cmos028fdsoi Technology

EGRVT models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

Please use the bookmark to navigate

General information on EGRVT models

- Maximum supply voltage is 1.5 V.
- Validity domain is defined as follows:
  - ✔ Drawn gate length varies from 100nm to 10um.
  - ✔ Drawn transistor width varies from 0.16um to 10um.
  - ✔ Device temperature varies from -40 °C to 125 °C.

Output parameters definitions

- Model(s): egvnfet_acc, egvpfet_acc
  - ✔ Gm_ana : Drain transconductance at Ids = iana*M*W/L, Vds = Vdd/4V, f = 100kHz.
  - ✔ Sv@1hz : Gate noise voltage spectral density at 1Hz, Vgs = Vgs_ana, Vds = Vdd/4V
  - ✔ Gds_ana : Drain conductance at Ids = iana*M*W/L, Vds = Vdd/4, f = 100k
  - ✔ Vgs_ana : Vgs value for which drain current is iana*M*shrink_iana*W/(shrink_iana*L+dlshrink_iana+plashrink_iana*p_la) at Vds=Vdd/4V.
  - ✔ Id_sv : Drain current at Vgs = Vgs_ana and Vds = Vdd/4V for which noise voltage and current spectral densities Sv, Si are extracted.
  - ✔ Cbd_off : Bulk-to-Drain capacitance at Vgs = 0V, Vds = 0V, f = 100kHz.
  - ✔ Cdg_ana : Drain-to-Gate transcapacitance at Ids = iana*M*W/L, Vds = Vdd/4V, f = 100kHz.
  - ✔ Ft_ana : Transition frequency at Ids = iana*M*W/L, Vds = Vdd/4V
  - ✔ Sv@th : Gate thermal noise voltage spectral density, Vgs = Vgs_ana, Vds = Vdd/4V
  - ✔ Rg : Total gate resistance at Vgs = 1.5V, Vds = 0V, f = 1GHz
  - ✔ Cdd_ana : Total drain capacitance at Ids = iana*M*W/L, Vds = Vdd/4V, f = 100kHz.
  - ✔ Gdc_ana : Voltage gain at Ids = iana*M*W/L, Vds = Vdd/4V, f = 100kHz
  - ✔ Cgg_ana : Total gate capacitance at Ids = iana*M*W/L, Vds = Vdd/4V, f = 100kHz
  - ✔ Cgd_0v : Gate-to-Drain capacitance at Vgs = 0V, Vds = vds_cggV, f = 100kHz.
  - ✔ Vtgmmax : Threshold voltage at Vds = 0.05 derived from Gm max method.

egvnfet_acc
Electrical characteristics per geometry

egvnfet_acc @ w=2e-6, l=0.10e-6, swshe=0, pre_layout_local=1, nf=2, sa=1.2e-07, sb=1.2e-07, devtype=PCELLwoWPE, as=1.2e-13, ad=1.2e-13, ps=2.24e-06, pd=2.24e-06, vbs=0, vdd=1.5, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	TT	FFF
VtGmmax [mV]	556.6 0.0mV	482.7 0.0mV	409.4 0.0mV
Vgs_ana [mV]	785.7 0.0mV	683.6 0.0mV	-9337 0.0mV
GDC_ana []	25.39 0.0%	29.61 0.0%	0.92 0.0%
GBW_QS [GHz]	150 0.0%	164.1 0.0%	350.7 0.0%
Ft_ana [GHz]	61.5 0.0%	66.55 0.0%	7.59e-05 0.0%
Gm_ana [µS]	729 0.0%	801.5 0.0%	-3.14 -0.0%
Gds_ana [µS]	28.71 0.0%	27.07 0.0%	26.76 0.0%
Cgg_ana [fF]	1.89 0.0%	1.92 0.0%	0.94 0.0%
Cdg_ana [fF]	1.14 0.0%	1.13 0.0%	0.37 0.0%
Cdd_ana [aF]	768.9 0.0%	774.3 0.0%	620 0.0%
Sv@1Hz [V/√Hz]	1.05e-05 0.0%	3.93e-05 0.0%	nan nan%
Sv@th [V/√Hz]	4.89e-09 0.0%	4.59e-09 0.0%	2.04e-08 0.0%

egvnfet_acc @ w=2e-6, l=2.0e-6, swshe=0, pre_layout_local=1, nf=2, sa=1.2e-07, sb=1.2e-07, devtype=PCELLwoWPE, as=1.2e-13, ad=1.2e-13, ps=2.24e-06, pd=2.24e-06, vbs=0, vdd=1.5, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	TT	FFF
VtGmmax [mV]	608.5 0.0mV	540.1 0.0mV	470.8 0.0mV
Vgs_ana [mV]	775.3 0.0mV	699.1 0.0mV	-7300 0.0mV
GDC_ana []	921 0.0%	882.4 0.0%	0.76 0.0%
GBW_QS [GHz]	12.71 0.0%	12.76 0.0%	2018 0.0%
Ft_ana [GHz]	0.42 0.0%	0.43 0.0%	8.55e-05 0.0%
Gm_ana [µS]	48.2 0.0%	49.81 0.0%	-1.22 -0.0%
Gds_ana [µS]	5.23e-02 0.0%	5.64e-02 0.0%	5.08 0.0%
Cgg_ana [fF]	18.11 0.0%	18.42 0.0%	4.3 0.0%
Cdg_ana [fF]	6.98 0.0%	7.11 0.0%	0.43 0.0%
Cdd_ana [aF]	603.8 0.0%	621.2 0.0%	566.2 0.0%
Sv@1Hz [V/√Hz]	4.06e-06 0.0%	7.16e-06 0.0%	nan nan%
Sv@th [V/√Hz]	1.62e-08 0.0%	1.58e-08 0.0%	1.05e-07 0.0%

egvpfet_acc
Electrical characteristics per geometry

egvpfet_acc @ w=2e-6, l=0.10e-6, swshe=0, pre_layout_local=1, nf=2, sa=1.2e-07, sb=1.2e-07, devtype=PCELLwoWPE, as=1.2e-13, ad=1.2e-13, ps=2.24e-06, pd=2.24e-06, vbs=0, vdd=1.5, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	TT	FFF
VtGmmax [mV]	639.1 0.0mV	516 0.0mV	403.3 0.0mV
Vgs_ana [mV]	-5.362e+04 0.0mV	724.4 0.0mV	607.2 0.0mV
GDC_ana []	3.17e-02 0.0%	9.89 0.0%	9.77 0.0%
GBW_QS [GHz]	515.3 0.0%	46 0.0%	44.48 0.0%
Ft_ana [GHz]	8.43e-05 0.0%	19.5 0.0%	18.34 0.0%
Gm_ana [µS]	-3.06 -0.0%	254.3 0.0%	249.6 0.0%
Gds_ana [µS]	102.8 0.0%	25.72 0.0%	25.55 0.0%
Cgg_ana [fF]	1.1 0.0%	2.08 0.0%	2.17 0.0%
Cdg_ana [fF]	0.46 0.0%	1.1 0.0%	1.14 0.0%
Cdd_ana [aF]	696.6 0.0%	878.2 0.0%	891.7 0.0%
Sv@1Hz [V/√Hz]	nan nan%	2.52e-05 0.0%	7.15e-05 0.0%
Sv@th [V/√Hz]	1.1e-06 0.0%	7.12e-09 0.0%	7.26e-09 0.0%

egvpfet_acc @ w=2e-6, l=2.0e-6, swshe=0, pre_layout_local=1, nf=2, sa=1.2e-07, sb=1.2e-07, devtype=PCELLwoWPE, as=1.2e-13, ad=1.2e-13, ps=2.24e-06, pd=2.24e-06, vbs=0, vdd=1.5, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

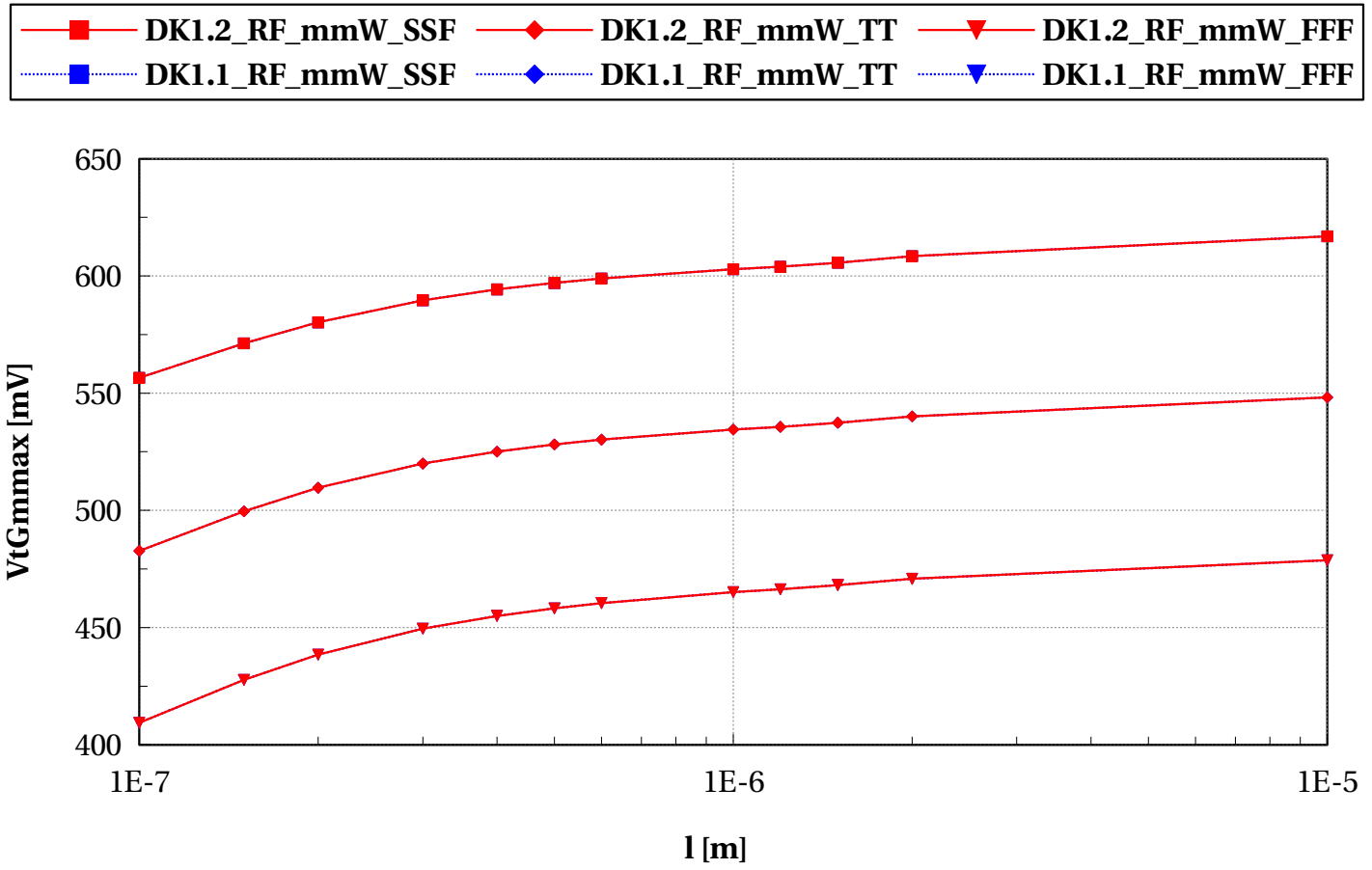
	SSF	TT	FFF
VtGmmax [mV]	701.7 0.0mV	579.2 0.0mV	466 0.0mV
Vgs_ana [mV]	-1.556e+04 0.0mV	7164 0.0mV	656.8 0.0mV
GDC_ana []	7.10e-02 0.0%	0.86 0.0%	131.2 0.0%
GBW_QS [GHz]	1306 0.0%	1600 0.0%	2.42 0.0%
Ft_ana [GHz]	1.39e-02 0.0%	1.25e-05 0.0%	0.11 0.0%
Gm_ana [µS]	-0.39 -0.0%	-5.38 -0.0%	13.56 0.0%
Gds_ana [µS]	5.56 0.0%	54.23 0.0%	0.1 0.0%
Cgg_ana [fF]	4.52 0.0%	30.49 0.0%	20.28 0.0%
Cdg_ana [fF]	0.47 0.0%	15.93 0.0%	7.77 0.0%
Cdd_ana [fF]	0.62 0.0%	11.97 0.0%	0.89 0.0%
Sv@1Hz [V/√Hz]	nan nan%	2.23e-06 0.0%	1.02e-05 0.0%
Sv@th [V/√Hz]	2.03e-06 0.0%	1.35e-08 0.0%	2.83e-08 0.0%

egvnfet_acc
Electrical characteristics scaling

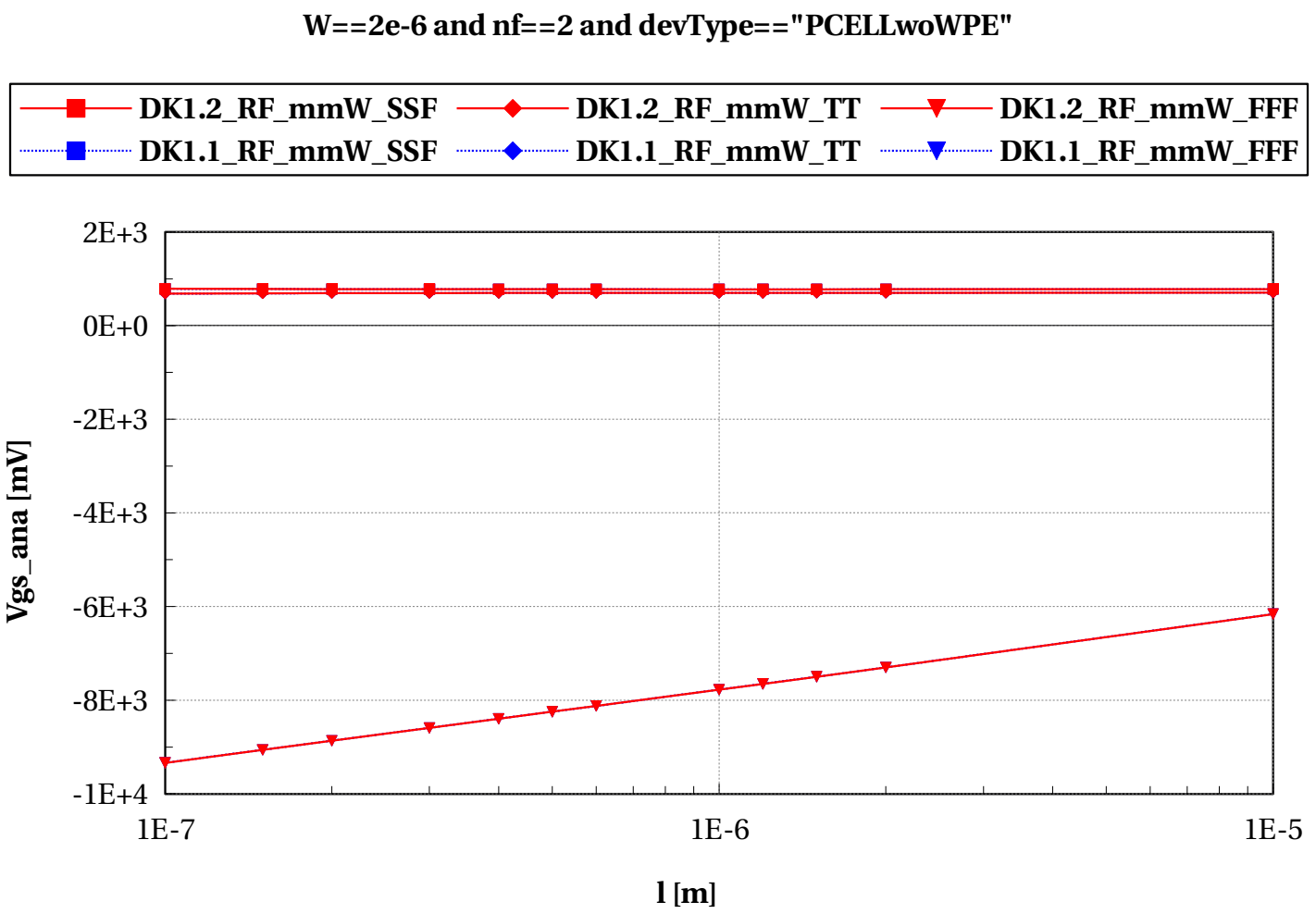
Scaling versus Length (T=25C)

egvnfet_acc, VtGmmax [mV] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"

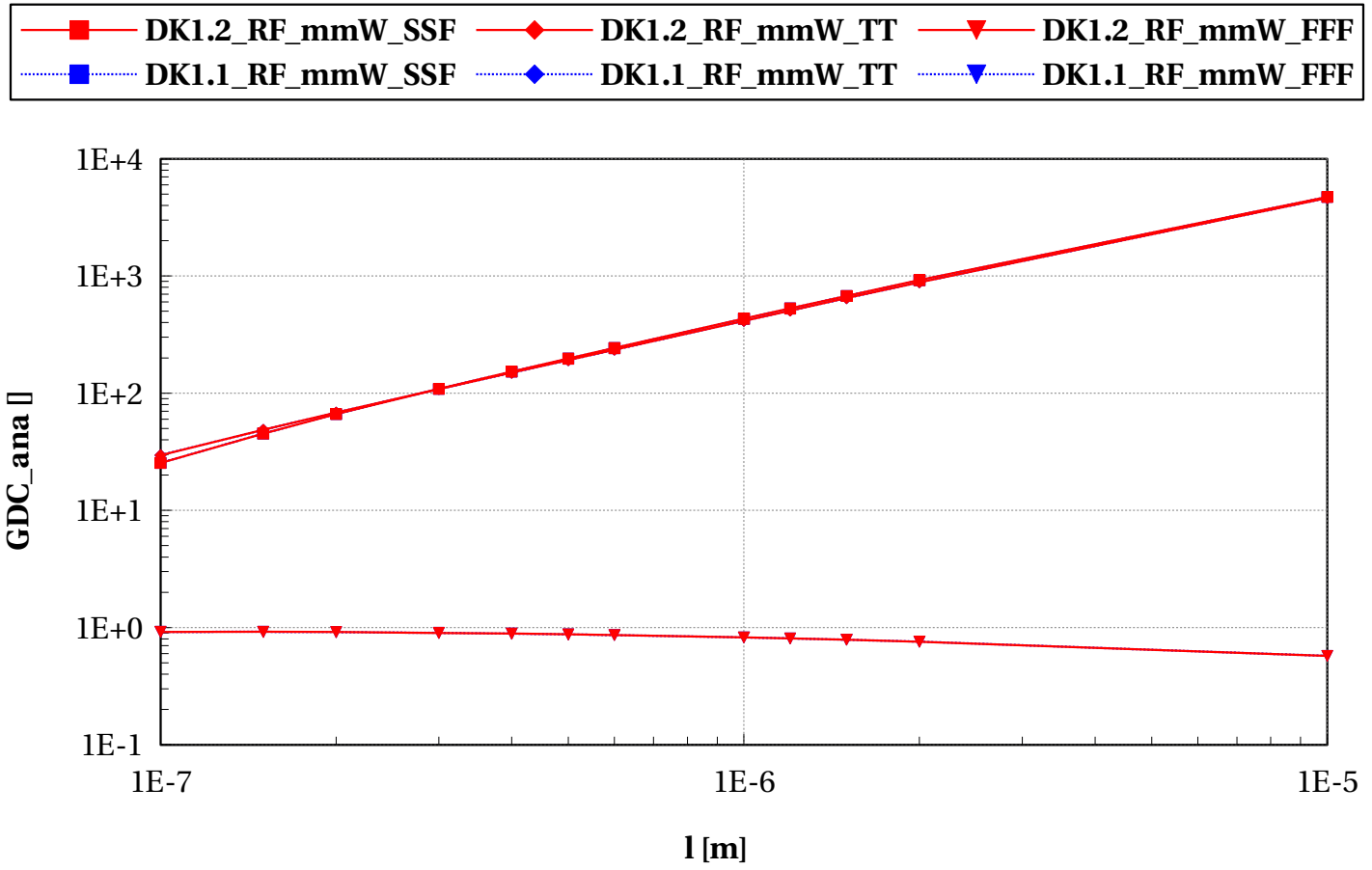


egvnfet_acc, Vgs_ana [mV] vs l [m]



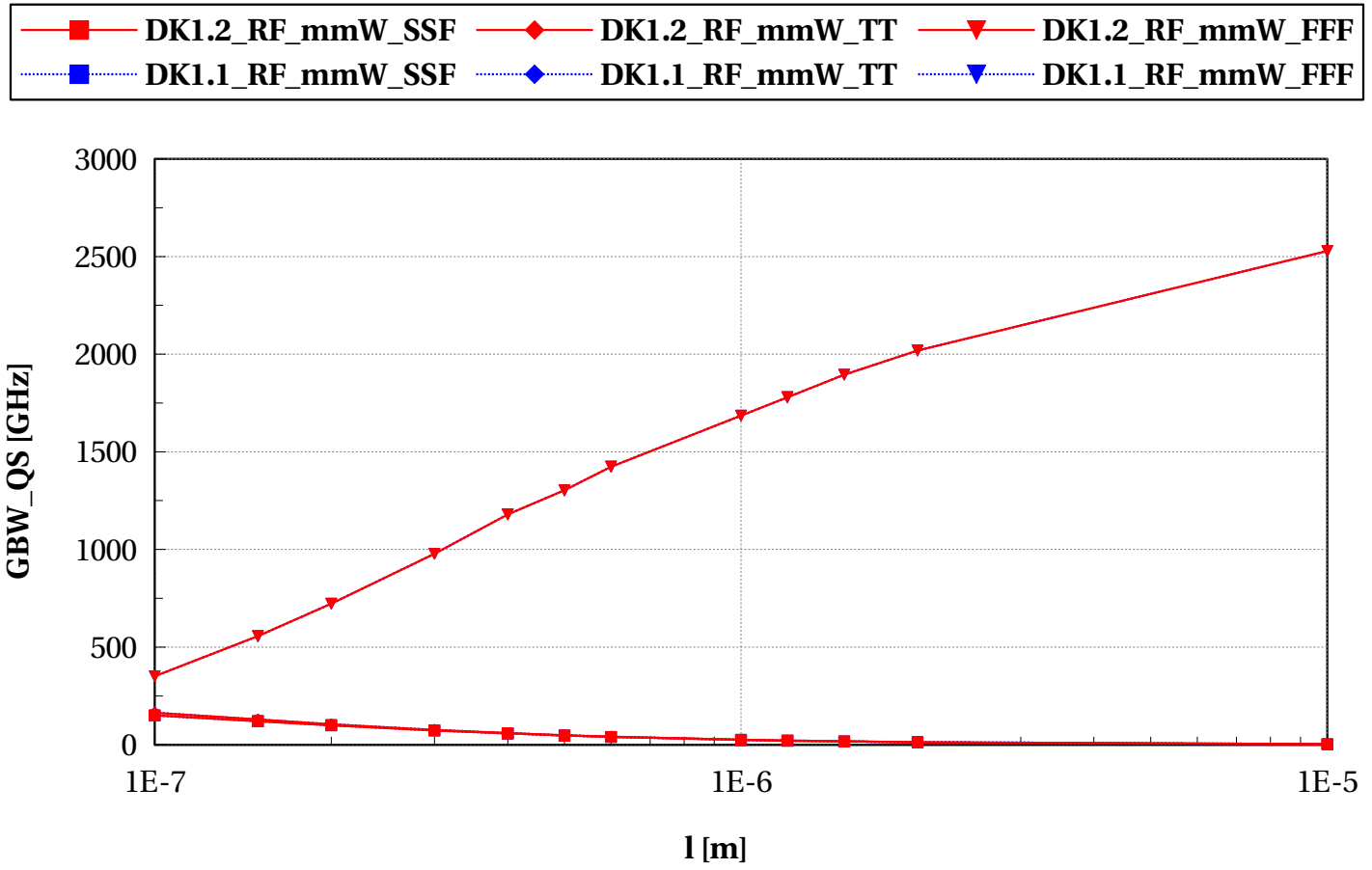
egvnfet_acc, GDC_ana [] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"



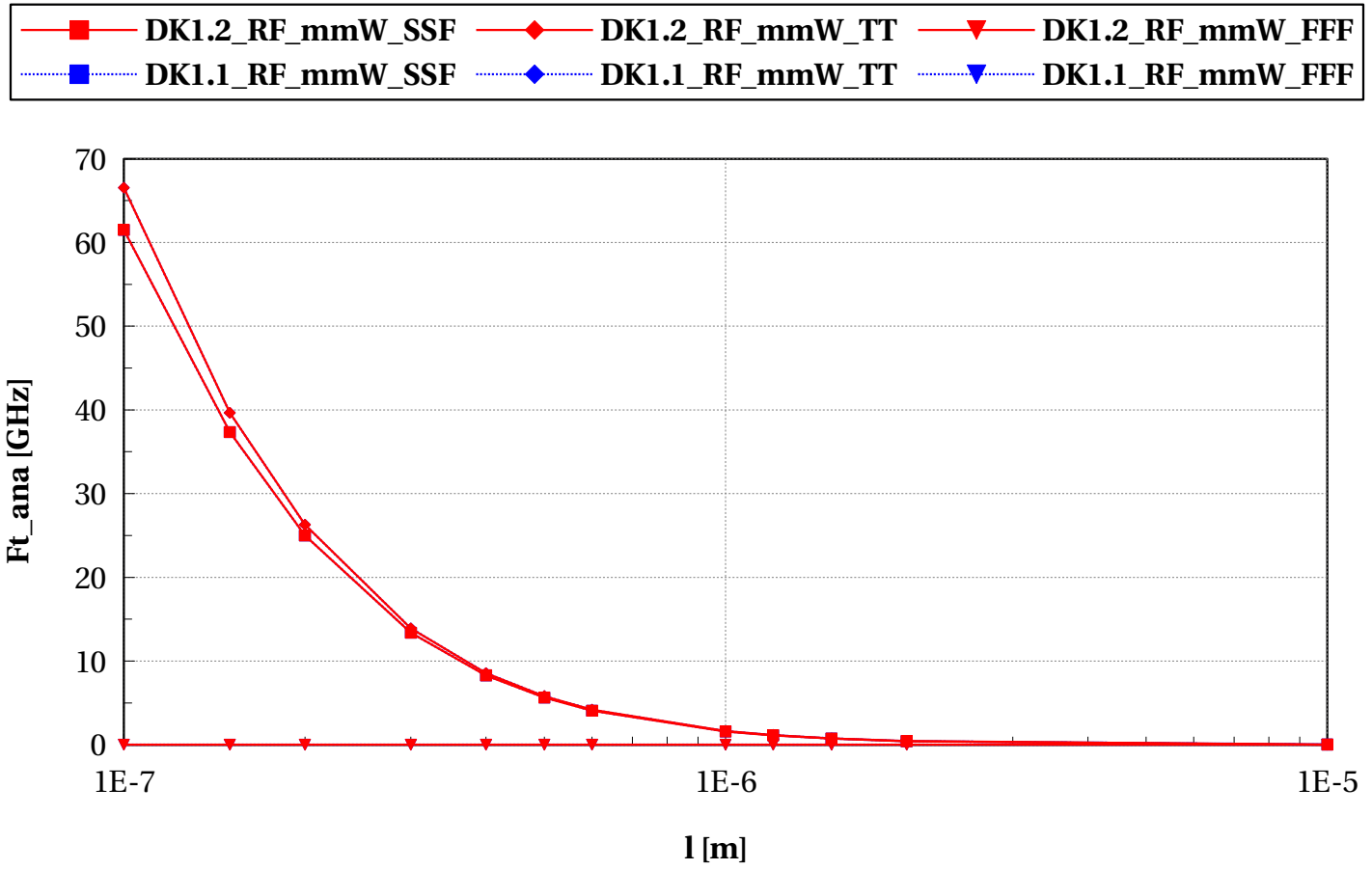
egvnfet_acc, GBW_QS [GHz] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"

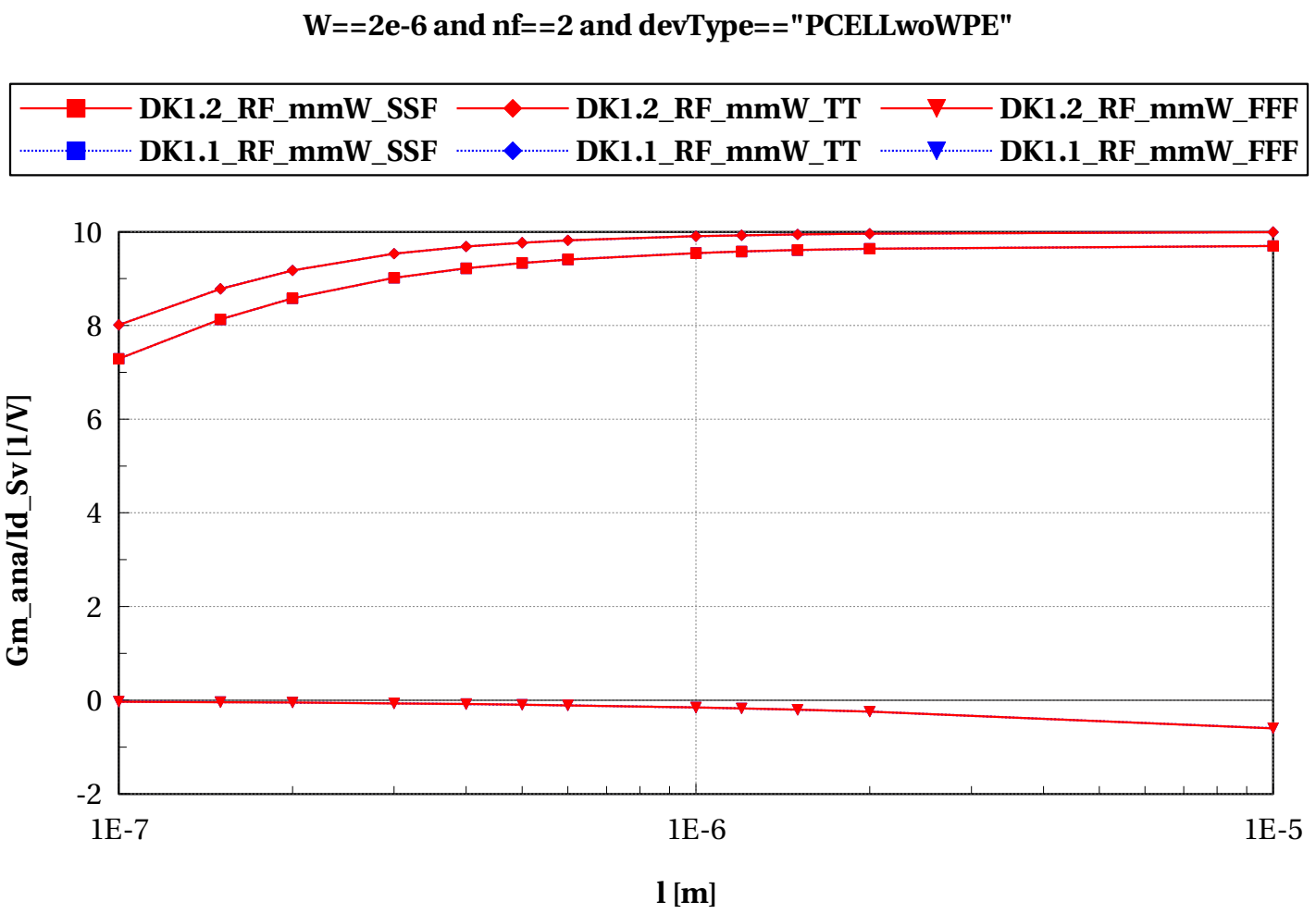


egvnfet_acc, Ft_ana [GHz] vs l [m]

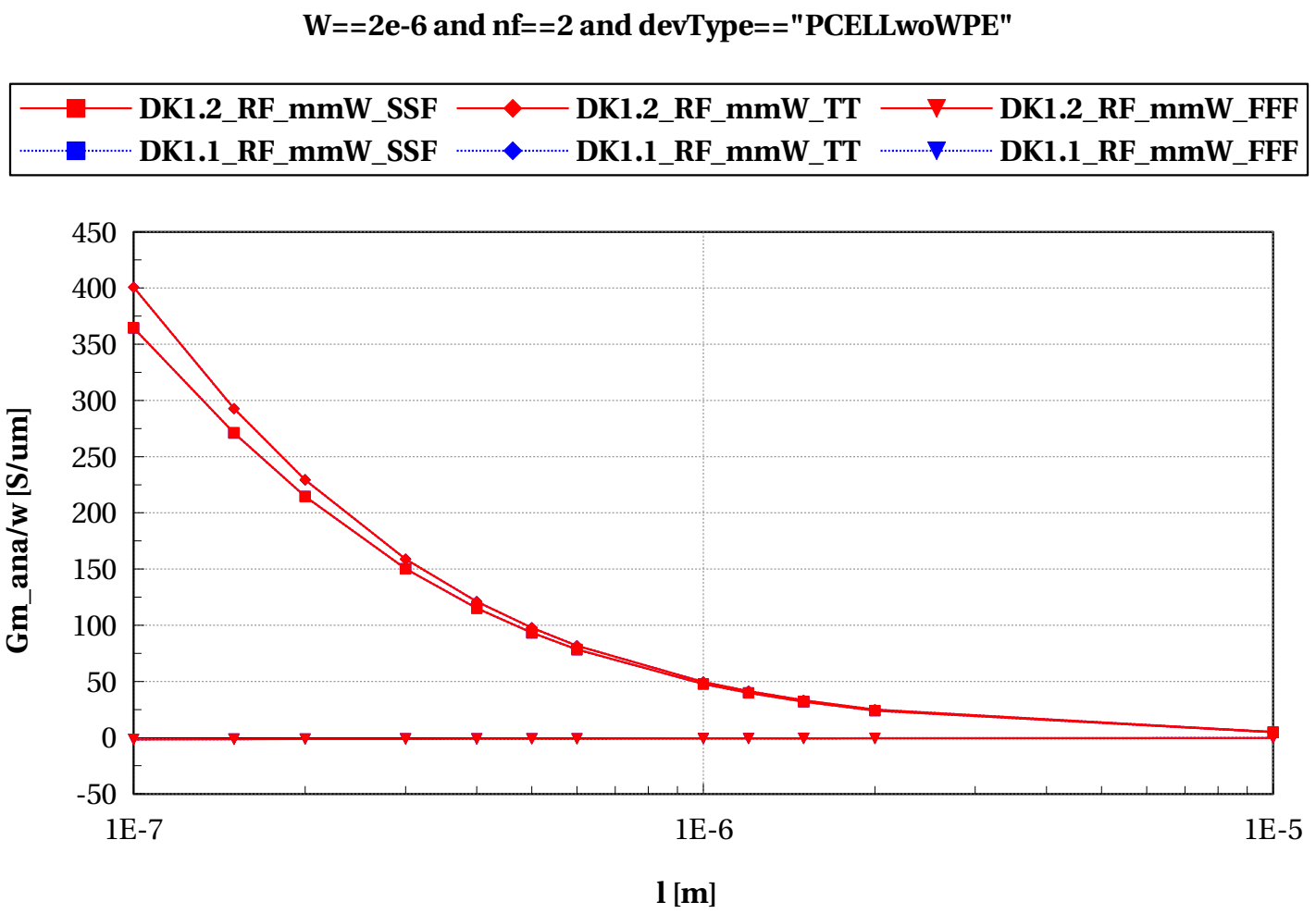
W==2e-6 and nf==2 and devType=="PCELLwoWPE"



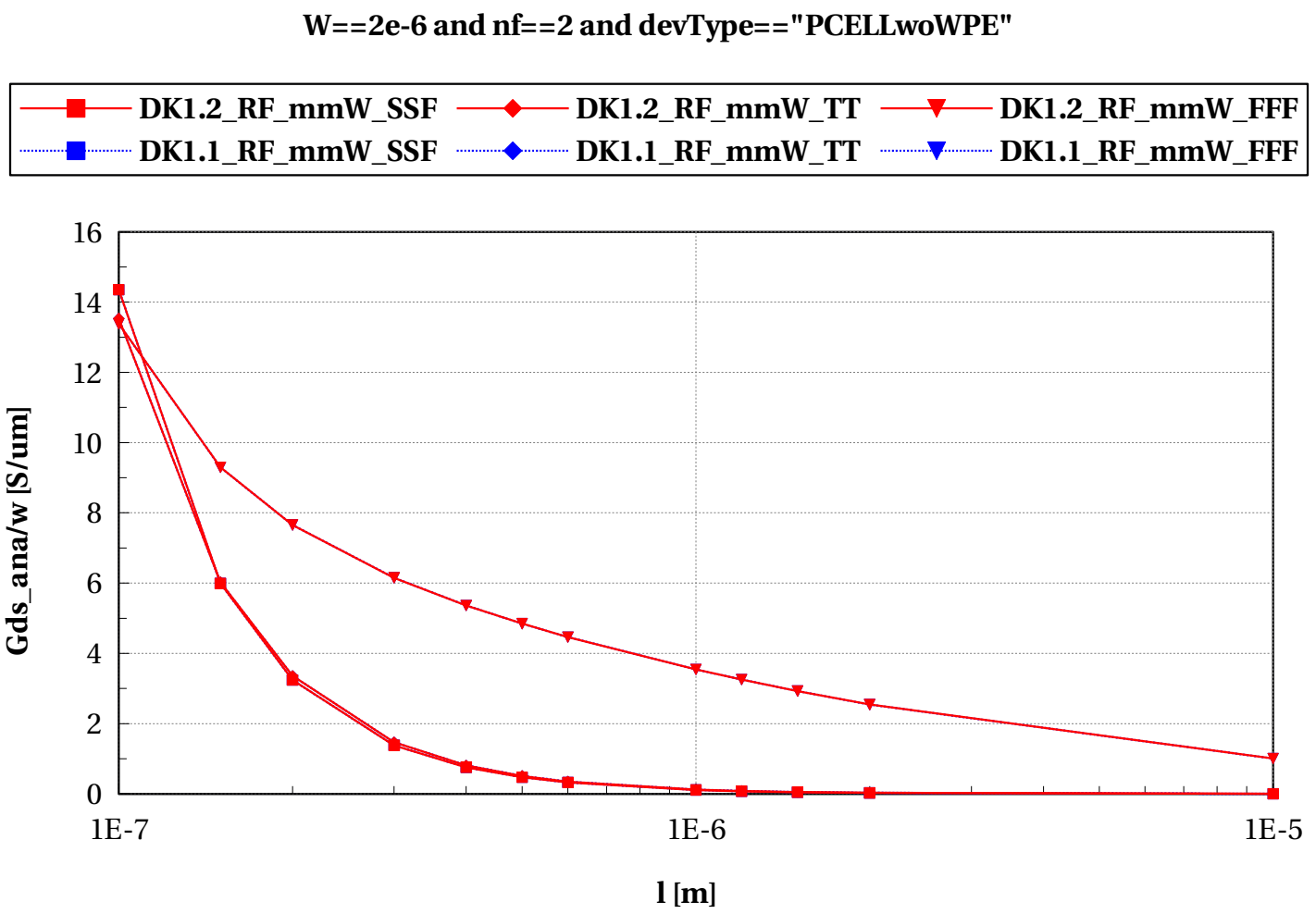
egvnfet_acc, Gm_ana/Id_Sv [1/V] vs l [m]



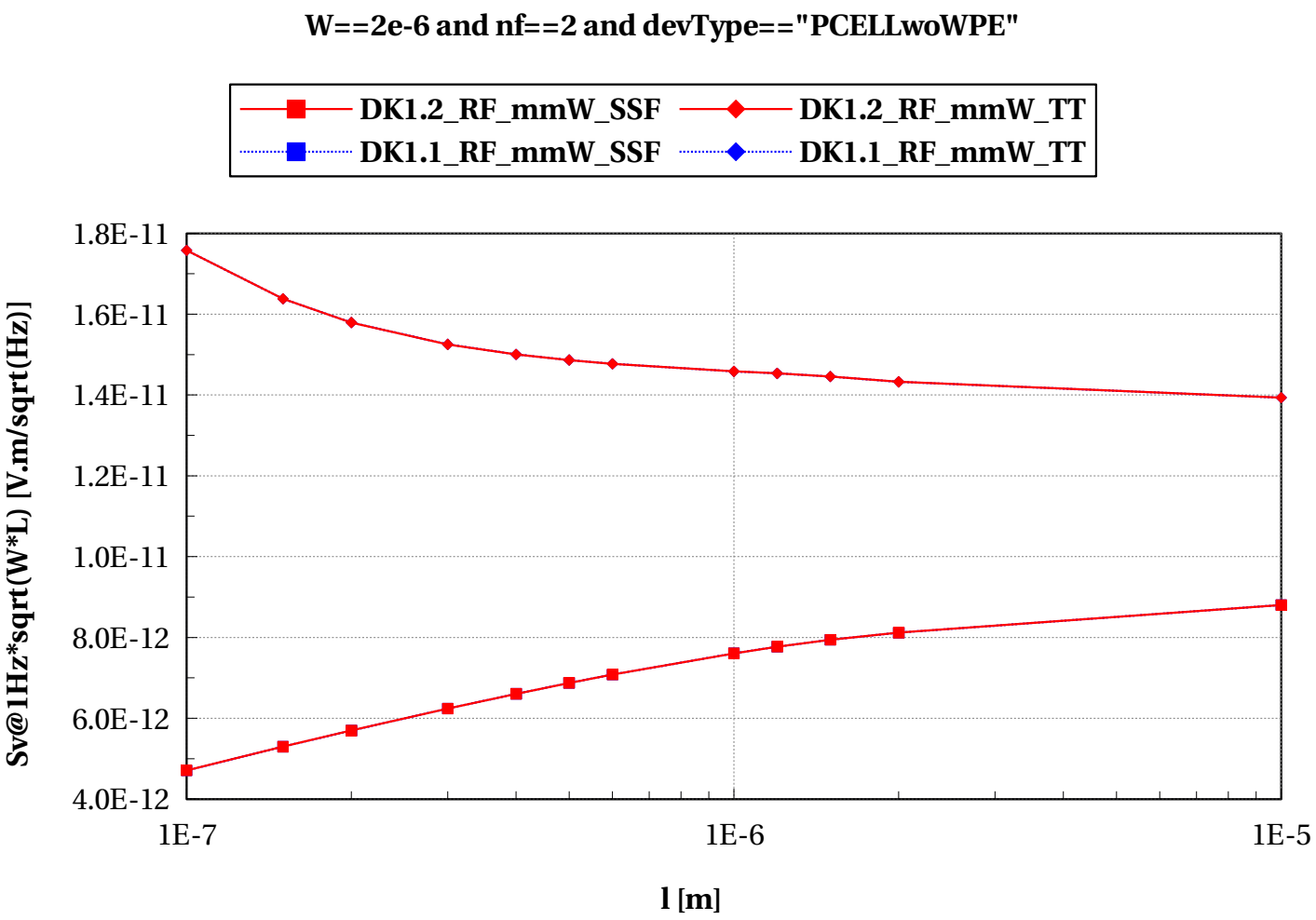
egvnfet_acc, Gm_ana/w [S/um] vs l [m]



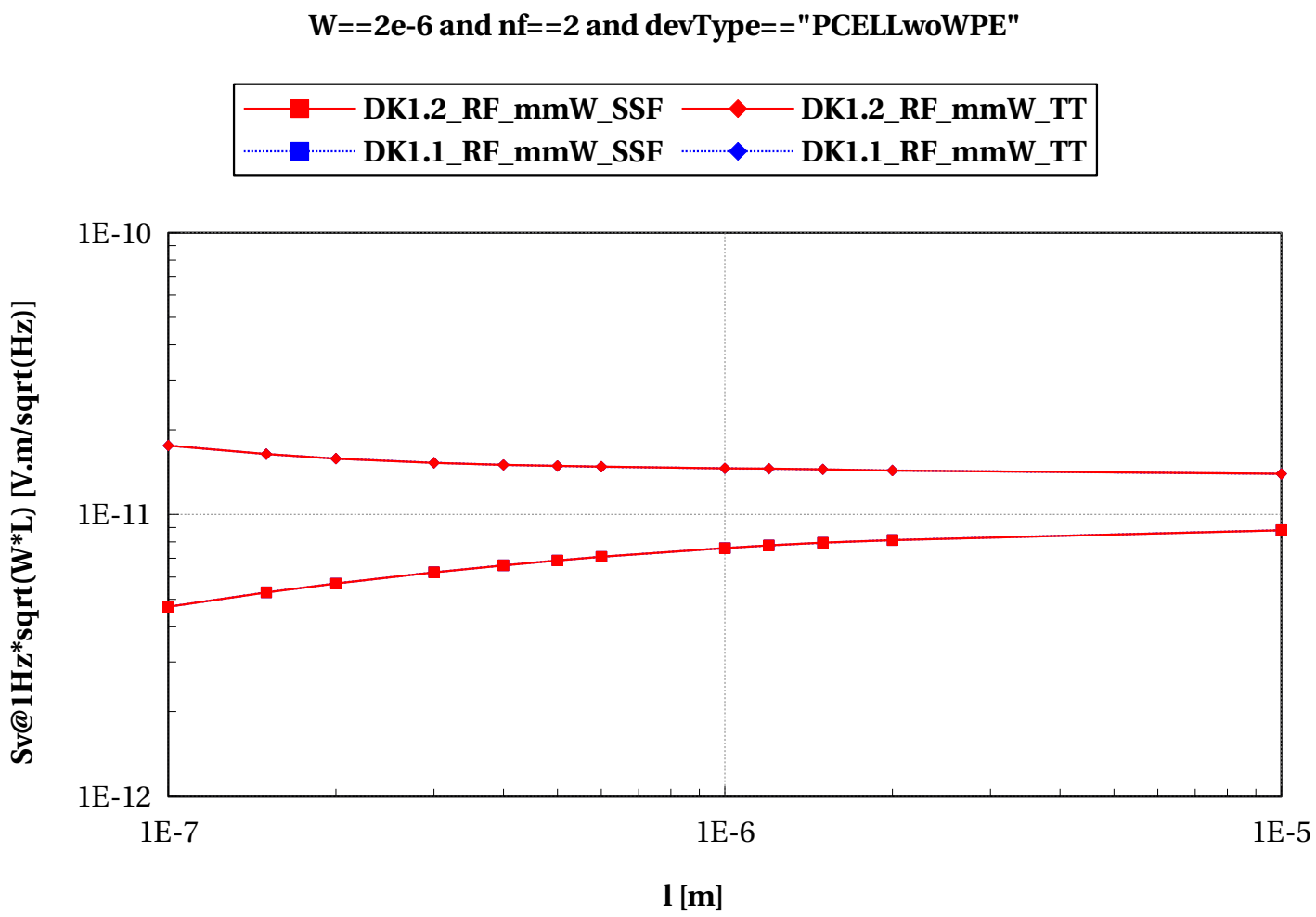
egvnfet_acc, Gds_ana/w [S/um] vs l [m]



egvnfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]

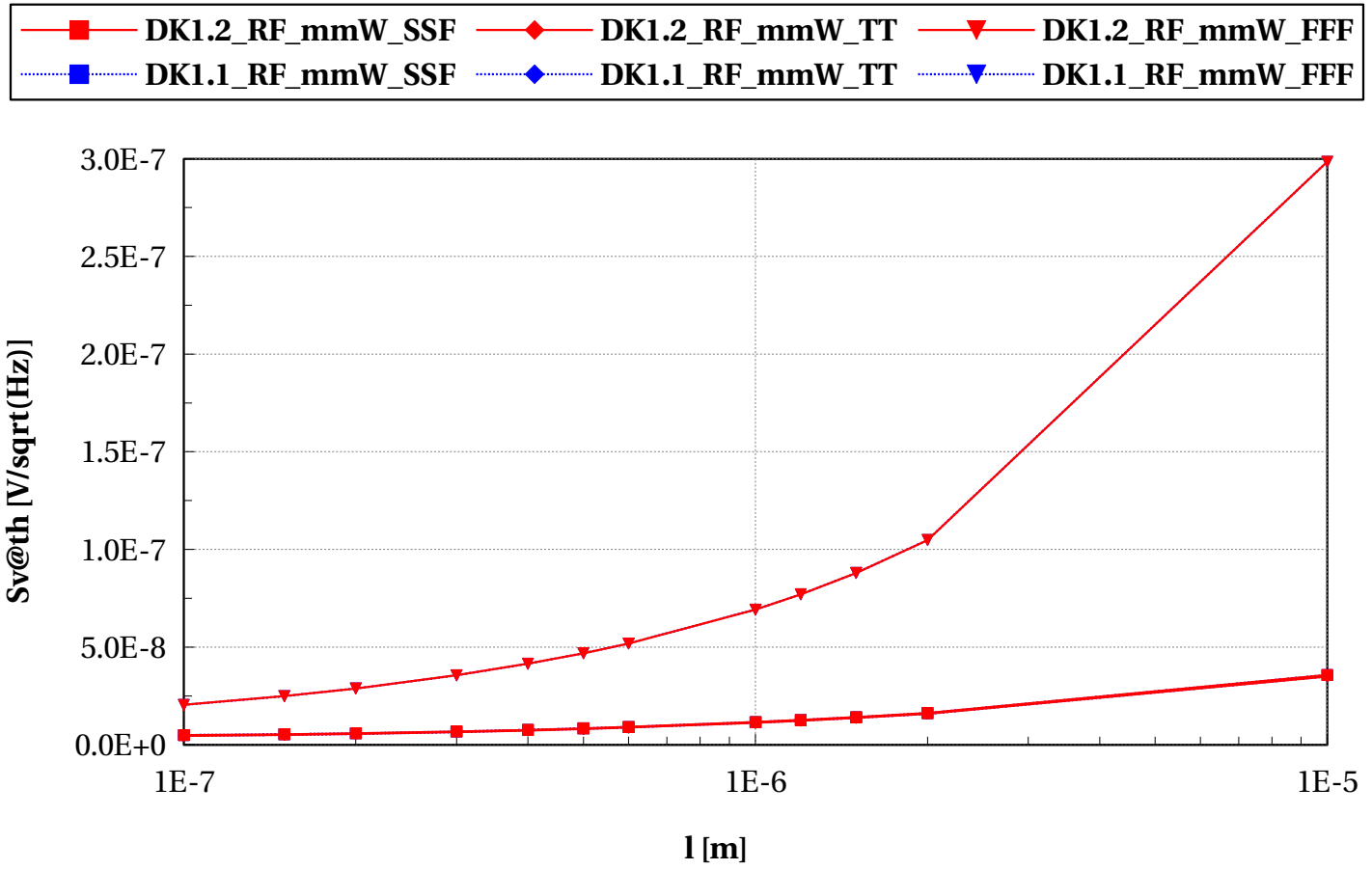


egvnfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]

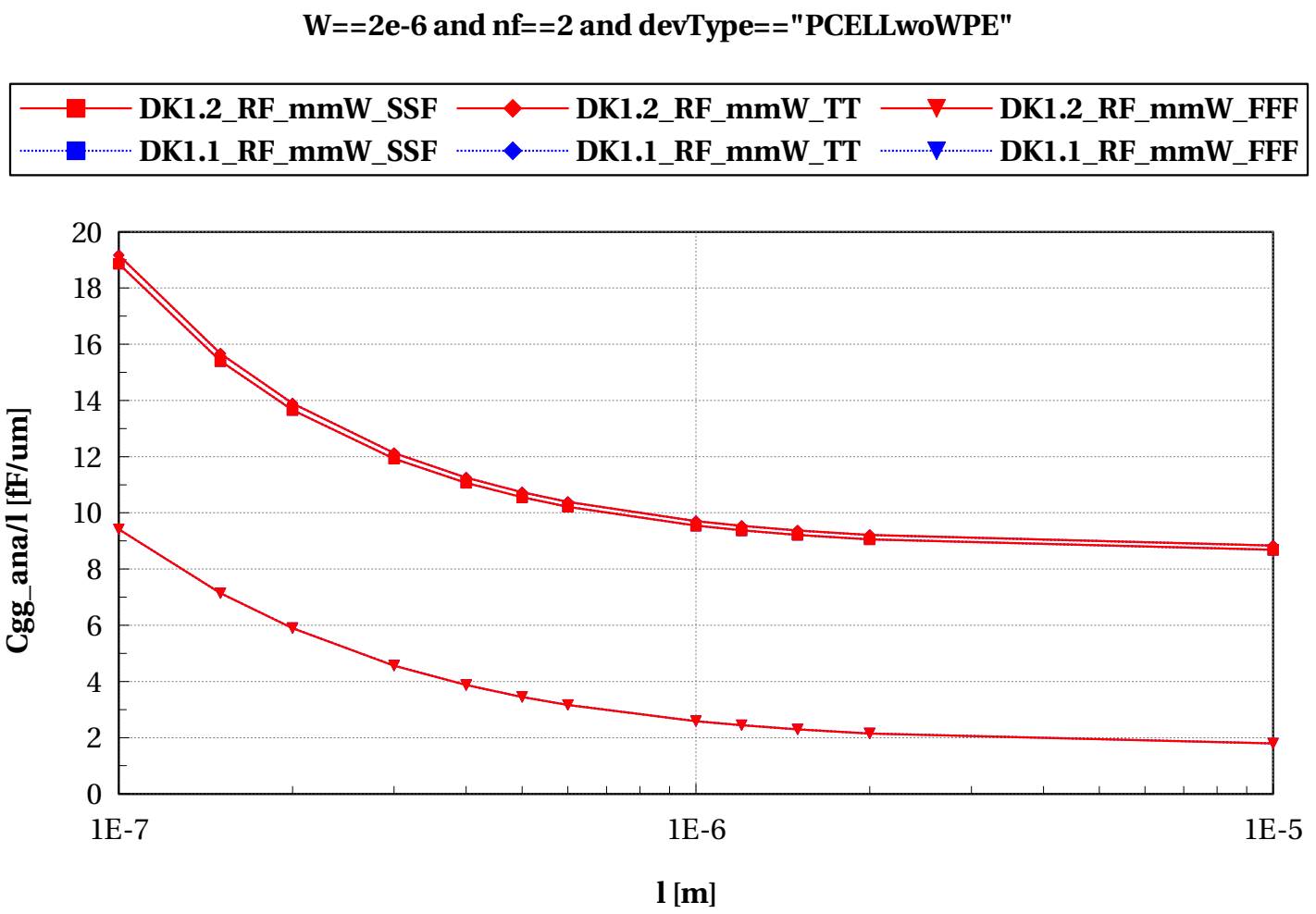


egvnfet_acc, Sv@th [V/sqrt(Hz)] vs l [m]

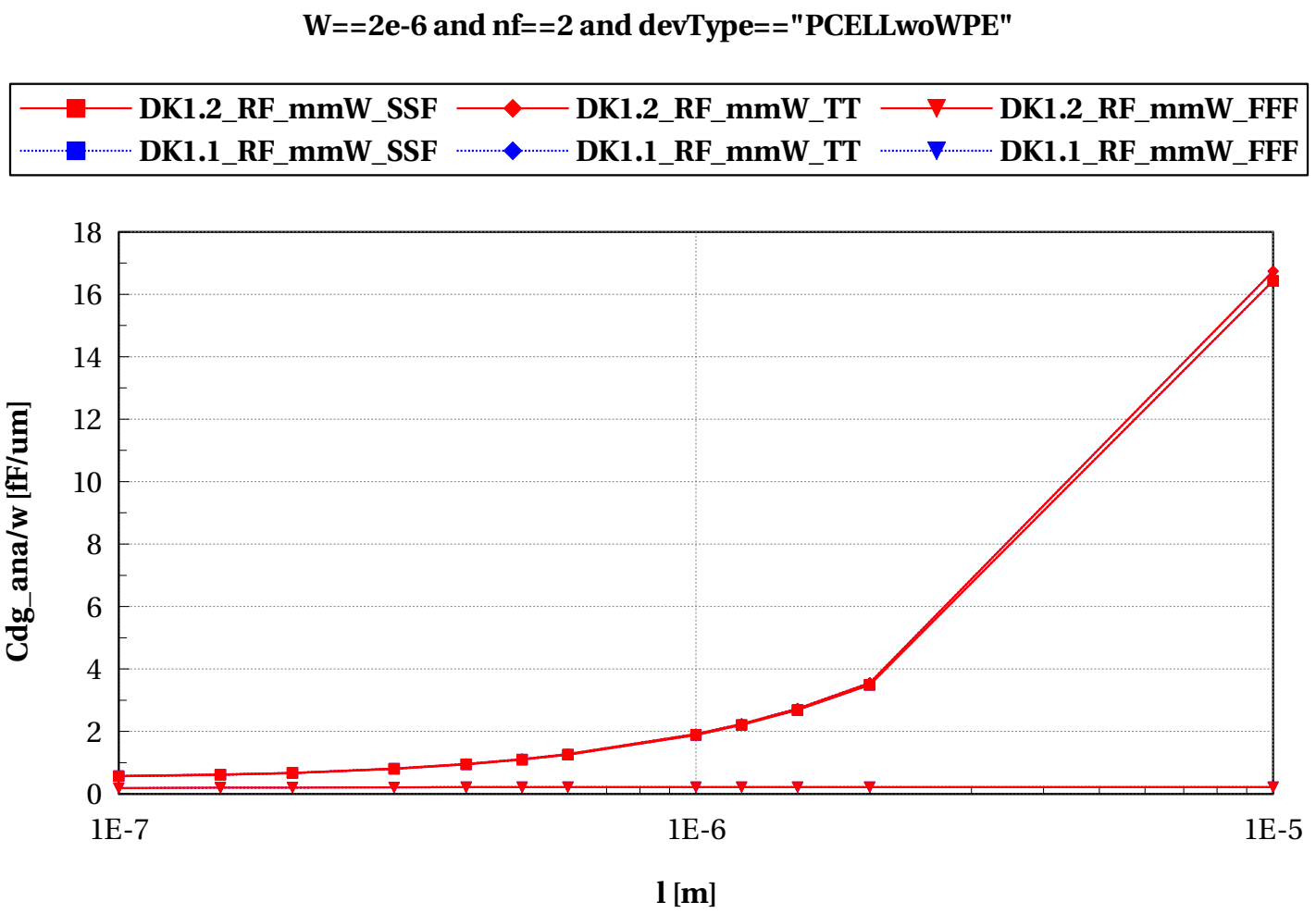
W==2e-6 and nf==2 and devType=="PCELLwoWPE"



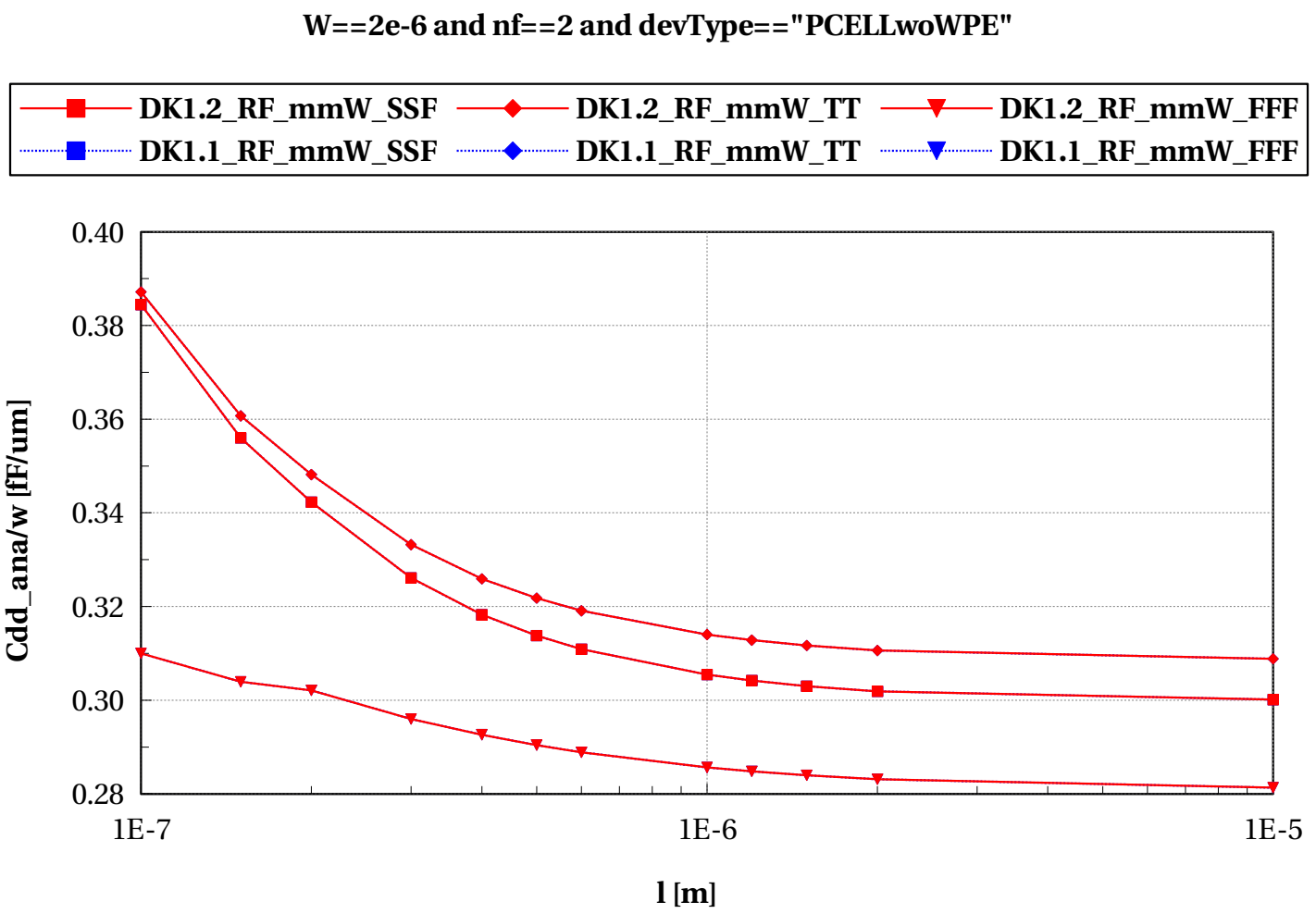
egvnfet_acc, Cgg_ana/l [fF/um] vs l [m]



egvnfet_acc, Cdg_ana/w [fF/um] vs l [m]

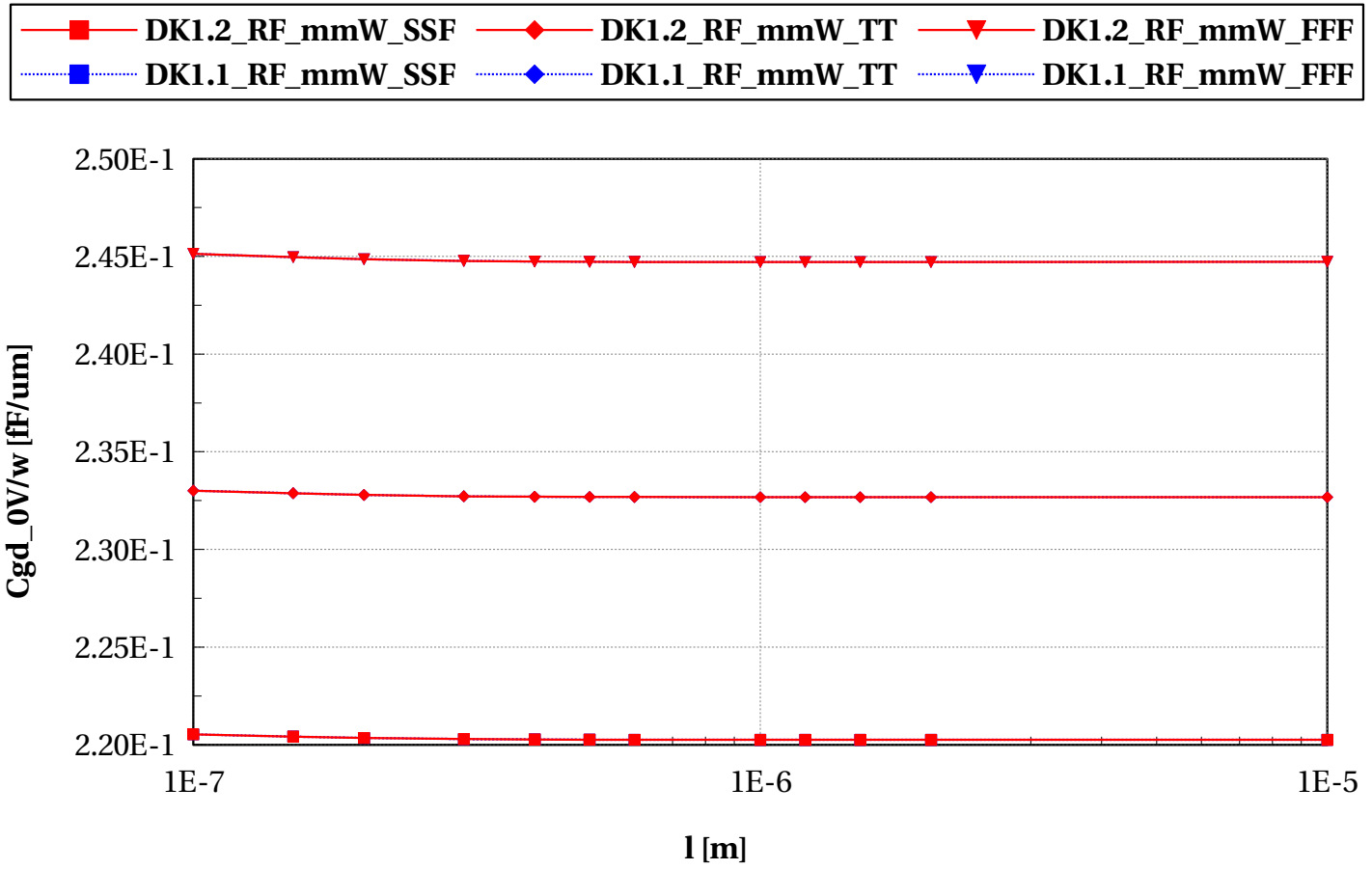


egvnfet_acc, Cdd_ana/w [fF/um] vs l [m]



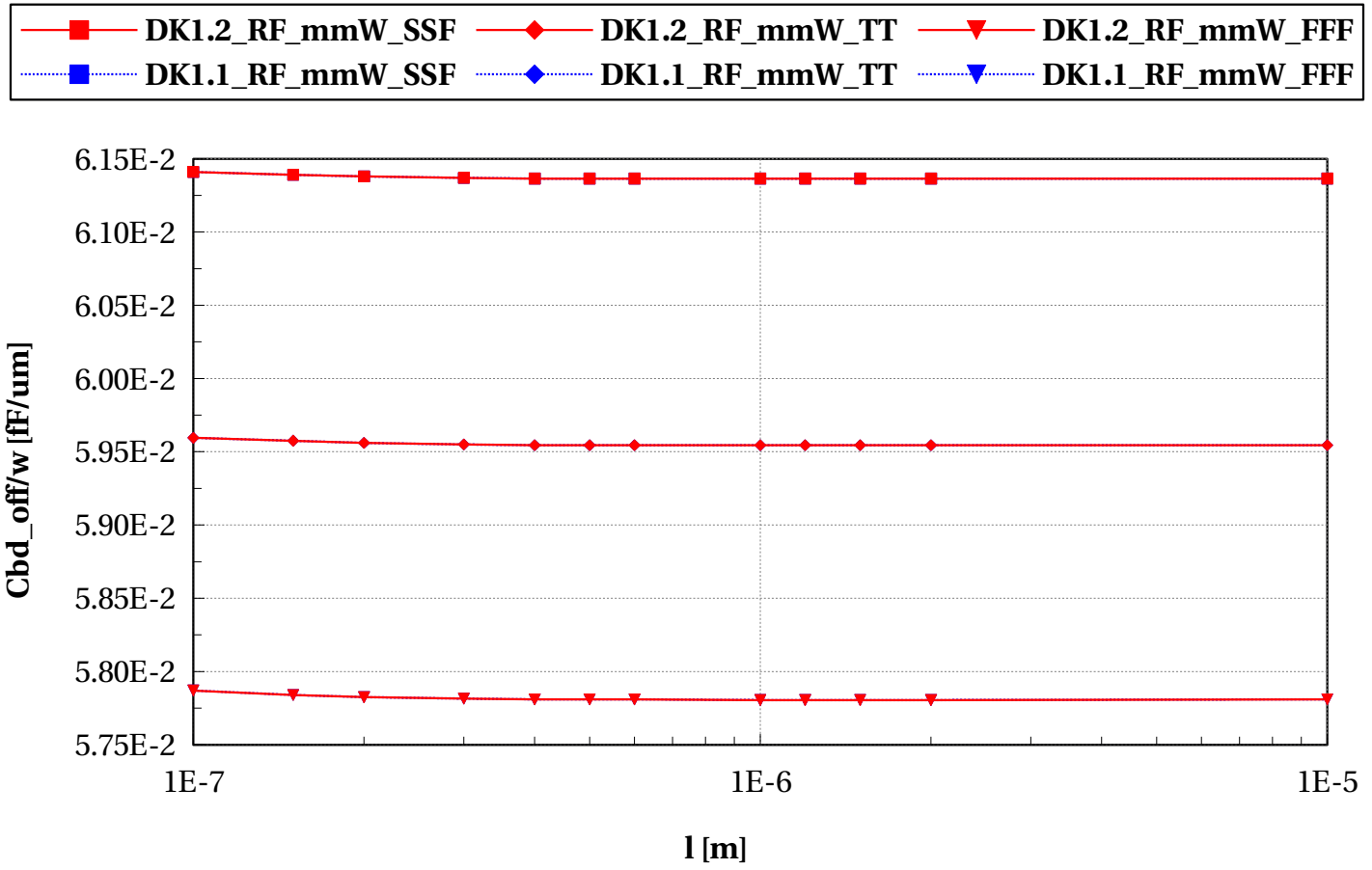
egvnfet_acc, Cgd_0V/w [fF/um] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"



egvnfet_acc, Cbd_off/w [fF/um] vs l [m]

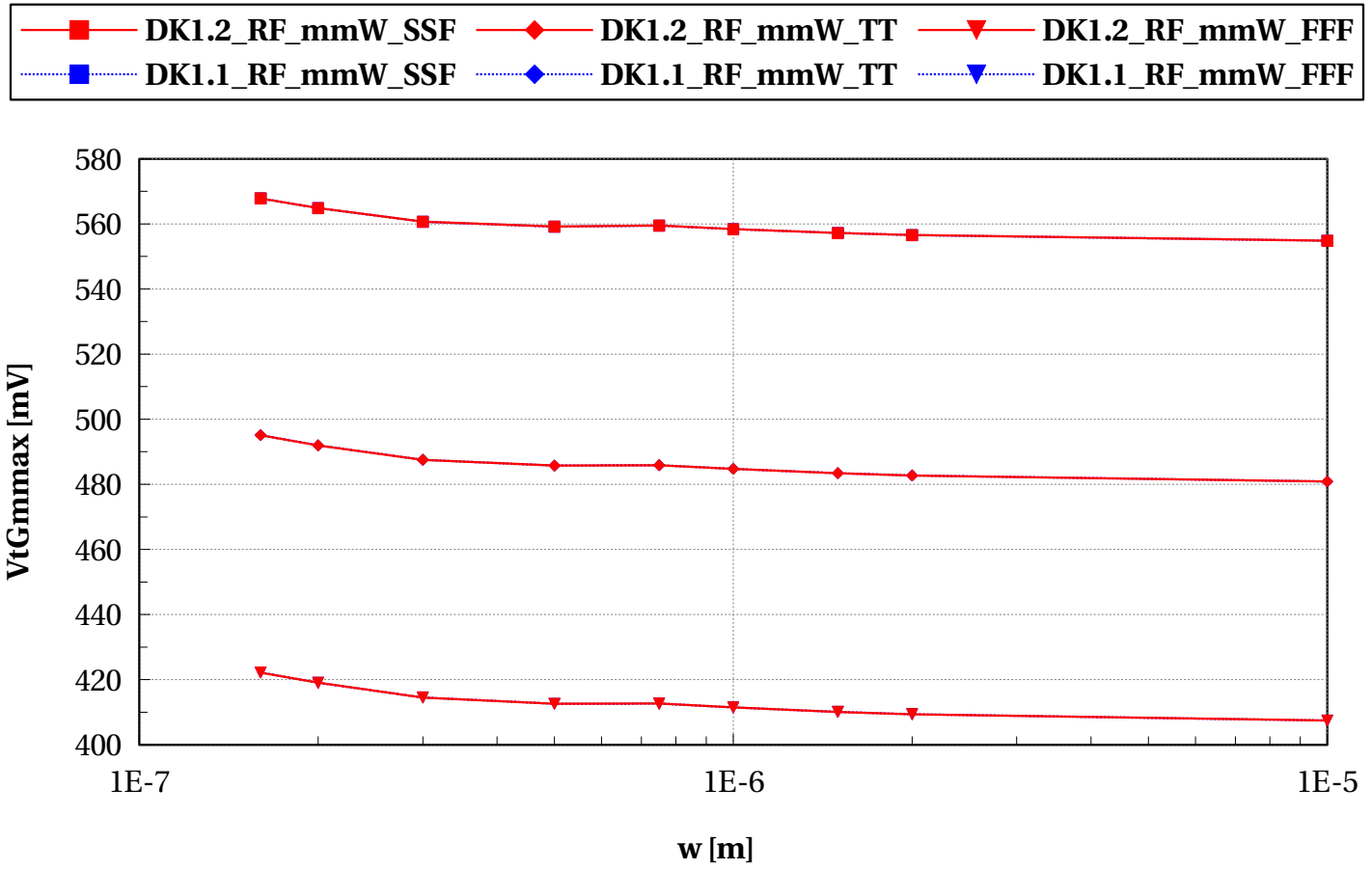
W==2e-6 and nf==2 and devType=="PCELLwoWPE"



Scaling versus Width (T=25C)

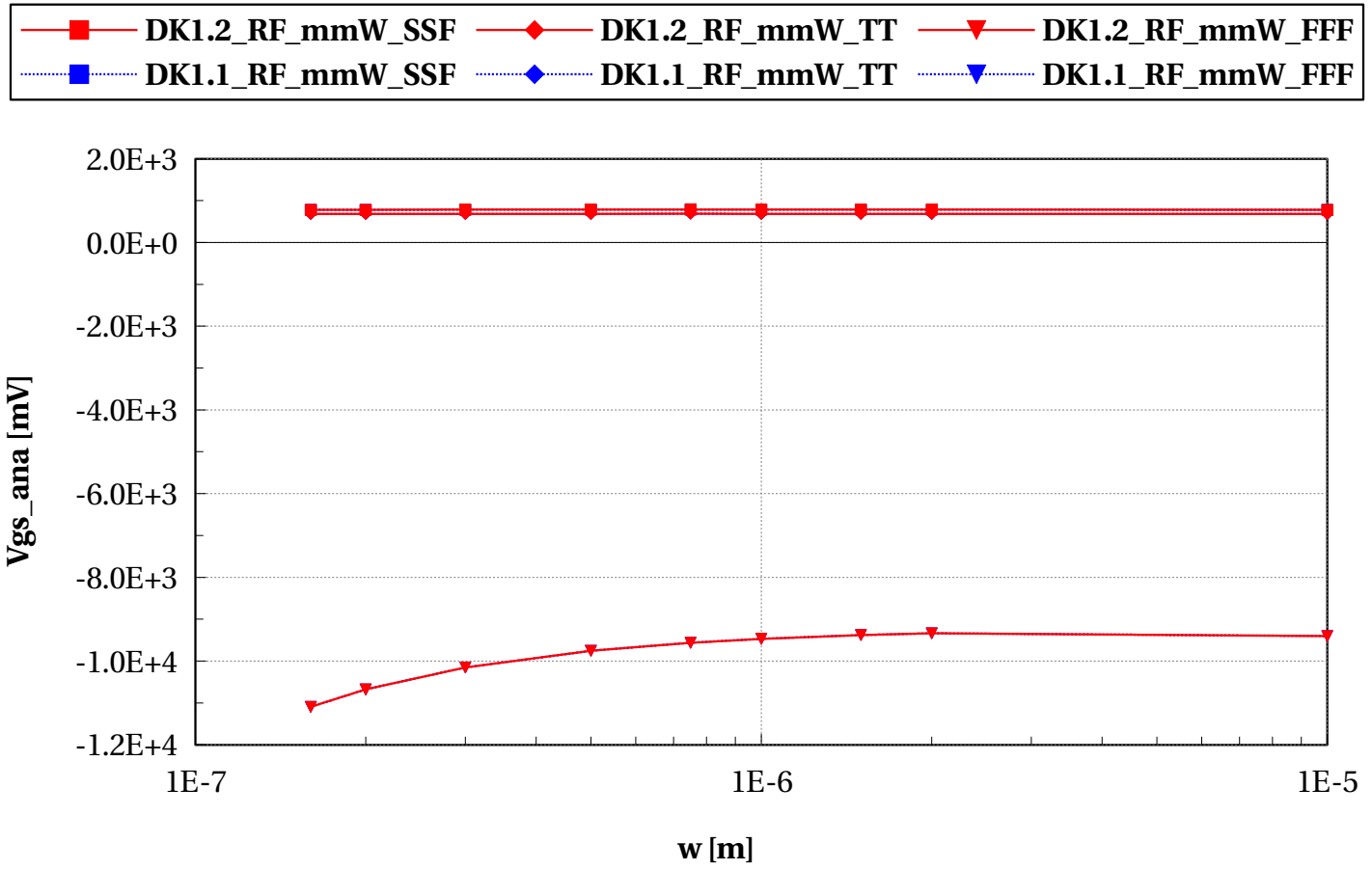
egvnfet_acc, VtGmmax [mV] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



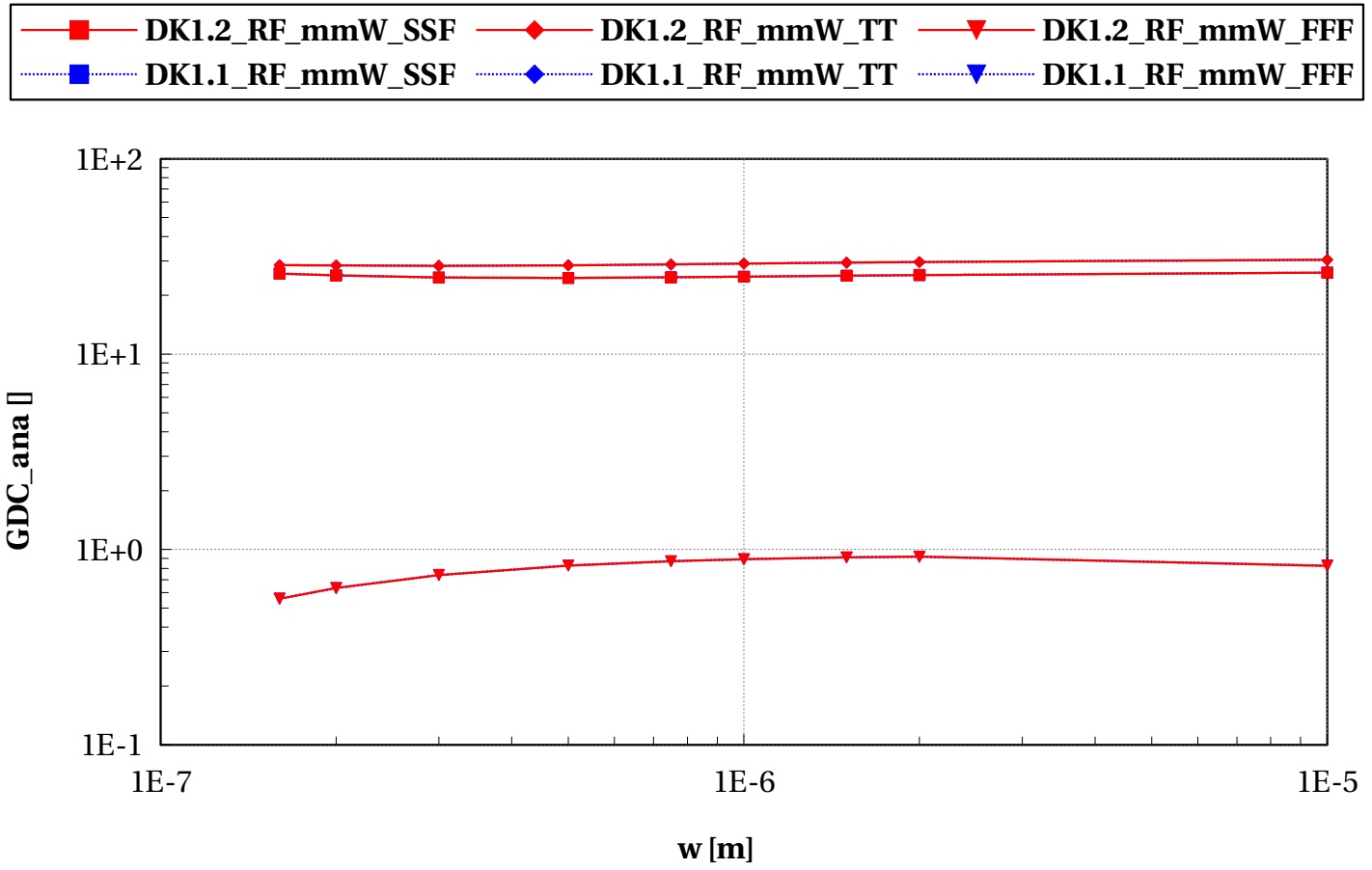
egvnfet_acc, Vgs_ana [mV] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



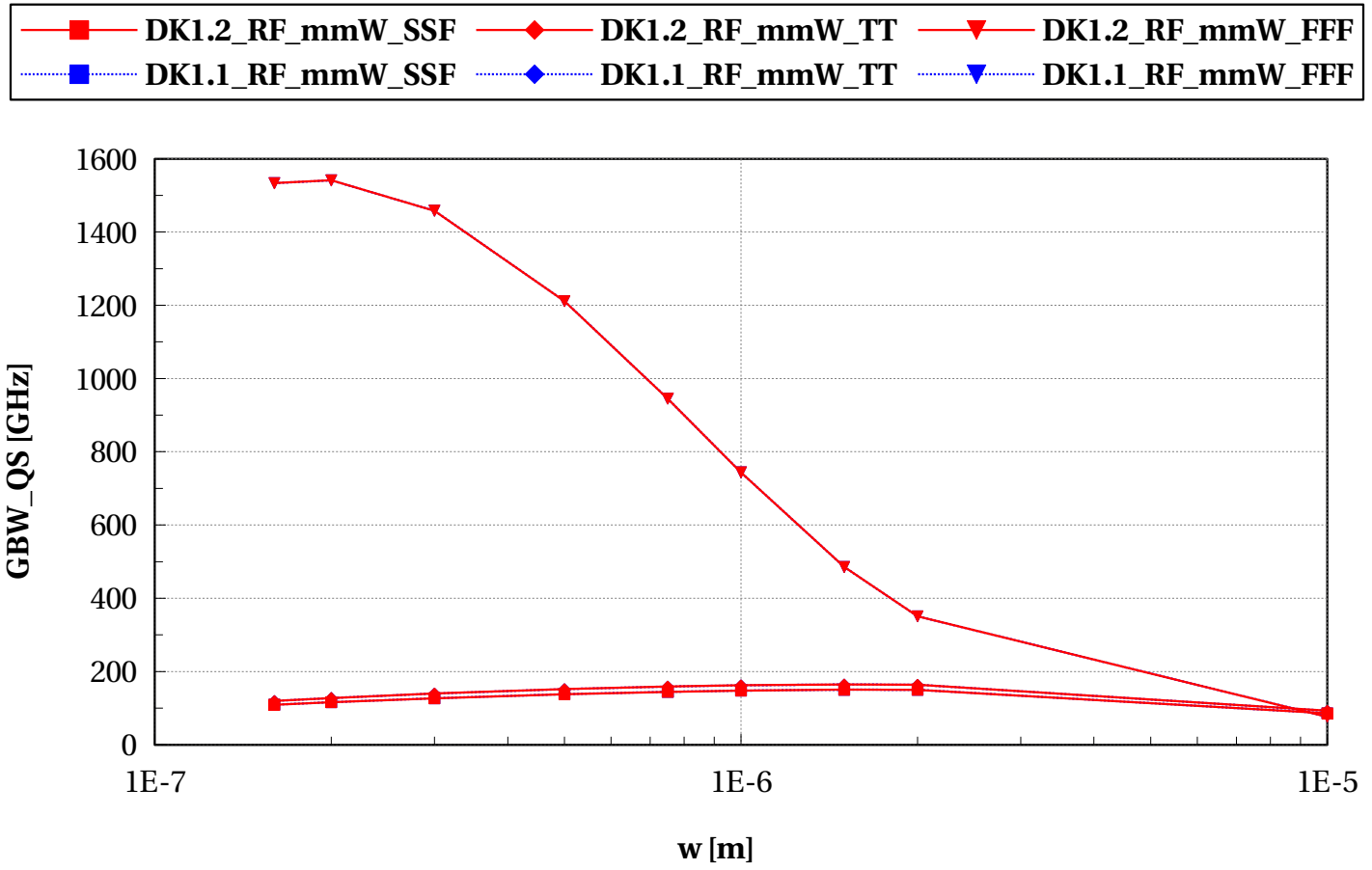
egvnfet_acc, GDC_ana [] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



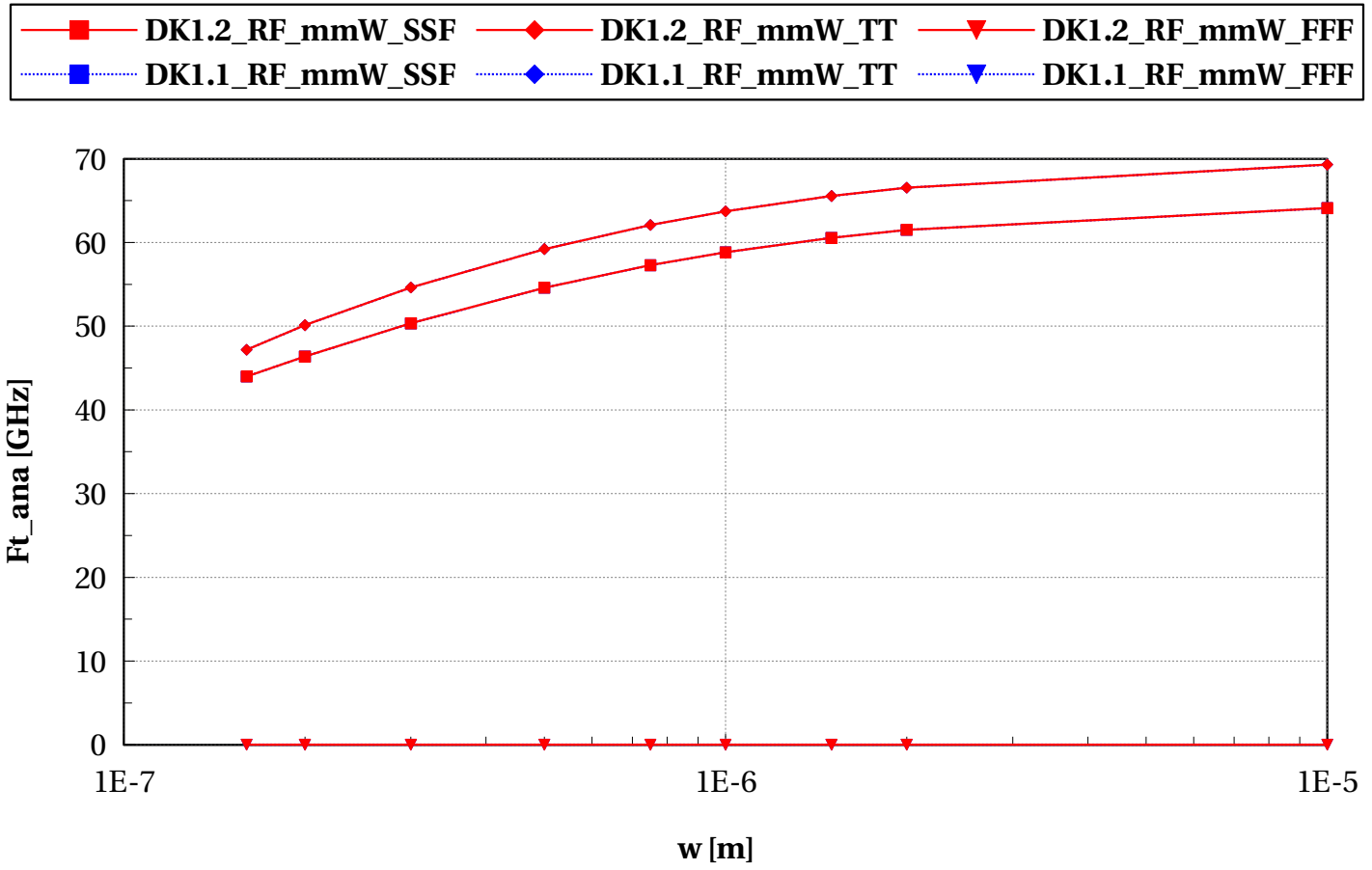
egvnfet_acc, GBW_QS [GHz] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



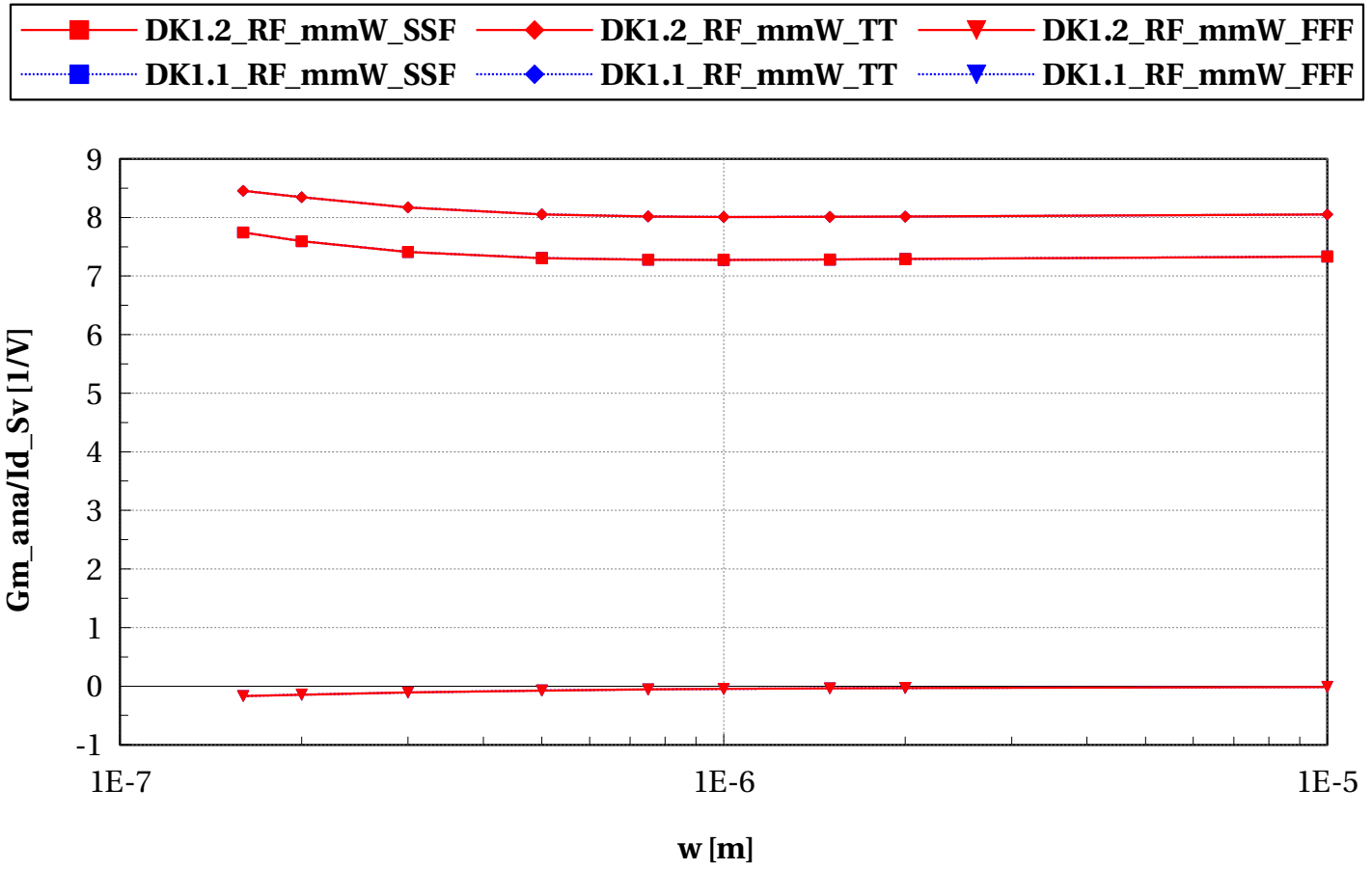
egvnfet_acc, Ft_ana [GHz] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



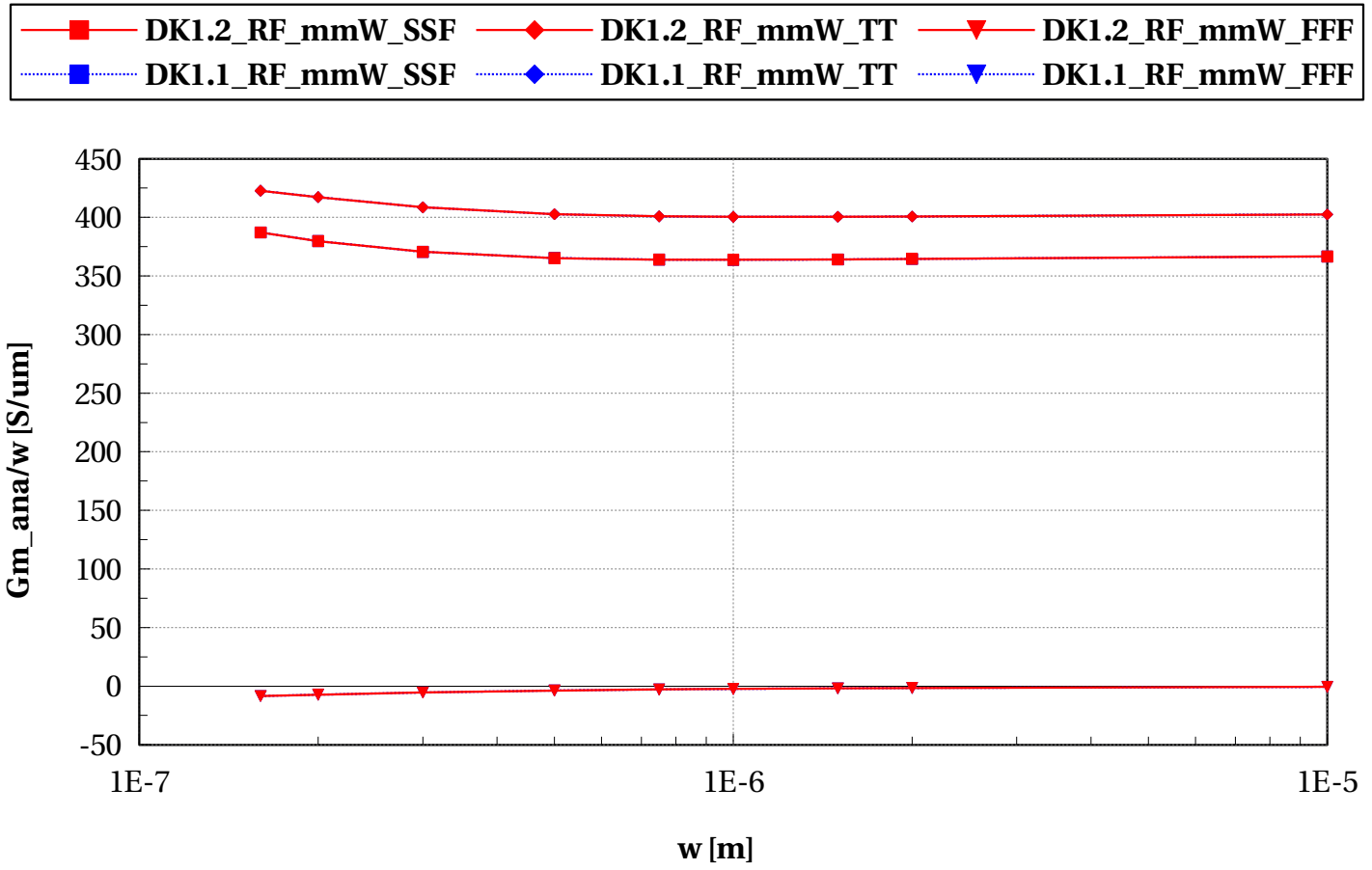
egvnfet_acc, Gm_ana/Id_Sv [1/V] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



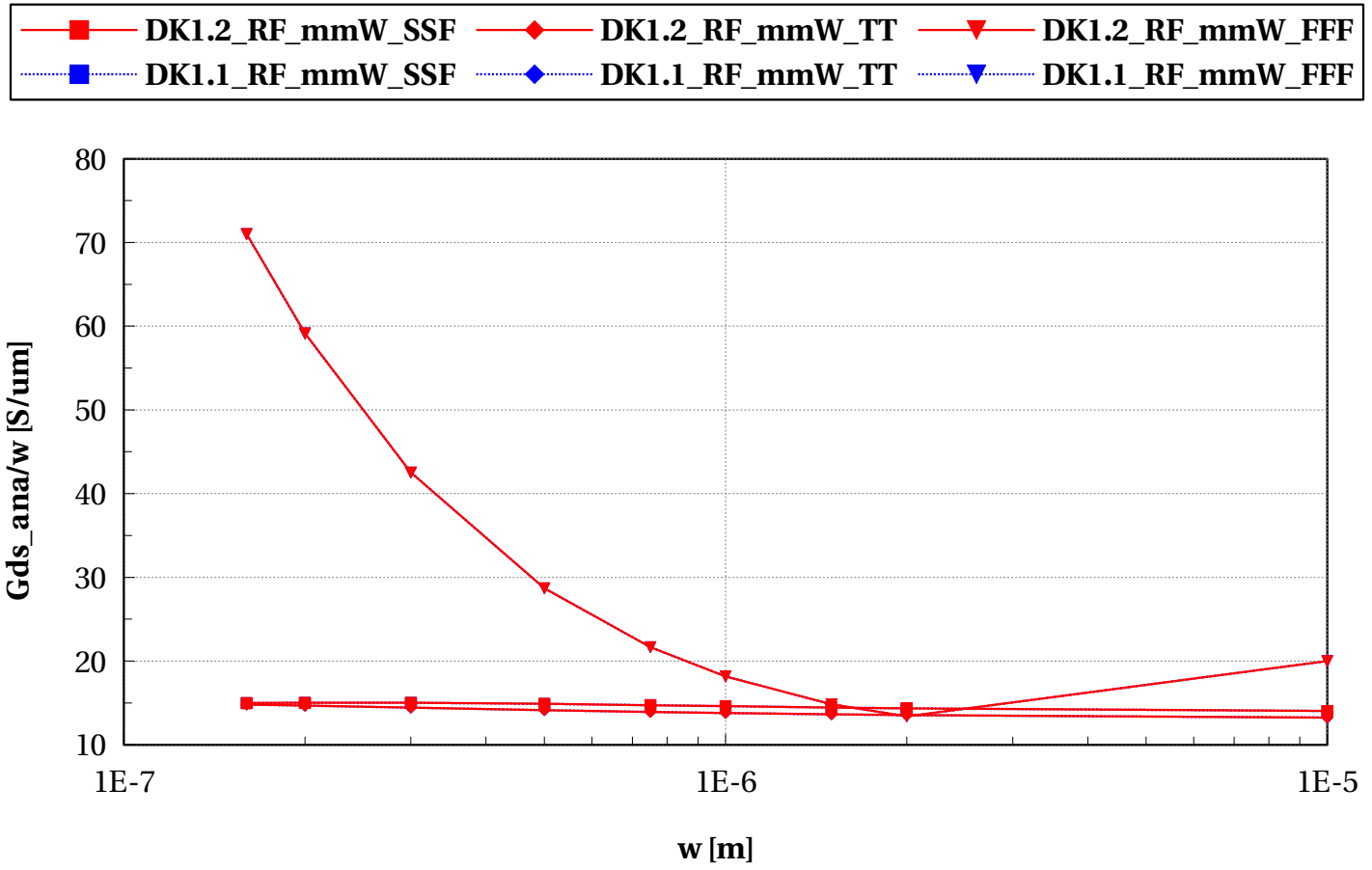
egvnfet_acc, Gm_ana/w [S/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"

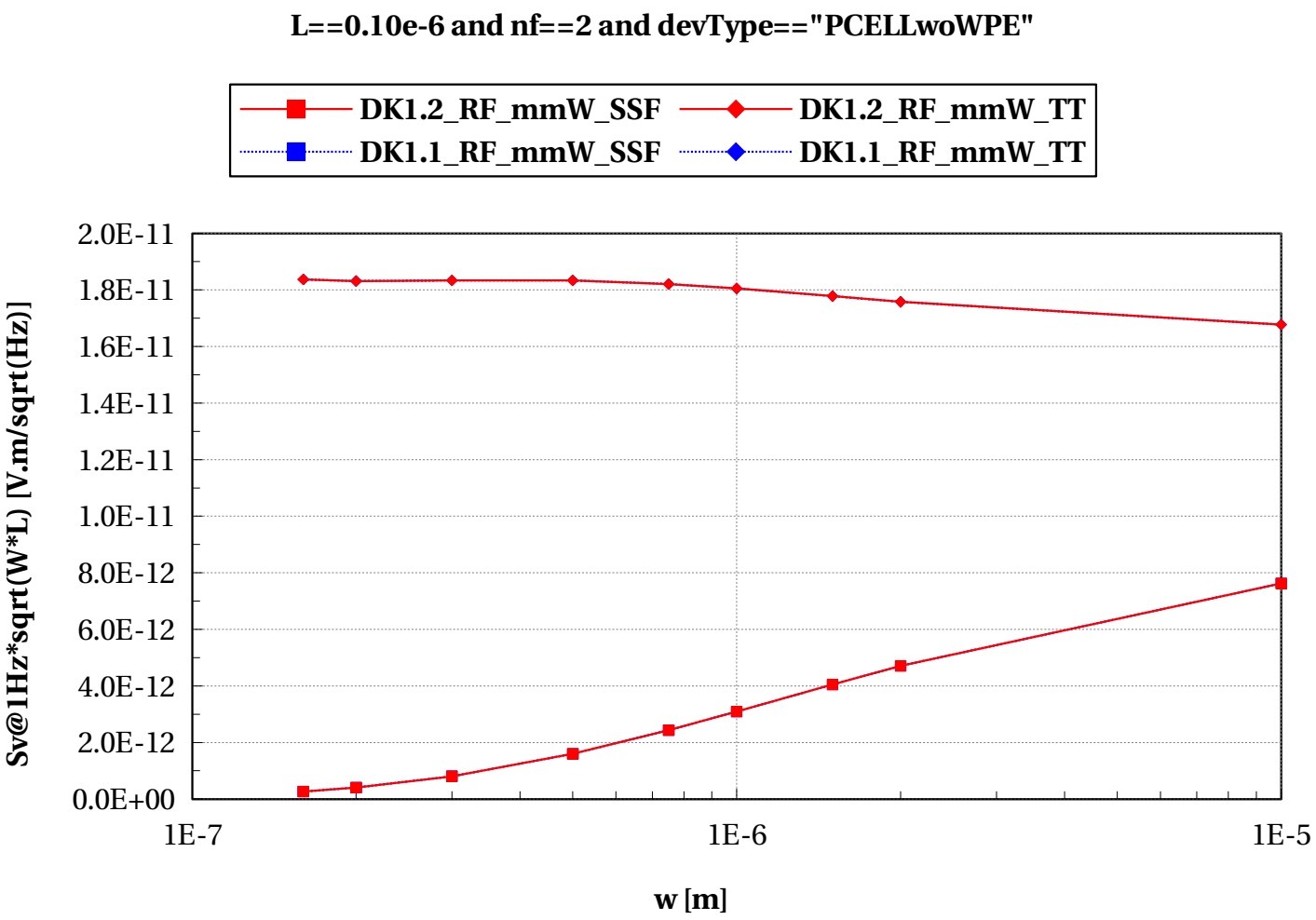


egvnfet_acc, Gds_ana/w [S/um] vs w [m]

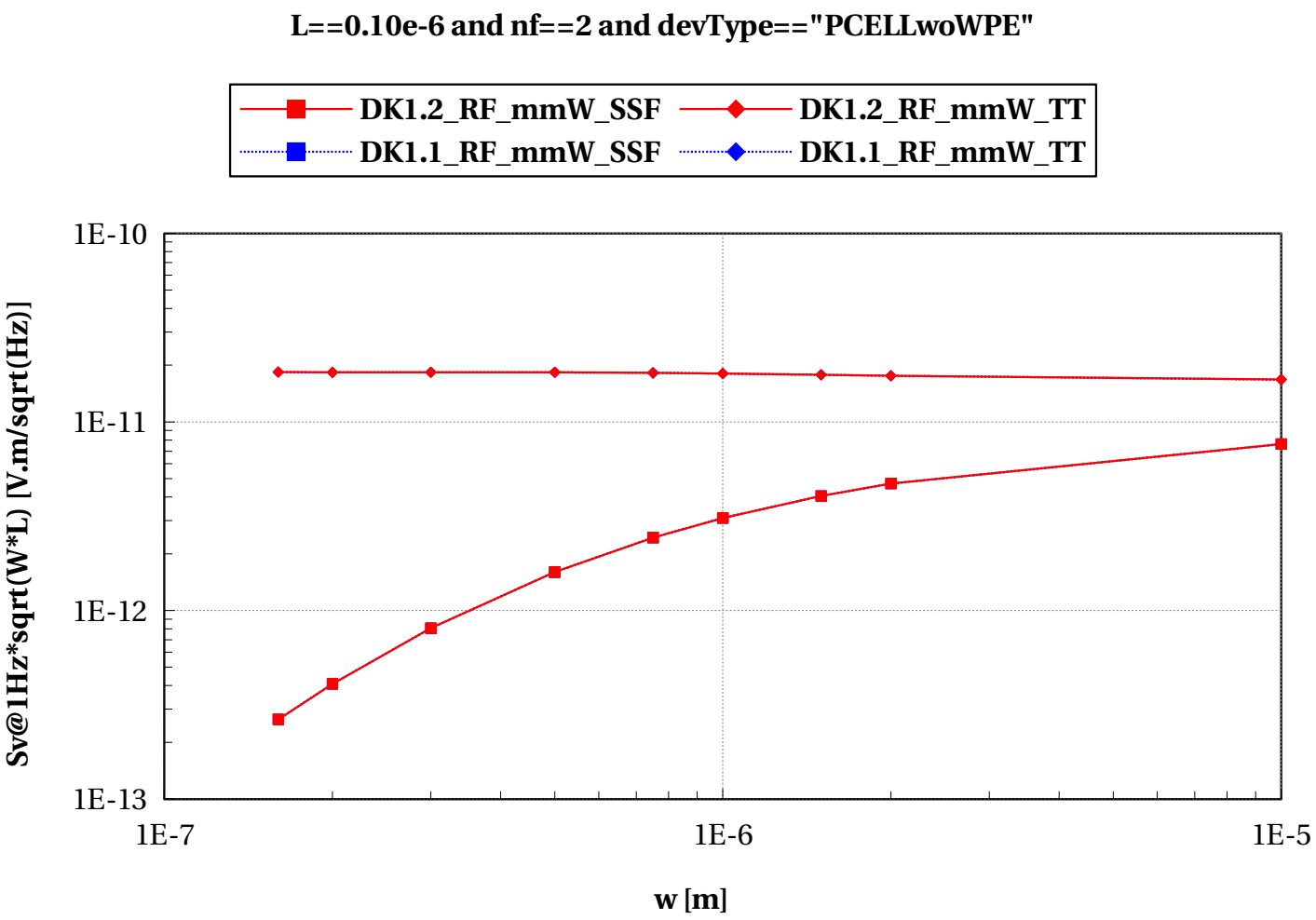
L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



egvnfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs w [m]

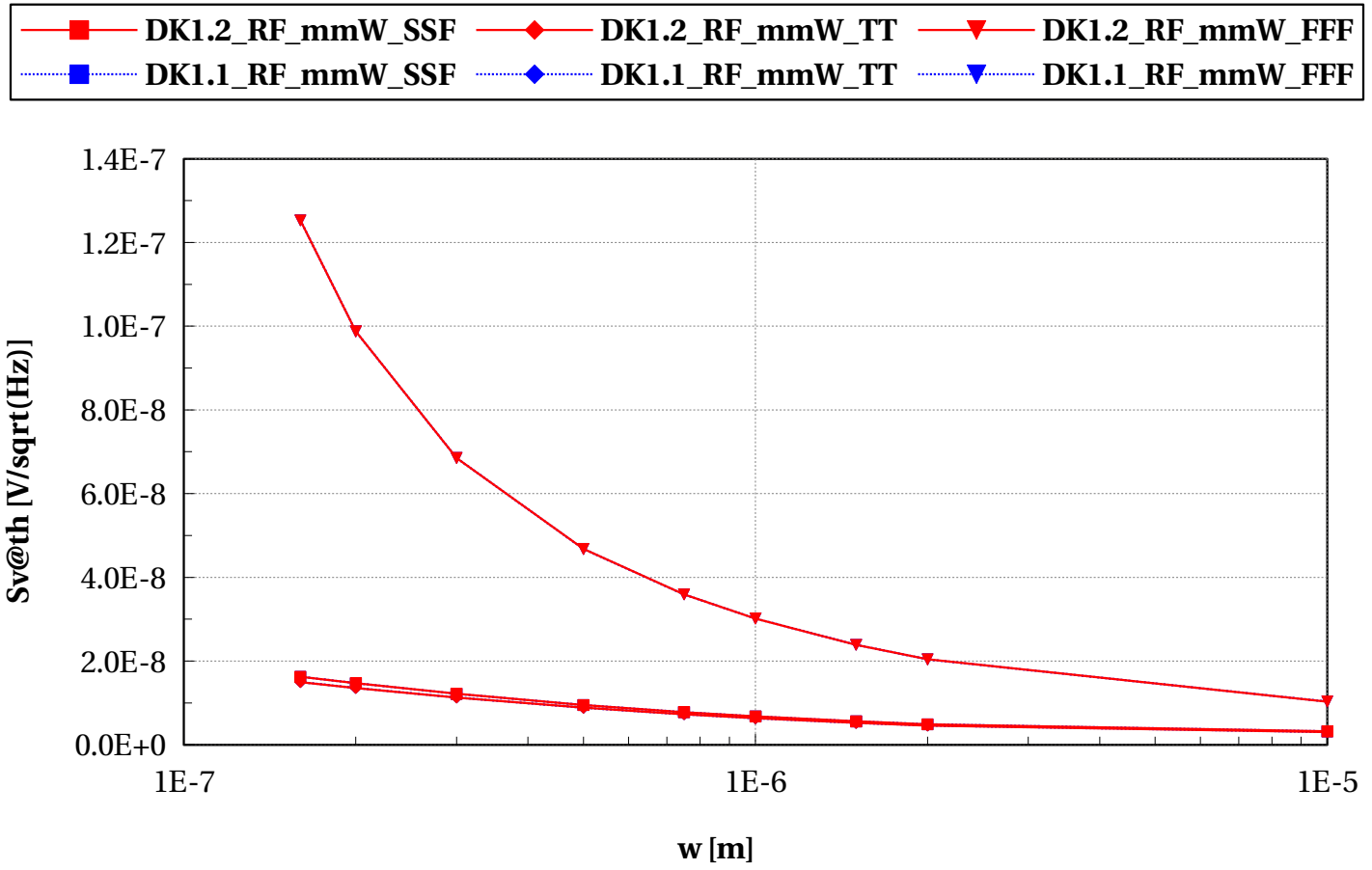


egvnfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs w [m]



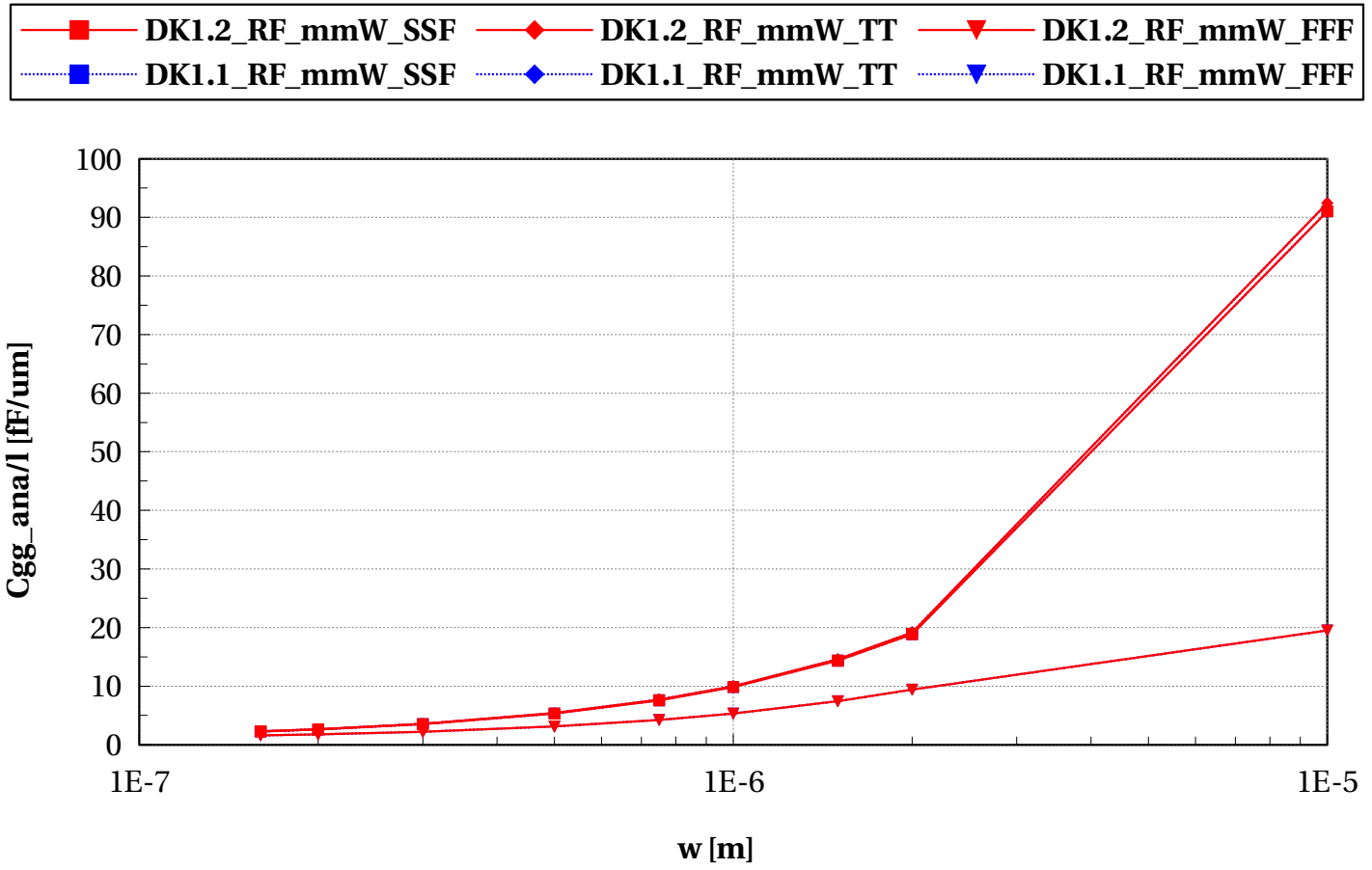
egvnfet_acc, Sv@th [V/sqrt(Hz)] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



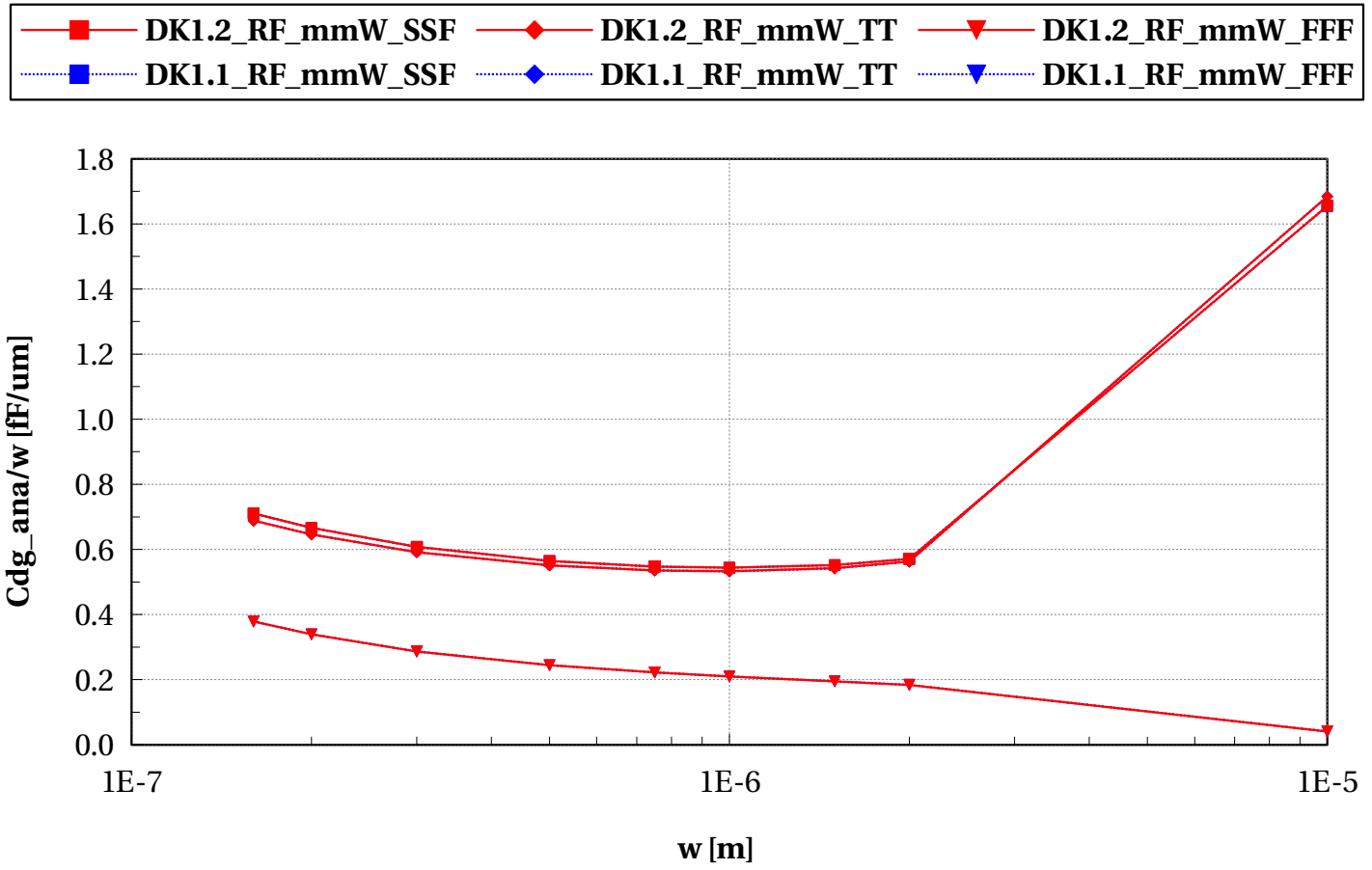
egvnfet_acc, Cgg_ana/l [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



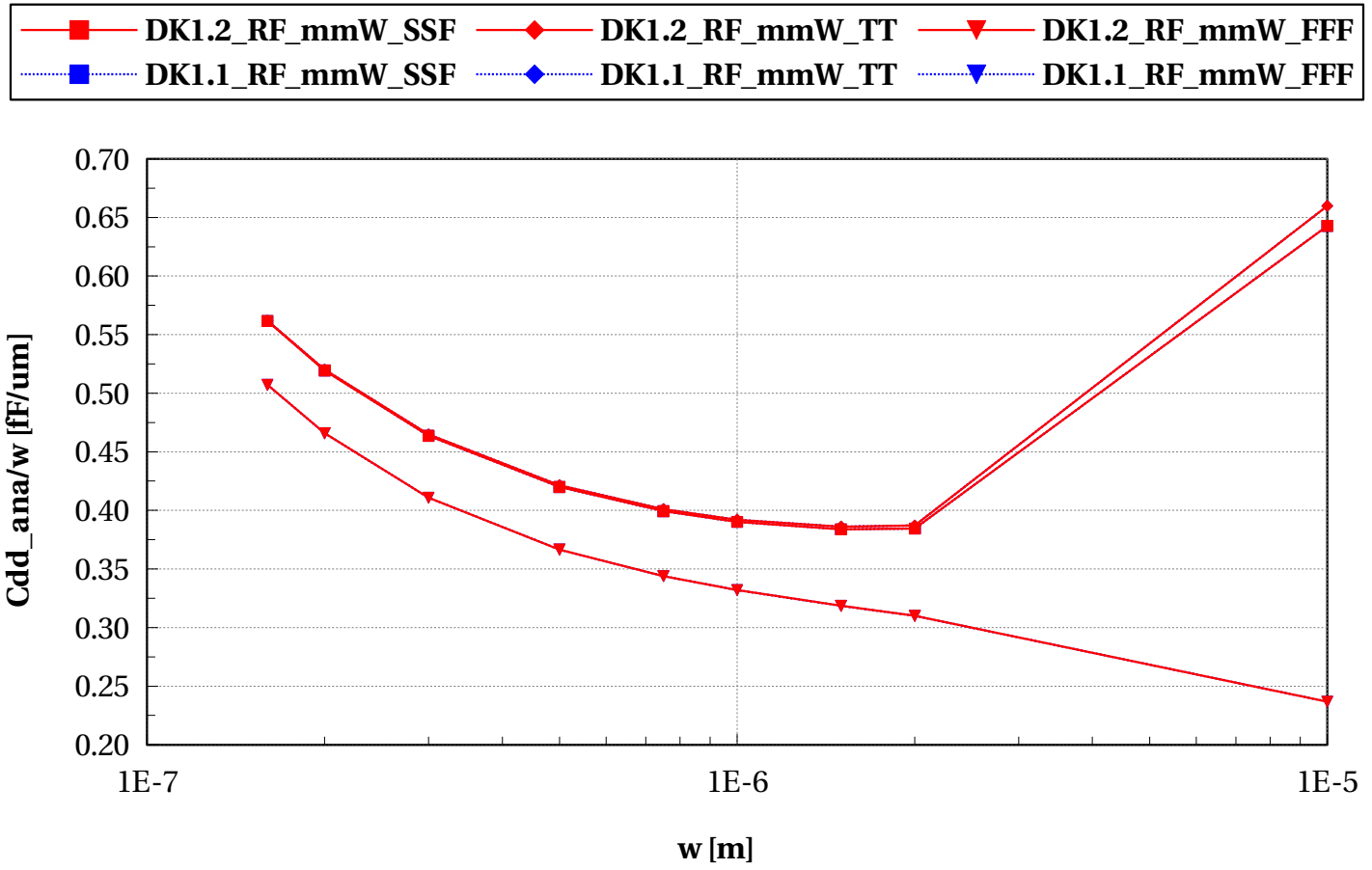
egvnfet_acc, Cdg_ana/w [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



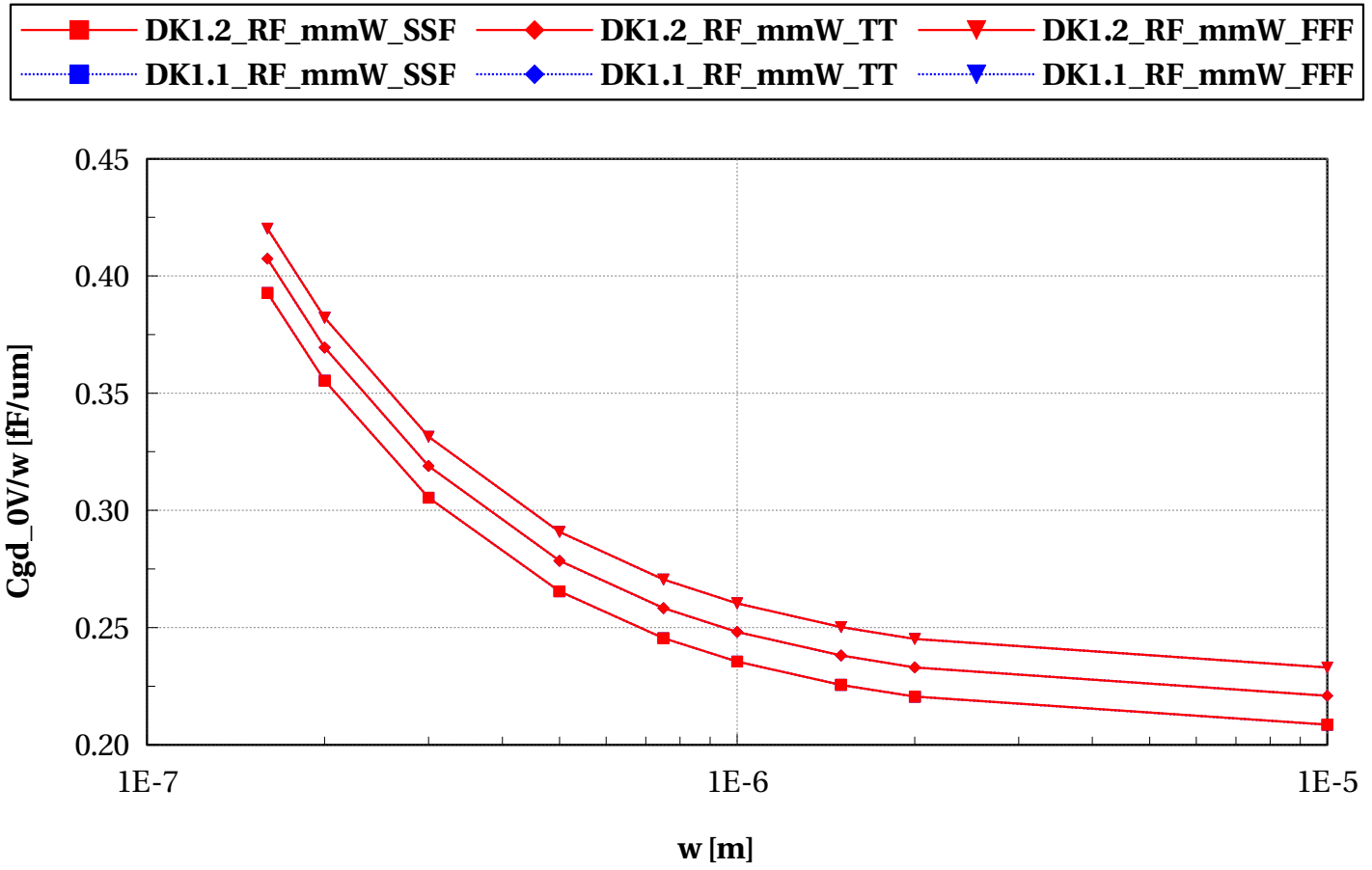
egvnfet_acc, Cdd_ana/w [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



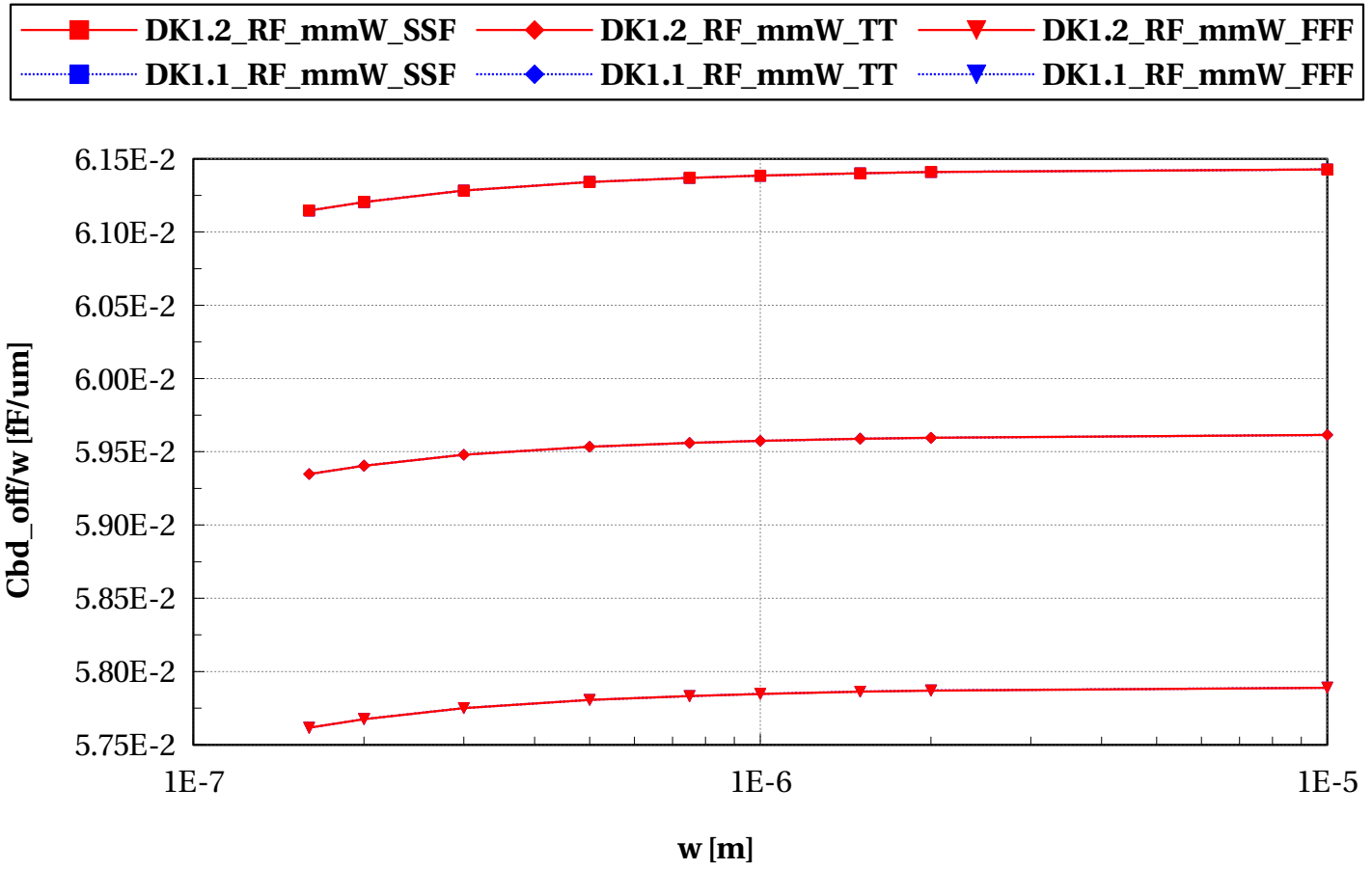
egvnfet_acc, Cgd_0V/w [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



egvnfet_acc, Cbd_off/w [fF/um] vs w [m]

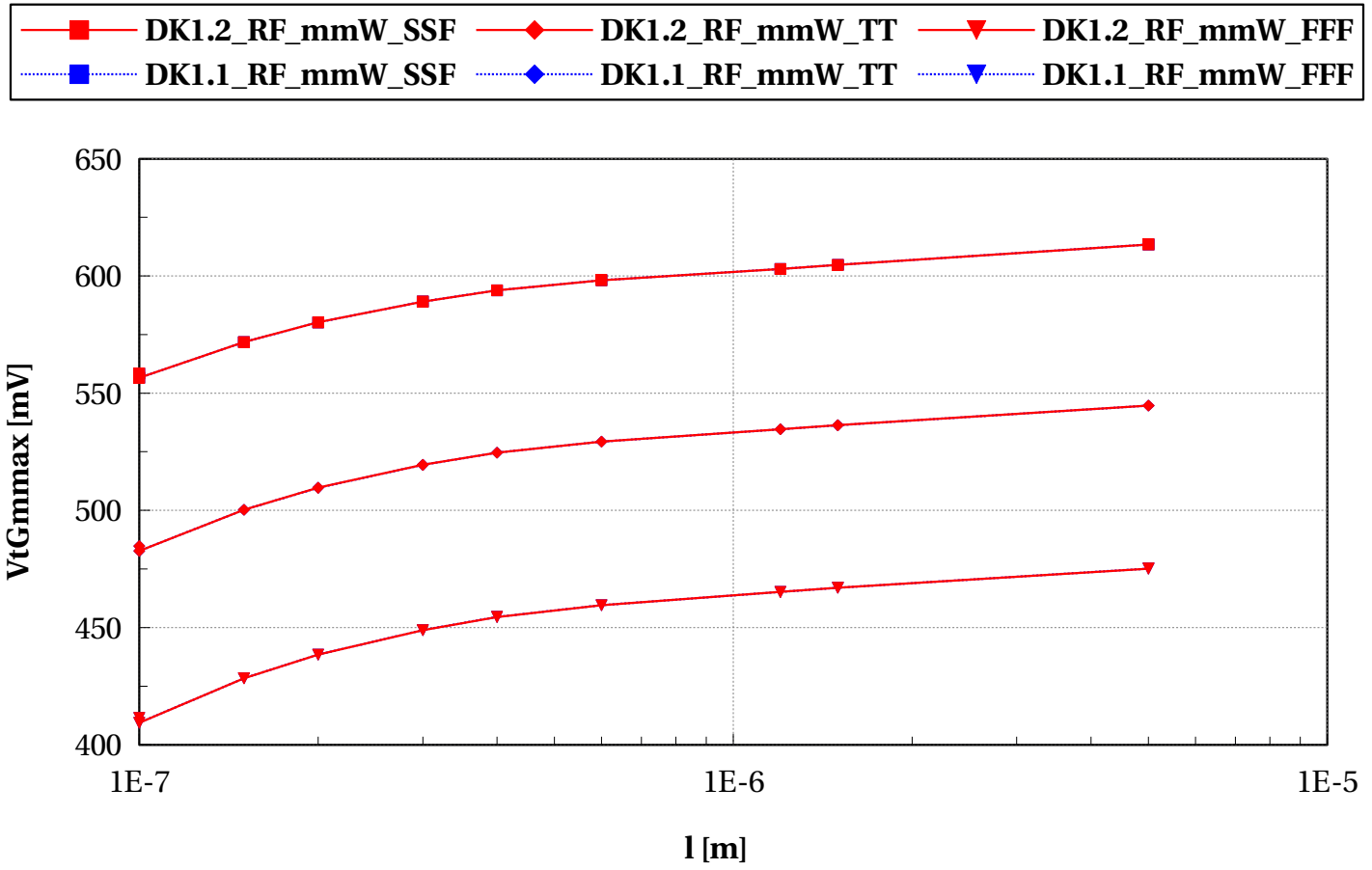
L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



Scaling versus Length @ W/L=10&&W/nf<5um

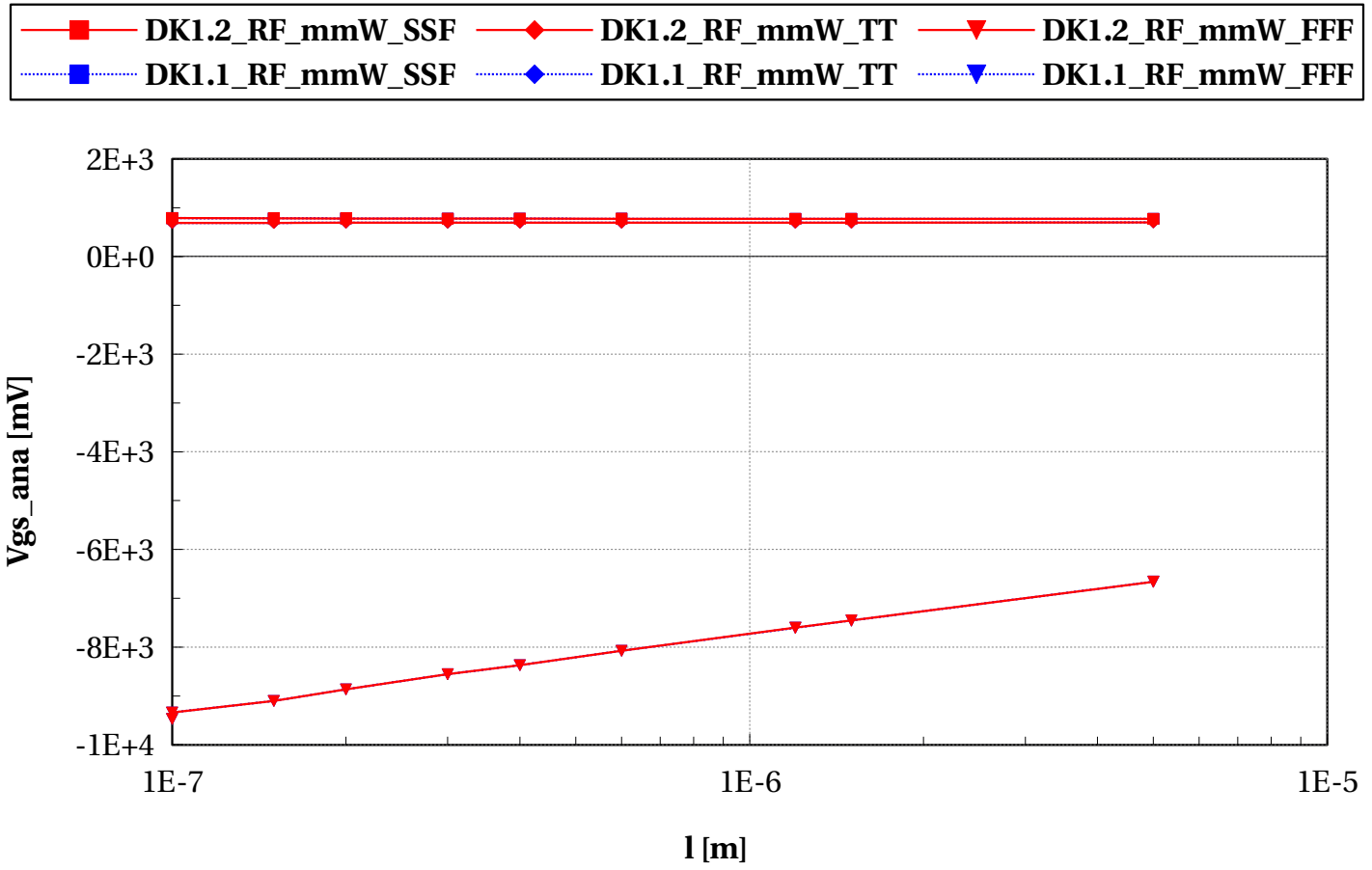
egvnfet_acc, VtGmmax [mV] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



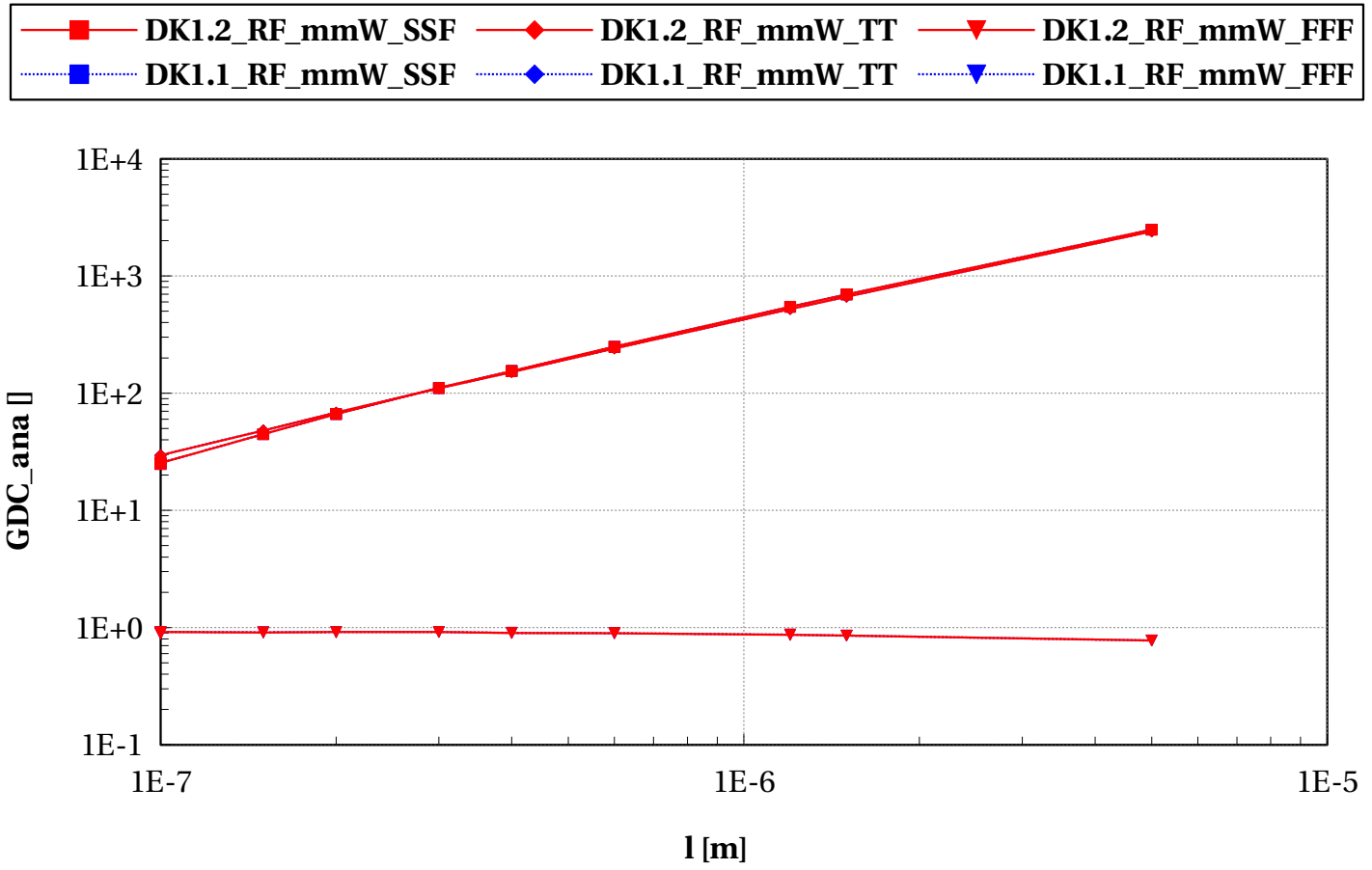
egvnfet_acc, Vgs_ana [mV] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



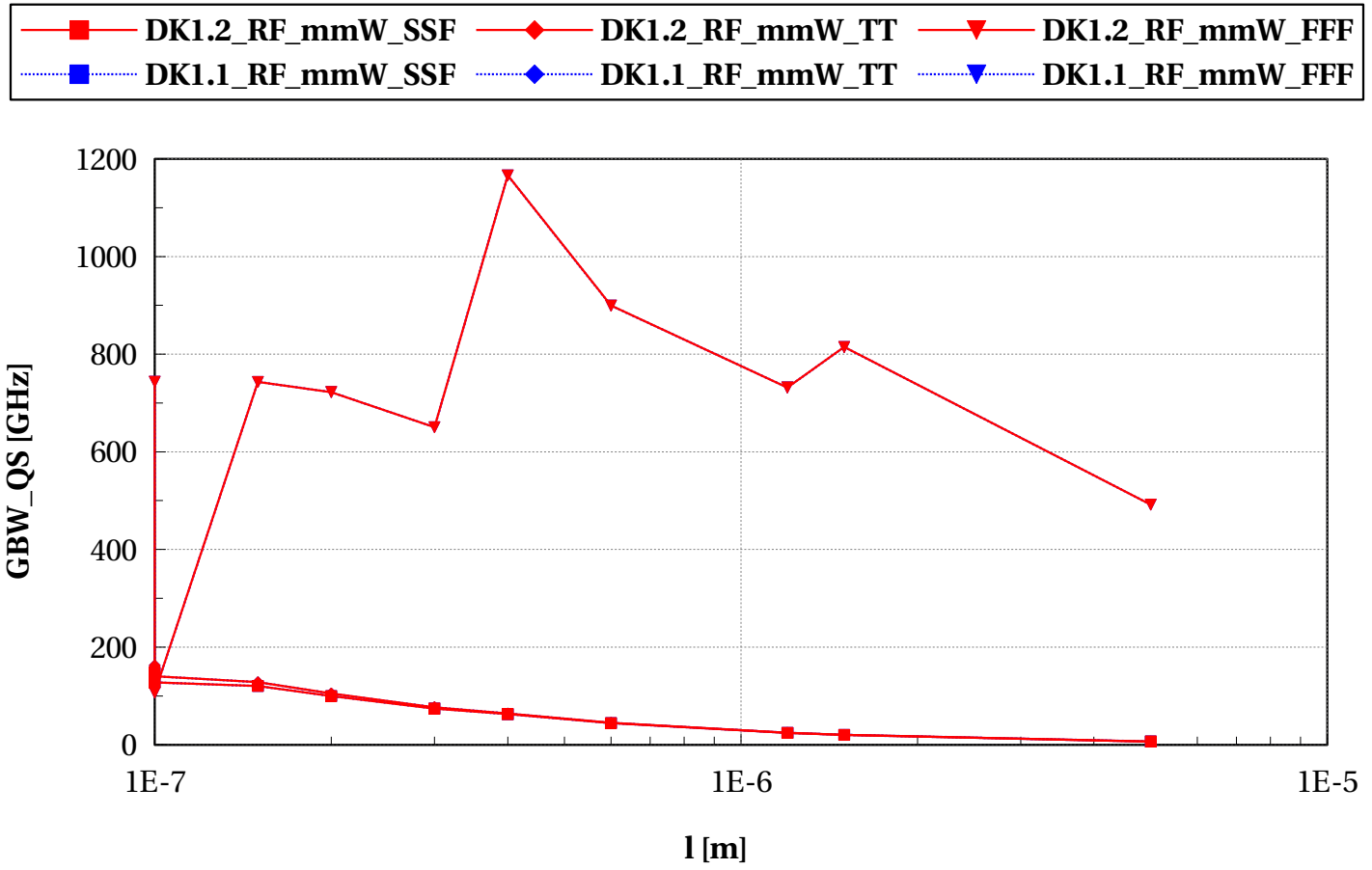
egvnfet_acc, GDC_ana [] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



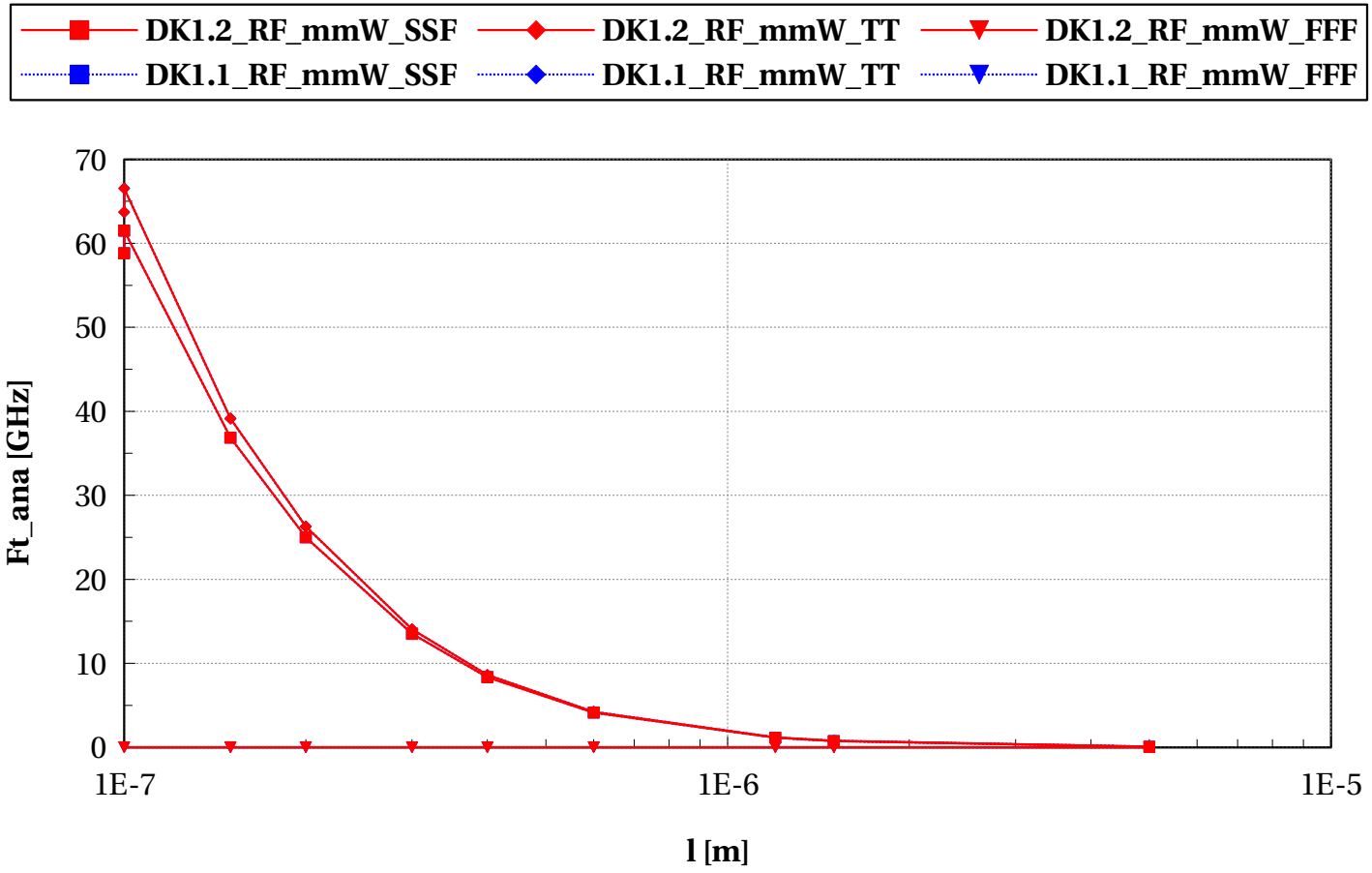
egvnfet_acc, GBW_QS [GHz] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



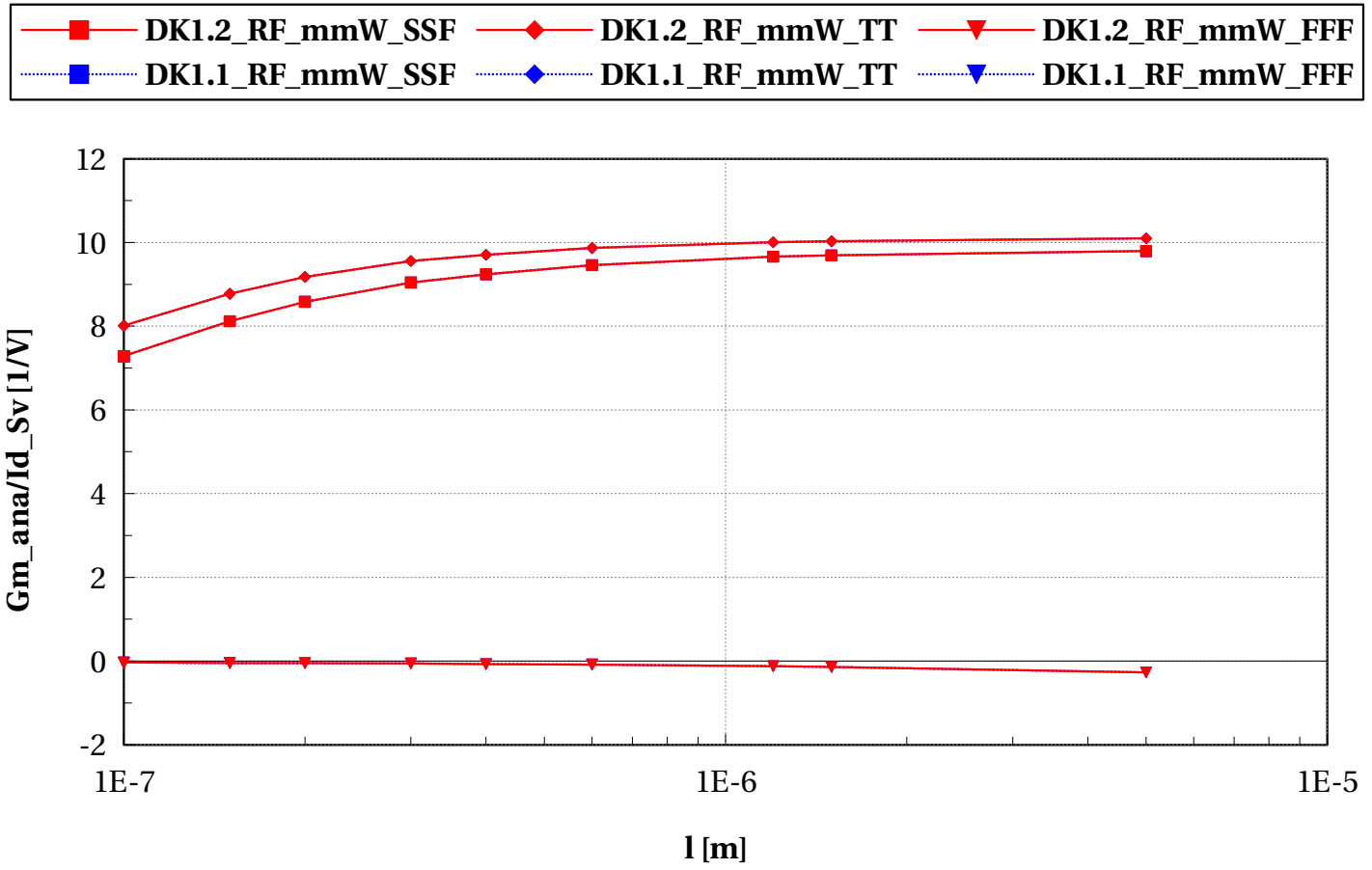
egvnfet_acc, Ft_ana [GHz] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

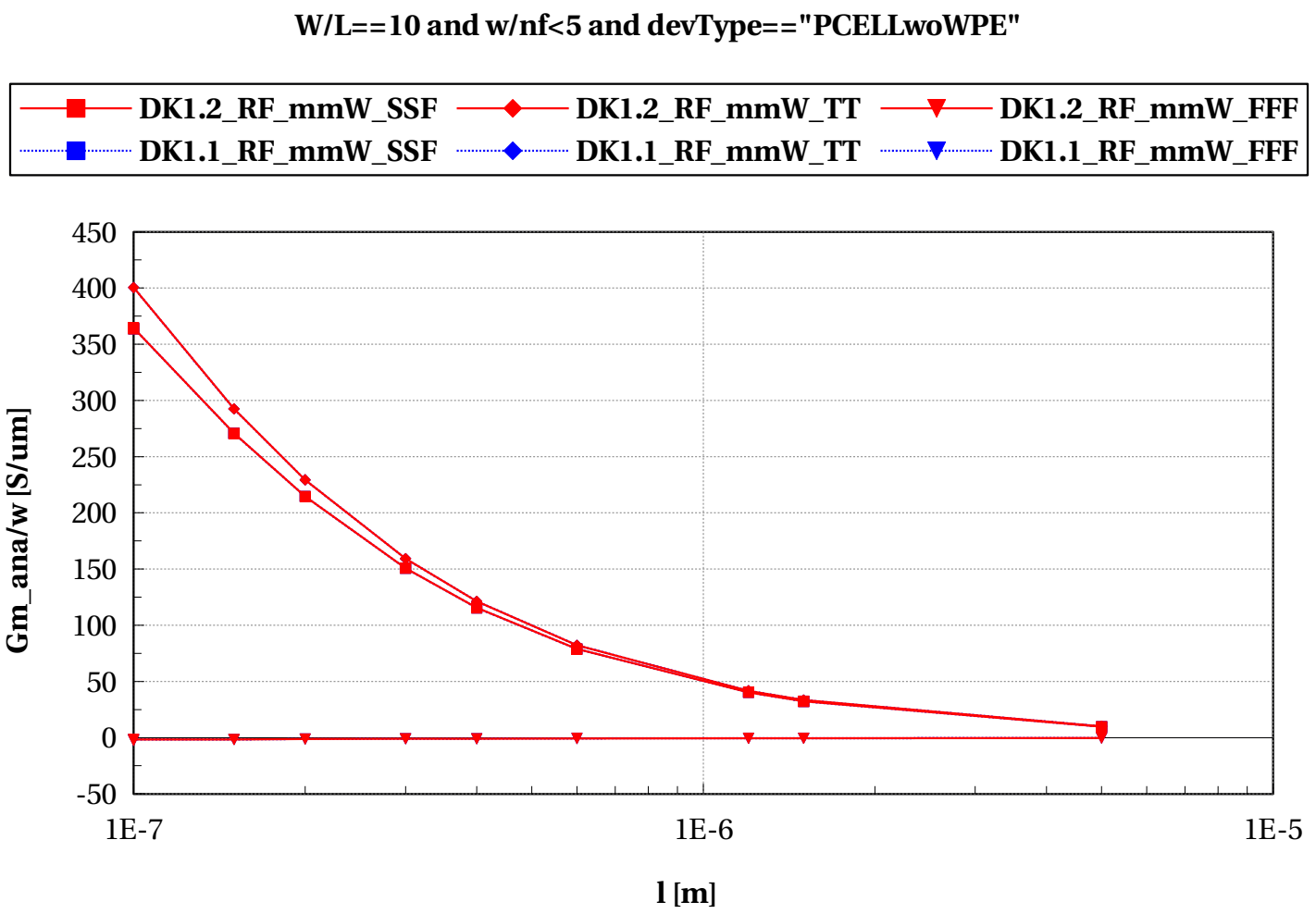


egvnfet_acc, Gm_ana/Id_Sv [1/V] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

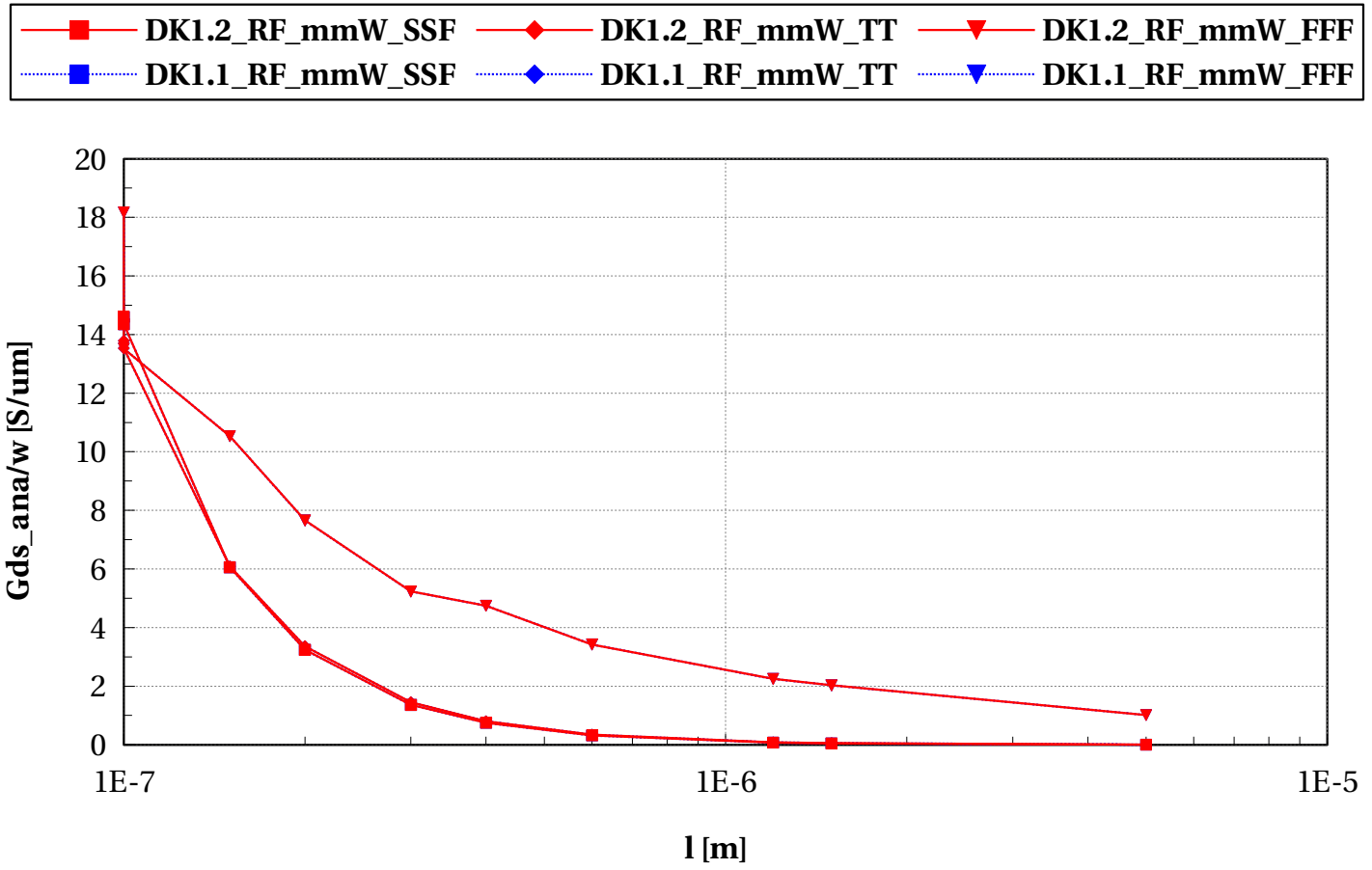


egvnfet_acc, Gm_ana/w [S/um] vs l [m]

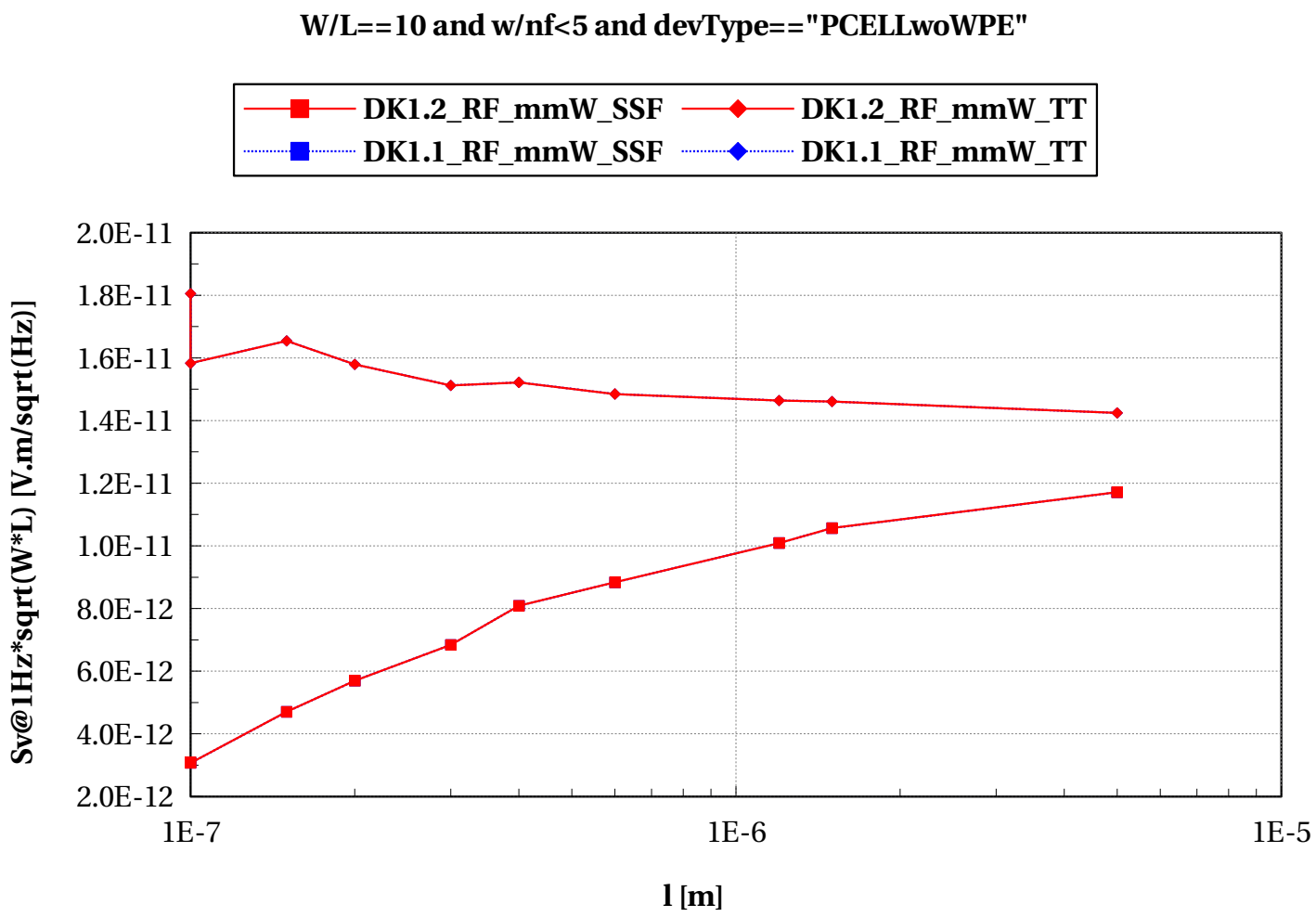


egvnfet_acc, Gds_ana/w [S/um] vs l [m]

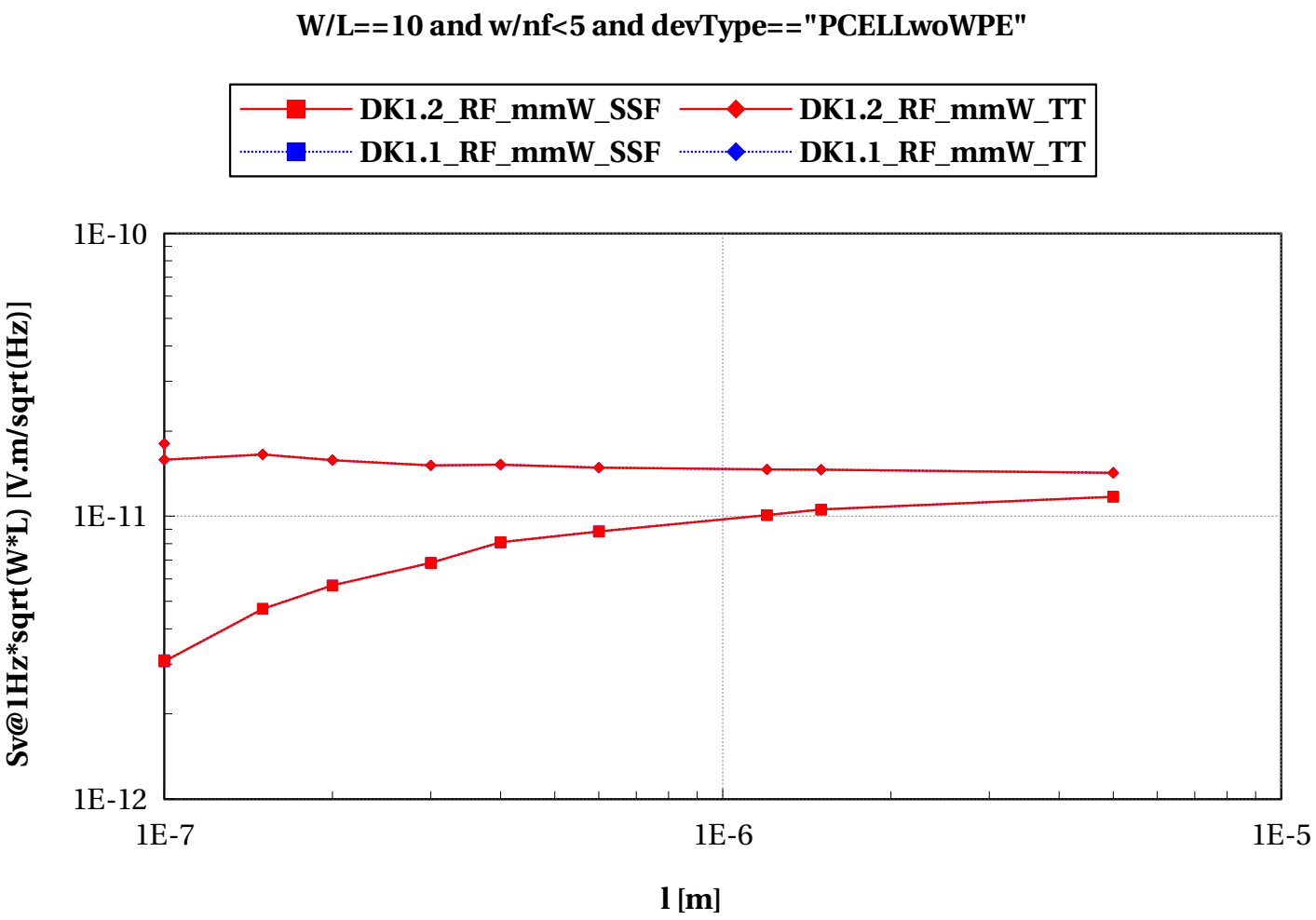
W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



egvnfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]

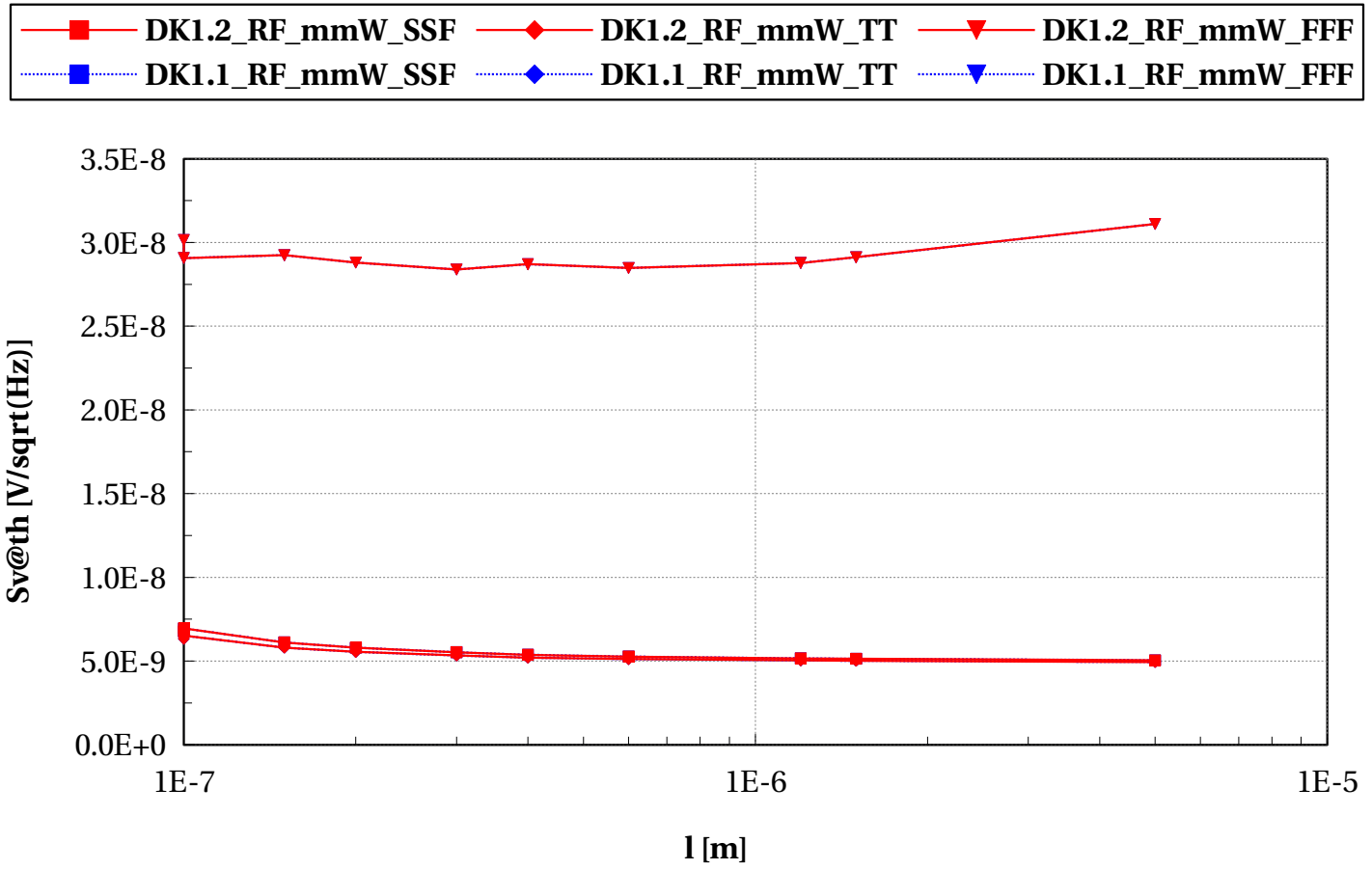


egvnfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]



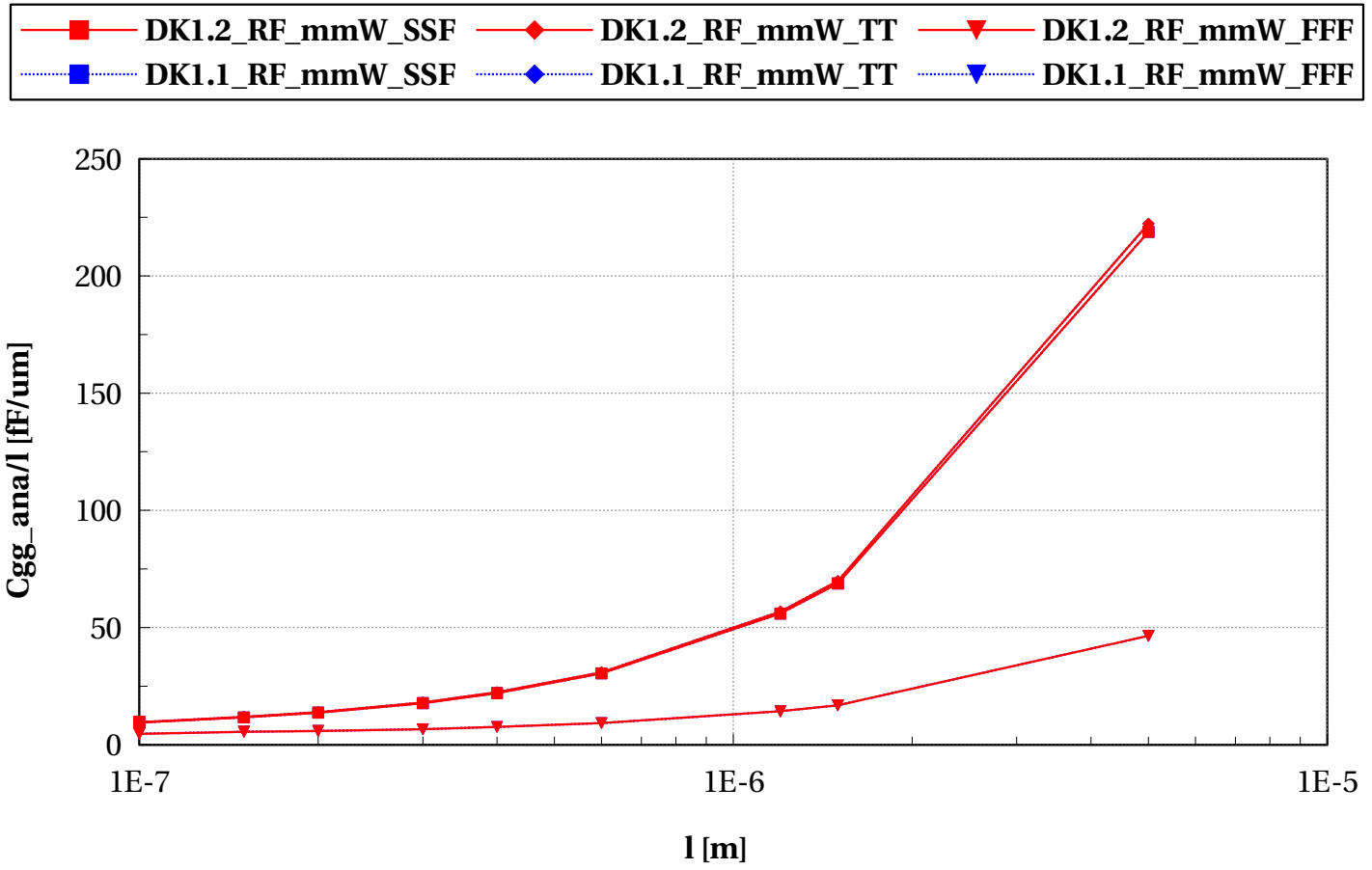
egvnfet_acc, Sv@th [V/sqrt(Hz)] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



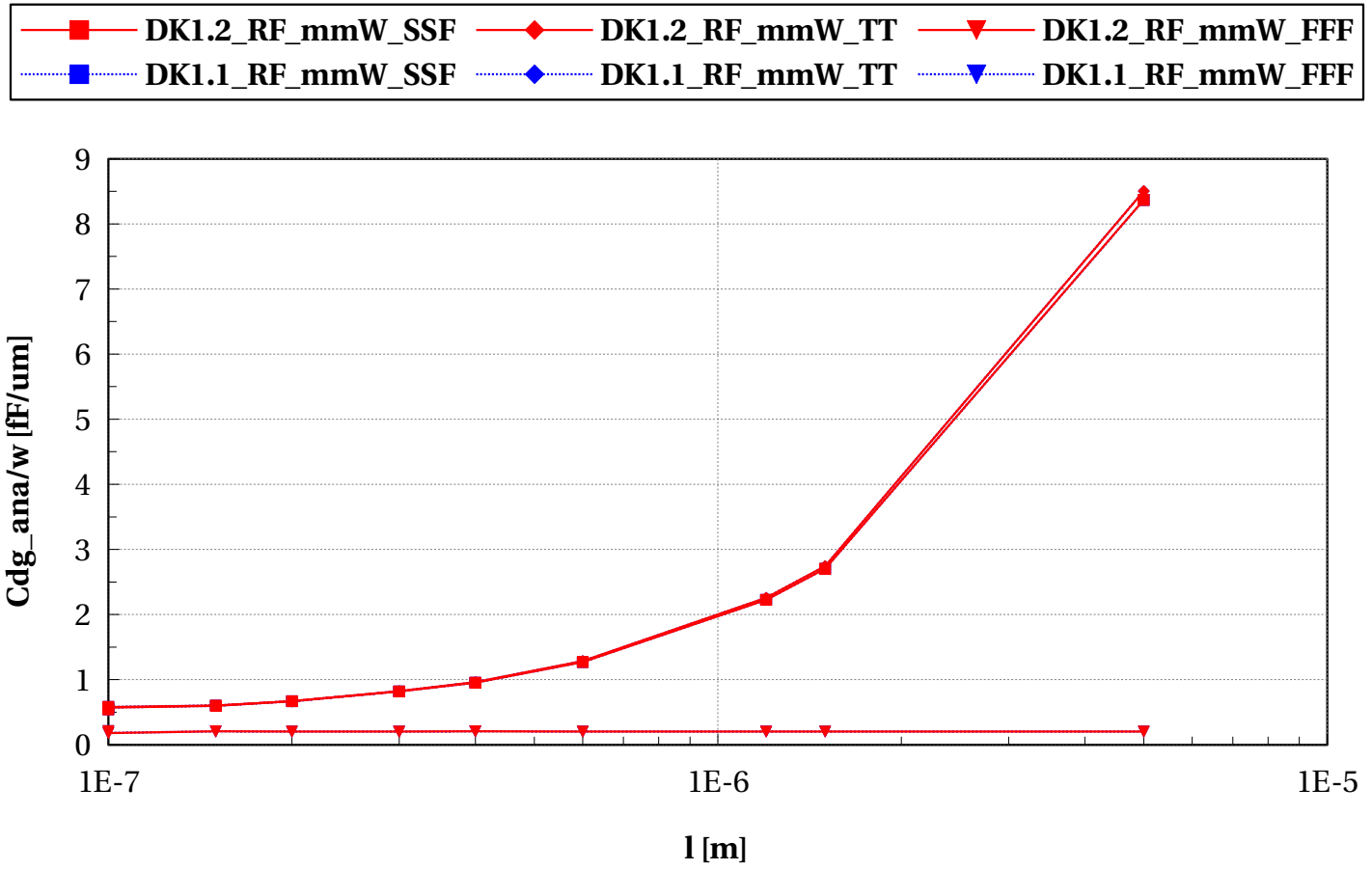
egvnfet_acc, Cgg_ana/l [fF/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

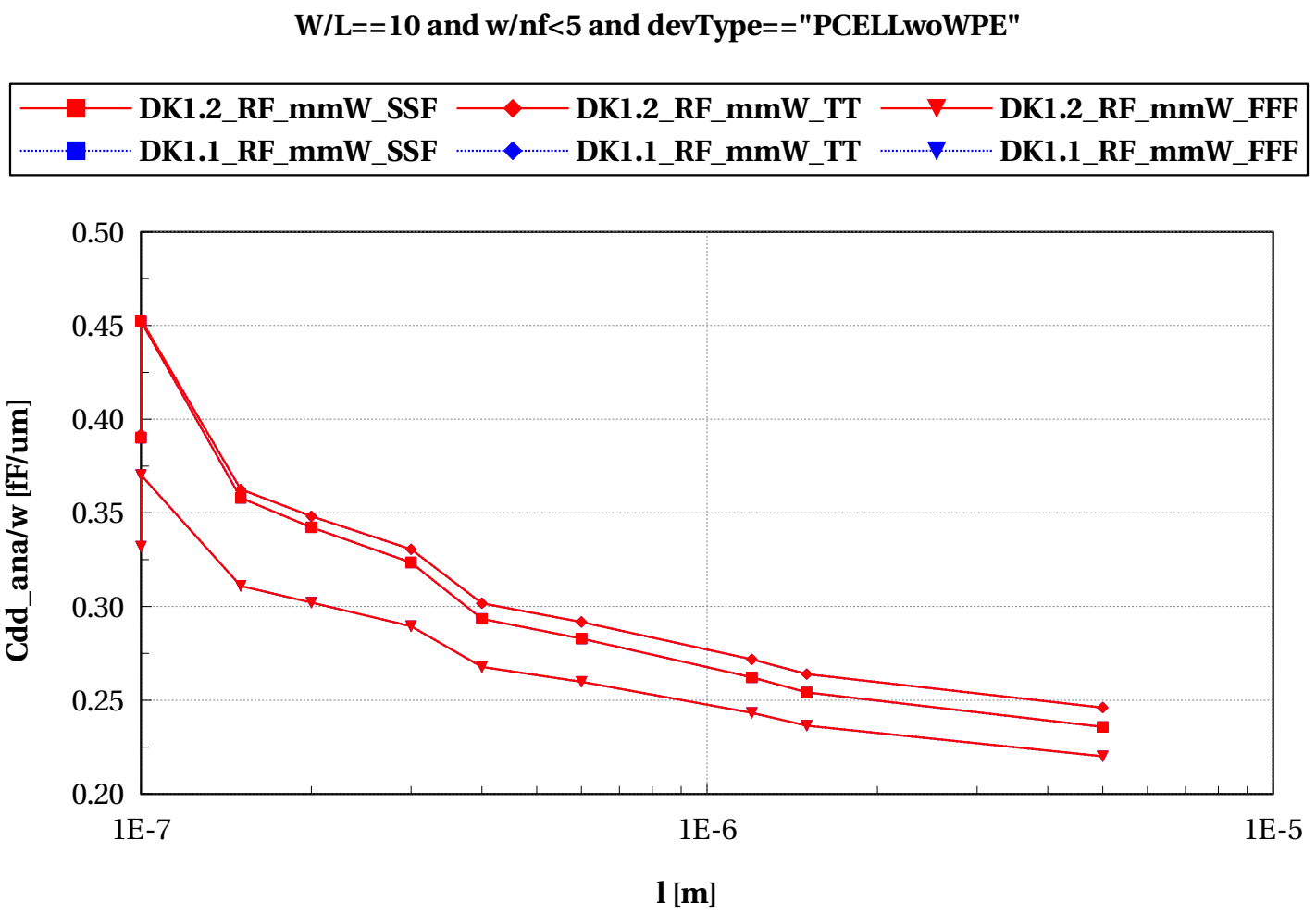


egvnfet_acc, Cdg_ana/w [fF/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

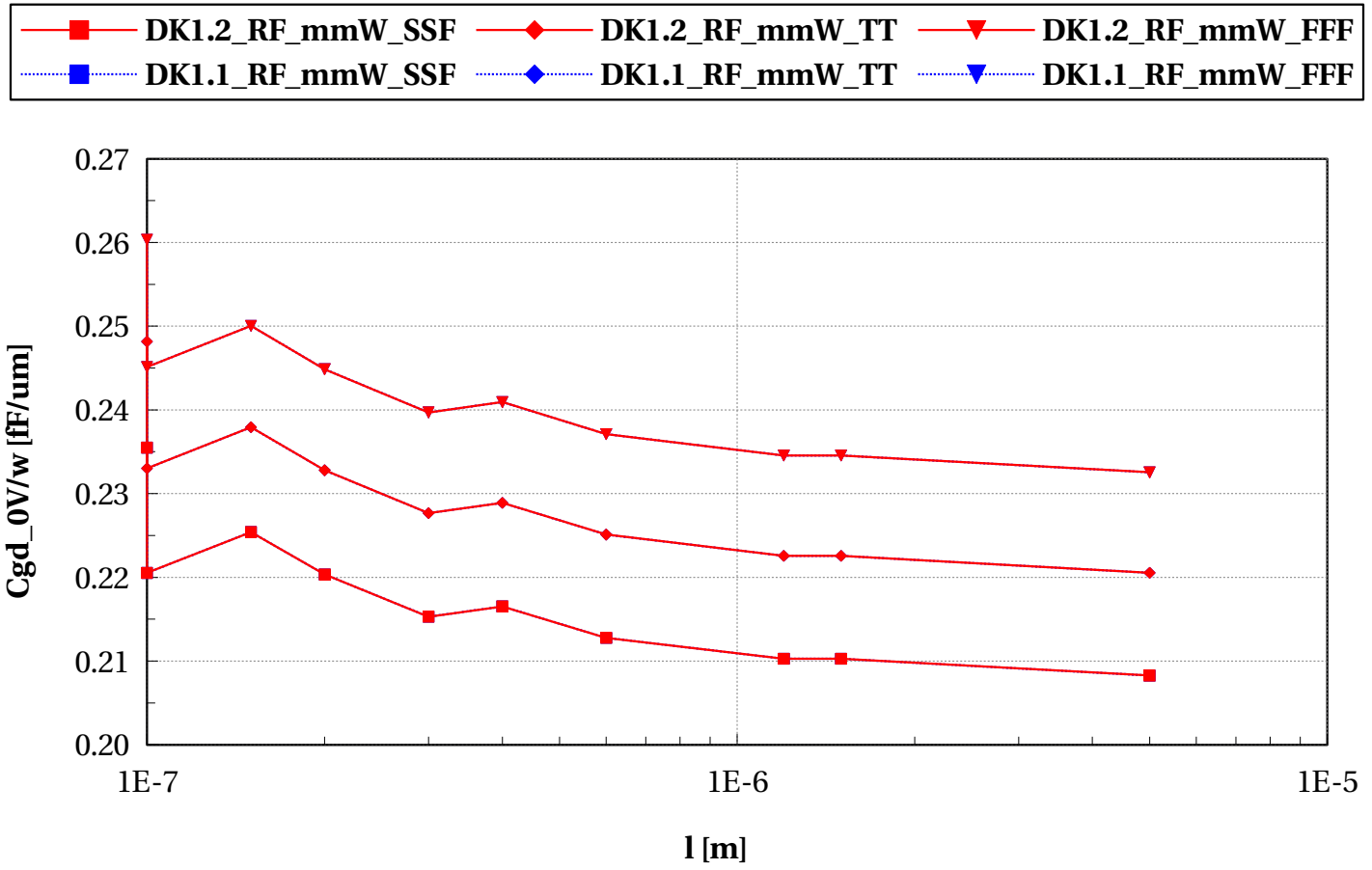


egvnfet_acc, Cdd_ana/w [fF/um] vs l [m]



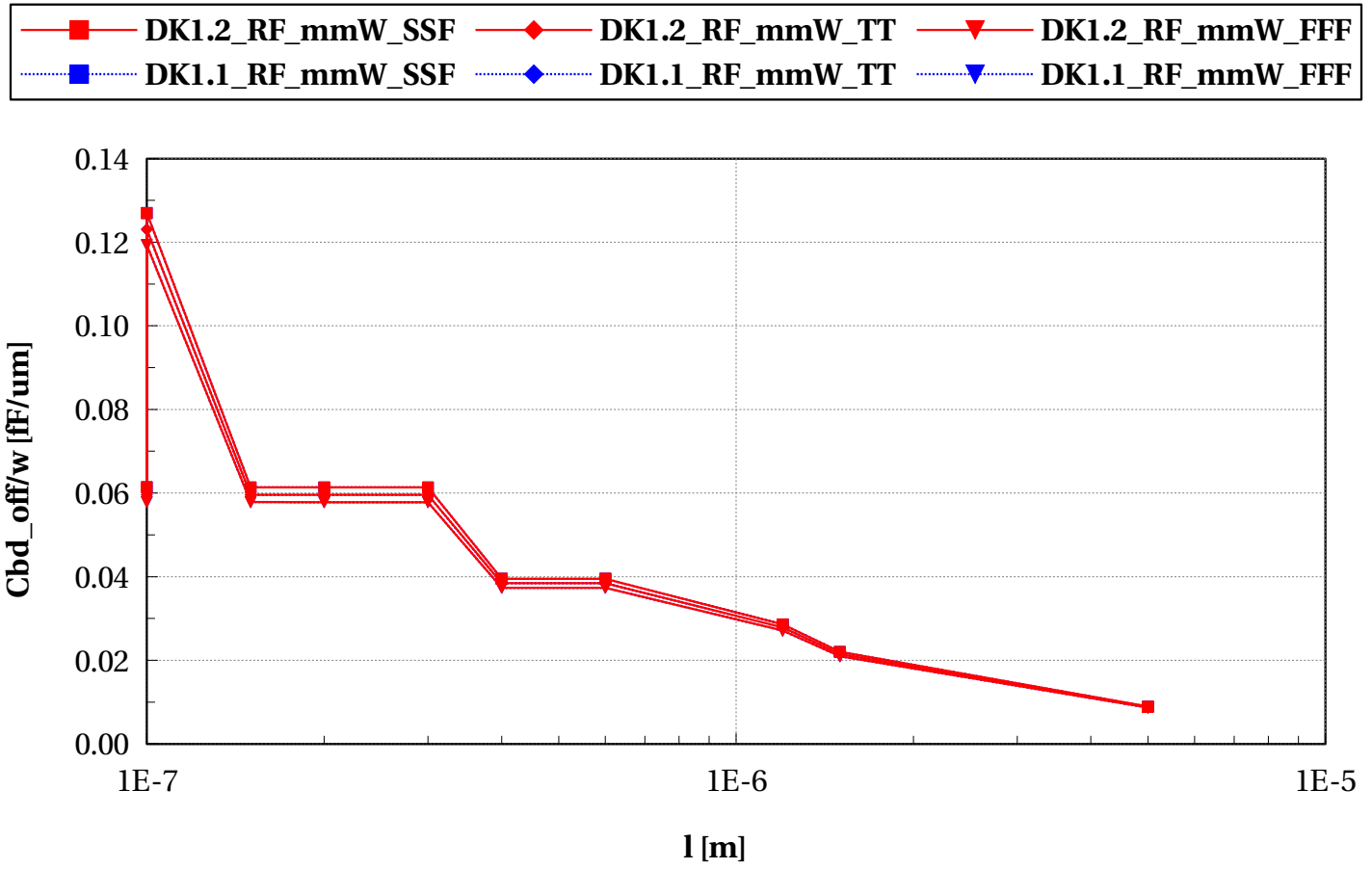
egvnfet_acc, Cgd_0V/w [fF/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



egvnfet_acc, Cbd_off/w [fF/um] vs l [m]

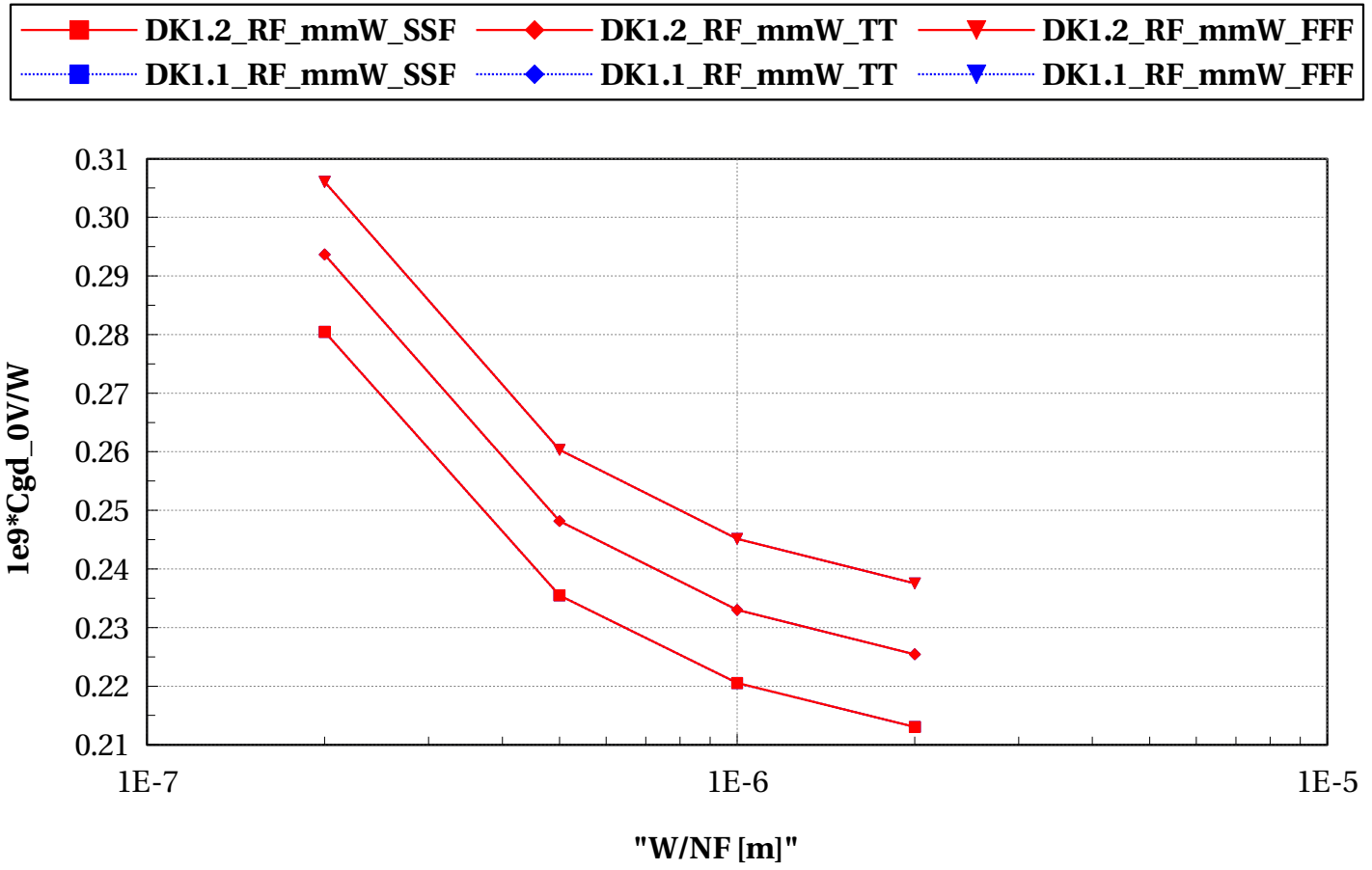
W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



Scaling versus gate finger width L=100nm

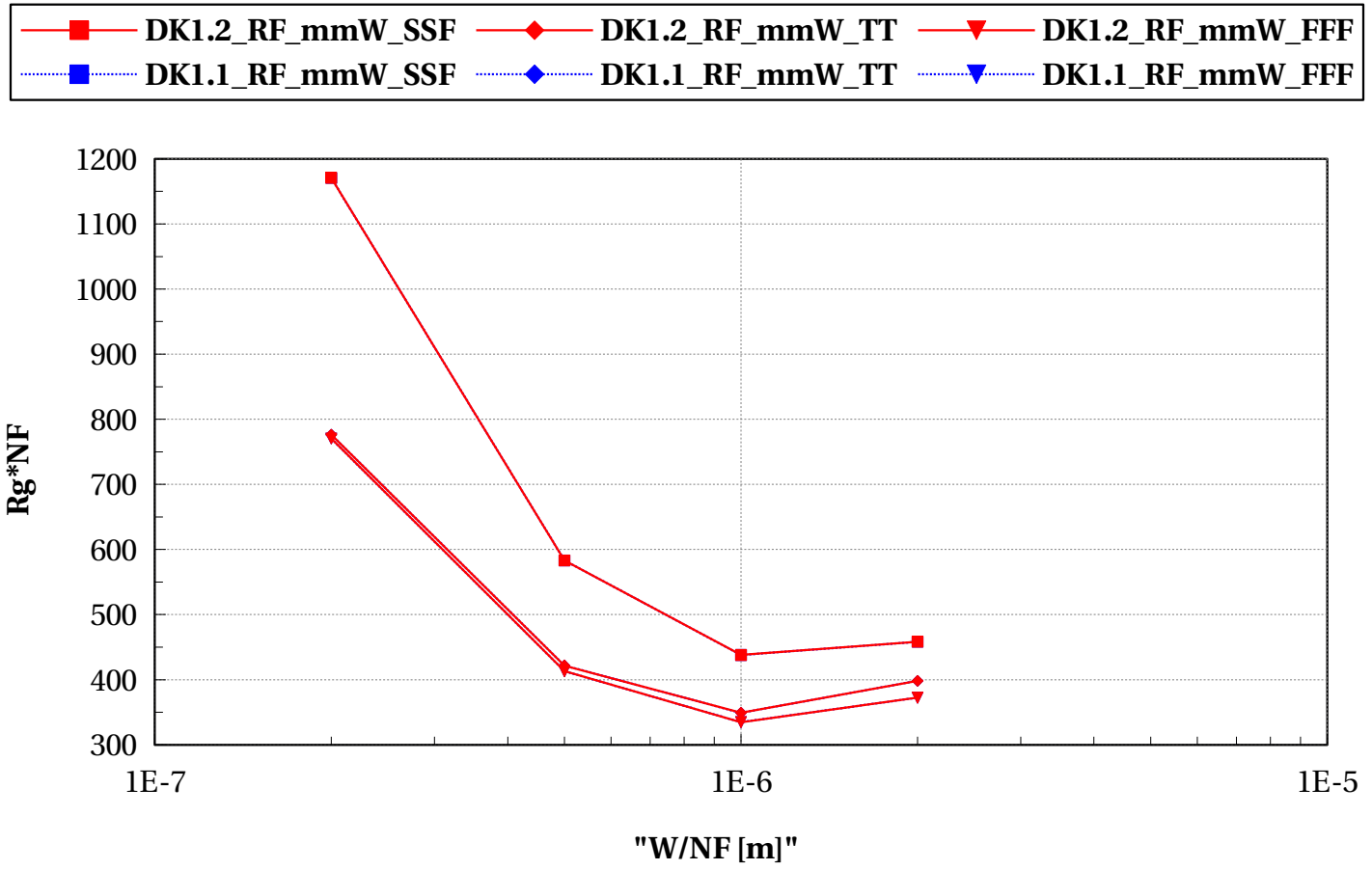
egvnfet_acc, 1e9*Cgd_0V/W vs "W/NF [m]"

L==100e-9 and NF==1 and devType=="PCELLwoWPE"



egvnfet_acc, Rg*NF vs "W/NF [m]"

L==100e-9 and NF==1 and devType=="PCELLwoWPE"

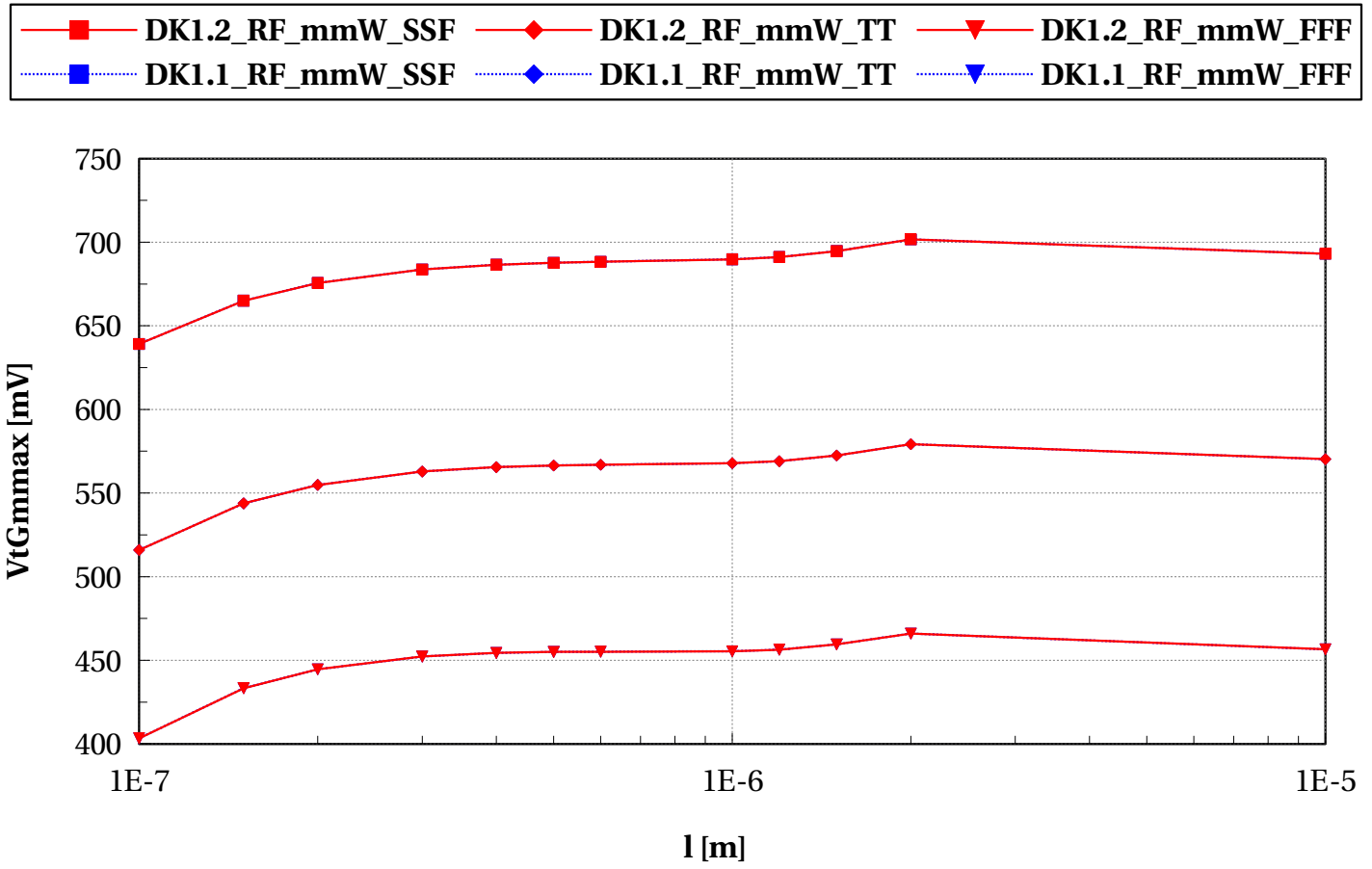


egvpfet_acc
Electrical characteristics scaling

Scaling versus Length (T=25C)

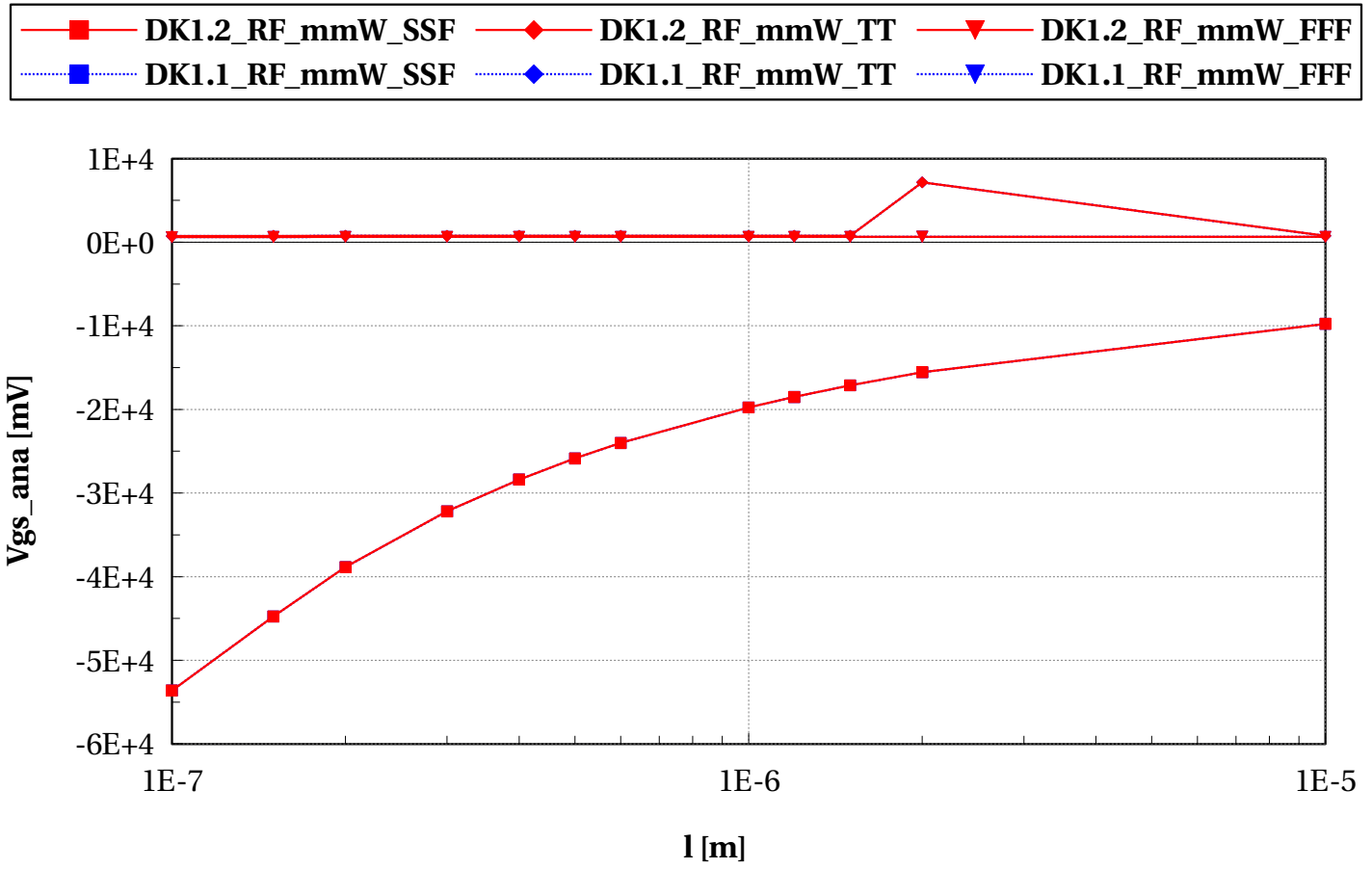
egvpfet_acc, VtGmmax [mV] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"



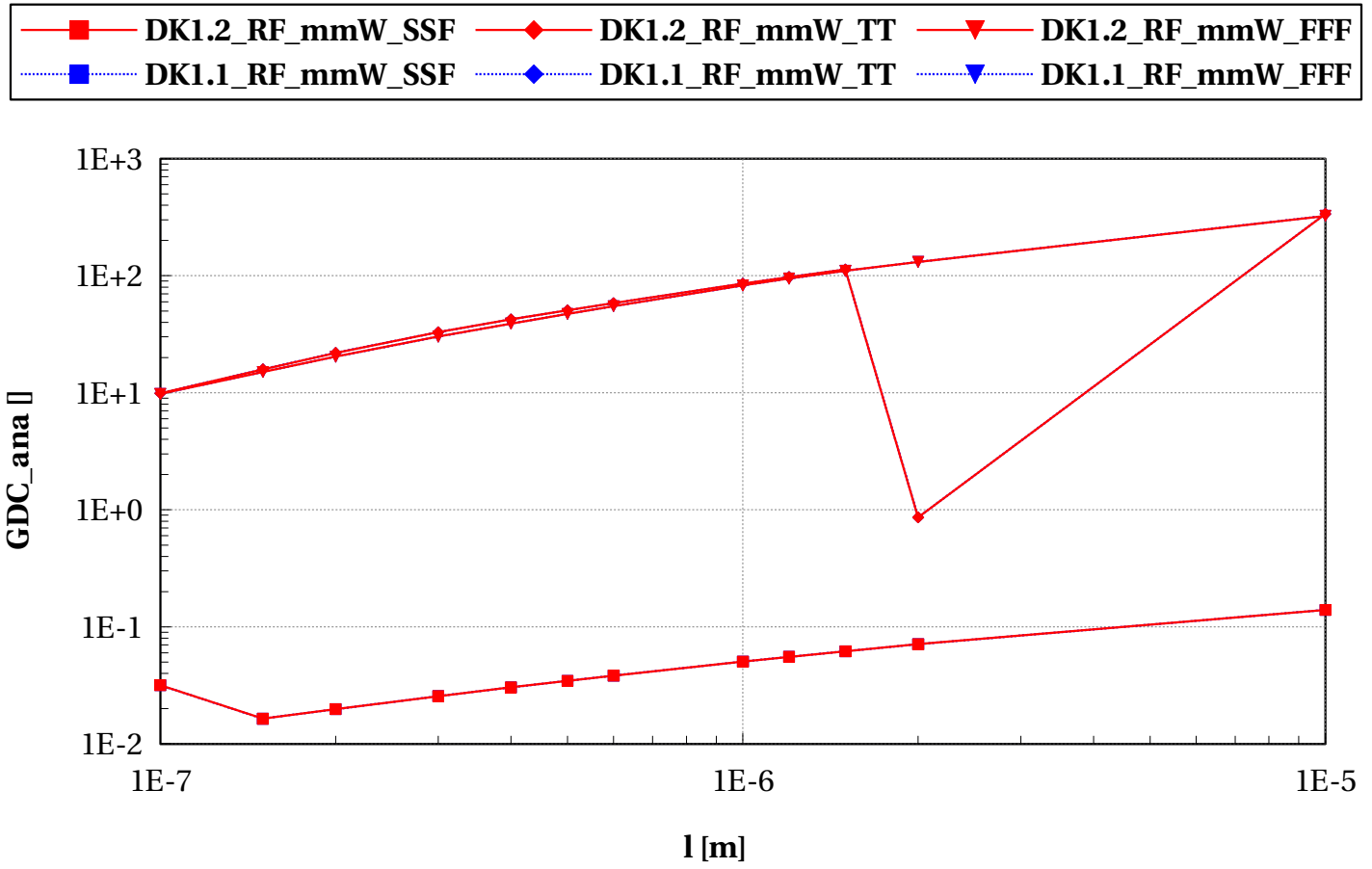
egvpfet_acc, Vgs_ana [mV] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"



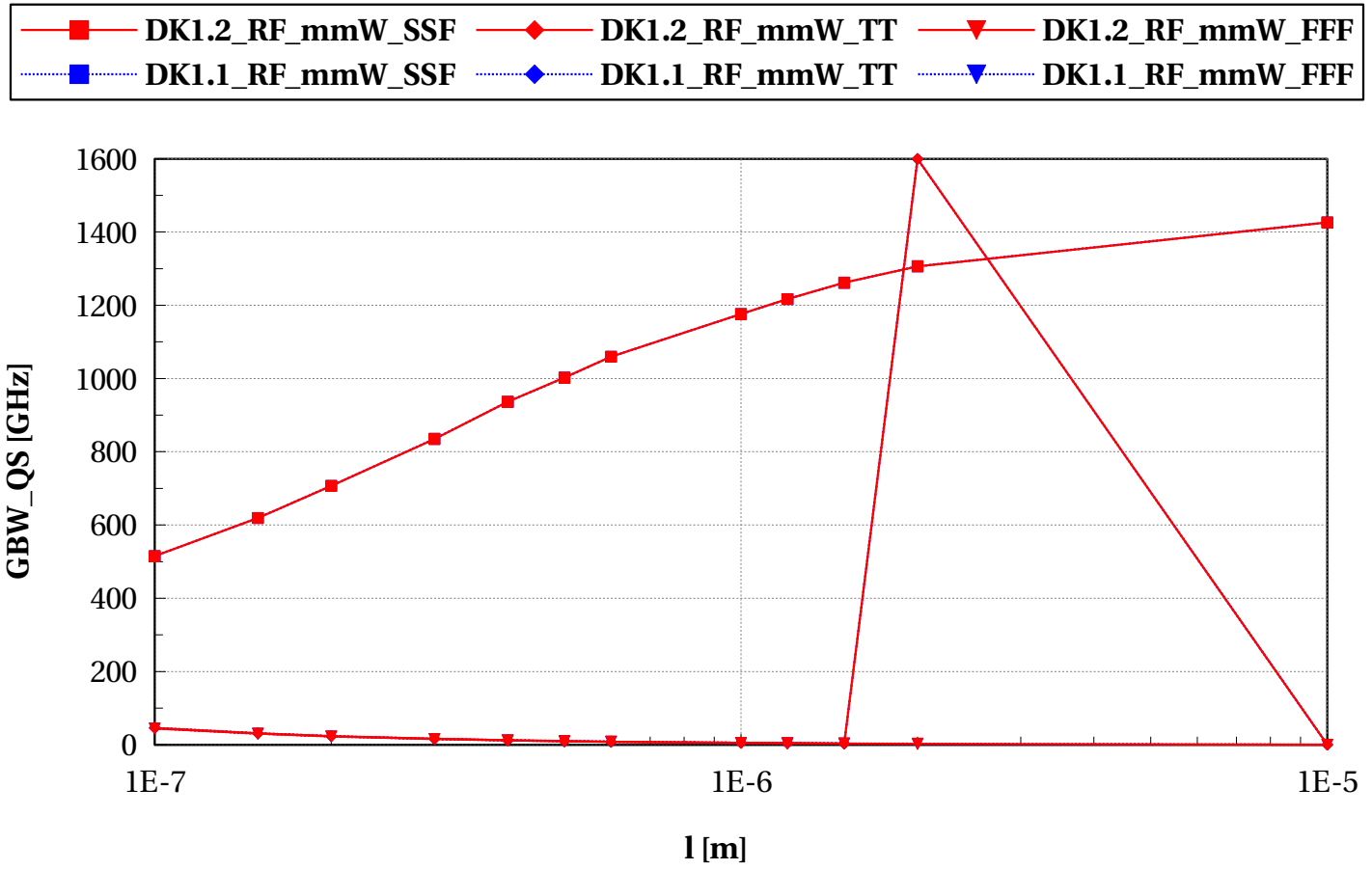
egvpfet_acc, GDC_ana [] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"



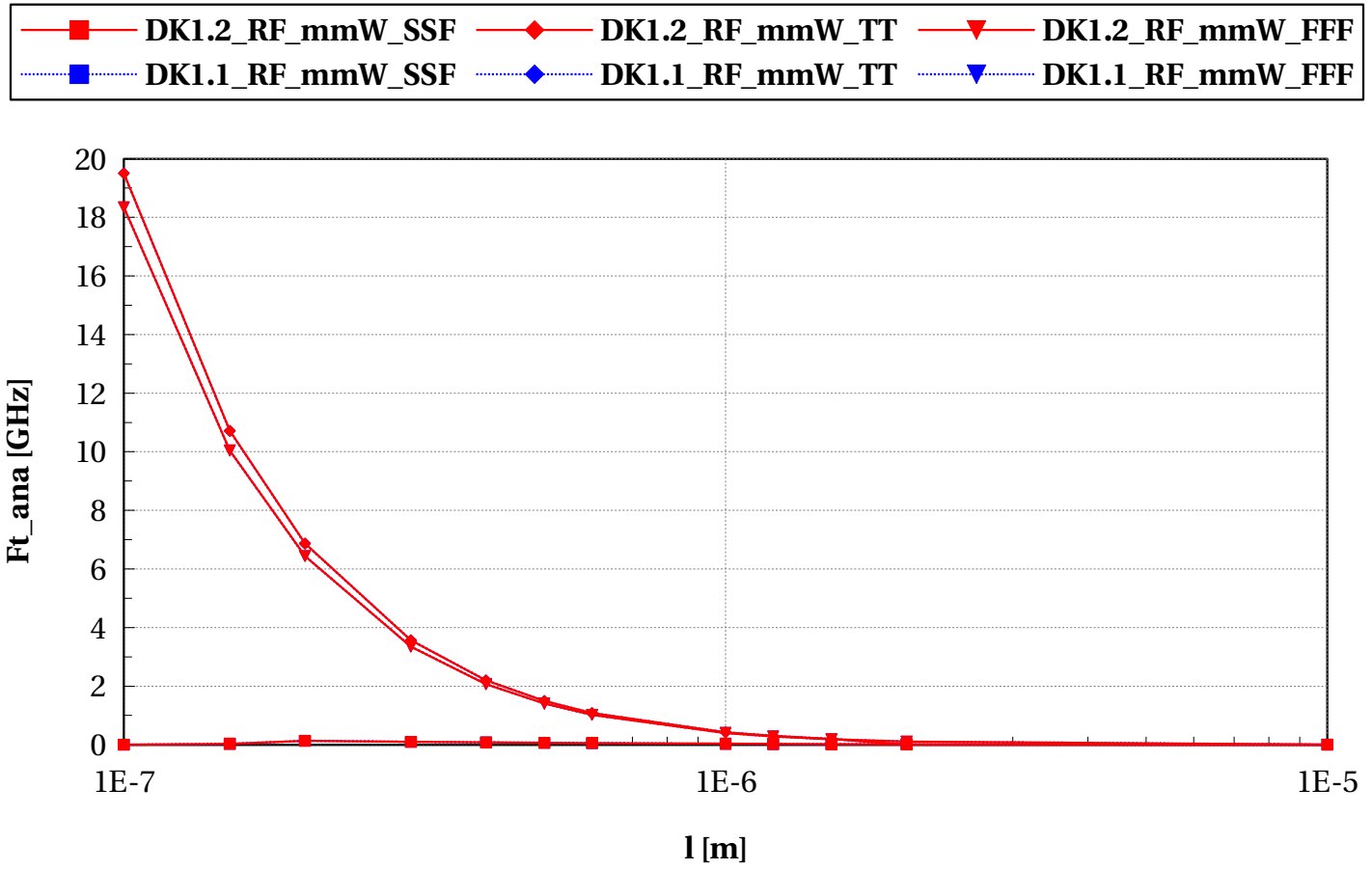
egvpfet_acc, GBW_QS [GHz] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"

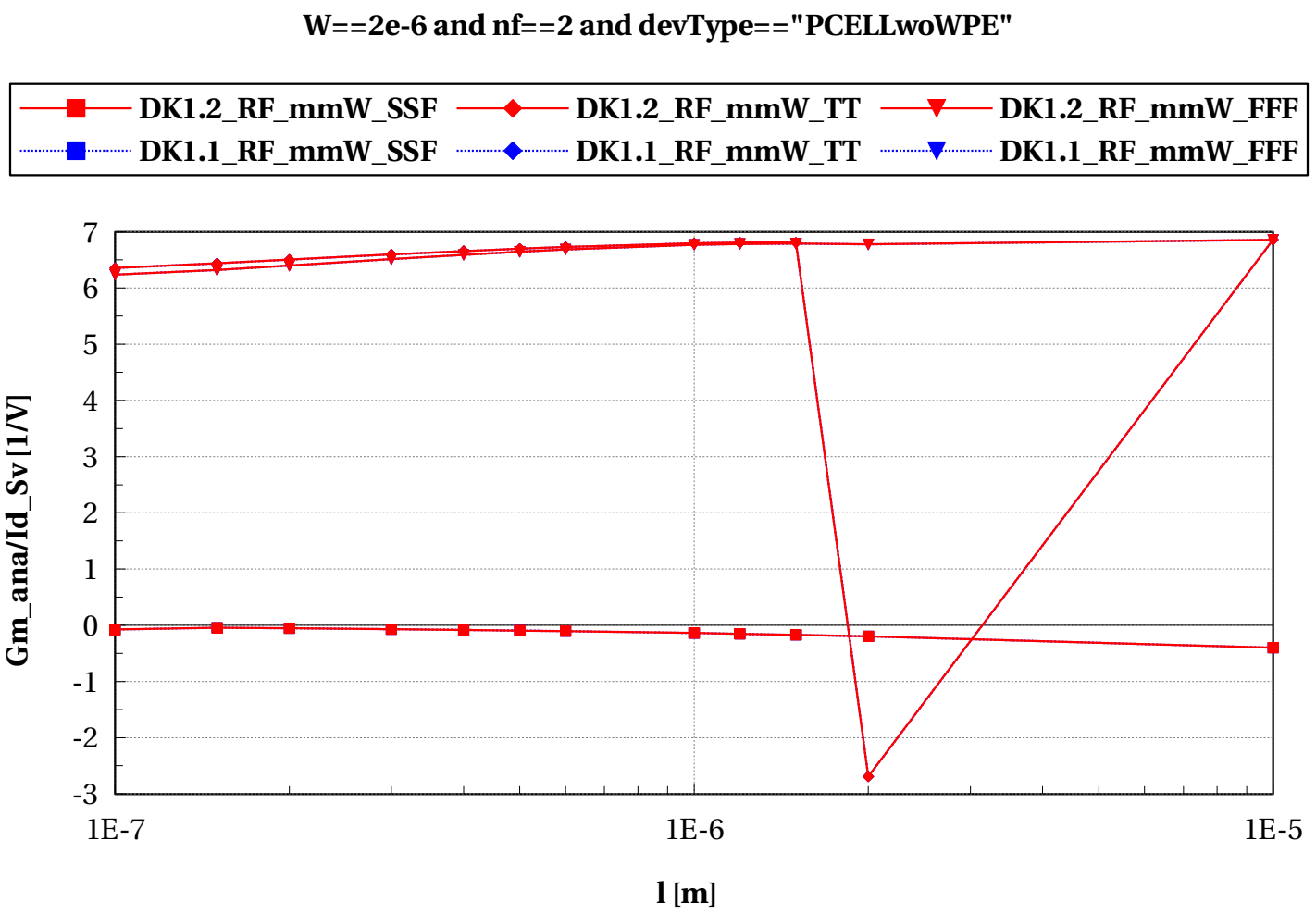


egvpfet_acc, Ft_ana [GHz] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"

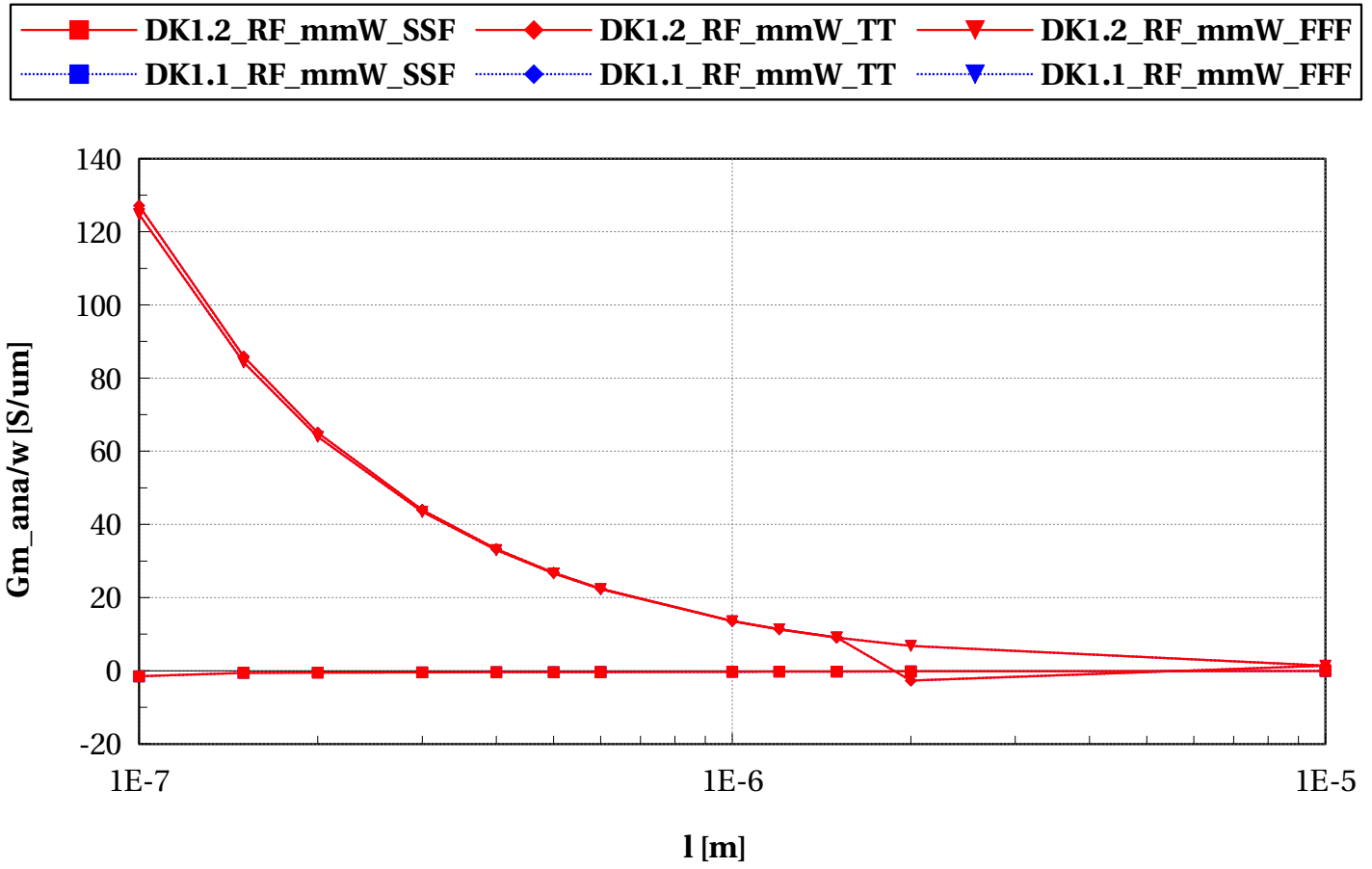


egvpfet_acc, Gm_ana/Id_Sv [1/V] vs l [m]



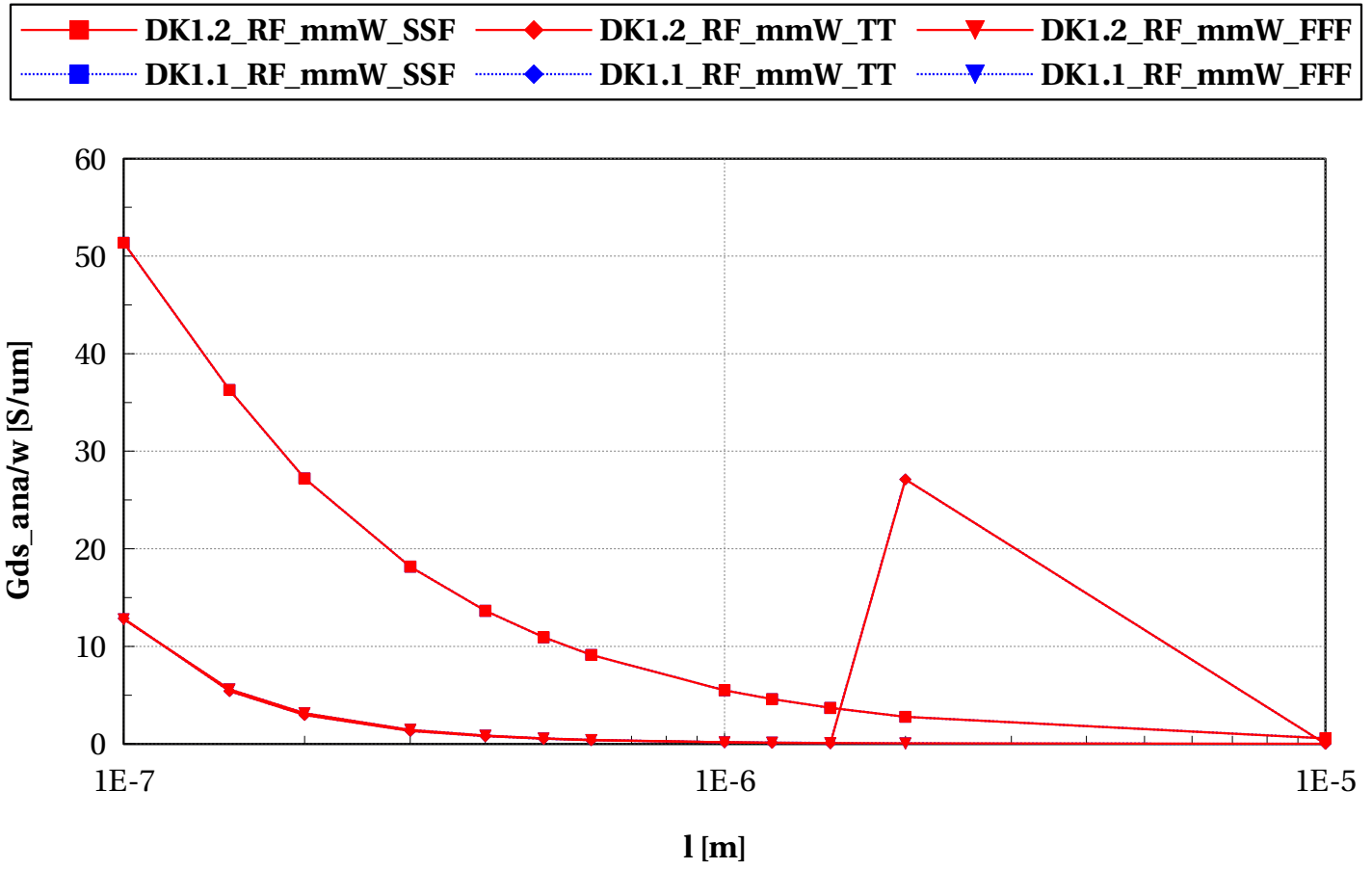
egvpfet_acc, Gm_ana/w [S/um] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"

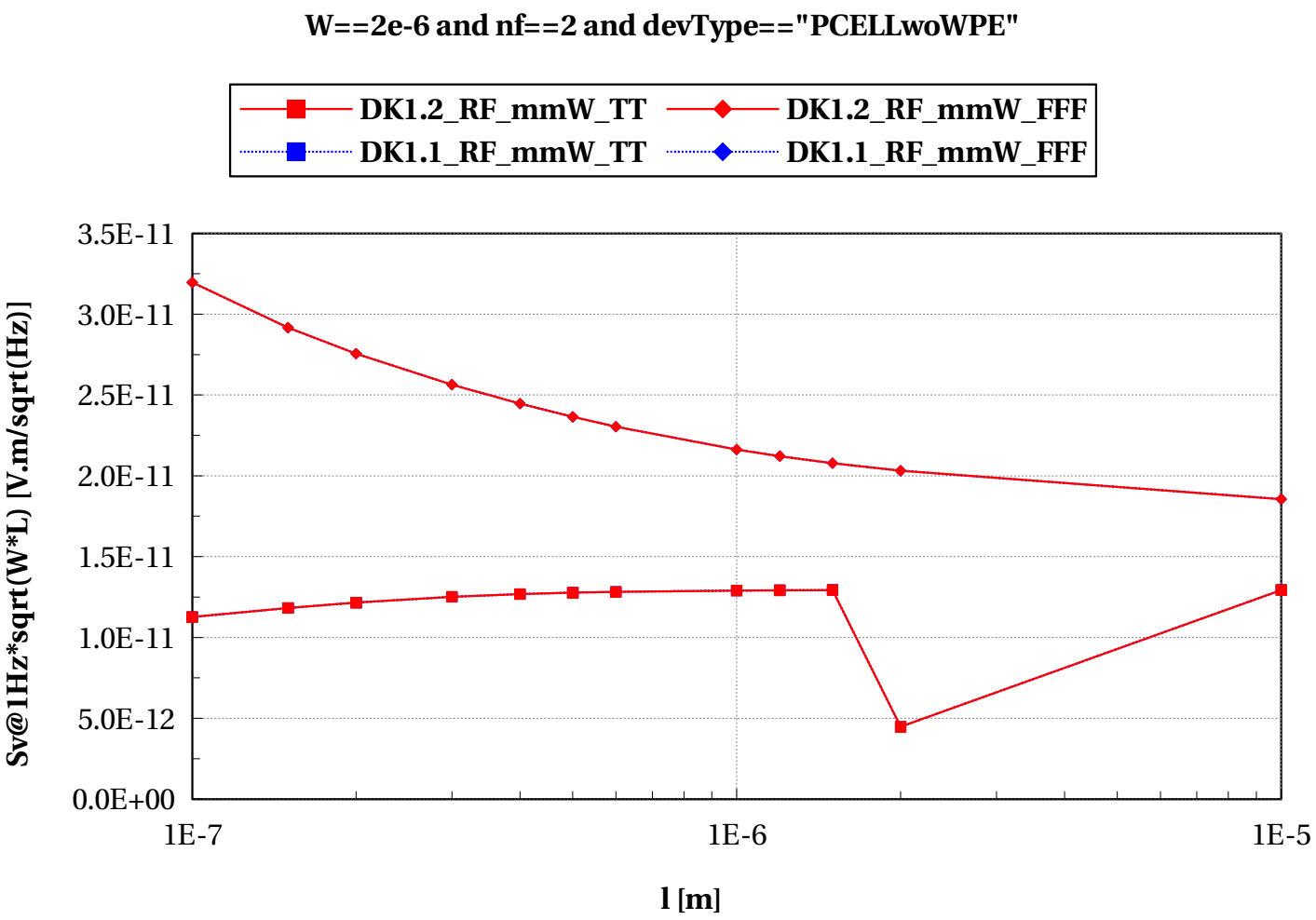


egvpfet_acc, Gds_ana/w [S/um] vs l [m]

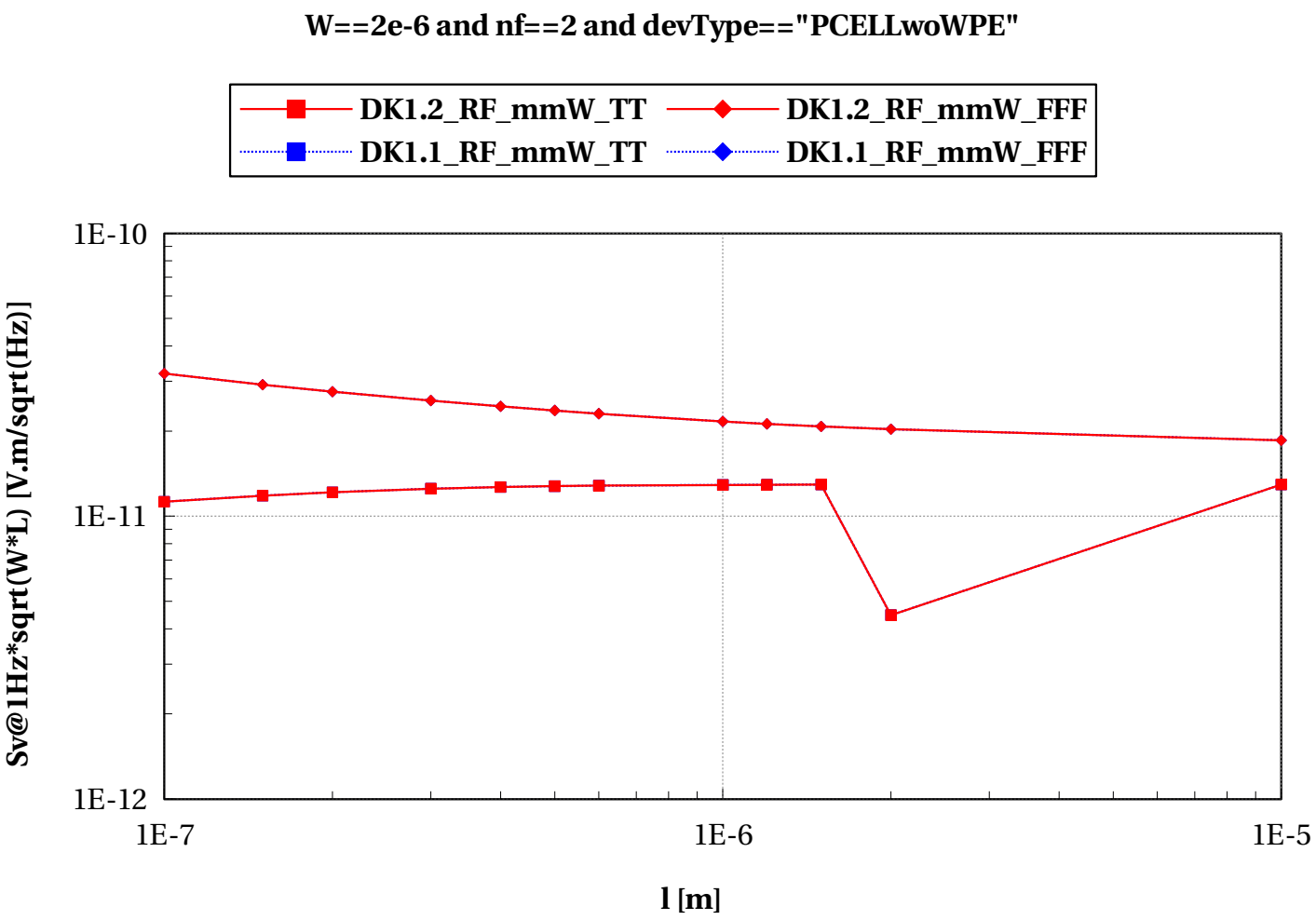
W==2e-6 and nf==2 and devType=="PCELLwoWPE"



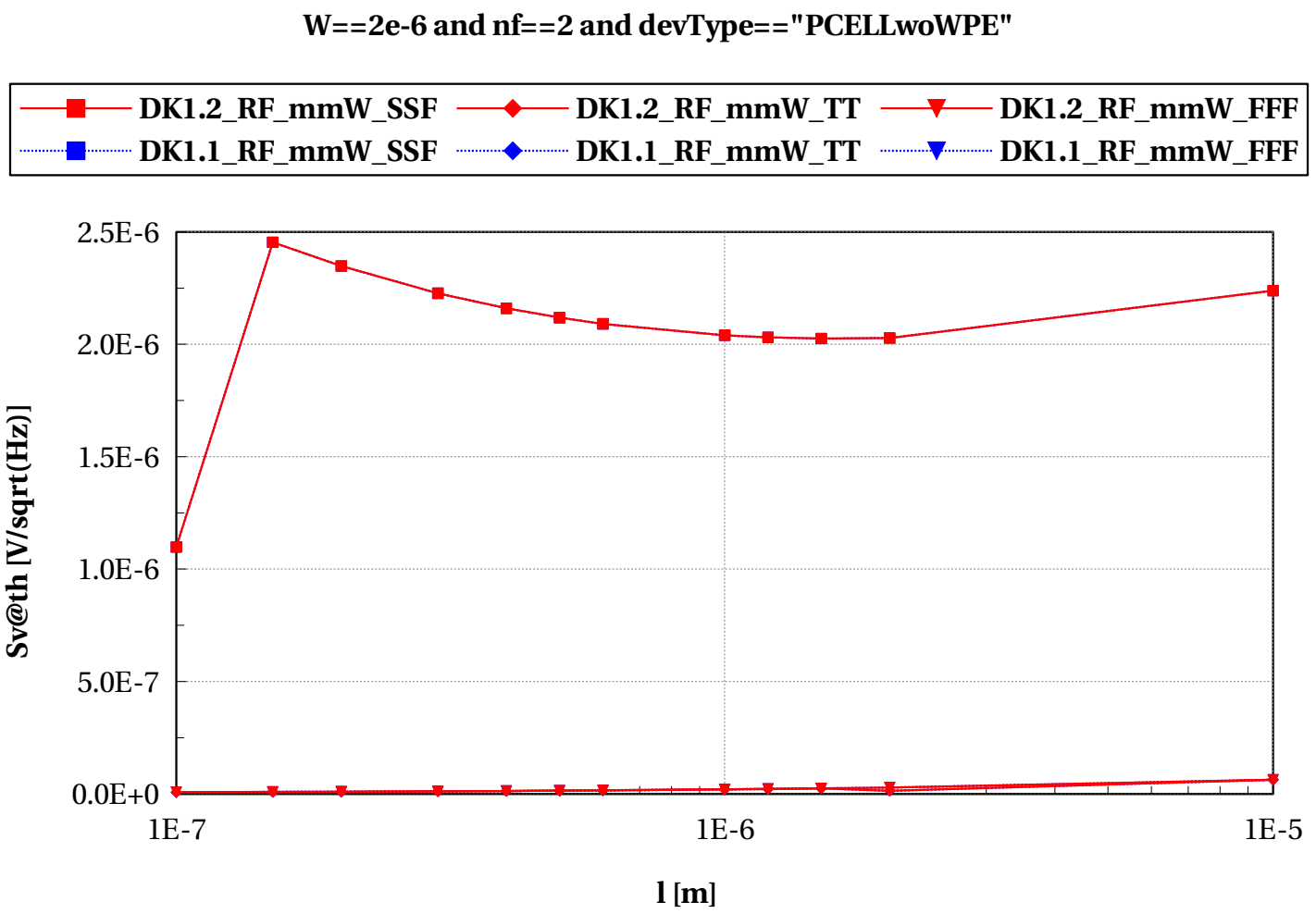
egvpfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]



egvpfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]

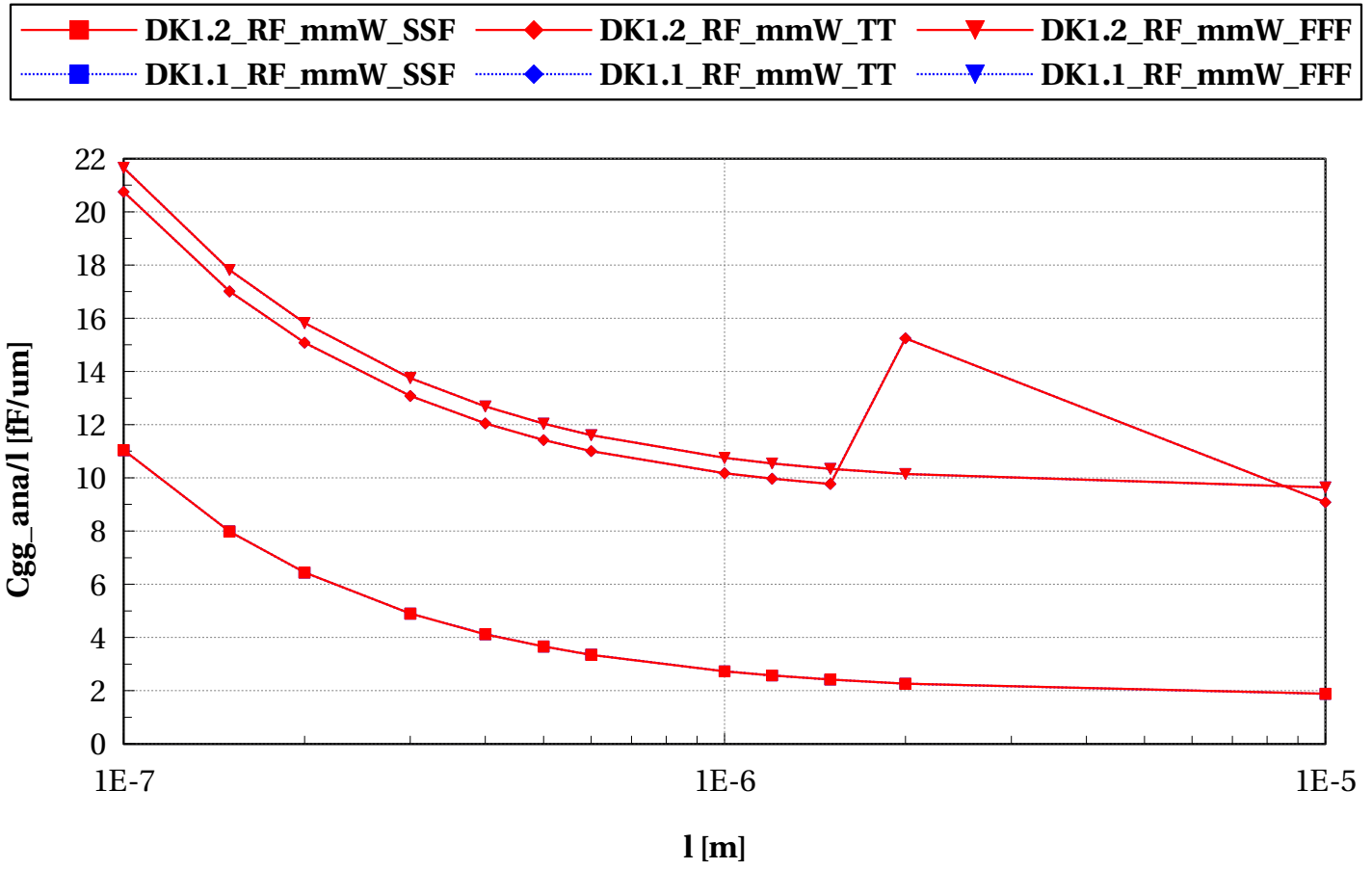


egvpfet_acc, Sv@th [V/sqrt(Hz)] vs l [m]

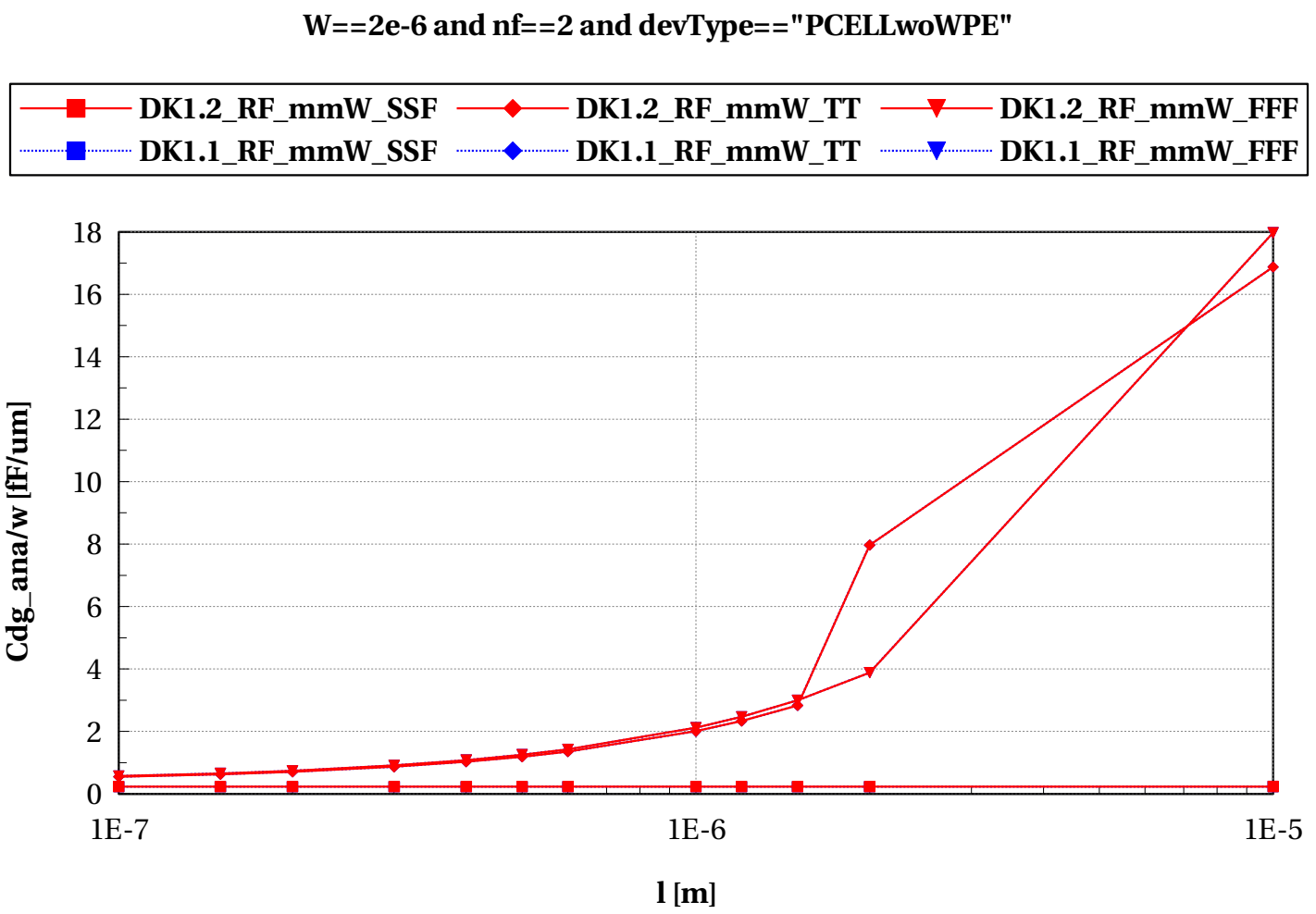


egvpfet_acc, Cgg_ana/l [fF/um] vs l [m]

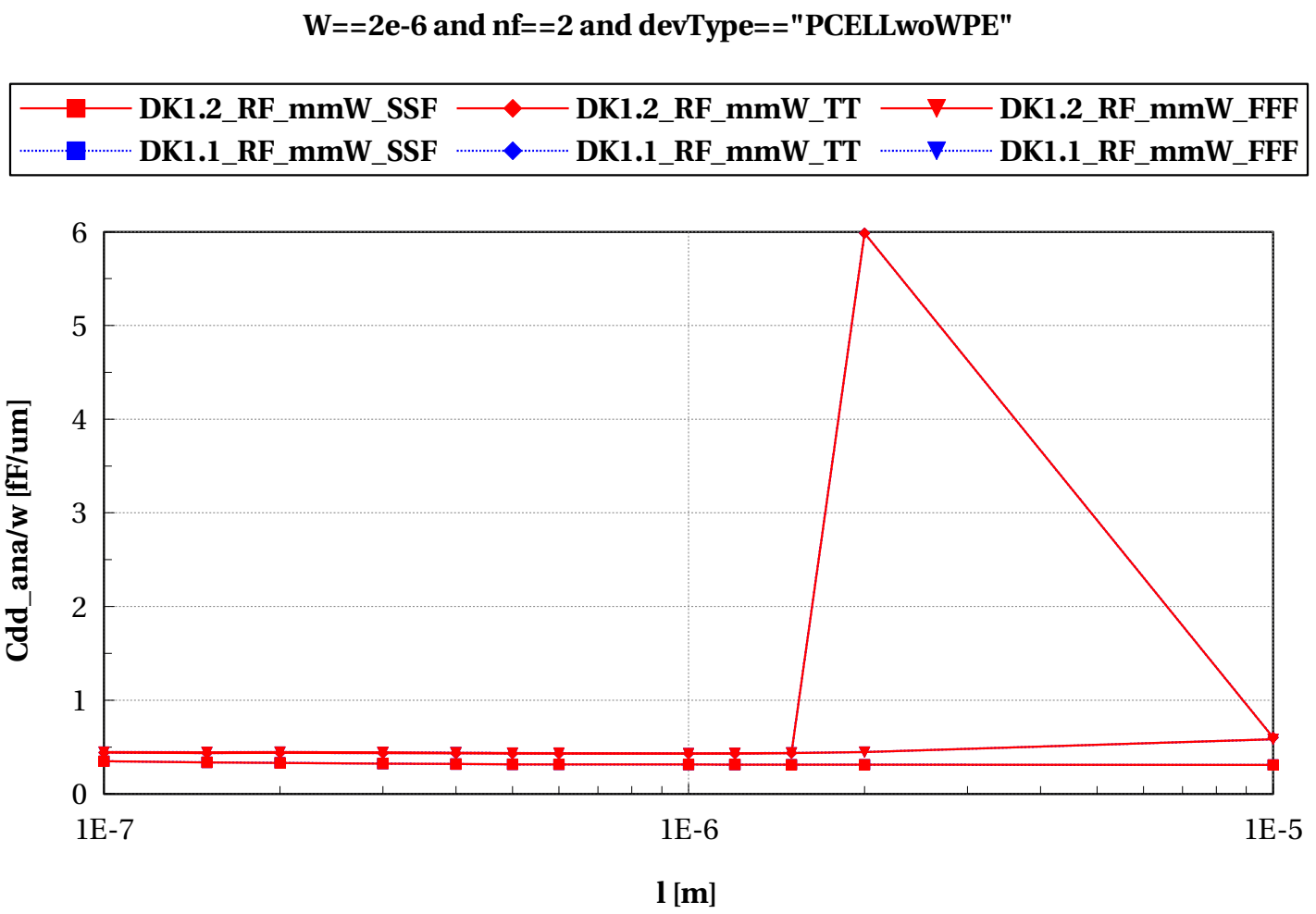
W==2e-6 and nf==2 and devType=="PCELLwoWPE"



egvpfet_acc, Cdg_ana/w [fF/um] vs l [m]

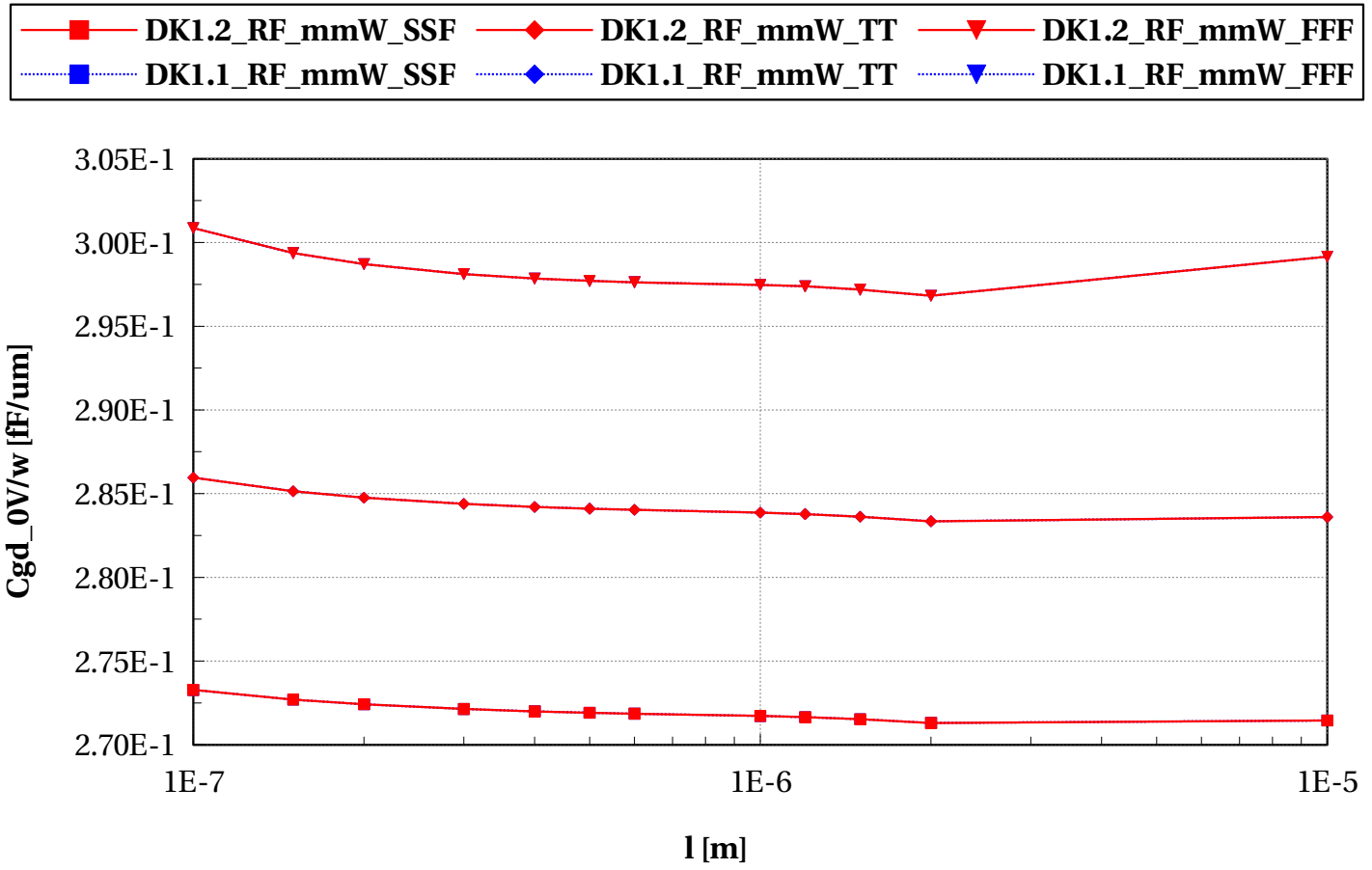


egvpfet_acc, Cdd_ana/w [fF/um] vs l [m]

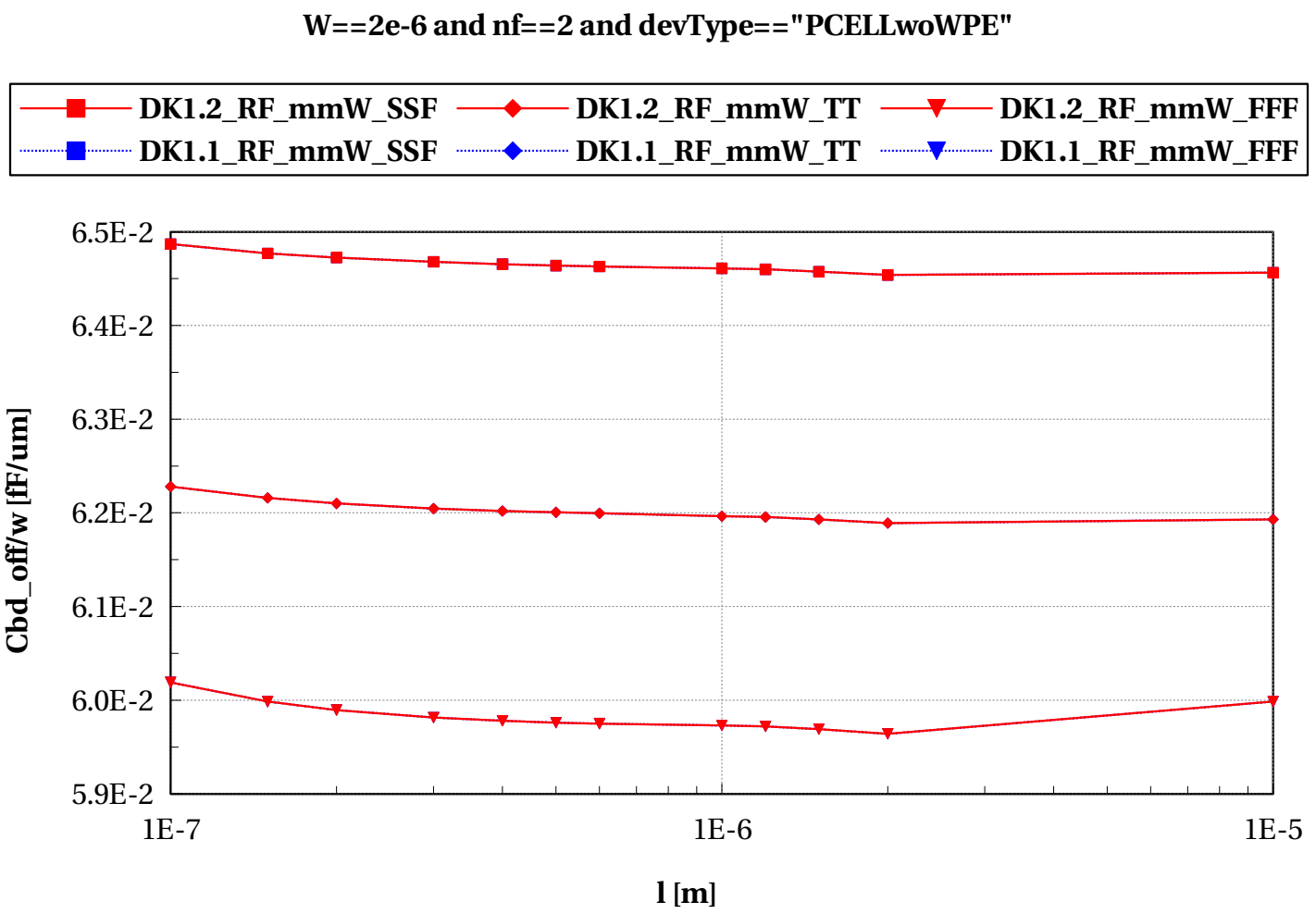


egvpfet_acc, Cgd_0V/w [fF/um] vs l [m]

W==2e-6 and nf==2 and devType=="PCELLwoWPE"



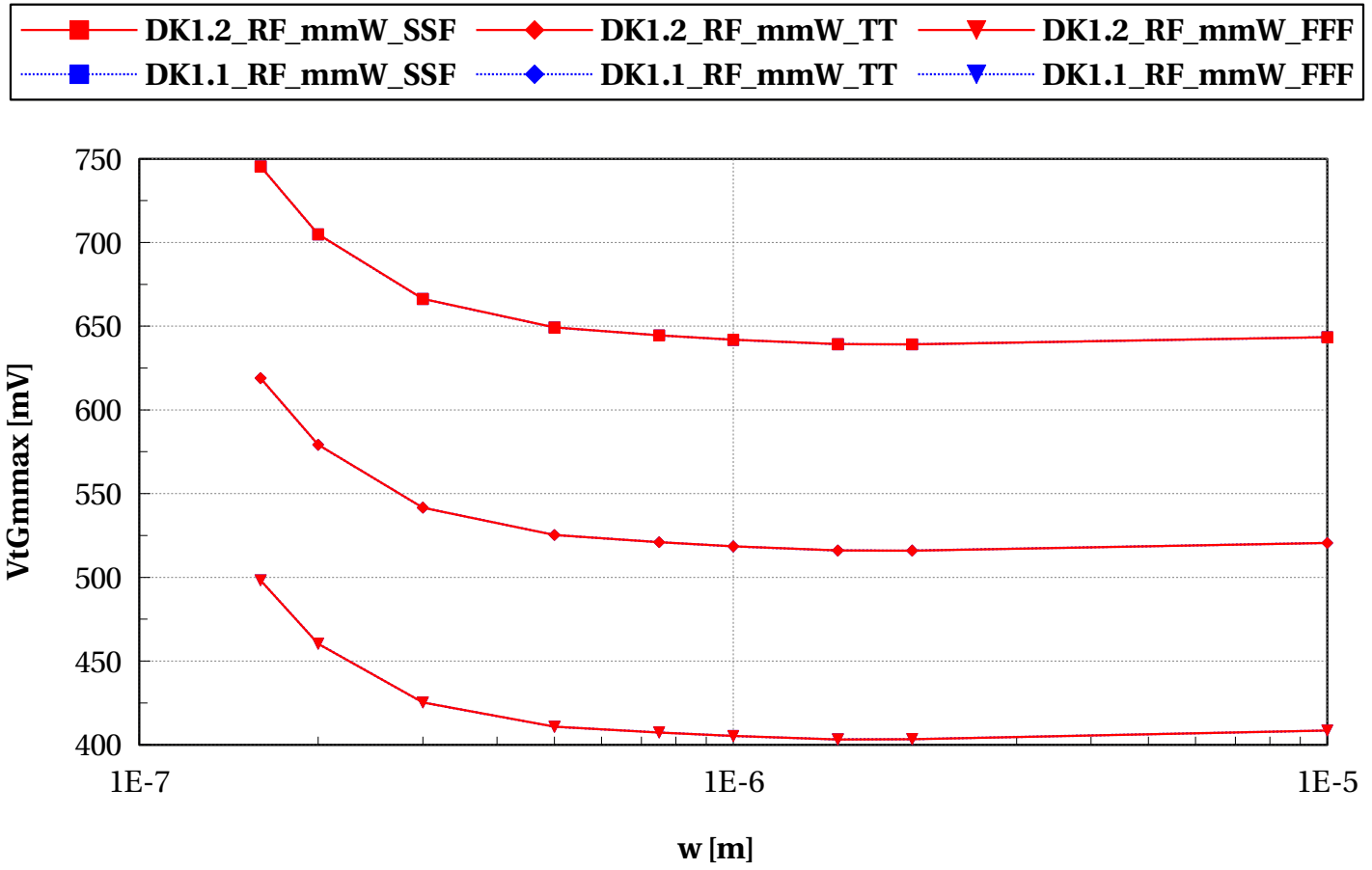
egvpfet_acc, Cbd_off/w [fF/um] vs l [m]



Scaling versus Width (T=25C)

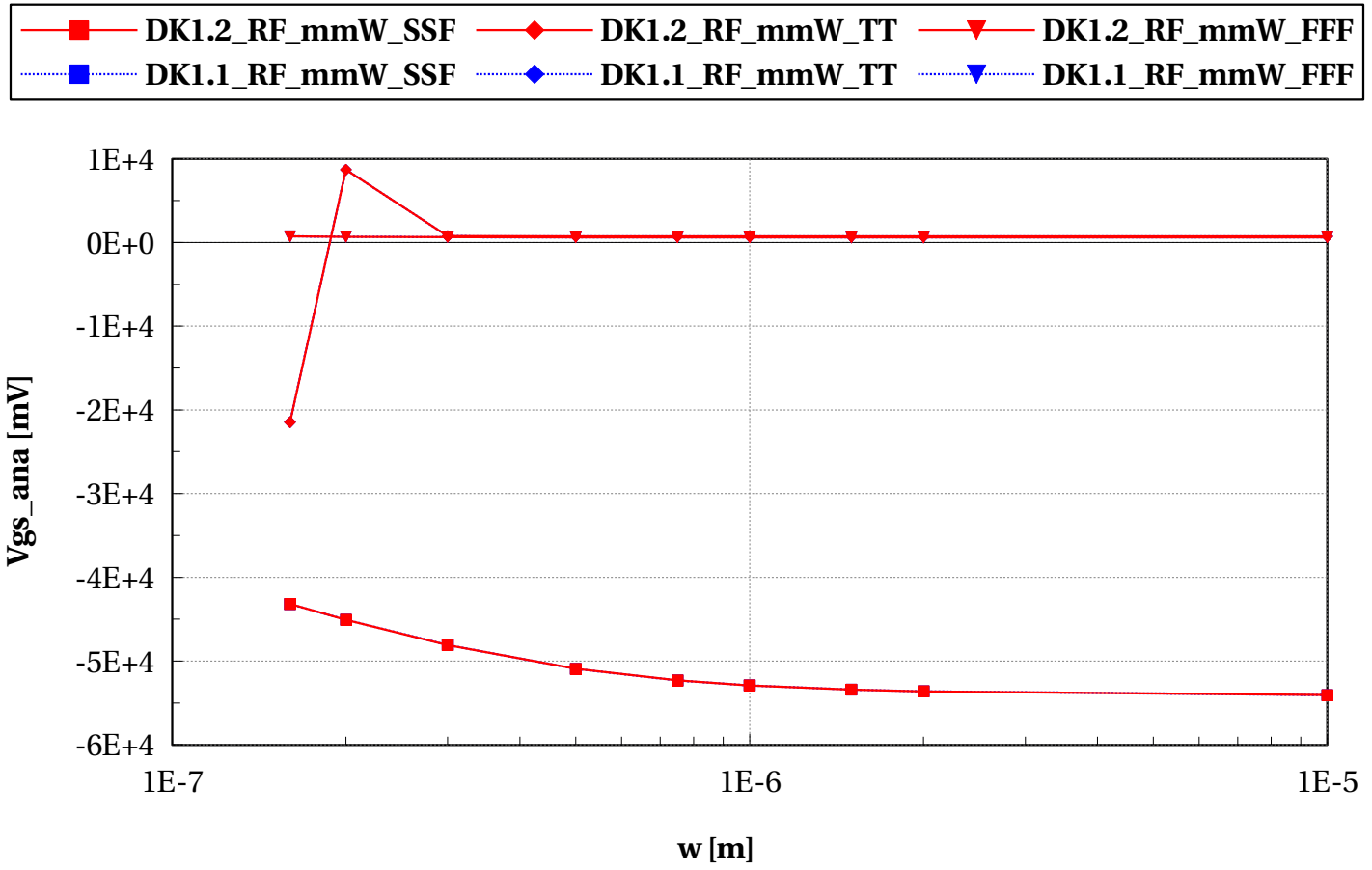
egvpfet_acc, VtGmmax [mV] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



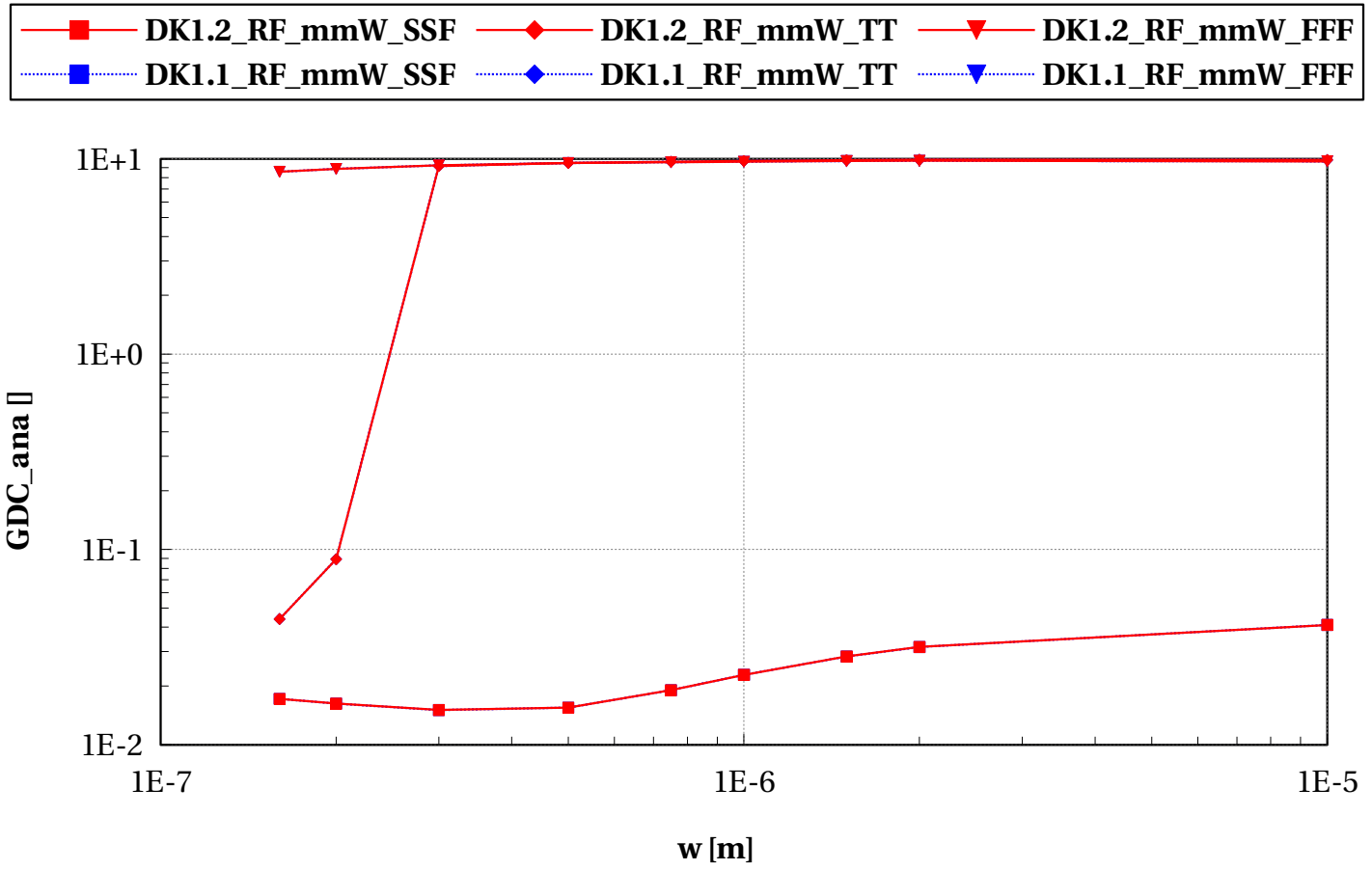
egvpfet_acc, Vgs_ana [mV] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



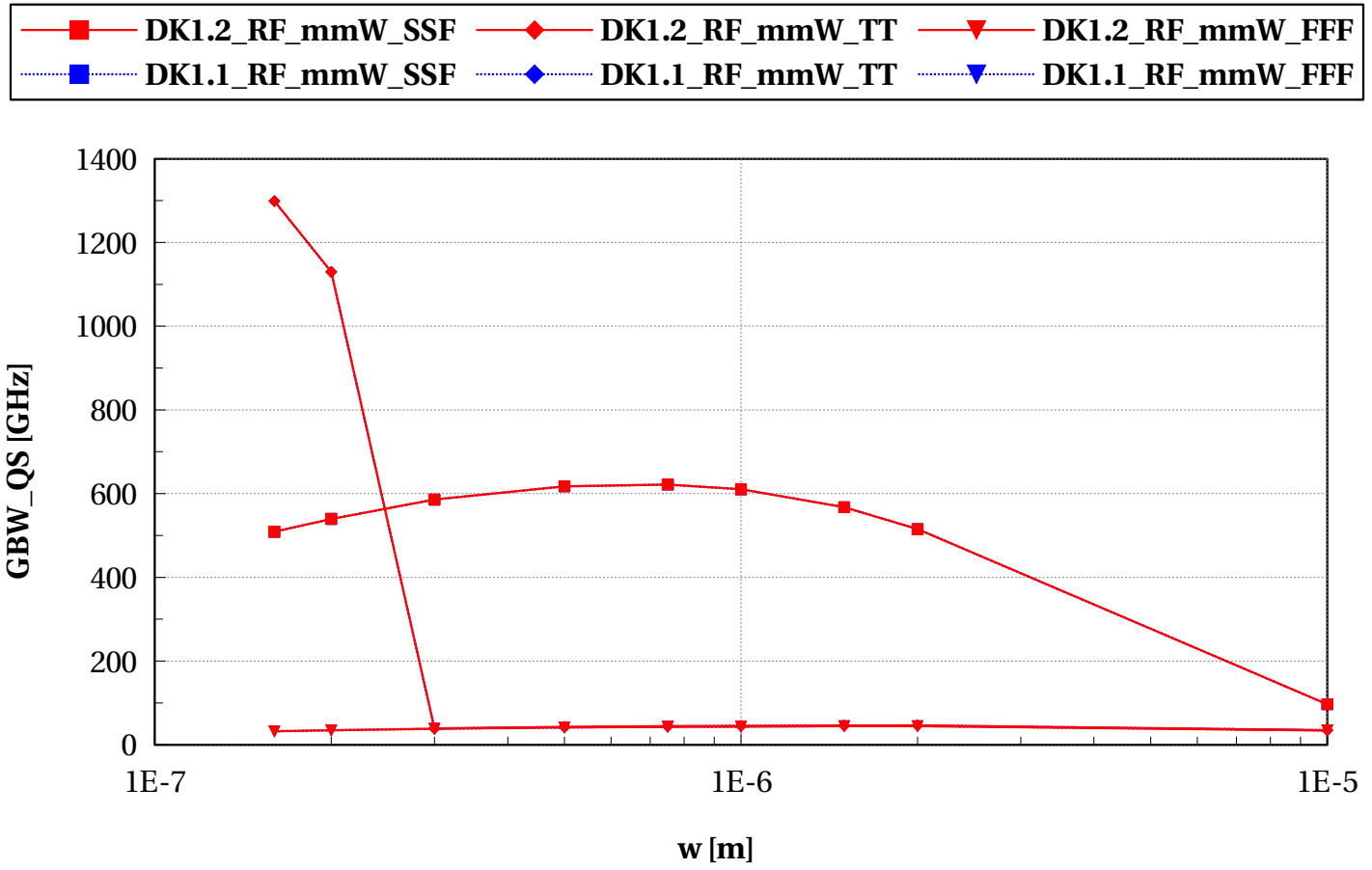
egvpfet_acc, GDC_ana [] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



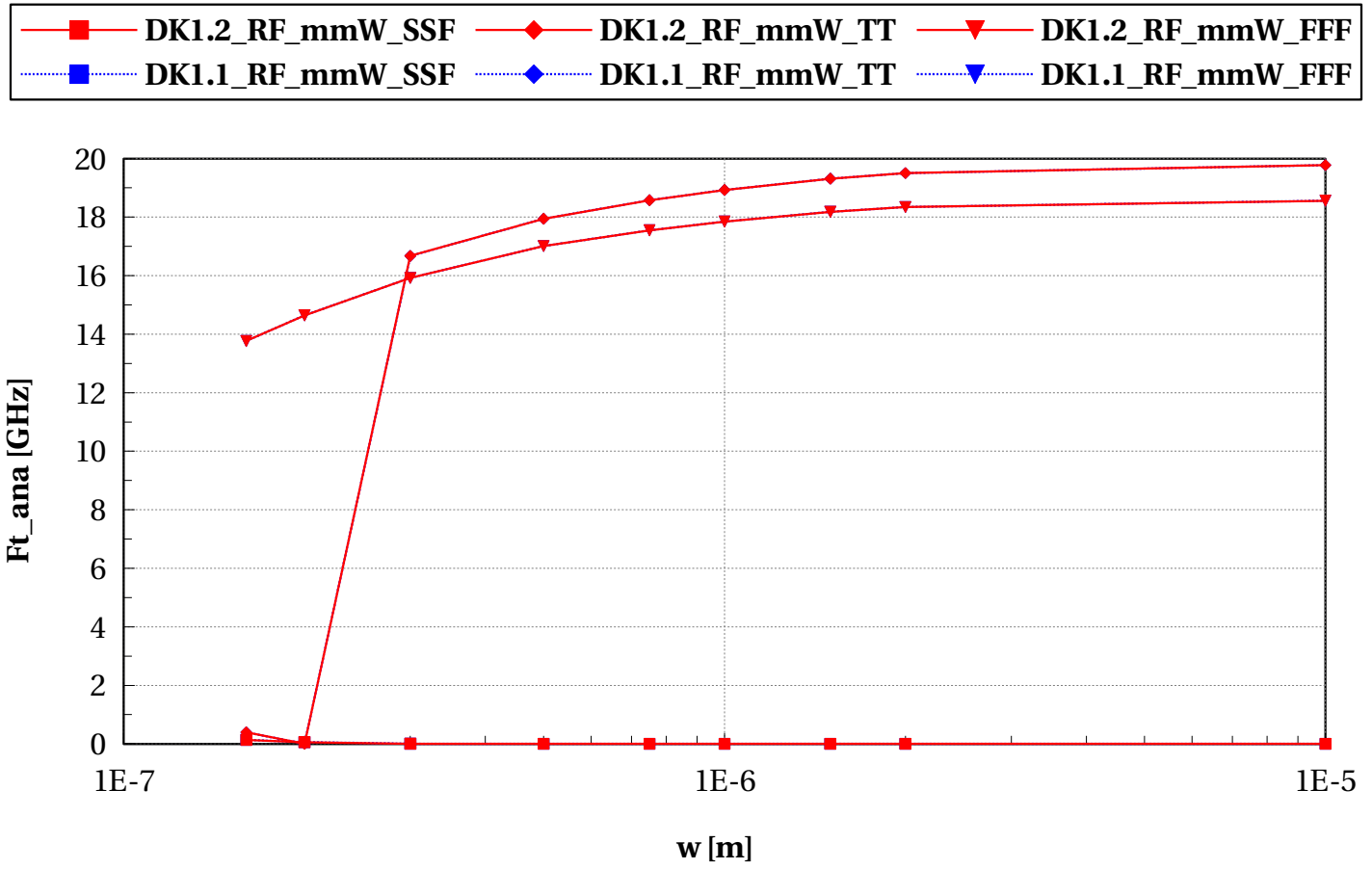
egvpfet_acc, GBW_QS [GHz] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



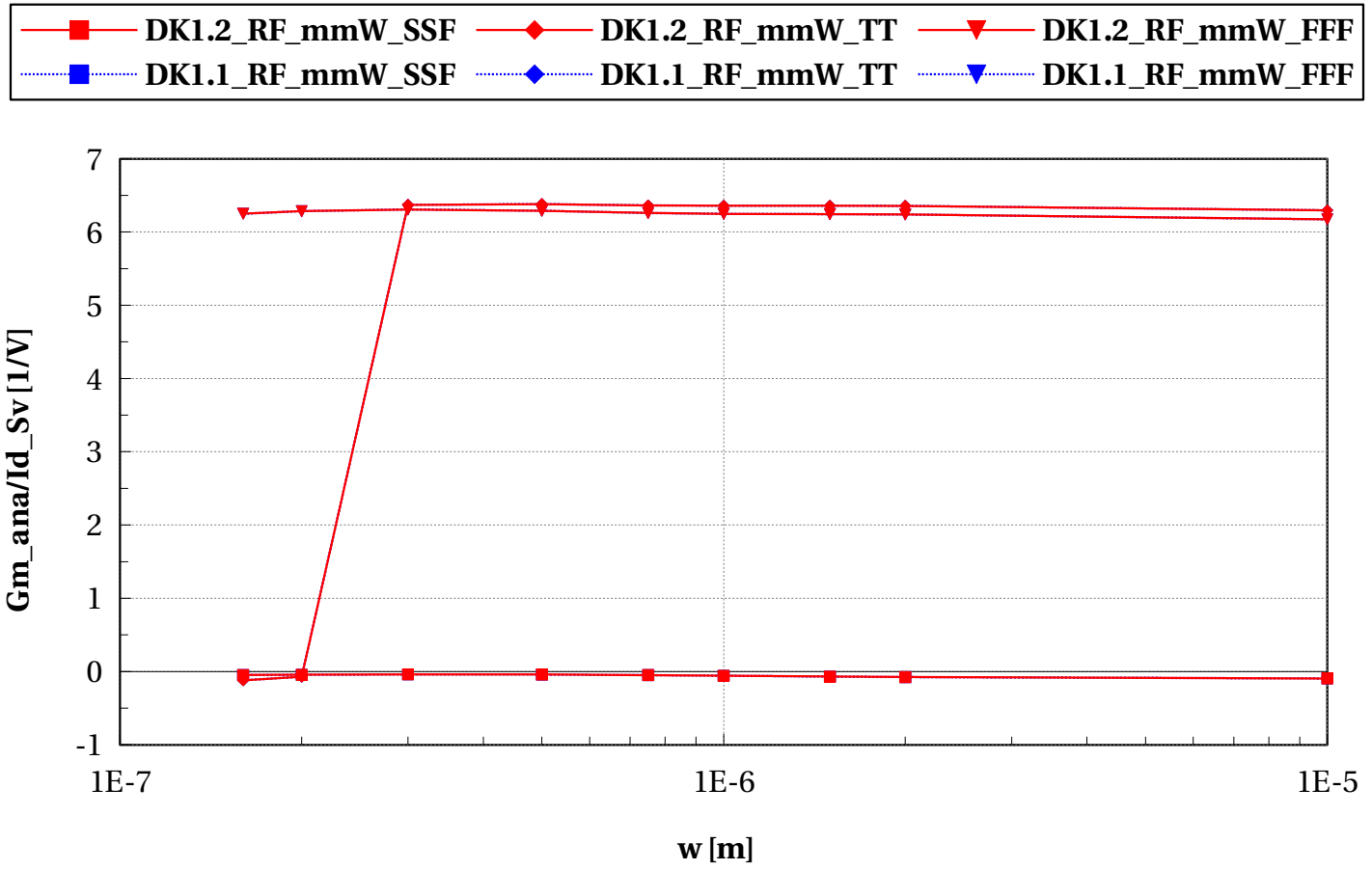
egvpfet_acc, Ft_ana [GHz] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



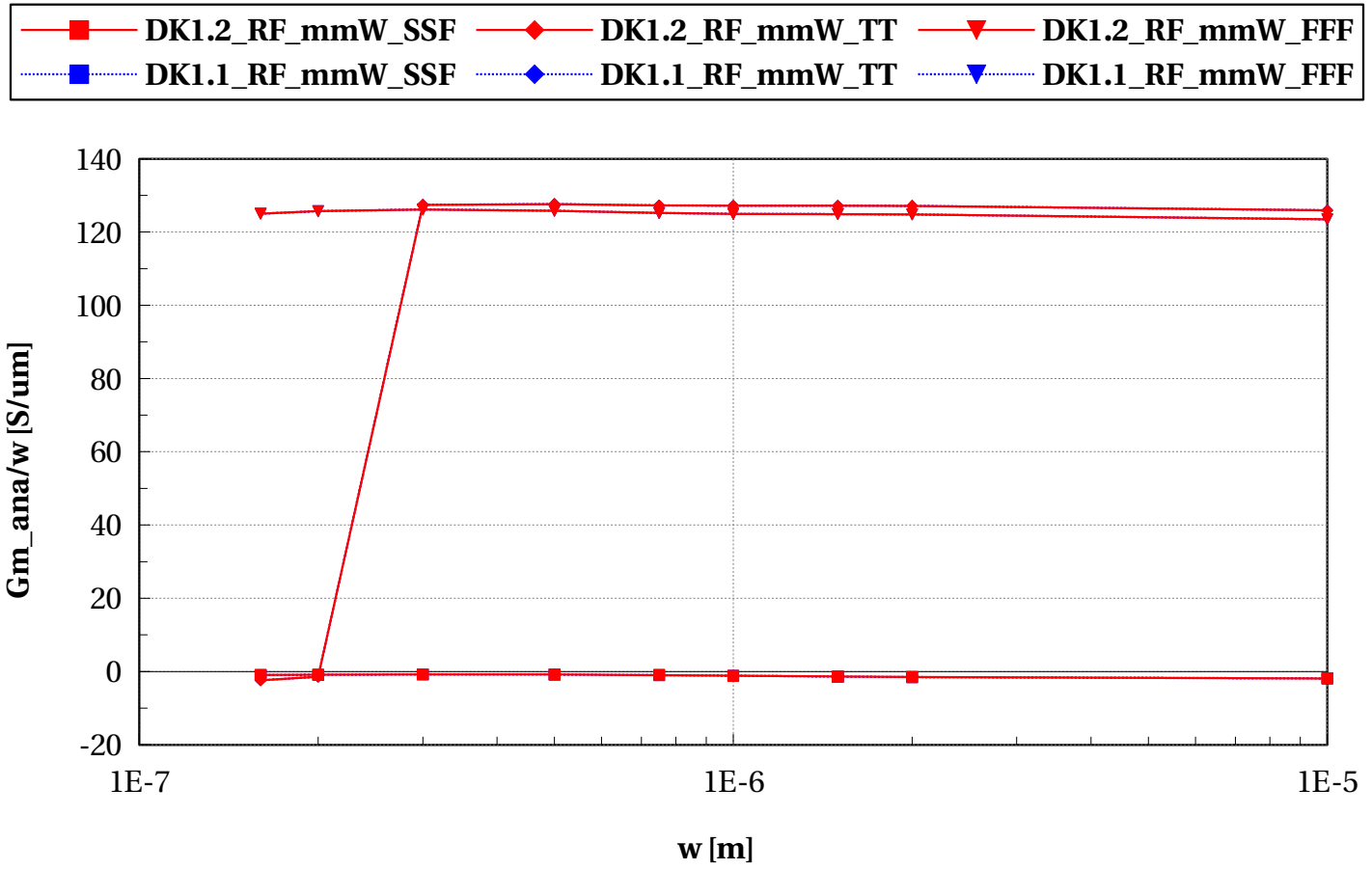
egvpfet_acc, Gm_ana/Id_Sv [1/V] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



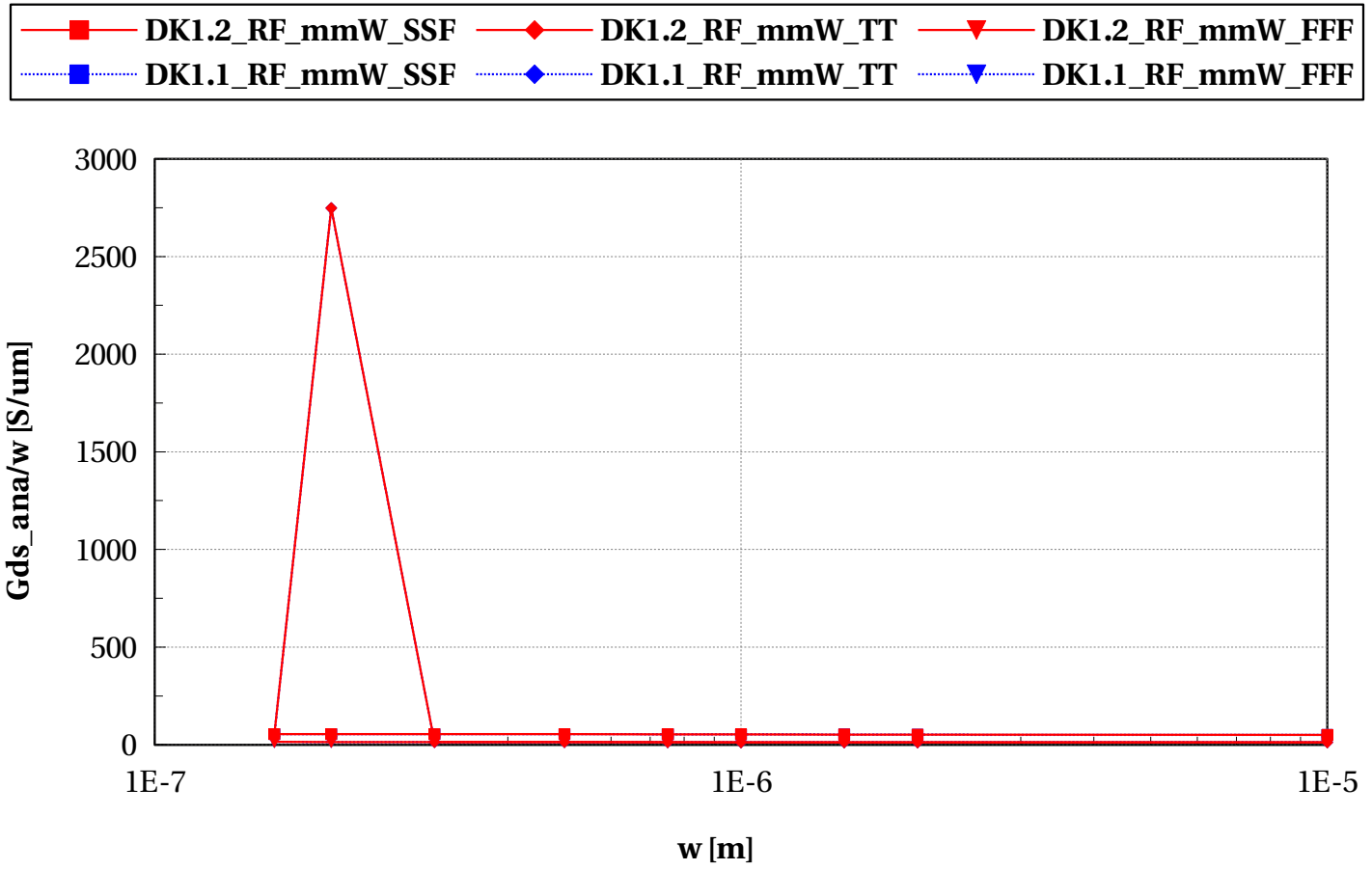
egvpfet_acc, Gm_ana/w [S/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"

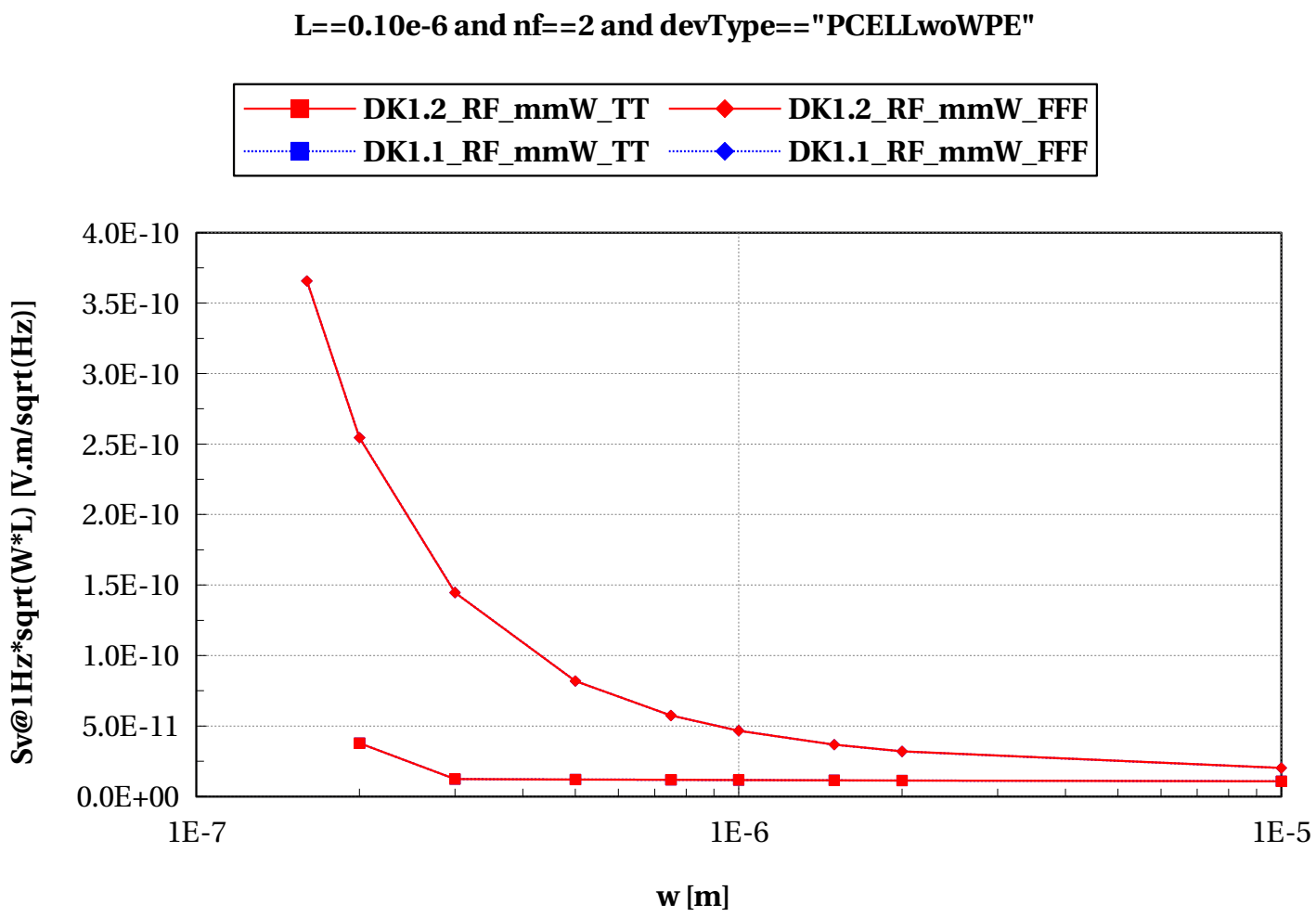


egvpfet_acc, Gds_ana/w [S/um] vs w [m]

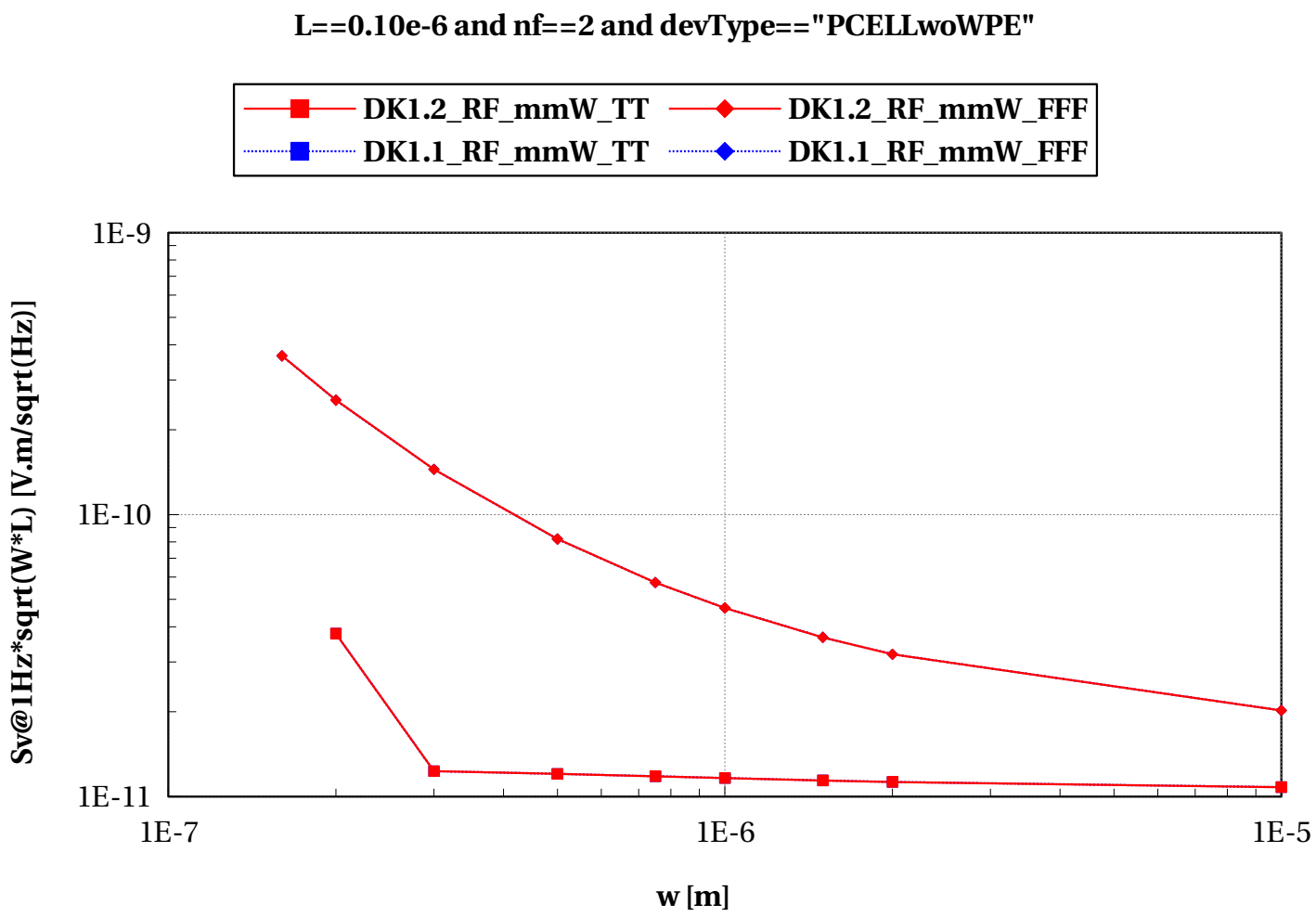
L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



egvpfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs w [m]

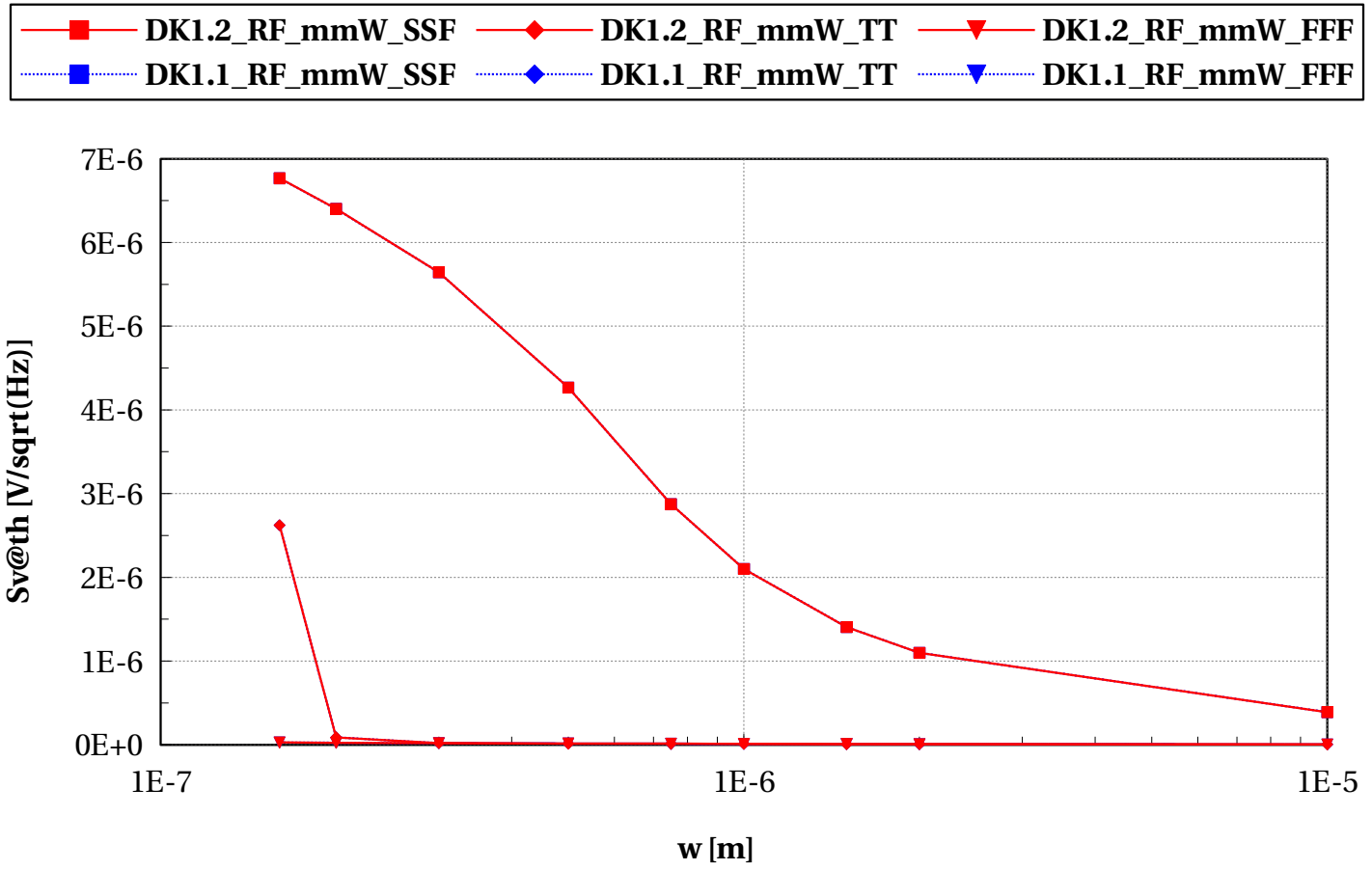


egvpfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs w [m]



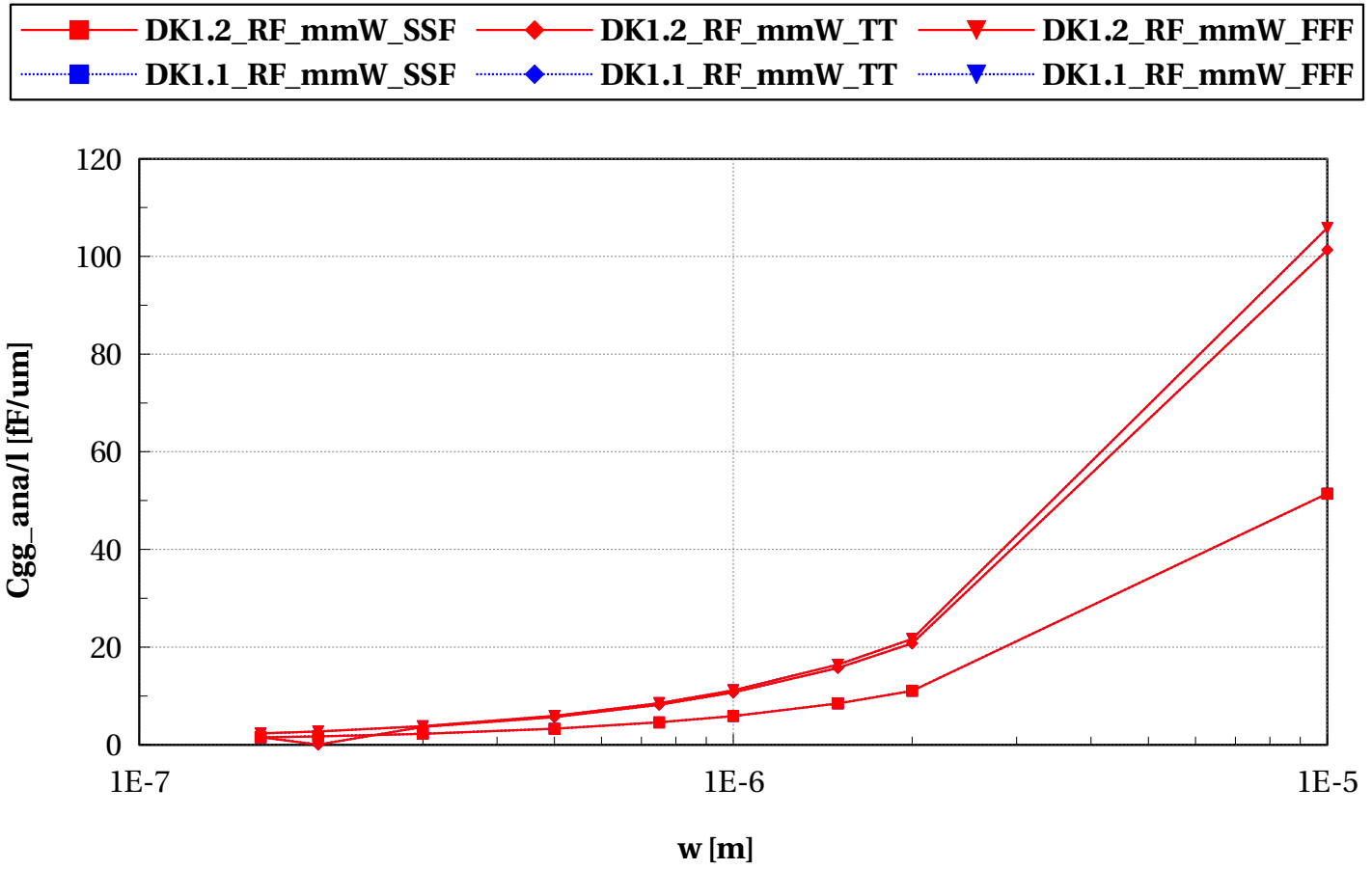
egvpfet_acc, Sv@th [V/sqrt(Hz)] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



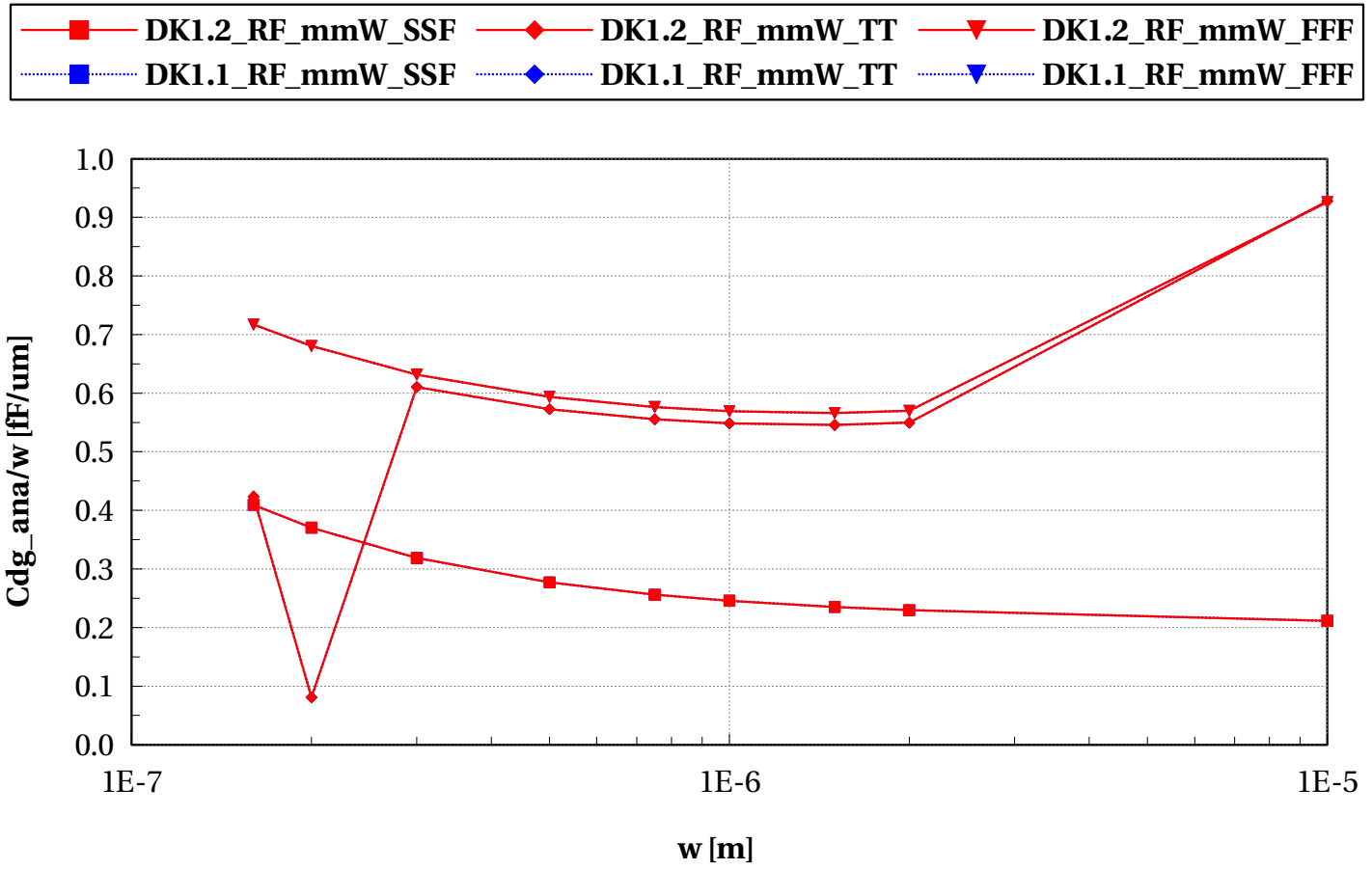
egvpfet_acc, Cgg_ana/l [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



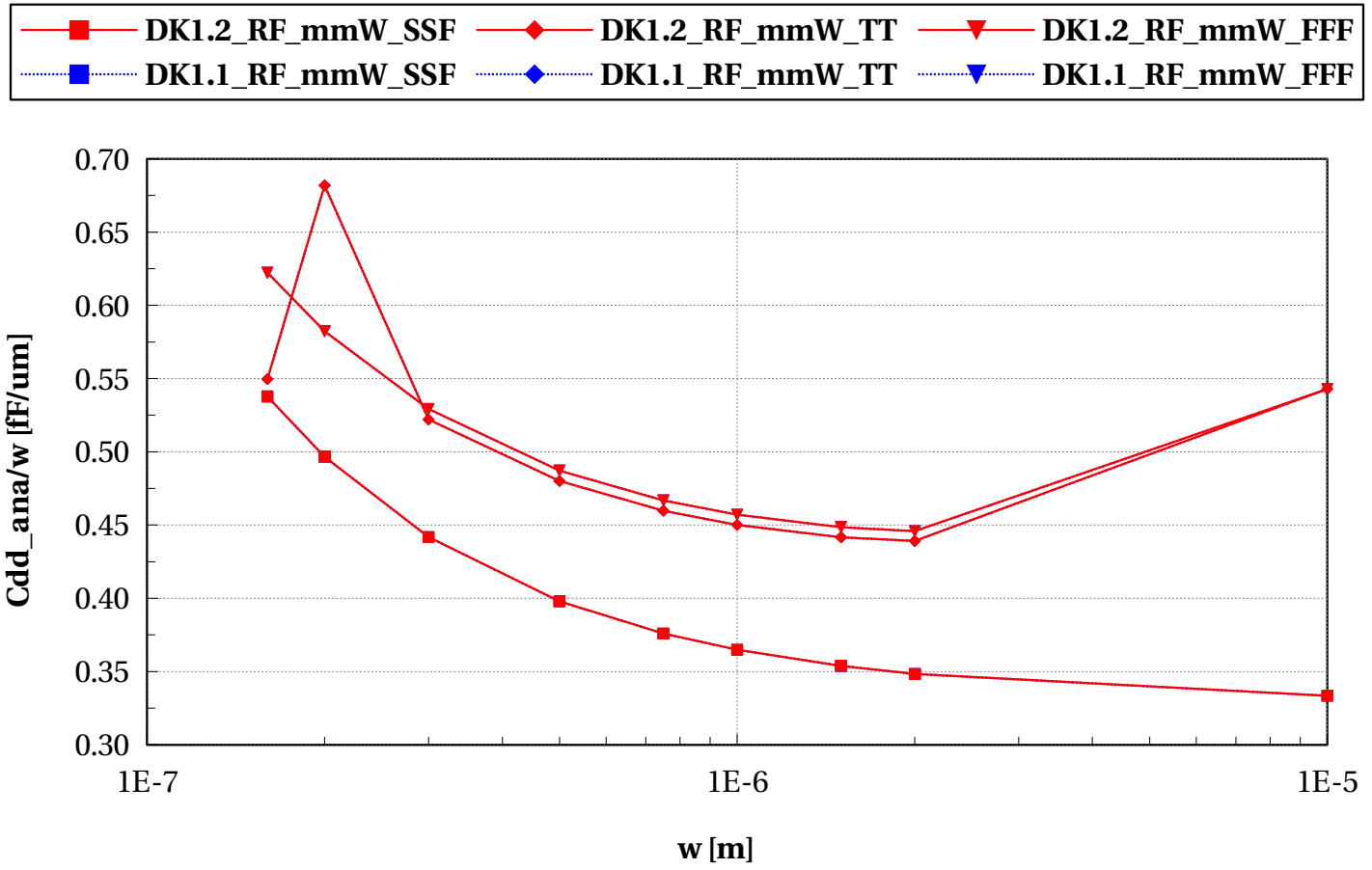
egvpfet_acc, Cdg_ana/w [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



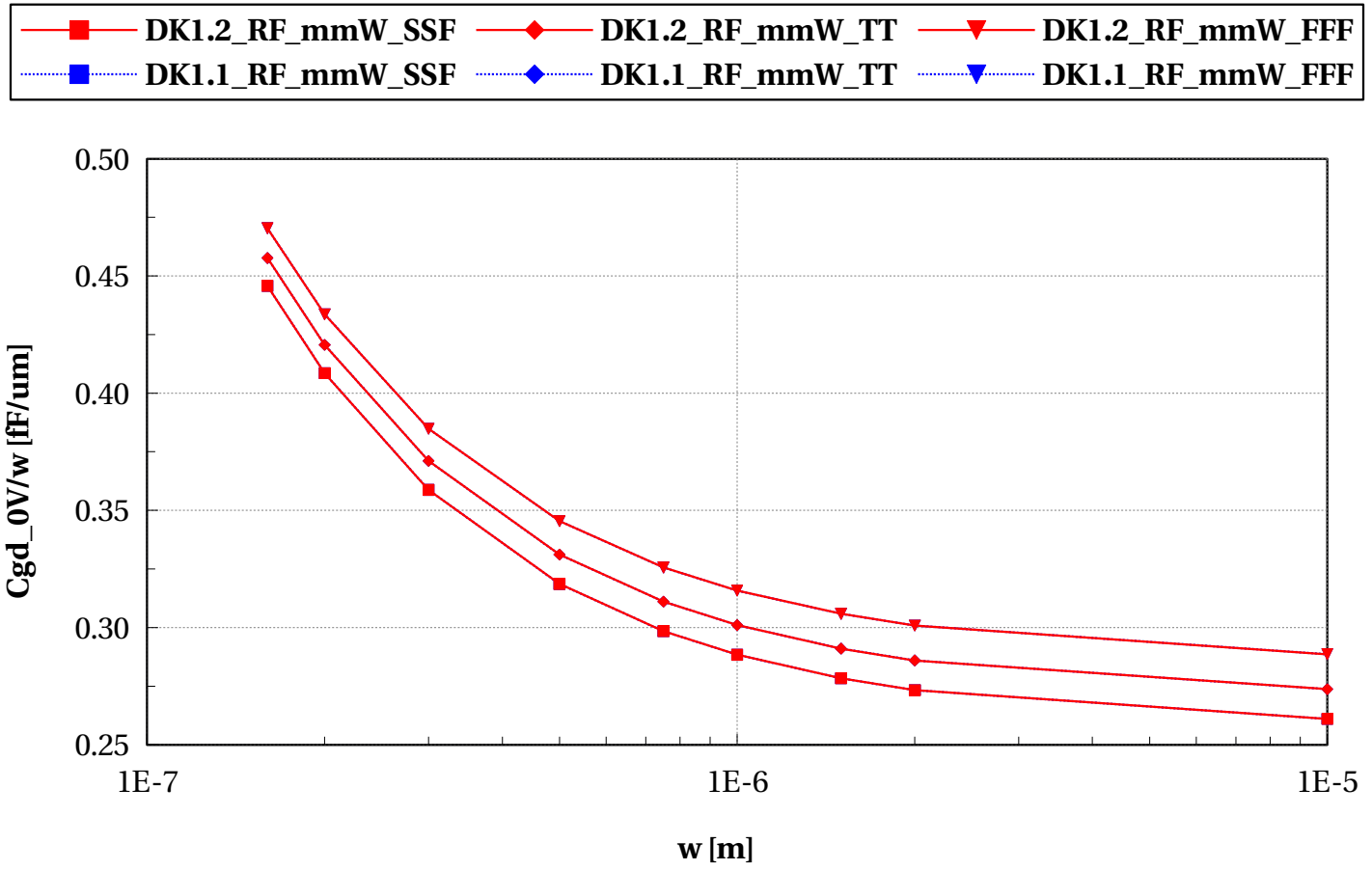
egvpfet_acc, Cdd_ana/w [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



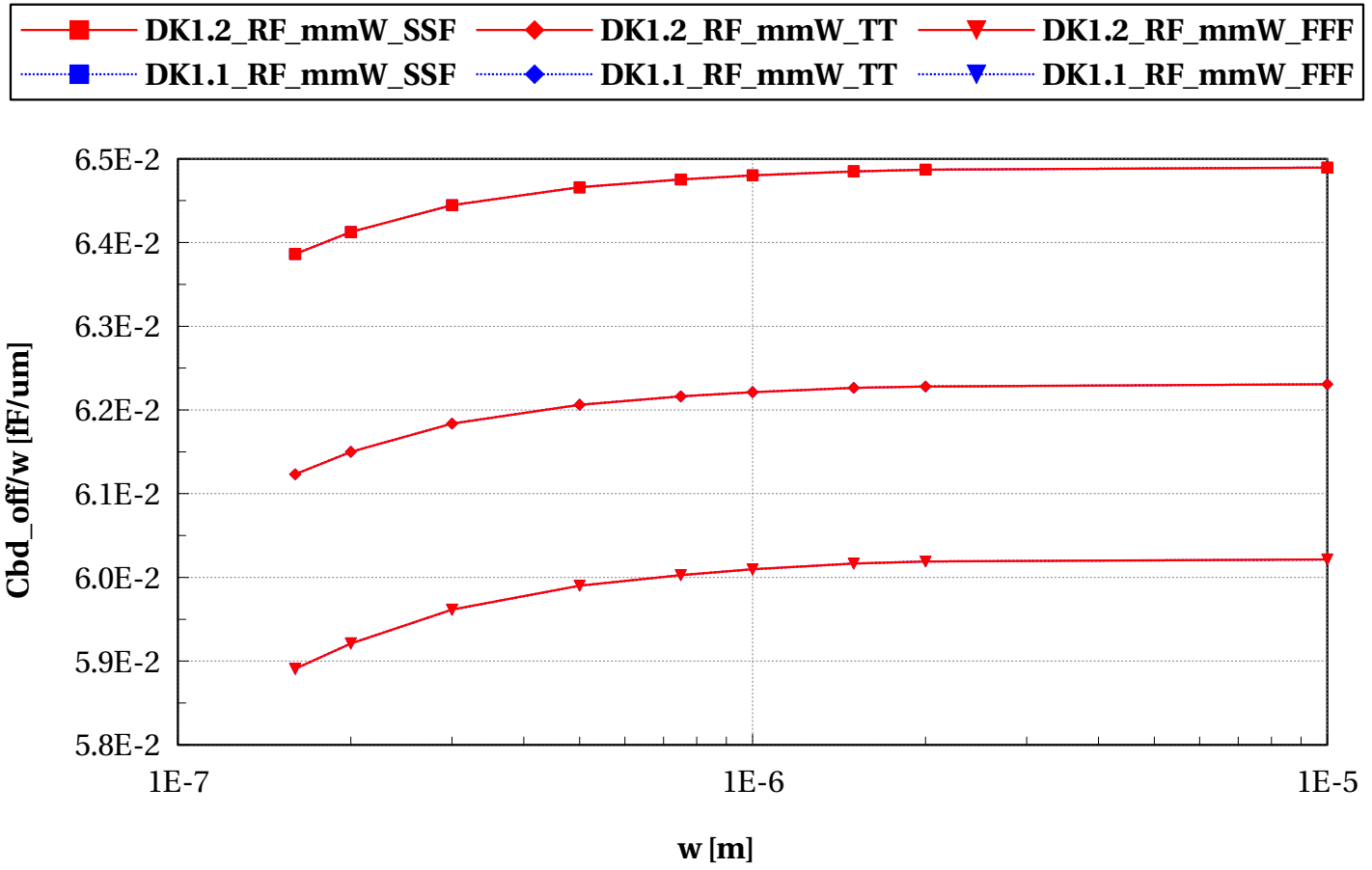
egvpfet_acc, Cgd_0V/w [fF/um] vs w [m]

L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



egvpfet_acc, Cbd_off/w [fF/um] vs w [m]

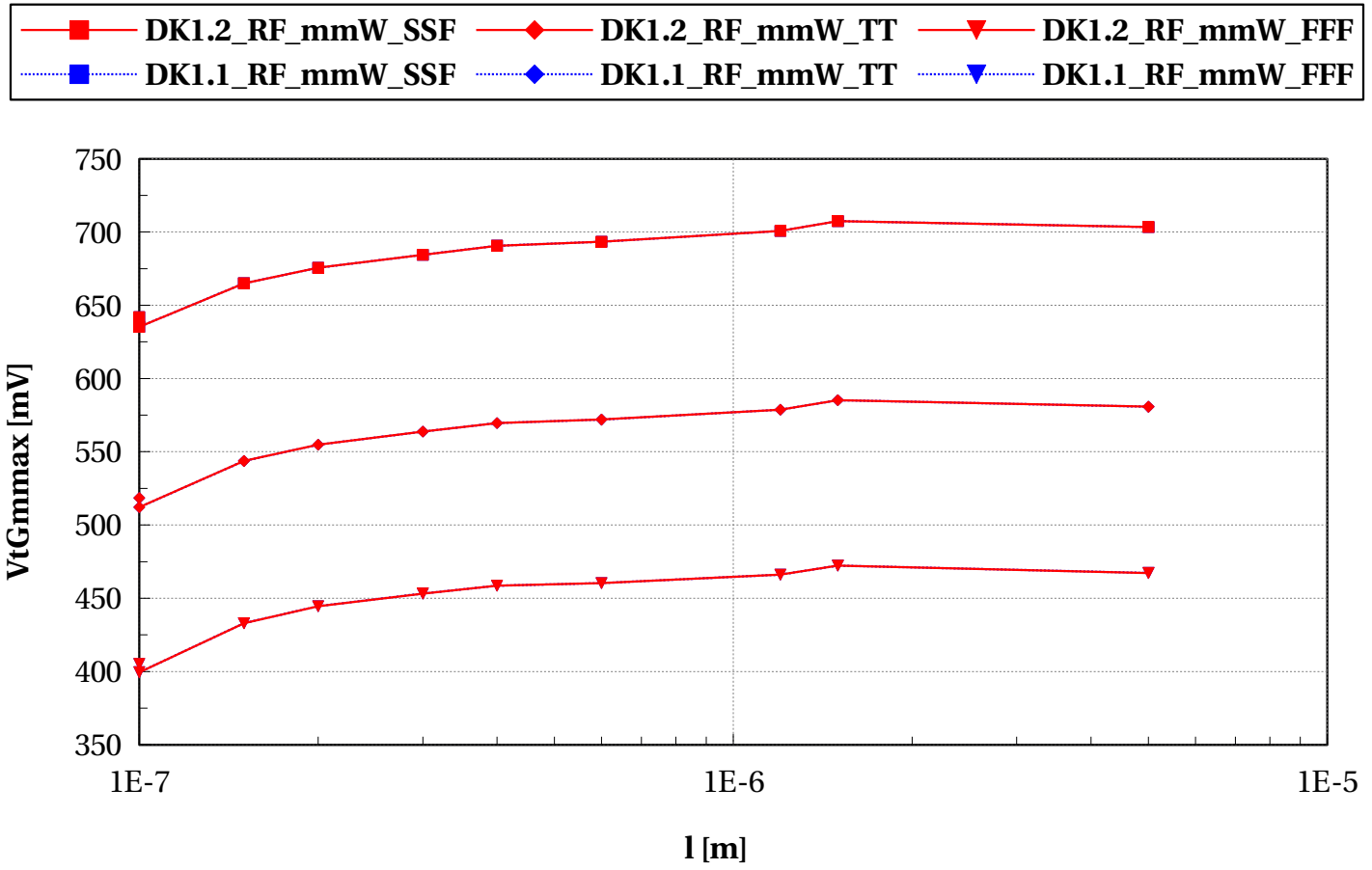
L==0.10e-6 and nf==2 and devType=="PCELLwoWPE"



Scaling versus Length @ W/L=10&&W/nf<5um

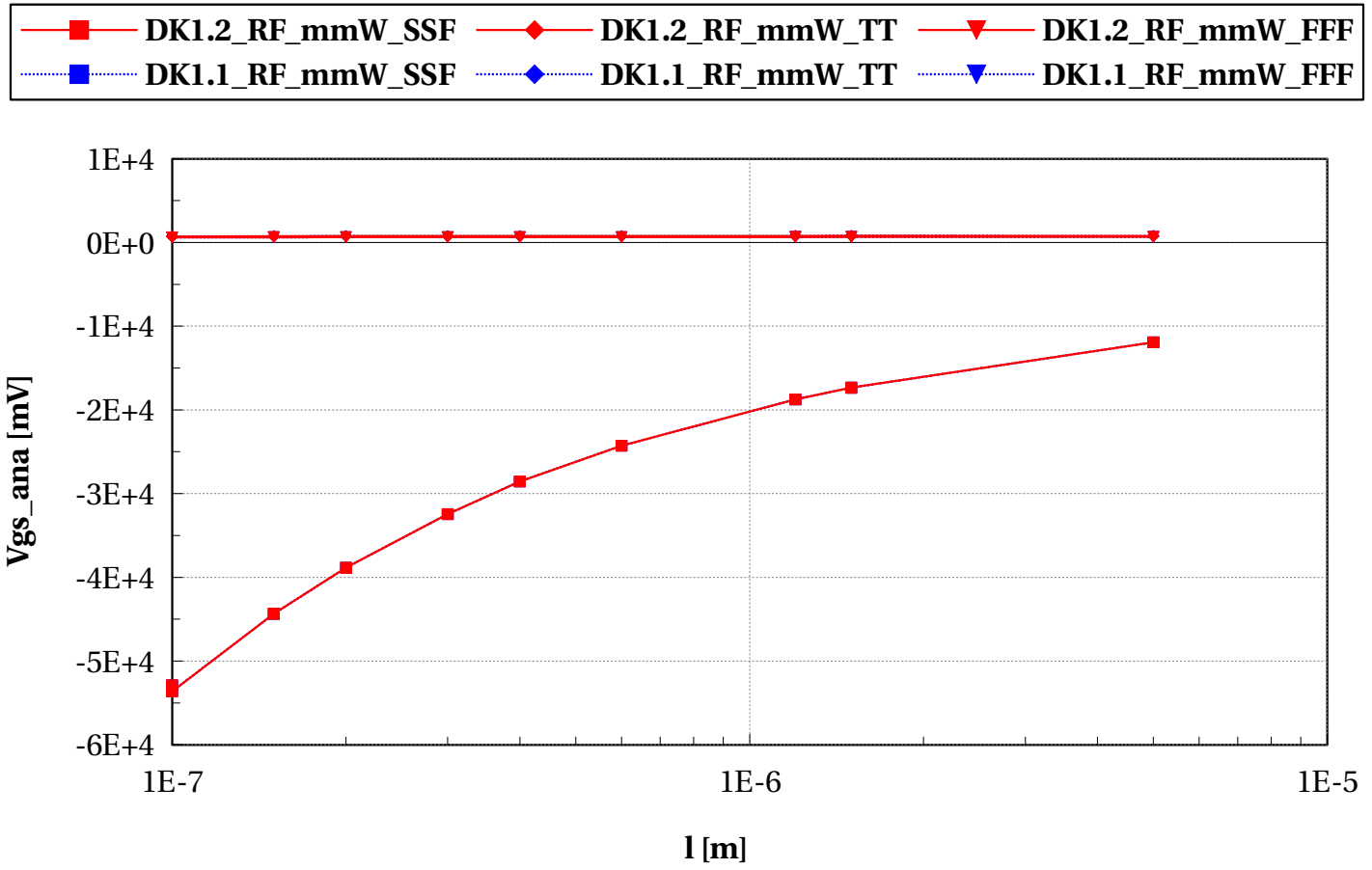
egvpfet_acc, VtGmmax [mV] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



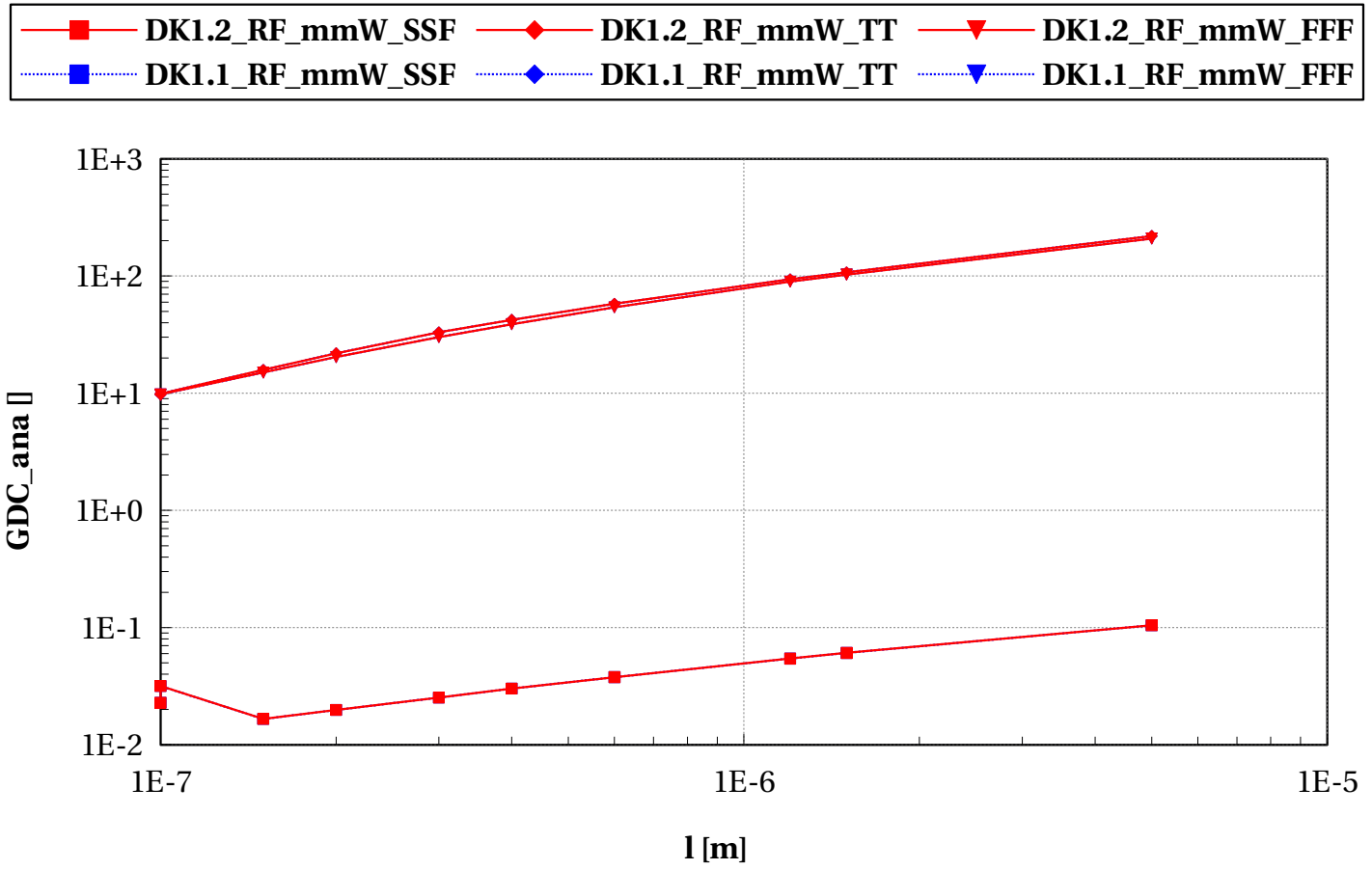
egvpfet_acc, Vgs_ana [mV] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



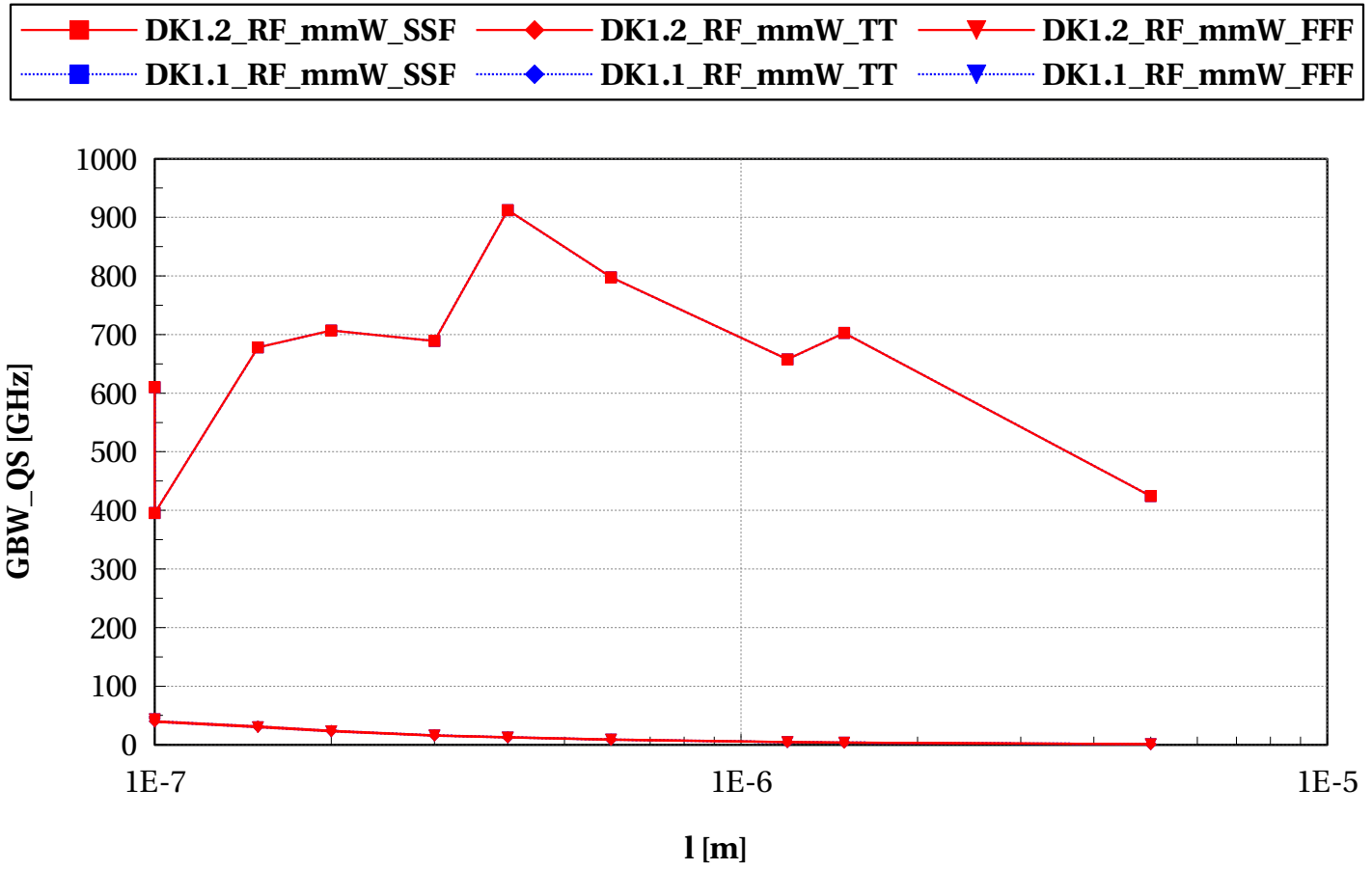
egvpfet_acc, GDC_ana [] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



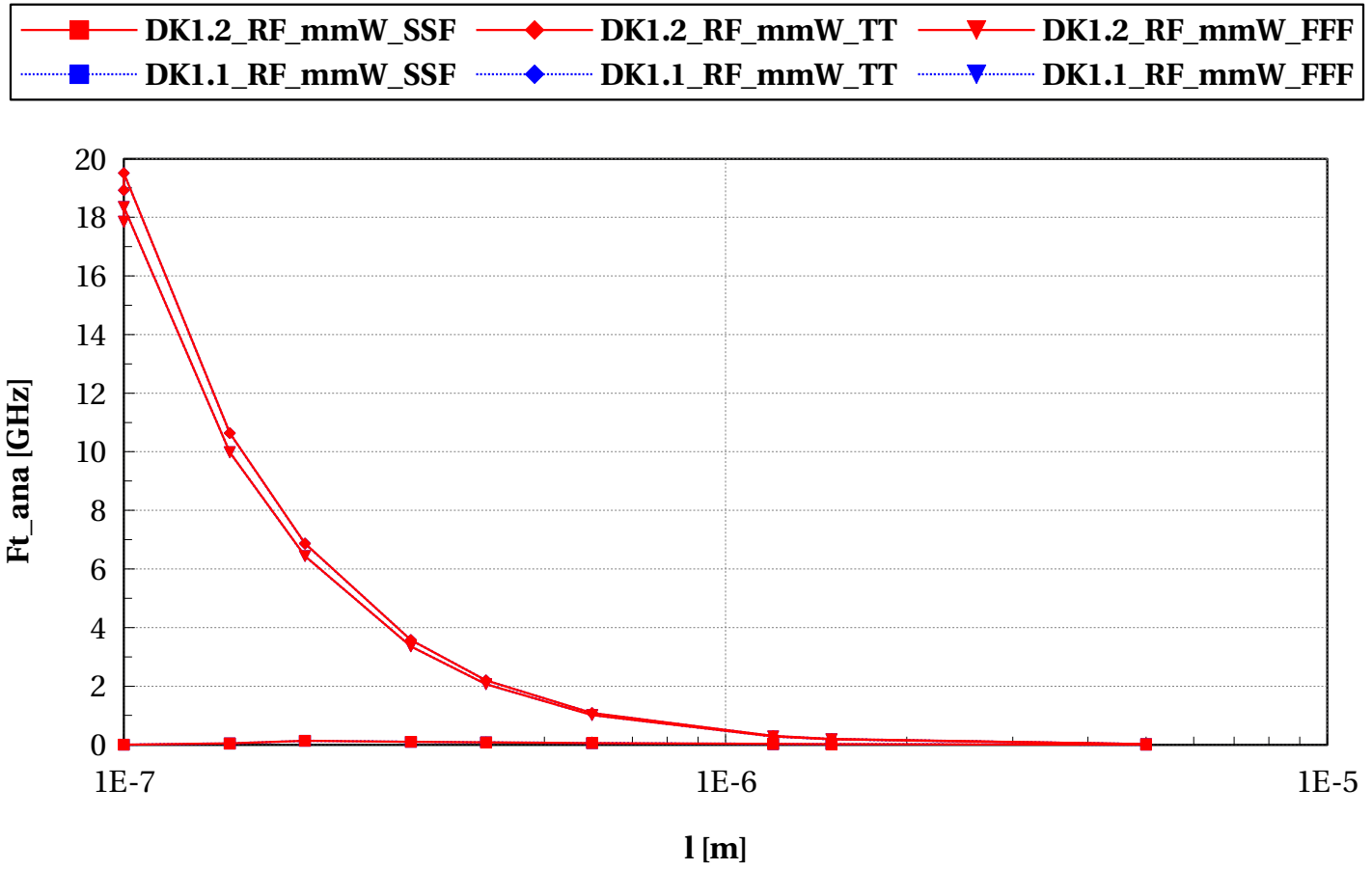
egvpfet_acc, GBW_QS [GHz] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



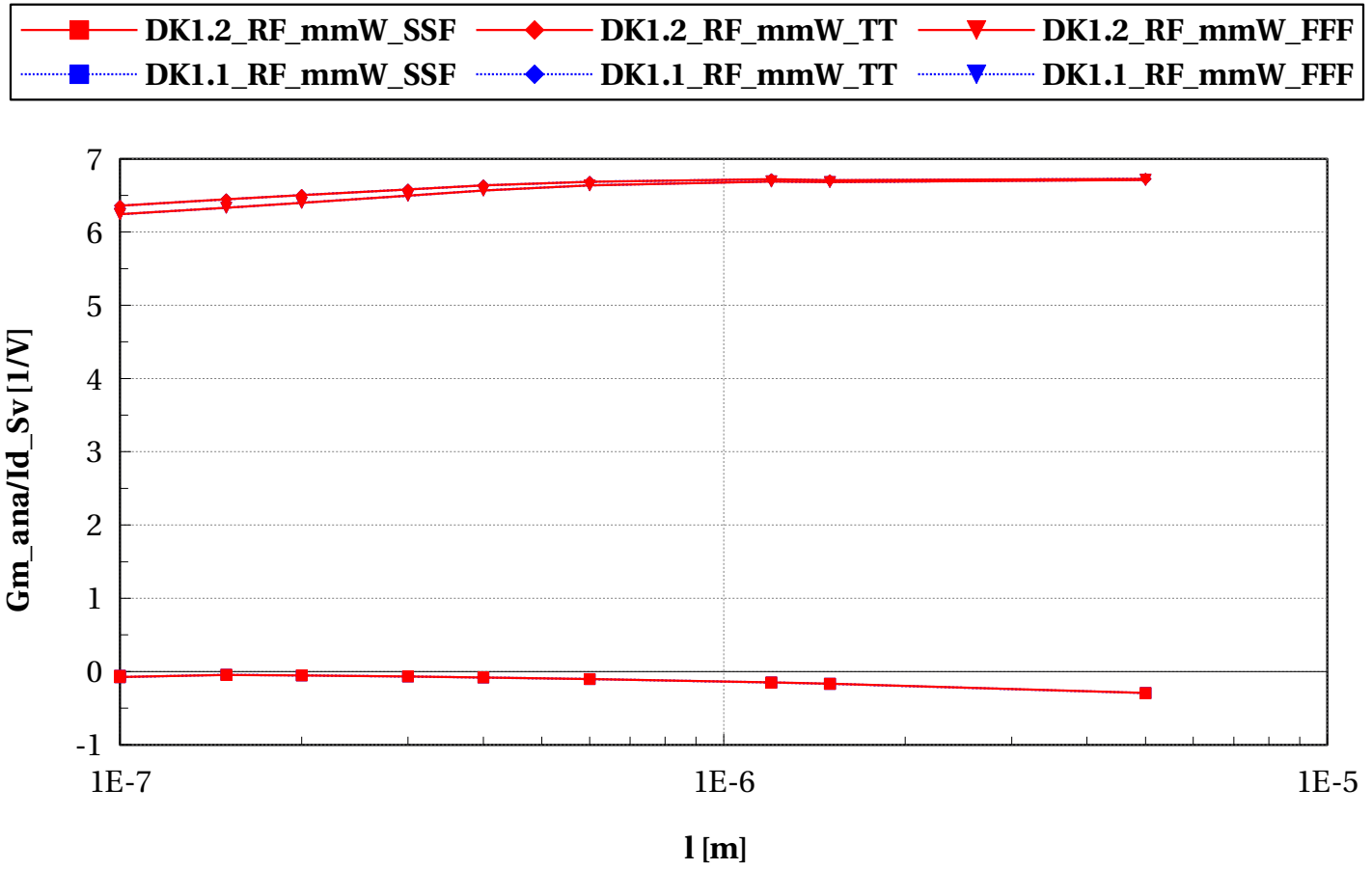
egvpfet_acc, Ft_ana [GHz] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



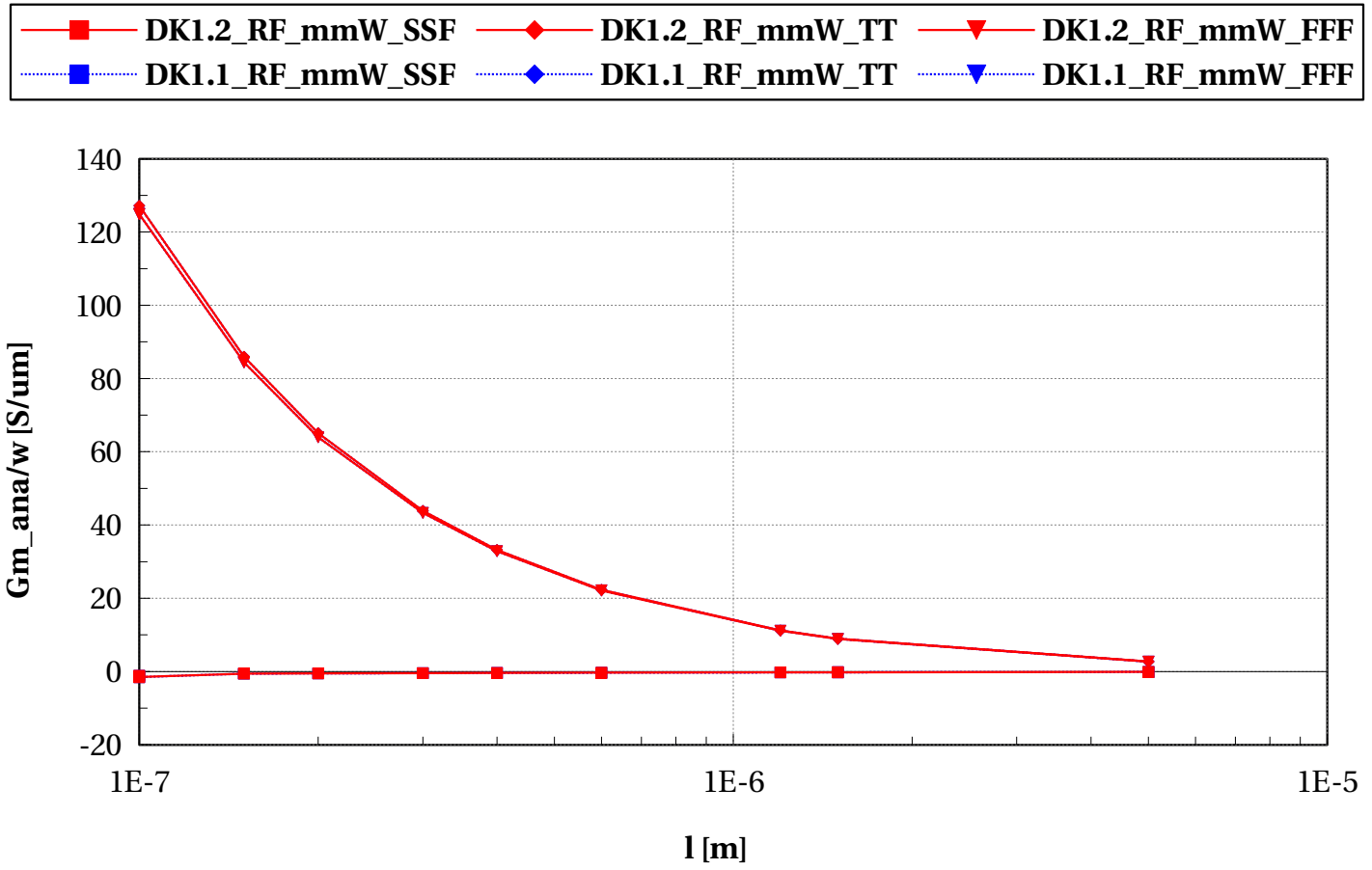
egvpfet_acc, Gm_ana/Id_Sv [1/V] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



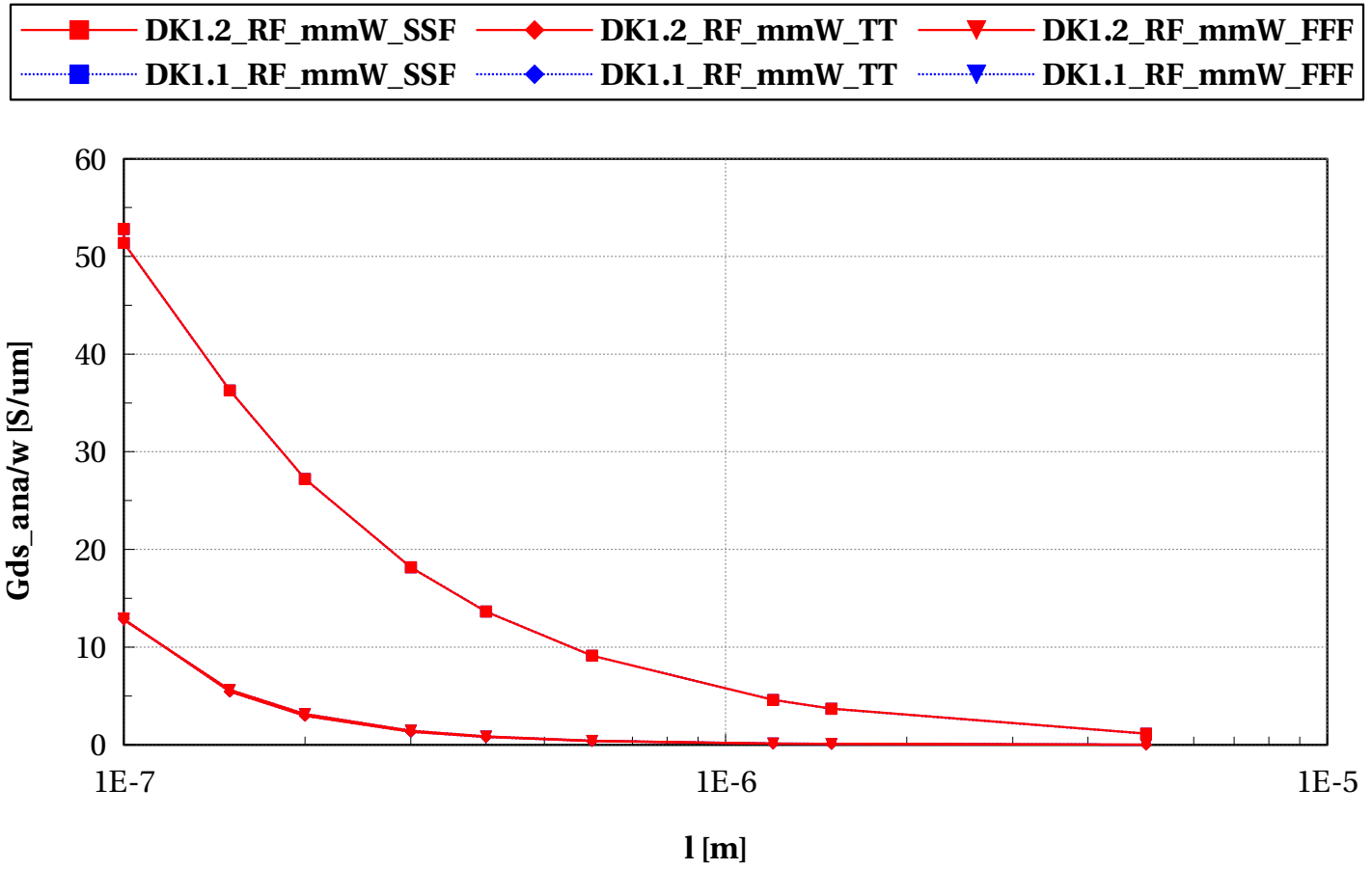
egvpfet_acc, Gm_ana/w [S/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

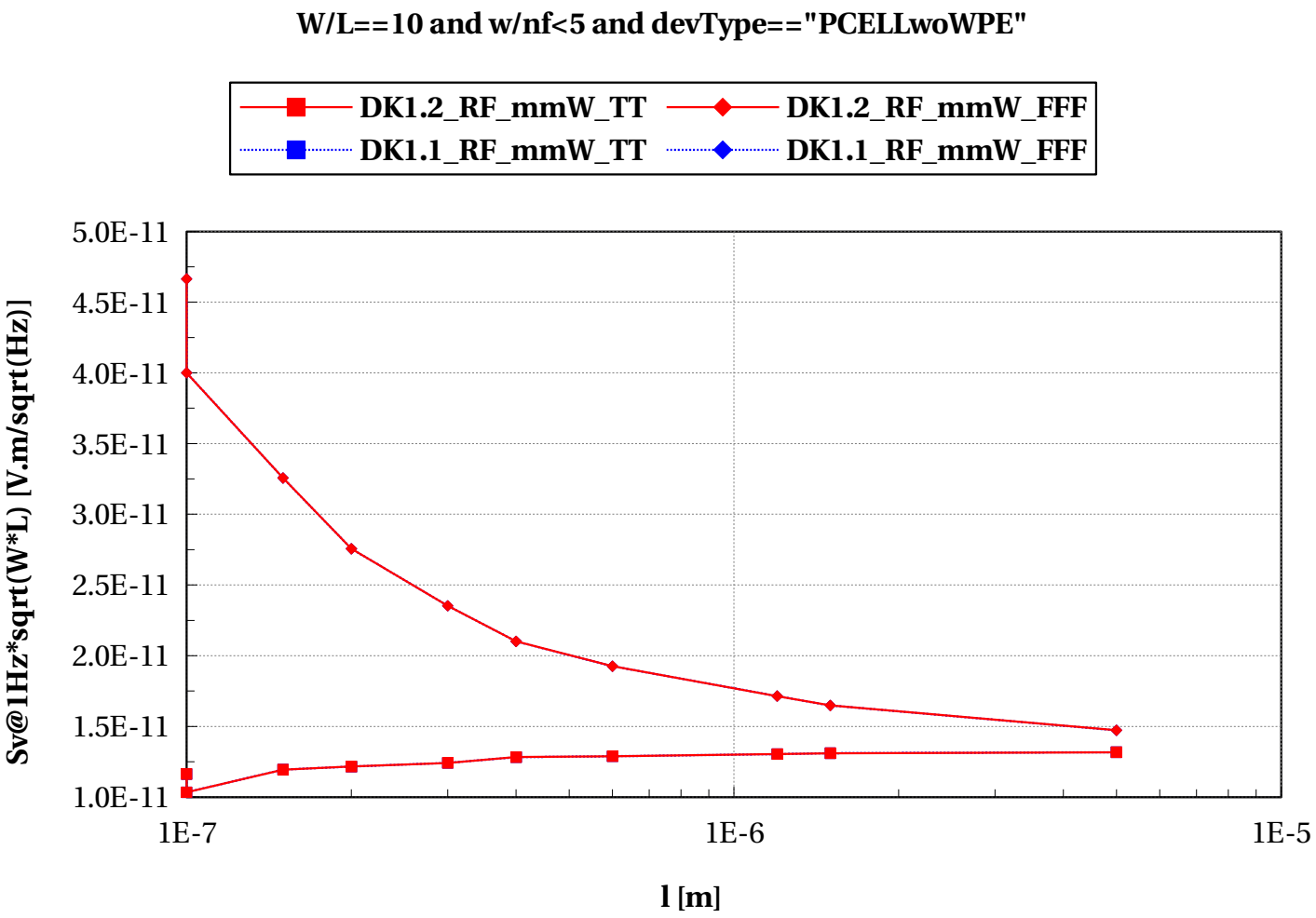


egvpfet_acc, Gds_ana/w [S/um] vs l [m]

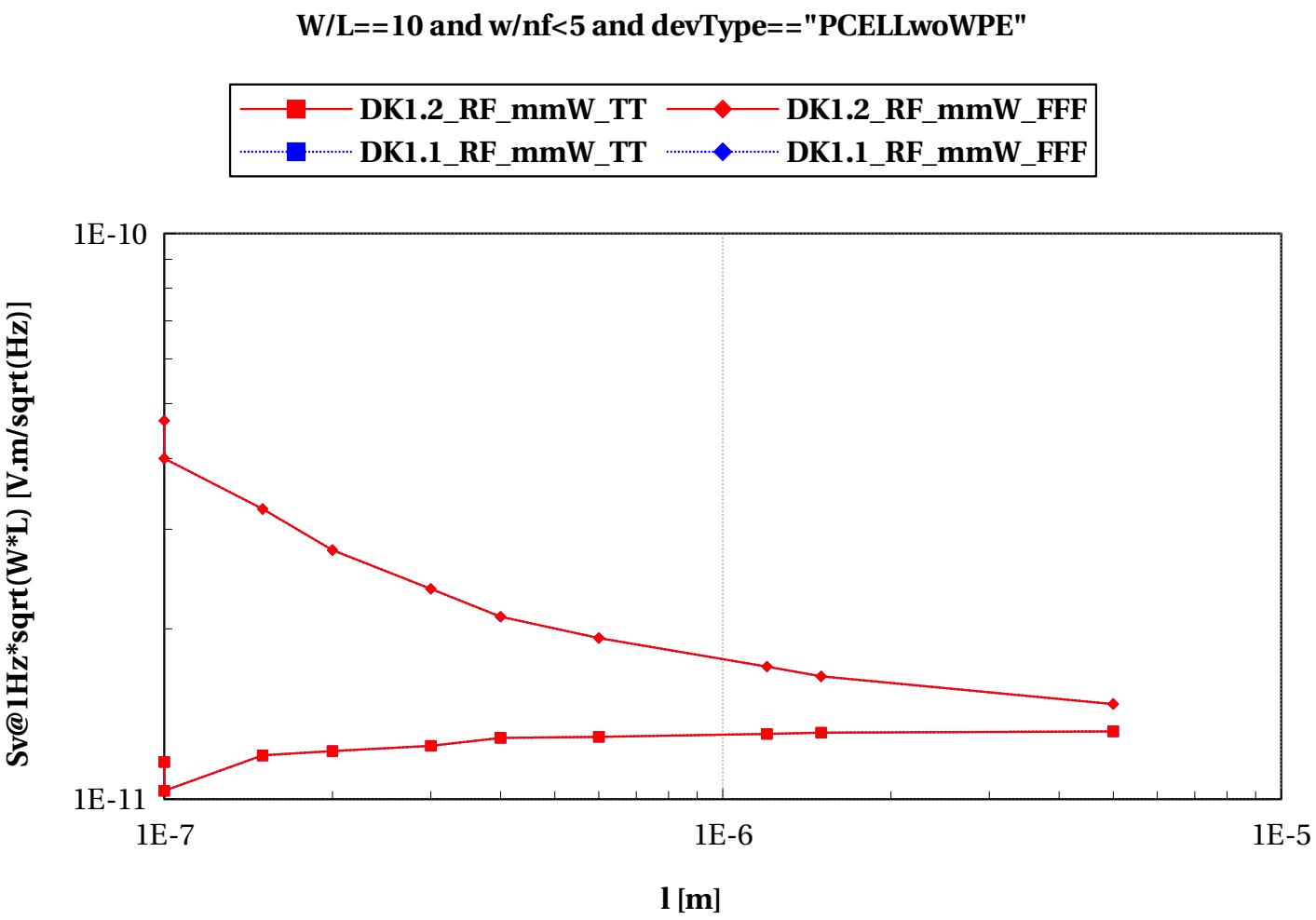
W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



egvpfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]

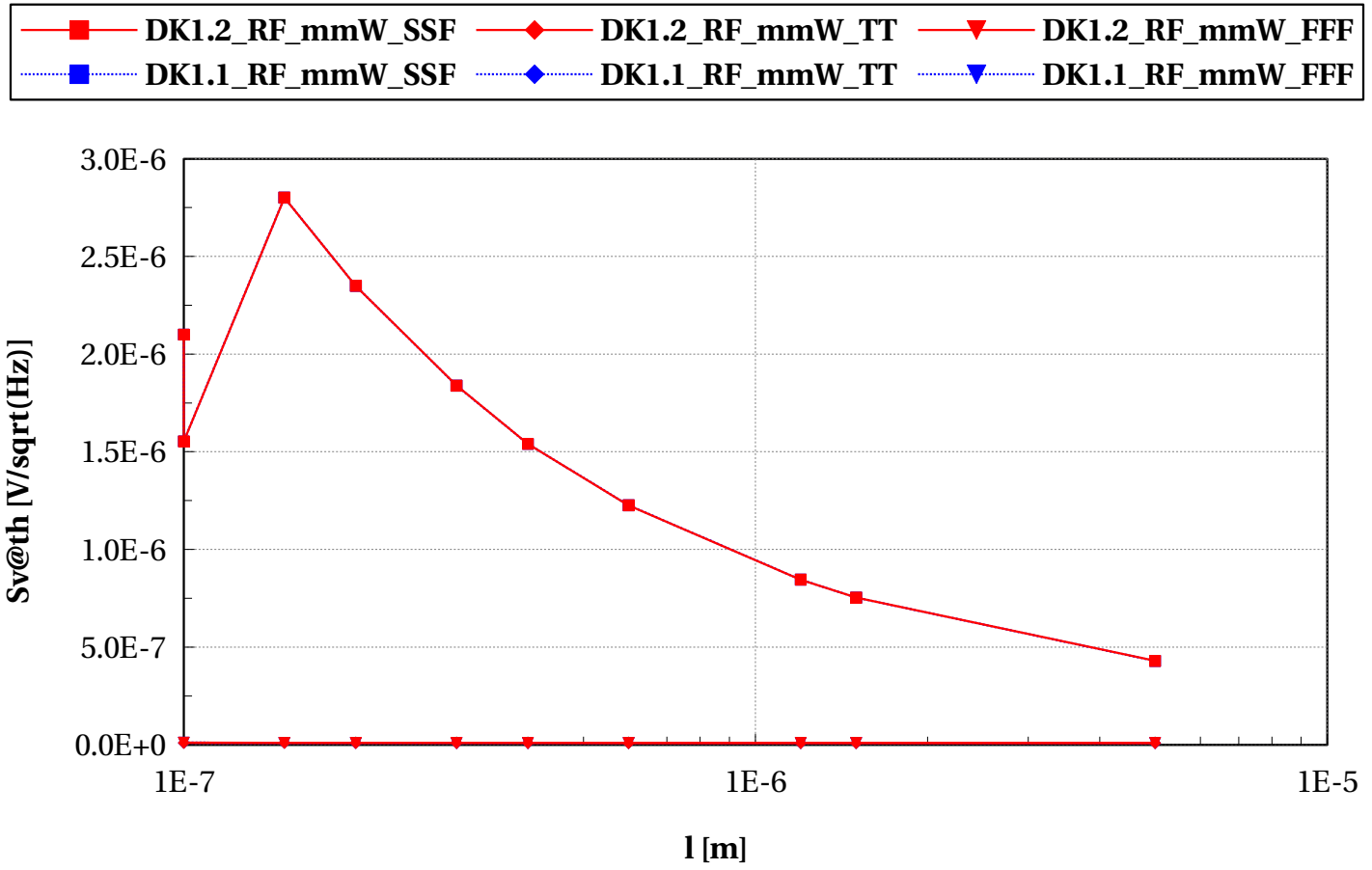


egvpfet_acc, Sv@1Hz*sqrt(W*L) [V.m/sqrt(Hz)] vs l [m]



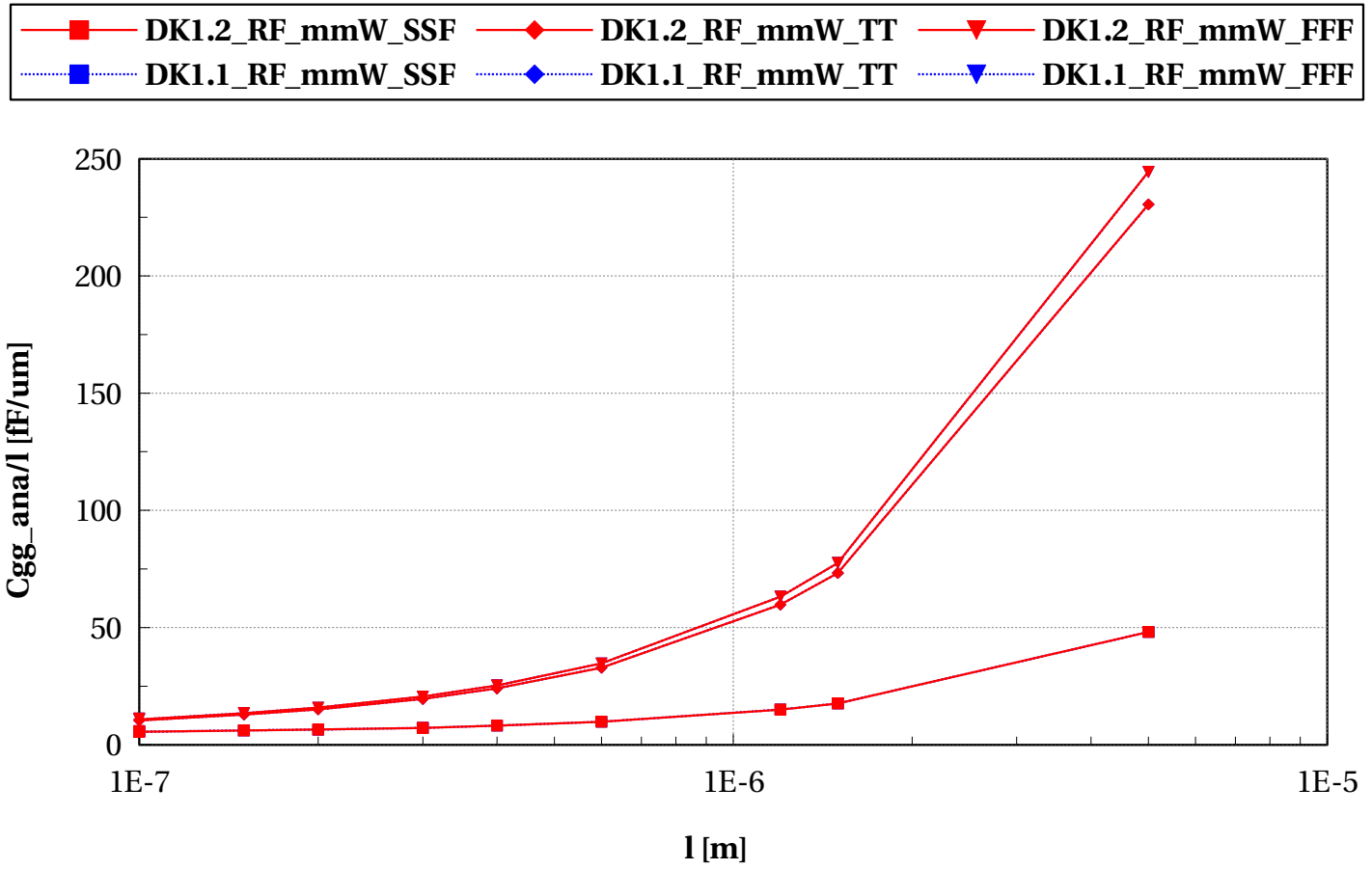
egvpfet_acc, Sv@th [V/sqrt(Hz)] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

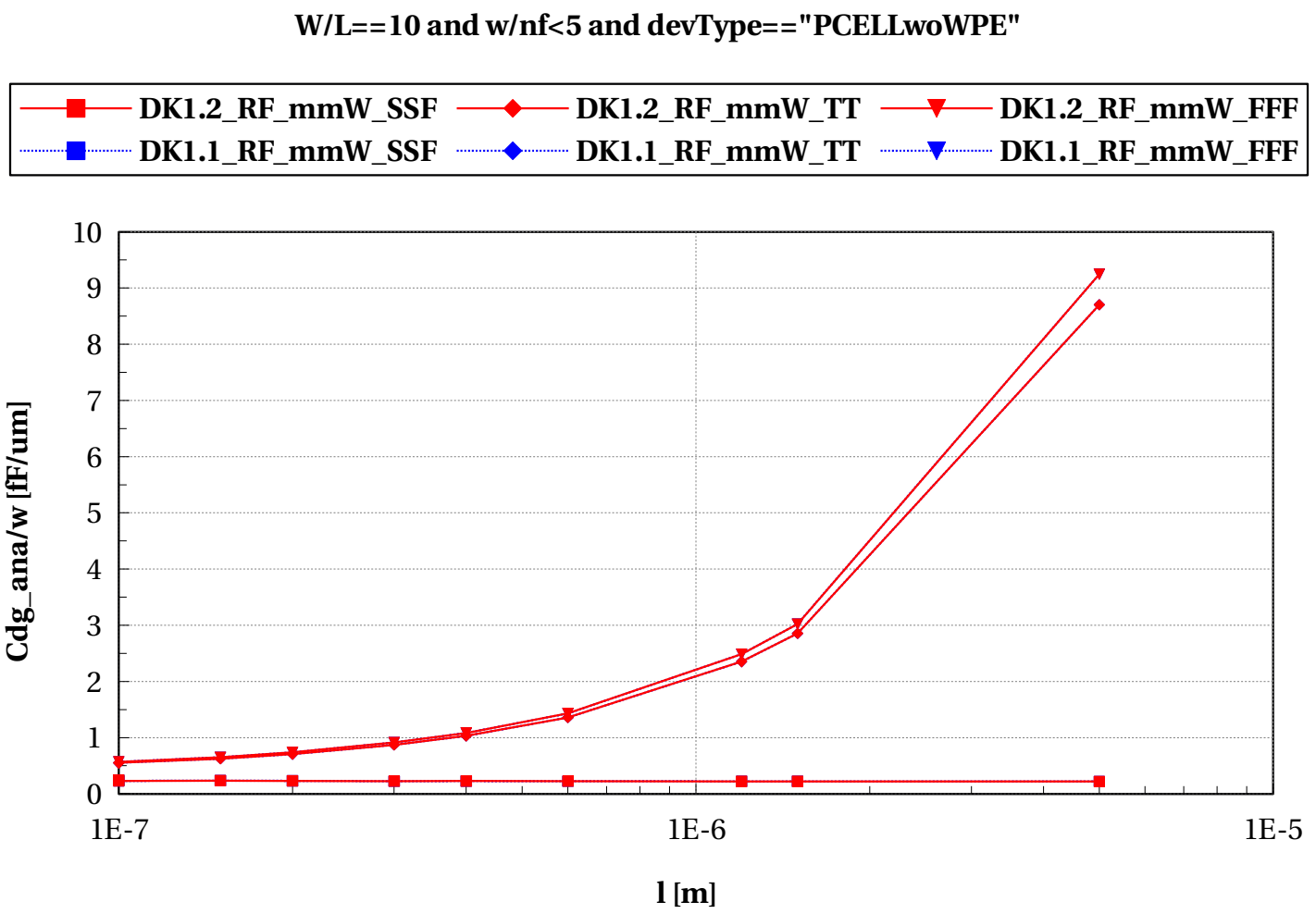


egvpfet_acc, Cgg_ana/l [fF/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"

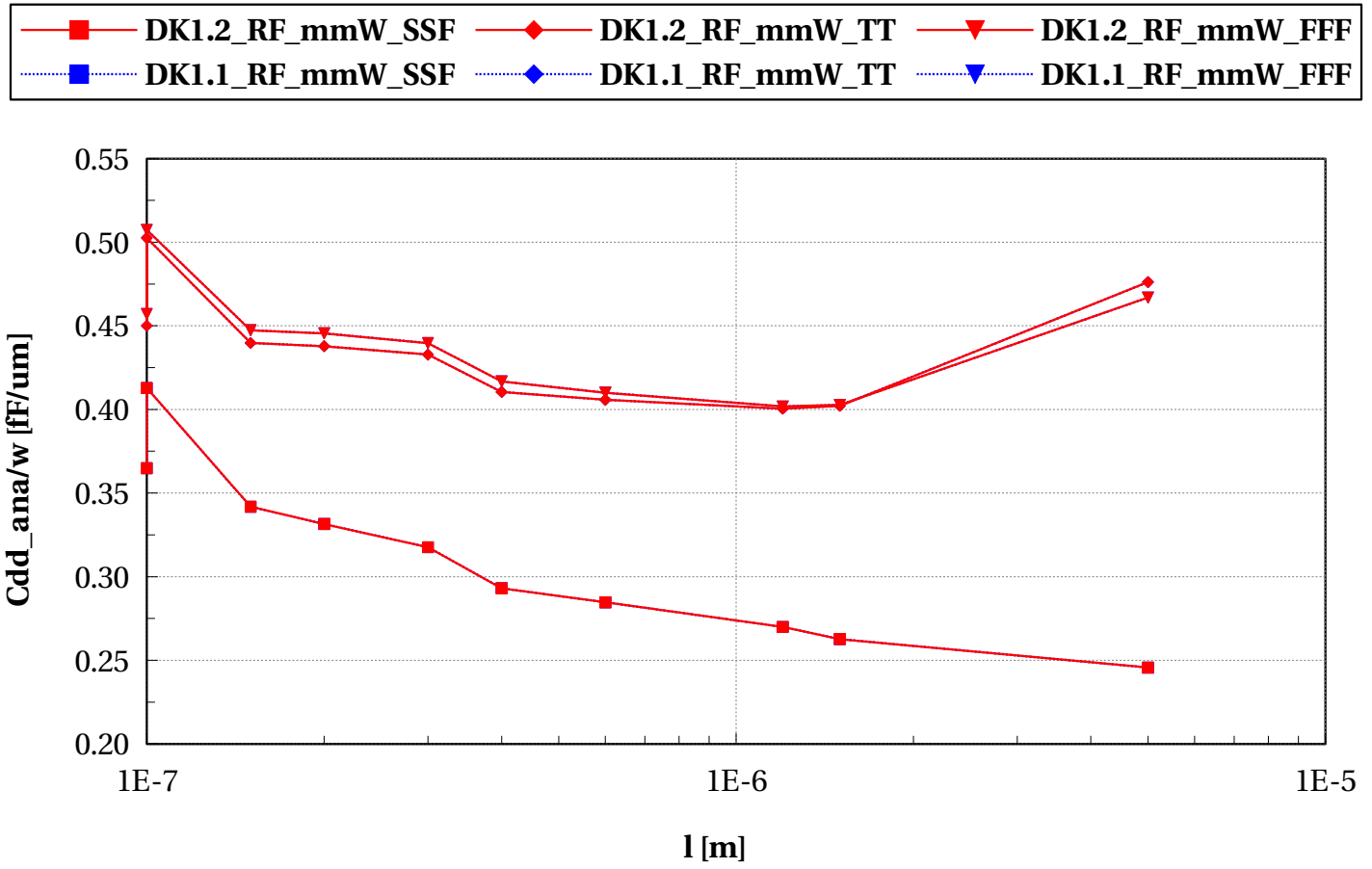


egvpfet_acc, Cdg_ana/w [fF/um] vs l [m]



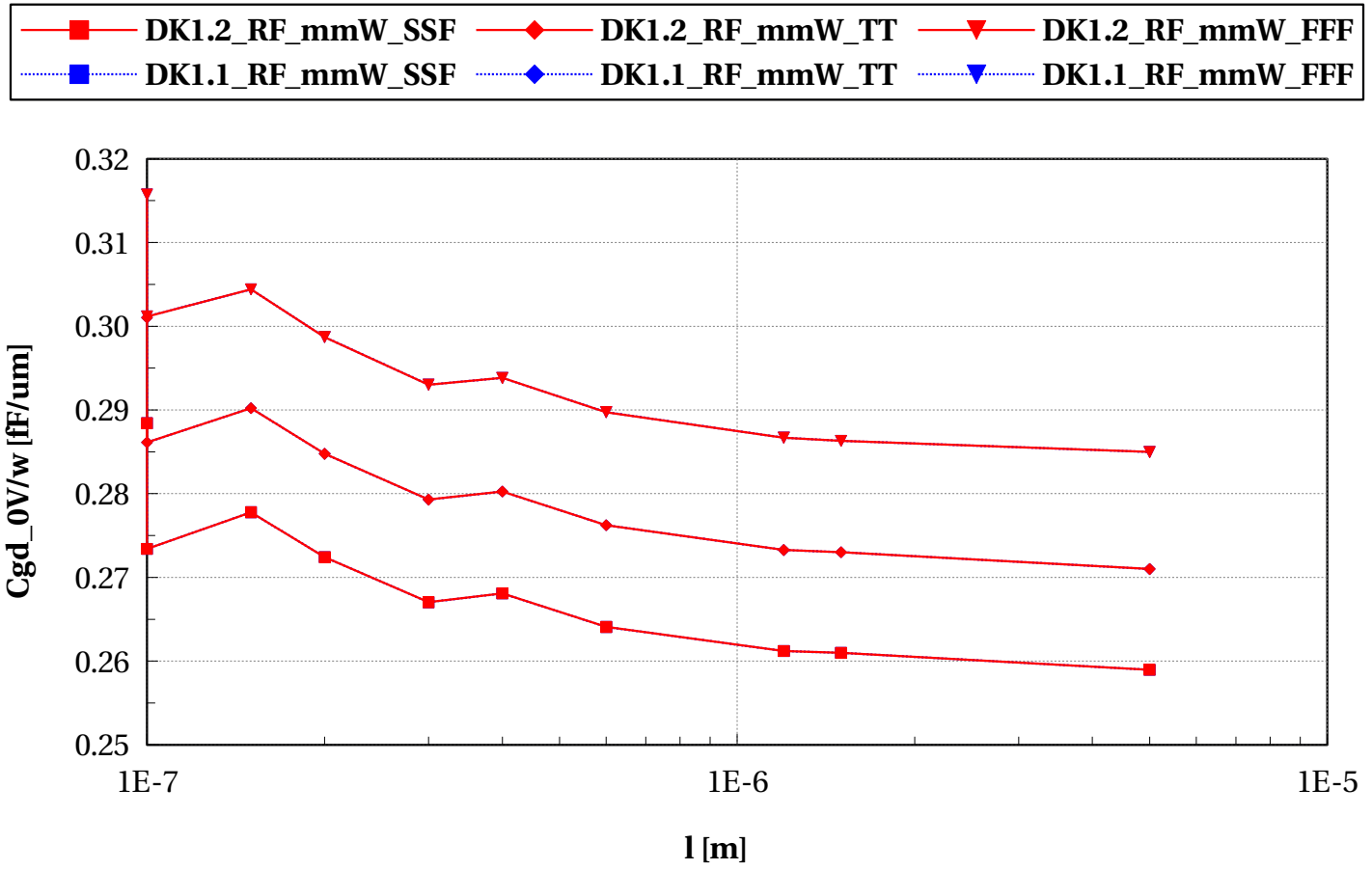
egvpfet_acc, Cdd_ana/w [fF/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



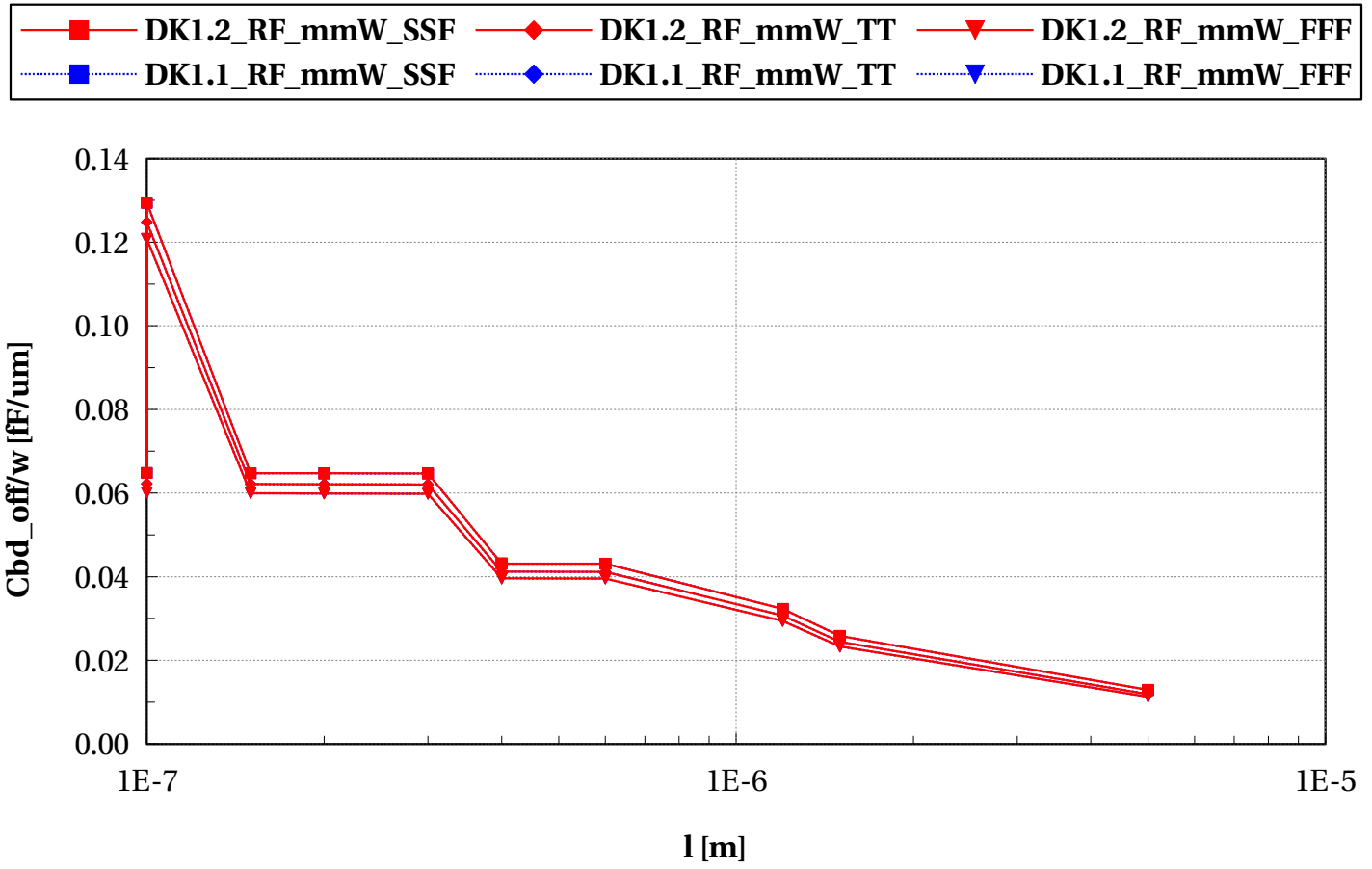
egvpfet_acc, Cgd_0V/w [fF/um] vs l [m]

W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



egvpfet_acc, Cbd_off/w [fF/um] vs l [m]

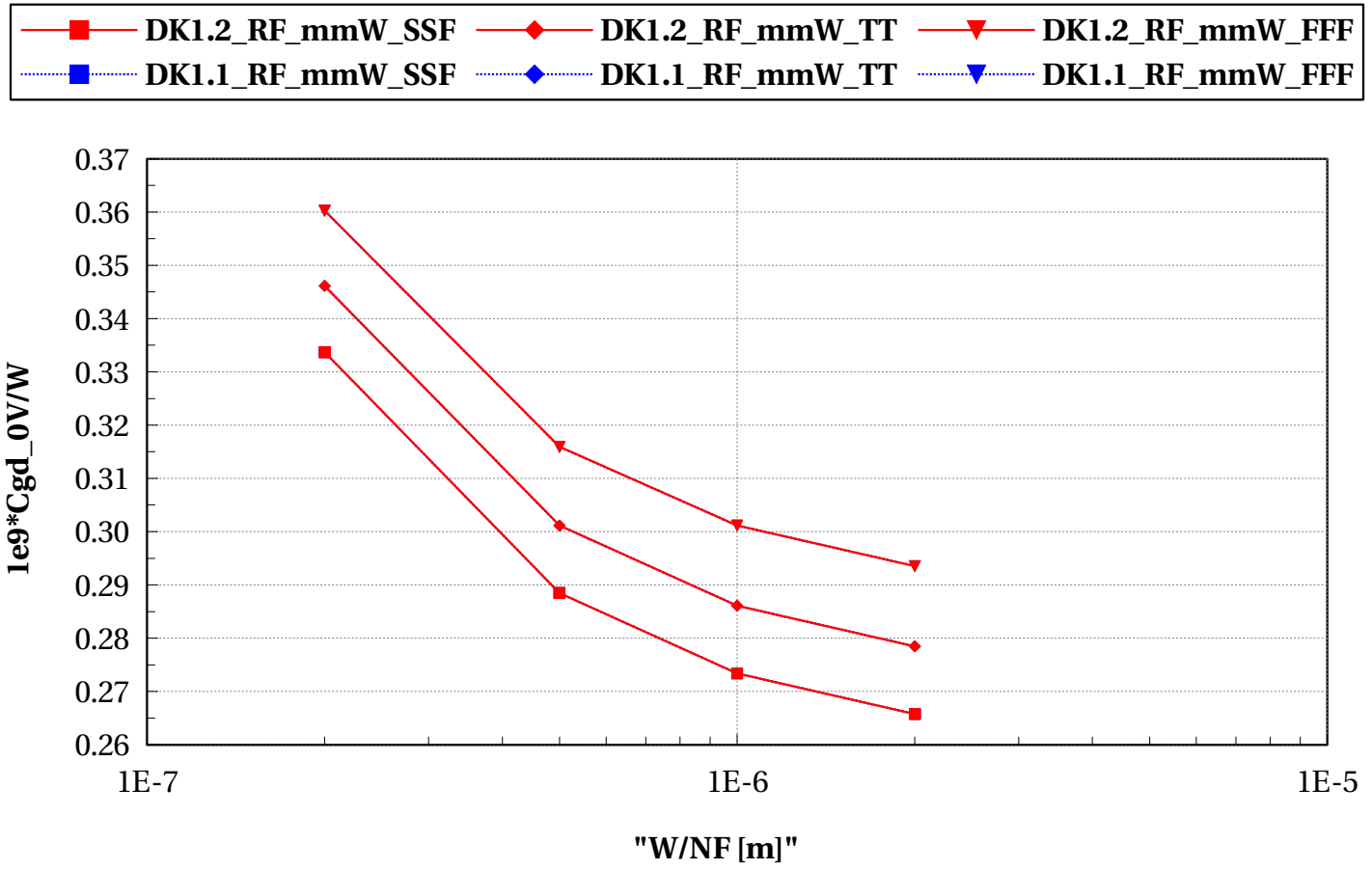
W/L==10 and w/nf<5 and devType=="PCELLwoWPE"



Scaling versus gate finger width L=100nm

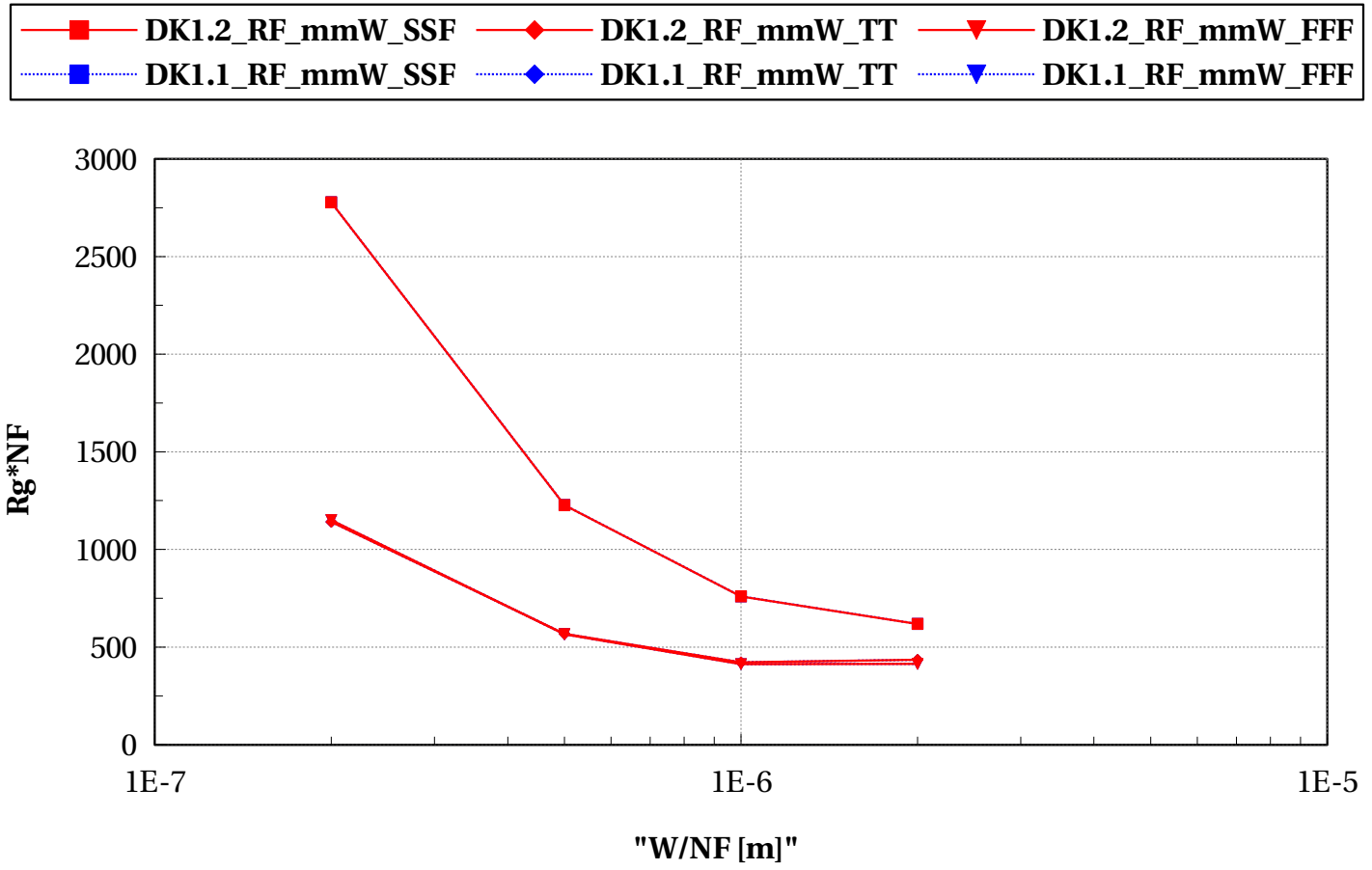
egvpfet_acc, 1e9*Cgd_0V/W vs "W/NF [m]"

L==100e-9 and NF==1 and devType=="PCELLwoWPE"



egvpfet_acc, Rg*NF vs "W/NF [m]"

L==100e-9 and NF==1 and devType=="PCELLwoWPE"



Annex

Conditions of simulations

The simulations were done with SBenchLSF Alpha using Eldo simulator 2018.3.

- Model egvnfet_acc (DK1.2_RF_mmW)
  - ✔ Input Parameters
    - ✘ vds_ft = Vdd V
    - ✘ vds_cgd = 0 V
    - ✘ f_ext_rg = 1G Hz
    - ✘ mc_sens = 0
    - ✘ vds_lin = 0.05 V
    - ✘ ivt = 300e-9 A
    - ✘ model_version = 1.2.c
    - ✘ vds_off = vds_sat V
    - ✘ iana = 5e-6 A
    - ✘ ams_release = 2018.3
    - ✘ vgs_stop = vdd V
    - ✘ dlshrink_ivt = 0
    - ✘ sbenchlsf_release = Alpha
    - ✘ vds_sat = Vdd V

- ✘ mc_nsigma = 3
- ✘ shrink_ivt = 1
- ✘ vgs_start = 0 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_ana = Vdd/4 V
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ mc_runs = 5000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 0 V
- ✘ vdd = 1.5 V

✔ Sweep Parameters

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1

● Model egvpfet_acc (DK1.2_RF_mmW)

✔ Input Parameters

- ✘ vds_ft = Vdd V
- ✘ vds_cgd = 0 V
- ✘ f_ext_rg = 1G Hz
- ✘ mc_sens = 0

- ✘ vds_lin = 0.05 V
- ✘ ivt = 70e-9 A
- ✘ model_version = 1.2.c
- ✘ vds_off = vds_sat V
- ✘ iana = 2e-6 A
- ✘ ams_release = 2018.3
- ✘ vgs_stop = vdd V
- ✘ dlshrink_ivt = 0
- ✘ sbenchlsf_release = Alpha
- ✘ vds_sat = Vdd V
- ✘ mc_nsigma = 3
- ✘ shrink_ivt = 1
- ✘ vgs_start = 0 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_ana = Vdd/4 V
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ mc_runs = 5000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 0 V
- ✘ vdd = 1.5 V

- ✔ Sweep Parameters
- ✔ Extra parameters
  - ✘ eg_dev = 1
  - ✘ eglvt_dev = 1

● Model egvnfet_acc (DK1.1_RF_mmW)

- ✔ Input Parameters
  - ✘ vds_ft = Vdd V
  - ✘ vds_cgd = 0 V
  - ✘ f_ext_rg = 1G Hz
  - ✘ mc_sens = 0
  - ✘ vds_lin = 0.05 V
  - ✘ ivt = 300e-9 A
  - ✘ model_version = 1.2.b
  - ✘ vds_off = vds_sat V
  - ✘ iana = 5e-6 A
  - ✘ ams_release = 2018.3
  - ✘ vgs_stop = vdd V
  - ✘ dlshrink_ivt = 0
  - ✘ sbenchlsf_release = Alpha
  - ✘ vds_sat = Vdd V
  - ✘ mc_nsigma = 3
  - ✘ shrink_ivt = 1
  - ✘ vgs_start = 0 V
  - ✘ plashrink_ivt = 1
  - ✘ ithslwi = 10e-9 A

- ✘ vds_ana = Vdd/4 V
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ mc_runs = 5000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 0 V
- ✘ vdd = 1.5 V

✔ Sweep Parameters

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1

● Model egvpfet_acc (DK1.1_RF_mmW)

✔ Input Parameters

- ✘ vds_ft = Vdd V
- ✘ vds_cgd = 0 V
- ✘ f_ext_rg = 1G Hz
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ ivt = 70e-9 A
- ✘ model_version = 1.2.b
- ✘ vds_off = vds_sat V
- ✘ iana = 2e-6 A

- ✘ ams_release = 2018.3
- ✘ vgs_stop = vdd V
- ✘ dlshrink_ivt = 0
- ✘ sbenchlsf_release = Alpha
- ✘ vds_sat = Vdd V
- ✘ mc_nsigma = 3
- ✘ shrink_ivt = 1
- ✘ vgs_start = 0 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_ana = Vdd/4 V
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ mc_runs = 5000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 0 V
- ✘ vdd = 1.5 V

✔ Sweep Parameters

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1