

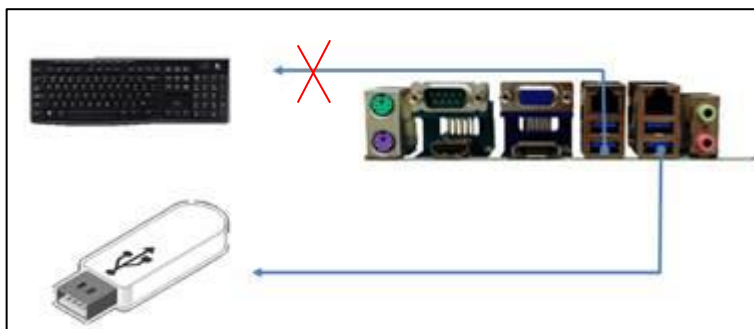
Advantech AE Technical Share Document

Date	2019/4/29	Release Note	■ Internal □ External
Category	■ FAQ □ SOP	Related OS	All OS
Abstract	USB 3.0 Radio Frequency Interference Impact on 2.4 GHz.		
Keyword	USB3.0, Radio Frequency, Interference, 2.4 GHz.		
Related Product	The Platforms which use USB3.0		

■ **Problem Description:**

Sometimes, wireless devices operating in the 2.4 GHz ISM band might be interfered with certain USB 3.0 devices and cables.

Figure 1



■ **Problem Analysis:**

As shown in Figure 2, the noise from USB 3.0 data spectrum can be high (in the 2.4–2.5 GHz range). This noise can radiate from the USB 3.0 connector on a PC platform, the USB 3.0 connector on the peripheral device or the USB 3.0 cable. If the antenna of a wireless device operating in this band is placed close to any of the above USB 3.0 radiation channels, it can pick up the broadband noise. The broadband noise emitted from a USB 3.0 device can affect the SNR and limit the sensitivity of any wireless receiver whose antenna is physically located close to the USB 3.0 device. (As shown in Figure 3) This may result in a drop in throughput on the wireless link.

Figure 2

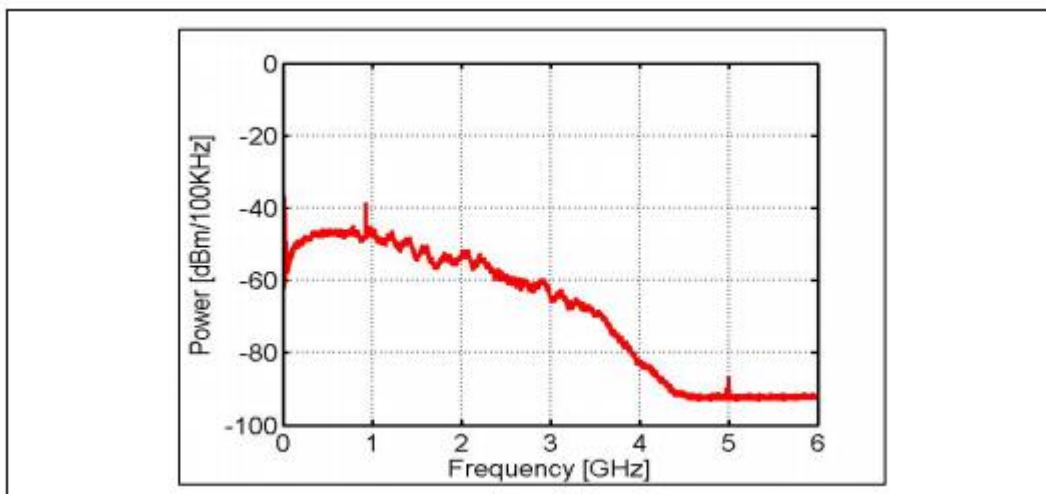
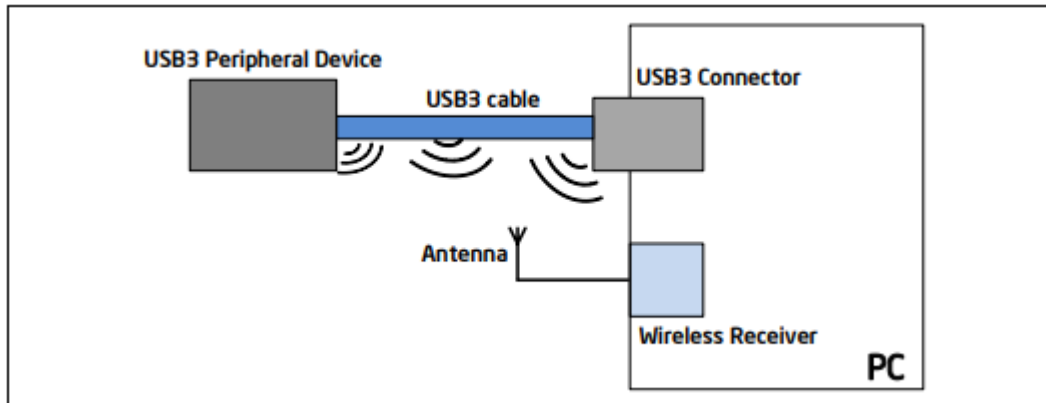


Figure 3

**■ Brief Solution:**

There are several areas where improvements can be made to minimize the impact of USB 3.0 noise on wireless device performance. Three areas where improvements can be made are:

- **Shielding on the USB 3.0 peripheral device**
- **Shielding improvements on the USB 3.0 receptacle connector on the notebook**
- **Wireless antenna placement, wireless receiver performance**

■ Reference:

Intel : <https://usb.org/sites/default/files/327216.pdf>

■ Contact Window and File Link:

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