

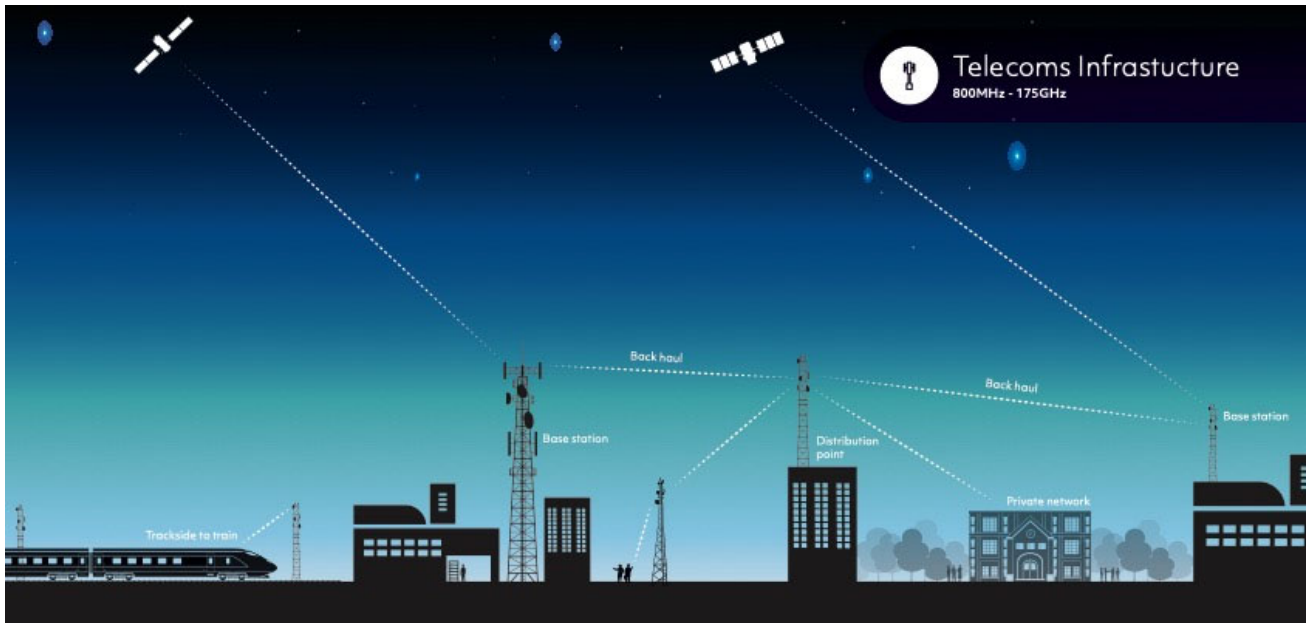
Filtronic E-band technology

E-band spectrum is widely used in radio links for 4G and 5G mobile communications, which operate in the mmWave frequency ranges 71 – 76GHz and 81 – 86GHz. E-band spectrum offers OEMs wide bandwidth, enabling them to provide 5G mobile network operators with high-capacity backhaul, midhaul and fronthaul (collectively known as XHaul). With a low SWAP (size, weight, and power), E-band modules are also proving a promising choice in developing systems for applications in High Altitude Platform Systems (HAPS), LEO satellites and ultra-high capacity trackside-to-train links. Dell'Oro has forecast that the [global market for mmWave transceivers at E-band and V-band](#) for 5G backhaul will grow at 27% year-on-year between 2022 and 2026.

Filtronic has been a pioneer in the evolution of E-band subsystems for more than 11 years, since the initial development of Proteus. To date more than 70,000 units have been shipped, including Proteus and its successors Theseus, Orpheus and Morpheus II. The transceiver product range is supported by a portfolio of amplifiers and active diplexers. Systems containing Filtronic's core E-band technology have been successfully demonstrated at data rates up to 40Gbps.

Filtronic E-band product summary

- [Morpheus II](#), launched in February 2020, is Filtronic's latest generation of E-band mmWave transceiver modules. The compact form factor of Morpheus II modules makes them suitable for use in all types of mmWave XHaul applications, as well as for HAPS, satellite and railway applications. Standard modules have a linear transmitter power control range of -4dBm to +16dBm, with an output third order intermodulation product (IP3) of typically up to +34dBm at the top end of the range. An enhanced power option, extending the control range up to +25dBm, is also available. With a low phase noise of -112dBc/Hz at 1MHz, the transceiver modules support a channel bandwidth in excess of 2GHz. [Read Morpheus II press release](#)
- [Cerus](#) is a family of high-power E-band amplifiers designed for long-range military or commercial telecommunications applications, including airborne and HAPS. The Cerus 8 amplifiers, launched in April 2022, integrate eight matched Filtronic GaAs HEMT PA MMICs and offer saturated power output levels up to +36dBm or higher, and 1dB gain compression point at +30dBm. Their high linearity enables them to support 256QAM modulation for high-capacity transmission. They also feature an integral temperature sensor, along with the option of control circuitry for functions including gain control, mute control and alarms. [Read Cerus 8 press release](#)
- [Hades](#), which is being launched in June 2022, is a range of active E-band mmWave diplexers offering a range of configurable options that integrate high power amplifiers (PAs) with power output levels up to more than +30dBm, and low-noise amplifiers (LNAs) noise figure of less than 4dB. The integration of the amplifiers reduces size and weight compared with discrete components. [Read Hades press release](#)



About Filtronic:

[Filtronic plc](#) is a designer and manufacturer of high-performance RF, microwave, and mmWave components and subsystems for telecommunications infrastructure, aerospace & defence, critical communications and space.

Filtronic is AIM listed on the London Stock Exchange, with operations in the UK and the US.