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APPROVAL SHEET

No: _____

Date: 2002/01/22

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Customer: _____

Customer Part No: _____

Parts Name: RF Keyboard-FSK (912MHZ)

Part No.: KBAZUS01-9

Spec. No.: TSAZ-002

Note: _____

Signature For Return

APP'D	CHK'D	DSG'D

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1. Table of date-revision

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FCC GUIDELINES

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the receiving antenna
- ☐ Increase the separation between the equipment and receiver
- ☐ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ☐ Consult the dealer or an experienced radio/TV technician for help.

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2. Description:

The Topseed RF Keyboard is a FSK (Frequency Shift Key) Transmitter for the frequency band 902-928 MHz. The RF Keyboard offers a full-integrated PLL synthesizer and a high efficiency power amplifier to drive a loop antenna; A special circuit design and a unique power amplifier design are used to save current consumption and to save battery live.

This keyboard specification applies 104/105/109 key membrane keyboard that is fully compatible with IBM PC AT system. FSK-800 series keyboard are silent -touch and spill-resistant.

For the Receiver Modular use with USB 1.1 compliant can be easily actuated without affecting the position of the mouse.

Note that the Channel button (Red button) on the receiver should flash any time the Cordless device is moved or a button is pressed. Then, it will remember your product ID and Channel ID



The Radio Frequency designed in this Version of RF Keyboard is FSK 912MHz and can be use in a range to 5-7 Meter from the Receiver at any directions. The Keyboard can operate for 10-12 months with two AA Alkaline batteries.

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3. Physical Description and Specification:



3.1 Dimensions

The approximate dimensions of the mouse's transmitter is as follows:

Length	474 mm
Width	185 mm
Height	37.5 mm

3.2 Weight

The approximate dimensions of the mouse's transmitter is as follows:

Weight of the RF Keyboard not to exceed 1250 grams (with batteries).

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4.RF Keyboard Specification

The RF Keyboard consists of three major parts; a baseband controller, a radio that suitable for America available 902–928 MHz frees ISM band applications, and a low power uC-controlled, includes RF antenna supporting circuitry, together with basic RF software level.

4-1 Range in meters: 5-7 Meter from the Receiver

4-2 Frequency Range: 912MHz+/-50KHz (64 channels ID for Mouse)

4-3 Data transmitting by transistor module

4-4 Operational voltage: 3.0 V

4-5 Low power consumption: on normal operation 4 mA and 10 uA on sleep mode.

4-6 Scrolling by mechanical encoder (24 detents every circle)

4-7 Support Power down Mode and high efficiency power amplifier.

4-8 Receiver Fully Compliant Low Speed (1.5Mbps) USB 1.1 Interface

4-9 Suspend/resume operation and device remote wakeup

4-10 Two channel ID selectable by slide switch

4-11 KeyBoard Function

- a. Easy and quick touch to outstanding features, such as WWW, Email, Calculator and many others.
- b. Compatible with Windows® 98, Windows® 2000, or Windows® ME
- c. Support Multimedia audio CD and video CD player functions
- d. Support Hot Keys' configurable menu
- e. Support OSD (OnScreen Display) functions
- f. User definable Hot Keys function
- g. One key to launch defined applications

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4.RF Keyboard Specification

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Frequency Range	912 MHz
Modulation	FSK
Channel No.	1
Channel I.D	6 bits → 64
Operation Voltage	3V
Battery	AA*2 Alkaline batteries.
Batter Life	10 - 12 months
TX Power	< 0dBm (1mW)
Transmission rate	6K bps
TX FM frequency deviation	+/- 60 KHz
Frequency tolerance	+/- 20ppm
Key Num.	104/105/109
Transmission Distance	5-7 Meter

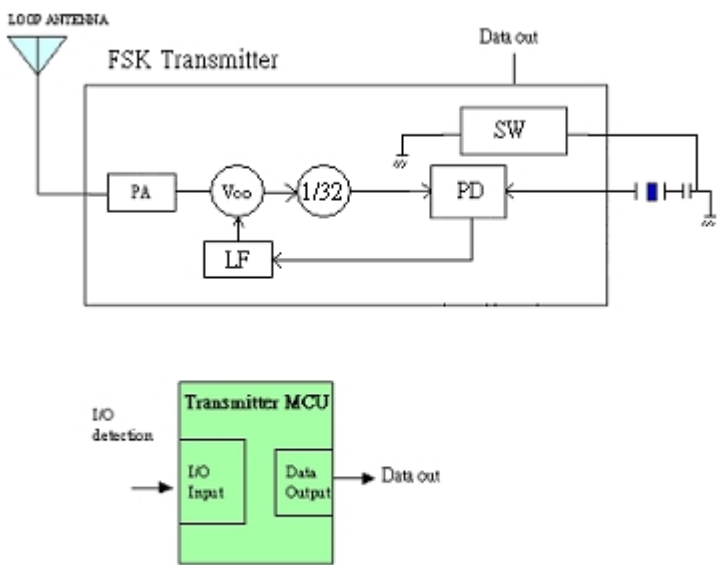
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5. Electrical Block Diagram

FSK (912MHZ) Transmitter



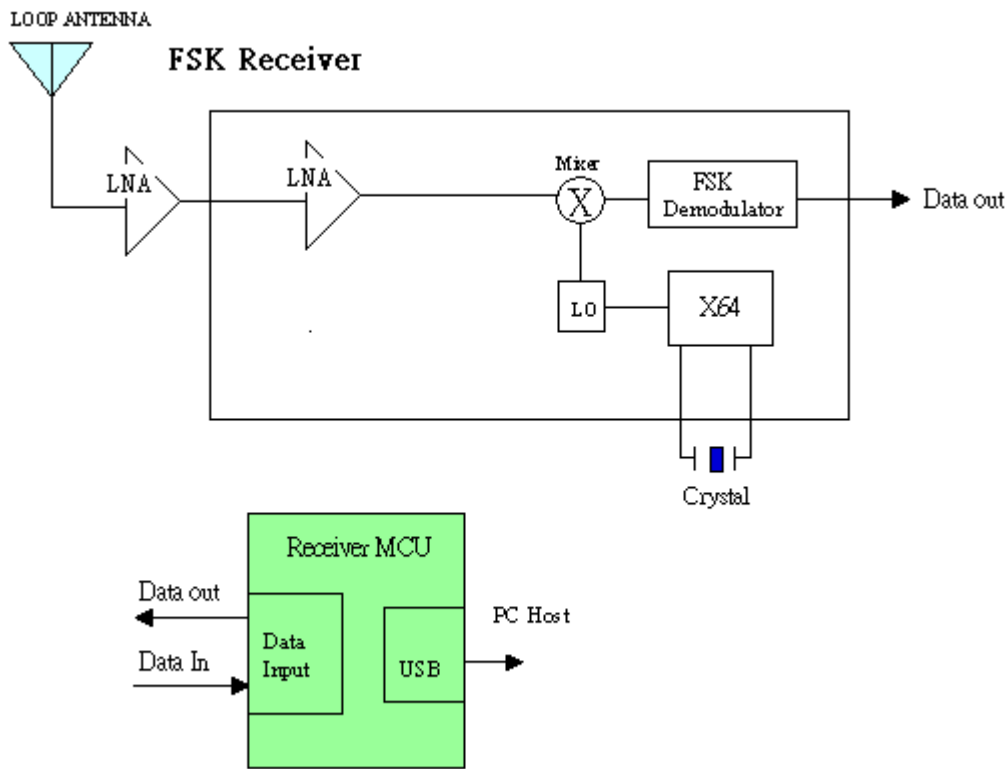
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5. Electrical Block Diagram

FSK (912MHZ) Receiver



USB 1.1 compliant The module is a USB high-speed class device (12 Mbps) and has the full functionality of a USB slave

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6. Electrical Characteristics:**6.1 GENERAL SPECIFICATION**

6.1.1 Operation temperature range

0 ~ + 40 °C

6.1.2 Storage temperature range

- 10 ~ + 60 °C

6.1.3 Relative humidity range

10 %~ 90 % RH

6.2 Operational Range

Parameter	Min	Max	Unit
Supply Voltage	2.3	3.6	V
Frequency (US)	912MHz+/-50KHz		MHZ
Ambient temperature	-10	60	°C

6.3 Electrostatic Discharge (ESD) Sensitivity**Direct discharge:**

Test Voltage: Not less than 8 KV for Air discharge

Not less than 4 KV for Contact discharge

Indirect discharge:

Test Voltage: Not less than 4 KV for HCP

Not less than 4 KV for VCP

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6.4 AC/DC Characteristics

Supply Voltage: VS= 3.0 V

Parameter		Min	Typ	Max	Unit
Current Consumption	Sleep mode		10	15	uA
	Transmit Mode		4	7	mA
Data rate			6K		bps
Sensitivity			-102		dbm
Transmitter settling time			2.2		ms
Power amplifier output		-4	-2	0	dbm
Output power (Transmit mode)			1		mW

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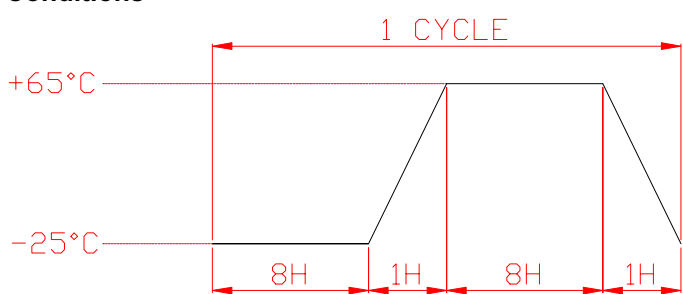
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7. Environmental Tests

7-1 Endurance test

ITEM	SPECIFICATION
7.1.1 Heat load test	Measurement after the test with following conditions and lefts in chamber (normal temp, normal humidity) for one hour (1). Temperature: + 65 +/- 2 °C (2). Time: 72 hours
7.1.2 Humidity load test	Measurement after the test with following conditions and lefts in chamber (normal temp, normal humidity) for 24 hours. (1). Temperature: +50 +/- 2 °C (2). Relative humidity: 90 to 95% (3). Time: 72 hours (4). Dew condensation shall be removed.
7.1.3 Cold test	Measurement after the test with following conditions and lefts in chamber (normal temp, normal humidity) for one hour. (1). Temperature: -25 +/- 2 °C (2). Time: 72 hours (3). Dew condensation shall be removed.
7.1.4 Vibration test	Storage: 10 to 300 Hz, 2.0 G 1 hour per axis Operation: 10 to 500 Hz, 0.5 G 1 hour per axis
7.1.5 HEAT CYCLE TEST	Measure initial value at standard testing conditions. 1. Conditions  2. Measurement after the test (temp cycles =4) and left in chamber (normal temp, normal humidity) for one hour.

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7. Environmental Tests

ITEM	SPECIFICATION
7.1.6 Shock test	Storage: 60G 1/4sines wave pulses, 11 ms DURATION Operation: 5G 1/4sines wave pulses, 11 ms DURATION
7.1.7 Drop test	The package carton, on the condition of 91 cm height, after 1 corner, 3 edges, and 6 faces dropping, electrical and mechanical characters will still be in normal conditions.

7-2 Legend endurance test:

ITEM	SPECIFICATION
7.2.1 Rubber eraser:	Material: Lion #510 for pencil Speed: 2 round per second Stroke: 20mm Force: 200 gf Cycle: 600 time Judgment: legend shall be legible and have no crack
7.2.2 Alcohol	Material: flannel soaked with ISOPROPYL alcohol Speed: 2 round per second Stroke: 20mm Force: 200 gf Cycle: 60 time Judgment: legend shall be legible and have no crack
7.2.3 Neutral detergent	Material: flannel soaked with neutral detergent Speed: 2 round per second Stroke: 20mm Force: 200 gf Cycle: 120 time Judgment: legend shall be legible and have no crack

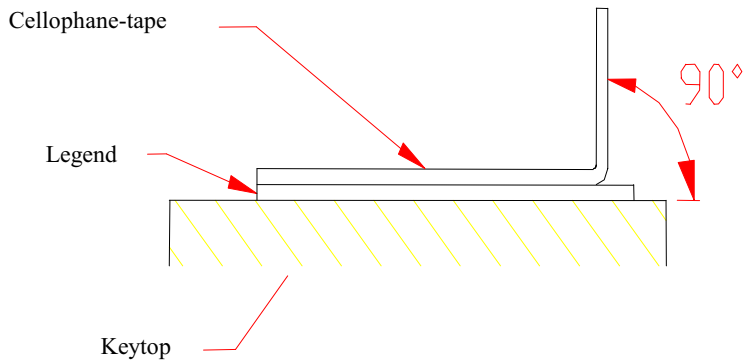
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7. Environmental Tests

7-2 Legend endurance test:

ITEM	SPECIFICATION
7.2.4 Artificial sweat:	Material: flannel soaked with artificial sweat Speed: 2 round per second Stroke: 20mm Force: 200 gf Cycle: 60 time Judgment: legend shall be legible and have no crack
7.2.5 Peeling test	There shall not be peeling of the legend when 18mm width of cellophane-tape is put by finger pressure of approx. 500gf. And followed by peeling at a stretch to the vertical direction. Test cycle: 1 time Material: 3M NO. 600  The diagram illustrates the peeling test setup. It shows a cross-section of a keytop with a legend on top. A piece of cellophane tape is applied to the legend. A red arrow indicates the peeling direction at a 90-degree angle.

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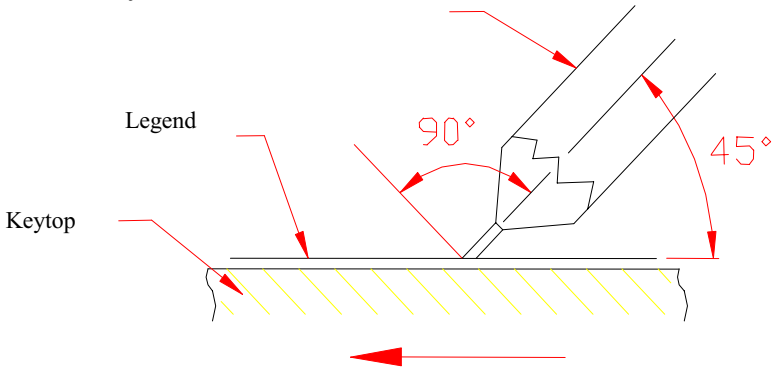
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7. Environmental Tests

7-2 Legend endurance test:

ITEM	SPECIFICATION
7.2.6 Pencil hardness	There shall be no legend peel off when a pencil (manufacturer name: Mitsubishi type in hardness type b whose load shall be cut at right angle shall be applied to the legend in a direction of 45 degree. Pressure: approx. 1 kg. (Lead shall not be snapped.) Speed: 0.5mm/sec Test cycle: 1 time 

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