Module

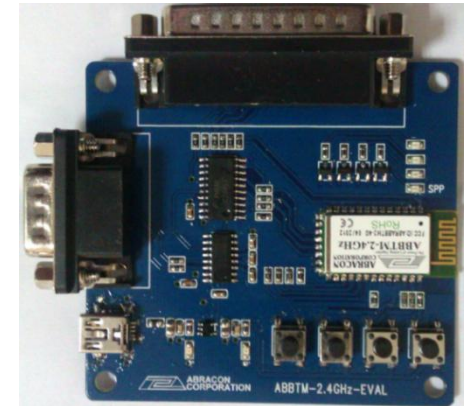
*ABBTM-2.4GHz-T* (26.9\*13\*2.5 mm)

## Main Features:

- Bluetooth v2.0+EDR, Class 2
- CSR BC04-External core
- Supply voltage: +3.3V
- Operating temp. range: -40~ +85°C
- Support Bluetooth profiles: SPP, OPP, PBAP
- 8Mbits onboard flash memory
- Support UART interface (Baudrate: 115200)
- On-board antenna
- FCC certified
- Custom firmware available on a case by case basis
- Eval kit available (ABBTM-2.4GHz-EVAL)

## Typical applications:

- Hand-held devices,
- Printers,
- Personal Navigation Devices,
- PDAs and other portable terminals



*ABBTM-2.4GHz-EVAL*



*ABBTM-2.4GHz-T*



# ABBTM-2.4GHz series Audio Module

*ABBTM-2.4GHz-31-T* & *ABBTM-2.4GHz-33-T*  
(20.0\*13.0\*2.0 mm) (29.0\*25.5\*2.8 mm)

## Main Features:

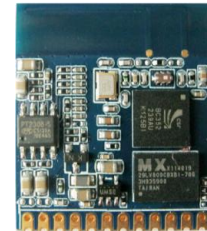
- Bluetooth v1.2, Class 2
- CSR BC03-Multimedia core
- Supply voltage: +3.3V
- Operating temp. range: -40 ~ +85°C
- Support Bluetooth profiles: HSP, HFP, A2DP, AVRCP
- Support UART interface (Baudrate: 115200); analog audio interface
- Support MP3, AAC, SBC Codec
- CVC software library available
- 8Mbit onboard flash memory
- On-board antenna (for ABBTM-2.4GHz-33-T only)
- Custom firmware available on a case by case basis

## Typical Applications:

- Automobile Hands free applications
- MP3 Headset



*ABBTM-2.4GHz-31-T*



*ABBTM-2.4GHz-33-T*



# ABBTM-2.4GHz series Audio Module (continued)

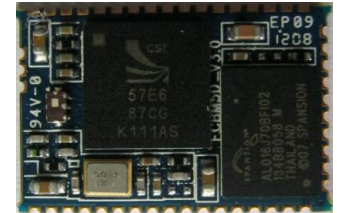
*ABBTM-2.4GHz-51-T* & *ABBTM-2.4GHz-52-T*  
(20.0\*13.4\*2.2 mm) (23.3\*11.93\*2.0 mm)

## Main Features:

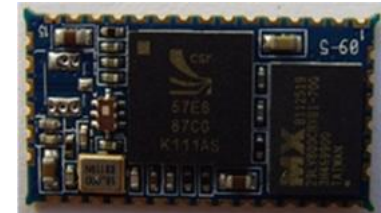
- Bluetooth v2.1, Class 2
- CSR BC05-Multimedia core
- Supply voltage: +3.3V
- Operating temp. range: -40 ~ +85°C
- Support Bluetooth profiles: HSP, HFP, A2DP, AVRCP
- Support UART interface (Baudrate: 115200); analog audio interface
- Support MP3, Apt-X, Apt-XLL, AAC, SBC Codec
- CVC software library available
- 16Mbit onboard flash memory
- Custom firmware available on a case by case basis
- Better overall sound quality than ABBTM-2.4GHz-31/33-T modules

## Typical Applications:

- Automobile Hands free applications
- High quality Stereo Headset
- Bluetooth speakers
- VoIP handsets
- MP3 players



*ABBTM-2.4GHz-51-T*



*ABBTM-2.4GHz-52-T*



# BT Module Comparison/Selection Guide

	ABBTM-NVC Series	ABBTM-2.4GHz Series
Data Module	<ul style="list-style-type: none"> <li>• BT v2.1+EDR, On-board antenna</li> <li>• Support profiles: SPP, iAP, HID, DUN, OPP</li> <li>• FCC/CE certified</li> <li>• Standard embedded iNova firmware allows more flexibility for user configurations via pre-defined ASCII commands</li> <li>• Custom firmware available case by case</li> </ul>	<ul style="list-style-type: none"> <li>• BT v2.0+EDR, Onboard antenna</li> <li>• Support profiles: SPP, OPP, PBAP</li> <li>• FCC certified</li> <li>• Standard module doesn't support any form of commands for user configuration</li> <li>• Custom firmware available case by case (e.g. AT-command version)</li> <li>• More price competitive</li> </ul>
Audio Module	<ul style="list-style-type: none"> <li>• BT v2.1+EDR,</li> <li>• Support profiles: A2DP, AVRCP, SPP, iAP, HFP</li> <li>• FCC/CE certified</li> <li>• Standard embedded iNova firmware allows more flexibility for user configurations via pre-defined ASCII commands</li> <li>• Custom firmware available case by case</li> </ul>	<ul style="list-style-type: none"> <li>• BT v1.2 or v2.1</li> <li>• Support profiles: A2DP, AVRCP, HFP, HSP</li> <li>• Standard module support some user configurations via pre-defined AT-commands</li> <li>• Custom firmware available case by case</li> <li>• More price competitive</li> </ul>
BLE Module	<ul style="list-style-type: none"> <li>• Single mode BLE, On-board antenna</li> <li>• Support profiles: Proximity, Find Me, Heart Rate, HID, iBeacon</li> <li>• FCC certified</li> <li>• Custom firmware available case by case</li> </ul>	Not available