

# Real6410 WinCE 6.0 Development manual

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Ver 1.0 Date: 2010-05-20



# Change History

Rev	Date	Description
V1.0	2010-5-20	The initial released Version

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# Catalogue

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#### **Chapter 1 WinCE Overview**

- Version : Wince6.0
- Source code:
  - stepldr, EBOOT Souce code, support usb download.
  - Wince 6.0 BSP
- Drivers in CD.
  - RTC driver
  - BINFS file system support
  - Hive register support
  - 256MB memory manager
  - 4 serial ports driver
  - network card driver.
  - Audio driver
  - LCD/touchscreen driver
  - Camera driver
  - TV-OUT driver
  - Power manager, SLEEP driver
  - SD card driver
  - USB HOST driver
  - USB OTG driver
  - Keypad/LED driver
  - WIFI driver
  - GPS driver
  - GPRS driver
- System characteristic
  - Windows Media Player 9.0 (supports MP3, MPEG2, MPEG4, WMV, WAV and so on ).
  - - Picture explorer, wordpad.
  - - IE6 explorer.



#### Chapter 2 Install VS2005 and WinCE 6.0

Whether VS2005 and WinCE6.0 proper installed is very important to the product development. So when install the development environment please kindly follow our user manual, step by step.

Real6410 development board support WinCE6.0 version, please refer to **CDROM**\ **User manual**\**VS2005\_WINCE6.0 installation guidance**.



#### **Chapter 3 Install the BSP**

Real6410 development board WinCE6.0 BSP include two part: **S3C6410\_SEC\_V1** and **SMDK6410** 

- 1. Copy WinCE6.0\BSP\SMDK6410 to D:\WINCE600\PLATFROM\
- 2. Copy WinCE6.0\BSP\S3C6410\_SEC\_V1 to D:\WINCE600\PLATFORM\COMMON\SRC\SOC
- 3. Remove S3C6410\_SEC\_V1 and SMDK6410 read-only properties.

4. Please confirm **SMDK6410**, **S3C6410\_SEC\_V1** file has been copy to correct directory

-->>SMDK6410





# -->>S3C6410\_SEC\_V1

S3C6410_SEC_V1				
文件(E)编辑(E)查看(Y)收藏(A)工具(E)	帮助(出)			<b>1</b> 2
🌀 后退 · 🕥 · 🏂 🔎 搜索 💫 文件:	×			
地址 (D) 📄 D: \WINCE600\PLATFORM\COMMON\SRC\SOC\;	S3C6410_SI	EC_V1		🖌 🏹 转到
文件夹	×	名称 🔺	大小	类型
<ul> <li>WINCESOO</li> <li>CRC</li> <li>CDDesigns</li> <li>OTHERS</li> <li>PLATFORM</li> <li>ARUBABOARD</li> <li>CEPC</li> <li>COMMON</li> <li>Ib</li> <li>SRC</li> <li>ARM</li> <li>COMMON</li> <li>INC</li> <li>MIPS</li> <li>SIX</li> <li>SOC</li> <li>HD64465_MS_V1</li> <li>MIPS</li> <li>SIX</li> <li>SOC</li> <li>HD64465_MS_V1</li> <li>OMAP5912_MS_V1</li> <li>OMAP5912_MS_V1</li> <li>MISC</li> <li>INC</li> <li>INTR</li> <li>INC</li> <li>POWER</li> <li>POWER</li> <li>POWER</li> <li>STSTEM</li> </ul>		OAL Build log dirs	53 KB 1 KB	文件夹 文本文档 文件
🗉 🛅 TIMER	~	<	l.	>



#### **Chapter 4 Customize the BSP**

#### 4.1 Compiling the example projects in CD-ROM

Step 1. Find the "6410V2" project folder under the directory "WinCE6.0\project" in CD-ROM. Copy this folder to the directory "D:\WINCE600\OSDesigns" and remove the read-only property ( if there is no OSDesigns directory, you can create one. ).

Step 2.Run "VS2005", select "File->open->Project/solution" In the VS2005 menu, then load the file "D:\WINCE600\OSDesigns\6410V2\6410V2.sln" :

Step 3. Select Menu "Build"-> "Advanced Build Commands"->"Build and systen" ( If this is the first time to create project, we suggest you to select "Build"-> "Advanced Build Commands" -> " Clean Sysgen")

Step 4. After compiling, NK.bin has been generated under project directory: "D:\WINCE600\OSDesigns\6410V2\6410V2\RelDir\Samsung\_SMDK6410\_Release".



#### 4.2 make user project files

The following contents introduce how to customize the user project files:

#### 1. Open **VS2005**

2. Create new project, Select "File" -> "New" -> "Project"

- "Project Types" select " Platform Builder for CE 6.0"
- "Template" select "OS Design"
- "Name:" input Project name "REAL6410V1"
- "Location: " Set default name " D:\WICNE600\OSDesigns"
- "Solution Name:" input solution name "REAL6410V1"
- Click "OK"

新建项目			? 🗙
项目类型(2):		模板 (II):	
Visual C++		Visual Studio 已安装的模板	
CLR		i OS Denign.	
二 常規 NFC		我的模板	
- 智能设备			
测试 Yin32 ● 其他语言 分布式系统解决方案 <u>- 其他项目类型</u> Platform Builder for CE 6.0 <del>- 阅试项目</del>			
A project for c	reating a Windows	s Embedded CE 6.0 operating system	
名称(10): 【	REAL541071		
位置(1):	C: \YINCE600\OSD	esigns	<ul><li>(浏览位))</li></ul>
解决方案名称 (2):	REAL6410V1	☑ 创建解决方案的目录 @)	
		備定	取消



#### 3. Click Next

Windows Embedded CE 6.0 OS Design Wizard	? 🛛
Telcome to the Windows Embedded CE 6.0 OS Design Wizard	
This wizard guides you through the process of creating an OS design for a CE 6.0 based platform. An OS design defines the characteristics of a CE 6.0 OS.	
You can create an OS design by choosing a design template and one or more board support packages (BSPs). A BSP includes an OEM adaptation layer (OAL) and device drivers.	
This wizard helps you:	
Choose a BSP. Choose a design template. Add items to your OS design or remove items from it.	
To continue, click Next.	
< <u>Previous</u> <u>Next</u> Finish Can	cel



4. Select project BSP

• "Available BSPs:" select "SMDK6410: ARMV41"

• Click "Next"

Windows Embedded CE 6.0 OS De	esign Tizard 🛛 🛛 🛛
Board Support Packages	
Available BSFs: Aruba Board: ARMV4I CEPC: x86 Device Emulator: ARMV4I H4Sample OMAP2420: ARMV4I MainstoneIII PXA27X: ARMV4I #Via:VT8500:VT8500ARMV4I:Title SMDK5410: ARMV4I SMDK5410: ARMV4I	A BSP contains a set of device drivers that are added to your OS design. Select one or more BSPs for your OS design. SMDK6410 Evaluation Platform Note: Only BSPs supported by installed CPVs are displayed in the list.
< <u>P</u> re	wious Next > Einish Cancel



5. Select project template

- "Available design templates:" Select " PDA Device"
  Click " Next"

sign template is a set of lefined catalog items.
use the design template that is closely aligned with the mose of your target device. Fides the starting point for a se of personal digital assistants (s) or mobile devices with a schell-and-keyboard design.



6. Select template type

- "Variants:" Select "Mobile Handheld"
- Click "Next"

Windows Embedded CE 6.0 OS Design	Vizard ? 🔀
Design Template Variants	
<u>V</u> ariants: Mobile Handheld Enterprise Web Pad	Mobile Handheld
< <u>Previous</u>	Next > Finish Cancel



7. Add the application which is requirement by the user, below is the default application
• "ActiveSync"

- "Internet Explorer 6.0"
- "Windows Media Audio/MP3"
- "Windows Messenger"
- "WordPad"
- Click "Next"

Vindows Embedded CE 6.0 OS Design	lizard 🛛 🛛 🔀
Applications _Media	
<ul> <li>NET Compact Framework 2.0</li> <li>File Systems and Data Store</li> <li>Windows Embedded CE Error Reporting</li> <li>ActiveSync</li> <li>Internet Browser</li> <li>Quarter VGA Resources - Portrait Mod</li> <li>Windows Media Audio/MP3</li> <li>Windows Messenger</li> <li>WordPad</li> </ul>	A full-featured browser comparable to the desktop implementation of Internet Explorer 6.0.
< <u>P</u> revious	Next > Finish Cancel



#### 8. Add network application

- Customer can defaults
- Click "Next"

Vindows Embedded CE 6.0 OS Desig	n Tizard 🛛 💽 🔀
Hetworking _Communications	
Vide Area Network (MAN) Uccal Area Network (LAN) Versional Area Network (PAN) Security	The Internet standard protocol, version 6.
(く上一步 (2))	下一步 (11) > 「完成 (12) 「取消」



#### 9. Click "Finish"

Vindows B	mbedded CE 6.	0 OS Design	Vizard		? 🔀
	OS Design Proje	ct Tizard Com	plete		
You have	completed the wiza	rd. Press Finisl	n to create you	ur OS Design projec	t.
		< Previous	Next >	<u>Finish</u> Ca	ncel



### 4.3 WinCE6.0 customization

Set target kernel type
 Select "SMDK6410 ARMV4I Release"

				- Iñe	rosoft	Visual	Studi	io					×
E H	ile elp	<u>E</u> dit	<u>V</u> i ew	VAssist <u>X</u>	Project	<u>B</u> uild	Debug	Ta <u>r</u> get	Tools	Te <u>s</u> t	Mindow	<u>C</u> ommunity	
12	1 -	-	2	Ø 8 9	1 2 10	- (21 -	周 - 日	3 1 1	SMDK6410	ARM -			**
2	Cat	alog I	tems Vi	ew	<b>–</b> ‡	× /s	tart P	age	SMDK6410 SMDK6410	ARMV4I ARMV4I	Debug Release	- ×	
Sol	1	Filter	• • 🖻	Search?	•	2		l	Configur	ation M	anager	^	Ser



#### 2. Set project properties

Select menu "Project" -> "Properties"



• "General" setting in Properties, default is ok, not change it.

Real6410	V1 Property	Pages ?	×
<u>C</u> onfiguration:	Active (SMDK6410	ARMV 😪 Platform: N/A 😪 Configuration Manager	
Conmon Proj Configurat Locale Build O Environ Custon Subproj	perties ion Properties ptions ment Build Actions ect Image Settin	Release directory: %PEWORKSPACEROOT%\RelDir\SMDK6410_ARMV4I_Release Build type: ① Debug ④ Release Target file name for debugger: nk. bin ♥	
		· · · · · · · · · · · · · · · · · · ·	



• "Locale" setting set the system language here.

- "Clear All" then select system language
- Click "English (American)
- Click "Chinese" (Chinese)
- Default locale: select "English (American)"

Common Properties	Locales:					
Configuration Properties	英语 (津巴布韦)	~				
Locale	☑ 英语 (美国)	C1				
Build Options	□ 英语(南非) □ 英语(特立尼达)					
- Custom Build Actions - Subproject Image Settin	Default locale:					
	英语(美国)					
	Codepages:					
	437 (OEM - United States)	^				
	708 (Arabic - ASMO 708)					
	720 (Arabic - Transparent ASMO)	Clear All				
	737 (UEM - Greek 437G)	×				
	VLocalize the build					
	Strict localization checking in the build					
>	LISTIC TOCALITACION CHECKING IN the Build					

- "Build Options" setting
  - Select option according to below picture. Click "Apply" and "OK" to return the VS2005.

<ul> <li>Common Properties</li> <li>Configuration Properties</li> <li>General</li> <li>Locale</li> <li>Build Options</li> <li>Environment</li> <li>Custom Build Actions</li> <li>Subproject Image Settin</li> </ul>	Build options:         Buffer tracked events in RAM (IMGOSCAPTURE=1)         Enable eboot space in memory (IMGEBOOT=1)         Enable event tracking during boot (IMGCELOGENABLE=1)         Enable hardware-assisted debugging support (IMGHDSTUB=         Enable kernel debugger (no IMGNODEBUGGER=1)         Enable KITL (no IMGNOKITL=1)         Enable profiling (IMGPROFILER=1)         Enable ship build (WINCESHIP=1)         Flush tracked events to release directory (IMGAUTOFLUS         Run-time image can be larger than 32 MB (IMGRAM64=1)         Use xcopy instead of links to populate release director         Write run-time image to flash memory (IMGFLASH=1)	:1) :H=1) ory (BUILDREL_USE_(
	<	>
< >		



#### 3. Add User Application-End

🕀 🧰 Games 🔽 Help

😑 🚞 Remote Desktop Connection

WordPad

➡ ♥ Remote Desktop Protocol (RDP)
 ➡ □ Windows Network Projector

Open " Catalog Items View" Windows

Catalog Items View	- 4 ×
Filter - 🔄 <search></search>	× 🔁
Core os     Device Drivers     Device Drivers     Third Party	
Solution Explorer Catalog Items View	🛃 Class View
Add user application as follow:	
🖬 📴 #MS:Common:GestureAnimation:Location	
🖬 🔚 #MS:Common:Trysteshighte:Excation	
🗄 🛅 #MS:Common:XamlRuntime:Location	
Applications - End User	
CAB File Installer/Mninstaller	



4. Add base class library for Application&ServiceS Development You can choose it by needs

🚍 🛄 Applications and Services Development
🖃 📴 . NET Compact Framework 2.0
😥 🧭 . NET Compact Framework 2.0
표 🔘 . NET Compact Framework 2.0 - Headless
🗄 🪞 OS Dependencies for .NET Compact Fram.
🗐 🦳 .NET Compact Framework 3.5
🛨 🧭 . NET Compact Framework 3.5
표 🔘 . NET Compact Framework 3.5 - Headless
🕀 🛅 OS Dependencies for .NET Compact Frame
Active Template Library (ATL)
😑 🚞 C Libraries and Runtimes
C+ Runtime Support for Exception Han
🛛 🔽 Full C Runtime
07M Floating Point CRT (ARM only)
Sandard I/O (STDIO)
Sandard I/O ASCII (STDIOA)
Sandard String Functions - ASCII (con
Green Component Services (COM and DCOM)
😑 🧰 Component Object Model
HIMINIMAL COM (No OLE Support)
🗄 🔲 Exchange Client
Lightweight Directory Access Protocol (LI
🕀 🛅 Location
🕀 🦳 Message Queuing (MSMQ)
🖃 🛅 Object Exchange Protocol (OBEX)
OBEX Client
🚽 📝 OBEX Server
Pocket Outlook Object Model (POOM) API
🕀 🫅 SOAP Toolkit
🗄 🚞 Speech Interface



#### 5. Net Component Selection









#### 6. Select the operating system core service components





7. File System Component Selection

- · based on RAM and ROM file system
- · HIVE-based registry of its in ROM, power-down is not lost
- supported BINFS, CD / UDFS File System, ExFAT, FAT file system

🚍 🛅 File Systems and Data Store
- Compression
😟 🚞 Database Support
😟 🚞 File and Database Replication
🛛 🗹 File Cache Manager
😑 🪞 File System - Internal (Choose 1)
- 🧭 RAM and ROM File System
🔍 🔘 ROM-only File System
😑 🚞 Registry Storage (Choose 1)
- 🧭 Hive-based Registry
RAM-based Registry
🖨 🗹 Storage Manager
🛛 🗹 Binary Rom Image File System
- 🗹 CD/VDFS File System
🛛 🗹 exFAT File System
- 🗹 FAT File System
- 🗹 Partition Driver
🔲 🔳 Release Directory File System
📃 Silent FAT File System VI
🛛 🗹 Storage Manager Control Panel App
🔤 🗹 Transaction-Safe FAT File System
🔲 🔳 System Password

8. English font selection system, default it ok.







📴 Media	~
😑 🛅 Audio Codecs and Renderers	-
G.711 Audio Codec	
GSM 6.10 Audio Codec	
- IMA ADPCM Audio Codec	
MP3 Codec	
MS ADPCM Audio Codec	
- 🗹 Wave/AIFF/au/snd File Parser	
📃 Waveform Audio Renderer	
- 🗹 WMA Codec	
🗄 🚞 Digital Rights Management	
🚊 🪞 DirectShow	
🛛 🗹 ACM Wrapper Filter	
🕀 🗹 DirectShow Core	
🛛 🗹 DirectShow Display	
- 🗹 DirectShow Video Capture	
🛛 🗹 DMO Wrapper Filter	
🕀 🛄 DVD-Video	
DVR Engine	
😑 🚞 Media Formats	
AVI Filter	
MPEG-1 Parser/Splitter	
🔄 🔄 Streaming Media Playback	
😑 📴 Video Codecs and Renderers	
🛛 🗹 DirectShow Video Renderer	
MPEG-1 Video Codec	
MS RLE Video Codec	
🛛 🗹 Video/Image Compression Manage	
WMV/MPEG-4 Video Codec	
🖃 🛄 Windows Media Player	
🕀 🗹 Windows Media Player	
Windows Media Player OCX	
Windows Media Player OCX 7	
🗄 🗹 Windows Media Technologies	v
WMA and MP3 Logal Plathaals	



#### 10. Font support non-English speaking countries International Input Method Manager (IMM) Cocale Services (Choose 1) Locale Specific Support Arabic Chinese (Simplified) East Asian Edit Control East Asian Word Wrap

🖃 🦲 Fonts 😑 📴 SimSun & NSimSun (Choose 1) 🔵 SimSun & NSimSun -- 🔘 SimSun & NSimSun (Subset 2\_20) 🥑 SimSun & NSimSun (Subset 2\_50) 🔘 SimSun & NSimSun (Subset 2\_60) 🔘 SimSun & NSimSun (Subset 2\_70) 🔘 SimSun & NSimSun (Subset 2\_80) 🔘 SimSun & MSimSun (Subset 2\_90) - 🗹 GB18030 Data Converter 표 🔚 Input Method Editor 🔽 Monotype Imaging AC3 Font Compression 🗄 🛅 Chinese (Traditional) 🗄 🛅 English (V.S.) 🗄 🛅 English (Worldwide) 🗄 🦲 French 🗄 🦲 German 🗄 🚞 Hebrew 🛨 🦲 Indic 🗄 🛄 Japanese 🗄 🛄 Korean 🛨 🦲 Thai 📃 Multilingual User Interface (MVI)



#### 11. Select Internet Services

😑 📴 Internet Client Services
😑 🧫 Browser Application
🖨 🤁 Flash Lite
🗹 Adobe Flash Lite ActiveX Control
🖃 🗹 Internet Explorer 6.0 for Windows Embedded CE - Star
표 🗹 Internet Explorer 6.0 Sample Browser
TV-Style Navigation Components
✓ Internet Explorer 6.0 Tiling Engine
🖃 🧰 Internet Explorer 6.0 for Windows Embedded CE Component
Internet Explorer Browser Control Host
🕀 🔳 Internet Explorer HTML/DHTML API
🗊 🔳 Internet Explorer Multiple-Language Base API
Internet Explorer RPC Support
🐨 🗍 Internet Explorer TV-Style Navigation
URL Moniker Services
The Windows Internet Services
XML Data Islands
There are a series and the series and the series and the series and the series of the
Savinting
Traint 5.6
The second secon
T T VDScript 5.0



# 12. Shell and User Interface options





13. General-purpose-driven selection



14. In VS2005 menu, Select Menu "Build"-> "Advanced Build Commands"->"Build and systen"

(If this is the first time to create project, we suggest you to select "Build"-> "Advanced Build Commands" -> " Clean Sysgen")

After compiling, NK.bin has been generated under project directory: "D:\WINCE600\OSDesigns\6410V2\6410V2\RelDir\Samsung\_SMDK6410\_Release".



#### Chapter 5 Burning the Image to Flash

#### 5.1 File introduce

<b>IROM_SD_EI</b>	<b>Boot.nb0</b> : The tools to create SD boot card
Block0.nb0	: Firstly Bootloader
eboot.bin	: Secondly Bootloader, booting NK
NK.bin	: WinCE Image file

#### 5.2 Create SD boot card

(1) Insert the SD card to USB reader under WinXP, and format the SD card to FAT32 format.

(2) Run the **IROM\_Fusing\_Tool.exe tools**, the tools position:\tools\SDboot\IROM\_Fusing\_Tool.exe

SD/MMC Drive  Drive Size Image file to fuse Browse The image file will be fused from to on Drive START

3) burn bootloader

- Click "Browse", add the file IROM\_SD\_EBOOT.nb0, The file position: \tools\SDboot\IROM\_SD\_EBOOT.nb0
- select SD card in **SD/MMC Drive** under tools.
- Click "START"



A IROL_Fusing_Tool	×
SD/MMC Drive Size Drive Size	
d Settings\Administrator\桌面\IROM_SD_EBOOT.nb0 Browse	
The image file will be fused from to on Drive	B
START	

After burning the image successfully, there will be a pop-up windows "Fusing image done", Click "Ok" to finish creating the SD card.

- 4) Copy file
  - Copy block0.nb0 to SD card root folder
  - Copy eboot.bin and NK.bin to SD card root folder

The Image Position: CD:\WinCE6.0\Image

#### 5.3 Burning the image into flash by SD card

- 1) Insert the SD card to the Real6410.
- 2) Set the board for SD boot mode
  - set the digital switch to boot from SD mode as follow:

boot mode / Pin	1	2	3	4	5	6	7	8
SD card boot	OFF							
Nand flash boot mode	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF

3) Connect the development board and PC via serial cable

4) Open the DNW software, and configure it(refer to the <u>Appendix A DNW software</u> <u>configuration</u>)

5) Power on the board, then the DNW will print the message,



Serial Port USB Port Configuration Help
[INFO] FTL_INFO_SECTION_SIZE = 10
[INF0] LOG_SECTION_SIZE = 7
[INFO] FREE_SECTION_START = 426
[INFO] FREE_SECTION_SIZE = 17
[INFU] FREE_LIST_STZE = 3
LINFU] DHIH_SECTION_STHKT = 443
$\begin{bmatrix} INFU \end{bmatrix} DHIH_SECTION_SIZE = 1595$
[INFO] FIL AREA SIANI = 410
IFTI:MSG1 FIL Init [OK]
IFTL:MSG1 BUF Init [OK]
[VFL:INF] Init VFL (27-JULY-2009) : V1.00
[VFL:INF] CPUID(0x36410101)
[FTL:MSG] VFL_Init [OK]
[INFO] ++NAND_GetPlatformInfo
[INFO]NAND_GetPlatformInfo
[FTL:MSG] VFL_Open [OK]
wNUM_BLOCKS : 2048(0x800)
TOC_Read
-TOC_Read
Press [ENIEK] to launch image stored on boot media, or [SPACE] to enter boot
monitor.
nitiating image launch in 3 seconds.

6) Then within 3 second, press "Space" Key on PC keyboard, enter BOOT command line.

m DNV v0.60C - For VinCE [COM1,115200bps][USB:x][ADDR:0x50500000]	
Serial Port USB Port Configuration Help	
Ethernet Boot Loader Configuration:	~
U) IP address: U.U.U.U	
1) SUDNET MASK: 255.255.255.0	
2) DHCP: DISADled	
3) Boot delay: 5 seconds	
4) Reset to factory default configuration	
5) Startup Image: DUWNLUHD NEW	
D) Program UISK IMage INCO SMartHeula Caru: DISADIEU	
7) Frugram 630900 MHC duuress (00.00.00.00.00.00)	
0) KITE GUIFIYUFACIDI. ENHDED 0) Format FIL (Fraco 01) Plocks)	
H) FORMAL FIL (ERASE HII DIUCKS) D) Format HEL (Format FIL + HEL Format)	
C) Format VIL (Format FIL + VIL Format)	
E) Frace Phycical Block 0	
E) Make Initial Rad Block Information (Warning)	
T) MLC Low Jonel test	
D) Download image now	
L) LAUNCH existing Boot Media image	
R) Read Configuration	
S) DOWNLOAD image now(SDMMC card)	
W) Write Configuration Right Now	
·, ···································	
Enter your selection:	
	1



7) input A) B) C) to format the flash.

Please confirm the option 5), 6) is proper set as follow picture



8) Download block0.nb0

• Press "s", it will show as that:

m DNV v0.60C - For VinCE [COM1,115200bps][USB:x][ADDR:0x50500000]	
Serial Port USB Port Configuration Help	
B) Format VFL (Format FIL + VFL Format)	^
C) Format FTL (Erase FTL Area + FTL Format)	
E) Erase Physical Block 0 5) Maka Initial Dad Dlock Information (Namaina)	
F) Make Initial Bau Block Information (Warning) T) MLC Low Jonal tost	
D) Download image now	
L) LAUNCH existing Boot Media image	
R) Read Configuration	
S) DOWNLOAD image now(SDMMC card)	
W) Write Configuration Right Now	
Sustem Poodut	
Prenaring for download	
Please choose the Image on SD.	
Choose Download Image:	
) block0.nb0	
) EBUULBIN	
3) chain.lst	
Enter your selection:	



• Press "0" to download block0.nb0 in to flash.



9) Download eboot.bin

- Reset the board, and press space key to enter the boot command again.
- press "s" -> "1" to download the eboot into flash

10) Download nk.bin

- Reset the board, and press space key to enter the boot command again.
- press "s" -> "2" to download the Nk.bin into flash

11) then set the board boot from Nand flash, and boot it, it will boot into the wince system

• set the digital switch to boot from Nand boot mode as follow:

boot mode / Pin	1	2	3	4	5	6	7	8
SD card boot	OFF							
Nand flash boot	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF

Note: The board can support the USB and Net update mode, if you need the method, please contact us.

#### 5.4 configure the LCD type for the board

The board can support more LCD type, you can choose it by boot command.

• Boot the board, and press space key to enter the boot command again,



DRW v0.60C - For WinCE [COM1, 115200bps] [USB:x] [ADDR:0xc000000]	
Serial Port USB Port Configuration Help	
	^
0) IP address: 192.168.1.120	
1) Subnet mask: 255.255.255.0	
2) DHCP: Disabled	
3) Boot delay: 5 seconds	
4) Reset to factory default configuration	
5) Startup image: LAUNCH EXISTING	
6) Program disk image into SmartMedia card: Enabled	
7) Program DM9000 MAC address (12:34:54:AB:DE:BC)	
8) KITL Configuration: DISABLED	
A) Format FIL (Erase All Blocks)	
B) Format VFL (Format FIL + VFL Format)	
C) Format FTL (Erase FTL Area + FTL Format)	
E) Erase Physical Block Ø	
F) Make Initial Bad Block Information (Warning)	
T) MLC Low level test	
D) Download image now(DM9000)	
L) LAUNCH existing Boot Media image	
R) Read Configuration	
U) DOWNLOAD image now(USB)	
W) Write Configuration Right Now	
G) LUD type select	
Enter your selection:	~

Press "G", it will show as that

🔤 DRV v0.60C - For VinCE [COM1,115200bps][USB:x][ADDR:0xc000000]
Serial Port USB Port Configuration Help
5) Startup image: LAUNCH EXISTING
6) Program disk image into SmartMedia card: Enabled
7) Program DM9000 MAC address (12:34:54:AB:DE:BC)
8) KITL Configuration: DISABLED
A) Format FIL (Erase All Blocks)
B) Format VFL (Format FIL + VFL Format)
C) Format FTL (Erase FTL Area + FTL Format)
E) Erase Physical Block Ø
F) Make Initial Bad Block Information (Warning)
T) MLC Low level test
D) Download image now(DM9000)
L) LAUNCH existing Boot Media image
R) Read Configuration
U) DOWNLOAD image now(USB)
W) Write Configuration Right Now
G) LCD type select
Inter your selection: g
1. WANAIN WACH143
2. Hallistar hsvoso
D. INNULUA HIUYUVOJV.I
Enter LCD Salast:



• Then choose the LCD type you used, such as press "1" to choose the 4.3"LCD.Then press "enter" and "W" to save the configure, reset the board again, you will see the LCD is ok.

4.3"LCD ---- 1. WanXin WXCAT43 5"LCD----- --2. HannStar HSD050 7"LCD------3.INNOLUX AT070V83V.1 VGA ------4 VGA Moudle



# **Chapter 6 Wince application program test**

#### 6.1 TouchScreen Calibration

Test Program positon: My Device-> control panel -> Stylus Enter My Device-> control panel, and click Stylus to run the Stylus properties tools, and click calibration to Recalibrate it.

#### 6.2 ResidentFlash Flash use method

The board have two ResidentFlash, you can enter the MyDevice to use it, these size is 31.7MB and 763.9MB.

文件(E) 编	辑( <u>E</u> ) 查看(	<u>⊻) 转到(G</u> )				<b>N?</b>	×
3 <b>4</b>	🦻 🗙 🖸	-					
$\bigcirc$		9	9	1 🗁	D		
Application Data	My Documents	RocketMory	PocketMory:	<mark>l</mark> Program Files	Temp	)	
$\bigcirc$	2	P					
Windows	网络	控制面板					
🐉 🔋 我的词	设备			S-4	▶ 10:02	2	-

#### 6.3 use ActiveSync software

ActiveSync is a software to sysc the data between PC to the board. 1) install ActiveSync

 Click the ActiveSync software in the /tools/ActiveSync/ActiveSync.exe, then click Next -Next to install it.

2) Connect the USB data cable with the development board and the PC, after power on enters the system, WinCE will create synchronous connection automatically. If you don't install the ActiveSync driver, you can find it in the folder: / tools/ ActiveSync/usb driver, When find the new device, install it.

3) Then you will find the My device in the computer



#### 硬盘

SYS (C:)	į	DATA (	D:)		WORK	(E:)		
有可移动存储的设备	<b>a</b>							
DVD Wata	₿ (F:)	Cruzer	(H:)					
<b>其也</b>								
Enter it, you will	I find that:							
<b>位置</b> 後期後期	Application Data Doc	My PocketMory uments	D PocketMoryl	Program Files	D Temp	Vindows	<b>)</b> 网络	控制面板

#### 6.4 Record Function Test

There is tha MIC in the board, We can use it for Recording Test. Test Program positon: **My Device-> Windows -> Record.exe** This program was provide by Samsung, so we don't provide the program. Double-click the **Record.exe**,

Then click follow button to begin Recording.



Then click follow button to stop Recording:



You can find the Record0.wav file in the program as follow:

<b>Wind</b>	WW
Eile Help Record0.wav	×
flick it for start the record	
Click it for stop the record	
Click it for play the record	
● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	01 🚔 🔁

This file Record0.wav will be saved in the folder: **My Device** Then we can click the follow button to play it:



**Core** 

#### 6.5 Ethernet port test

Test Program positon: My Device-> control panel-> Network and Dial-up Co....



Doble click it, and it will show:





The device "DM9CE1" is the net device, double cilck it and configure it as PC. Then you can surf the net by IE explore.

#### 6.6 WIFI test

The WIFI module is the option module, when you buy it, you can test it as follow: When you boot the board, it will show the dialog automatic, then you can choose the configure WIFI param, and input the password, it will link the net automatic by WIFI.



#### 6.7 GPS module test

The GPS module is the option module, when you buy it, you can test it as follow: Link the GPS antenna to GPS module, and put the antenna on the place that can find the positioning signal.

Test Program positon: My Device-> Windows-> GPScmd.exe



# This test software is the third-party software, the company did not source code

Click the GPScmd.exe, then it will show:

Com Port: COM3:	×	
Baudrate: 9600	×	
Scan	Close GPS	
Power Save	WAAS/EGNOS	
Hot Start	Cold Start	
Warm Start		
\$GPGSA,A,1,,,,,,,,,,, \$GPGSV,3,3,12,16,0 \$GPRMC,000936.070 \$GPGGA.000937.05 Setup GPS Status	,,, )0,000,,28,00,0; ⊃,∨,0000.0000,1 9.0000.0000.N,1 ♥	
Tools		×

The GPS module was linked by COM3, and the baud rate is 9600, So choose it:

- Com Port: COM3
- Baudrate: 9600

And then click the cold start to run it, please wait some times, it will show:

Date : 2008/09/28 Time : 08:11:02	
Longitude: E 0' 0'0.0" Latitude: N 0' 0'0.0" Dop:0.0	
Acquiring: No Fix 20 10 31 27 19 29 4 11 16 28 26 15	
Direction:NE 0 Speed: 0 km/hr Setup GPS Status	
Tools	×

#### 6.7 Camera Test

This test software is the third-party software, the company did not source code.



And the software was base on the DirectDraw, you should add the DirectDraw to project when you build the system.

Insert the Camera module into the board, note the Pin Order and the camera in the board will face the LCD direction.

# Test Program positon: My Device-> Windows->CameraDshowApp.exe

Run the **CameraDshowApp.exe**, and it will show :

Driver       AM1:       Image: Still Image: Sink Ima	apture Parameters		₩?	×
Still       \release \test \ddots d.jpg <t< th=""><th>river CAM1:</th><th></th><th></th><th></th></t<>	river CAM1:			
Stream       \release\test%d.asf       程序       启动       收藏夹         ✓ VideoCapture       ✓ AudioCapture       ● </td <td>till /release/test%d.jpg</td> <td>DD</td> <td>Ø</td> <td>^</td>	till /release/test%d.jpg	DD	Ø	^
✓ VideoCapture       ✓ AudioCapture         ✓ Video Encoder       ✓ Audio Encoder         ✓ Still image sink       Intelliconnect         ✓ File Mux       SimulControl	tream \release\test%d.asf	程序 启动	收藏夹	
File Mux SimulControl	VideoCapture AudioCapture Video Encoder Audio Encoder Still image sink Intelliconnect	Adobe- CNS1-3 CNS1-UCS	В5рс-Н 2	
VideoRenderer CameraDs ceconfig CNS-EUC-H	File Mux SimulControl VideoRenderer OK	CameraDs ceconfig	CNS-EUC-H	~

# Choose **CAM1**, and then click **OK**, it will show:





#### 6.7 GSM phone Test

CeCom	2. input phone number
打开串口 清空接收区	支送AT 前令 AT
	电话&短信
1. Open the serial)	拨打电话
	接听电话 hello
3. call it	发送短信
	查看短信
	册除短信
Maria I and a state	Index
🐉 👫 CeCom	🙀 😓 🕹 📾 🖓

#### 6.7 TV-OUT Test

The board have two interface: S interface and AV interface, please link one to your TV.

# Test Program positon: My Device-> Windows->tvout\_test\_Swith.exe Run the tvout\_test\_Swith.exe.



And it will show the system in TV, but note that it can't be exit from the TV display except reboot the board.



#### Chapter 7 WinCE Memory mapping table

#### 7.1 Virtual memory mapping table

SMDK6410 virtual address to physical address mapping table as shown below:

From this table, we can know the memory, net, other cs, IO mapping address, the format for the table is :

virtual address	physical address	Size	
g_oalAddressTable			
-			
; mDDR 128 MB	0000000 0**5000000	64	. CA MP DDAM
I SMDV6410 3	75D	DT	; OT ND DRAM
DCD 0x80	0000000, 0x60000000,	64	; 64 MB DRAM
DCD 0x80	0000000, 0x50000000,	256	; 256 MB DRAM
			256IB memory
DCD 0x90	000000, 0x7000000,	4	; SROM SFR
:DCD Ox9	90100000. 0x70100000.	1	: OneNAND SFR
: DCD Ox9	90200000, 0x70200000,	1	: NECON SER
DCD OX9	0300000 0x70300000	1	: CECON SER
DCD Ox90	400000, 0x71000000,	4	: TZICO
:DCD Ox9	90500000, 0x71100000,	1	: TZIC1
: DCD Ox9	90600000, 0x71200000,	1	: INTCO
:DCD Ox9	90700000, 0x71300000	1	: INTC1
DCD (	x9080000, 0x7200000	1	: FING-3DSE SER
:DCD Ox9	90800000 0x73000000	2	: ETB Memory
DCD DX9	0900000 0x73100000	1	: FTB Registers
DCD Ox90	A00000, 0x74000000,	2	: Indirect Host I/F
:DCD Ox9	0800000 0x74100000	1	: Direct Host I/F(MODEM)
DCD 0x90	C00000. 0x74300000.	2	: USB Host
:DCD Ox9	0000000 0x74400000	1	: MDP T/F
DCD Ox90	E00000, 0x75000000,	2	: DMAO
DCD DX9	0F00000, 0x75100000,	1	: DMA1
DCD 0x91	1000000, 0x76100000,	3	: 2D Granhics
:DCD Ox9	91100000, 0x76200000,	1	: TV Encoder
DCD OX9	91200000, 0x76300000,	1	: TV Scaler
DCD 0x91	1300000, 0x77000000,	3	: Post Processor
:DCD Ox9	91400000 0x77100000	1	: LCD Controller
: DCD Ox9	91500000 0x77200000	1	: Rotator
DCD 0x91	1600000, 0x78000000,	1	: Camera I/F
DCD 0x91	1700000, 0x78800000,	1	: JPEG
DCD 0x91	1800000, 0x70000000,	5	IISB OTG LINK
:DCD Ox9	91900000 0x7C100000	1	: USB OTG PHY SER
DCD 0x91	1A00000, 0x7C200000,	1	: SD-MMC Controller 0
DCD 0x91	1800000, 0x7C300000,	1	: SD-MMC Controller 1
:DCD Ox9	9100000, 0x70400000	1	: SD-MMC Controller 2
DCD Over	1D00000, 0x7D000000	13	: D&I (Security Subsystem Config) SFR
:DCD Ove	91E00000, 0x7D100000	1	: AES RX
:DCD Ox9	91F00000, 0x7D200000	1	: DES RX
:DCD Ox9	2000000 0x7D300000	1	: HASH(SHA/PRNG) RX



;DCD	0x92100000, 0	0x7D400000,	1	; RX_FIFO SFR
;DCD	0x92200000, (	0x7D500000,	1	; AES_TX
;DCD	0x92300000, 0	0x7D600000,	1	; DES_TX
;DCD	0x92400000, 0	0x7D700000,	1	; HASH (SHA/PRNG) TX
;DCD	0x92500000, 0	0x7D800000,	1	; TX FIFO SFR
;DCD	0x92600000, 0	0x7D900000,	1	; RX_FIFO
;DCD	0x92700000, 0	0x7DA00000,	1	; TX_FIFO
;DCD	0x92800000, 0	0x7DB00000,	1	; SDMAO
;DCD	0x92900000, 0	0x7DC00000,	1	; SDMA1
DCD	0x92A00000, 0x	x7E000000,	1	; DMC, MFC, WDT, RTC, HSI TX/RX, Keypad,
DCD	0x92B00000, 0x	x7F000000,	1	; TZPC, AC97, I2S, I2C, UART, PWM, IrDA,
DCD	0x93000000, 0x	x00000000,	16	; 32 MB SROM(SRAM/ROM) BANK O
DCD	0x93000000, 0: mCS5, mCS0	x00000000,	16	; 32 MB SROM(SRAM/ROM) BANK O DM9000
DCD ; nCS1- DCD	0x93000000, 0; -nCS5, nCS0 0x94000000, 0;	x00000000, x18000000, 3	16 32	; 32 MB SROM(SRAM/ROM) BANK O DM9000 ; 32 MB SROM(SRAM/ROM) BANK 1 = DM9000
DCD ; nCS1- DCD ; DCD	0x93000000, 0) nCS5, nCS0 0x94000000, 0) 0x96000000, 0	x00000000, x18000000, 3 0x20000000,	16 32 32	; 32 MB SROM(SRAM/ROM) BANK 0 DM9000 ; 32 MB SROM(SRAM/ROM) BANK 1 = DM9000 ; 32 MB SROM(SRAM/ROM) BANK 2
DCD ; nCS1- DCD ; DCD ; DCD	0x93000000, 0x <u>nCS5, nCS0</u> 0x94000000, 0x 0x96000000, 0x 0x98000000, 0x	x00000000, 3 x18000000, 3 Dx20000000, Dx28000000,	16 32 32 32	; 32 MB SROM(SRAM/ROM) BANK 0 DM9000 ; 32 MB SROM(SRAM/ROM) BANK 1 = DM9000 ; 32 MB SROM(SRAM/ROM) BANK 2 ; 32 MB SROM(SRAM/ROM) BANK 3
DCD ; nCS1- DCD ; DCD ; DCD ; DCD ; DCD	0x93000000, 0x nCS5, nCS0 0x94000000, 0x 0x96000000, 0x 0x98000000, 0x 0x98000000, 0x 0x98000000, 0x	x00000000, 3 x18000000, 3 Dx20000000, Dx28000000, Dx30000000,	16 32 32 32 32	<pre>; 32 MB SROM(SRAM/ROM) BANK 0 DM9000 ; 32 MB SROM(SRAM/ROM) BANK 1 = DM9000 ; 32 MB SROM(SRAM/ROM) BANK 2 ; 32 MB SROM(SRAM/ROM) BANK 3 ; 32 MB SROM(SRAM/ROM) BANK 4</pre>
DCD ; nCS1- DCD ; DCD ; DCD ; DCD ; DCD ; DCD	0x93000000, 0x nCS5, nCS0 0x94000000, 0x 0x96000000, 0x 0x98000000, 0x 0x98000000, 0x 0x9A000000, 0x 0x9C000000, 0x	x180000000, 3 x18000000, 3 Dx20000000, Dx28000000, Dx30000000, Dx38000000,	16 32 32 32 32 32 32	<pre>; 32 MB SROM(SRAM/ROM) BANK 0 DM9000 ; 32 MB SROM(SRAM/ROM) BANK 1 = DM9000 ; 32 MB SROM(SRAM/ROM) BANK 2 ; 32 MB SROM(SRAM/ROM) BANK 3 ; 32 MB SROM(SRAM/ROM) BANK 4 ; 32 MB SROM(SRAM/ROM) BANK 5</pre>
DCD ; nCS1- DCD ; DCD ; DCD ; DCD ; DCD ; DCD ; DCD	0x93000000, 0x mCS5, mCS0 0x94000000, 0x 0x96000000, 0x 0x98000000, 0x 0x98000000, 0x 0x9C000000, 0x 0x9E000000, 0x	x18000000, 3 x18000000, 3 Dx20000000, Dx28000000, Dx38000000, Dx38000000,	16 32 32 32 32 32 32 32	; 32 MB SROM(SRAM/ROM) BANK 0 DM9000 ; 32 MB SROM(SRAM/ROM) BANK 1 = DM9000 ; 32 MB SROM(SRAM/ROM) BANK 2 ; 32 MB SROM(SRAM/ROM) BANK 3 ; 32 MB SROM(SRAM/ROM) BANK 4 ; 32 MB SROM(SRAM/ROM) BANK 5 ; 32 MB SROM(SRAM/ROM) BANK 0

This table position:

X:\WINCE600\PLATFORM\SMDK6410\SRC\INC\oemaddrtab\_cfg.inc

# 7.2 WINCE distributed memory

4.4	H	La V	1922
Region	Address	Size (B)	Details
AUD_DMA	80002000	2000	Audio DEA
TEMPS	80010000	10000	TELP data
ARGS	80020800	800	boot param
DBGSER_DMA	80022000	2000	Debug serial DMA
SER_DMA	80024000	2000	Serial D <b>IA</b>
IR_DMA	80026000	2000	IR DEA
SLEEP	80028000	2000	Sleep data save
EDBG	80030000	20000	Debug using
NK	80100000	128M	NK using
CMM	86500000	300000	CIII Using
DISPLAY	86800000	0000000	Display using
MFC_JPEG	87400000	0000000	<b>IPEG</b> decode using



# Chapter 8 Export SDK and remote link

#### 8.1 Export the SDK

When you finished to build the your project, you can export the SDK. 1) Click Menu "**Project**" à "Add New SDK..."

911	06 -	Liero	soft	/isual	Studio	ŧ.
Pro	ject	Build	Debug	Target	Tools	Te <u>s</u> t
1	Add ]	New Subp	roject	s <b>t</b> e		
	Add	Existing	Subproj	ject		
	Set 3	Subproje	ct Build	l Order.		
	Add ]	New SDK.	253			
	Add ]	Existing	SDK			
	Add	New Dist	ributed	System <u>I</u>	liagram	25
×	Remo	<u>v</u> e				Del
	Un <u>l</u> o	ad Proje	ct			
	Set	as St <u>a</u> rt	Vp Proje	ect		
c	Prop	erties			Alt	+F7

3) Select and inout the proper item according below picture

General         Install         License Terms         Readme         CPU Families         Development Languages         Additional Folders         Emulation         Product Version:         Major:       0         Company Name:         XXXXXXX         Company Website:         XXXXXXX

4) On below project table there will be a MLCV3 generated





பன் கால். பென் கால்		ч техн	2
<b>4</b>	C·/WINCER	00	
	PLATE	IRM	
		IRABOARD	
		MON	
		VTCEEMIL ATO	R
	÷ 🔁 H43	SAMPLE	200
	- 13 MA	INSTONETT	
		DK6410	
	T 🖶 🥅	Parameter	Files
	- P	samples	0.0220240
		src	
	⊕ 🛐 SM	DK6410 5	
	🗄 - 🛐 SMD	OK6410 SLC	
	PRIVAT	CE _	
÷	D PUBLIC	2	
- 🕁	Favorites		
÷ 🗎	Parameter	• Files	
9 1	SDKs		
	MLCV3		
ė- 🖻	Subprojec	ts	
÷	🛅 Tencer	at (C:/WINC	E600/3rdps
<			
■	🕘 Cat	透 类视图	资

5) Compile the SDK

Click "build"-> "Build all SDKs...", Then wait a moment, i will create the SDK in the position:



Notice: the MLCV3 is the project name.



#### 8.2 VS2005 Remote to the board

We use the ActiveSync to link the board to the PC.

We need to create a folder "armv4" in the position:

" X:\Program Files\Common Files\Microsoft Shared\Windows CE Tools\Platman\target\wce600"

And then copy all the content from armv4i to armv4.

Then Click the "Target-> Remote Tools -> Zoom" in the VS2005 menu, it will show as follow:

Click "Cancel", then configure the link as AcitveSYNC mode, refer the follow pic:





Vindows CE Platform Manager Confi	guration
Select a platform or device to	<u>A</u> dd Device Delete
	About
Device Properties Device	

Device		
Default Device		
Select a transport and a startup verify that you can establish a c device with the selected transpor	server. Choose onnection to y t and startup	Test to our target server
Iranspor		
Microsoft ActiveSync	-	Con <u>f</u> igure
<u>S</u> tartup		
Microsoft ActiveSync	-	Configure
<u>OK</u> Cance	1 <u>T</u> est	
		*:

Then CLick "OK" to finished configure, click "Connection -> connect to Device".



Then it will shows as that:









# Appendix A DNW software configuration

1.Find DNW software under directory CD:\Tools\DNW.exe. Double-click to open it:

v0.49 [COM:x][U58:x]	X
t USB Port Configuration Help	
	*
	w.

2. Click "Configuration -> Options", it will open the "UART/USB Options" dialog.
choose '115200' in 'Baud Rate'

• choose 'COM1' in 'COM Port '(the COM1 means the serial number in PC) click 'OK' to finish the DNW configuration:

laud F	Rate -	-COM Port-	ОК
115	200	€ COM 1	Cance
576	00	C COM 2	
384	00	C COM 3	
192	00	C COM 4	
144	00		
0.00	0		

3. Then Click 'Serial Port->connect' to enable the DNW serial link.