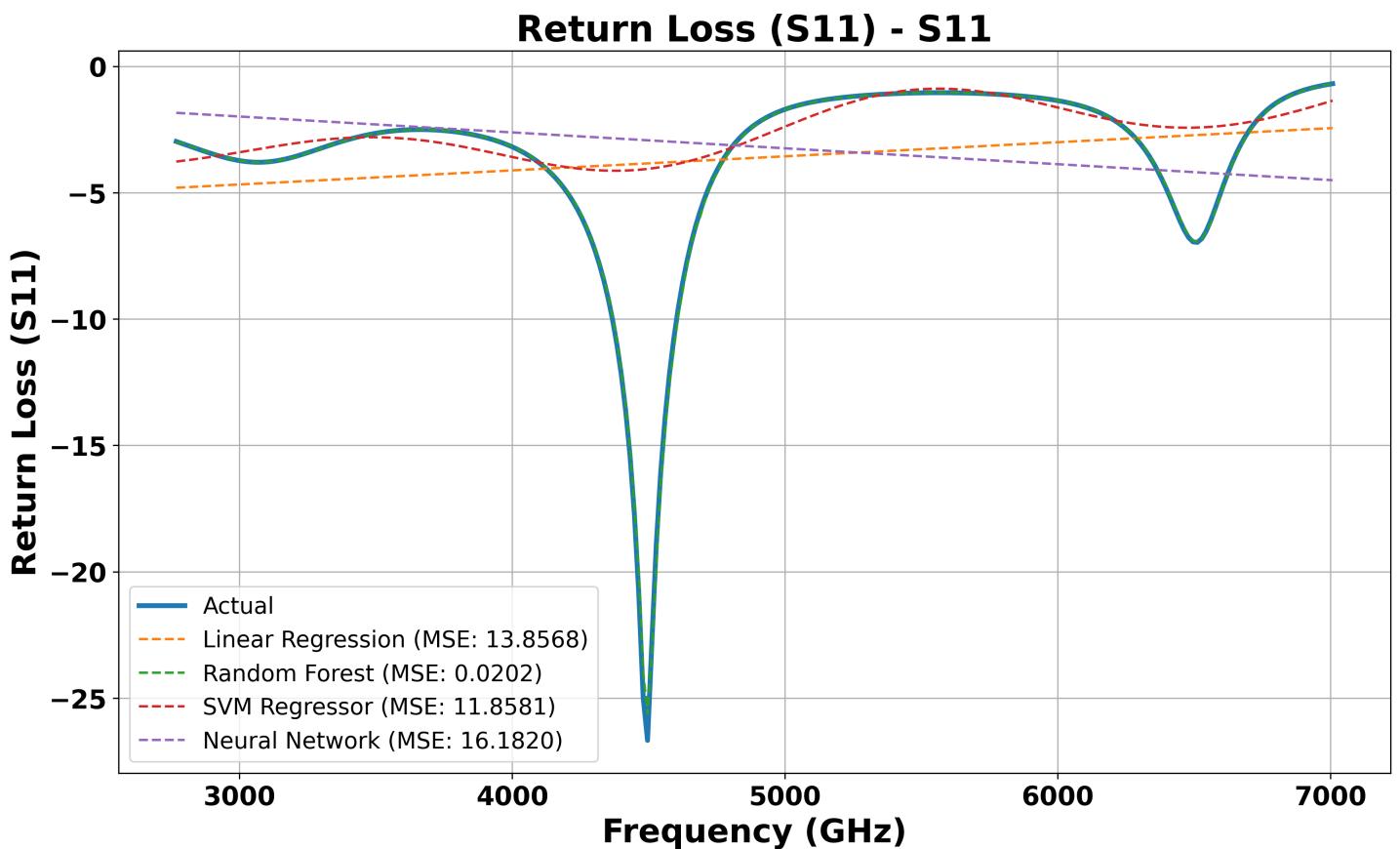
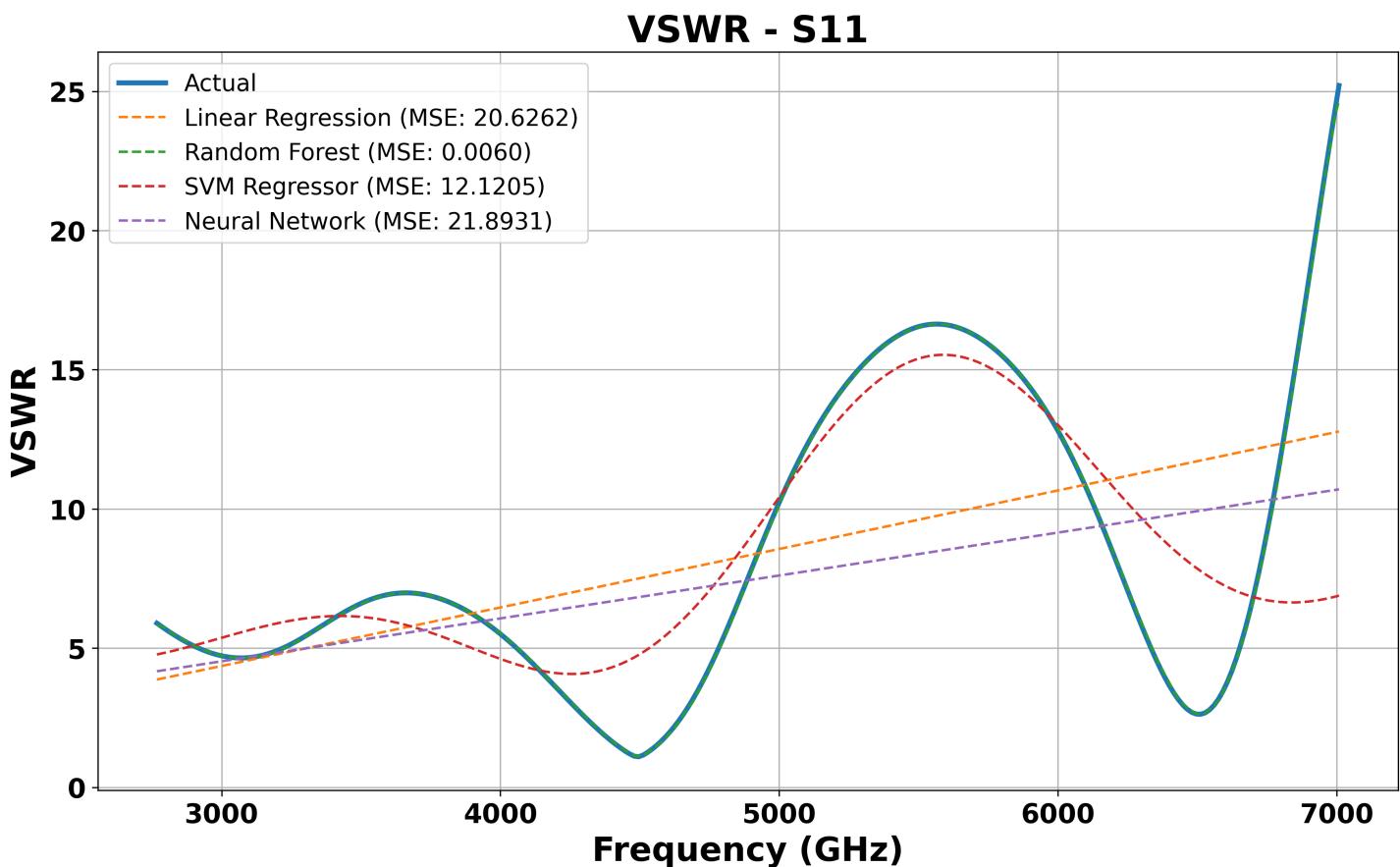


Multi-Port MIMO Antenna Analysis I

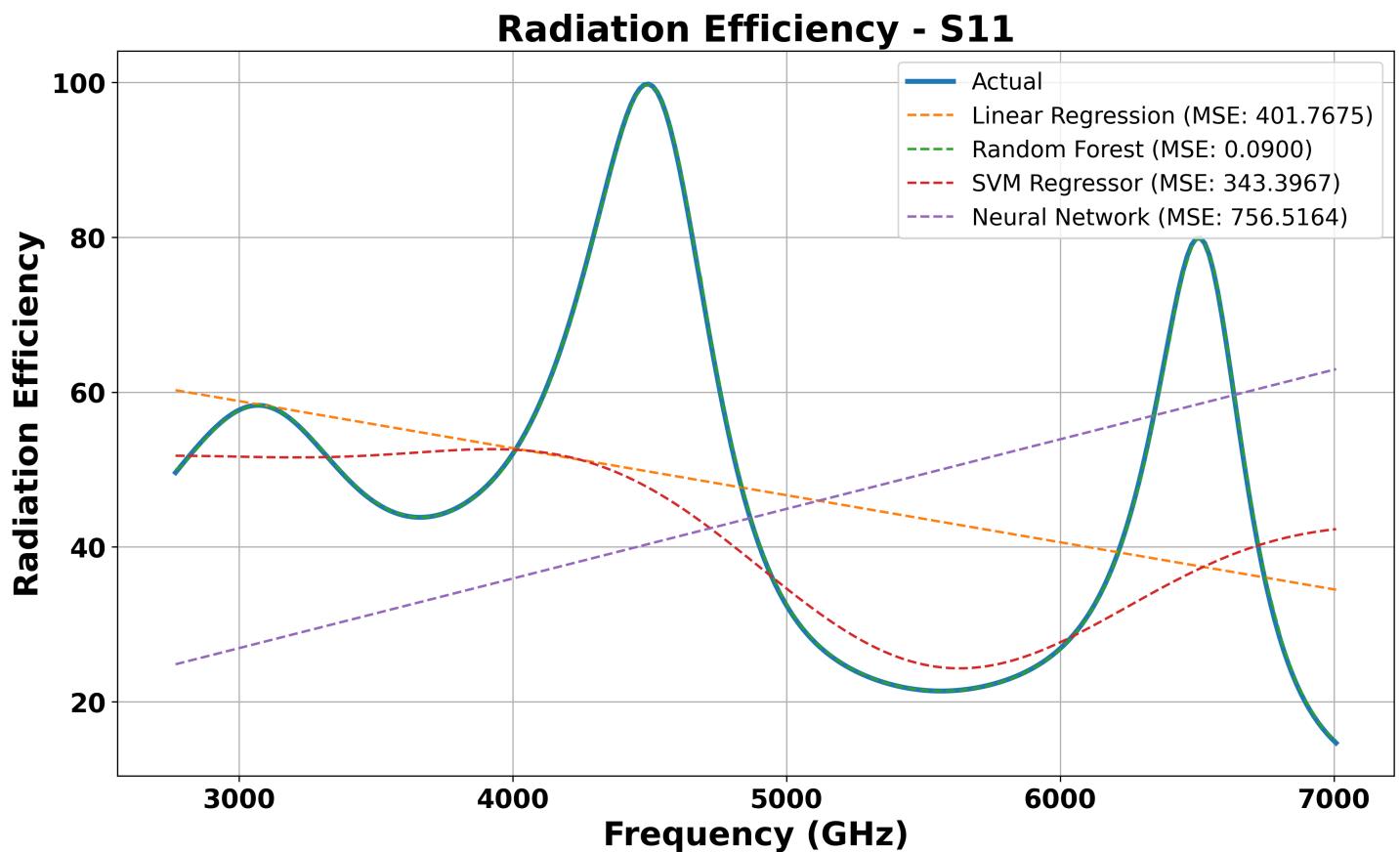
Return Loss (S11) - S11



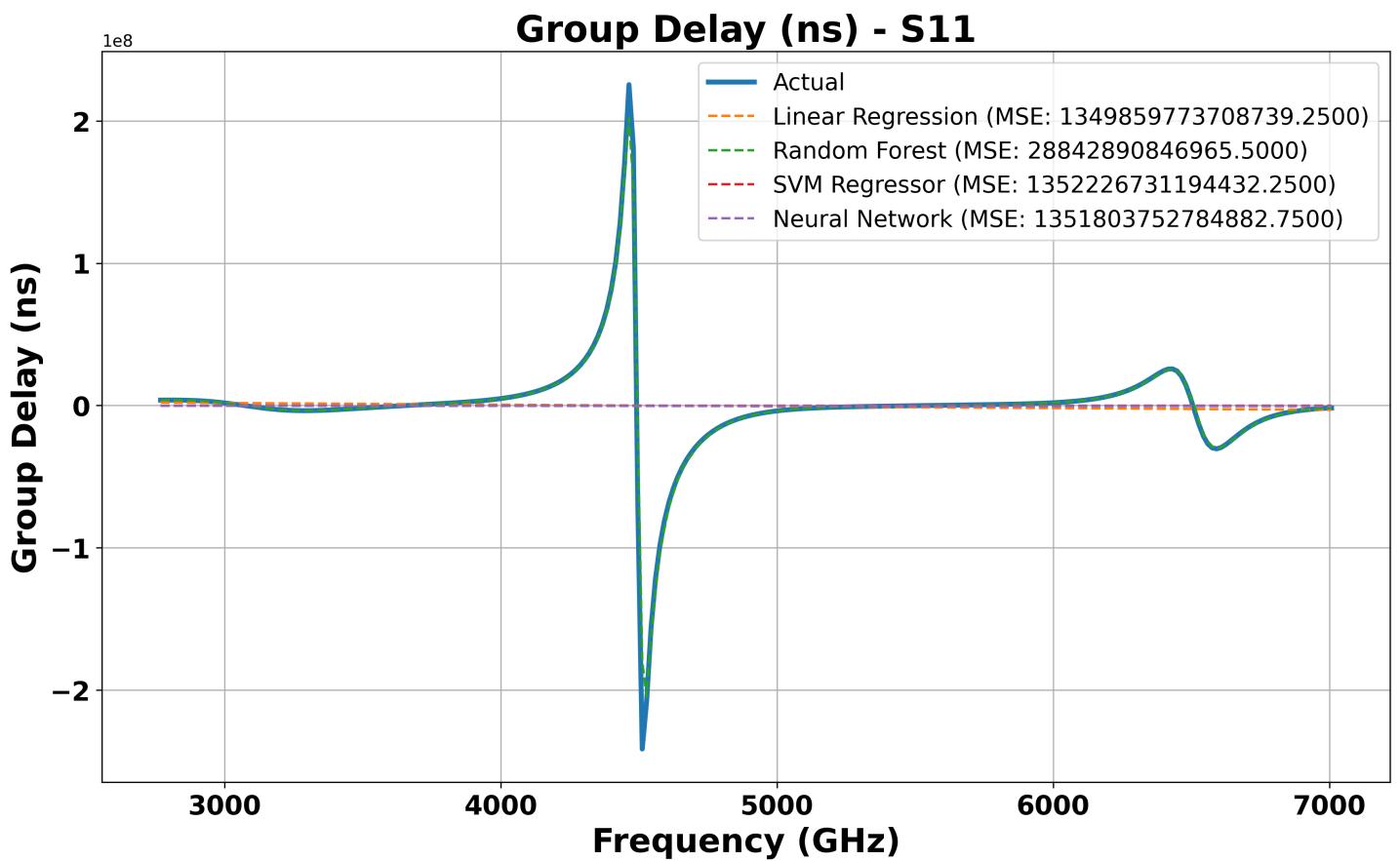
VSWR - S11



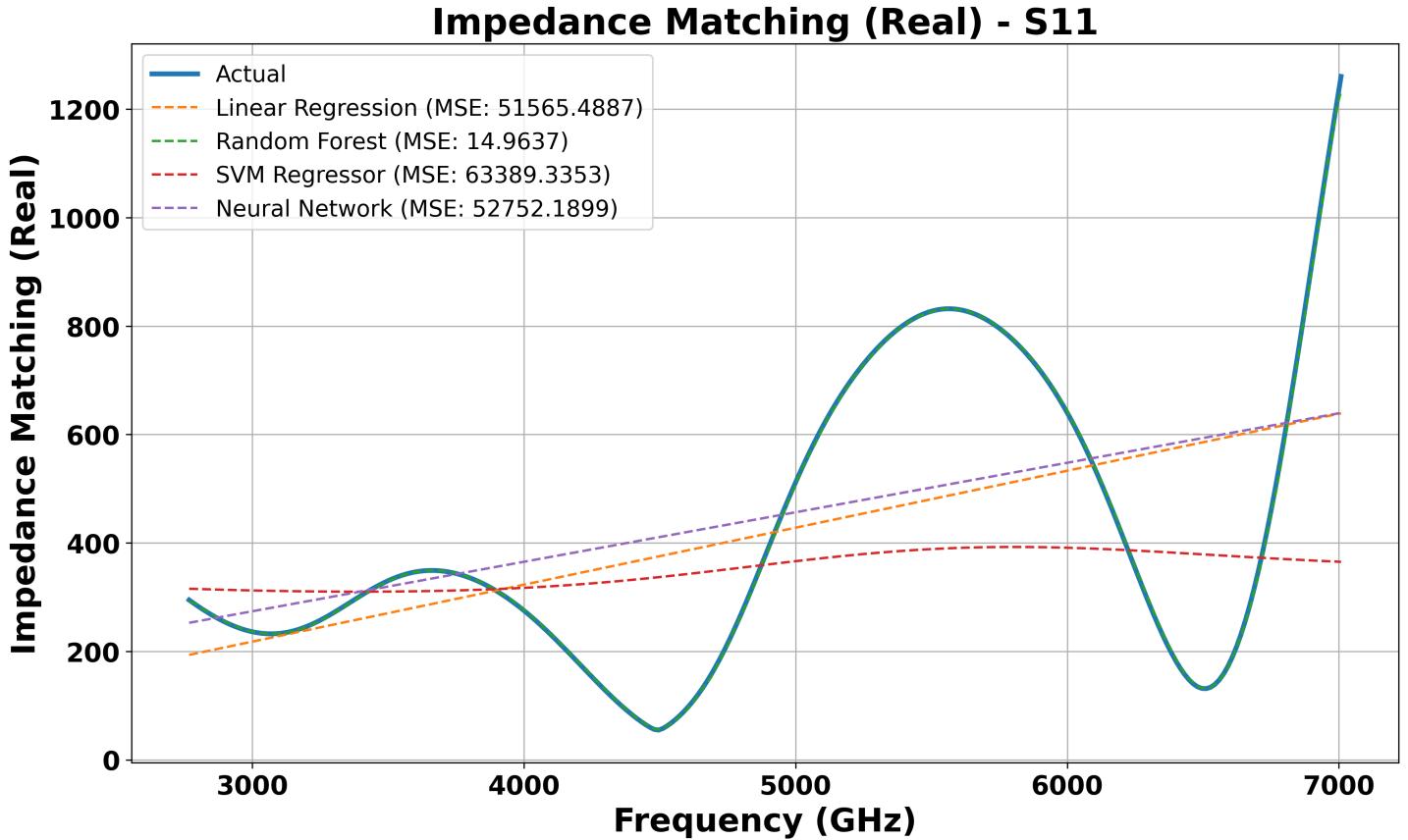
Radiation Efficiency - S11



Group Delay (ns) - S11



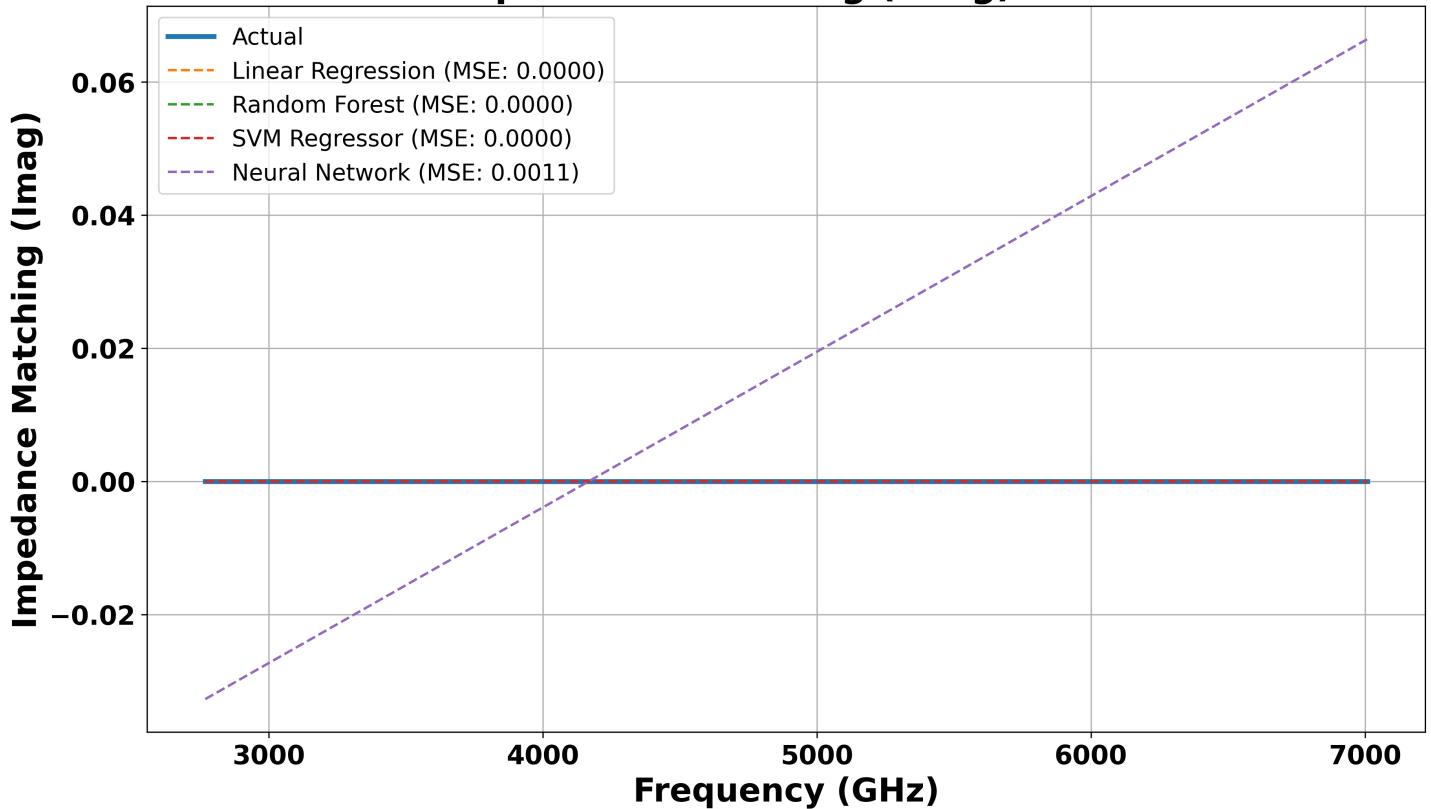
Impedance Matching (Real) - S11



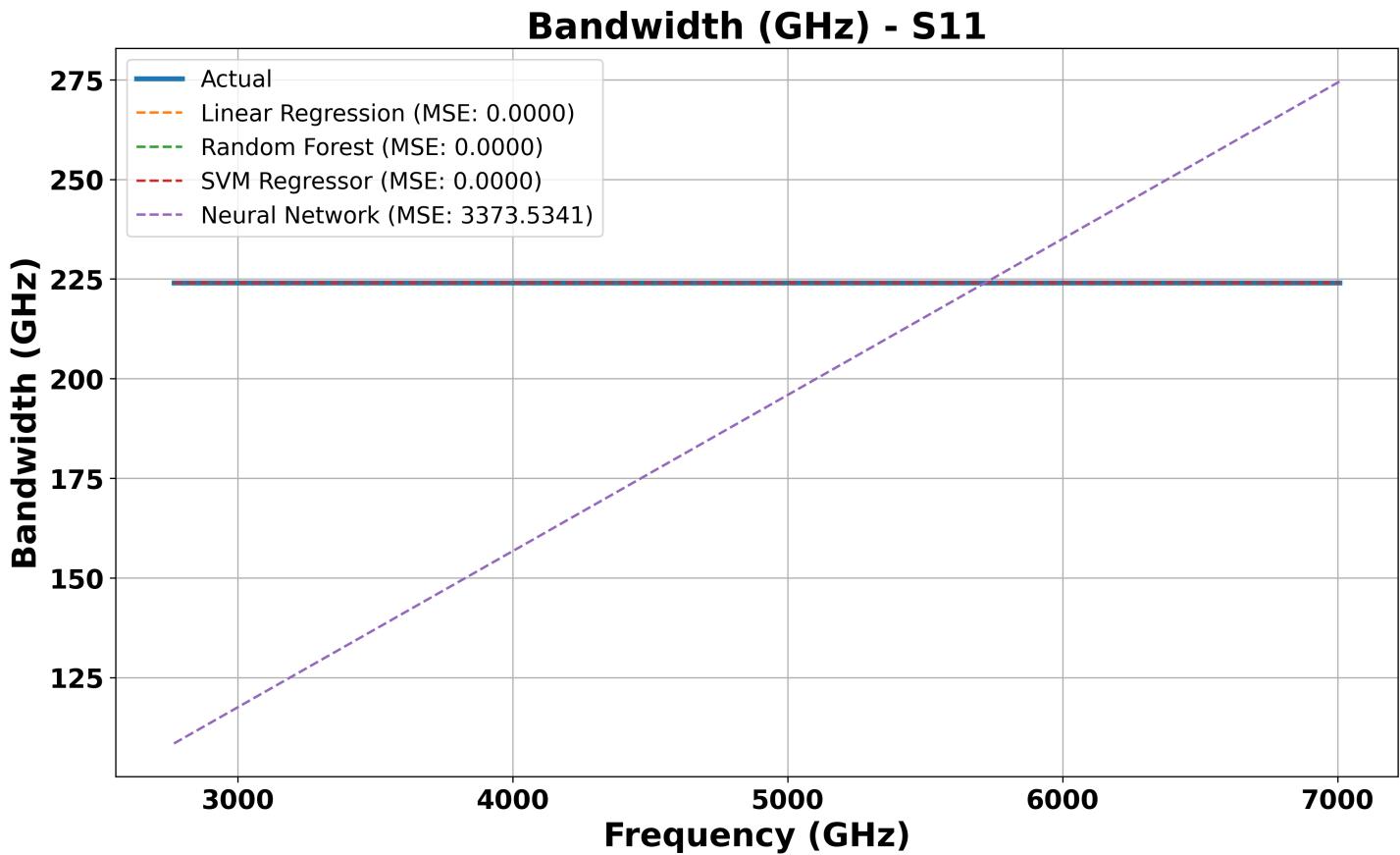
Impedance Matching (Imag)

S11

Impedance Matching (Imag) - S11



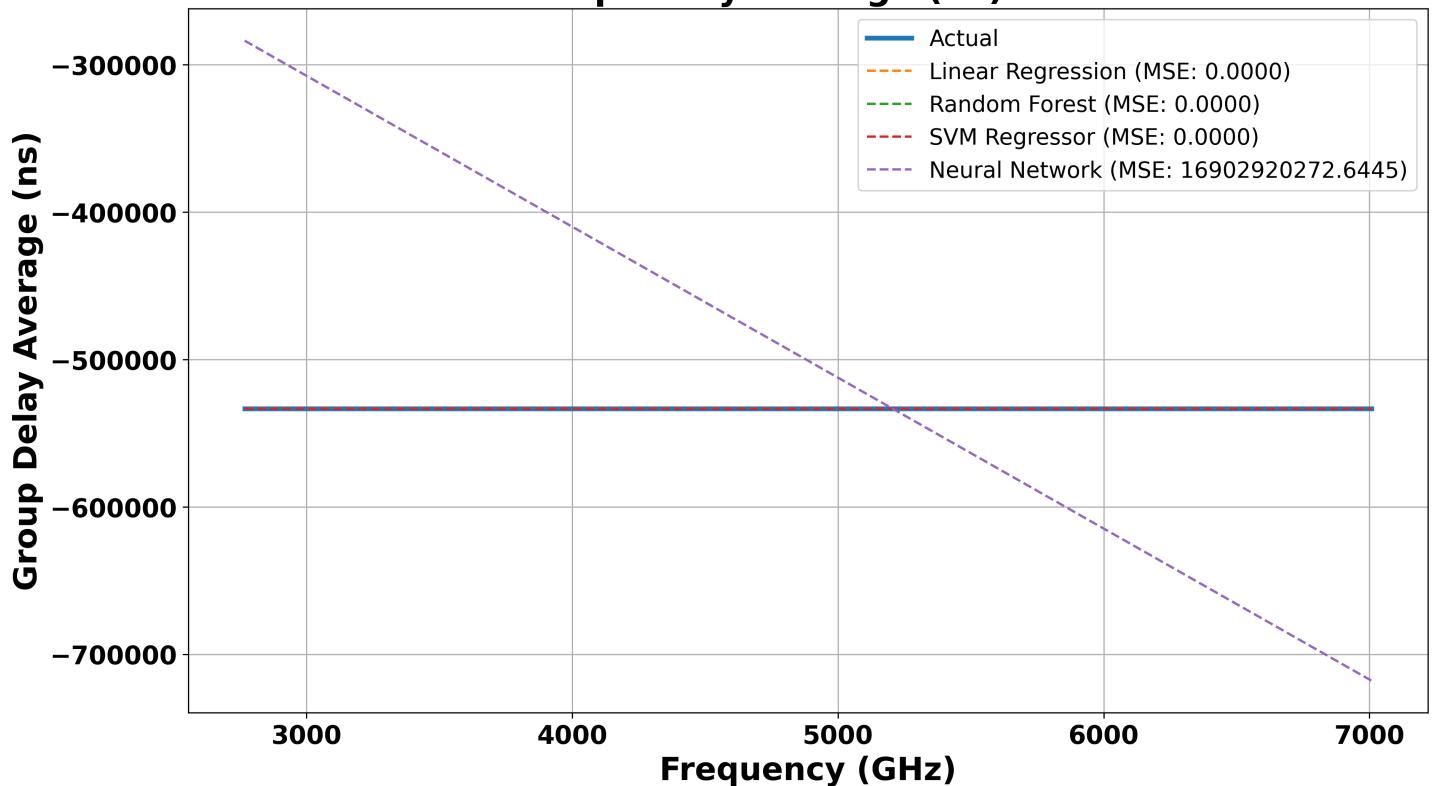
Bandwidth (GHz) - S11



Group Delay Average (ns) -

S11

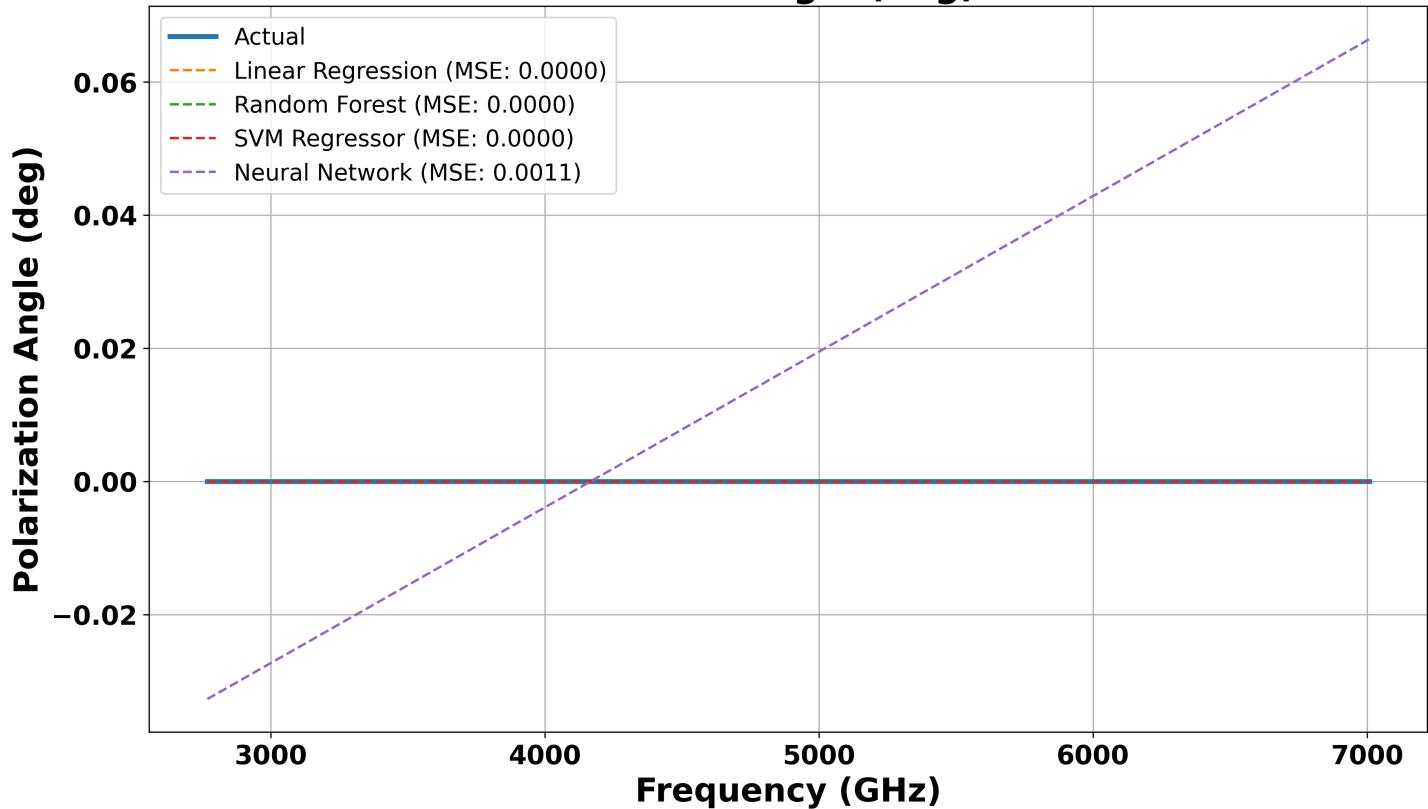
Group Delay Average (ns) - S11



Polarization Angle (deg) -

S11

Polarization Angle (deg) - S11



Summary for Port: S11

Return Loss (S11) | Best: Random Forest | MSE: 0.0202 | R²: 0.9986 | Var: 0.9986 | MAE: 0.0501 | RMSE: 0.1422 | MAPE: 0.81%

VSWR | Best: Random Forest | MSE: 0.0060 | R²: 0.9998 | Var: 0.9998 | MAE: 0.0470 | RMSE: 0.0774 | MAPE: 0.68%

Radiation Efficiency | Best: Random Forest | MSE: 0.0900 | R²: 0.9998 | Var: 0.9998 | MAE: 0.2090 | RMSE: 0.3000 | MAPE: 0.45%

Group Delay (ns) | Best: Random Forest | MSE: 28842890846965.5000 | R²: 0.9787 | Var: 0.9787 | MAE: 976574.2481 | RMSE: 5370557.7780 | MAPE: 4.70%

Impedance Matching (Real) | Best: Random Forest | MSE: 14.9637 | R²: 0.9998 | Var: 0.9998 | MAE: 2.3503 | RMSE: 3.8683 | MAPE: 0.68%

Impedance Matching (Imag) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Bandwidth (GHz) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Group Delay Average (ns) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Polarization Angle (deg) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

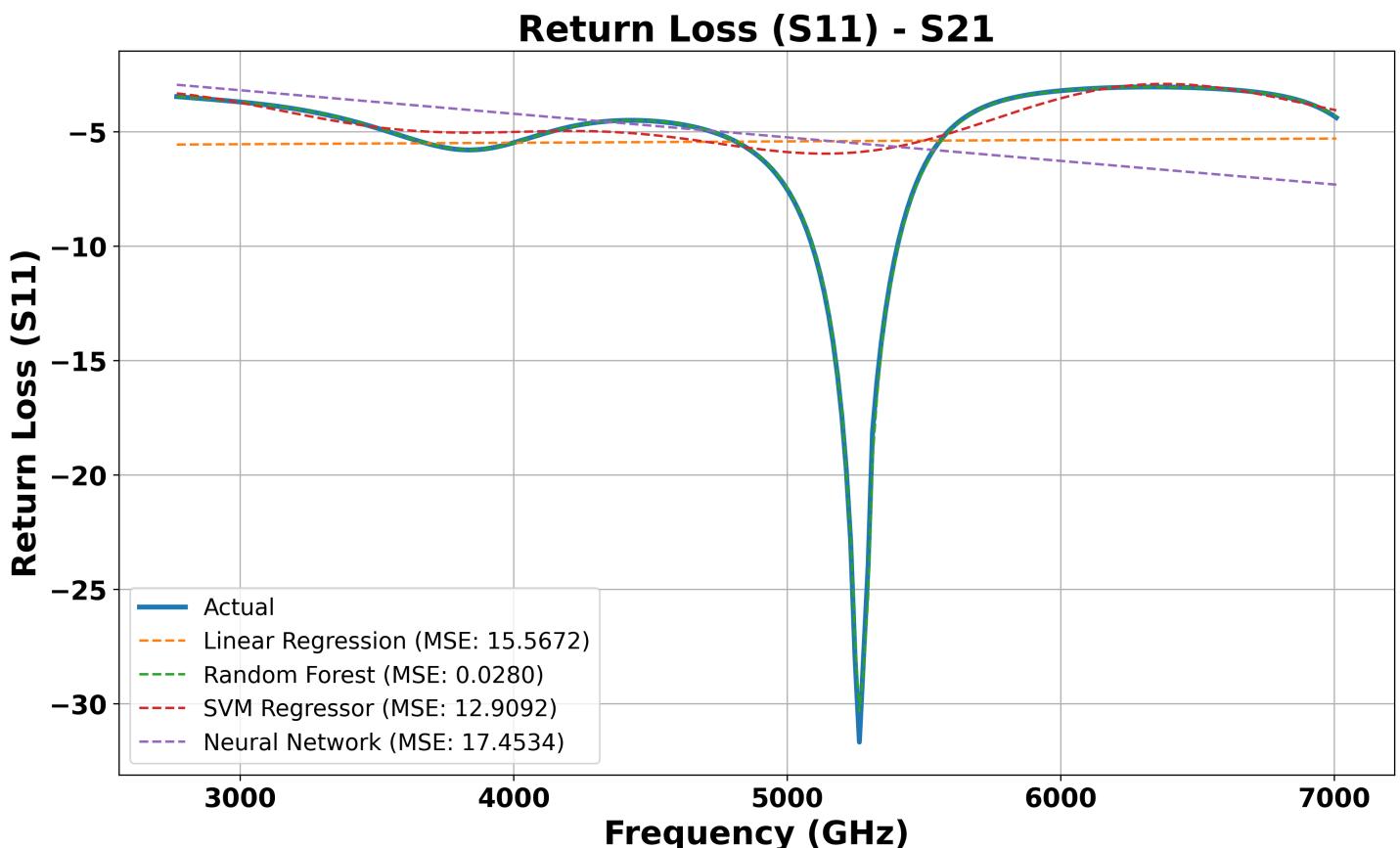
Bandwidth: 224.00 GHz

Avg. Group Delay: -533422.23 ns

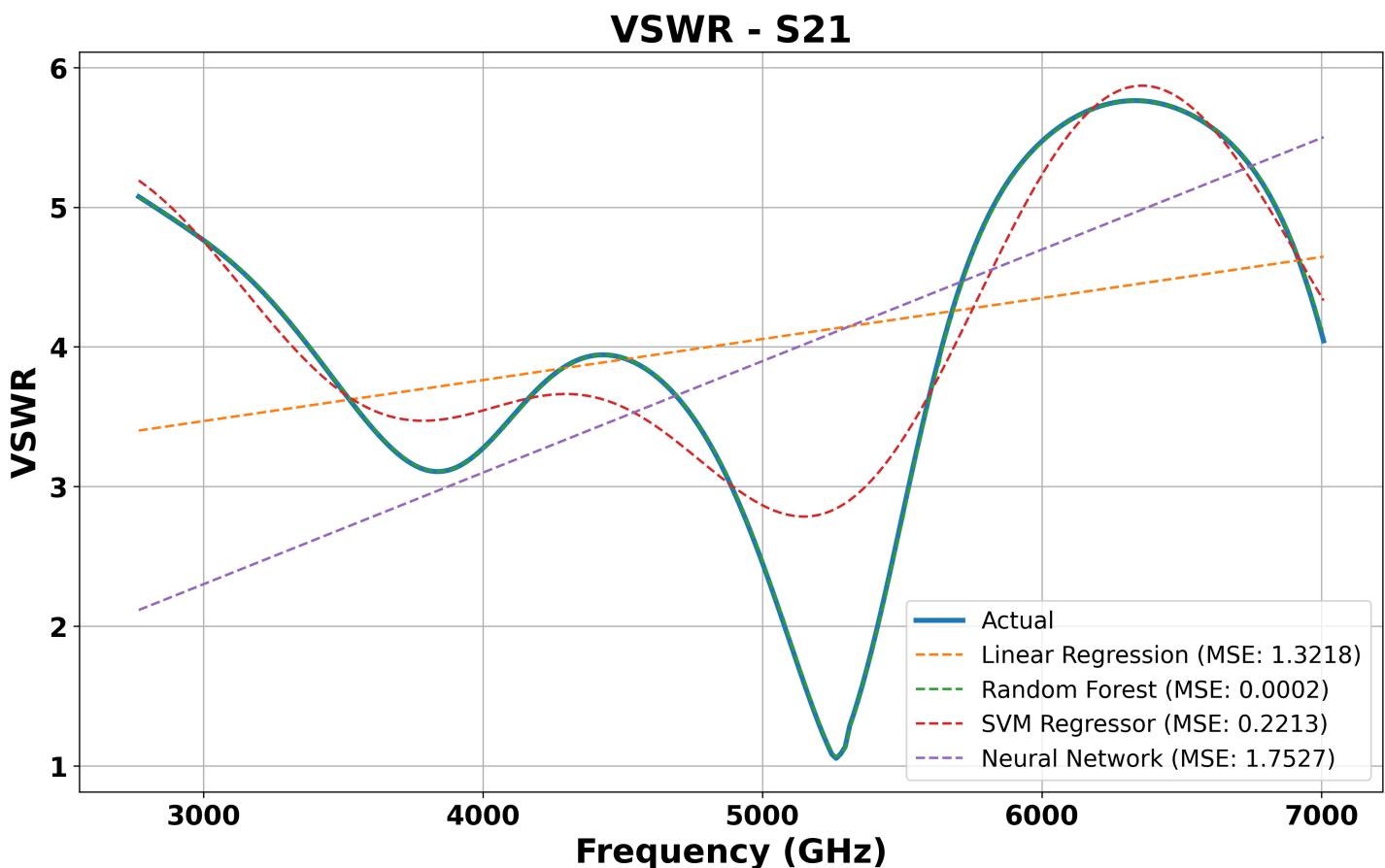
Min Return Loss: -26.68 dB at 4496.00 GHz

Resonant Frequency: 4496.00 GHz

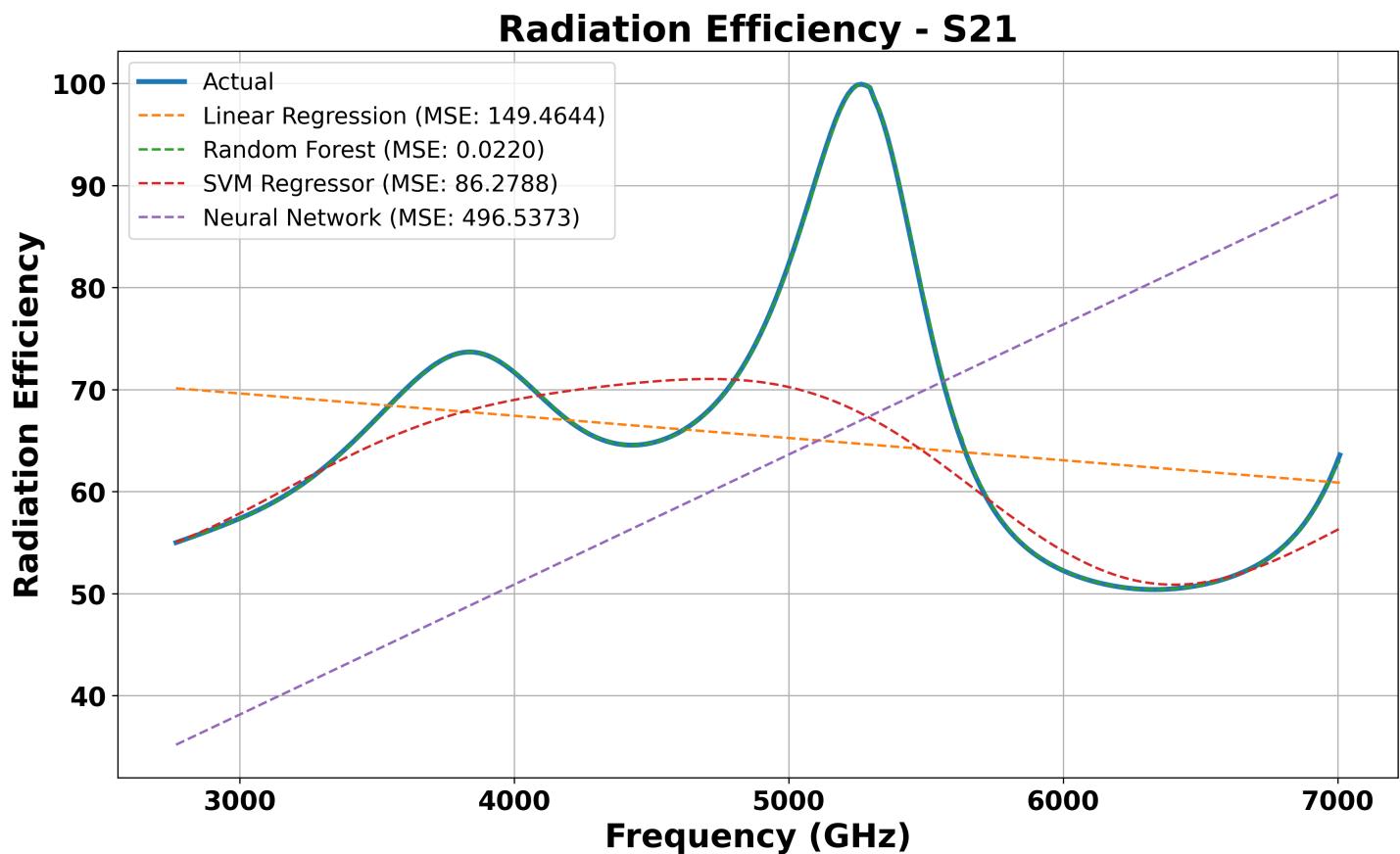
Return Loss (S_{11}) - S_{21}



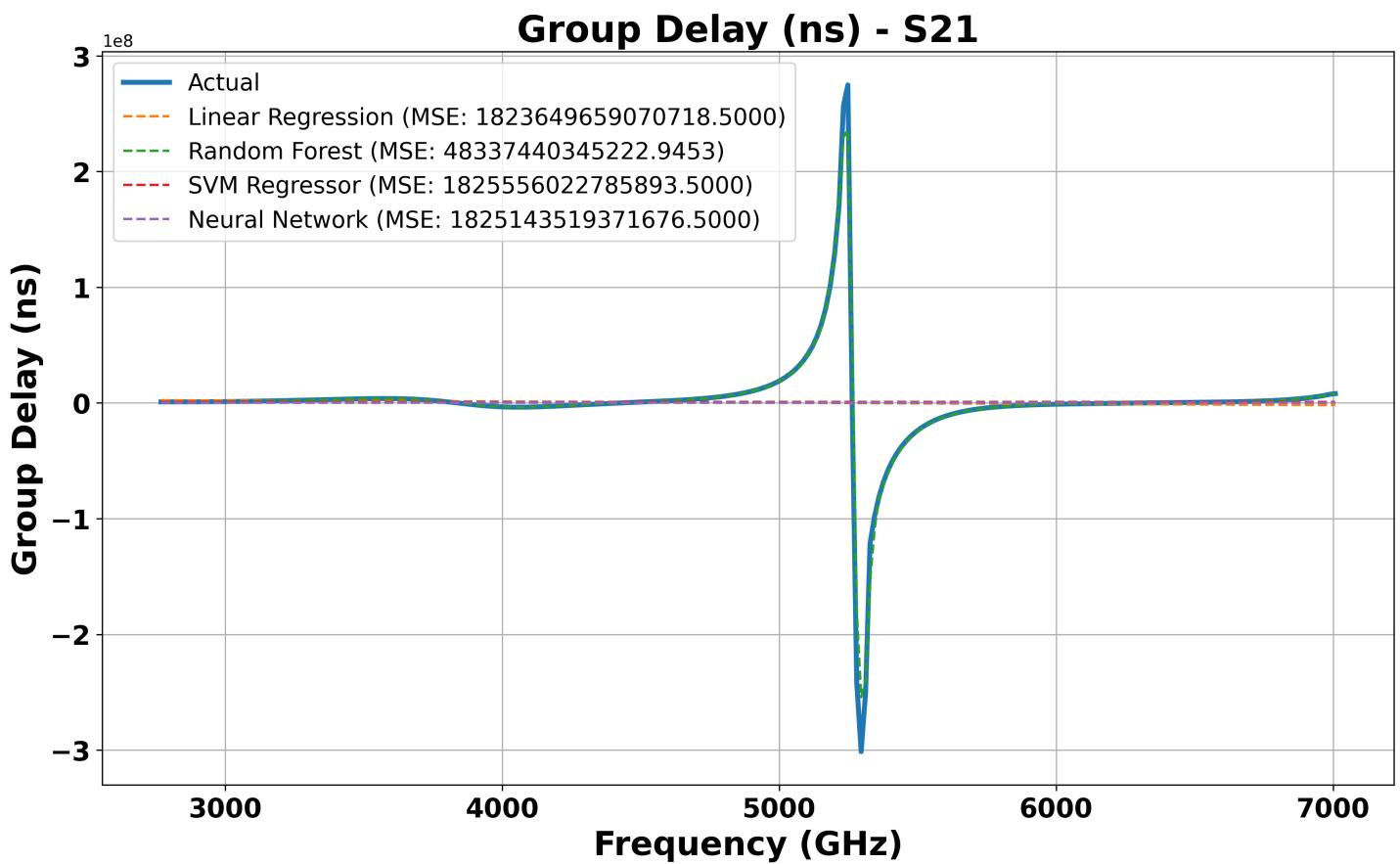
VSWR - S21



Radiation Efficiency - S21



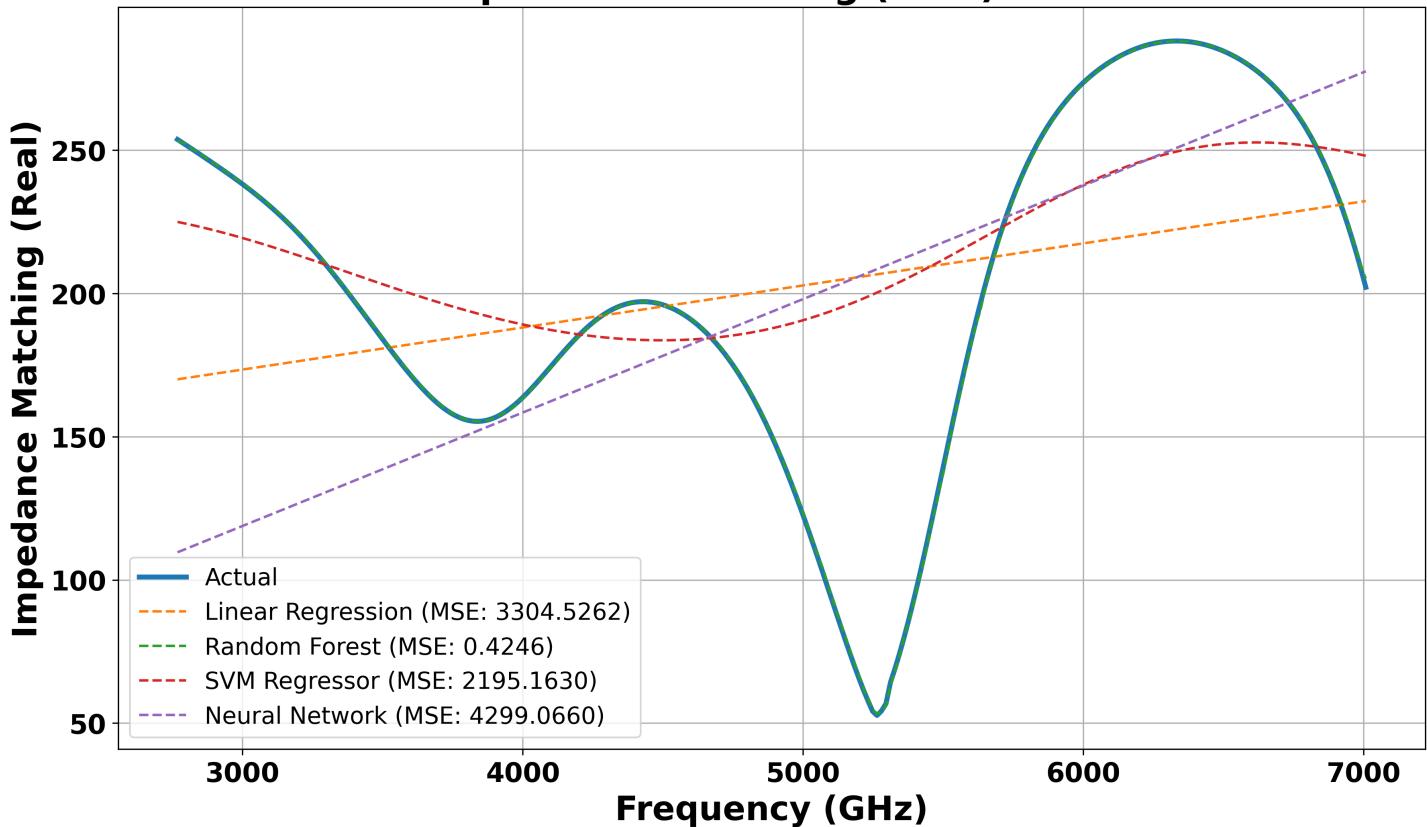
Group Delay (ns) - S21



Impedance Matching (Real) -

S21

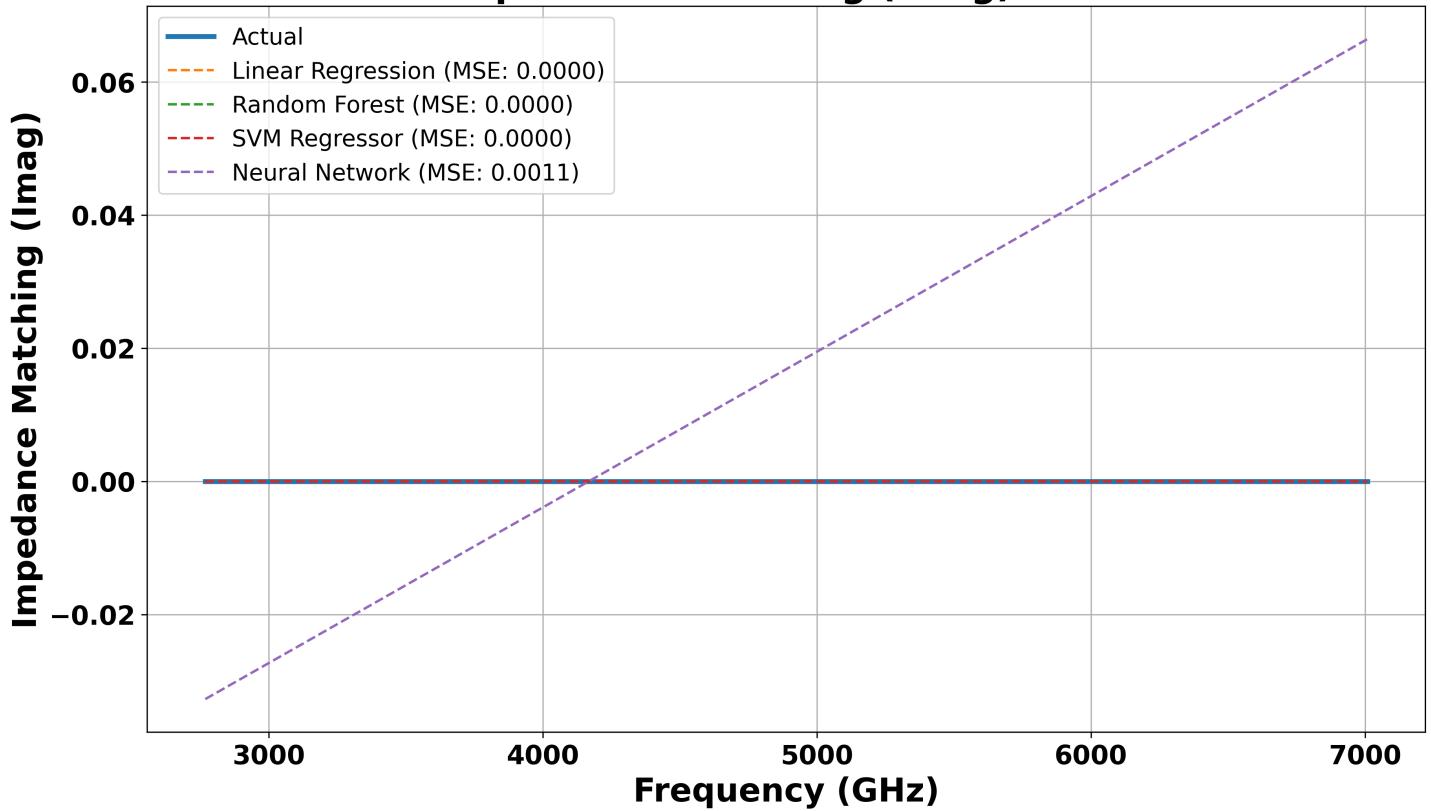
Impedance Matching (Real) - S21



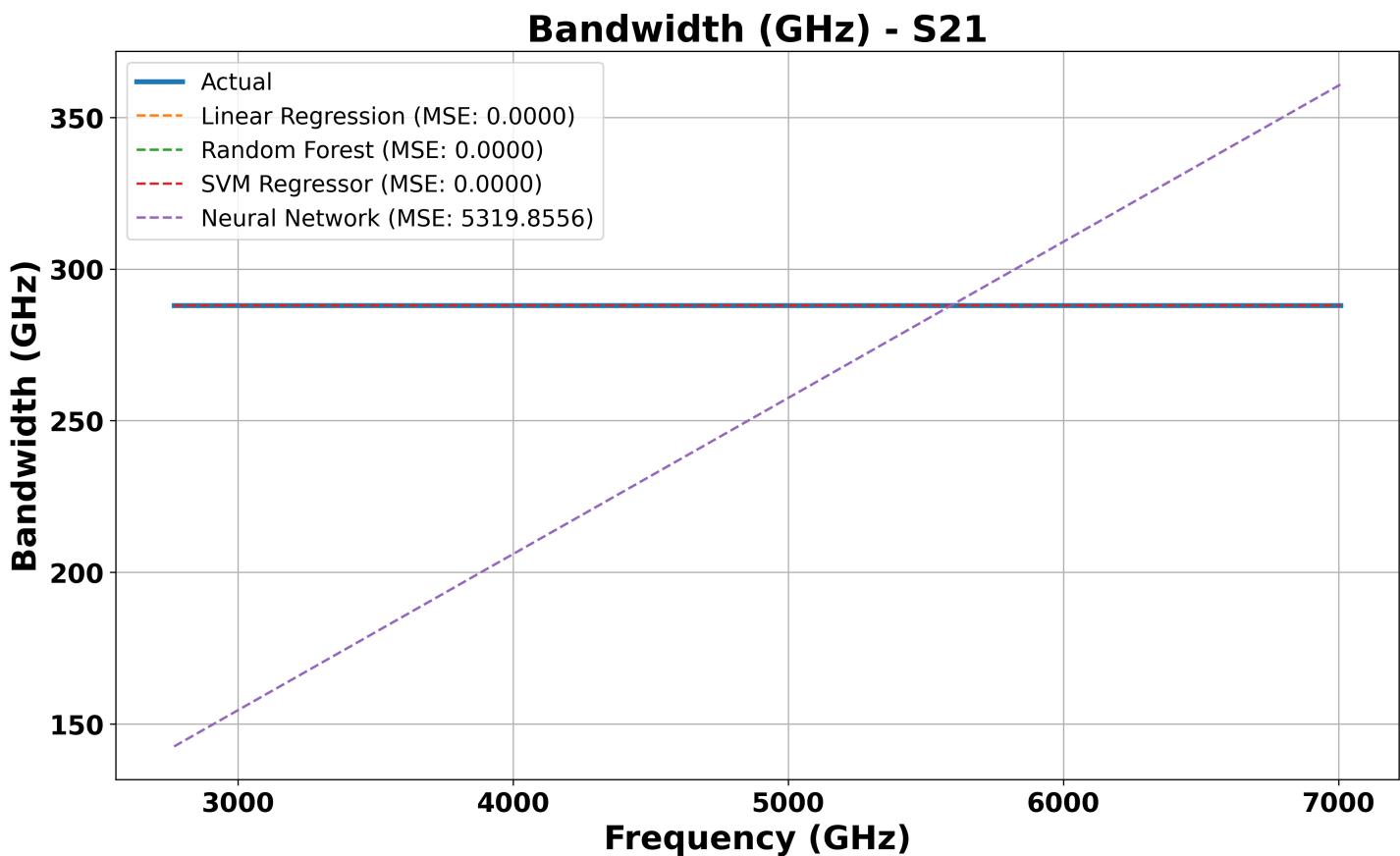
Impedance Matching (Imag)

S21

Impedance Matching (Imag) - S21



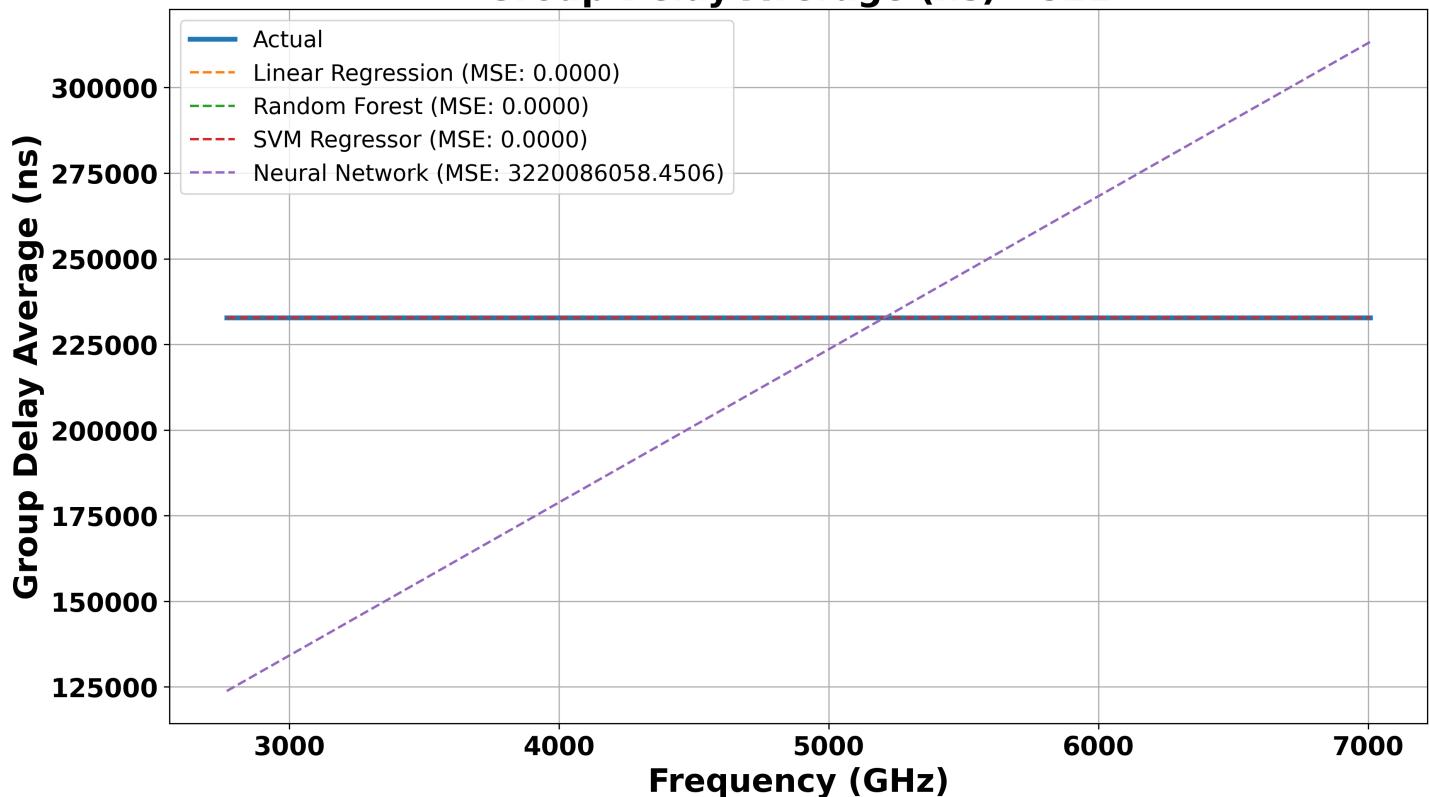
Bandwidth (GHz) - S21



Group Delay Average (ns) - S21

S21

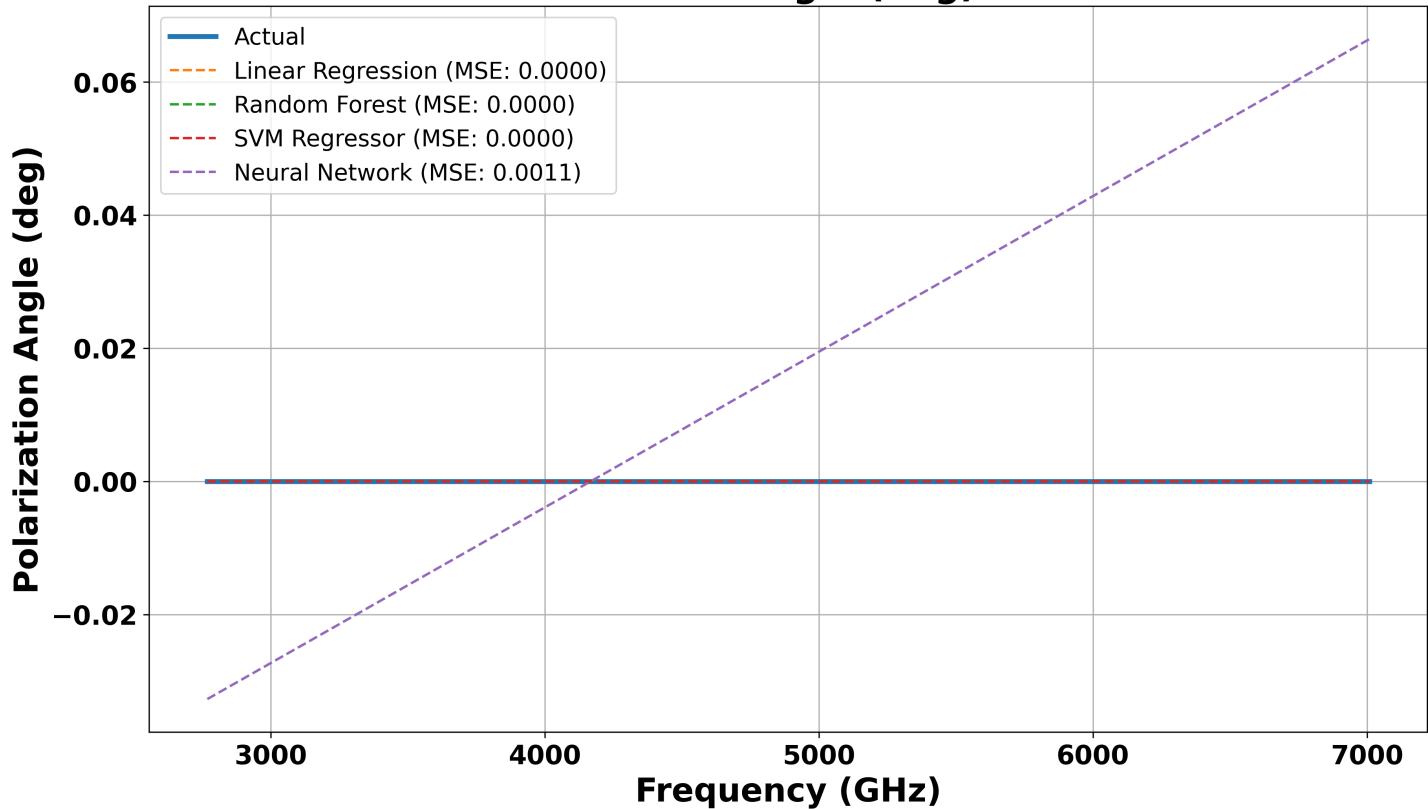
Group Delay Average (ns) - S21



Polarization Angle (deg) -

S21

Polarization Angle (deg) - S21



Summary for Port: S21

Return Loss (S11) | Best: Random Forest | MSE: 0.0280 | R²: 0.9982 | Var: 0.9982 | MAE: 0.0451 | RMSE: 0.1674 | MAPE: 0.41%

VSWR | Best: Random Forest | MSE: 0.0002 | R²: 0.9999 | Var: 0.9999 | MAE: 0.0092 | RMSE: 0.0130 | MAPE: 0.30%

Radiation Efficiency | Best: Random Forest | MSE: 0.0220 | R²: 0.9999 | Var: 0.9999 | MAE: 0.0953 | RMSE: 0.1484 | MAPE: 0.14%

Group Delay (ns) | Best: Random Forest | MSE: 48337440345222.9453 | R²: 0.9735 | Var: 0.9735 | MAE: 1244718.9967 | RMSE: 6952513.2395 | MAPE: 7.26%

Impedance Matching (Real) | Best: Random Forest | MSE: 0.4246 | R²: 0.9999 | Var: 0.9999 | MAE: 0.4598 | RMSE: 0.6516 | MAPE: 0.30%

Impedance Matching (Imag) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Bandwidth (GHz) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Group Delay Average (ns) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Polarization Angle (deg) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Bandwidth: 288.00 GHz

Avg. Group Delay: 232820.72 ns

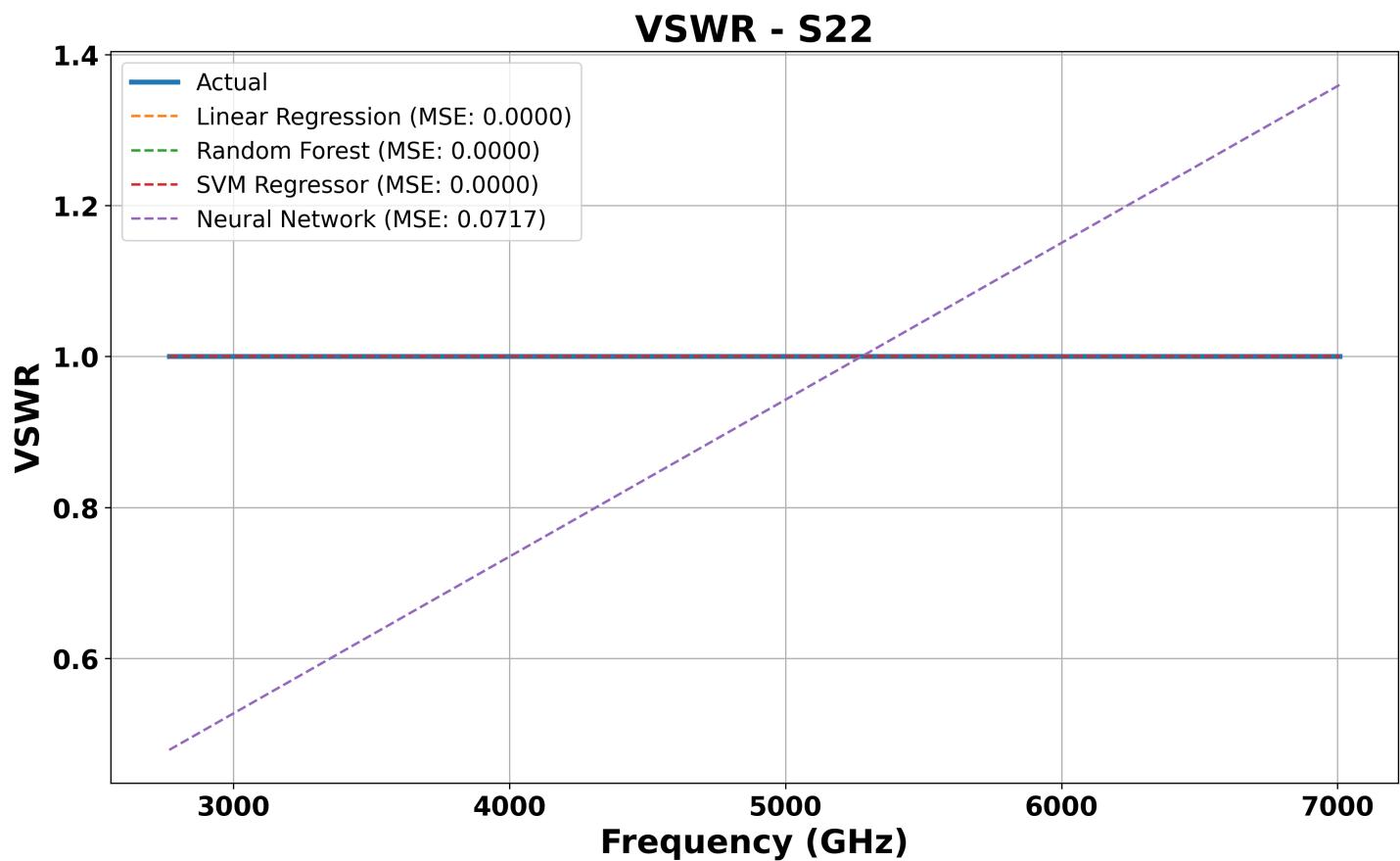
Min Return Loss: -31.68 dB at 5264.00 GHz

Resonant Frequency: 5264.00 GHz

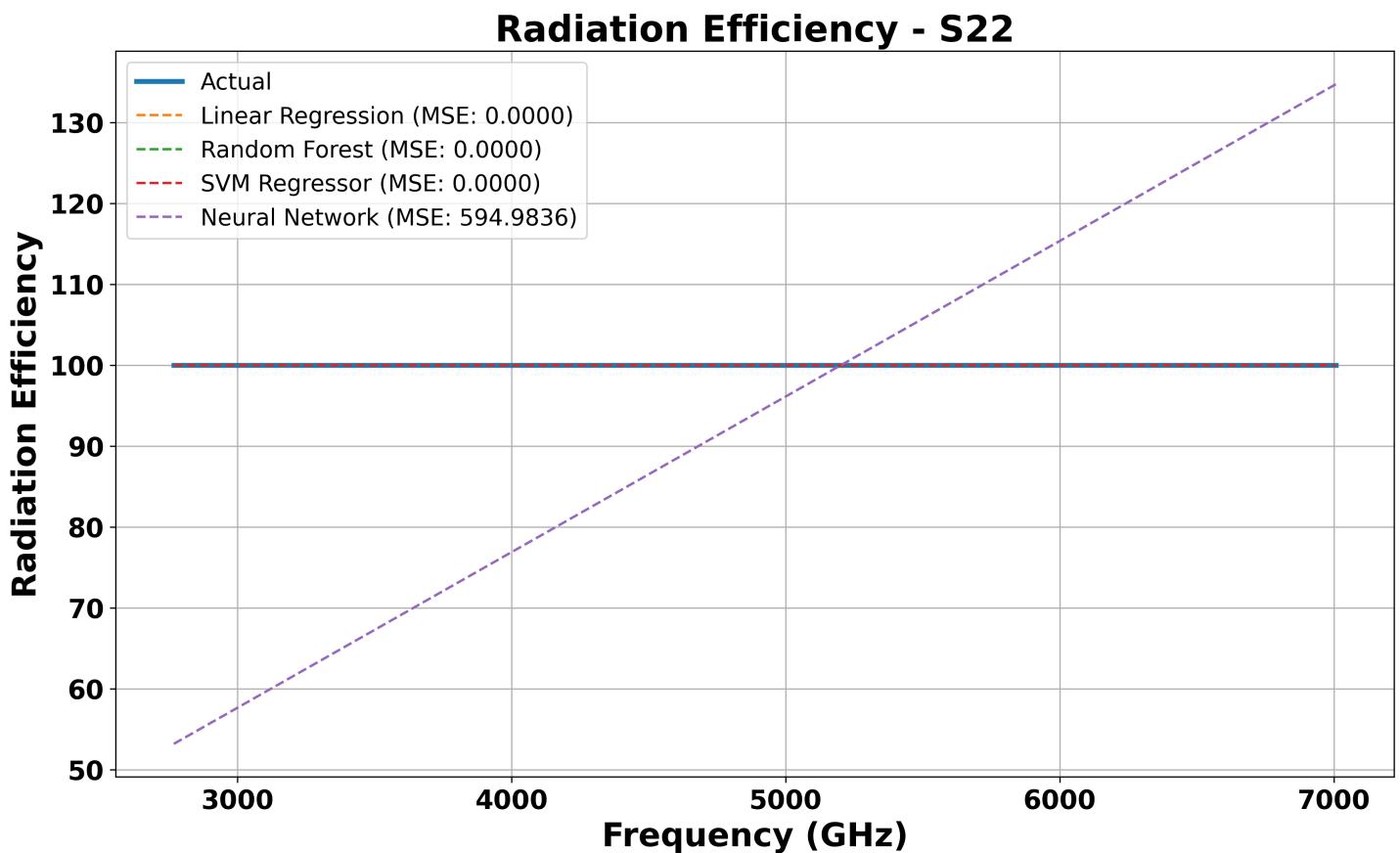
Return Loss (S_{11}) - S_{22}



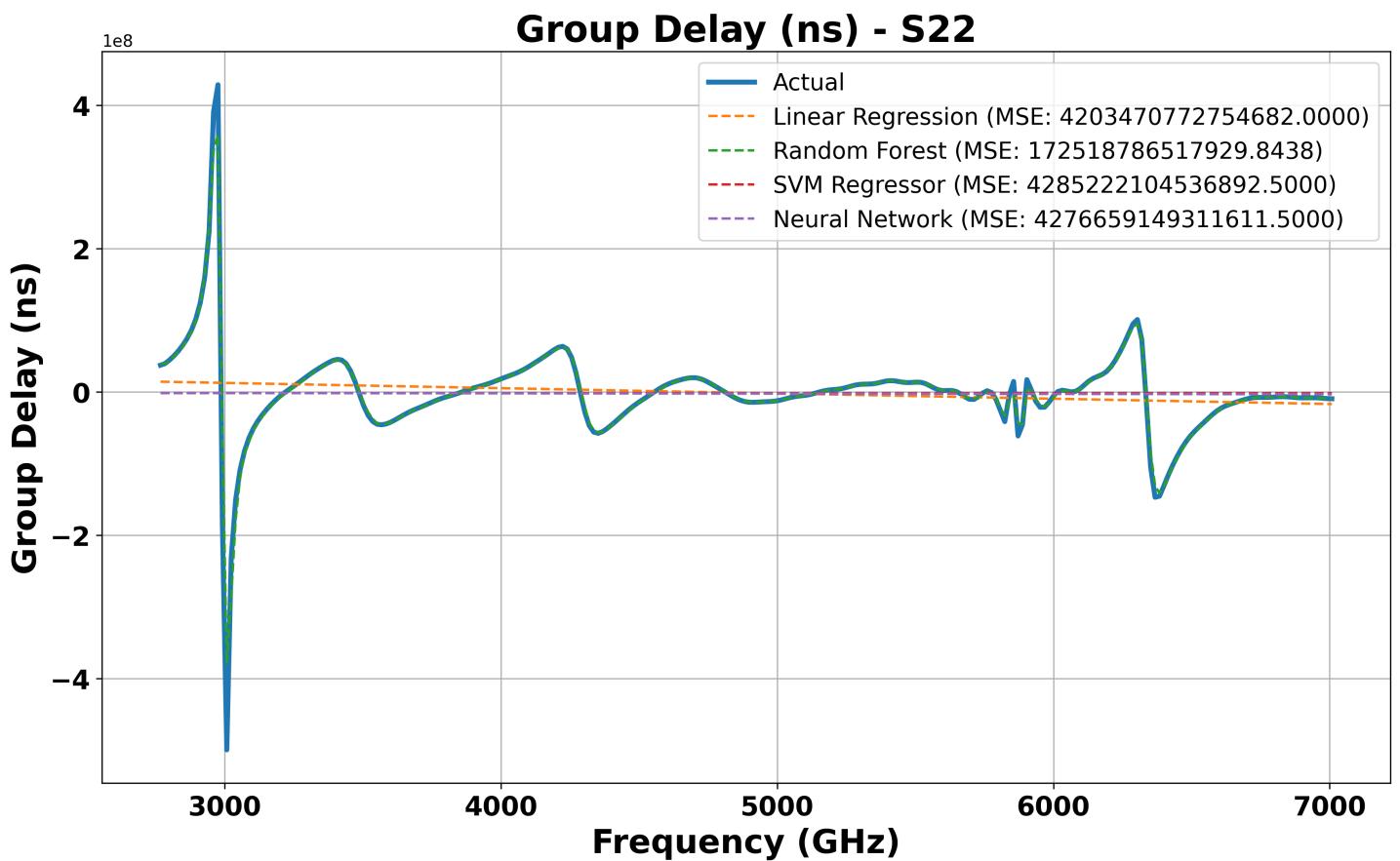
VSWR - S22



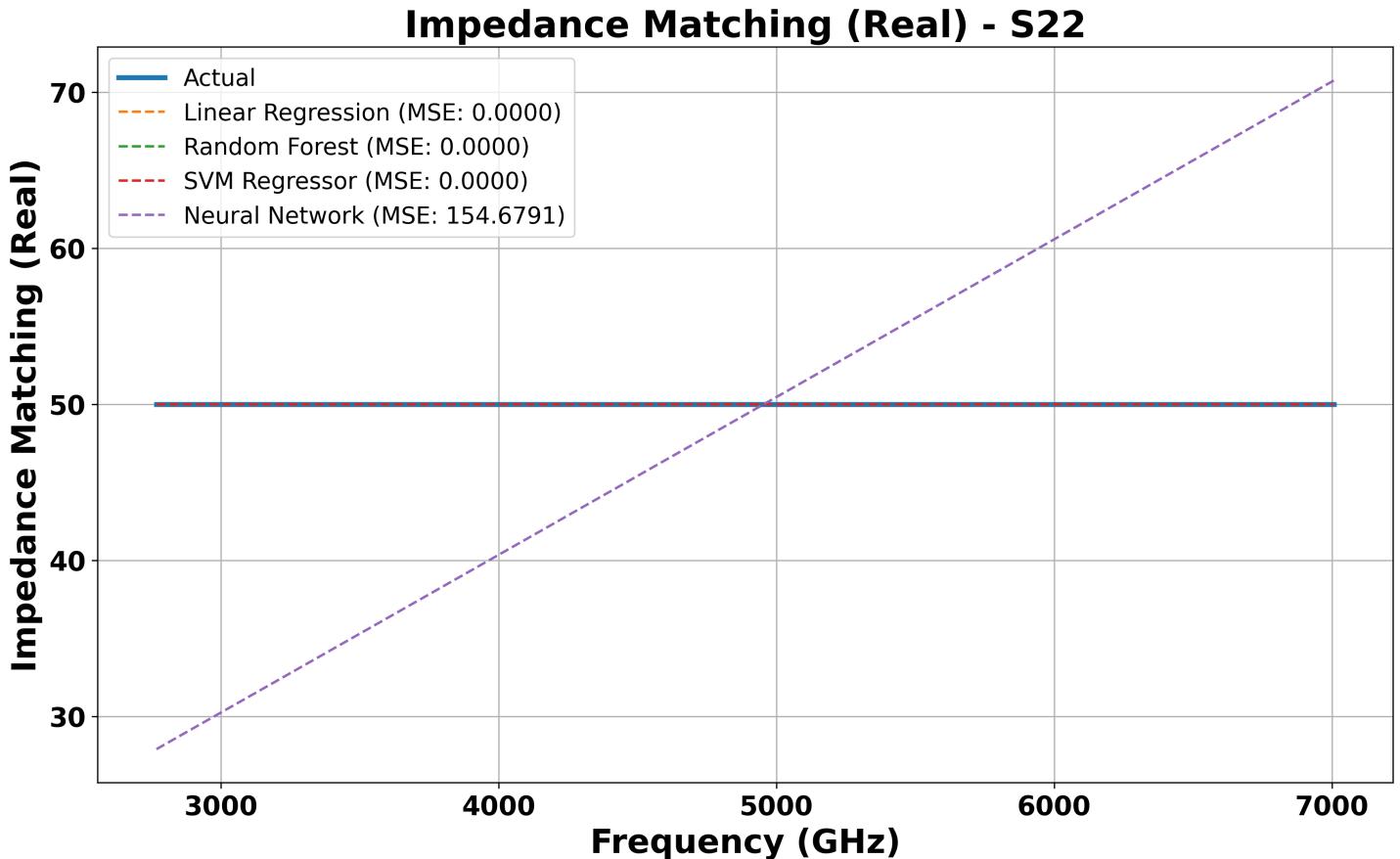
Radiation Efficiency - S22



Group Delay (ns) - S22



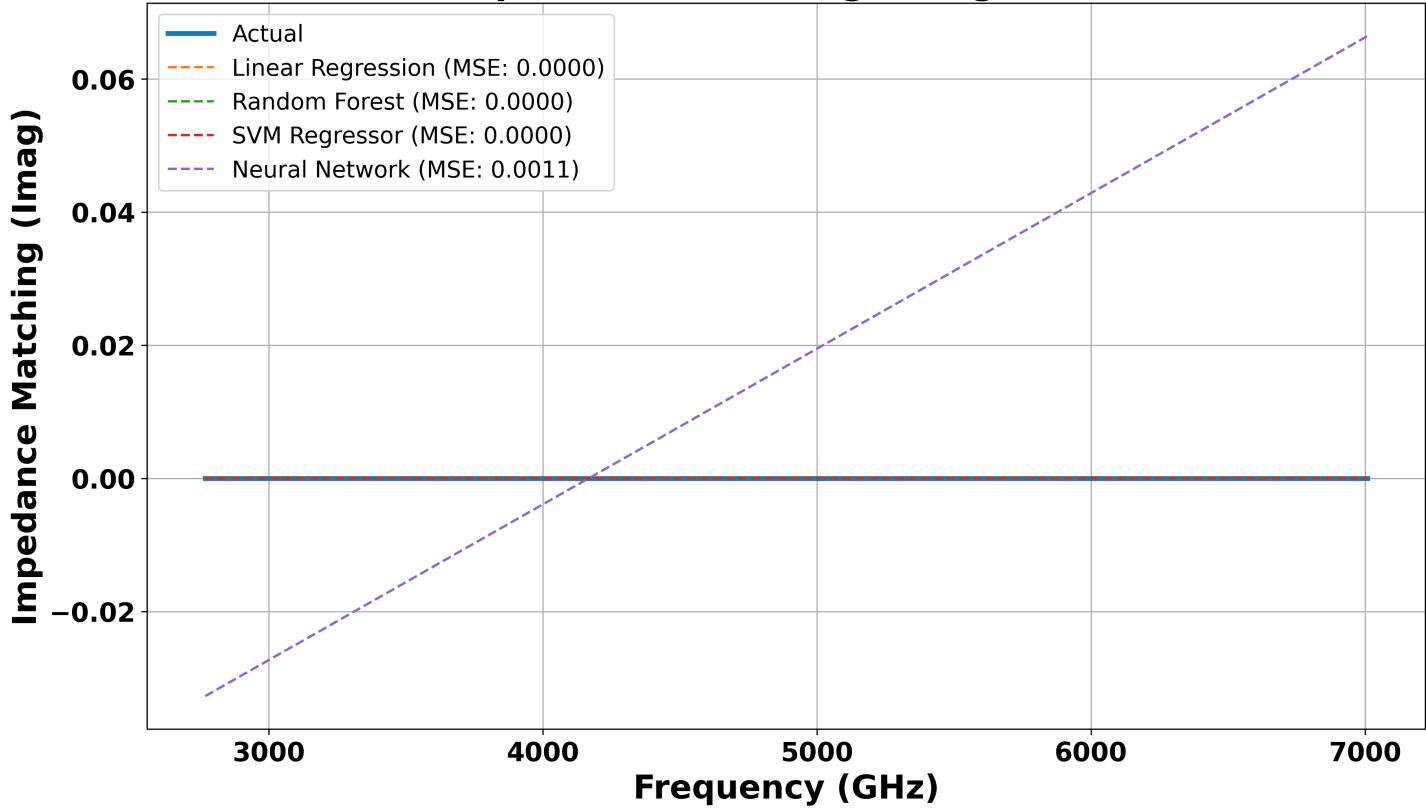
Impedance Matching (Real) - S22



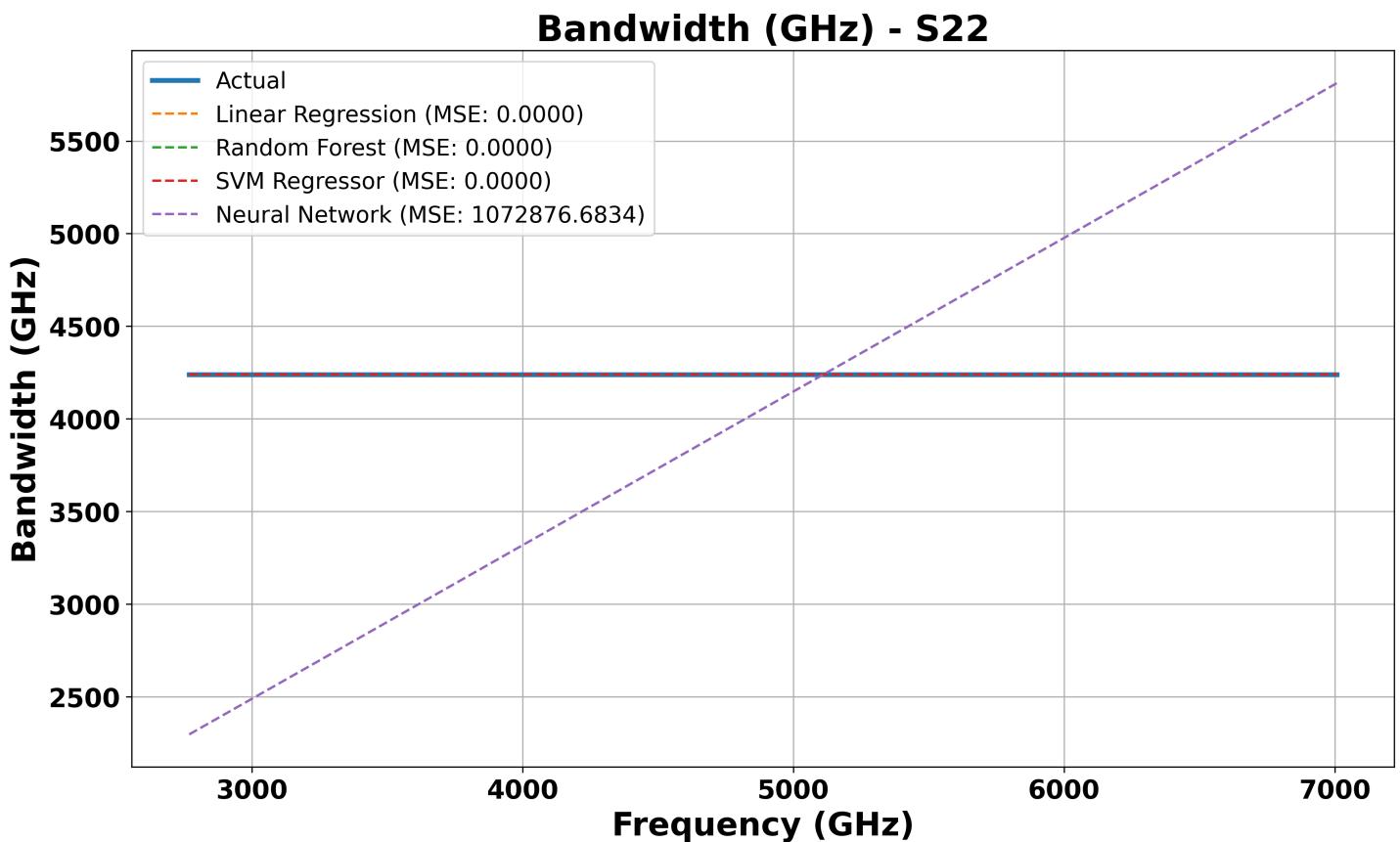
Impedance Matching (Imag)

S22

Impedance Matching (Imag) - S22

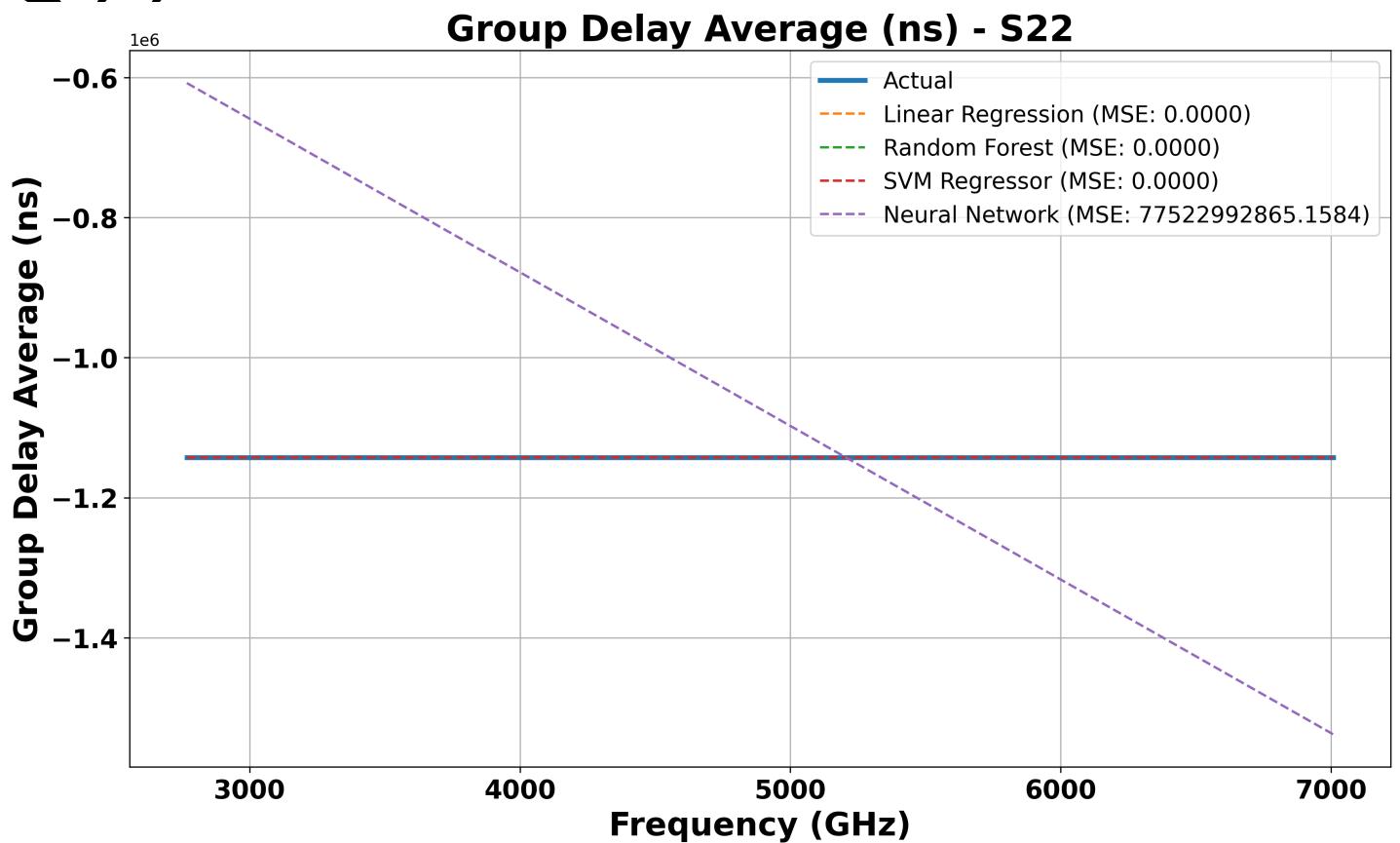


Bandwidth (GHz) - S22



Group Delay Average (ns) - S22

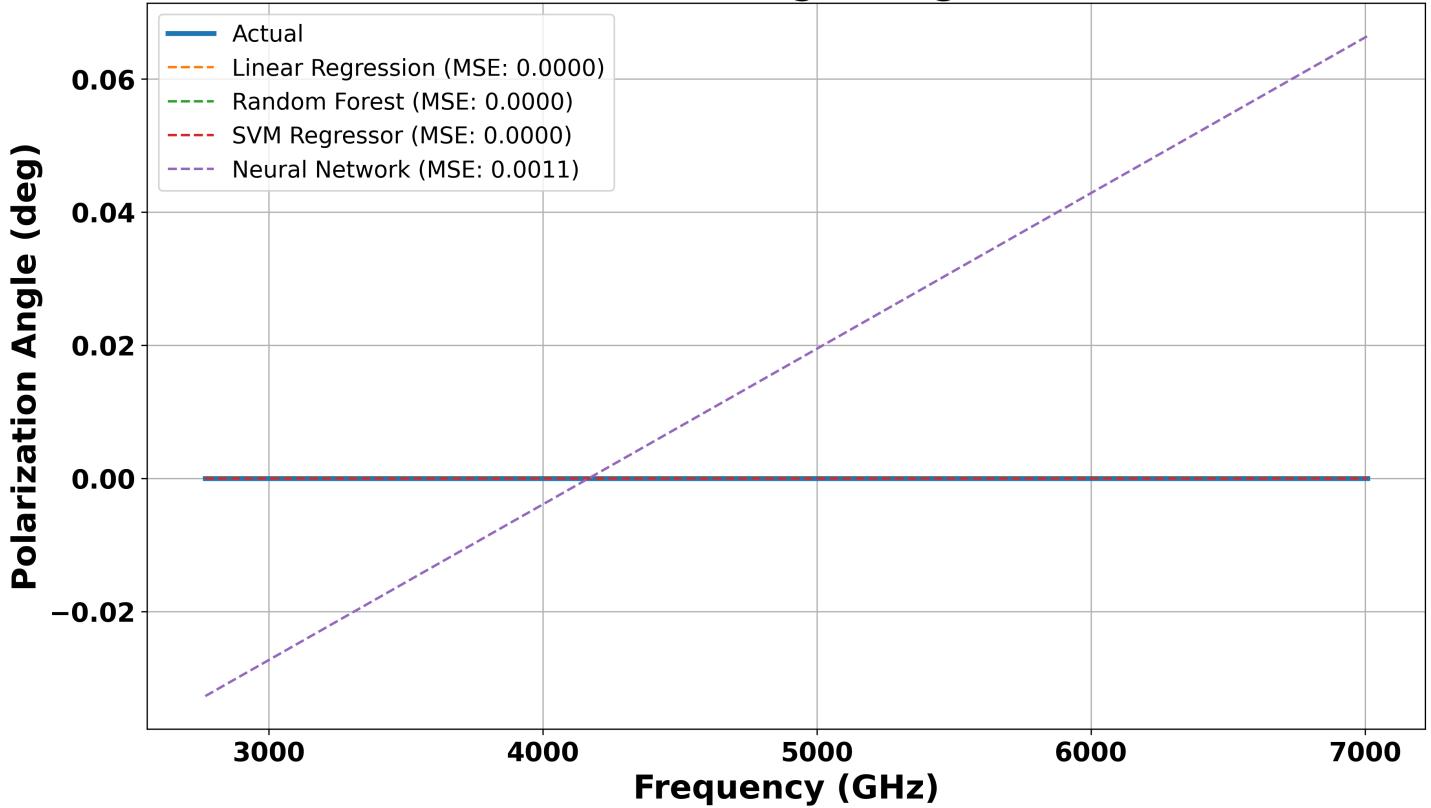
S22



Polarization Angle (deg) -

S22

Polarization Angle (deg) - S22



Summary for Port: S22

Return Loss (S11) | Best: Random Forest | MSE: 0.0905 | R²: 0.9971 | Var: 0.9971 | MAE: 0.1244 | RMSE: 0.3008 | MAPE: 0.07%

VSWR | Best: Linear Regression | MSE: 0.0000 | R²: 0.1638 | Var: 0.1638 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Radiation Efficiency | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Group Delay (ns) | Best: Random Forest | MSE: 172518786517929.8438 | R²: 0.9597 | Var: 0.9597 | MAE: 3096175.9868 | RMSE: 13134640.7076 | MAPE: 18609022556404.95%

Impedance Matching (Real) | Best: Linear Regression | MSE: 0.0000 | R²: 0.1638 | Var: 0.1638 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Impedance Matching (Imag) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Bandwidth (GHz) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Group Delay Average (ns) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Polarization Angle (deg) | Best: Linear Regression | MSE: 0.0000 | R²: 1.0000 | Var: 1.0000 | MAE: 0.0000 | RMSE: 0.0000 | MAPE: 0.00%

Bandwidth: 4240.00 GHz

Avg. Group Delay: -1142387.22 ns

Min Return Loss: -204.50 dB at 2992.00 GHz

Resonant Frequency: 2992.00 GHz