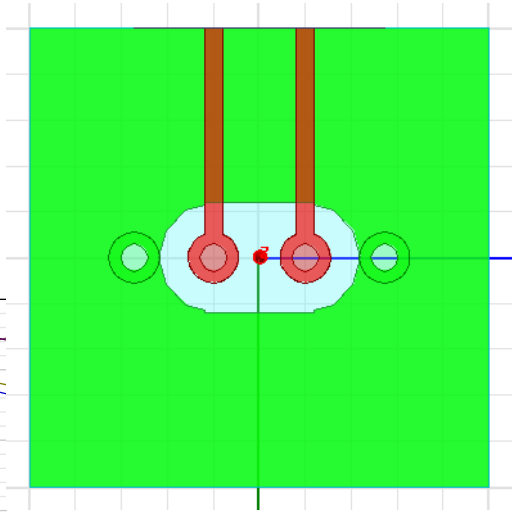
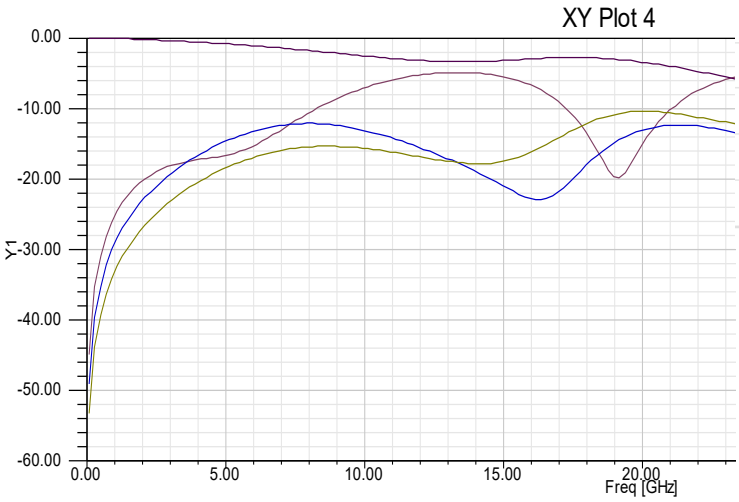
Nominal Case

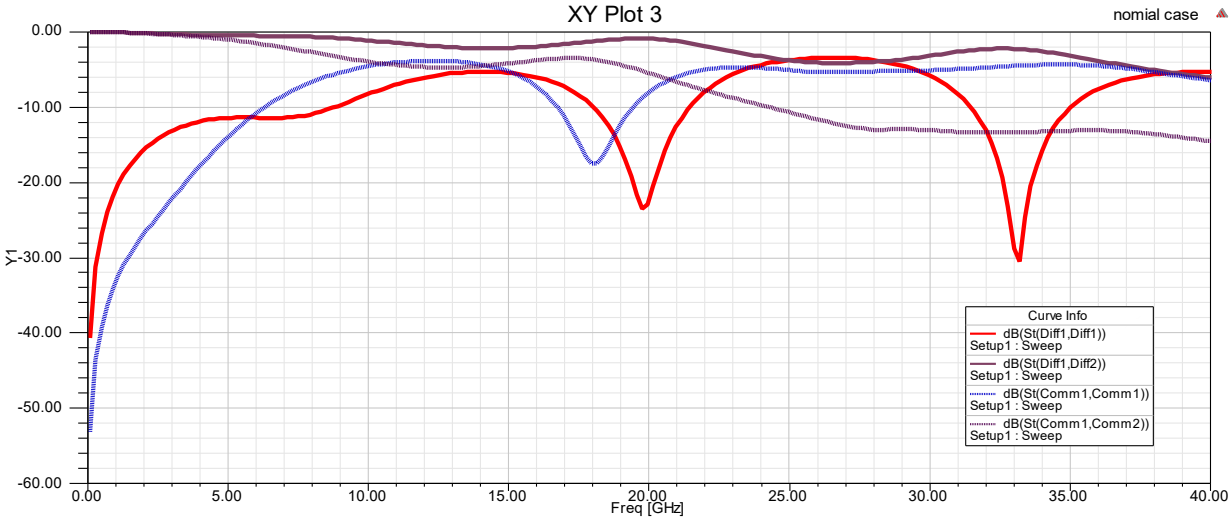
Separation of via	40 mil
Separation of ground via	109 mil



● Terminal S parameter

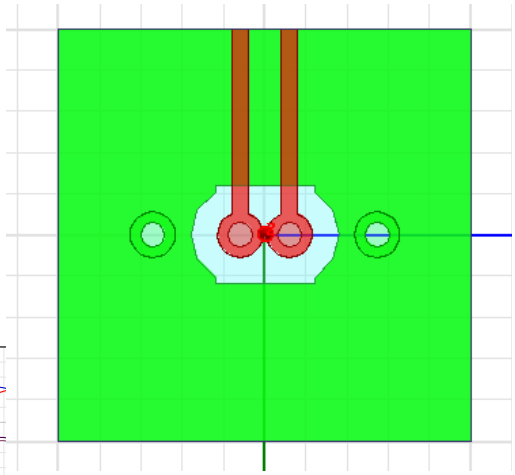


● Differential / Common S parameter



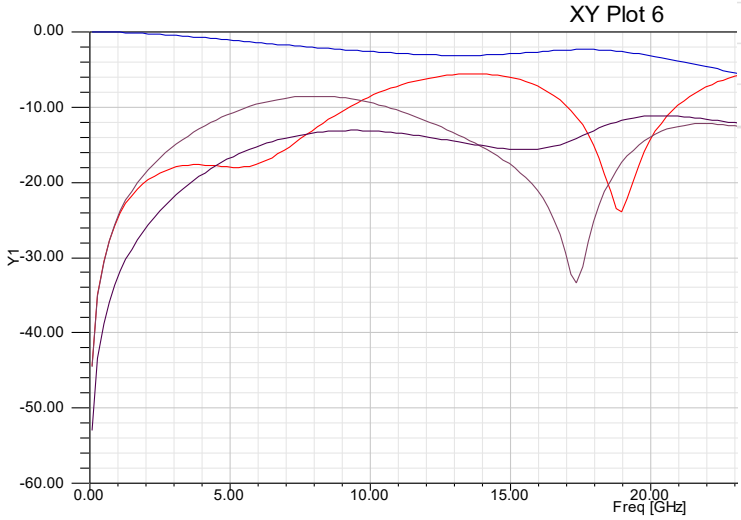
Decrease signal via separation

Separation of via	**26 mil** (nominal 40 mil)
Separation of ground via	109 mil

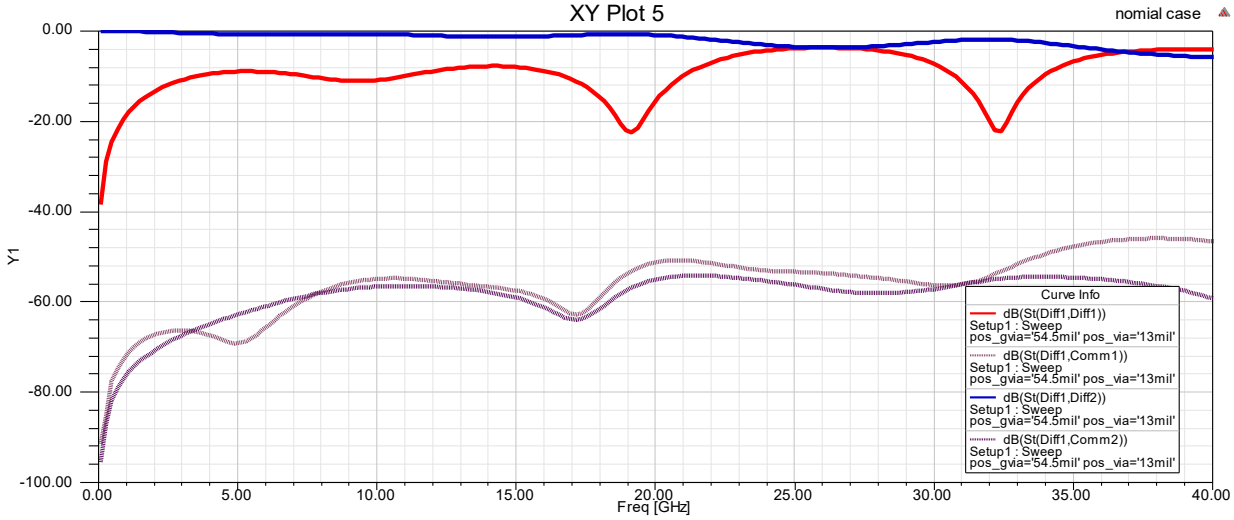


Reducing the distance of signal via decreases the differential to common mode ratio.

- **Terminal S parameter**

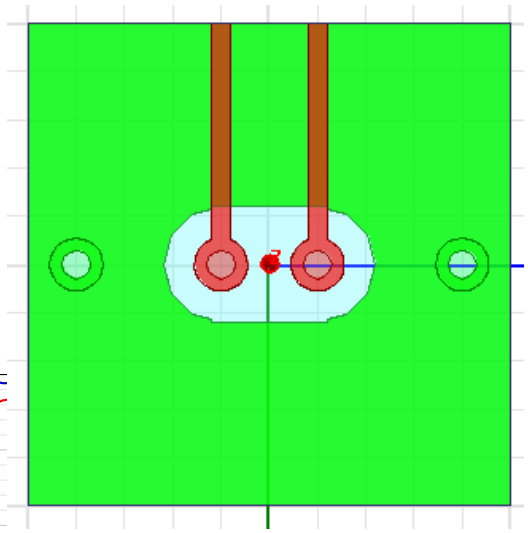


- **Differential / Common S parameter**



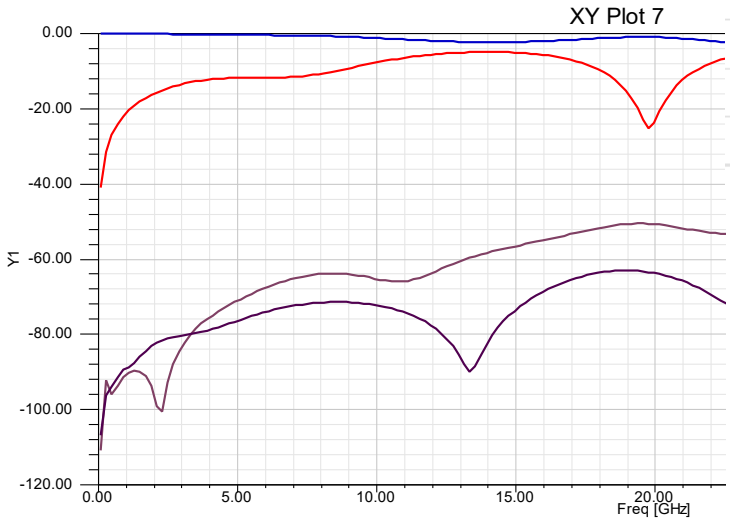
Increase ground signal via separation

Separation of via	40 mil
Separation of ground via	160 mil (nominal 109mil)

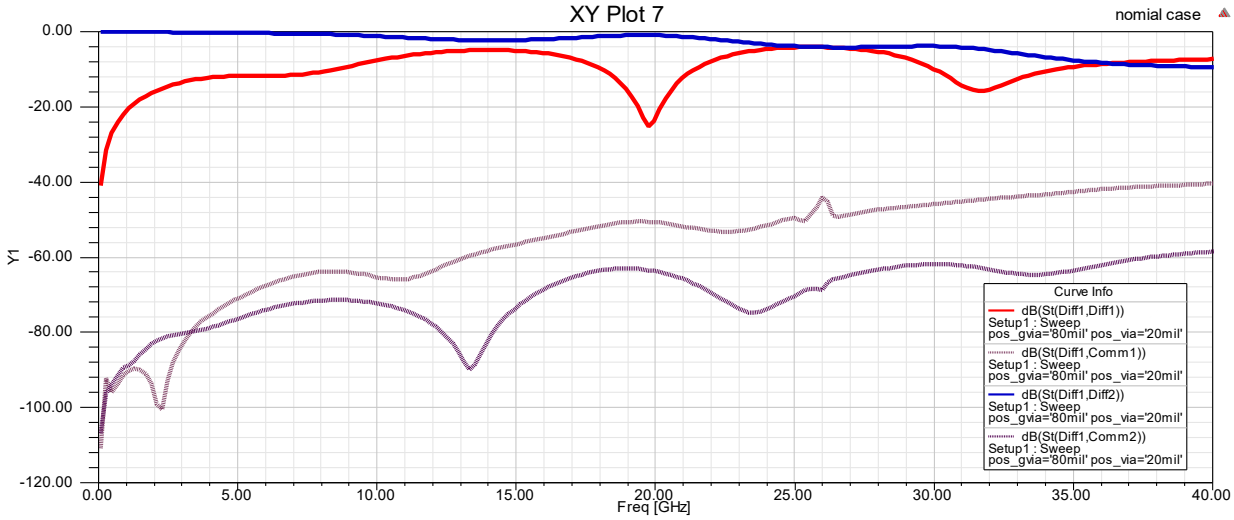


Increasing the separation of grounded vias does not have much effect on differential mode since differential mode does not rely on ground via very much.

- **Terminal S parameter**



- **Differential / Common S parameter**



PEC case

By changing the material of finite conductivity to PEC , one eliminates the conduction loss and the transmission becomes higher.