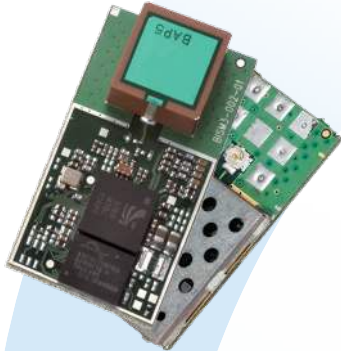




Innovative **Technology**  
for a **Connected** World



# Bluetooth® Multimedia Module

## BTM520/521

The BTM520 and BTM521 are the most advanced low-power, multimedia Bluetooth® modules available in the marketplace. Designed to meet the needs of developers requiring the ultimate Bluetooth audio performance and flexibility, these modules include everything required for a fully qualified and functional Bluetooth multimedia application.

In addition to providing best-in-class radio performance, range, and power consumption, the BTM520/521 support all the functionality to run Cambridge Silicon Radio's Road Tunes and Blue Tunes development applications. They support the latest Bluetooth Version 2.1+EDR Specification, providing secure simple pairing that improves security and enhances easy use. (The BTM521 has an integrated high-performance, multilayer ceramic antenna that achieves open field ranges in excess of 300 meters.)

The modules include a 16 bit stereo codec and microphone input to support both stereo and mono applications, with the ability to drive stereo speakers. Containing all the necessary audio filtration and biasing components, these modules only require the addition of speakers, microphone, and push buttons to make a high-quality Bluetooth stereo product.

The BTM520/521 contain a full, integrated Bluetooth stack along with SPP, HFP 1.5, HSP, AVRCP, and A2DP profiles, all of which are Bluetooth qualified. Additional profiles could be made available for file transfer, object exchange, dial up networking, messaging, and phonebook control. Because these modules are pre-qualified, customers can list and promote their products free of charge on the Bluetooth website.

These modules include an embedded 32-bit, 64-MIPS DSP core within the BC05 that is integrated with the Bluetooth functionality, allowing the addition of significant product enhancements, such as echo cancellation, noise reduction, and audio enhancement using additional soft codecs. The availability of the 16MB of flash memory in the module allows complex functionality to be included. DSP routines can be licensed through a number of specialist partners.

To speed product development and integration, Laird Technologies has developed a comprehensive AT command interface that simplifies application development, including support for audio and headset functionality. Combined with a low-cost development kit, Laird Technologies' Bluetooth modules provide faster time to market.

### global solutions: local support™

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### FEATURES

- Fully featured Bluetooth multimedia module
- Supports CSR Road Tunes and Blue Tunes applications
- Bluetooth v2.1+EDR
- Supports mono and stereo headset applications
- Adaptive frequency hopping to cope with interference from other wireless devices
- 32bit Kalimba DSP for enhanced audio applications
- Support for secure simple pairing
- External or internal antenna options
- HSP, HFP, A2DP and AVRCP audio profiles
- HDP profiles (later release)
- 16 bit stereo codec and microphone input
- Integrated audio amplifiers for driving stereo speakers
- Comprehensive AT interface for simple programming
- Bluetooth End product qualified
- Compact size
- Class 1 output – 8dBm
- Lowest power operation with high efficiency internal switch mode supply.
- Wi-Fi coexistence hardware support

### APPLICATION AREAS

- High quality stereo headsets
- Hands-free devices
- Wireless audio cable replacement
- MP3 and music players
- Phone accessories
- VoIP products
- Aftermarket automotive applications

CATEGORIES	FEATURE	IMPLEMENTATION	
<b>Wireless Specification</b>	Bluetooth®	Version 2.1+EDR	
	Frequency	2.402 – 2.480 GHz	
		Class 1	
	Max Transmit Power	+ 6dBm (at antenna connector – BTM520) +8dBm (from integrated antenna – BTM521)	
	Receive Sensitivity	Better than -86dBm	
	Data Rates	Up to 2.1Mbps (over the air)	
<b>Host Interface</b>	UART Data Transfer Rate	Greater than 300 Kbps	
	UART	Supports DTR, DSR, DCD and RI, multiplexed with other functionality.	
<b>Audio Interfaces</b>	Codec	Internal 16 bit Stereo Codec Integrated Amplifiers for driving Stereo Speakers	
	Microphone	Integrated low noise microphone bias	
<b>DSP</b>	Integrated Kalimba DSP	32bit, 64MIPS	
<b>Profiles</b>		GAP (Generic Access Profile) SDP (Service Discovery Profile) SPP (Serial Port Profile) HSP HFP – Audio Gateway and Handsfree A2DP – Source and Sink AVRCP – Target and Controller SCO/eSCO	
	<b>Supply Voltage</b>	Supply	3.0V – 4.2V DC
		I/O	1.7V – 3.6V DC
	<b>Power Consumption</b>	Current Consumption	Operational - Less than 80 mA (including speaker amplifiers) Idle (sleep) < 1.5mA
		<b>Coexistence / Compatibility</b>	802.11 (Wi-Fi)
	<b>Connections</b>	External Antenna	u.fl connector for external antenna – BTM520
		Internal Antenna	Multilayer ceramic antenna – BTM521
<b>Programming API</b>		AT Command Set (extended for audio and headset functions and secure simple pairing)	
<b>Physical</b>	Dimensions	20.0mm x 36.0mm x 4.1mm - BTM 520	
		20.0mm x 36.0mm x 5.1mm - BTM 521	
<b>Environmental</b>	Operating Temperature	-30°C to +70°C	
	Storage Temperature	-40°C to +85°C	
<b>Miscellaneous</b>	Lead free	Lead-free and RoHS compliant	
	Warranty	1 Year	
<b>Development Tools</b>	Development Kit	Development board and software tools	
<b>Approvals</b>	FCC/IC & CE	BTM520 - Full Modular Approval w/specified antenna BTM521 - Full Modular Approval	

### ORDERING INFORMATION

BTM520	Bluetooth Multimedia Plus Module (external antenna)
BTM521	Bluetooth Multimedia Plus Module (with integrated antenna)
DVK- BTM520	Evaluation Board with BTM520
DVK- BTM521	Development Kit (with integrated antenna)

The details contained within the document are subject to change. Download the product specification from [www.lairdtech.com/wireless](http://www.lairdtech.com/wireless) for the most current specification.



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# Bluetooth® Multimedia Module

## BTM520/521

### LAIRD TECHNOLOGIES—WIRELESS MODULES FOR EVERY APPLICATION

#### Bluetooth®

- Modules for data and multimedia applications
- Pre-qualified modules for rapid integration

#### 802.11

- Modules for connection to Wi-Fi networks
- Low power M2M modules
- Video streaming modules

#### Proprietary

- Modules for 868MHz, 900MHz and 2.4MHz

#### ZigBee™

- Modules for low power mesh networking

**Development Kits are available for all the above wireless modules.**

#### Telematics

- End-to-end wireless telematics hardware and solutions

#### Industrial

- Rugged wireless connectivity products, bridges, and access points

Visit [www.lairdtech.com/wireless](http://www.lairdtech.com/wireless) for details on our full range of wireless products, as well as extensive range of white papers and applications notes.

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