![ACTiSYS logo] **ACTiSYS**
The Wireless Connectivity Expert

IrReady

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IrDA Reference Product

ACT-IR3200M

IrDA handheld tester

Hardware User's Manual

Sep 27th, 2005

Version 1.0

TABLE OF CONTENT

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1. Introduction

How to Design a Good IrDA-Enabled System Products?

Most of the IrDA hardware components such as the IR transceiver, the encoder/decoder or the integrated IrDA I/O chip are often tested by the component manufacturer to be IrDA compliant. Each IrDA protocol software layer licensed from third party or developed in-house, can also be individually tested to be IrDA compliant. However, when all these IrDA-compliant components are put together, unexpected result may happen. Once the engineering phase is done and manufacturing phase starts, there are many possibilities on the manufacturing line too, due to parts property or assembly variations. Also, after the manufacturing phase is done and the products are shipped, there remains field service issue of screening test in the field or at service centers Methods for system testing must be planned and designed into the IrDA implementation, not an afterthought. A good system test methodology is essential to facilitate both engineering, the production and field service.

What IrDA Mishaps Can Occur and How to Test Them?

Most of engineering mishaps usually are in the area between the Physical Layer and IrLAP. Production mishaps usually are confined to Physical Layer only. Consequently, a very simple and effective system test is to access the "**test frame**" feature of IrLAP as defined in the IrDA Protocol Spec., particularly the test frame feature within a connection. ACTiSYS Corp. has made this test frame source codes available which you may get by contacting: tech-support@actisys.com. Most major IrDA hardware or software products have implemented this "test frame" well. These include Microsoft-Windows 95/98/98se/2000 IR drivers(not for Windows 2K/SP3, SP4, XP), HP-5P/6MP LaserJet printers and many others. If implemented well in your IrDA protocol stack, a specially programmed tester tool can fully exercise the Physical Layer and IrLAP layer in the device under test (DUT) automatically. This test can range from very thorough for engineering study or QC diagnosis to very speedy for production, quality control or field screening. Both fashions are especially useful for Inter-op "IrDA Reference Product" and "IrReady" certification tests among different IrDA device classes. ACTiSYS provides such test software, ACT-IR9006D/SW, IR3200SW.

What Can ACT-IR3200M Do For You and IrDA Certification?

ACTiSYS has a complete IrDA system test strategy, provides such test hardware and software tools, and operates the first full-capability among five IrDA authorized Certification Test Lab's. We have condensed all these expertise into one enabling FIR handheld tester, IR3200M and the associated optional software package; IR3200SW

You can now use IR3200M to carry out:

1) IrDA Bit Error Rate test of your products in the design phase by engineers,

2) Quick screen test on the production line by your production workers, and

3) Even simple and quick field test by your service personnel.

You can use IR3200M to carry out IrDA BER (Bit Error Rate) self test of your IrDA-enabled products following the procedures recommended below in **"RECOMMENDED IrDA CERTIFICATION TEST PLAN"** section. After you have completed this self test, you may fill out the appropriate Test Lab. report forms available from ACTiSYS at irda-info@actisys.com and submit these forms to any of the IrDA Test Lab. This will enable speedy completion of IrDA certification process at lower cost for your IrDA system products!

Reference Information:

IrDA Inter-Op Test Plan and Certification (Please check web site: http://www.actisys.com)

IrDA Test Lab. Operation Procedure and Report Forms (ACTiSYS Corp., 2004. Available at: tech-support@actisys.com)

2. PRECAUTIONS

To ensure trouble-free operation, please observe the following precautions:

Optical communications are easily affected by external light sources, weak batteries, transfer distance, transfer angle, etc. Any of these conditions may cause a data transfer failure, incomplete, missing or incorrect data. Make sure that the wireless interface is away from direct sunlight and other strong light source.

Do not terminate arbitrarily during file transfer process between DUT's and computers until finished. Otherwise DUT's internal data integrity may be damaged, which is due to the violation of DUT's.

Do not expose the unit to moisture, as this will damage the internal circuitry.

Do not expose the unit to extreme temperatures. It should not be placed in direct sunlight or in a closed vehicle, neither should it be placed near heaters nor other heat sources.

Do not store the unit in a humid or dusty place.

Use a soft, dry cloth to clean the unit. Do not use a wet cloth or any solvent.

Do not drop the unit or handle the unit carelessly.

CAUTION:

Never touch the pins of computer connection terminal. The internal circuits can be damaged by a static electricity discharge. If this device requires any servicing, use only an ACTiSYS service dealer, an ACTiSYS approved service facility, or an ACTiSYS repair service.

When exchanging data with host computer, be sure the appropriate serial communication port is available and is not in conflict with other peripheral device or software.

3. ACT-IR3200M HARDWARE

Fig.1 is view of ACT-IR3200M. It has an USB type B connector on side, an IR window at the front and 4 LED on the top and two keys on the rear. It can work with IR3200SW or work alone. IR3200SW is software runs under PC's Windows system and it allows user to set up different baud rates B.E.R. test to DUT.

Fig. 1 ACT-IR3200M

4. BATTERY INSTALLATION AND REPLACEMENT

If the power LED goes out while the wireless interface is in operation, immediately replace the batteries with new ones according to the following procedure. * Batteries: Four "AA" size alkaline manganese batteries (LR6).

(1) Turn off the power.

(2) Remove the battery compartment cover.

(3) Replace the batteries. Be sure that the "+" and "-" marks on the battery correspond to the "+" and "-" marks on the wireless interface.
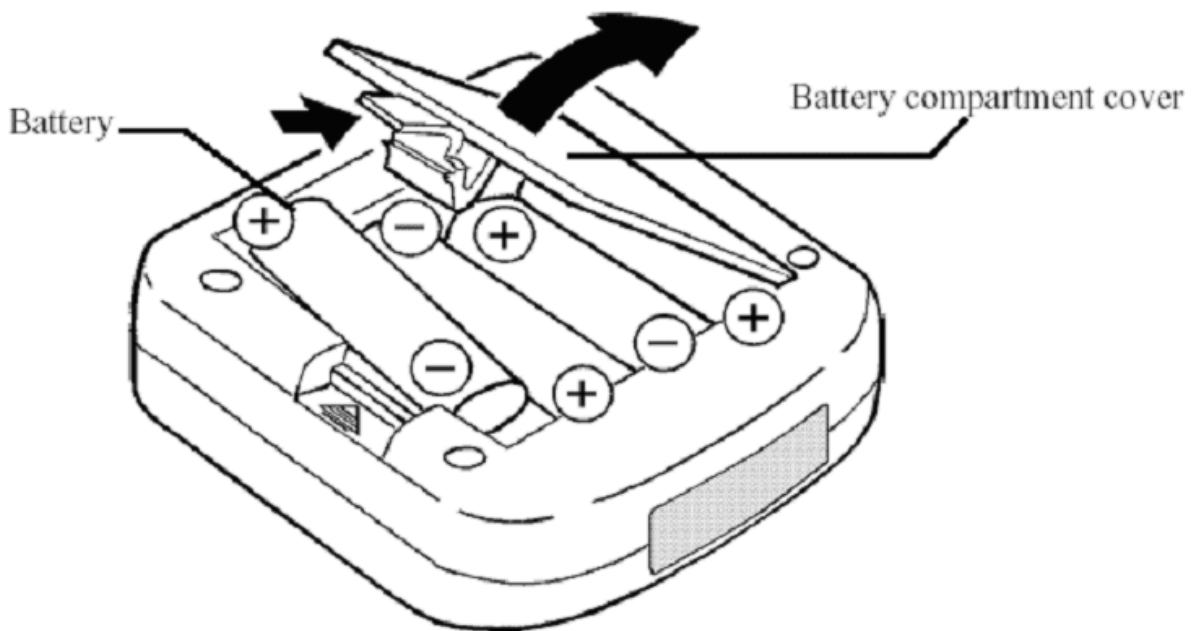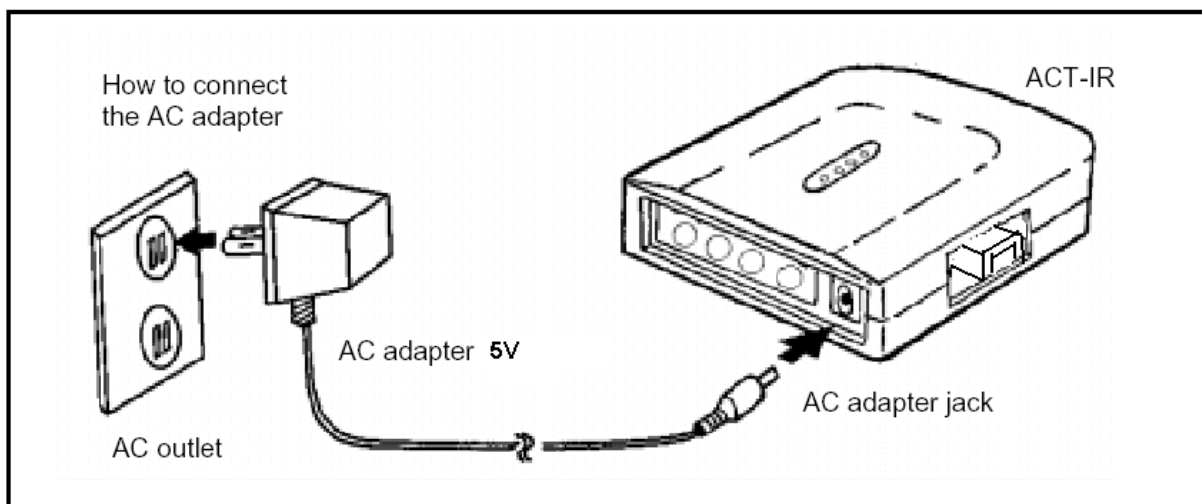
(4) Put the battery compartment cover back.

Fig. 2 ACT-IR3200M back

5. AC adapter

The ACT-IR3200M Hand-Held Tester can also bo operated on AC power by using the optional AC adapter. When the AC adapter is connected to it, the power source automatically switchs over from the batteries to the AC power source.

Note:

When not in use, be sure to disconnect the adapter from both the unit and the wall outlet.

Turn off the power to the wireless interface before connecting or disconnecting the adapter.

CAUTION:

Use ONLY ACT3-123 adapter. Using an AC adapter other than ACT3-123 may cause damage to the ACT-IR3200M Hand-Held Tester.

6. SET UP AND OPERATION PROCEDURE

I. TWO- STATION SET-UP:

a) IR3200M is used as Test Reference Station powered by battery or AC adapter. DUT (Device Under Test) Station can be one of the following IrDA-enabled embedded devices: digital camera, PDA, smart cellphone, pager, data terminal, printer, intelligent dongle, etc.

b) Position the IR3200M so that its infrared window is lined up with DUT's IR window within 1 meter or maximum capable distance of reliable data transfer.

A. TEST DUT – EMBEDDED DEVICE:

1) "IR DETECT" TEST:

a) Press on, for a short while, "IR Detect" button on IR3200M, the LED status indicator will be "on" indicating test in progress. It will detect any IR beam from IrDA DUT, TV remote control, etc.

b) This LED will remain on while test result is displayed by Pass/Fail LED or by audio. If IR beam is detected this Pass/fail LED will flash. If no IR beam is detected this Pass/Fail LED will remain "off".

c) When test is completed, you may turn off the unit to save power by pressing Stop/Reset button. You should turn off the unit if you want to continue with another test option and re-start by pressing on the corresponding button.

B. SET-UP:

- Media busy condition.
- Discovery procedure.
- Connections at all the data rates supported.
- IAS inquiries of DeviceName and IrLMPSupport.
- Verify Test Frames if the DUT-IrLAP supports it.
- Disconnect, go back to Normal Contention Mode and connect at the next supported data rate, make IAS inquiries, exchange test frames, etc.

2) "BASIC TEST":

a) This test will work well only if the DUT has a proven Test Frame within its built-in IrDA protocol driver. This Test Frame is defined in detail in the IrDA Protocol Specification as part of the IrLAP protocol layer.

b) Press the "Basic Test" button on IR3200M to test the DUT of both its IrDA hardware and Test Frame in its built-in IrDA protocol driver. The corresponding LED status indicator will stay solid

on indicating Basic Test is in progress. This "Basic Test" utilizes the ACTiSYS IrDA Test Software (ACT-IR9003SW) built into IR3200M and its associated test parameters with pre-set values of: Frame size, # of Frames, Test Patterns, IR Baud rates), The test process progresses through the following steps:

c) This LED will remain on while test result is displayed by Pass/Fail LED or by audio. If DUT passes the test, audio will beep once at lower tone for SIR, higher tone for MIR and yet even higher tone for FIR. The Pass/Fail LED will also light up as Green each time DUT passes the corresponding SIR, MIR, FIR test. If DUT fails the test, audio will sound a resonating beep at the corresponding tone of SIR, MIR, FIR test. The Pass/Fail LED will also light up as Red each time DUT fails the corresponding SIR, MIR, FIR test.

d) When test is completed, you may turn off the unit to save power by pressing Stop/Reset button. You should turn off the unit if you want to continue with another test option and re-start by pressing on the corresponding button. (You may skip "CUSTOM TEST" section if you have not purchased additional ACTiSYS test software ACT-IR3200SW)

3) "CUSTOM TEST": (You need to license additional test software, ACT-IR3200SW)

Customize the Test Program:

a) You may customize the parameter values in the IrDA test software built into IR3200M (Frame size, # of Frames, Test Patterns, IR Baud rates).

b) Connect IR3200M using serial cable to the RS232 port of your PC. Activate the IR3200SW running under DOS of your PC. You'll see the GUI as shown in the display below. Turn on the IR3200M and you are ready to program the test parameters.

c) This test-parameter set up procedure is described in detail in the separate ACTiSYS IrDA Test software, IR3200SW which you will purchase/license separately.

d) This customized test parameter values will be stored in the flash memory in IR3200M and kept permanently as "Custom Test" program until you re-program and re-store it again.

7. ACT-IR3200M HARDWARE CHARACTERISTICS AND SPECIFICATION

DC Electrical Specification

Parameter	MIN.	TYPICAL	MAX.	Units
USB supply voltage	4.75	5.0	5.25	V
Supply voltage, VSS		0		V
Operating free-air temperature range, TA	0		40	℃
DC current (Ready mode)		45		mA
DC current (Active mode)		60	80	mA
Infrared receiving angle	0~15			Degree
Infrared radiation (peak wavelength	850	900	1050	nm
Transmission speeds :(IrDA-1.0, 1.1)	9.6K, 19.2K, 38.4K, 57.6K, 115.2K, 1.152M, 4M			Bps

Other Specification

Parameter	MIN.	Units
Dimensions	3.58"L x 3.75"W x 1.25"H	Inches
Weight (no batteries)	4.1 (110gm)	Oz
Connector	USB type B	