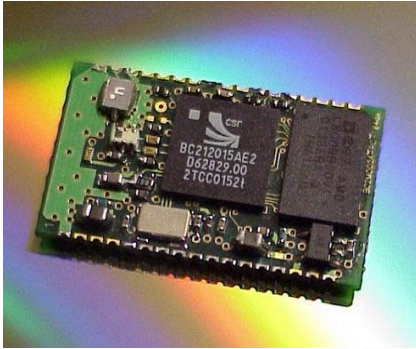




BLUETOOTH MODULE

Model BT-20

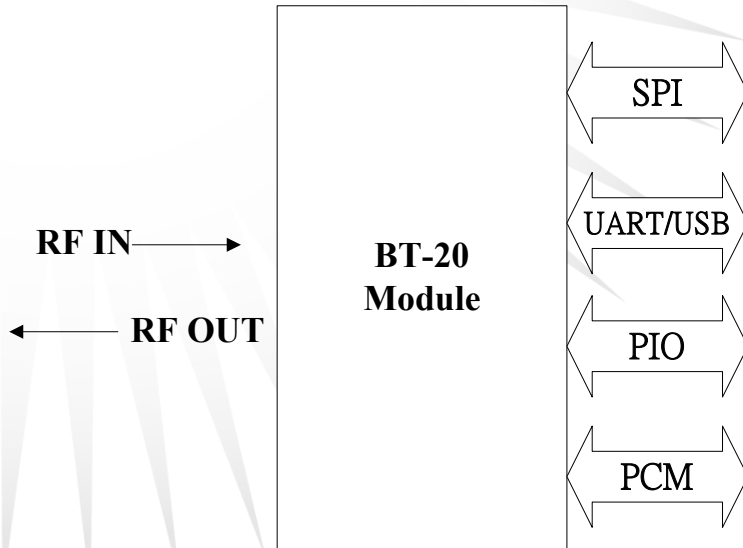
Device Features

- ◆ 3.3V power operation
- ◆ Fully qualified by BQB
- ◆ Full speed Bluetooth operation with full piconet support
- ◆ 8M flash memory for application firmware

Applications

- ◆ PC Notebooks
- ◆ Cordless Headsets
- ◆ Bluetooth hand free
- ◆ Personal Digital Assistants(PDA)
- ◆ RS-232 Cable replacement
- ◆ USB Dongle
- ◆ Bluetooth HID device(Keyboard, mouse and Joystick)
- ◆ Other Bluetooth specification pforile

BT-20 Bluetooth Module Diagram



Key features

Radio

- ◆ No external trimming is required in production.
- ◆ UP to +4dBm RF transmit power
- ◆ Supports Class 2 and Class 3 Radios

Baseband/software and physical Interfaces

- ◆ 8M bit slash memory for complete system solution
- ◆ Transcoders for A-law, u-law and linear voice from host and A-law, u-law and CVSD voice over air
- ◆ UART interface with programmable baud rate up to 1.5M
- ◆ Full speed USB interface support

Device Pinout Diagram

PIN FUNCTIONS VIEWED FROM COMPONENT SIDE

1	} GND	GND	34
2	} N.C.	RF_Out	33
3	} N.C.	GND	32
4	} AIO(0)	PIO(0)	31
5	} AIO(1)	PIO(1)	30
6	} RESET	PIO(2)	29
7	} SPI_MISO	PIO(3)	28
8	} SPI_CSB	PIO(4)	27
9	} SPI_CLK	PIO(5)	26
10	} SPI_MOSI	PIO(6)	25
11	} UART_CTS	PIO(7)	24
12	} UART_TX	USB_DN	23
13	} UART_RTS	USB_DP	22
14	} UART_RX	PCM_CLK	21
15	} 1V8	PCM_IN	20
16	} 3V3	PCM_SYNC	19
17	} GND	PCM_OUT	18

Device Pinout Diagram

Pin No.	Pin name	Pad type	Description
1	GND	GND	Ground connection
2	NC	NC	No connection
3	NC	NC	No connection
4	AIO(0)	Bi-direction	Programmable I/O line
5	AIO(1)	Bi-direction	Programmable I/O line
6	RESET	COMS input with weak internal pull-down	Module reset if high>5ms to cause a reset
7	SPI_MISO	COMS input with weak internal pull-down	Serial Peripheral Interface data output
8	SPI_CSB	COMS input with weak internal pull-down	Chip select for Synchronous Serial Interface active low
9	SPI_CLK	COMS input with weak internal pull-down	Serial Peripheral Interface clock
10	SPI_MOSI	COMS input with weak internal pull-down	Serial Peripheral Interface data input
11	UART_CTS	CMOS input	UART clear to send
12	UART_TX	CMOS output	UART data output
13	UART_RTS	CMOS output	UART request to send
14	UART_RX	CMOS input	UART data input
15	1.8V	Voltage output for testing	1.8 V output when 3.3V VDD connected
16	3.3V	VDD	Positive power supply
17	GND	GND	Ground connection

Pin No.	Pin name	Pad type	Description
18	PCM_OUT	CMOS output	PCM Synchronous data output
19	PCM_SYNC	Bi-direction	PCM synchronous data SYNC
20	PCM_IN	COMS input	PCM Synchronous data input
21	PCM_CLK	Bi-direction	PCM Synchronous data clock
22	USB_DP	Bi-direction	USB data plus
23	USB_DN	Bi-direction	USB data minus
24	PIO(7)	Bi-direction	Programmable I/O line
25	PIO(6)	Bi-direction	Programmable I/O line
26	PIO(5)	Bi-direction	Programmable I/O line
27	PIO(4)	Bi-direction	Programmable I/O line
28	PIO(3)	Bi-direction	Programmable I/O line
29	PIO(2)	Bi-direction	Programmable I/O line
30	PIO(1)	Bi-direction	Programmable I/O line
31	PIO(0)	Bi-direction	Programmable I/O line
32	GND	Ground	Ground connections for RF circuitry
33	RF	RF	RF single Input and output
34	GND	Ground	Ground connections for RF circuitry

Electrical Characteristics

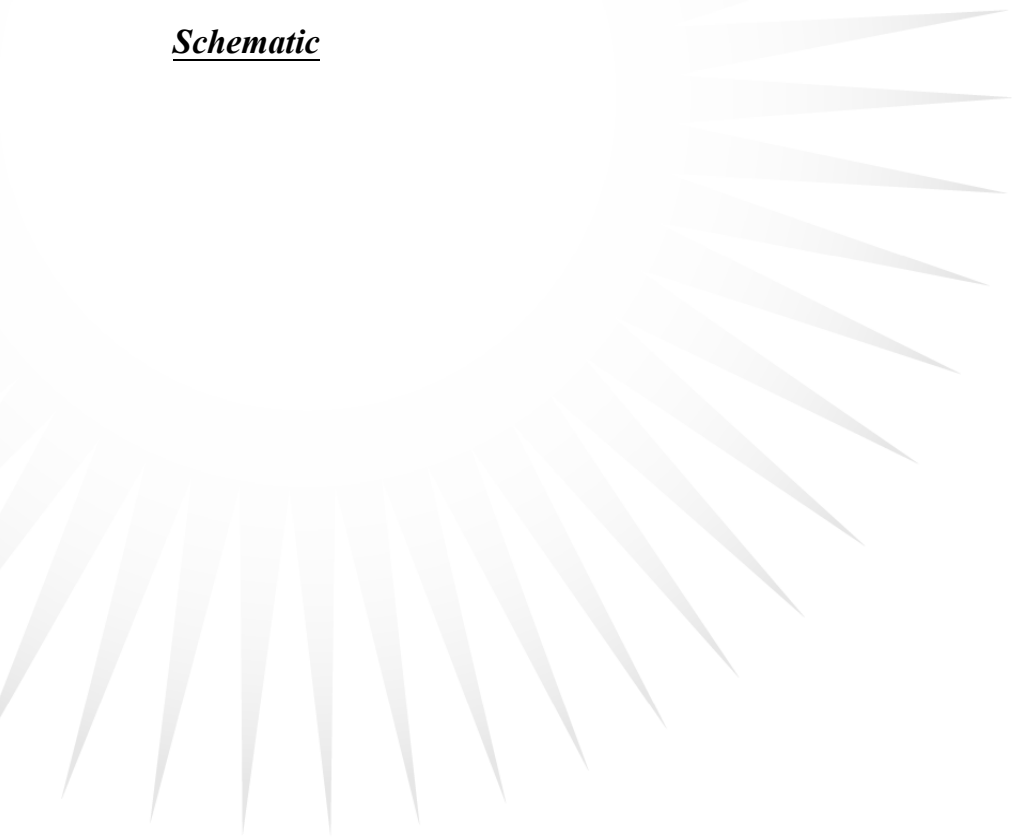
Absolute Maximum Ratings		
Rating	Min	Max
Storage Temperature	-40°C	+120°C
Operating Temperature	-40°C	+105°C

Recommended Operating Conditions		
Operating Condition	Min	Max
Supply Voltage:	3.0 V	3.6V

Radio Characteristics, VDD=3.3V Temperature=+20 °C						
Receiver	Frequency (GHz)	Min	Typ	Max	Bluetooth Specification	Unit
Sensitivity at 0.1% BER	2.402	-	-83	-80	≤ -70	dBm
	2.441	-	-83	-82		dBm
	2.480	-	-83	-82		dBm
Maximum received signal at 0.1% BER		-	-5		≤ -20	dBm

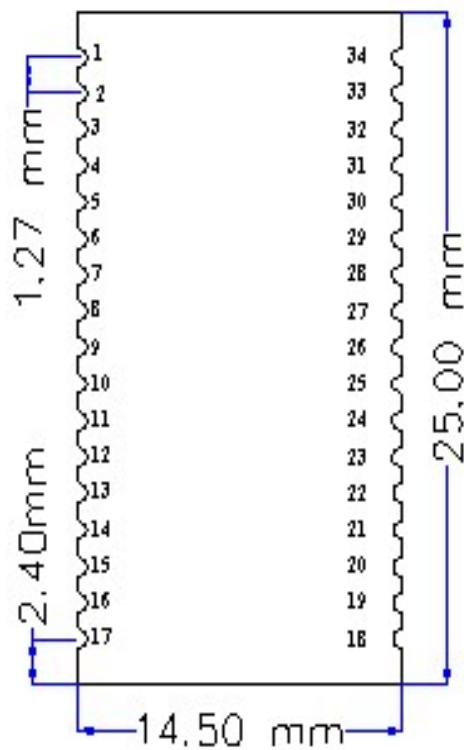
Current Consumption VDD=3.3V		
Mode	Avg	Unit
SCO connection HV3(Slave)	28	mA
SCO Connection HV3(Master)	28	mA
ACL data transfer 115.2kbps UART(Master)	15	mA
ACL data transfer 720kbps USB(Slave)	61	mA
ACL data transfer 720kbps USB(Master)	61	mA
ACL connection, Sniff mode 40ms interval, 38.4kbps UART	4	mA
ACL connection, Sniff mode 1.28s interval, 38.4kbps UART	0.5	mA
Parked Slave, 1.28s beacon interval, 38.4kbps UART	0.6	mA
Deep Sleep mode	20	uA
Peak RF current during TX burst(+4dBm)	70	mA
Peak RF current during TX burst(0dBm)	60	mA
Peak RF current during RX burst(-80dBm)	55	mA

Schematic

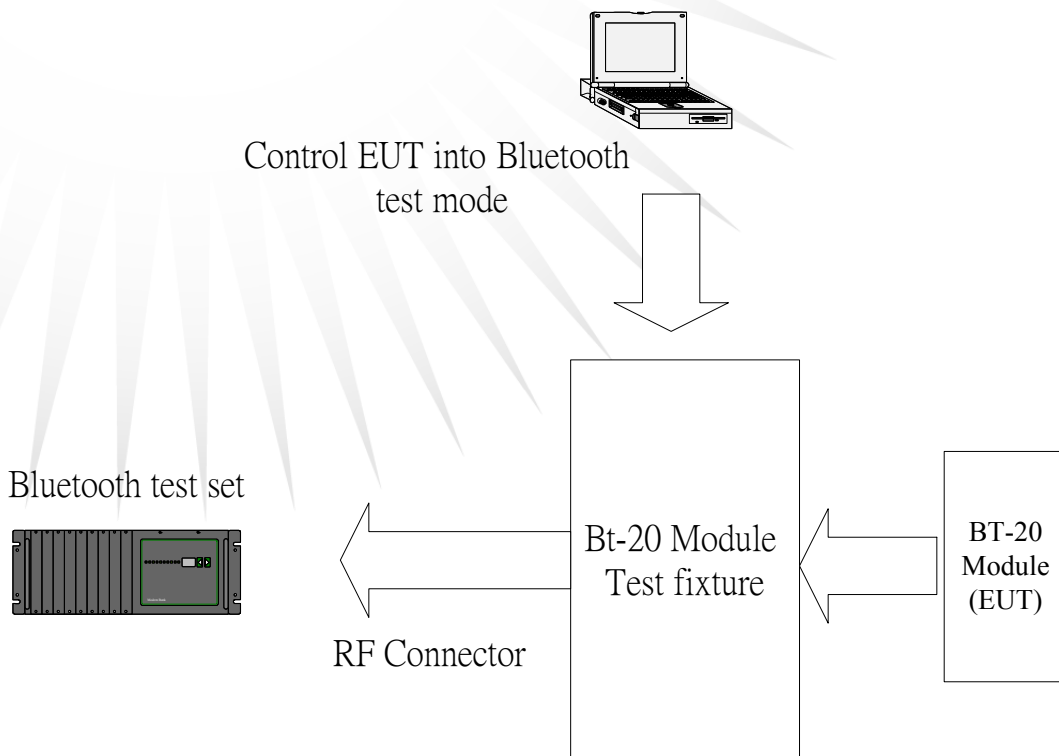


Package Dimensions

Top View

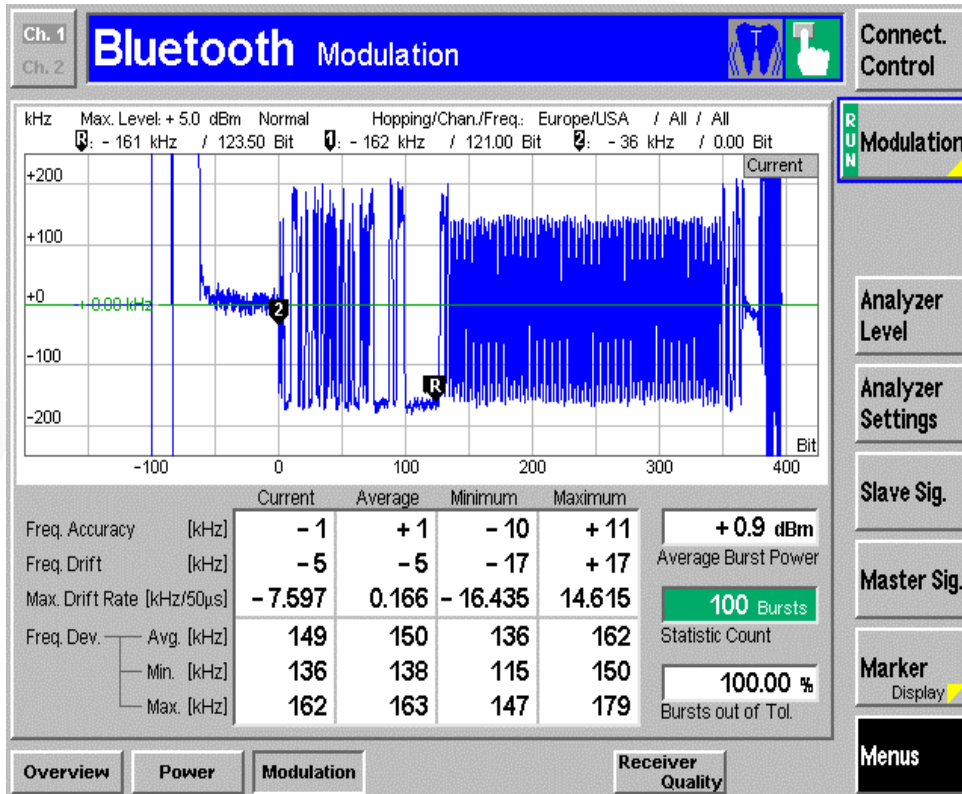


Bluetooth module testing block



Remark: RF Connector in test fixture and cable lose about 2.5dBm

Bluetooth Modulation Characteristics(by R&S CMU-200)



BQB (Bluetooth Qualification Body) Certificate



TEST CERTIFICATE

Nº: 17413RTC

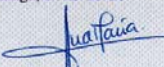
Product	: BT-20 Bluetooth Module
Trade Mark	: N/A
Model / Type Ref.	: BT-20
Manufacturer	: Rainbright Enterprise Co., Ltd.
Tested on request of	: Rainbright Enterprise Co., Ltd.
Full identification of the product - n/s	: Bluetooth Module
Standard(s)	: Bluetooth RF Specification 1.1 (revision 0.91) + Applicable Erratas
Test certificate based on the test reports	: Nº. 17413RTC and Nº. 17541RET dated: 2002-10-11
Summary	: COMPLIANT

CETECOM is a testing laboratory competent to carry out the tests described in the report.

CETECOM is a testing laboratory authorized by *Bluetooth Special Interest Group Inc.* to carry out the tests of Bluetooth RF Conformance testing.

Note: This test certificate is applicable to the unit(s) of the product submitted and the corresponding tests shown in the reference report.

Málaga, 2002-10-11


Ana Rivera
Bluetooth Consultant


Andrés Moreno
Telecommunications Director