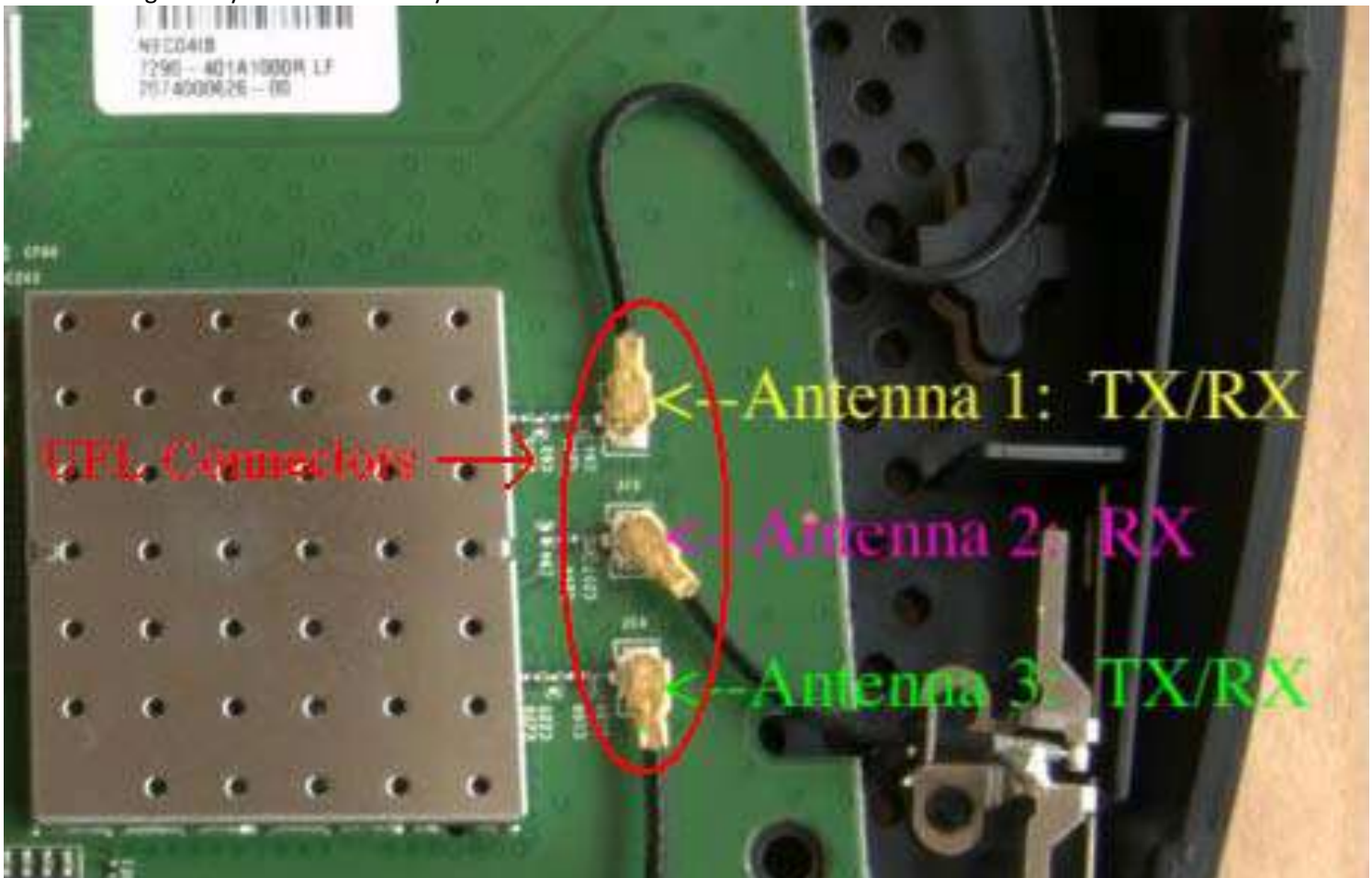


Thank you for purchasing the 3 antenna 7dBi Antenna Mod Kit for your Linksys router. You will see a tremendous improvement in both the signal strength and performance of your wireless network after you complete the steps described in this tutorial. First we will show you how to install the antennas for your router. Next we will teach you how to setup the DD-WRT firmware which will turn your \$60 router into a powerful, highly configurable \$600 router. Finally we will provide you with a tool that will help test the performance of your newly modified Router.



WRT320N/E2000 Antenna Installation Instructions:

1. No soldering required
2. Open the unit. You can use a torque wrench (size T10) or the sharp end of a kitchen knife will work (we don't recommend this).
3. Remove the UFL antenna connectors.
4. Now this part requires some patience.
5. Fitting your new UFL connectors into the little holes can take a little practice, and patience
6. So do this first: Practice removing the original UFL antenna cables and then putting them back on.
7. You will be attaching UFL cables to Antenna 1,2 and Antenna 3.
8. Now you are ready to drill.
9. Detach the stock UFL cables and remove the board from the unit.
10. Mark on the unit with a pen or whatever where you want to drill.
11. First 2 antennas -**Your mark should be just a fraction above center point so the RP-SMA adapter will clear the board.** <<Very important IF YOU DRILL TOO LOW THE BOARD WON'T CLEAR
12. 3rd Antenna – You can drill right on top of the 'Cisco' logo, use pictures for references.
13. Drill a smaller hole first with a smaller bit and then go ahead and finish the drilling with the 1/4" drill bit.
13. You may want to get someone to help you hold the unit in place as you drill. Hold the unit vertically on a solid service before drilling. Take your time. No hurry!



14. After drilling there will be a little plastic left around the inside hole that will need removing. Just use a kitchen knife or other small knife to remove the plastic.

15. Attach the UFL cables and the RP-SMA Plugs and of course the 7dBi Antennas and you are set to go.

Be sure the nut on the RP-SMA plug is nice and tight, otherwise your antennas will flop.

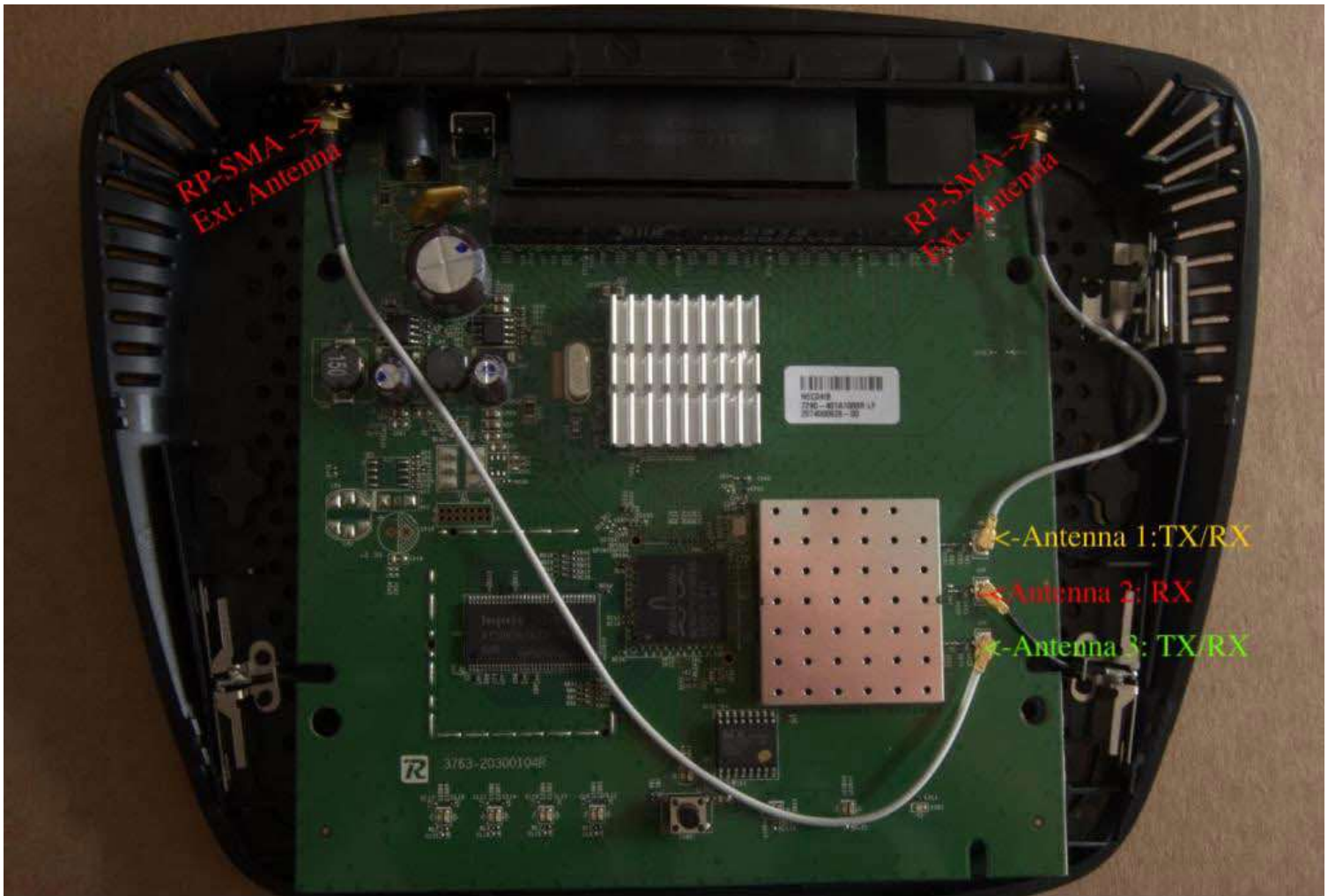
When putting the case back together make sure the wires are secured in place (use clear tape for that) otherwise you can pinch them with screws!

Enjoy

Inside of the E2000/WRT320N: Before the antenna modification



After the modification.





Linksys E2000 | Advanced Wireless-N Router

Third antenna goes here

Selectable Dual-Band (2.4 or 5 GHz)
Gigabit Ethernet (10/100/1000) Ports

FROM THE WORLDWIDE LEADER IN WIRELESS WORKING

Linksys E2000




CISCO

Linksys E2000 | Advanced Wireless-N Router



Selectable Dual Band (2.4 or 5 GHz)
Gigabit Ethernet (10/100/1000) Ports

FROM THE WORLDWIDE LEADER IN WIRELESS NETWORKING

Linksys E2000



DD-WRT:

For optimal performance we recommend replacing the Linksys firmware with DD-WRT. This is a free third party firmware that will help turn your \$60 router into a powerful, highly configurable \$600 router.

WRT 320N - http://www.dd-wrt.com/wiki/index.php/Linksys_WRT320N_v1.0

E2000 - http://www.dd-wrt.com/wiki/index.php/Linksys_E2000

DD-WRT Firmware installed on the Linksys WRT320N

Firmware: DD-WRT v24-sp2 (12/19/09) mini
Time: 22:31:01 up 10 min, load average: 0.00, 0.00, 0.00
WAN IP: 192.168.0.5

dd-wrt.com ... control panel

Setup Wireless Services Security Access Restrictions NAT / QoS Administration Status

Router WAN LAN Wireless Bandwidth Sys-Info

Router Information

Help [more...](#)

System

Router Name	DD-WRT
Router Model	Linksys WRT320N
Firmware Version	DD-WRT v24-sp2 (12/19/09) mini - build 13493M NEWD-2 K2.6 Eko
MAC Address	<u>00:25:9C:48:B2:B1</u>
Host Name	
WAN Domain Name	nc.rr.com
LAN Domain Name	
Current Time	Tue, 22 Dec 2009 22:31:01
Uptime	10 min

CPU

CPU Model	Broadcom BCM4716 chip rev 1
CPU Clock	354 MHz
Load Average	0.00, 0.00, 0.00 <div style="float: right; text-align: center;">0% </div>

Memory

Total Available	27528 kB / 32768 kB	84%
Free	16224 kB / 27528 kB	59%
Used	11304 kB / 27528 kB	41%
Buffers	1392 kB / 11304 kB	12%
Cached	4228 kB / 11304 kB	37%
Active	844 kB / 11304 kB	7%
Inactive	762 kB / 11304 kB	7%

Router Name:

This is the specific name for the router, which you set on the *Setup* tab.

MAC Address:

This is the router's MAC Address, as seen by your ISP.

Firmware Version:

This is the router's current firmware.

Current Time:

This is time received from the ntp server set on the *Setup / Basic Setup* tab.

Uptime:

This is a measure of the time the router has been "up" and running.

Load Average:

This is given as three numbers that represent the system load during the last one, five, and fifteen minute periods.

dd-wrt.com ... control panel

Firmware: DD-WRT v24-sp2 (12/19/09) mini
Time: 23:44:39 up 3 min, load average: 0.02, 0.02, 0.00
WAN IP: 192.168.0.56

Setup **Wireless** Services Security Access Restrictions NAT / QoS Administration Status

Basic Settings Radius Wireless Security MAC Filter Advanced Settings WDS

Advanced Wireless Settings

Advanced Settings

Authentication Type	<input checked="" type="radio"/> Auto <input type="radio"/> Shared Key	(Default: Auto)
Basic Rate	Default	(Default: Default)
MIMO - Transmission Fixed Rate	Auto	(Default: Auto)
Transmission Fixed Rate	Auto	(Default: Auto)
CTS Protection Mode	<input checked="" type="radio"/> Auto <input type="radio"/> Disable	(Default: Auto)
Frame Burst	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Beacon Interval	100	(Default: 100ms, Range: 10 - 65535)
DTIM Interval	1	(Default: 1, Range: 1 - 255)
Fragmentation Threshold	2346	(Default: 2346, Range: 256 - 2346)
RTS Threshold	2347	(Default: 2347, Range: 0 - 2347)
Max Associated Clients	128	(Default: 128, Range: 1 - 256)
AP Isolation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	(Default: Disable)
TX Antenna	Auto	(Default: Auto)
RX Antenna	Auto	(Default: Auto)
Preamble	Long	(Default: Long)
Shortslot Override	Auto	(Default: Auto)
TX Power	185	(Default: 71, Range: 1 - 251mW)
Afterburner	Disable	(Default: Disable)
Bluetooth Coexistence Mode	Disable	(Default: Disable)
Wireless GUI Access	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	(Default: Enable)

Radio Time Restrictions

Radio Scheduling	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	(Default: Disable)
------------------	---	--------------------

AP Isolation
The default value is *Off*. This setting isolates wireless clients so access to and from other wireless clients are stopped.

TX Antenna / RX Antenna
Values are *Auto*, *Left*, *Right*, default value is *Auto*. This is used in conjunction with external antennas to give them optimum performance. On some router models left and right antennas may be reversed depending on you point of view.

Preamble
Values are *Long* and *Short*, default value is *Long*. If your wireless device supports the short preamble and you are having trouble getting it to communicate with other 802.11b devices, make sure that it is set to use the long preamble.

TX Power
This value ranges from 1 - 251 mw, default value is 28mw. A safe increase of up to 70 would be suitable for most users. Higher power settings are not recommended for users due to excess heat generated by the radio chipset, which can affect the life of the router.

Afterburner
The default value is *Off*. This should only be used with WRT54GS Models and only in conjunction with other Linksys "GS" wireless clients that also support Linksys "Speedbooster" technology.

Wireless GUI Access
The default value is *Enabled*. The setting allows access to the routers setup (GUI) from wireless clients. Disable this if you wish to block all wireless clients from accessing the setup pages.

Radio Times Restrictions
The *Radio Times Restriction* facility constitutes a time switch for the radio. By default, the time switch is not active and the WLAN is permanently on. Enable the time switch, if you want to turn off the WLAN during some hours of the day. Hours during which the WLAN is on are marked in green, while red indicates that the radio is off. Clicking on the respective hour toggles between on and off.

WMM Support
Enable support of Wi-Fi Multimedia feature. Configuring QoS options consists of setting parameters on existing queues for different types of wireless traffic. You can configure different minimum and maximum wait times for the transmission of packets in each queue based on the requirements of the media being sent. Queues automatically provide minimum transmission delay for Voice, Video, multimedia, and mission critical applications, and rely on best-effort parameters for traditional IP data.

Advanced Wireless Settings: TX/RX External Antenna adjustments, TX Power adjustments, etc...

WiFi Radar Scanner:

<http://www.metageek.net/products/insider/> (free download)

The WiFi Radar Scanner will show the signal strength of your router. We recommend using it before and after installing the antennas to see the improvement of the signal strength. It can also show you which antenna position and router location can give you the best signal. The closer to -0db the better the signal, and the closer to -100db the worse.

