**Steps**

1. Run the Python code
2. Select the folder containing the S parameter (.txt )file
3. Text file format should be as follows

Frequency s11r s11i s21r s21i s12r s12i s22r s22i

1. Data skip upto 6th line and reads from the 7th line of the s-parameter file (.txt)
2. After calculation, data is saved to a Excel file in the same folder of data file.

Equations used for calculating EMI shielding effectiveness

Reflectance

Transmittance

Absorbance

Shielding effectiveness of reflection

Shielding effectiveness of absorption

Shielding effectiveness of total

SEM is ignored if

Derived from the following equations

;

|  |  |
| --- | --- |
| EM Shielding efficiency in dB | Shielding Efficiency in percentage |
| 10 dB | 90% |
| 20 dB | 99% |
| 30 dB | 99.9% |
| 40 dB | 99.99% |

Reference: <https://doi.org/10.1007/s40820-023-01058-w>

Return Loss

For example, if the return loss in a system is specified to be 40 dB, you instantly know that the reflected power is 40 dB lower than the incident power. Therefore, a larger return loss corresponds to a better match between the load and the line’s characteristic impedance.