

#### ◆ EMI NOISE-ORIGIN AND CHARACTERISTICS

Recent decades have witnessed the rapid growth of computers, business machines, industrial controls, medical electronics equipment and many other devices that utilize digital techniques. Concurrent with this growth, the problems of Electro-Magnetic Interference (EMI) found both in the equipment, causing interference to other equipment of related Emission communication, have become more severe. The frequency ranges of EMI noise are 10KHz to 30 MHz by conduction through wires and 30MHz to 1GHz by radiation.

#### Conducted EMI noise consists of two modes:

1. Common mode interference is EMI noise present on the line and neutral referenced to safety ground. Most noise problems are caused by common mode interference.
2. Differential mode interference is EMI noise present on the phase line referenced to the neutral. Differential mode EMI tends to decline rapidly in the building wiring.

#### ◆ VDE

Products intended for European markets should meet the requirements devised by VDE. VDE 0243 specification limits conducted emission for computing devices and other industrial, scientific and medical equipment to two levels:

#### Class A:

The user has to apply for a special operating license by the BZT(the German equivalent of FCC). If the equipment moved from one location to another, the BZT must be notified

#### Class B:

If the equipment meets the B level, it then has general approval and no operating license is required. Most manufacturers attempt to meet Class B for marketing reasons. Conducted EMI regulated by FCC part 15 and VDE 243 are shown in the figure.

#### ◆ LEGAL REGULATION ON CONDUCTED EMI FCC

In the US, the FCC has imposed legal regulations to control interference at its source. All computing devices, including peripherals, using digital techniques with a clock frequency greater than 10KHz must comply with FCC regulations part 15 after Oct. 1983.

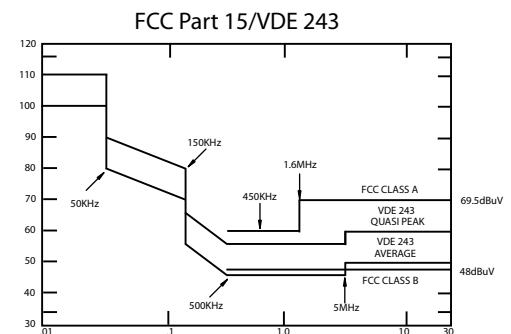
The FCC had divided products into two basic categories:

#### Class A:

For computing devices marketed for use in a commercial, industrial or business environment. Class A requires verification, which means that the equipment has been tested and complies with the data.

#### Class B:

For computing devices marketed for use in a residential environment. Class B requires certification, which means that the test data has to be submitted to FCC for the equipment to pass.



**Qualtek**  
Electronics Corporation

7675 Jenther Drive \* Mentor, Ohio 44060  
Phone: 1-440-951-3300 \* Fax: 1-440-951-7252  
E-Mail: mailbox@qualtekusa.com