

# COMMON MODE FILTER + ESD Protection for Automotive



## Automotive 4-line ECMF common mode filters protect against destructive electrostatic discharges to ensure safe wireless communication

Cars are complex systems with multiple subsystems all interconnected to each other. Automotive engineers must ensure that each sub-system does not interfere with another one to ensure the safety of those in the vehicle.

Common-mode filters prevent differential lines from radiating and interfering with other RF signals nearby. ST's Automotive 4-line ECMF common mode filters (2 differential lanes) achieve three tasks at once: clamp ESDs, keep common mode signals at bay and filter out the bus RF signal harmonics.

### KEY FEATURES & BENEFITS

AEC-Q101 qualified

- Rejection of LTE, GPS, Bluetooth, Wi-Fi and V2x frequencies

Automotive quality

- Transparent for the signal, protecting the system against ESD according to automotive standards
- Compatible with all high-speed lines
- Reduces the footprint by 30%
- Reduces BOM and cost

### KEY APPLICATIONS

Automotive applications

- ADAS (Camera, Radar, High speed network, vision system)
- Infotainment (Sound and video system, High speed network, Infotainment module)
- Mobility (Telematic box)
- Body and convenience (Gateway, Head-up display)
- Telematic and Network (Gateway, secure connectivity module, V2x)



## Differentiation and improvements

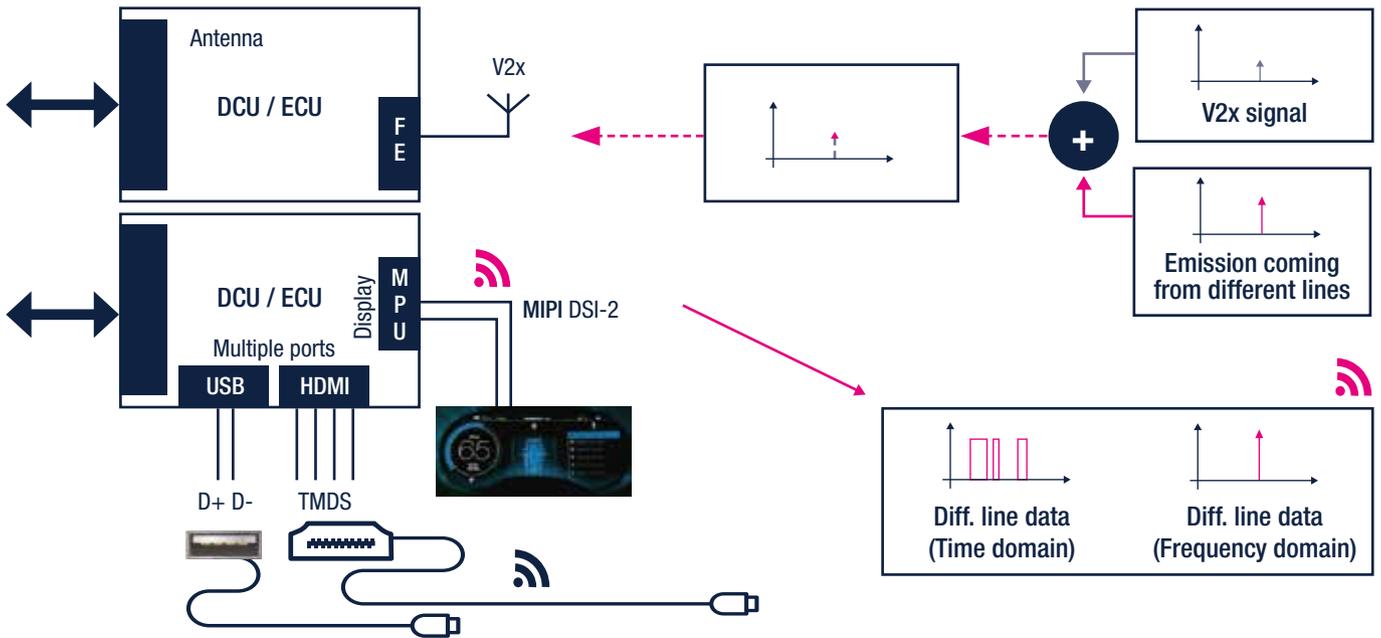
### Compact solution:

Designed to replace discrete common mode chokes or LTCC filters, ST's ECMF integrated common mode filters help to ensure safe and noiseless communications in cars by suppressing EMI/RFI common mode noise on high-speed buses such as HDMI 2.0, HDMI2.1, HDMI 1.4, DisplayPort, FPD link III, GMSL, USB3.2 and MIPI.

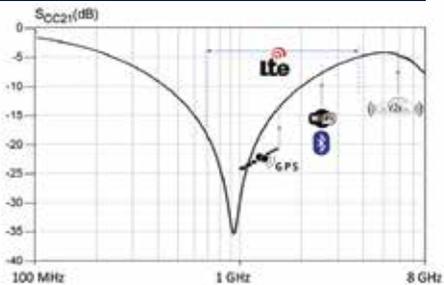
### Why filtering is important

If a signal's strength is less than the radiation from high-speed data lines, the RF receiver is unable to get useful signal. So, it is important to decrease the RF receiver's sensitivity to ensure that useful signal is higher than the radiation from the nearby high-speed data lines. This is known as antenna desense.

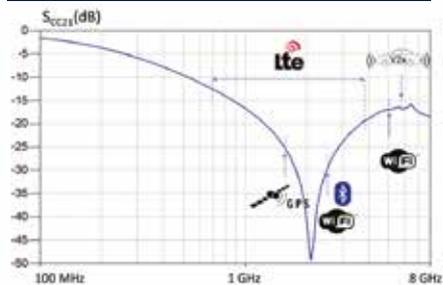
To avoid the antenna desense phenomena, a Common Mode Filter is placed on differential lines to reduce high-speed signal radiation. Moreover, to shield antenna/RF circuits from interference from burst noise, the ECMF4 secondary filter mode will clamp RF harmonics.



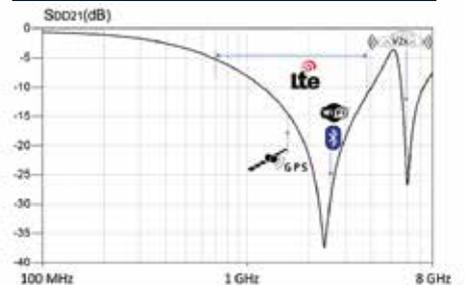
**ECMF04-4HSM10Y**



**ECMF04-4HSWM10Y**



**ECMF4-2459A6M10Y**



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