User Guide Standards

6″ ePaper Display (ED060KC1)

Table of Contents

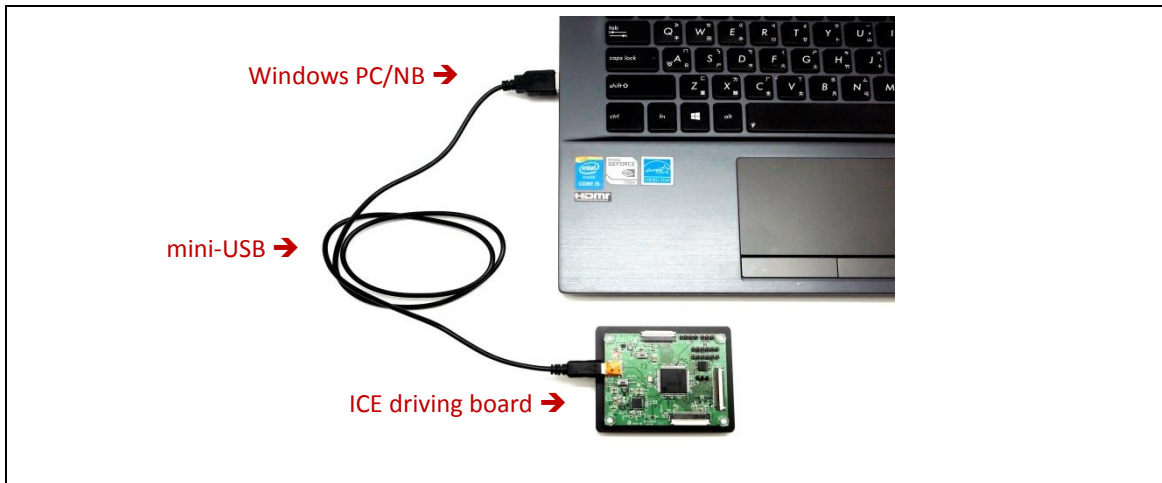# Firmware Update SOP

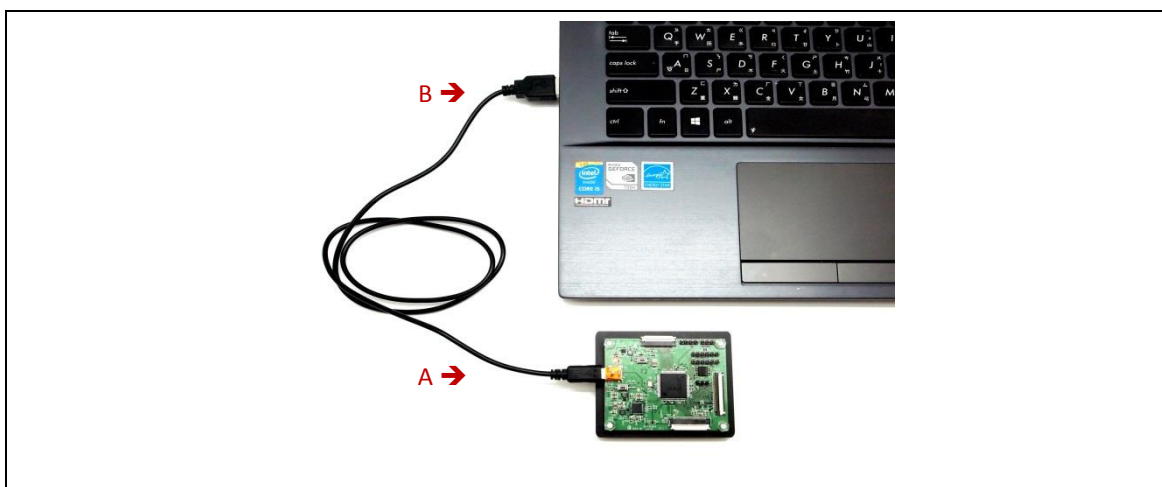## 1 Hardware Guide

(1) HARDWARE REQUIREMENTS

The firmware update requirements included the ICE driving board, mini-USB cable and Windows PC/NB.

(2) HARDWARE INSTALLATION

Refer to following figure to setup ICE driving board and connect it to your PC/NB :

- A Connect the mini-USB cable to ICE driving board
- B Connect the mini-USB cable to PC/NB USB port

2   Software Guide

(1)   SOFTWARE REQUIREMENTS

● Application software ITE_TCon_DemoAP_v2.0.exe required.

● Firmware required:

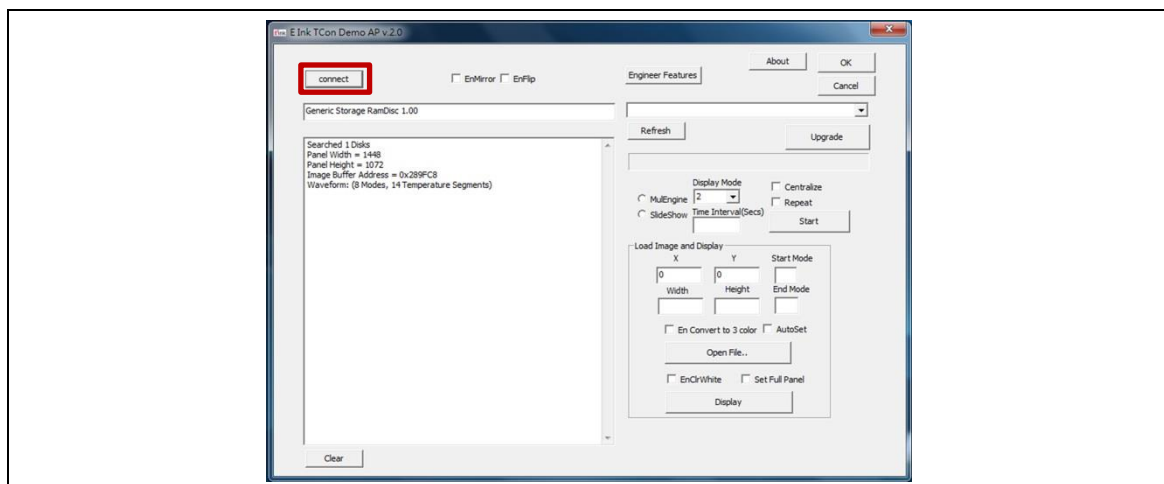Please follow ICE Part number(be shown on EVK backside) to choose the corresponding FW(.bin).
Otherwise, the ICE will be inoperable.

● Put the firmware with application software in the same folder.

(2)   FIRMWARE UPDATE BY APPLICATION SOFTWARE

● Press ITE_TCon_DemoAP_v2.0.exe to open application software.

● Click "connect" button to make sure the software has connected to physical drive.

- Click "Refresh" and choose the FW option which you need to load:

  Please follow ICE Part number(be shown on EVK backside) to choose the corresponding FW(.bin).
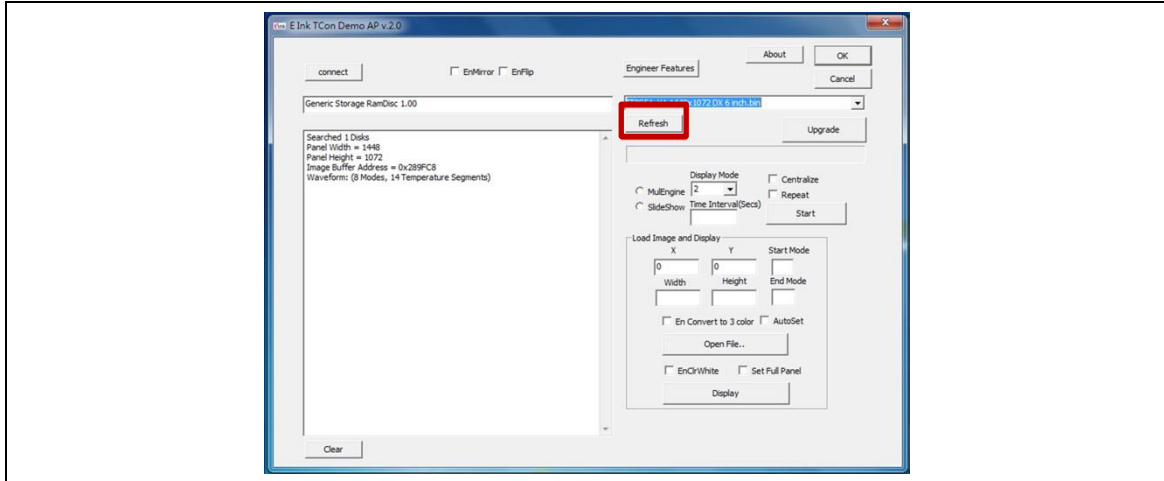 Otherwise, the ICE will be inoperable.

- Click "Upgrade" to load the FW to ICE.
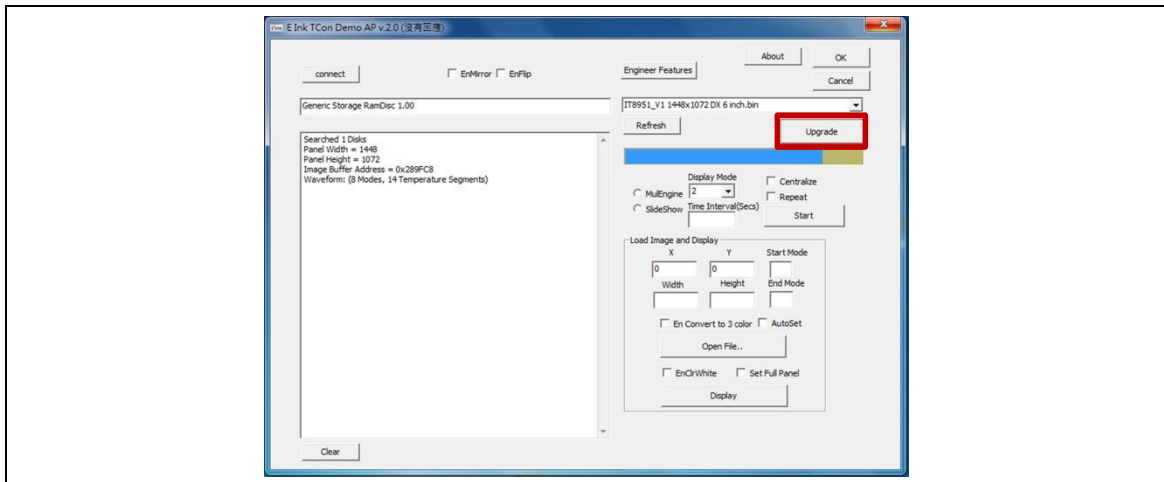
- FW upgrade successful, click "OK" button.

- Click "OK" button to close the AP.
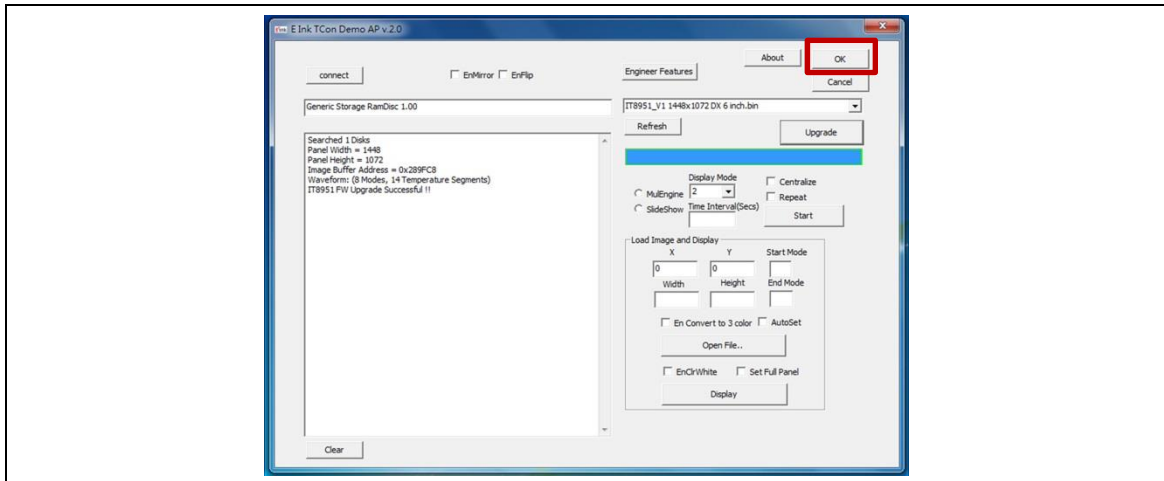
- Pull out the mini-USB cable, firmware update finished.
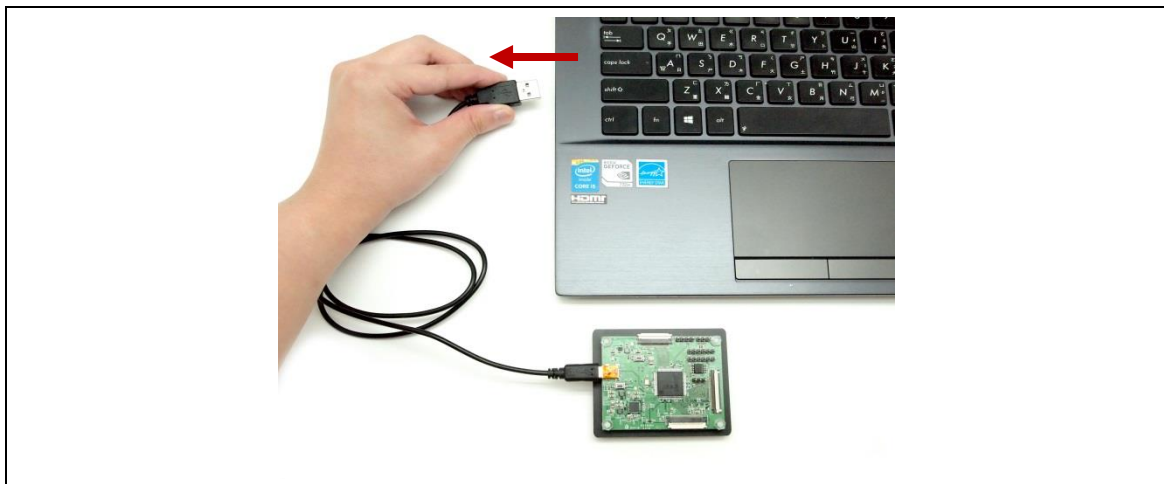
ePaper Display Update SOP

1 Introduction

E Ink's ICE demo kit is intended to highlight the features and benefits of the 6" ePaper display (EPD) display. This low power ePaper display has a resolution of 1072x1448 and uses E Ink technology which allows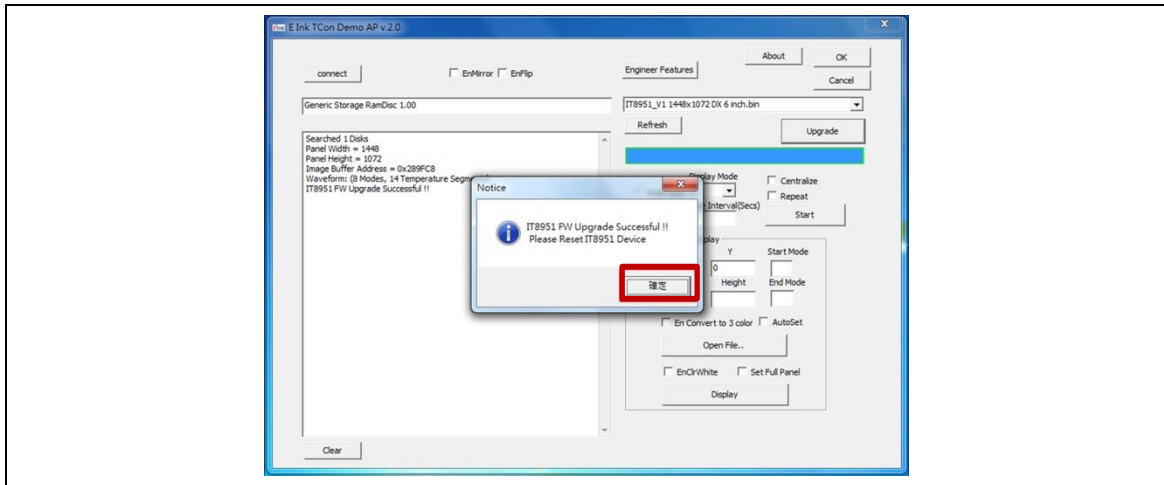 each pixel to show two color states – black and white. This document will provide details on how to load custom images onto the 6" EPD (ED060KC1).

Included in the ICE demo kit are an ICE driving board, a mini-USB cable, and the 6" EPD display.

(1) Package Contents

This demo kit contains the following:

- ICE driving board
- 6" EPD panel
- Mini-USB cable
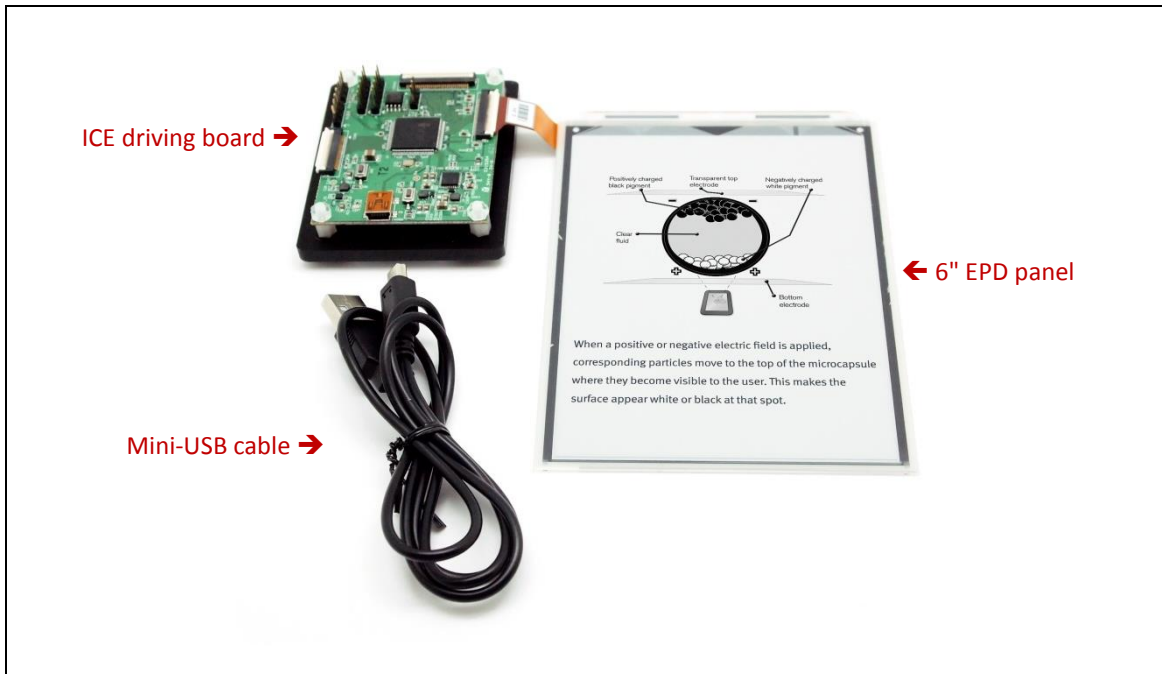
Demo Kit Contents

<p align="center">Specification</p>

Item	Specification
TCON	IT8951 DX
TCON Solution	Hardware TCON
E Ink Display Panel	
Dimension (W × H × D, unit: mm)	101.8(W) × 138.4(H) × 1.01(D)
Shape	Rectangular
Resolution	1072 (H) × 1448(V)
Controller Board	
Input	5Vdc (USB), power on when connected to PC

2   Hardware Guide

This section describes the hardware setup of the 6" EPD demo kit

(1)   Hardware Requirements
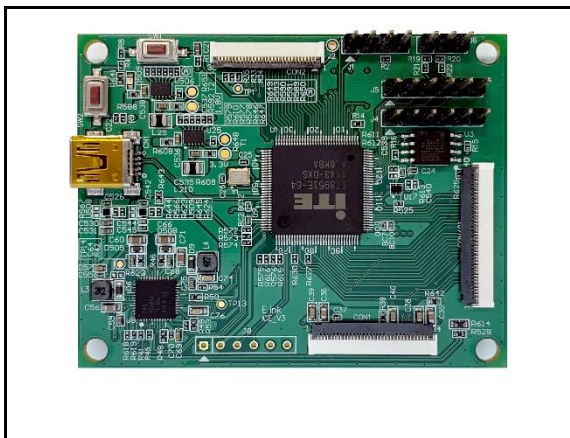
<p align="center">ICE Driving Board</p>

<p align="center">EPD panel</p>

<p align="center">Windows PC/NB</p>

<p align="center">Mini USB cable</p>

CPU	Pentium III 800 MHz or later
RAM	128MB or greater
Required Software	Windows 7 or newer
Interface	USB port

(2) Demo Kit Hardware Description

The 6" EPD demo kit includes an ICE driving board. The ICE driving board and E Ink display panel are connected via a 34 pin connector (connector 1). The mini USB port on the demo kit supplies data and power to the ICE driving board and E Ink panel. Using the E Ink PC application, users can send image data to the board or update settings.
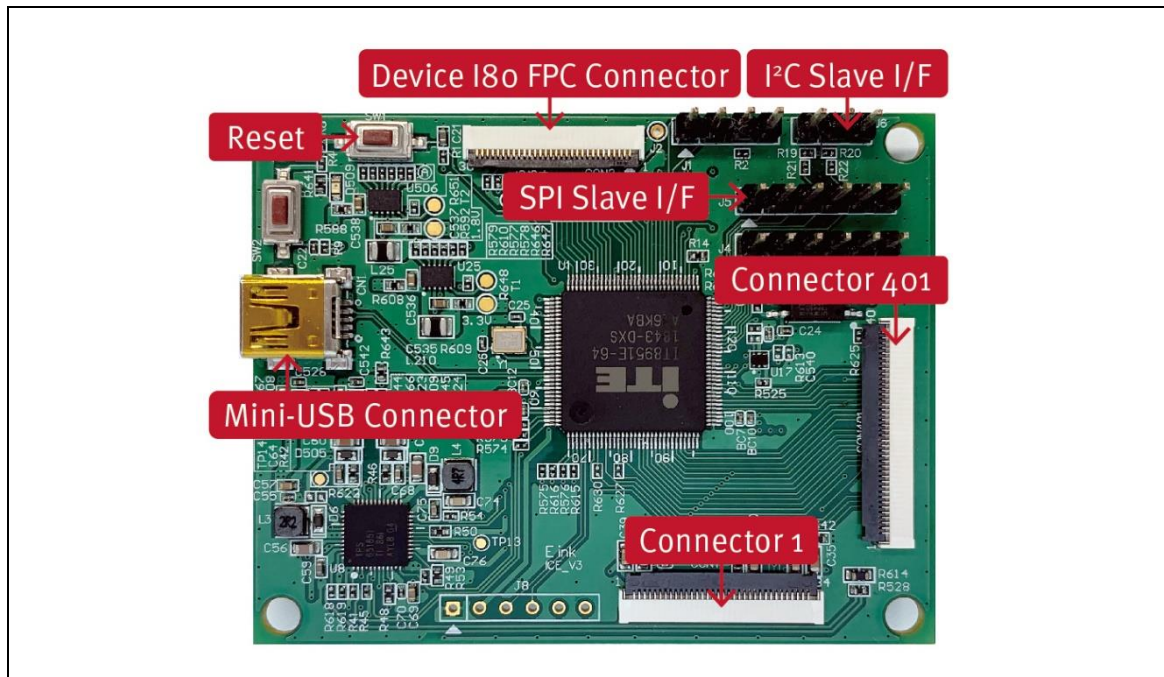
ICE driving board Function

(3) Hardware Installation

The 6" EPD demo kit is connected to a PC/NB via a mini USB cable. Please follow the steps to install demo kit and 6" EPD display:

- EPD FPC need to be folded, FPC golden finger down. Attach the 6" panel to ICE driving board connector 1. (Figure 2-3-a)
- Connect the mini-USB cable to ICE driving board. (Figure 2-3-b)
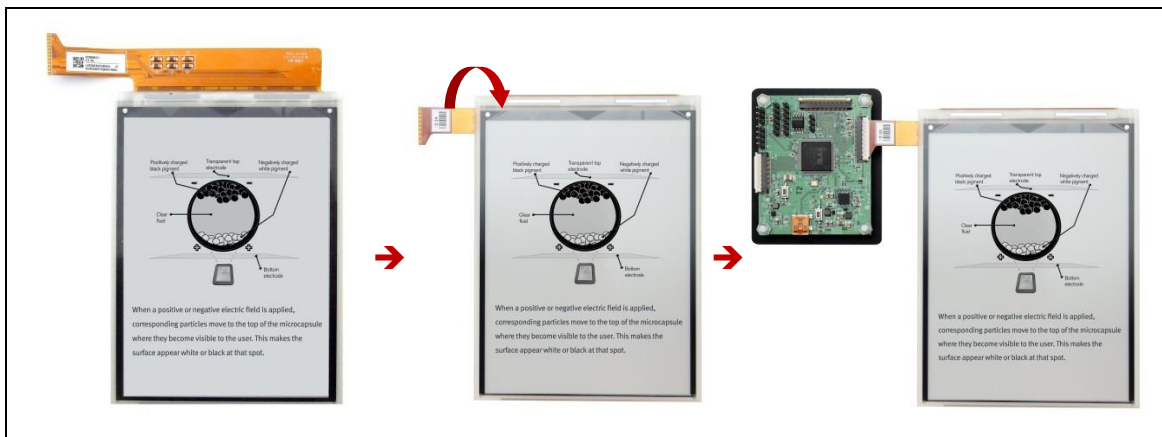- Connect the mini-USB cable to PC/NB (Figure 2-3-c)
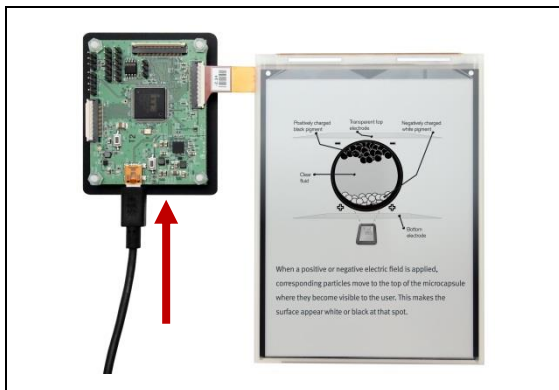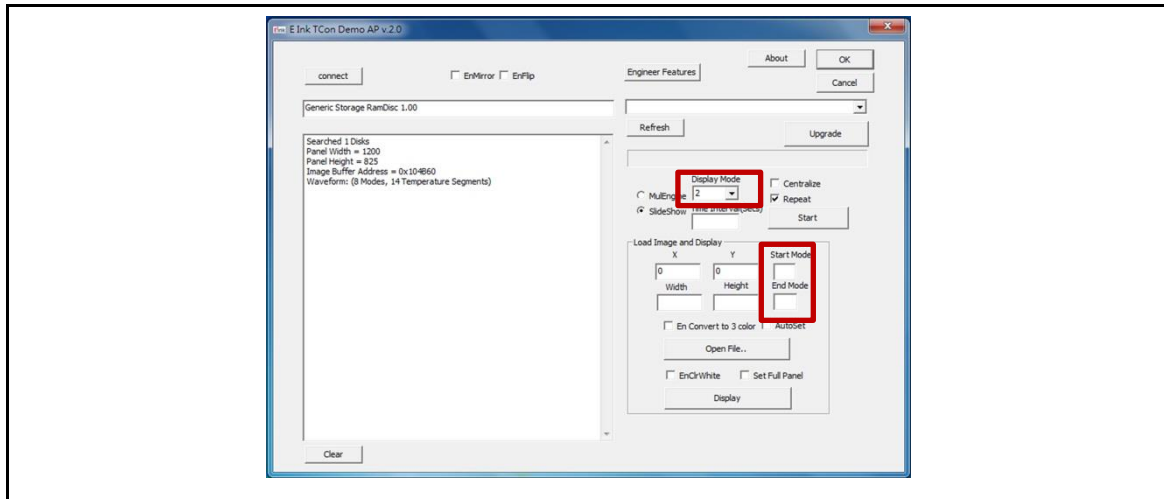

Figure 2-3-a

Figure 2-3-b

Figure 2-3-c

3 Software Guide

(1) Software Requirements

Application software **ITE_TCon_DemoAP_v2.0.exe** required.

(2) E Ink APPLICATION Display mode Introduction

● **What is a Waveform?**

A predefined sequence of voltages applied to the E Ink material to switch it from one gray tone to another gray tone.

Paired to display by production lot, display size, and waveform type.

Standard waveforms ensure proper product performance and reliability.

● **The waveform contains the following WF modes:**

➢   MODE 0 ⸺ **INIT**

Initialize is used to completely clear the display, if it's left in an unknown state (i.e. if the previous image has been lost by a re-boot)

➢   MODE 1 ⸺ **DU**

Direct update Non-flashing waveform that can be used to update.   It can update any changed gray tone pixel to black or white only.   This waveform can be used for pen or other fast menu updates. It only updates changed pixels.

➢   MODE 2 ⸺ **GC16**

Grayscale Clear, 16 Levels. A "flashy" waveform used for 16 level grayscale images.   This provides the best image appearance. All the pixels are updated or cleared.

➢ MODE 3 — **GL16**

The GL16 waveform is used to update anti-aliased text with reduced flash. GL16 should be used only with Full Display Update, the entire display except pixels staying in white will update as the new image is written. The GL16 waveform has 16 unique gray levels.

● **WF Guidelines Overview**

User Experience	Description	Experience-Enabling Waveform Mode
Interacting	Fast updates Pop-up menu Typing Pen input Cursor	**DU** – Direct Update DU drives to WS or DS DU: 260ms update times (85Hz Frame Rate) No flash
Viewing	High-Quality images Detailed icons	**GC16** – Grayscale Clear (16 level) Drives between any (4-bit) gray tone 450ms update time (85Hz Frame Rate) Medium Flash
Reading	Anti-aliased text Images Icons	**GL16** – Grayscale (16 level) Drive between any (4-bit) gray tone 450ms update time (85Hz Frame Rate) Low Flash

(3) Display selected image to EPD

● Uploading Image

When connected to a PC/NB, the interface, AP, could upload pictures in .BMP format from PC/NB to 6" EPD through mini USB. Please notice: the picture format needs to be fit the resolution of EPD.

● Procedures are as following:

➢ Run "ITE_TCon_DemoAP_v2.0.exe" software

➢ Click "Connect" button to make sure the software has connected to physical drive (Figure 3-2-a)

➢ Display EPD operation by USB interface contains the following steps:

▪ Check AutoSet Item to auto set the parameters (Resolution, mode) (Figure 3-2-b)

▪ Click "Open File.." to open a file browser to select an image (Figure 3-2-b)

▪ Display selected image to EPD (Figure 3-2-c)

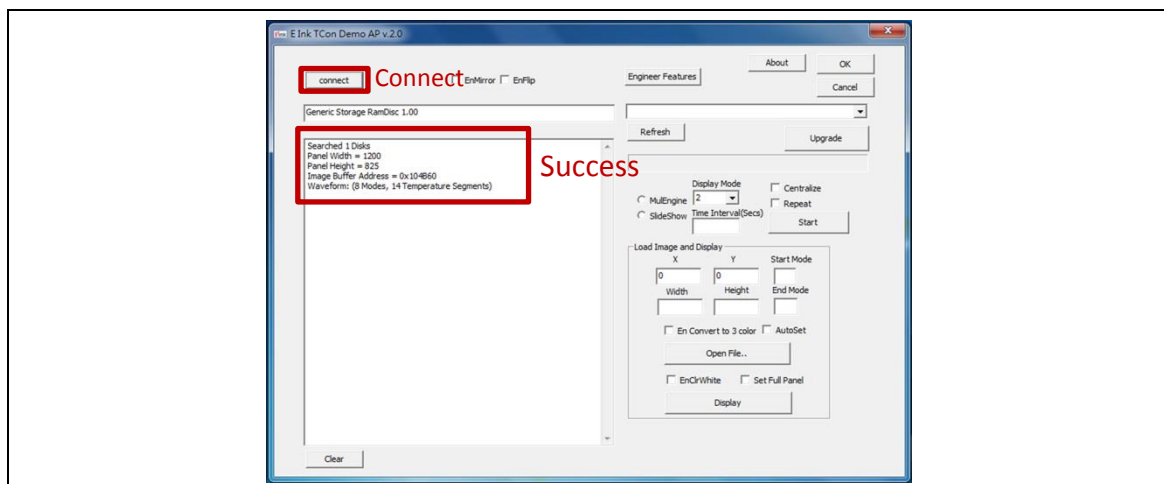Figure 3-2-a Software connected to physical drive
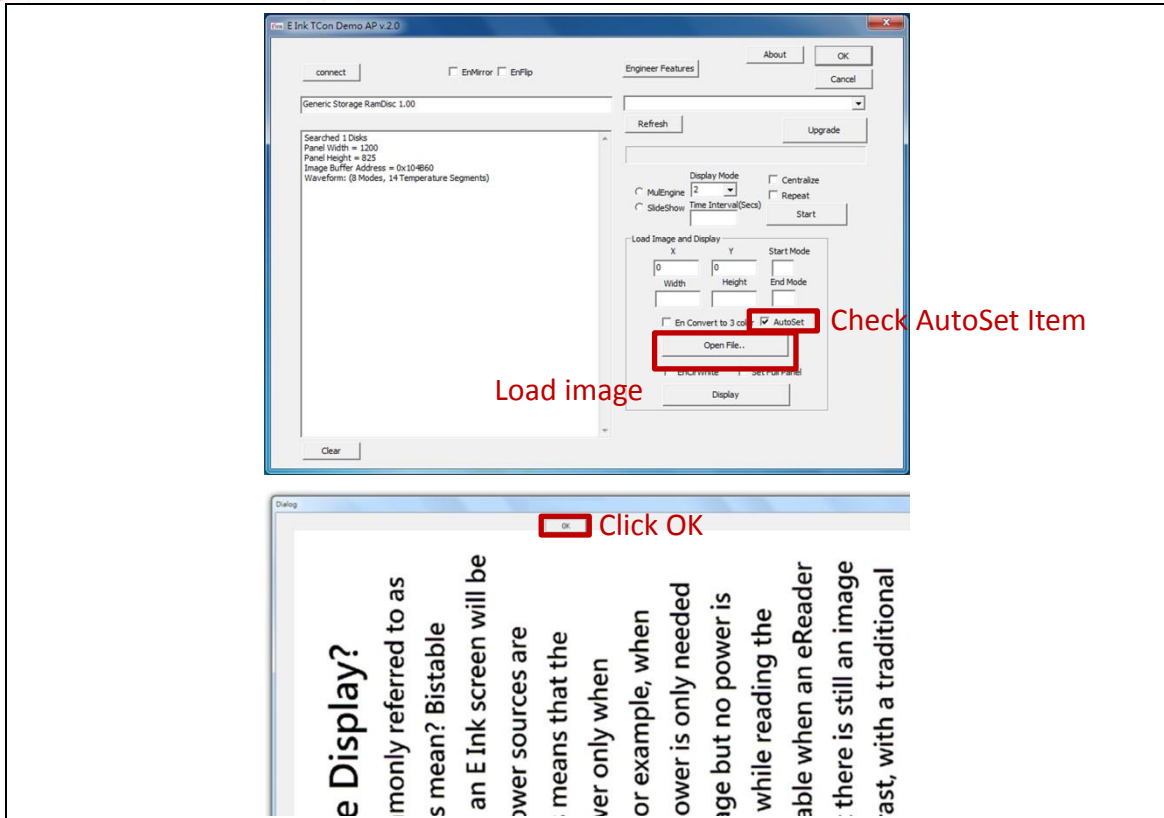
Figure 3-2-b Load image to demo board
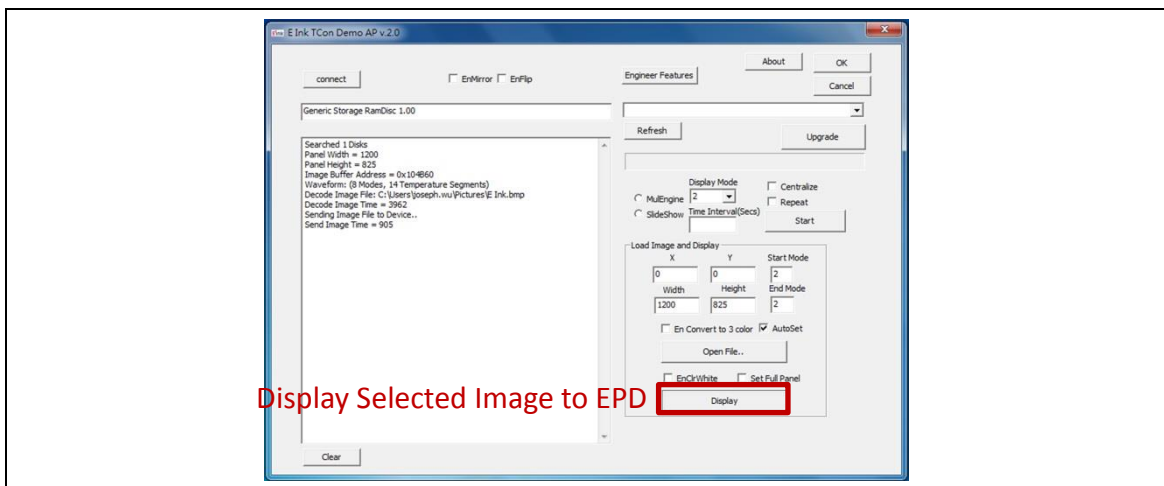
Figure 3-2-c Display the image

Button/Option	Description
Connect	Tell the software to connect to the EPD demo kit
Open File	Open a file browser to select an image
AutoSet	Auto set the parameters (Resolution, mode)
Display Image	Display selected image to EPD

(4) Slide Show Function

● SELECT THE DISPLAY IMAGE

Named the folder "SlideShowImages" that including the pictures you want to display, it needs to be in the same folder with the "ITE_Tcon_DemoAP_v2.0.exe"
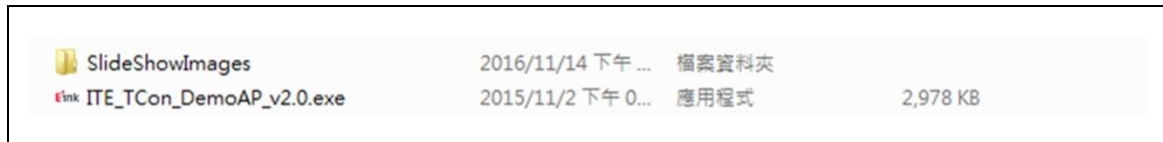
For example: "SlideShowImages" contains 4 pictures:

| Picture 1 | Picture 2 | Picture 3 | Picture 4 |

● CONNECTING TO THE ICE driving board

The AP is connecting to the demo kits successfully.
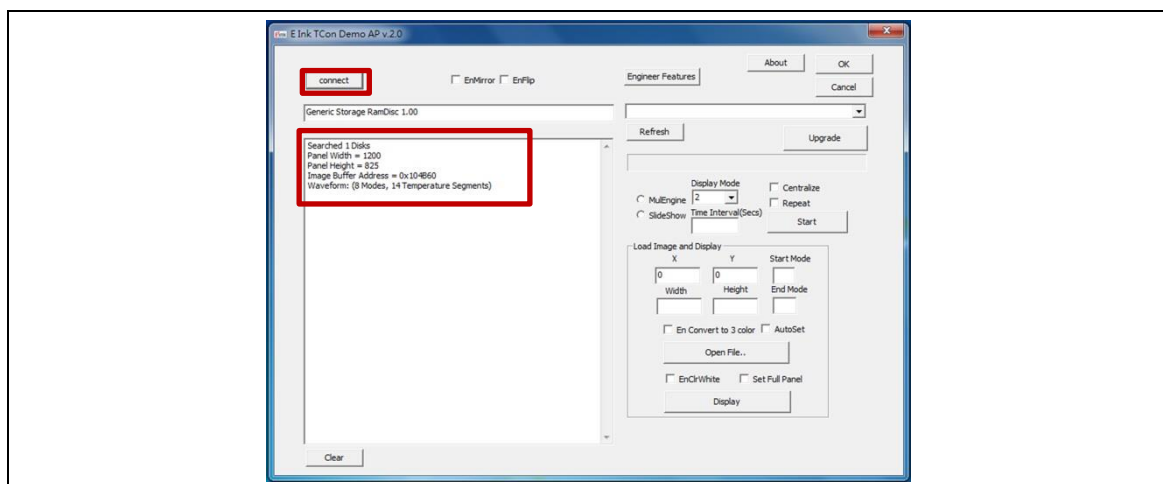
● SLIDE SHOW DISPLAY (NOT REPEAT)

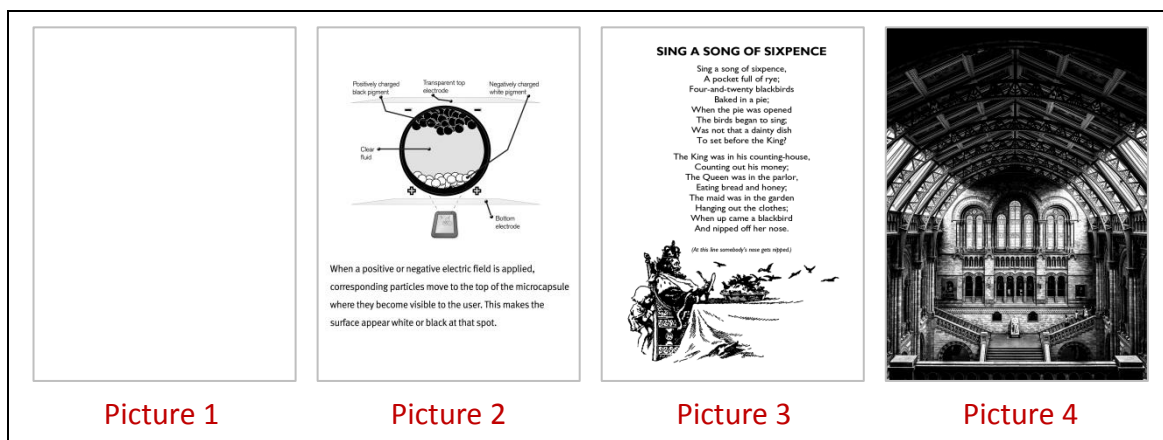Operating Steps:

> Choose "SlideShow" option

> Press "Start" button

Image order: Picture 1 ▸ Picture 2 ▸ Picture 3 ▸ Picture 4

● SLIDE SHOW DISPLAY (REPEAT)

Steps:

> Choose "SlideShow " option

> Check "Repeat" option

> Press "Start" button

Image order: Picture 1 ▸ Picture 2 ▸ Picture 3 ▸ Picture 4
              ↑_____↓

4 Troubleshooting

Below list is commonly asked question:

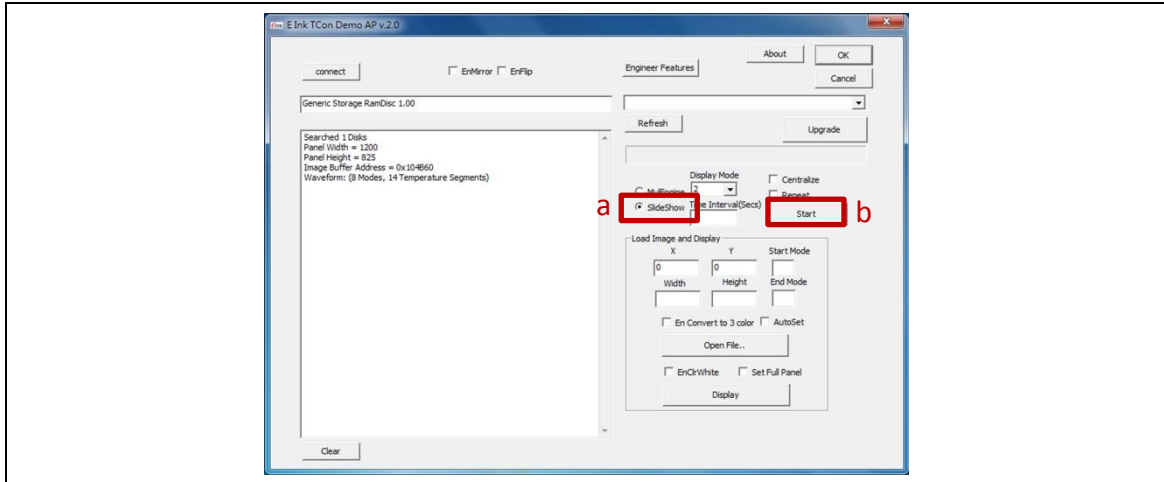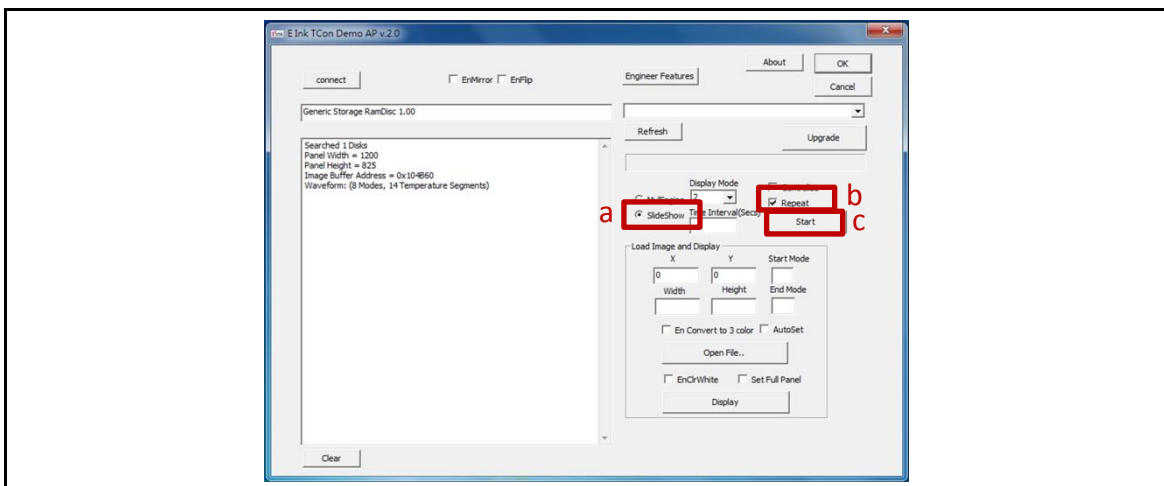| Number	Name	Description
1	6" EPD demo kit is not detected by the PC/NB	Cause: USB cable is damaged
		Solution: Replace the USB cable

5 Contact Information

For more information, please visit

http://www.eink.com

For sales office addresses, please visit

http://www.eink.com/contact_sales.html

6 Legal Information

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● Revision History

Version	Date	Page	Description	Author
0.1	2016/12/29		Initial	Joseph Wu
0.2	2020/03/24		Revise "FW Update"	Debby Lin
0.3	2021/03/22		E Ink APPLICATION Display mode	Debby Lin