



APP NOTE 20070209
RT73 802.11B/G COMPATIBLE MINI WIRELESS LAN USB DRIVER FOR GX-LINUX

Files Needed for this Task

rt73-cvx-2007011723.tar.gz -- the Wi-Fi driver code source file

Assumptions

- Must have the GX-Linux source tree untarred in a user directory.
- Must have an i.MX21 ADS / ADSE / LiteKit board.
- Must have an RT73 802.11 compatible USB device (note: Xterasys XN-3135G 802.11b/g mini wireless LAN in a USB2.0 adapter makes a nice choice; as of 2/2007 cost for this device at Newegg.com was \$17.99.
- Must have an 802.11b/g wireless router setup for open or encrypted connection.
- Must have a Linux hosted Microcross GNU X-Tools ARM Linux toolkit installed.

Make / Install Wi-Fi Driver for Xterasys XN-3135G

Note: Basic build instructions for the GX-Linux BSP are the same as printed in the user guide.

Copy the tar file (rt73-cvx-2007011723.tar.gz) into a temporary user directory and start a Bash / xterm shell and issue commands:

```
$ tar xzf rt73-cvx-2007011723.tar.gz
$ cd rt73-cvx-2007011723/Module
$ make ARCH=arm CROSS_COMPILE=arm-linux- \
  KERNDIR=<GX-Linux dir>/linux arm
$ mkdir -p <GX-Linux dir>/rootfs/etc/Wireless
$ mkdir -p <GX-Linux dir>/rootfs/etc/Wireless/RT73STA
```

Edit `rt73sta.dat` file, which is located in the module directory, to set the SSID, keys, etc. (see **Datafile 'rt73sta.dat' Setup Information** and two examples below)

After configuring your `rt73sta.dat` file, perform the next steps.

```
$ dos2unix rt73sta.dat
$ cp rt73sta.dat rt73.bin <GX-Linux dir>/rootfs/etc/Wireless/RT73STA
$ cp rt73.ko <GX-Linux dir>/rootfs/
```

Either setup an NFS mount and startlinux on the target board with this option, or create a root filesystem from rootfs after copying the above files to rootfs.

To use the WI-FI LAN adapter

Startlinux on the target board from a serial console and plug in your RT73 compatible USB device and issue the following commands:

```
$ insmod rt73.ko
$ ifconfig rausb0 <IP address>
```



Now ping this IP address from another networked computer. This process can be automated in Linux after you confirm a successful setup. Most problems we encountered have to do with the proper setup of an `rt73sta.dat` file – study the following information and examples.

Datafile ‘rt73sta.dat’ Setup Information

This is detailed explanation of each parameter for `rt73sta.dat` file.

DESCRIPTION

[parameters] [val] /{range}

CountryRegion	{0~7} :: Set country region 0: 1 ~ 11 ch 1: 1 ~ 13 ch 2: 10, 11 ch 3: 10 ~ 13 ch 4: 14 ch 5: 1 ~ 14 ch 6: 3 ~ 9 ch 7: 5 ~ 13 ch
CountryRegionABand	{0~10} :: Set country region for A band 0: 36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161, 165 ch 1: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 ch 2: 36, 40, 44, 48, 52, 56, 60, 64 ch 3: 52, 56, 60, 64, 149, 153, 157, 161 ch 4: 149, 153, 157, 161, 165 ch 5: 149, 153, 157, 161 ch 6: 36, 40, 44, 48 ch 7: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165 ch 8: 52, 56, 60, 64 ch 9: 34, 38, 42, 46 ch 10: 34, 36, 38, 40, 42, 44, 46, 48, 52, 56, 60, 64 ch
SSID	{0~z, 1~32 ascii characters} :: Set AP SSID
WirelessMode	{0~4} :: Set Wireless Mode 0: 11b/g mixed, 1: 11B only, 2: 11A only 3: 11a/b/g mixed, 4: 11G only
TxRate	{0~12} :: Set TxRate of Infrastructure mode 0: Auto, 1: 1Mbps, 2: 2Mbps,



3: 5.5Mbps,
4: 11Mbps,
5: 6Mbps,
6: 9Mbps,
7: 12Mbps,
8: 18Mbps,
9: 24Mbps,
10: 36Mbps,
11: 48Mbps,
12: 54Mbps

Channel depends on CountryRegion or CountryRegionABand
:: Set Channel

BGProtection {0~2}
:: Set 11B/11G Protection
0: Auto,
1: Always on,
2: Always off

TxPreamble {0~2}
:: Set TxPreamble
0: Preamble Long,
1: Preamble Short,
2: Auto

RTSThreshold {1~2347}
:: Set RTS Threshold

FragThreshold {256~2346}
:: Set Fragment Threshold

TxBurst {0,1}
:: Set TxBurst Enable or Disable
0: Disable,
1: Enable

NetworkType {Infra,Adhoc}
:: Set Network type

AdhocOfdm {0~3}
:: Set Adhoc Wireless Mode
0: WIFI mode(11b rates only),
1: b/g mixed,
2: 11g only,
3: 11a only

AuthMode {OPEN,SHARED,WEPAUTO,WPAPSK,WPA2PSK,WPANONE}
:: Set Authentication Mode

EncryptType {NONE,WEP,TKIP,AES}
:: Set Encryption Type

KeyType {0|1}



0 - Key is in hex
1 - Key is in ASCII

DefaultKeyID {1~4}
:: Set Default Key ID

Key1 {5 ascii characters or 10 hex number or 13 ascii characters or 26 hex numbers}
:: Set Key1 String

Key2 {5 ascii characters or 10 hex number or 13 ascii characters or 26 hex numbers}
:: Set Key2 String

Key3 {5 ascii characters or 10 hex number or 13 ascii characters or 26 hex numbers}
:: Set Key3 String

Key4 {5 ascii characters or 10 hex number or 13 ascii characters or 26 hex numbers}
:: Set Key4 String

WPAPSK {8~63 ascii or 64 hex characters}
:: WPA Pre-Shared Key

PSMode {CAM, MAX_PSP, FAST_PSP}
:: Set Power Saving Mode

IEEE80211H {0,1}
:: Set IEEE80211H Enable or Disable
0: Disable
1: Enable spectrum management
(This field can be enable only in A band)

USAGE_2:

DESCRIPTION

[parameters]	[val] range	explanation
auth	{1~5} 1:OPEN 2: SHARED 3: WPAPSK 4: WPA2PSK 5: WPANONE	Authentication Mode
enc	{1~4} 1:NONE 2: WEP 3: TKIP 4: AES	Encryption Type
wpapsk	{8~64 chars}	WPAPSK/WPA2PSK Password
psm	{0~2} 0:constantly awake mode (CAM) 1:MAX_PSP 2:FAST_PSP	Power Saving Mode



Encrypted State Data File (rt73sta.dat) Example

```
[Default]
CountryRegion=0
CountryRegionABand=7
WirelessMode=0
SSID=default
NetworkType=infra
Channel=0
AuthMode=SHARED
EncrypType=WEP
DefaultKeyID=1
Key1Type=0
Key1Str=78384E3741
Key2Type=0
Key2Str=
Key3Type=0
Key3Str=
Key4Type=0
Key4Str=
WPAPSK=abcdefghijklmnopqrstuvwxy
TxBurst=0
PktAggregate=0
TurboRate=0
WmmCapable=0
AckPolicy=0;0;0;0
BGProtection=0
IEEE80211H=0
TxRate=0
RTSThreshold=2347
FragThreshold=2346
PSMode=CAM
TxPreamble=0
AdhocOfdm=0
FastRoaming=0
RoamThreshold=70
```



Encryption-Free State Data File (rt73sta.dat) Example

```
[Default]
CountryRegion=0
CountryRegionABand=7
WirelessMode=0
SSID=AP350
NetworkType=Infra
Channel=0
AuthMode=OPEN
EncrypType=NONE
DefaultKeyID=1
Key1Type=0
Key1Str=0123456789
Key2Type=0
Key2Str=
Key3Type=0
Key3Str=
Key4Type=0
Key4Str=
WPAPSK=abcdefghijklmnopqrstuvwxy
TxBurst=0
PktAggregate=0
TurboRate=0
WmmCapable=0
AckPolicy=0;0;0;0
BGProtection=0
IEEE80211H=0
TxRate=0
RTSThreshold=2347
FragThreshold=2346
PSMode=CAM
TxPreamble=0
AdhocOfdm=0
FastRoaming=0
RoamThreshold=70
```

----- END -----