

Can you Change the Antenna on an FCC Certified Device?

A question that often comes up is, “can you change the antenna on an FCC certified wireless system?” The answer is YES, but it’s not that simple.

Federal Communications Commission Certification

Every RF Modem or Access Point sold in the United States needs to be certified by the **Federal Communications Commission (FCC)**. The certification process involves RF testing which is performed by independent test laboratories which are approved by the FCC. The testing process requires that an antenna is attached to the device as it would be used in its application. The certification of the device is therefore dependent to on the performance of the antenna used during testing.

Wireless integrators may wish to use a different antenna of a wireless system for a specific application. The FCC has a method for changing the antenna without, in some cases, requiring additional or repeat testing.

CFR 47 Part 2.1043: three Classes

Class I

permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing is required for a Class I permissive change.

Class II

permissive change includes those modifications which degrade the performance characteristics as reported to the Commission at the time of the initial certification. Such degraded performance must still meet the minimum requirements of the applicable rules. When a Class II permissive change is made by the grantee, the grantee shall provide complete information and the results of tests of the characteristics affected by such change. The modified equipment shall not be marketed under the existing grant of certification prior to acknowledgement that the change is acceptable.

Class III

permissive change includes modifications to the software of a software defined radio transmitter that change the frequency range, modulation type or maximum output power (either radiated or conducted) outside the parameters previously approved, or that change the circumstances under which the transmitter operates in accordance with Commission rules. When a Class III permissive change is made, the grantee shall provide a description of the changes and test results showing that the equipment complies with the applicable rules with the new software loaded, including compliance with the applicable RF exposure requirements. The modified software shall not be loaded into the equipment, and the equipment shall not be marketed with the modified software under the existing grant of certification, prior to acknowledgement that the change is acceptable. Class III changes are permitted only for equipment in which no Class II changes have been made from the originally approved device.



Summary

In summary, changes to an FCC certified antenna would be **Covered Under Class I and Class II**.

Class I States that you may change out an antenna if the replacement antenna is equivalent. This means the antenna must be the same type (e.g. collinear, Yagi, Dish) or equal or lesser gain, and similar in-band and out of band characteristics. This Class Requires *NO Additional filing with the FCC*.

Class II Changes are applicable if an antenna of higher gain or different in-band or out of band characteristics is used. This would Require the *Device and Antenna be Retested and Recertified*.

Class III Does NOT Apply.

There are many reasons why a wireless integrator may want to change the antenna of FCC certified wireless system. **These reasons include cost, performance, or antenna availability**. These are all valid reasons, however; it is the **Ultimate Responsibility of the Device Manufacturer** to ensure their device is in *compliance with FCC Certification*. In addition, they must ensure their devices are *used in a system which maintains the performance and characteristics that were present at the time of certification*.

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