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FCC ID: P2DBTU9X

Operational Description

1. Purpose:

The purpose of this document is to describe key component operations on Bluetooth. The BTU** Series are the advanced USB Flash Disk (UFD) with Bluetooth communication system. (UFD is a developed mobile storage device. It stores data in flash memory ICs. UFD can be re-used for 100,000 times and data retention for 10 years. Transfer rate is 15 times faster than floppy disk. The UFD is an easy-to- use, reliable, security mobile mass storage device.)

2. Key components:

ALPS ELECTRIC CO., LTD. Bluetooth Module: UGPZ2-109A;
Alcor Micro Corp USB HUB: AU9254 and mass storage microprocessor
AU6680; K9FXXXXUOM, SAMSUNG Flash Memory,
Matsushita narrow-pitch 20 pin high reliability connectors

3. Operation Principle:

UGPZ2-109A, Bluetooth Module contains CSR BC2-EXT (BC212013/BC212015), which has complete radio part and base band controller section (16bits RISC processor, ram and flash memory).
Protocol software is already downloaded into integrated Flash memory and interfaces to HCI layer of upper layer protocol stack on an appropriate host system. It provides a fully compliant Bluetooth system for data and voice communications.
USB flash disk function resort to mass storage micro processor
AU6680 via USB HUB: AU9254 transmit data with PC
Operation at 2.7 ~ 3.3V supply.
Operation clock is provided by 12MHz oscillator.

4. Key Features:

. Supports huge capacity (16MB/32MB/64MB/128MB/256MB)
. USB1.0/1.1 compliant, supporting plug-and-play.
. No auxiliary power supply necessary, powered by USB bus directly.
. Built-in write protection switch protect data from delete and virus attack.
. Read speed: 1.1 MB/S
. Write speed: 700KB/s
. Data can be preserved more than 10 years

. Storage media: Flash Memory

. Compact size

. Two modules, UFD module and Bluetooth module combine the BTU* series products.

. The Bluetooth module in this product is a standard Bluetooth System, which comply with Bluetooth Specification Version 1.1;

. No driver necessary for UFD in Windows Me/2000/XP, Mac OS9, Linux Kernel 2.4x Operating System.

. A special application software for Bluetooth system, which used to drive and manage the Bluetooth devices.

. Supports “portable QQ” functions via a special application program (Optional).

. Supports USB Flash Disk bootable function if the motherboard supports booting from USB devices (Optional item).

5. Electrical Specifications:

Fully compliant with USB 1.1 specification and UHCI, OHCI standards

Data transfer-rate:

Read: 1.1 Megabytes per second approximately.

Write: 700 Kilobytes per second approximately.

Power Supply: UFD is powered by USB bus directly, the power should be within 4.75V, 500mA to 5.25V, 500mA.

Fully compatible with Windows98 (A driver is required).

Fully compatible with Windows Me, Windows2000, Windows XP, Linux kernel 2.4 and the driver is needless.

Power consumption: less than 0.5Watt.

6. Physical Layer specifications:

Common Physical Layer Specifications

Operating Frequency	2402 MHz to 2480 MHz
Carrier Spacing	1.0 MHz
Channel	79
Duplexing	TDD
Symbol Rate	1 Mbps
Modulation Method	GFSK BbT = 0.5
Reference Oscillator	16MHz (built in)
RF input and output impedance	Nominal 50 ohm

7. Tx Specifications:

TX Specifications (UGPZ2 / Class2)

Items	Spec. limits			Unit	Conditions	
	Min	Typ	Max		Temp.	Volt.
Normal Transmit Power Averaged power	-6	0	+4	dBm	Extreme	Extreme
Maximum controlled level	-6	0	+4	dBm	Nominal	Nominal
Minimum controlled level			-6	dBm	Nominal	Nominal
Power control step size	2		8	dB	Nominal	Nominal
Radio Frequency Tolerance	-75		+75	kHz	Extreme	Extreme
Radio Frequency drift One slot Three slot Five slot Drift Rate	 -25 -40 -40 -20		 +25 +40 +40 +20	 kHz kHz kHz kHz/50μs	Extreme	Extreme
Peak Deviation 00001111($df1_{avg}$) 01010101($df2_{min}$) 01010101($df2_{avg}/df1_{avg}$)	 ±140 ±115 80		 ±175	 KHz KHz %	Extreme	Extreme
Spurious Emission(In Band) *1) ±500 kHz |M-N| = 2 *2)|M-N| ≥ 3	 -20		 -20 -40	 DBc DBm DBm	Extreme	Extreme
Spurious Emission(out of Band) *3) 30 MHz ~ 1 GHz 1 GHz ~ 12.75 GHz 1.8 GHz ~ 1.9 GHz 5.15 GHz ~ 5.3 GHz			 -36 -30 -47 -47	 DBm dBm dBm dBm	Extreme	Extreme
TX current consumption *4)		65	80	mA	Nominal	Nominal

8. Rx Specifications:

RX Specifications

Items	Spec limits			Unit	Conditions	
	Min	Typ	Max		Temp.	Volt.
Reference Sensitivity Level (BER=0.001)		-78	-70 TBD	dBm	Extreme Nominal	Extreme Nominal
Reference Interference Level *1) BER<=0.1% Co-ch interference C/I_{co} Adj. (1 MHz) interference C/I_{1MHz} Adj. (2 MHz) interference C/I_{2MHz} Adj. (≥3 MHz) interference C/I_{3MHz} Image Ch interference C/I_{image} Image Ch interference $C/I_{image+1MHz}$	 11 0 -30 -40 -9 -20			 dB dB dB dB dB dB	 Nominal	 Nominal
Out of Band Blocking *2) BER ≤0.1 % 30 MHz ~ 2 GHz 2 GHz ~ 2.4 GHz 2.5 GHz ~ 3 GHz 3 GHz ~ 12.75 GHz	 -10 -27 -27 -10			 dBm dBm dBm dBm	 Nominal	 Nominal
Intermodulation Characteristics *3) BER ≤ 0.1% Carrier Level: -64 dBm	 -39			 dBm	 Nominal	 Nominal
Maximum Usable Level	-20			dBm	Nominal	Nominal
Spurious Emission 30 MHz ~ 1 GHz 1 GHz ~ 12.75 GHz			 -57 -47	 dBm dBm	Nominal	Nominal
RX current consumption		65	80	mA	Nominal	Nominal