Operational Description

EUT is a BRCM 2045 bluetooth module with 79 channels(2402~2480MHz, Space 1MHz). It allows you to connect to other Bluetooth device.

General Operational Description:

1. Time base of the transmission frequency:

   For IF and RF frequency, Crystal is a clock reference.

2. Synthesizer:

   Synthesizer inside Bluetooth (Transceiver/BBP) single chip IC and operate frequency in 2.4GHz ISM Band. Internal voltage controlled oscillator (VCO) provides the desired LO signal base on the phase-locked loop (PLL) with a relatively wide tuning range for this application.

3. Transmission:

   Bluetooth IC has FHSS (GFSK) modulation function, it provides transmission data rate are 1 Mbps. Digital data signal will be converted to analog (TX IQ) signals through DAC in Bluetooth IC, TX IQ pass through to low pass filter of Bluetooth IC. TX I/Q signal use direct conversion (zero-IF) architecture converter to generate carrier frequency signal. Bluetooth IC has a power amplifier to magnify output power.

4. Receiver:

   Reverse direction isolation of LNA inside Bluetooth IC suppresses unwanted radiation. Then 2.4GHz RF signal will be directly down to IF signal (RX IQ) and high frequency spurious emissions are suppressed by LPF. At last RX IQ signal will be demodulated digital data.

5. Base band Processing:

   Channel hopping: Automatic hopping channel is controlled by Bluetooth IC.

   Data Modulation: FHSS (GFSK) modulation type is controlled by Bluetooth IC.

   Power Control Level: Bluetooth IC has the power leveling loop table are calibrated by manufacturer, then uses closed-loop power control function to limit RF output power level. Power leveling step accuracy is $\pm$ 0.5dB. The typical out power is class 2~3.

   Transmit/Receive Switch: Not-applicable

   Data Link Layer:

   It supports BlueCore Serial Protocol (BCSP), Dynamic UART configuration. On-chip RAM of Bluetooth IC allows full speed Bluetooth data transfer, mixed voice and data. Transcoders for A-law, μ-law and linear voice from host and A-law, μ-law and CVSD voice over air. It dedicates logic for forward error correction, header error control, access code correlation, demodulation, cyclic redundancy check, encryption bitstream generation.

6. Interface: Not-applicable

7. Power: Input 3.3Vdc from host equipment. This power is provided to regulator components to regulated DC power.

Product Details

EUT IS a BRCM 2045 bluetooth module with Bluetooth radio functions. Only the radio detail of Bluetooth is shown in the table below. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Items	Description
Radio Type	Intentional Transceiver
Power Type	3.3V DC from host
Interface Type	NA
Modulation	FHSS (GFSK / QPSK /8PPSK)
Data Rate (Mbps)	GFSK: 1 ; QPSK: 2 ; 8PSK: 3
Frequency Range	2400 ~ 2483.5MHz
Channel Number	79
Channel Band Width (99%)	1164 kHz
Conducted Output Power	0.17 dBm
Carrier Frequencies	2402-2480 MHz
Antenna	Chip Antenna

Table for Filed Antenna

Ant.	Model Name	Antenna Type	Connector	Gain (dBi)
1	U.FL-R-SMT	Chip Antenna	Hirose	1.0

Table for Carrier Frequencies

Freqeuncy Band	Channel No.	Frequency
2400~2483.5MHz	0	2402 MHz
	1	2403 MHz
	:	:
	38	2440 MHz
	39	2441 MHz
	40	2442 MHz
	:	:
	77	2479 MHz
	78	2480 MHz