Wifi and Bluetooth controller

What is difference between Bluetooth and wifi ?

* Both are means to provide wireless communication
* Bluetooth used to connect devices without using cables.
* Wifi provides high speed access to internet.
* We know that Bluetooth is used to exchange data over short distances(example:mobile less than 30 feet).
* This means we an communicate with other devices such as wireless headset or printer(e.g:My mi band with phone).
* Bluetooth therefore acts much like a cord between the 2 devicesby creating a secure,wireless personal area network in which these devices can communicate.

**WIFI MODULES(ESP8266)**

**1.ESP-01(PRICE-100 TO 200)**

**2.ESP-05(PRICE-400 TO 500)**

**3.ESP-12(PRICE-ABOUT 200)**

**4.ESP-201(PRICE-ABOUT 200)**

**5.NODEMCU MODULE V0.9(OUTDATED)**

**6.ESP-12-E(NODEMCU LATEST V1.0-ANTENNA INTO PCB)(PRICE-300 TO 400)**

**7.ESP-12-F(PRICE-200)**

**8.nRF24L01(PRICE:100)**

* **ESP-12E(NODE MCU):**

1. **It works better on any platform including arduino ide.**
2. **Not necessary to press the reset/flash button combination in the Arduino ide to upload new version of code.**
3. **Configure upload speed upto 921600 baudrate.**
4. **Saves additional hardware like serial-usb converter.**

5.)Serial chip(chip used for serial communication.i.e usb to uart)-CP2102(REQUIRED FOR efficiency since this chip has voltage regulator) /CH340G(REQUIRED FOR PROVIDING COMMON MODEM SIGNALS TO ALLOW ADDING A UART TO A COMPUTER) while other nodemcu has only CH340G.ALSO RTS,DTR,DCD,RI,DSR AND CTS CONTROL SIGNALS SUPPORTED.(ALL THESE ARE REQUIRED FOR BLUETOOTH COMMUNICATION WITH DEVICE).

1. **SPECIFICATIONS:** • Voltage:3.3V.

• Wi-Fi Direct (P2P), soft-AP

• Current consumption: 10uA~170mA.

• Flash memory attachable: 16MB max (512K normal).

• Integrated TCP/IP protocol stack.

• Processor: Tensilica L106 32-bit.

• Processor speed: 80~160MHz.

• RAM: 32K + 80K.

• GPIOs: 17 (multiplexed with other functions).

• Analog to Digital: 1 input with 1024 step resolution.

• +19.5dBm output power in 802.11b mode

• 802.11 support: b/g/n.(IT IS DESIGNED SUCH THAT DEVICE SUPPORTS PARTICULAR FREQUENCY CHANNEL OR BAND FOR INTERNET CONNECTION)

• Maximum concurrent TCP connections: 5

* **ESP-12-F:**

1. **Specification:**

802.11 b/g/n

• Integrated low power 32-bit MCU

• Integrated 10-bit ADC

• Integrated TCP/IP protocol stack

• Integrated TR switch, balun, LNA, power amplifier and matching network

• Integrated PLL, regulators, and power management units

• Supports antenna diversity • Wi-Fi 2.4 GHz, support WPA/WPA2

• Support STA/AP/STA+AP operation modes

• Support Smart Link Function for both Android and iOS devices

• SDIO 2.0, (H) SPI, UART, I2C, I2S, IRDA, PWM, GPIO

• STBC, 1x1 MIMO, 2x1 MIMO

• A-MPDU & A-MSDU aggregation and 0.4s guard interval

• Deep sleep power < 5uA

• Wake up and transmit packets in < 2ms

• Standby power consumption of < 1.0mW (DTIM3) 5

• +20dBm output power in 802.11b mode

• Operating temperature range -40C ~ 125C

• FCC, CE, and ROSH certified

**BLUETOOTH MODULES**

**1.HC-04**

**2.HC-05**

**3.HC-06 RS232 TTL**

**4.BLE link BEE**

**5.BLE Mini**

**6. BlueSMiRF**

**7.JY-MCU (9 METERS)**

**8.ITEAD BT (10 METERS)**

**9.Shield Bluetooth with RN-42 (20 meters)**

**10.Bluefruit EZ-link(10 meters)(price-2000)**

* **Bluefruit EZ-link:**

1.)It is a combination of all of the modules.

2.) The Bluetooth module doesn’t need additional software or custom hardware to communicate wirelessly with another Bluetooth system.

3.) Unlike other Bluetooth modules, the EZ-Link is featured with automated detection of the COM port.

* **Shield Bluetooth with RN-42 :** The RN-42 Bluetooth shield is what you need for any project you would like to use an Arduino microcontroller. But unlike the HC-05 and HC-06, it has [a price of 28.00€](https://store.open-electronics.org/index.php?_route_=Arduino/Shield/bluetooth_shield). The shield is fitted on top of the Arduino board and works in a range of maximum 20 meters(65ft)
* **OEM SERIAL PORT ADAPTER 411 :**
* **ITEAD BT:** The [BT Bluetooth module](http://imall.iteadstudio.com/im120417006.html) is a stackable shield with serial ports based on the HC-06 module. The shield can be connected directly to the Arduino UART port for wireless communication. Without obstacles or other interference, the Bluetooth shield can communicate in a range of 10 meters (32ft).
* **JY-MCU(for android)** :-

1.connect devices and robots that generate massive amounts of data.

2.Compatible with any Android device, the Bluetooth module covers a distance of 9 meters (30ft) between the master and slave devices.

3.Designed for faster connections between an Android device and an Arduino board, the Bluetooth module can be up and running in minutes..

* **BLUESMIRF:**

1.)It is compatible with other Bluetooth devices that support SPP(serial port profile).

2.)The wireless module is perfect for applications that require a distance up to 100 meters (328ft)

* **BLE MINI:** (Bluetooth 4,0 low energy)

1.)The Bluetooth module is easy to setup with an Arduino board and has a range of 50 meters (164ft)

2.).You are allowed to develop your own iOS application using the open-source SDK provided by the Red Bear company.

3.)The module includes the Bluetooth 4.0 Low Energy (BLE) technology and requires only a serial port for communication

* **HC-06:**

1.)wireless data transmission is needed in slave mode.

2.)The board can be accessorized with a USB to TTL(transistor-transistor logic) serial cable to connect to your PC.

3.)Like the HC-05, the HC-06 module can reach a range of up to 9 meters (30 ft).

If you need a Bluetooth module to talk to your smartphone and an Arduino board, the HC-06 would work fine. But if you want to talk with another Arduino development board, the HC-05 module is the way to go.

* **HC-05** :

This Bluetooth module covers 9 meters (30ft) of signals and works both as a master or as a slave. For example, a robot can be designed to be a master connected to a slave Bluetooth module or as a slave board to make a wireless connection with a PC

**(**[**https://youtu.be/mt8uF9lblUU**](https://youtu.be/mt8uF9lblUU)**)**

**(**[**https://youtu.be/hyMElosgr7s**](https://youtu.be/hyMElosgr7s)**)**

**WIFI MODULE**

**I PREFER USING NODEMCU AS THE WIFI MODULE BECAUSE:**

**THERE IS NO DIFFICULTY OF ADJUSTING CONTROLLER USING RESET AND FLASH**

**ALSO WORKS BETTER ON ANY PLATFORM….**

**BLUETOOTH MODULE**

**FOR BLUETOOTH MODULE,I THINK HC-05 WILL BE BEST BECAUSE IT WORKS BOTH AS A MASTER AS WELL AS SLAVE AND ALSO IT CAN BE HANDLED PROPERLY BUT YES ,HERE WE HAVE TO ADJUST RESET/FLASH BUT THE PROCEDURE IS NOT THAT DIFFICULT AS OTHER BLUETOOTH CONTROLLER…..AND WITH RESPECT TO PRICE ALSO IT WILL BE GREAT TO USE HC-05….**