How to improve the quality of wireless connection? (For 802.11 AC Wireless Adapter: Intel® Dual Band Wireless-AC 3160 / 7260 & Killer Wireless AC 1525)

Prepared by MSI NB FAE Team | Version: 1.5 | Date: 2015/02/02

FAQ No. 01178

Improve the quality of wireless connection

Affected Model: Models with 802.11ac WLAN adapter

Please check the Wireless Standard and the Wireless Band of your router (802.11n 2.4 GHz / 5 GHz, 80211ac 5GHz), see the table below for all suggested items and try to change the advanced setting of the WLAN adapter in the system.

***Note: Some settings on the wireless router may have conflict with the advanced setting of the WLAN adapter, please try different combination of the settings to optimize the wireless connection.**

Intel 802.11 AC WLAN Adapter

Router's Wireless Standard and the Wireless Band	802.11n 2.4GHz	802.11n 5GHz	802.11ac 5GHz
WLAN driver update	Download and install the latest WLAN driver from MSI or Intel official website.		
Router firmware update	Check if there is new firmware update for your router.		
Power saving settings	Set the power plan to "high performance" and makes sure the wireless adapter's power saving mode is set to "maximum performance".		
Advanced settings: U-APSD support	Disabled		
Advanced settings: Transmit Power	5. Highest		
Data encryption protocol of the router	WPA2-AES		
WLAN Channel	According to the "WifiInfoView" program, choose the least overlapping area which can reduce the signal interference.		
Wireless Mode	802.11a/b/g		
Preferred Band	Prefer 2.4GHz band	Prefer 5.2GHz band	Prefer 5.2GHz band
HT Mode	HT Mode	VHT Mode	VHT Mode
802.11n Channel Width for 2.4GHz	20MHz Only or Auto	Auto	Auto
Bluetooth function	If there is no Bluetooth devices need to connect with, then it's recommended to turn OFF the Bluetooth function in SCM control panel.		
Roaming Aggressiveness	1. Lowest		
Ad Hoc QoS Mode	WMM Disabled		

Killer 802.11 AC WLAN Adapter

Router's Wireless Standard and the Wireless Band	802.11n 2.4GHz	802.11n 5GHz	802.11ac 5GHz
WLAN driver update	Download and install the latest WLAN driver from MSI official website.		
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Power saving settings	Set the power plan to "high performance" and makes sure the wireless adapter's power saving mode is set to "maximum performance".		
Data encryption protocol of the router	WPA2-AES		
WLAN Channel	According to the "WifiInfoView" program, choose the least overlapping area which can reduce the signal interference.		
Bluetooth function	If there is no Bluetooth devices need to connect with, then it's recommended to turn OFF the Bluetooth function in SCM control panel.		
Roaming Aggressiveness	1. Lowest		

I. WLAN Adapter Driver & Router Firmware Update

The WLAN adapter driver and the router fimware update may be helpful for impoving the compatibility between the WLAN adapter and some certain router (*more details*), stability and the performance of the Wireless connection.

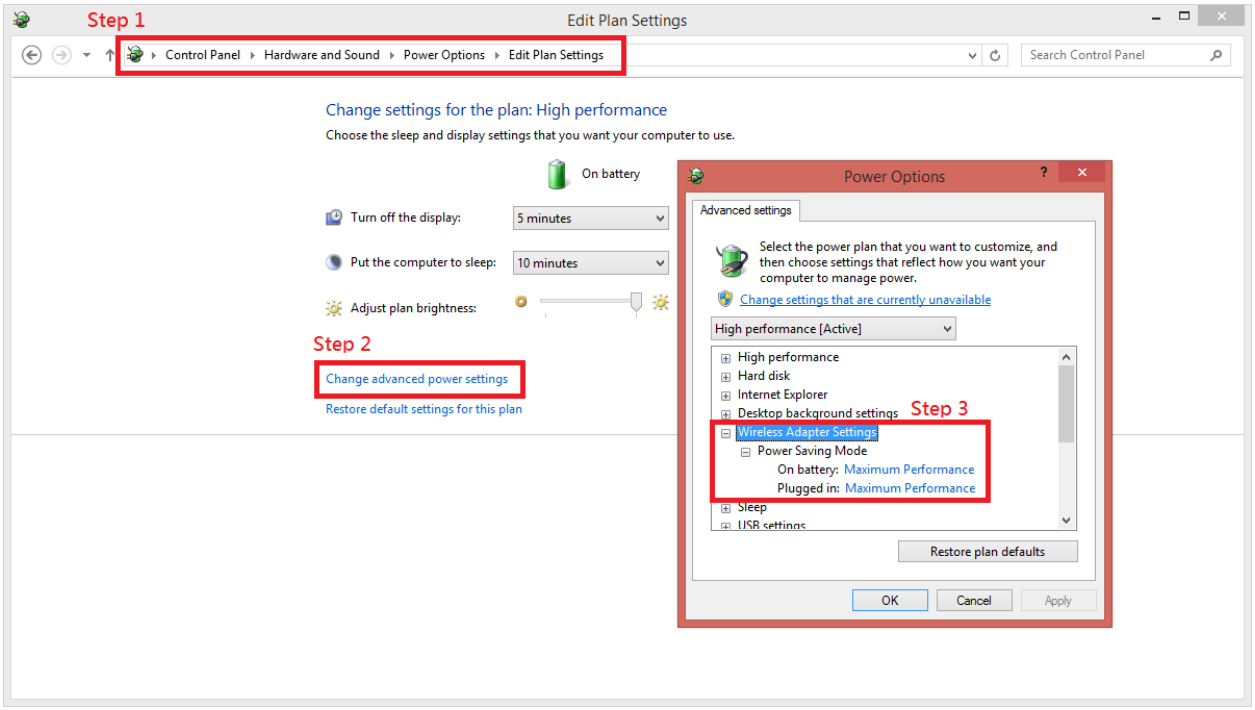
1. Download and install the latest WLAN driver from MSI official website.
   - Intel: https://downloadcenter.intel.com/default.aspx
2. Check if there is new firmware update for your router.

II. Disable the Power Saving Functions

To turn off the power saving related functions can prevant unexpected disconnecting, sudden connection speed drops issues and keep the WLAN adapter working at its maximum performance.

1. Set the power saving settings:

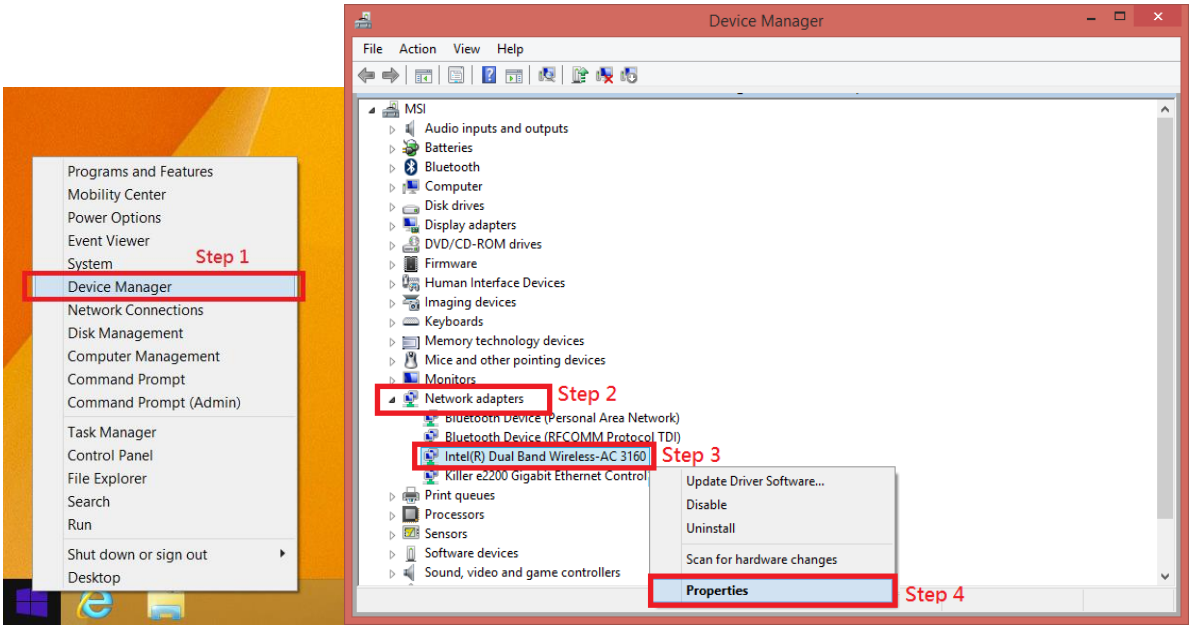
   Go to “Control Panel” >> “Hardware and Sound” >> “Power Options” >> Set the “High performance” and apply to default settings. (Check the “Change plan settings”>> “Change advanced power settings”>> Wireless adapter settings>> Power Saving Mode and make sure both “On battery” and “Plugged in” are set to “Maximum Performance”.)



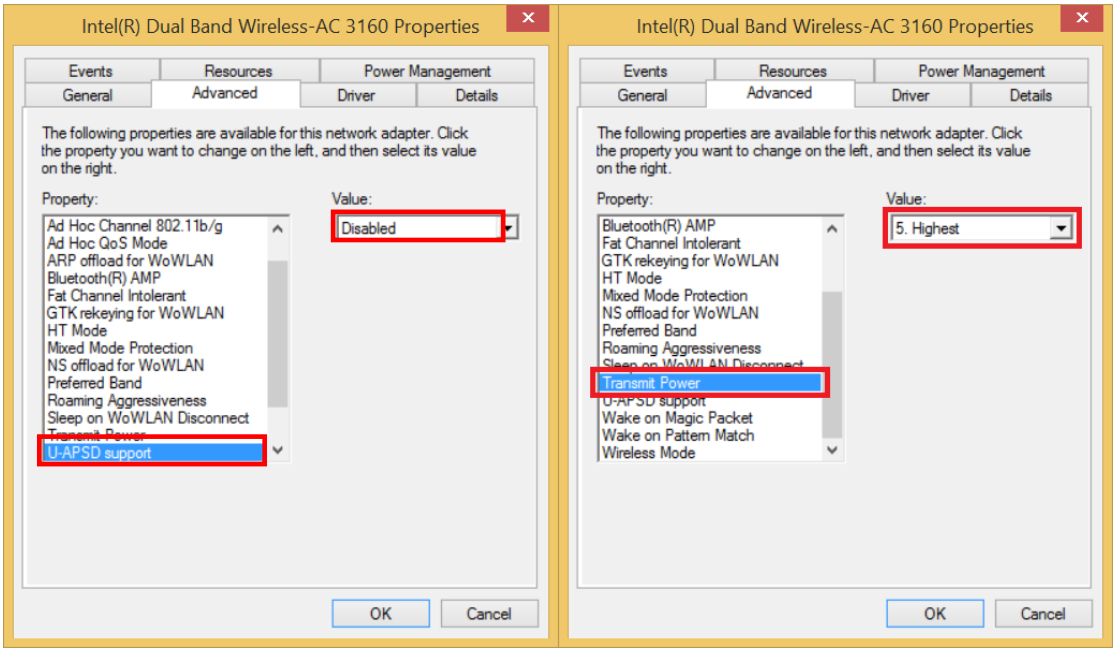
2. Set the advanced settings of WLAN adapter:

Intel 802.11 AC WLAN Adapter

Right click on Windows icon and choose “Device Manager” >> “Network adapters” >> “Intel® Dual Band Wireless-AC 7260 / AC 3160”, and right-click and select “Properties”.

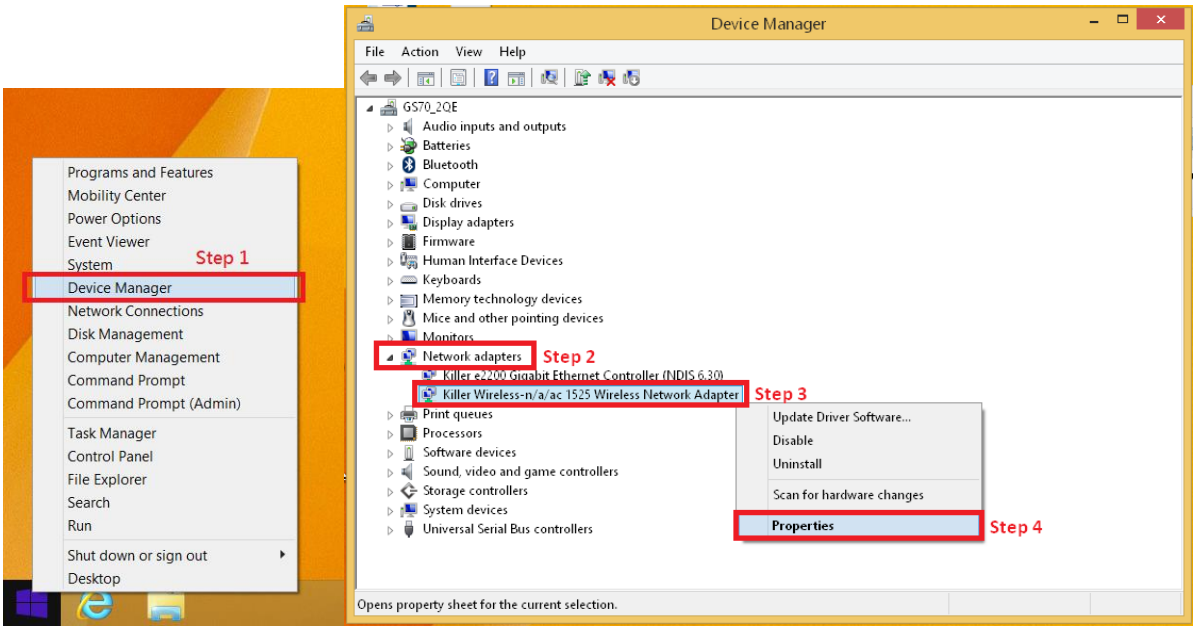


- Select “Advanced” page to set the value of “U-APSD support” to “Disabled”. *(Find more details about U-APSD here)*
- Check the value of “Transmit Power” and make sure it’s set to “5. Highest”.



Killer 802.11 AC WLAN Adapter

Right click on Windows icon and choose “Device Manager” >> “Network adapters” >> “Killer Wireless-n/a/ac 1525 Wireless Network Adapter”, and right-click and select “Properties”.

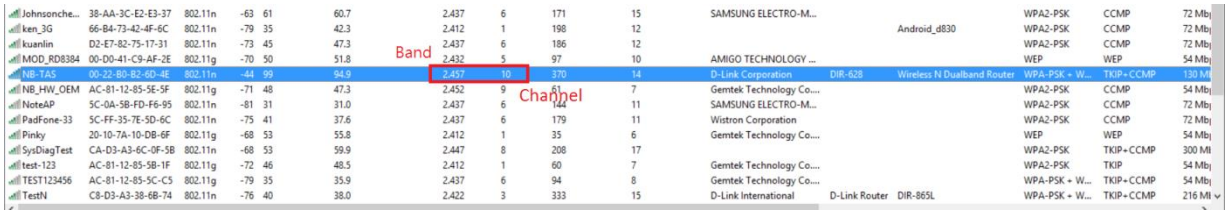


III. Optimize the Wireless Network

Find the optimized wireless connection settings between the WLAN adapter and the router. By choosing the settings which suits the network environment and the router, you can have a better connection quality and more stable connection.

- MSI recommands 5GHz channel with 5GHz router to have a better wireless connection performance. *(Find more details about improving 802.11n connectivity here)*
- Setup WPA2-AES encryption for your router. (*Find more details about WPA2-AES encryption here*)

For example, I’m using a GE60 2PE (with Intel AC 3160 WLAN) to connect with a 802.11b/g/n router (supports both 2.4GHz and 5.2GHz) and by using the “WifiInfoView” program, it shows the wireless connection enviornment around (It shows the band and the channel every routers/wireless devices are using).



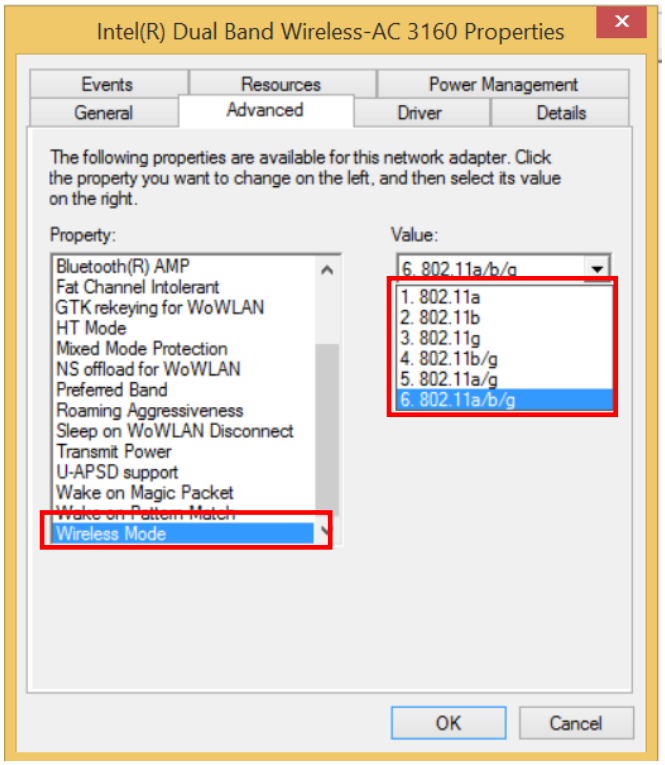
Choose and set the band and the channel for the wireless connection for your router and the WLAN adapter. Choose 2.4GHz (Choose the 5.2GHz band under normal condition, we choose 2.4GHz

band since my mobile phone, tablet and other devices which only support the 2.4GHz band) and the channel 11. (According to the wireless connection environment around, we choose the channel 11 because it has the least overlapping area which can reduce the signal interference)

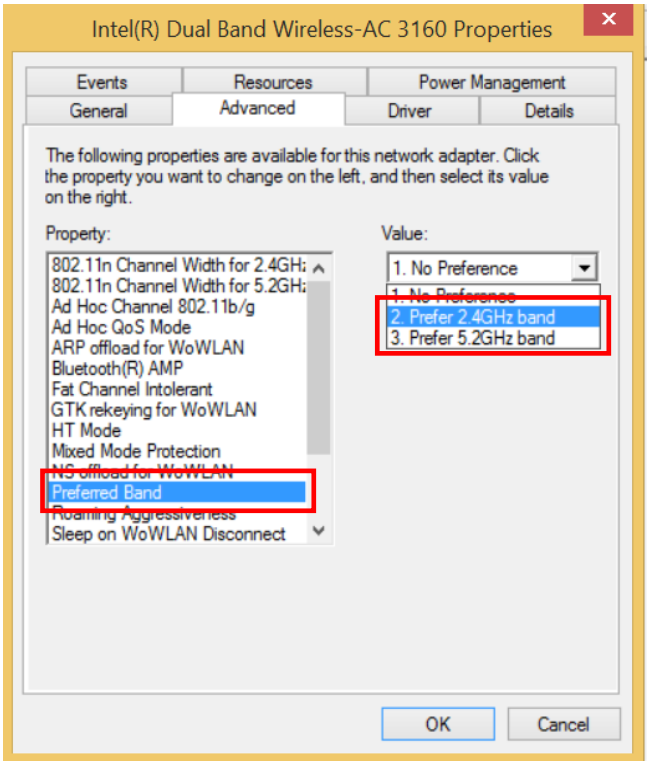
PS: Despite the 2.4GHz band has better penetration capabilities, you should choose the optimized setting for you wireless connection environment. (If there are walls or other solid objects blocking between the router and the notebook, using the 2.4GHz can be a better choice.)

Next, change the WLAN adapter's advanced settings in order to match the settings with the router. ***(Only for Intel 802.11 AC WLAN Adapter)***

- *Set the "Wireless Mode" to "802.11 a/b/g". (Choose the wireless mode according to the support mode of your router)*

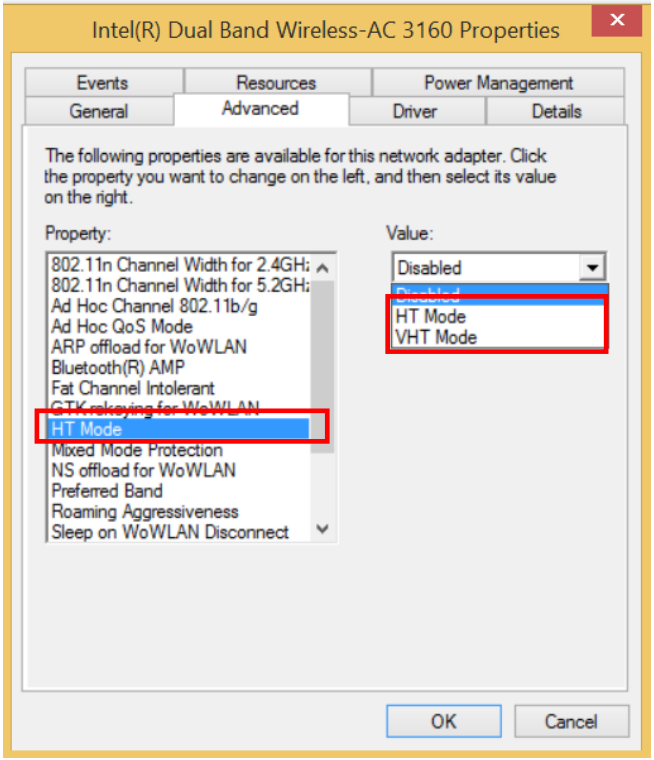


- *Set the "Preferred Band" to "Prefer 2.4GHz band".*



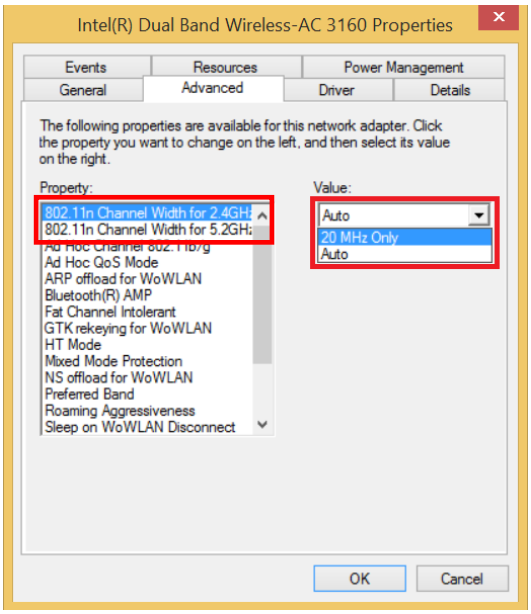
- *Set the "HT Mode" to "HT Mode" for 802.11n compatibility.*

  (VHT Mode is for 802.11ac compatibility)



- *Set the "802.11n Channel Width for 2.4GHz" to limited "20MHz".*

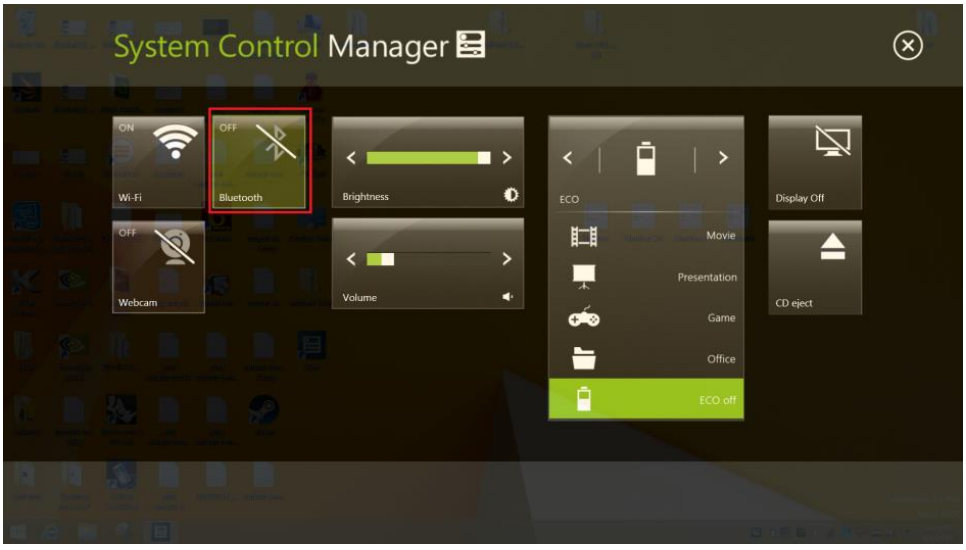
  PS: 20MHz has smaller bandwidth than 40MHz, but it has better penetration capabilities which improves the connection signal.



IV. Other WLAN Adapter Settings

Furthermore, if there is no Bluetooth devices need to connect with, then it's recommended to turn OFF the Bluetooth function in SCM control panel. The wireless and bluetooth combo card share the same bandwidth and the antenna, so by turning off the bluetooth function can let the wireless connection has the entire usage of bandwidth and the antenna. if choosing 2.4GHz band, then turnning off the Bluetooth can also decrease the signal interference since Bluetooth devices use the same band.

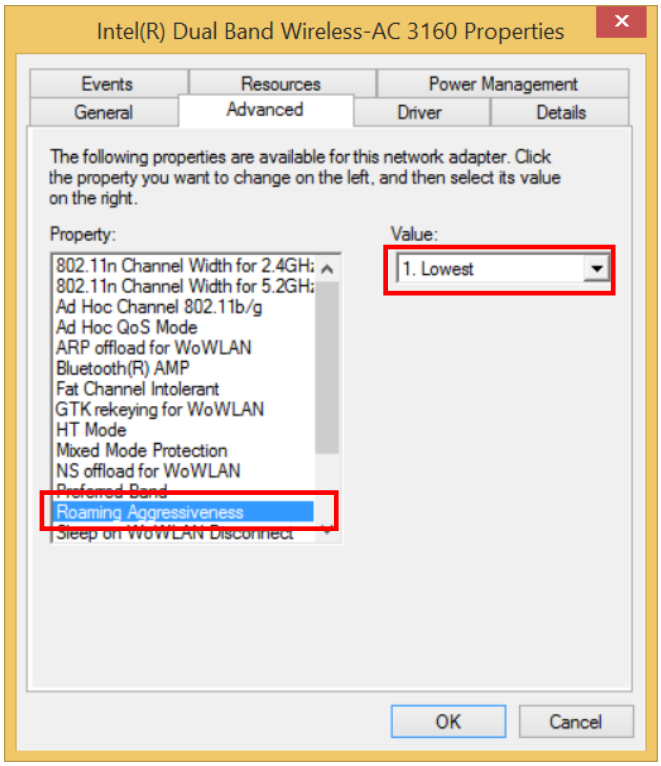
PS: Except the Bluetooth devices, a working microwave will cause the signal interference of the wireless connection (microwave is also also using 2.45GHz band). Thus, to keep the microware away from the router and the notebook can give you a better connection quality.



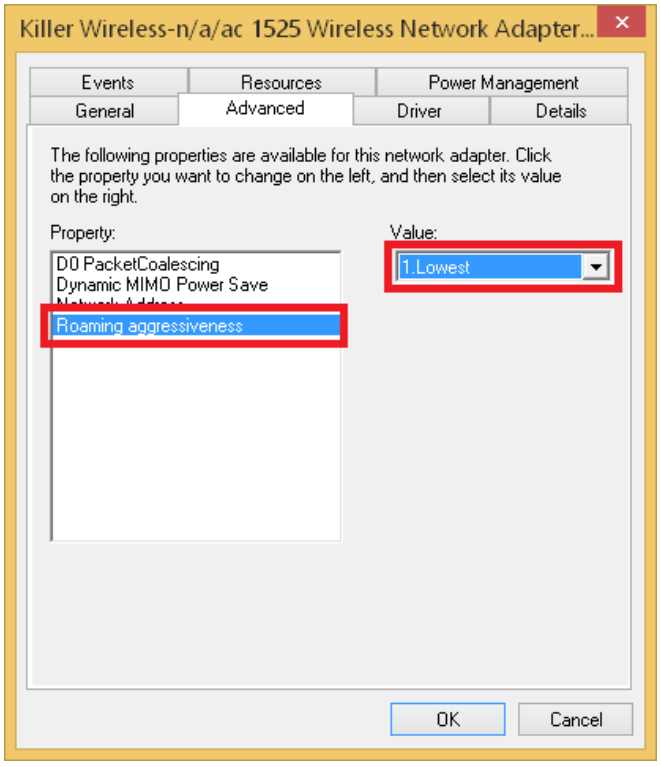
Lastly, set up the properties below can improve the quality of the wireless connection.

- Set the value of “Roaming Aggressiveness” to “Lowest “.

Intel 802.11 AC WLAN Adapter



Killer 802.11 AC WLAN Adapter



- Set the value of “Ad Hoc QoS Mode” to “WMM Disabled”. (**Only for Intel 802.11 AC WLAN Adapter**)