SERVICE MANUAL

FUD-202

Bluetooth USB Adaptor

FutureInternet

CONTENT TABLE

1.GENERAL INFORMATION

1.1 Description

FUD-202 is a low power wireless communication device with following characteristics which uses 2402 ~ 2480MHz band for carrier frequency.

1) This is a bluetooth application product for highspeed wireless internet connection which could be shared by up to 7 clients concurrently per single server via USB port.

2) Minimum system hardware requirement for FUD-202 is Intel Pentium Processor, 32MB RAM, 5MB free HDD space and USB 1.1 complient host controller.

3) Windows 98SE, Windows Me, Windows 2000 and Windows XP are supported.

1.2 CONFIGURATION

ITEM	Model Name
Transceiver	FUD-202
USB extension cable(0.6m)	
Program CD (Install & User Manual)	FCD-200

1.3 SPECIFICATIONS

1.3.1 General Specification

Product Name : FUD-202
Operating Voltage: 5.0V (for USB power source)
Operating frequency range: 2402 ~ 2480MHz
Channel : 79 CH
Occupied channel frequency: 1MHz
Interface : USB
Modulation: GFSK, BT=0.5 ±1%
Duplex type: Half Duplex
Antenna Impedance: 50 ohm
Antenna Type: SMD chip Antenna
Temperature : -10~+50
Dimension : 24.5(W) X 80(D) X 13(H)
Weight : 12g
Bluetooth Specification: 1.1

1.3.2 Radio Specification

1)Transmitter
- Output Power : < 20dBm
- Power Density : < 20dBm
- Power Control : +4dBm ~ +20dBm
- TX Output Spectrum - Frequency range : 2.400 ~ 2.4835GHz
- TX Output spectrum – 20dB bandwidth : < 1MHz
- TX Output spectrum – 2nd Adjacent channel power : < -20dBm
  (TX Output spectrum – 3rd Adjacent channel power) < -40dBm

- Modulation Characteristics :1) 140KHz $\leq \Delta f1 \leq$ 175KHz for at least
99.9% of all $\Delta f1$
2) $\Delta f2 \geq$ 115KHz for at least 99.9% of all $\Delta f2$
3) $\Delta f2/\Delta f1 \geq 0.8$
- Initial Carrier Frequency Tolerance : $\pm$75KHz
- Carrier Frequency Drift : 1) 1 slot packet : $\pm$25KHz
2) 3 or 5 slot packet : $\pm$40KHz

2)Receiver

- Sensitivity – Single slot packets : -70dBm(BER $\leq$ 0.1%)
- Sensitivity – Multi slot packets : -70dBm(BER $\leq$ 0.1%)
- C/I Performance – Co-channel : 11dB
- Blocking Performance : -27dBm
- Intermodulation Performance : -39dBm
- Maximum Input Level : -20dBm

3)Transceiver

- Out of band Spurious emissions : Regulatory Requirement FCC Part 15.247
Limit when operating : -30dBm
Limit when in standby : -47dBm

4)Conducted : Pref – Ppk $\geq$ 20dB, as measured in the frequency range 30MHz to 25GHz, excluding The operating frequency band (2400~2483.5 MHz)

5) Radiated : Field strength limited within the restricted bands.

2. CIRCUIT DESCRIPTION

2.1 TRANDMITTER

1) Carrier frequency(2.4 GHz) is oscillated then modulated by U2(BC01b-USB) that is Bluetooth main chipset. Transmission power of U2 is about 1~2dBm and impedance is matched to 50ohm using pattern balun then finally amplified to approximately 10~15dBm by terminal amplifier U6(PA2423L).
   After that, the amplified transmission signal is switched with reception signal alternatively by RF switch U4(AS179-92) according to each time for reception and transmission. Finally, transmission signal is radiated at SMD antenna on PCB after passing band pass filter U3(MDR741F).

2) Transmission signal level is controlled by Bluetooth main chipset to reduce current consumption according to RSSI(receiver strength signal indicator).

2.2 RECEIVER

The necessary signal is extracted from the high frequency signal, which has received by SMD antenna, using band pass filter U3(MDR741F). After passing RF switch U4(AS179-92) which selects reception and transmission signal according to each time, it is amplified to about 10~12dB by low noise amplifier U9(XM2400LB). Finally, Bluetooth main chipset U2(BC01b-USB) converts it to digital data.

2.3 POWER

Power is supplied to internal active components by voltage regulator U5(MIC5219) and U7(MIC5219) which convert DC 5.0V from USB port.

3. OPERATION

-External View
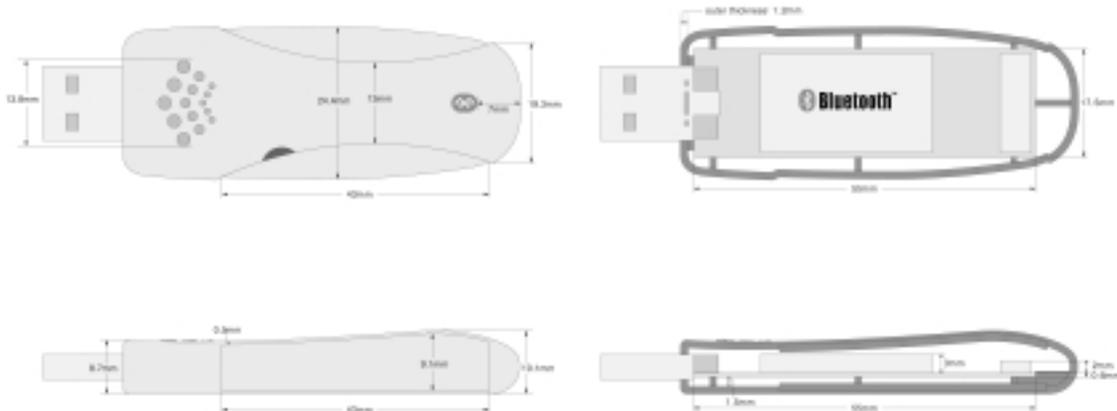
3.1 FEATURE AND OPERATION

1) Plug it to USB port of PC.
2) LED emission : if you plug it into an USB port of powered PC then the LED light is emitted until it has removed from USB port in red color.