Noise problems related to electronic devices are becoming a major issue in modern society. TDK offers a wide range of effective solutions to deal with various types of noise.
The mobile phone market is rapidly expanding all around the world. The spread of smartphones in particular has triggered an upsurge in mobile Internet use. In order to deal with the explosive growth in data volumes, telecommunication carriers are developing and implementing next-generation communication standards such as LTE-Long Term Evolution, employing higher frequencies.

As the global mobile device market expands...

The market for smartphones with sophisticated functions is booming!

Telecommunication methods and standards are becoming more complex on a worldwide scale, requiring advanced noise countermeasures.

In the Communications Sector

*Data prepared by TDK. Years and financial years ending March 31. Data for 2012 and 2013 are actual, 2014 and later are projections.
Sophisticated LTE communications are spreading around the world.

The frequency bands used for mobile phone communication differ by country and by carrier. In recent years, as telecommunication carriers around the globe are trying to expand their range of frequency bands, there is a trend for so-called multi-band support in mobile devices, allowing them to handle different communication standards and frequency bands. The spread of LTE communications and the move towards higher frequency ranges also means that the risk of adverse effects due to noise is becoming even more of an issue.

And since smartphones are usually held in the hand and operated by touch panel, measures to protect the circuitry from static electricity discharge caused by the human body are increasingly important.

Guarding against RF noise and static electricity is more important than ever!

For example, TDK multilayer chip varistors work like lightning rods!

When encountering surge noise such as caused by static electricity, multilayer chip varistors rapidly reduce their resistance value, thereby creating a bypass that routes the noise to ground and protects the other circuitry. Their function can be likened to that of a lightning rod. The devices are therefore extensively used in areas such as terminals, touch panels, as well as buttons and switches.

TDK also offers various other ways to protect mobile devices from noise, both through special technology and dedicated products such as the proprietary flexible magnetic shield material "Flexield."
Modern cars increasingly rely on electronic systems, and sometimes incorporate as many as 100 or more electronic control units (ECU). These units are linked by networks referred to as in-vehicle LANs. Unless proper countermeasures are implemented, the cables for these networks can act as antennas that radiate noise which potentially poses a risk to driving safety.

**ECUs control many functions in an automobile.**

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Common mode filters are highly effective at separating electrical signals from noise, making it possible to suppress only the unwanted noise components. This is achieved by making use of the "reflection" (blocking) effect of coils. TDK’s extensive know-how in magnetic materials and advanced winding technology is an indispensable asset in this area. TDK also offers ring varistors for suppressing DC motor noise, clamp filters for automotive use, and many other effective tools for countering noise in the automotive environment.
The so-called "smart house" is designed to both conserve and generate energy, and to make more efficient use of power. Power management in a smart house is handled by a power conditioner whose task is to convert the direct current (DC) power from renewable energy sources into alternating current (AC).
required by appliances in the house. This process involves a high-speed switching stage which produces radio frequency (RF) noise that can adversely affect the operation of electronic devices in or around the house. Power conditioners therefore must implement reliable noise suppression measures.

Noise countermeasure is even more essential for power management in a smart house!

For example,

**TDK multilayer chip beads help to fight RF noise!**

The power conditioner sits at the boundary to the power grid and is both an entry and exit point for noise. TDK offers EMC filters for power supplies, film capacitors for DC links, and various other technology solutions and products to protect electronic devices from noise.

Multilayer chip beads are highly miniaturized electronic components that selectively absorb only RF noise riding on a signal current. TDK’s extensive experience with ferrite technology accumulated over many years is put into practice here.
Demographic changes are happening not only in developed nations but also in emerging economies. Medical care is required by more and more people around the world, and the market for medical equipment is expanding accordingly. On the other hand, medical equipment such as imaging diagnosis devices increasingly rely on digital technology. Hospitals in many countries have come to make use of the latest technology in the electronics sector.

Safety standards for medical equipment must conform to especially high levels, as this is an area where human life is at stake. Quality assurance standards for medical equipment such as ISO 13485 and the IEC 60601 series of standards for safety of medical electrical equipment therefore set stringent conditions that must be met on an international basis.
A radio wave anechoic chamber is an indispensable piece of facilities for EMC testing. As electronic devices use ever higher frequencies and are built to deliver higher performance, the demands for anechoic chamber performance also have risen accordingly. TDK has developed an anechoic chamber with a level of performance that is hardly surpassed anywhere. As a leading manufacturer of anechoic chambers, TDK is able to supply the most advanced EMC testing environments to medical equipment companies.