MGF0951P

L & S BAND GaAs FET [Plastic Mold Lead-less PKG]

DESCRIPTION

The MGF0951P GaAs FET with an N-channel schottky Gate, is designed for use L/S band amplifiers.

FEATURES

- High output power
  Po=31dBm(TYP.) @f=2.15GHz,Pin=20dBm
- High power gain
  Glp=13dB(TYP.) @f=2.15GHz
- High power added efficiency
  ηadd=50%(TYP.) @f=2.15GHz,Pin=20dBm
- Plastic Mold Lead-less PKG

APPLICATION

- For L/S Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- Vds=10V • Ids=200mA • Rg=500Ω

Delivery Tape & Reel(1.5K)

Fig.1

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGSO	Gate to source breakdown voltage	-15	V
VGDO	Gate to drain breakdown voltage	-15	V
ID	Drain current	800	mA
IGR	Reverse gate current	-2.5	mA
IGF	Forward gate current	5.4	mA
PT	Total power dissipation	6.0	W
Tch	Cannel temperature	150	°C
Tstg	Storage temperature	-40 to +150	°C

Recommended maximum ratings (Ta=25°C)

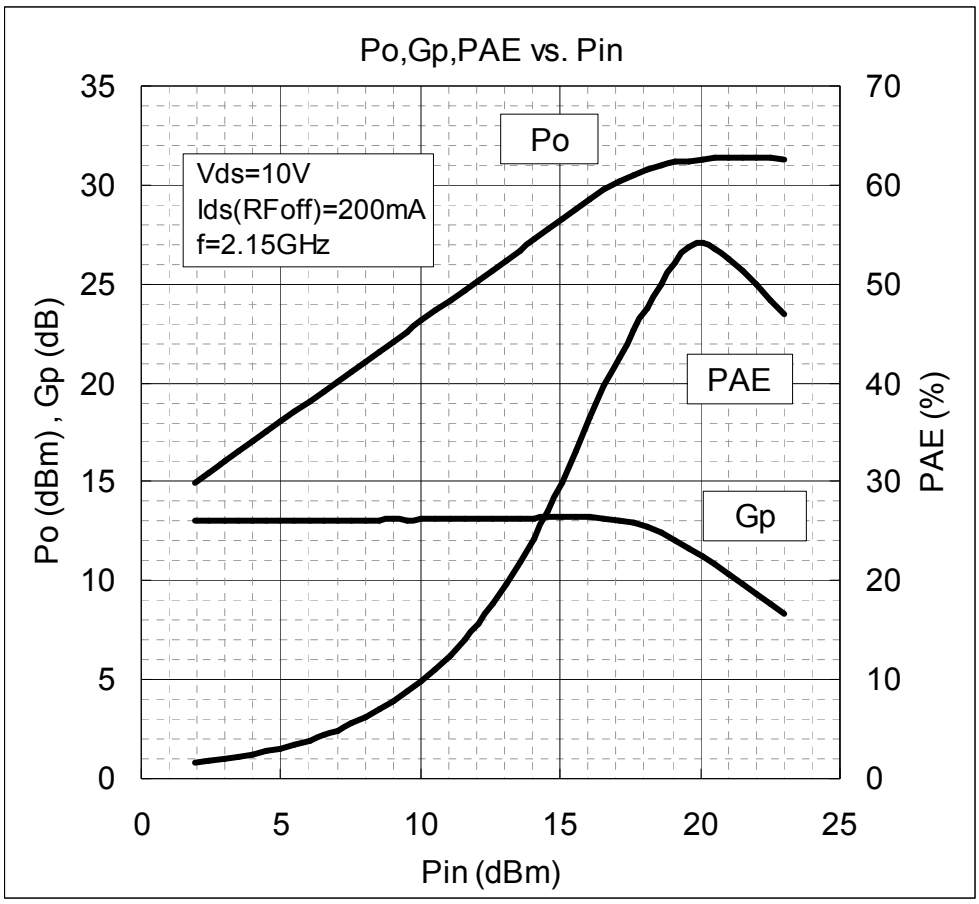
Symbol	Parameter	Ratings	Unit
Tch	Cannel temperature	150	°C

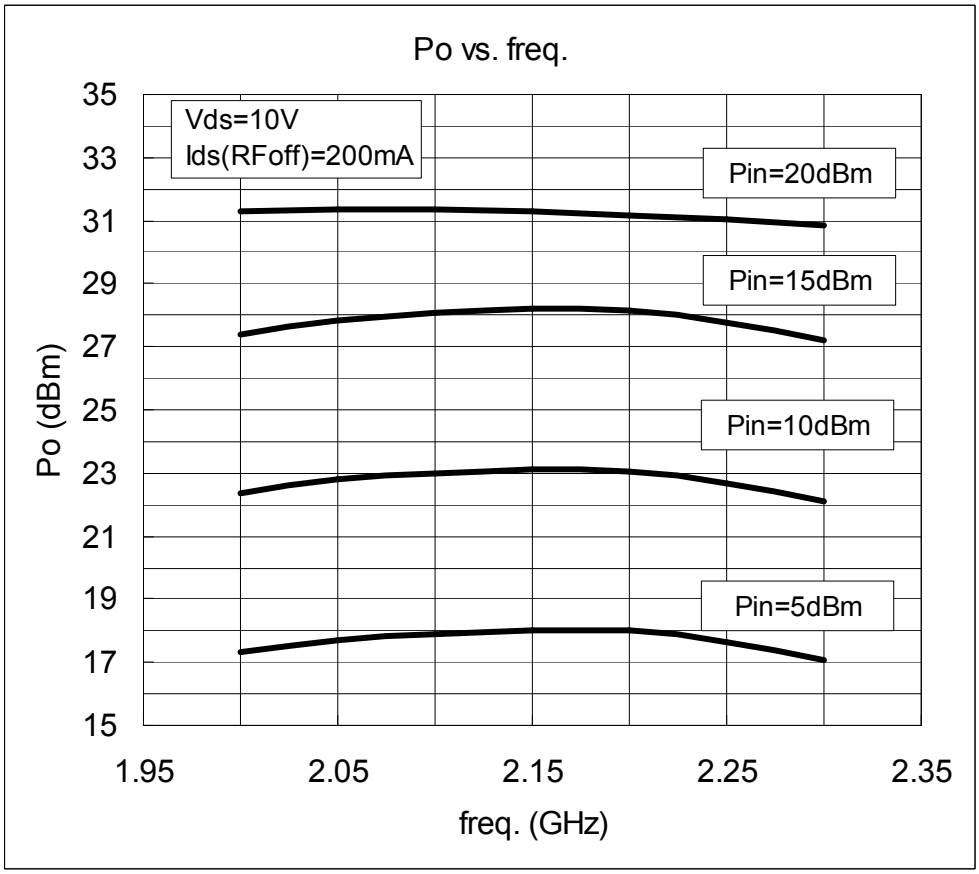
Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=2.5mA	-1	-3	-5	V
gm	Transconductance	VDS=3V,ID=300mA	--	200	--	mS
Po	Output power	VDS=10V,ID=200mA,f=2.15GHz	29.5	31	--	dBm
ηadd *1	Power added Efficiency	*1:Pin=20dBm, *2:Pin=10dBm	--	50	--	%
GLP *2	Linear Power Gain	*3:f1=2.15GHz,f2=2.16GHz	11	13	--	dB
IM3 *3	3rd order Modulation Distortion	Po(SCL)=20dBm	--	-45	--	dBc
Rth(ch-c)	Thermal Resistance *1	ΔVf Method	--	20	25	°C/W

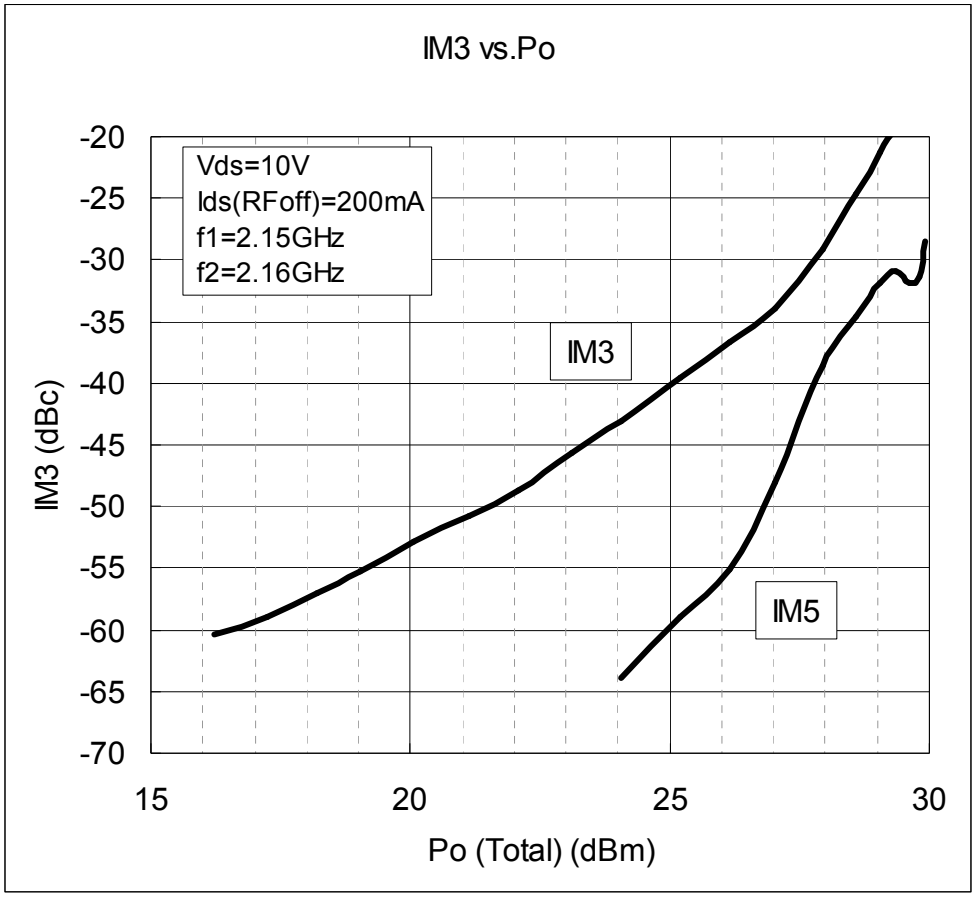
*1:Channel to case / Above parameters, ratings, limits are subject to change.

MGF0951P TYPICAL CHARACTERISTICS





MGF0951P TYPICAL CHARACTERISTICS



MGF0951P S PARAMETERS (Ta=25°C,VD=10V,ID=200mA)

f (MHz)	S Parameter(TYP.)								K	MSG/MAG (dB)
	S11		S21		S12		S22			
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)		
600	0.847	-98.9	7.176	117.6	0.039	44.1	0.186	-115.6	0.476	22.7
800	0.827	-115.4	5.972	106.5	0.043	37.8	0.207	-126.0	0.564	21.4
1000	0.807	-127.9	5.076	97.3	0.046	34.1	0.225	-133.2	0.666	20.4
1200	0.797	-137.6	4.392	89.6	0.048	31.5	0.240	-137.7	0.767	19.6
1400	0.785	-145.0	3.867	82.8	0.051	29.6	0.256	-140.5	0.855	18.8
1600	0.777	-151.3	3.450	76.6	0.052	29.0	0.270	-142.7	0.951	18.2
1800	0.772	-156.1	3.127	71.0	0.053	28.2	0.284	-143.5	1.027	16.7
2000	0.763	-160.3	2.865	65.7	0.056	28.0	0.295	-144.3	1.099	15.2
2200	0.754	-164.1	2.655	60.8	0.058	27.2	0.303	-144.8	1.173	14.1
2400	0.745	-167.7	2.485	55.8	0.060	27.4	0.314	-145.3	1.223	13.3
2600	0.733	-171.3	2.342	50.9	0.064	26.7	0.325	-145.4	1.269	12.5
2800	0.720	-175.0	2.223	46.1	0.067	25.9	0.335	-145.3	1.312	11.9
3000	0.709	-178.8	2.114	41.4	0.070	25.4	0.342	-145.4	1.358	11.3
3200	0.698	177.4	2.023	36.7	0.073	24.8	0.346	-146.1	1.399	10.7
3400	0.689	173.5	1.939	31.8	0.076	23.9	0.350	-147.5	1.426	10.2
3600	0.678	169.7	1.867	27.2	0.080	22.8	0.351	-148.9	1.451	9.7
3800	0.669	166.0	1.807	22.6	0.084	22.0	0.351	-149.5	1.462	9.3
4000	0.660	162.4	1.756	18.1	0.089	21.6	0.346	-150.5	1.458	8.9
4200	0.651	158.4	1.715	13.4	0.095	20.2	0.340	-152.0	1.451	8.6
4400	0.641	154.1	1.677	8.5	0.101	18.6	0.334	-154.4	1.442	8.3
4600	0.630	149.4	1.640	3.6	0.108	16.8	0.332	-156.5	1.413	8.0
4800	0.619	144.6	1.604	-1.2	0.114	15.0	0.328	-158.4	1.410	7.7
5000	0.608	140.0	1.572	-6.1	0.122	12.9	0.323	-160.6	1.398	7.4
5200	0.599	135.2	1.543	-11.1	0.129	10.5	0.318	-163.5	1.378	7.1
5400	0.589	130.4	1.512	-16.2	0.137	7.9	0.316	-167.3	1.356	6.9
5600	0.577	125.2	1.486	-21.3	0.146	5.1	0.316	-170.5	1.337	6.6
5800	0.563	120.3	1.466	-26.4	0.156	2.2	0.314	-172.9	1.305	6.4
6000	0.549	115.0	1.453	-31.6	0.165	-0.9	0.307	-175.5	1.287	6.2
6200	0.533	108.4	1.440	-37.1	0.177	-4.6	0.300	-178.9	1.263	6.0
6400	0.518	101.4	1.427	-42.9	0.189	-8.3	0.293	177.0	1.243	5.8
6600	0.505	93.1	1.417	-48.9	0.201	-12.7	0.286	173.4	1.222	5.6
6800	0.497	84.1	1.403	-55.3	0.213	-17.2	0.269	169.2	1.206	5.4
7000	0.501	74.8	1.386	-61.9	0.226	-22.5	0.245	162.5	1.185	5.3

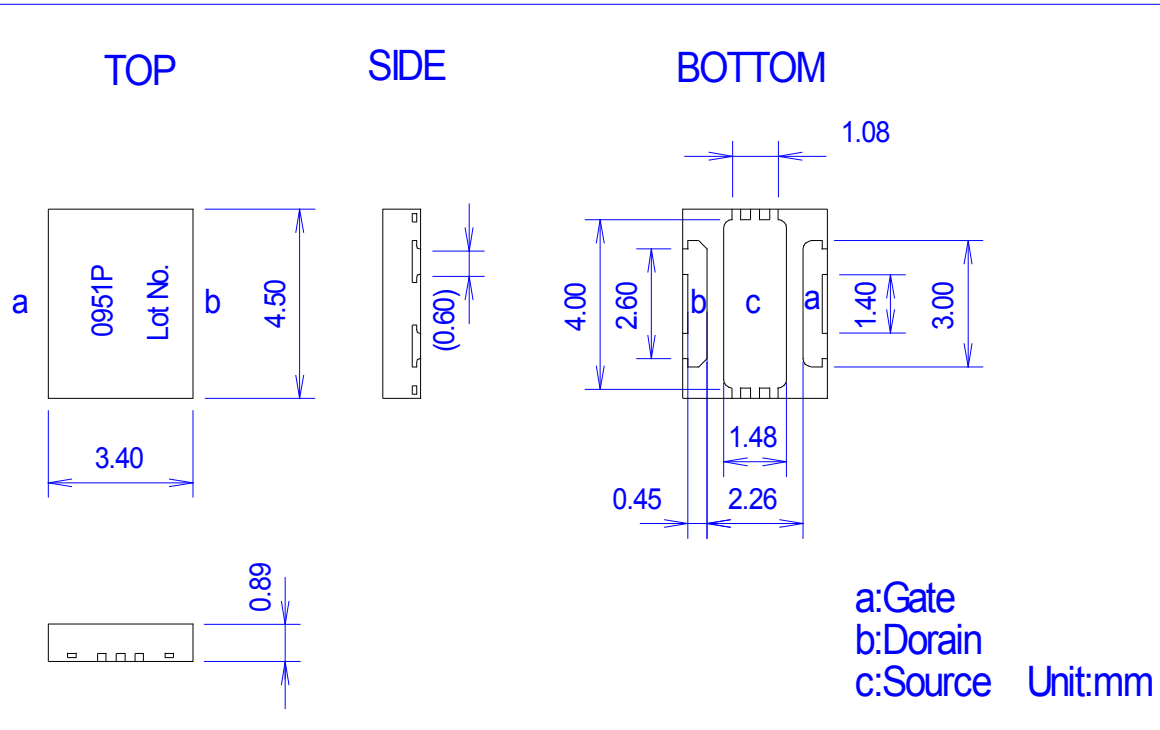
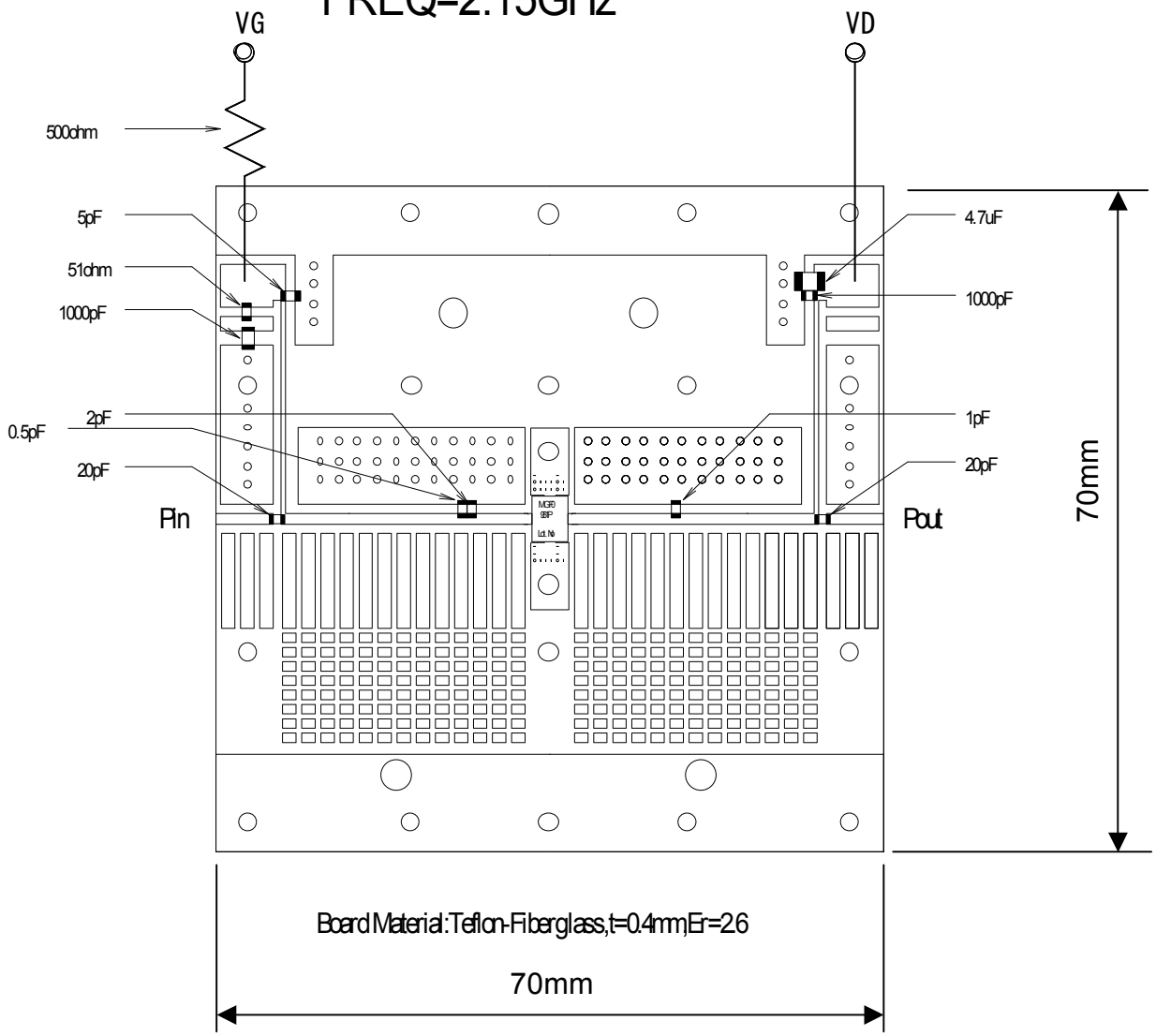


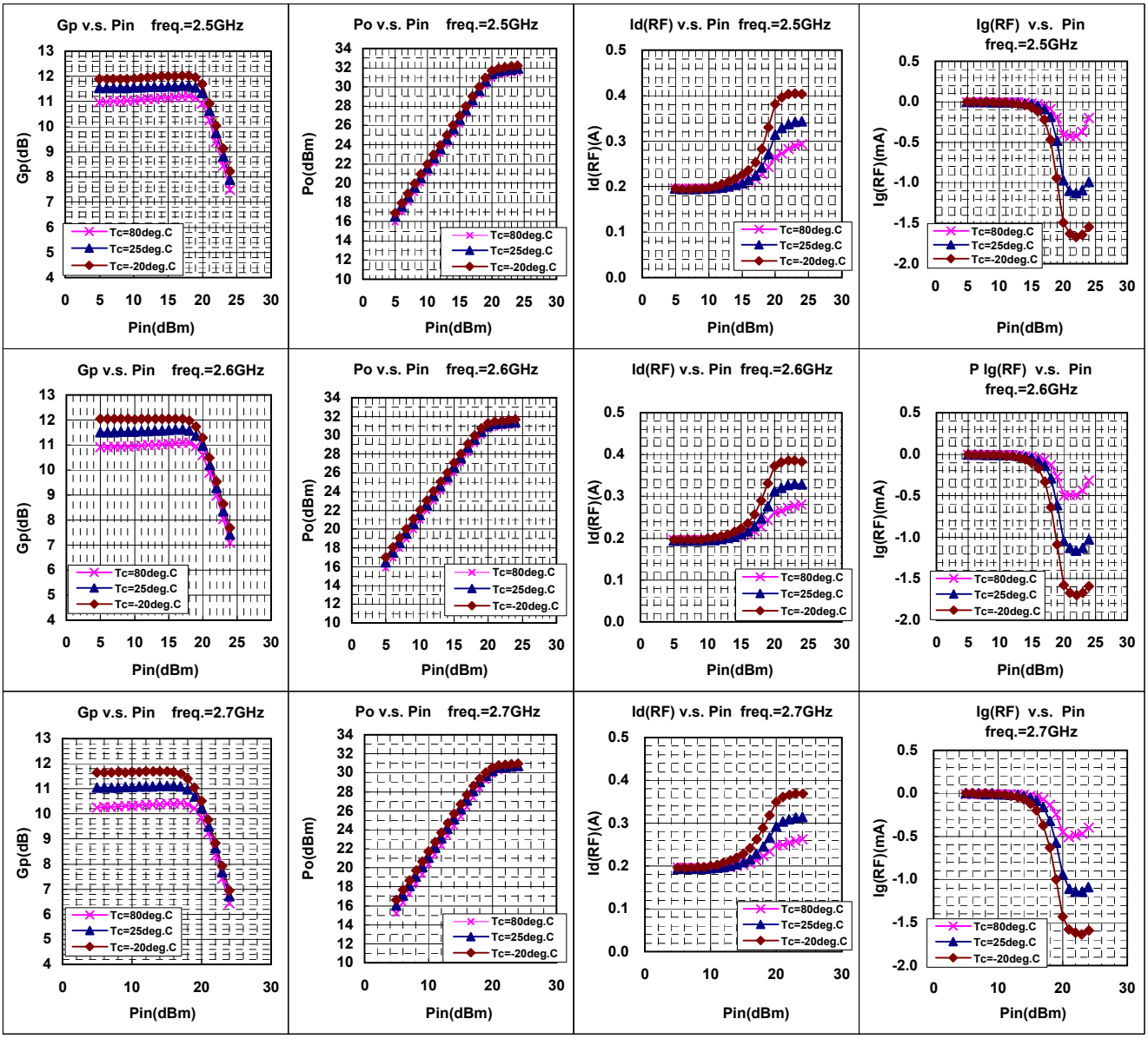
Fig1.OUTLINE DRAWING

MGF0951P TESTFIXTURE
FREQ=2.15GHz

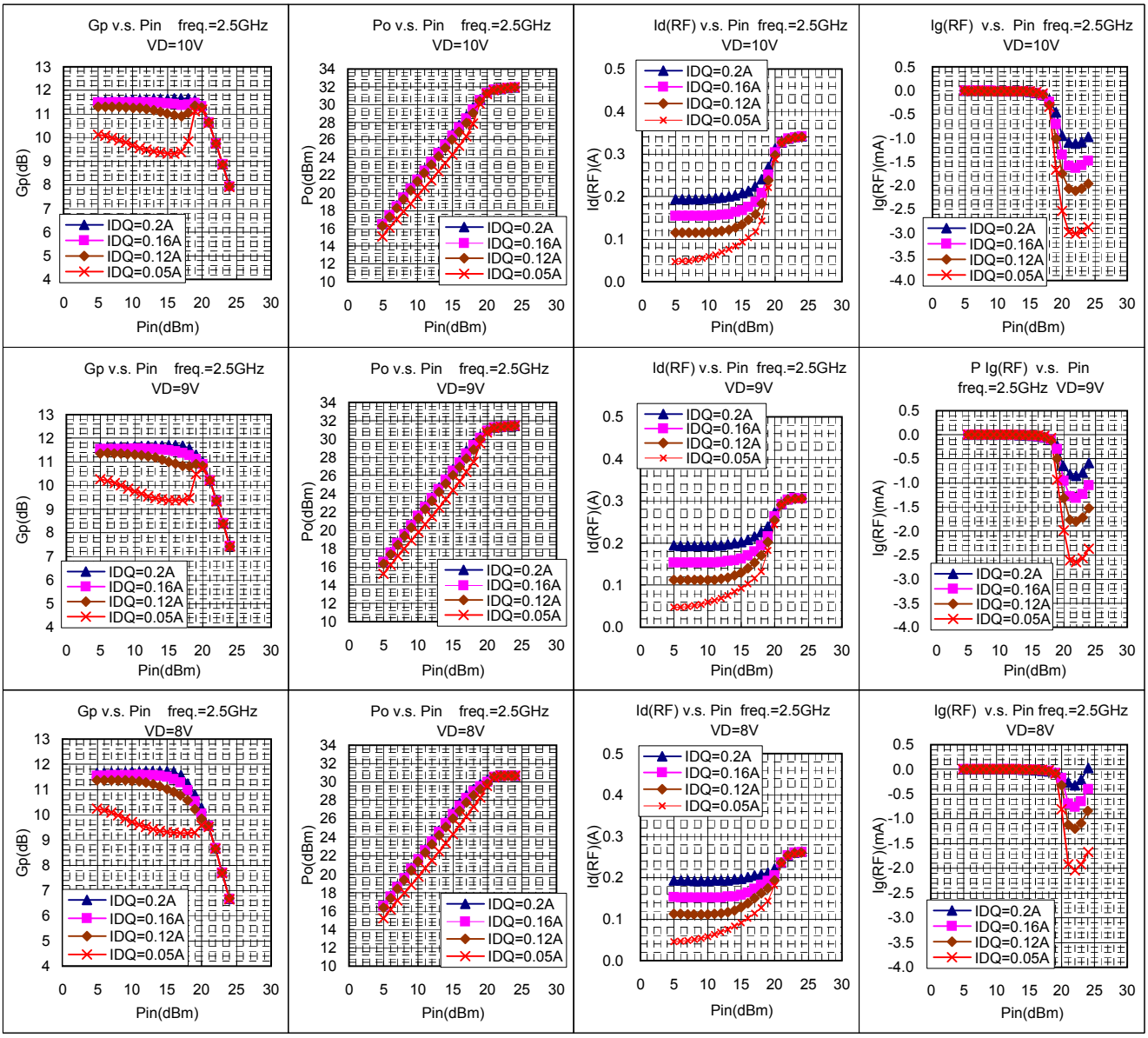


MGF0951P RF TEST DATA(CW) VD=10V,Idq=0.2A

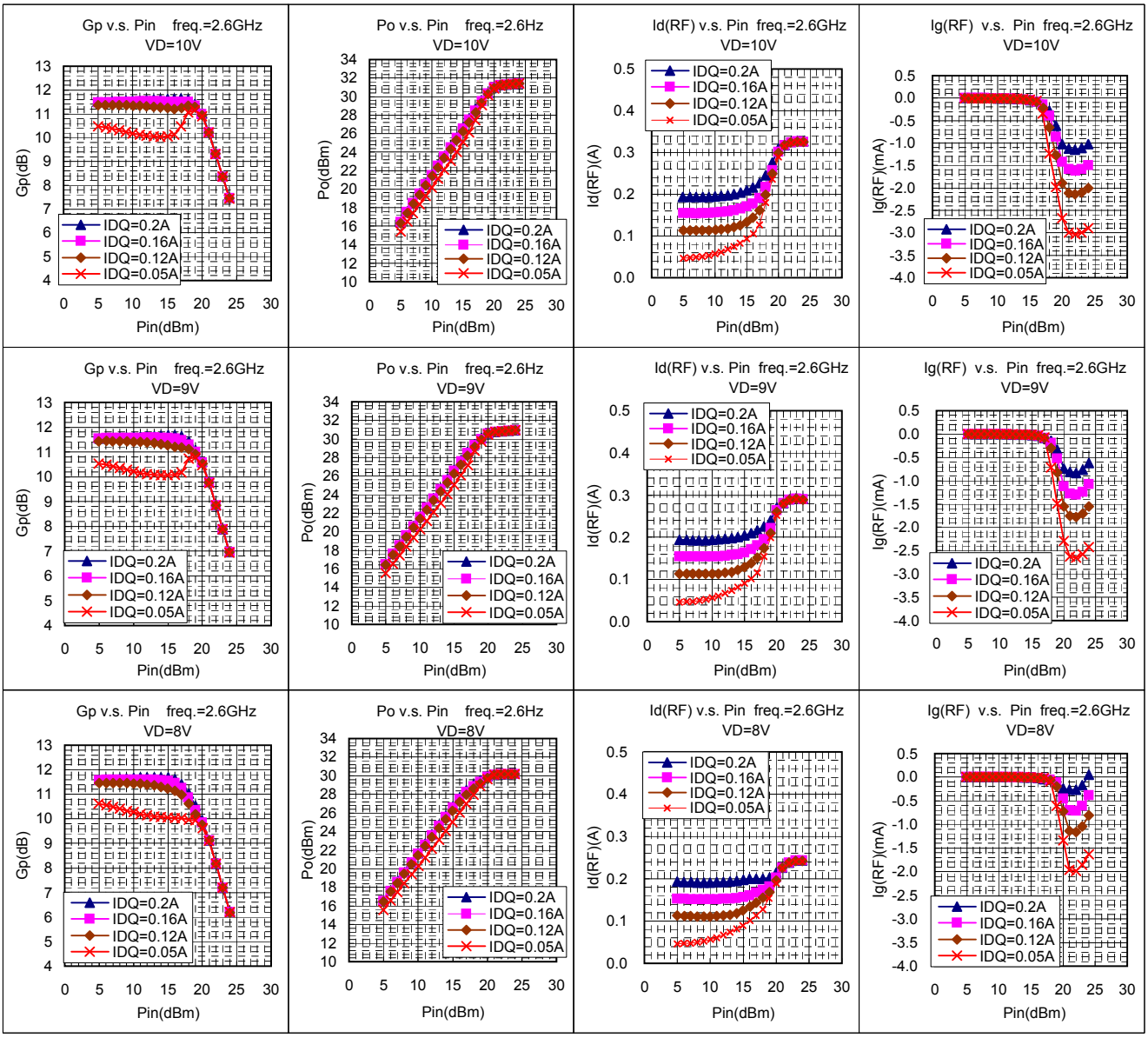
Gp,Po,Id(RF),Ig(RF) v.s. Pin



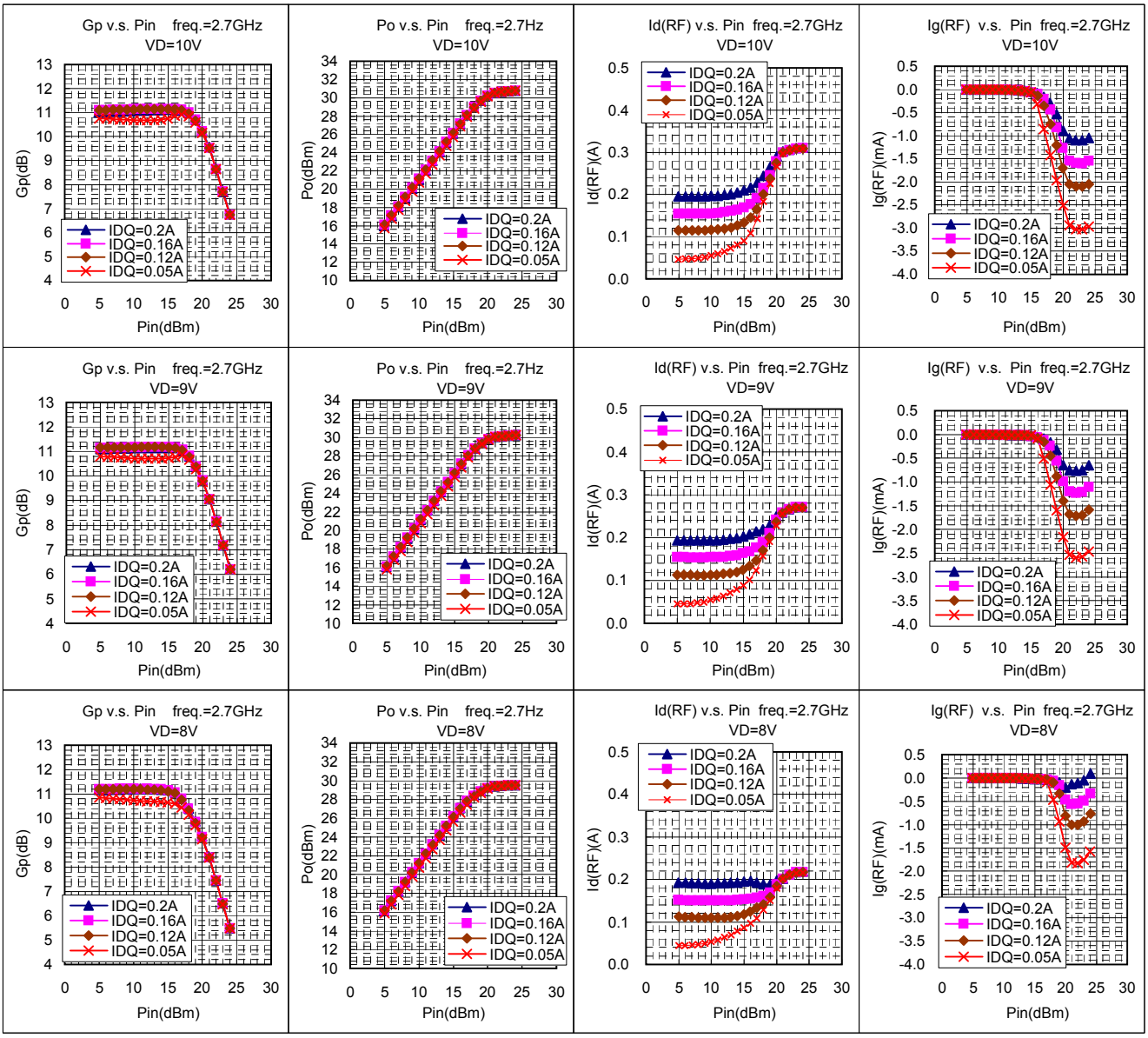
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



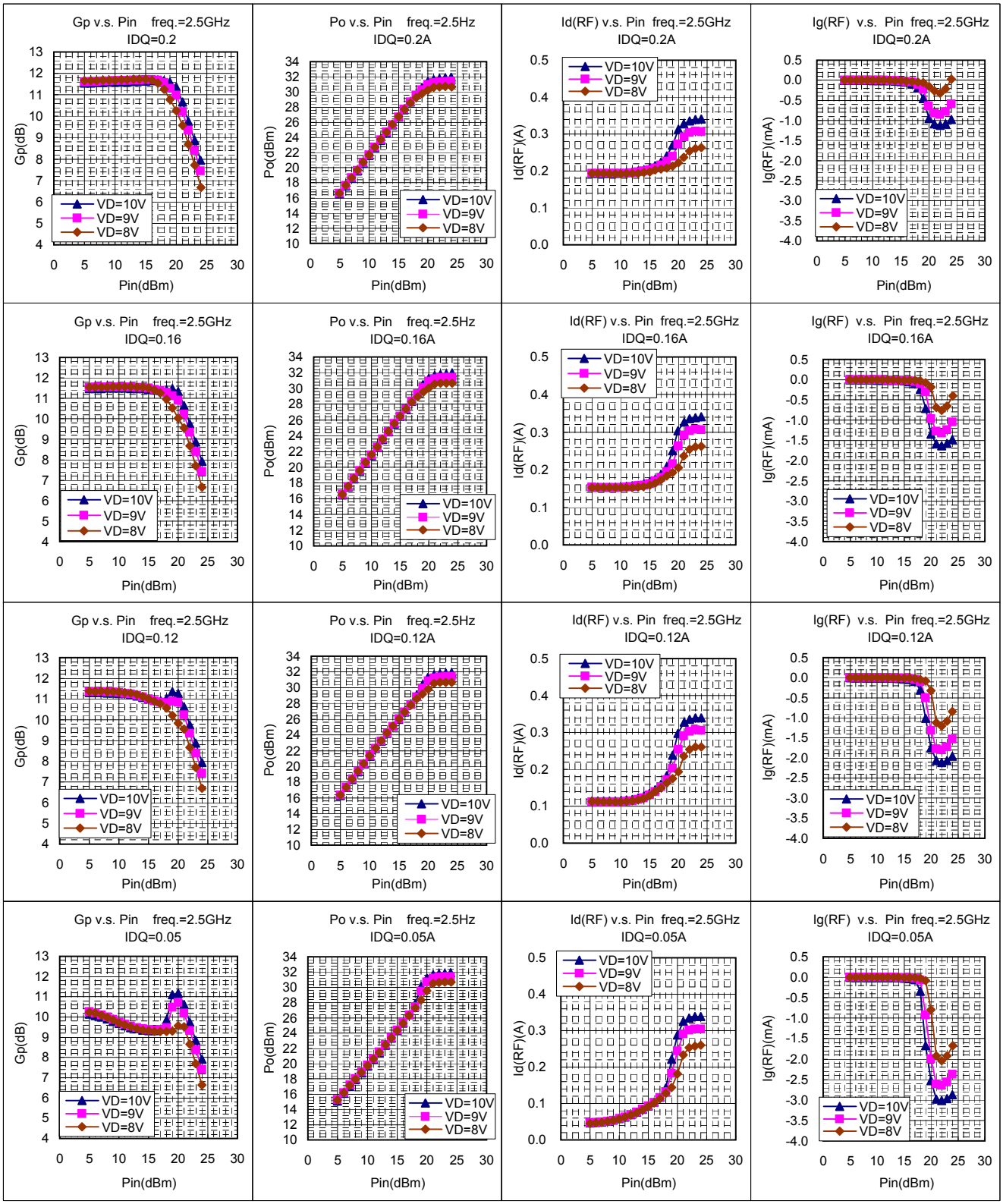
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



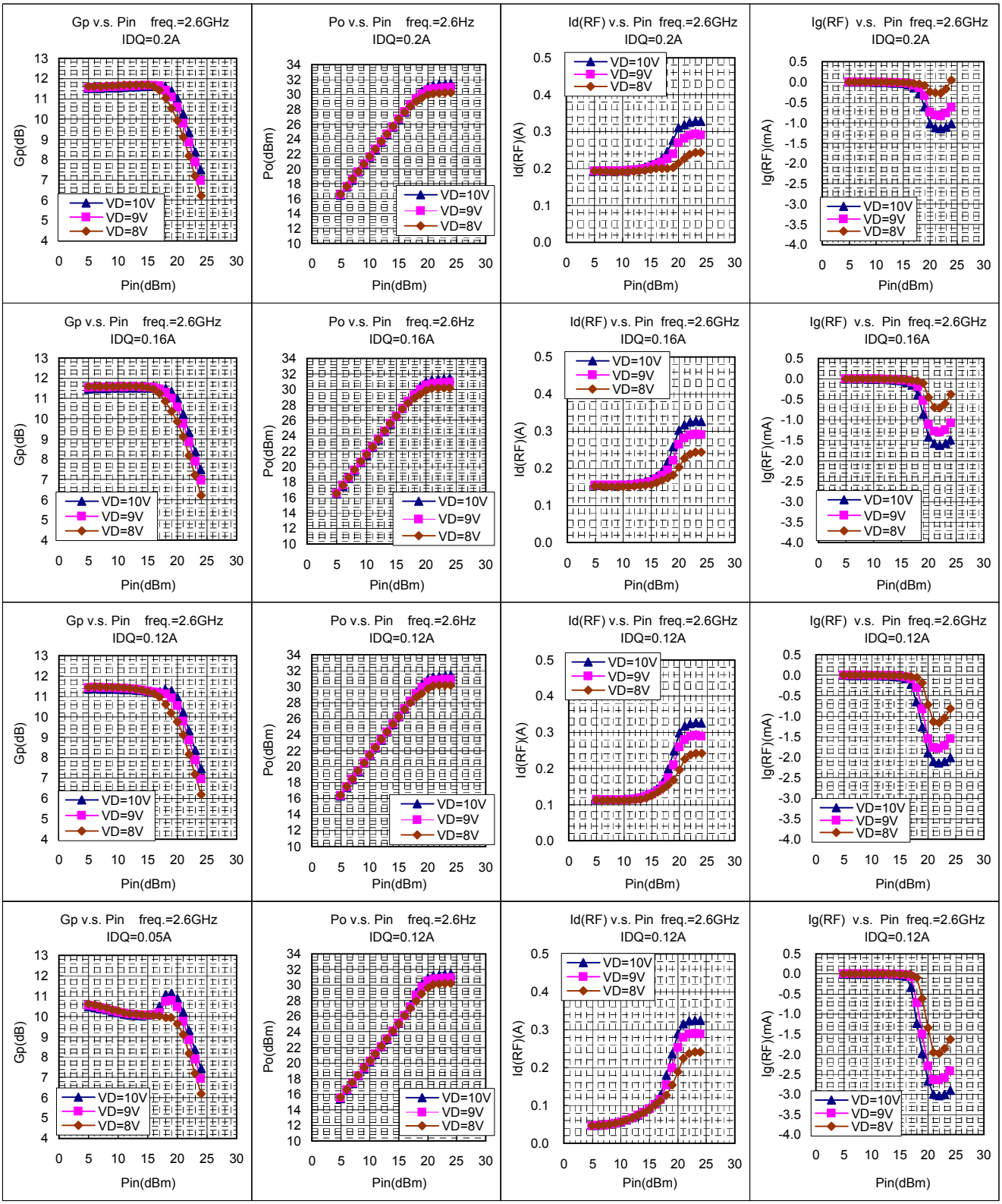
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



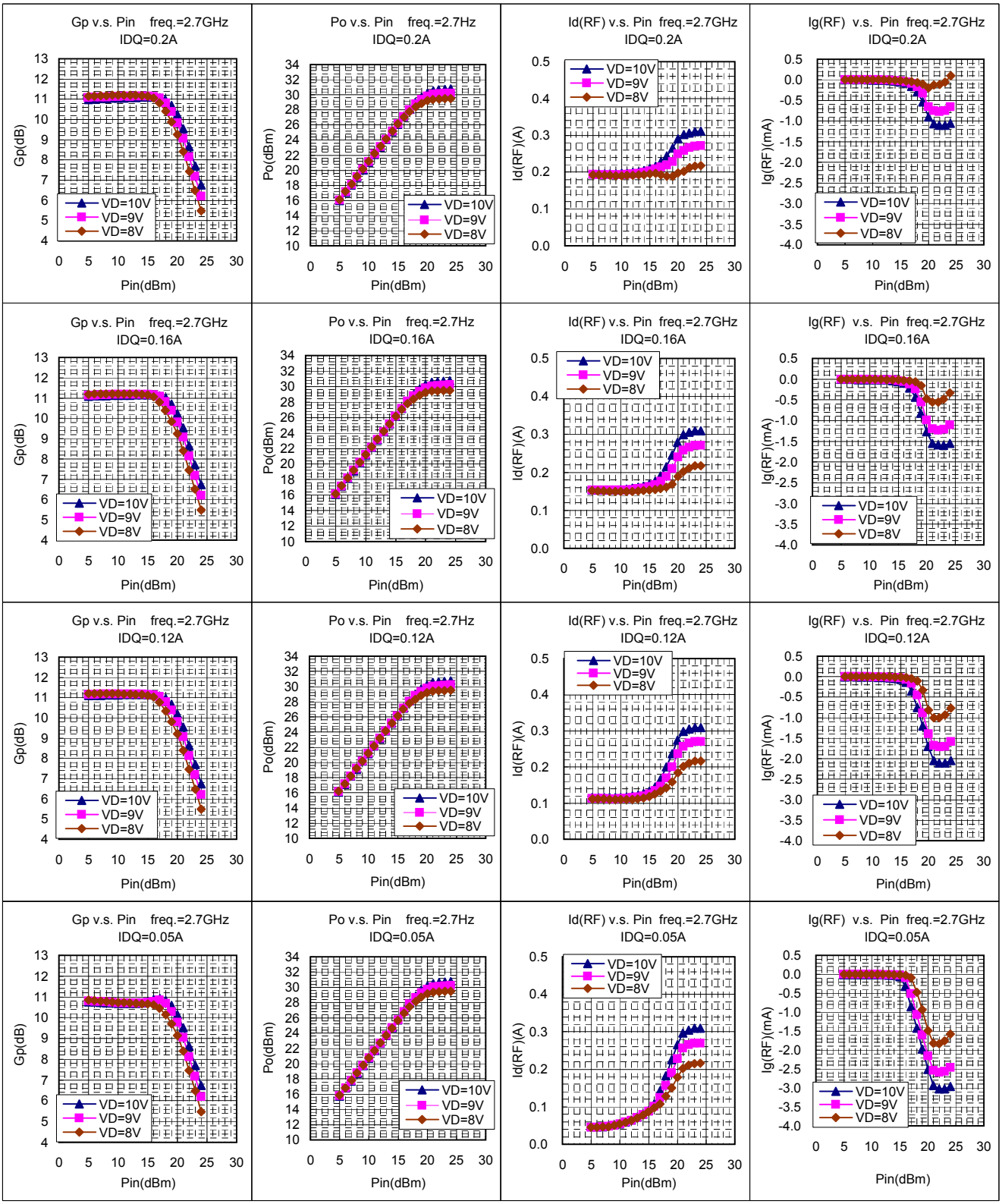
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



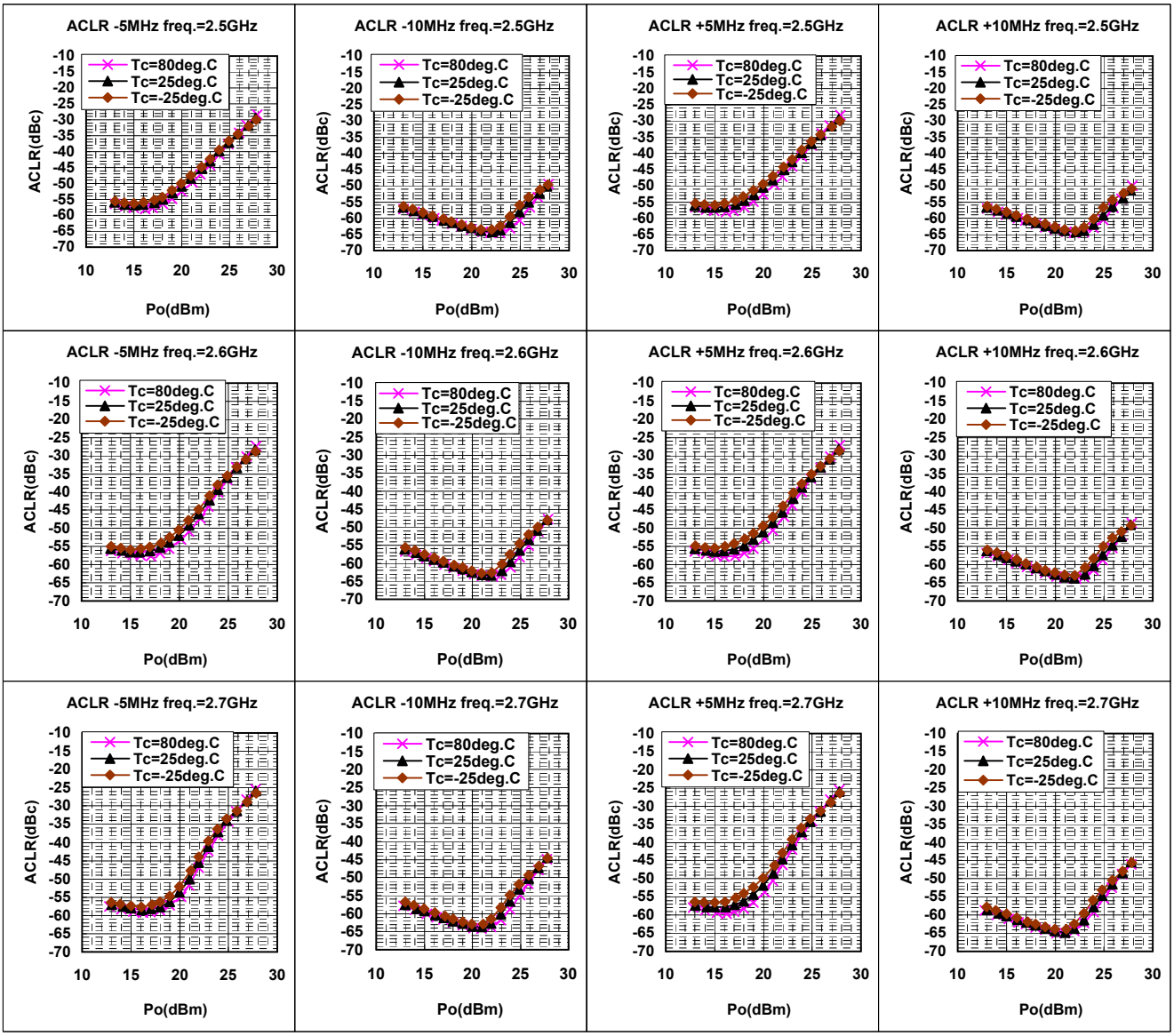
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



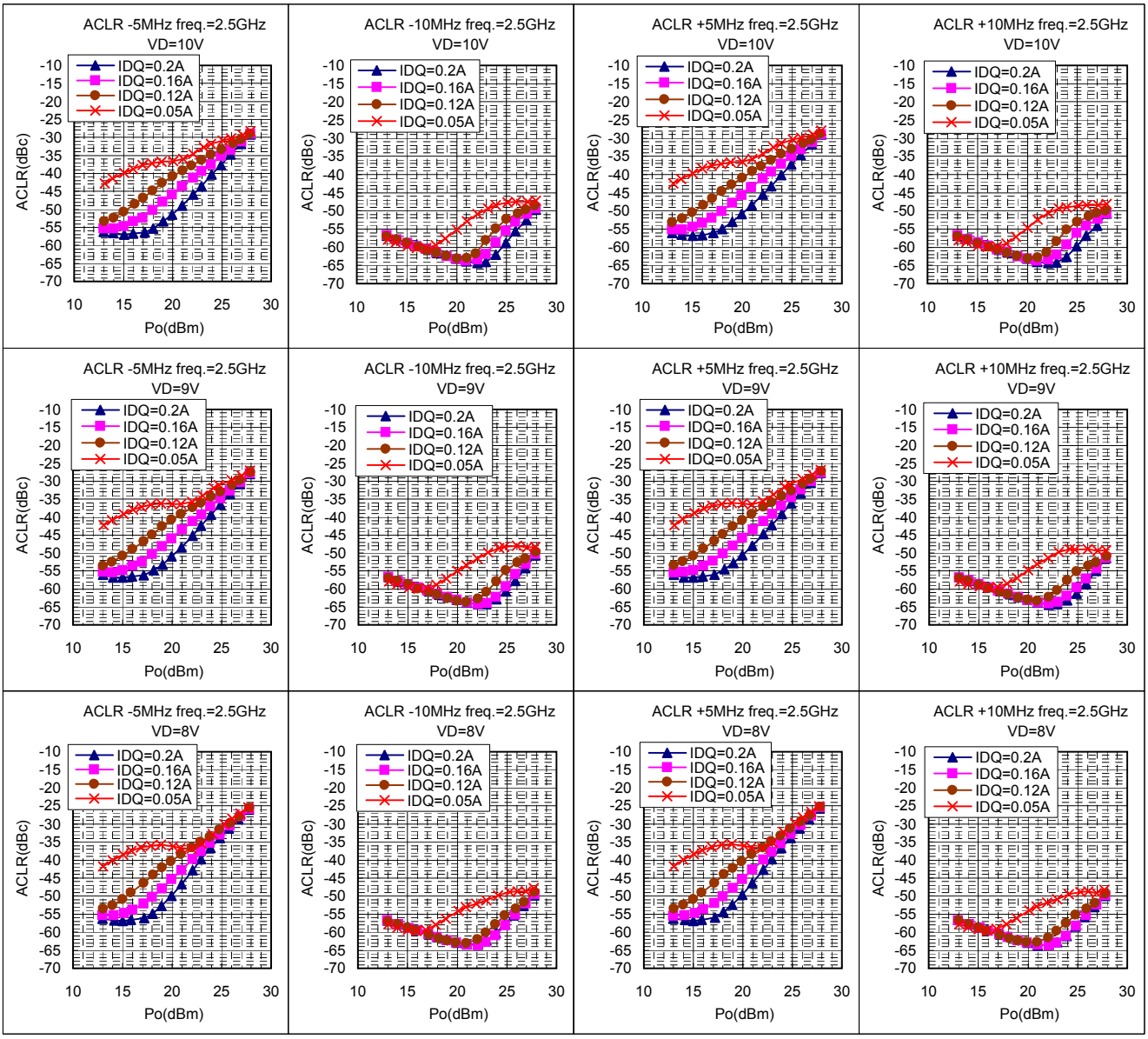
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



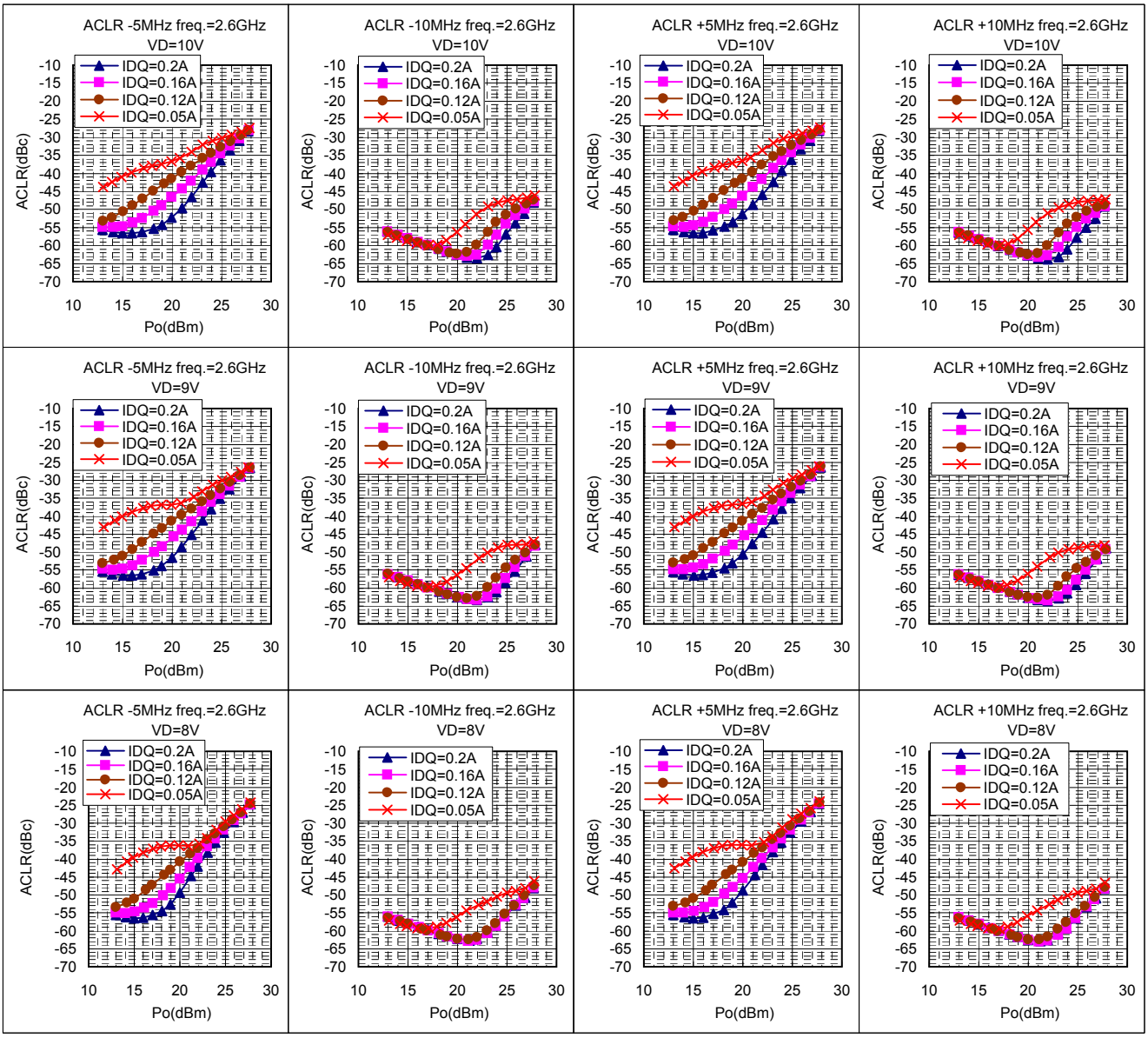
MGF0951P RF TEST DATA(W-CDMA) VD=10V,Idq=0.2A
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal



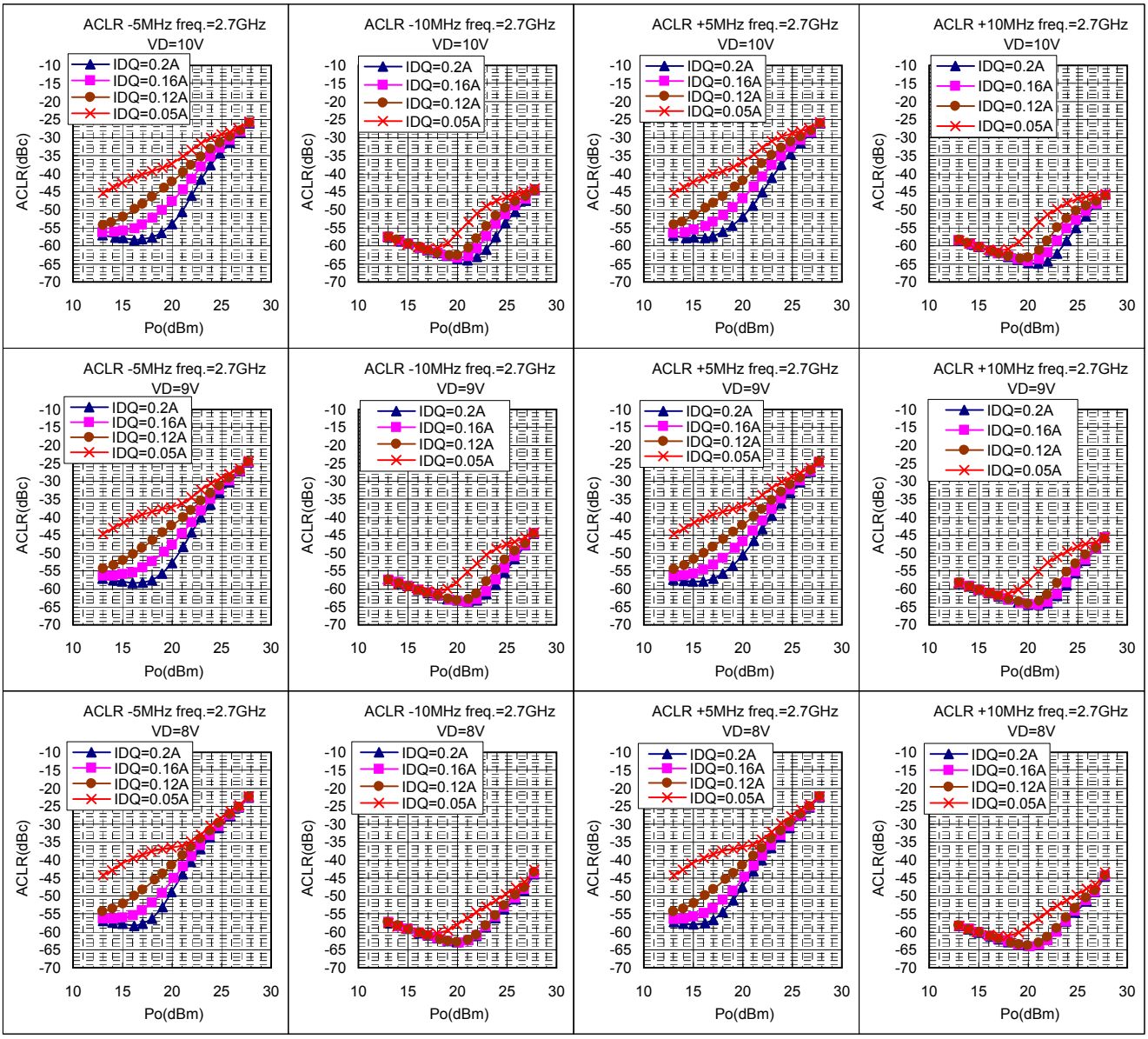
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal



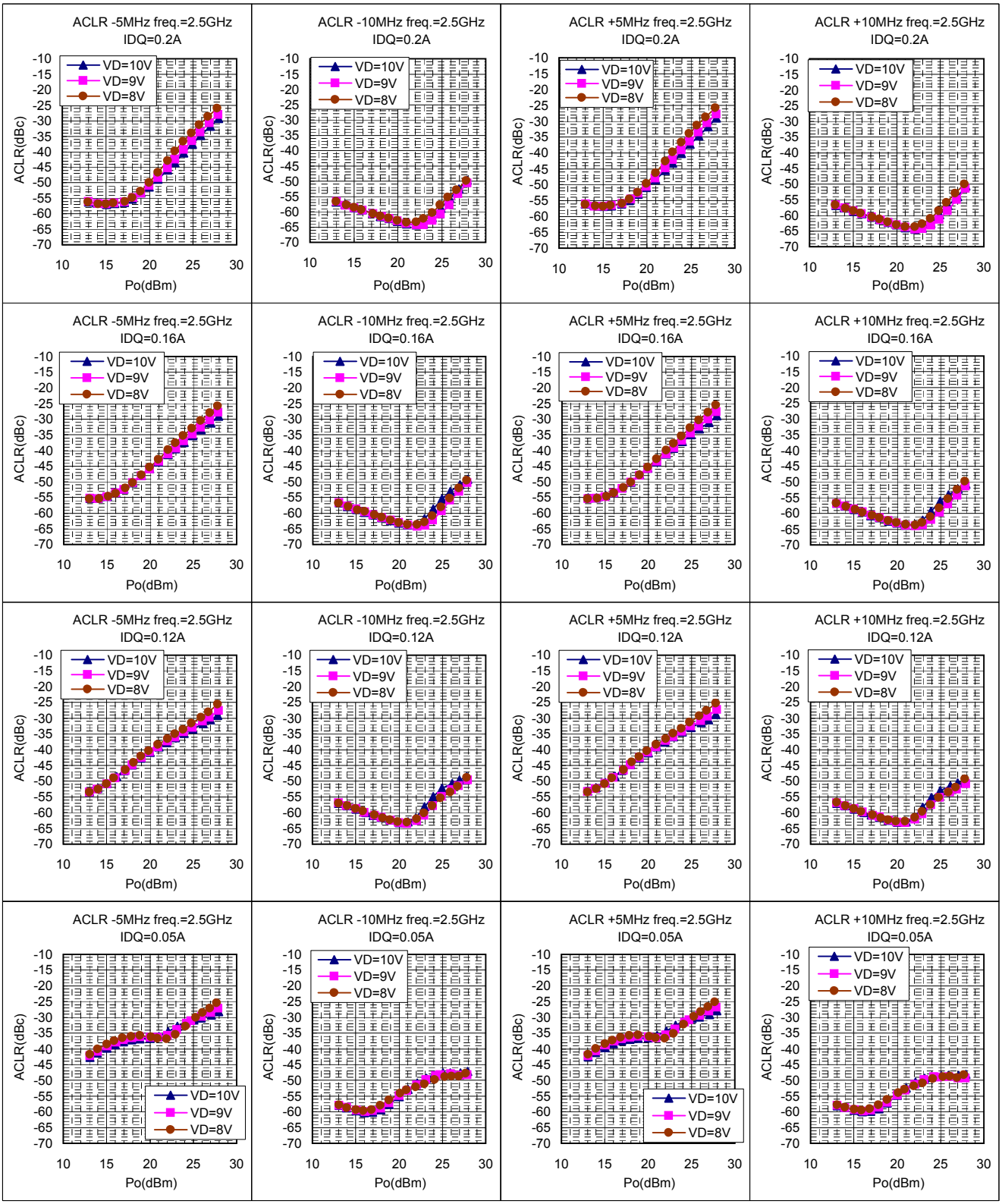
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal



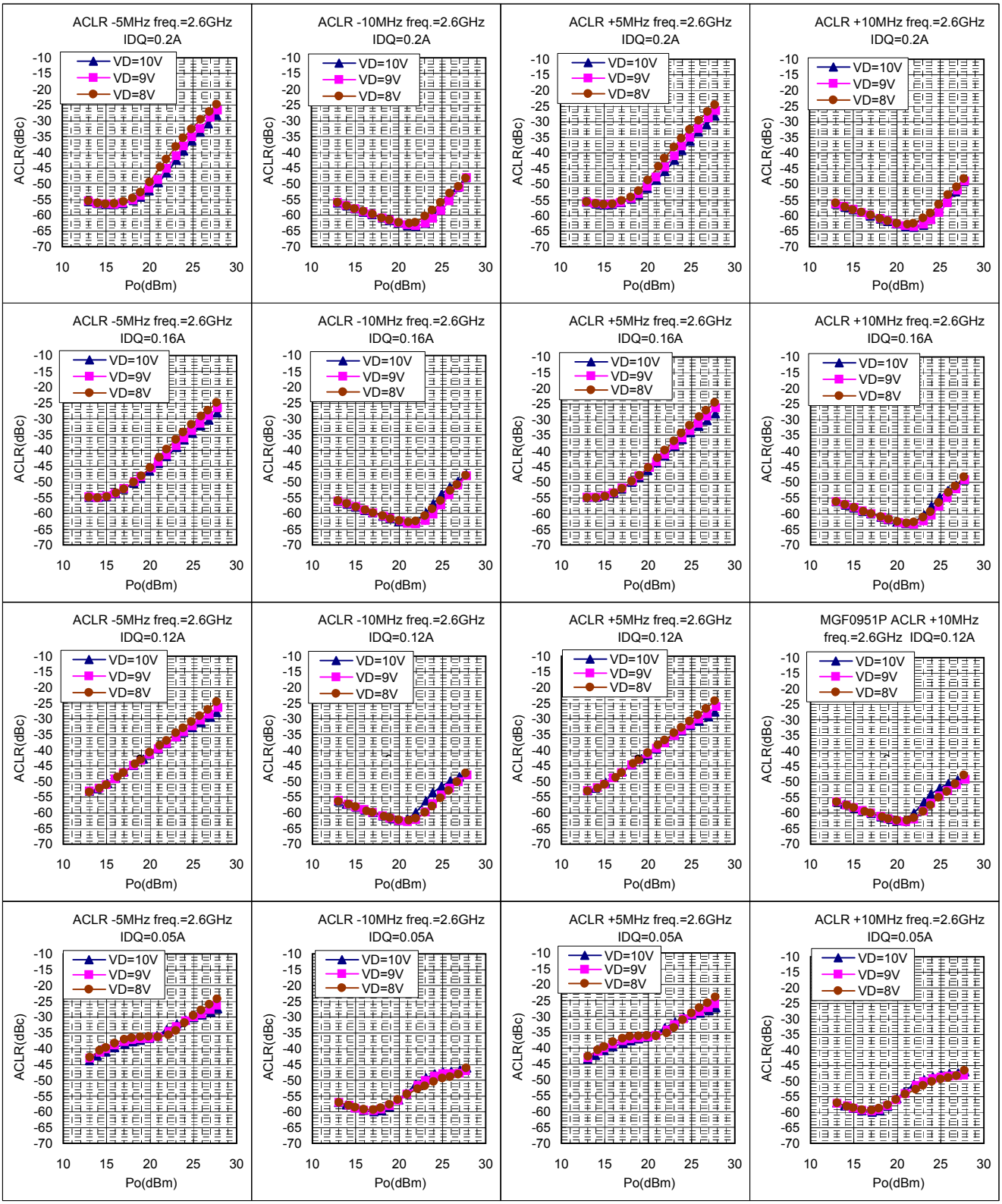
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal



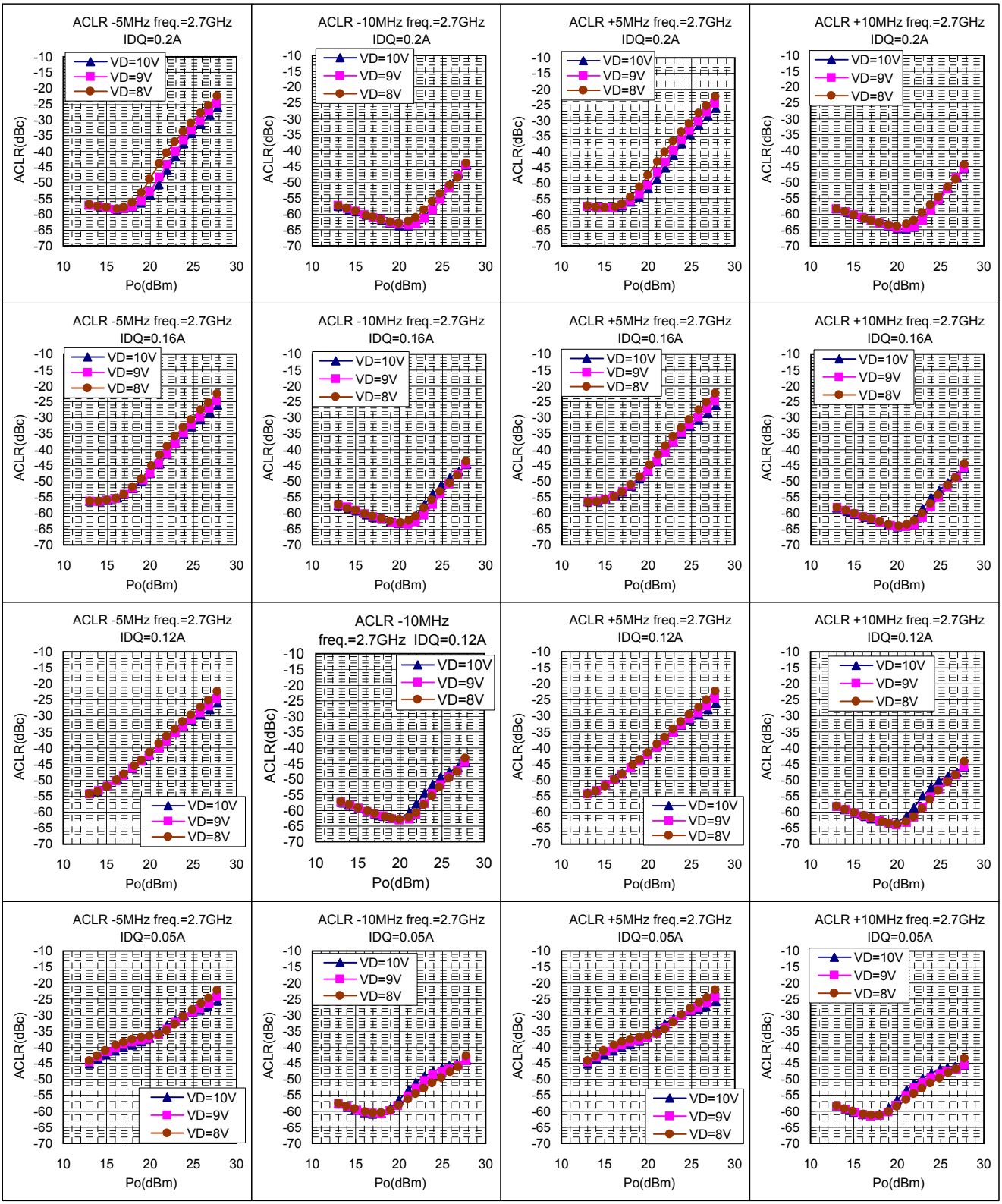
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal

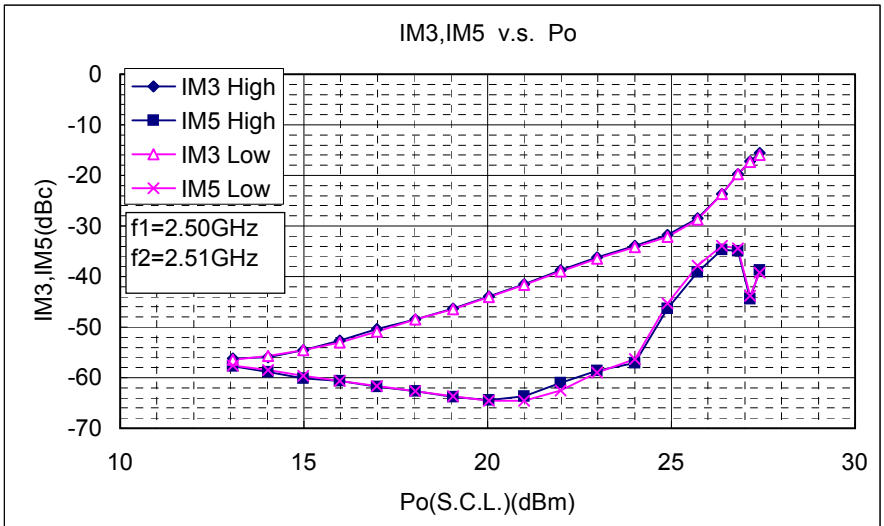


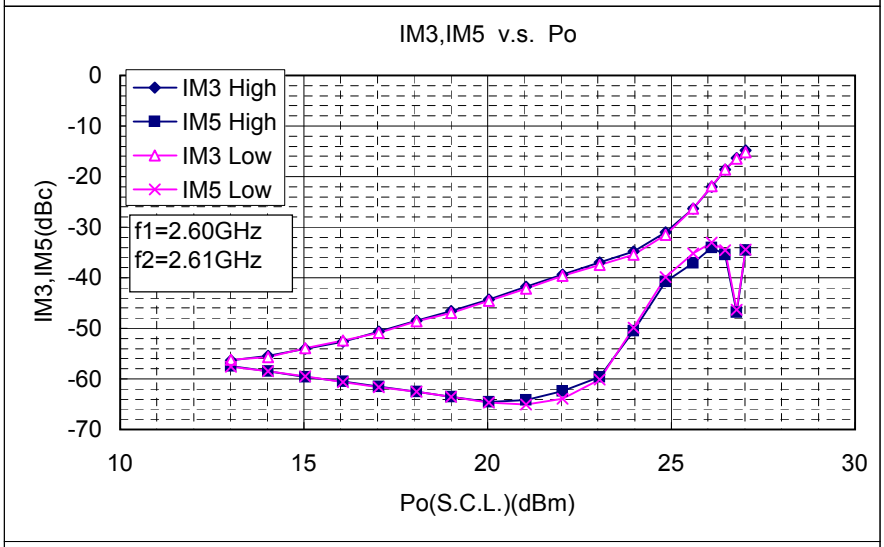
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal

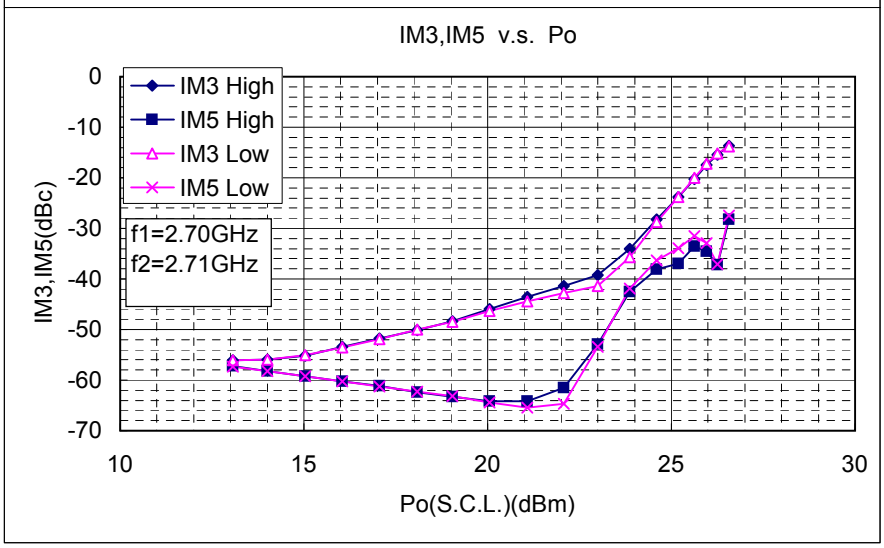


MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal

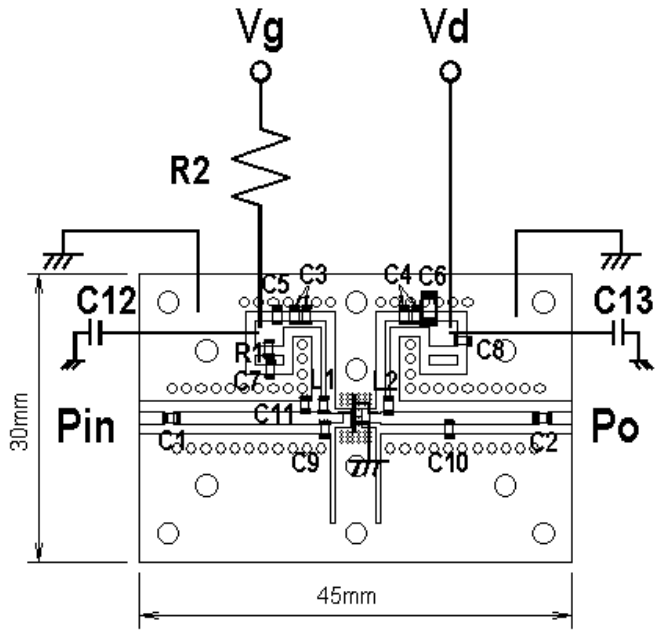



IM3,IM5 v.s. Po
IM3 High
IM5 High
IM3 Low
IM5 Low
f1=2.50GHz
f2=2.51GHz
IM3,IM5(dBc)
0
-10
-20
-30
-40
-50
-60
-70
10
15
20
25
30
Po(S.C.L.)(dBm)


IM3,IM5 v.s. Po
IM3 High
IM5 High
IM3 Low
IM5 Low
f1=2.60GHz
f2=2.61GHz
IM3,IM5(dBc)
0
-10
-20
-30
-40
-50
-60
-70
10
15
20
25
30
Po(S.C.L.)(dBm)


IM3,IM5 v.s. Po
IM3 High
IM5 High
IM3 Low
IM5 Low
f1=2.70GHz
f2=2.71GHz
IM3,IM5(dBc)
0
-10
-20
-30
-40
-50
-60
-70
10
15
20
25
30
Po(S.C.L.)(dBm)

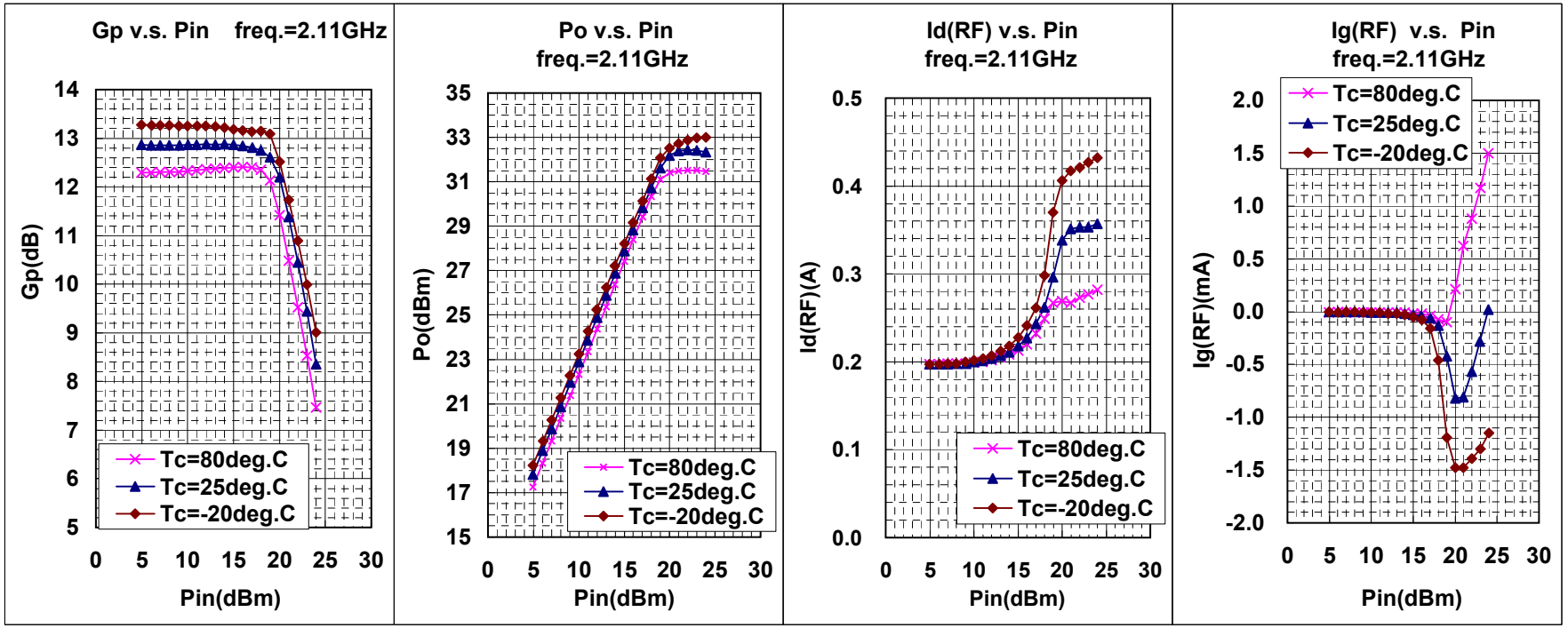
MGF0951P TEST FIXTURE f=2.6GHz



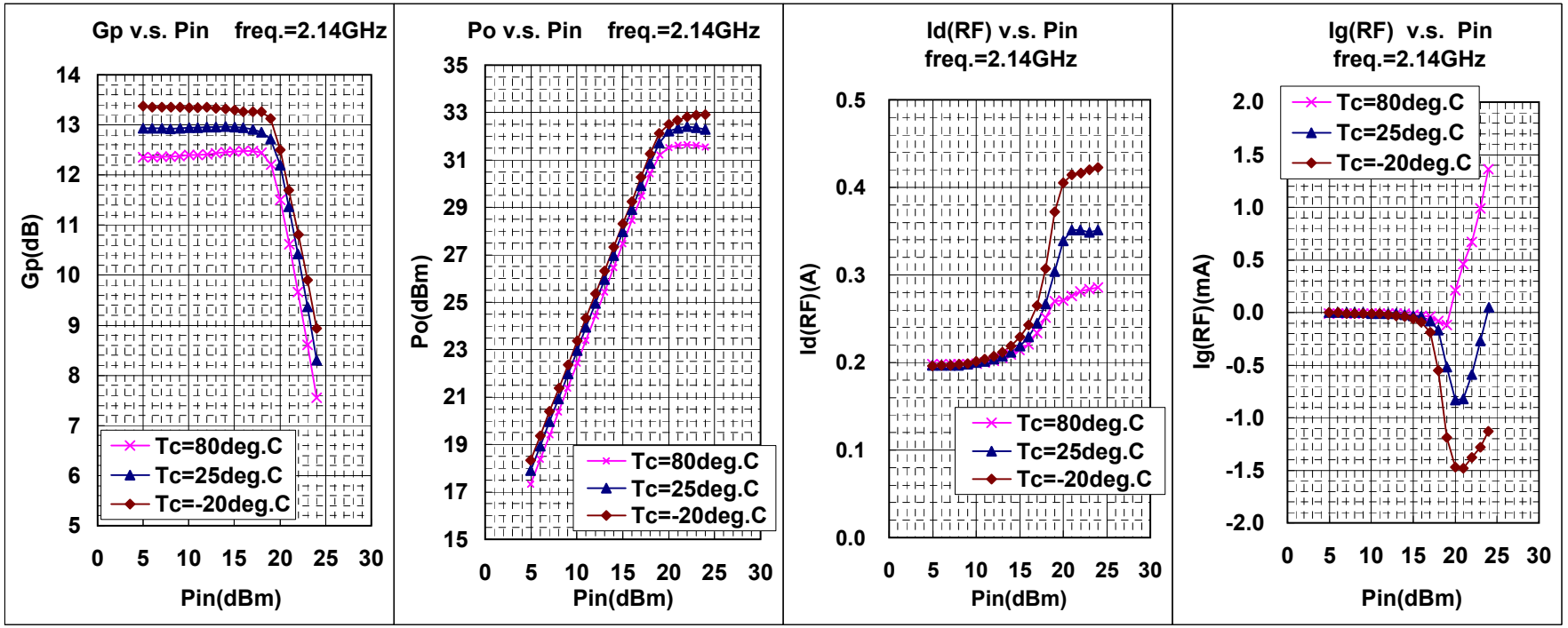
C1,C2,C3,C4=20pF
C5,C7,C8=1000pF
C9=2pF
C10=1pF
C12,C13=47uF
C11=0.5pF
C6=4.7uF
L1,L2=12nH
R1=51ohm
R2=500ohm

Board material:FR4 Thickness=0.8(mm)
Specific dielectric constant=4.4

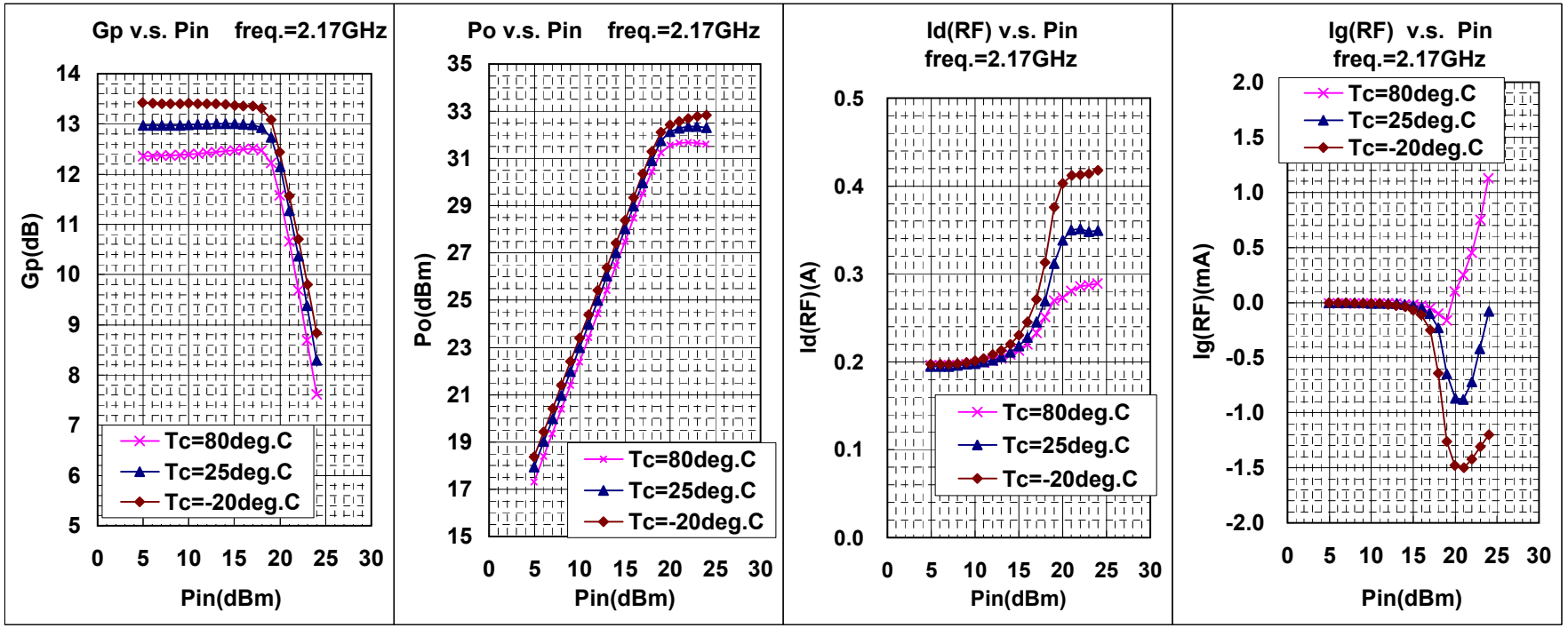
MGF0951P RF TEST DATA(CW) VD=10V,IDQ=0.2A
Gp,Po,Id(RF),Ig(RF) v.s. Pin



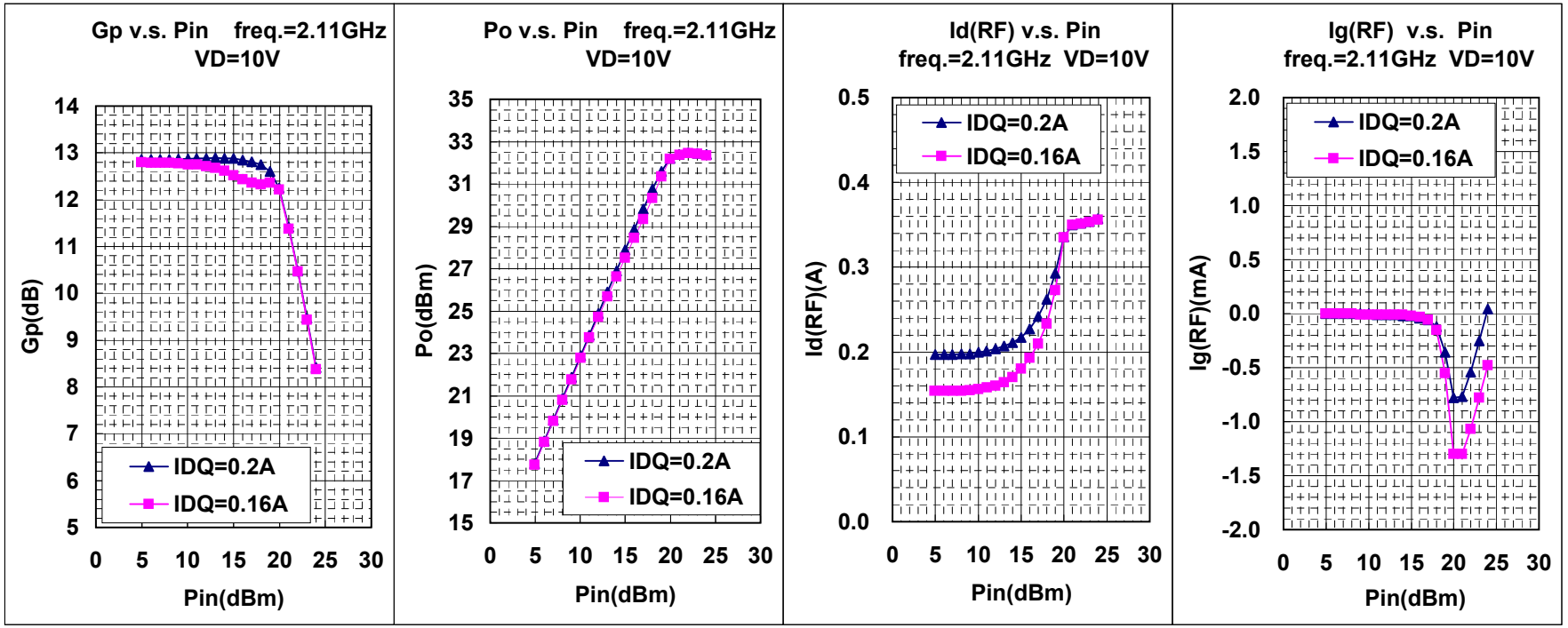
Gp,Po,Id(RF),Ig(RF) v.s. Pin



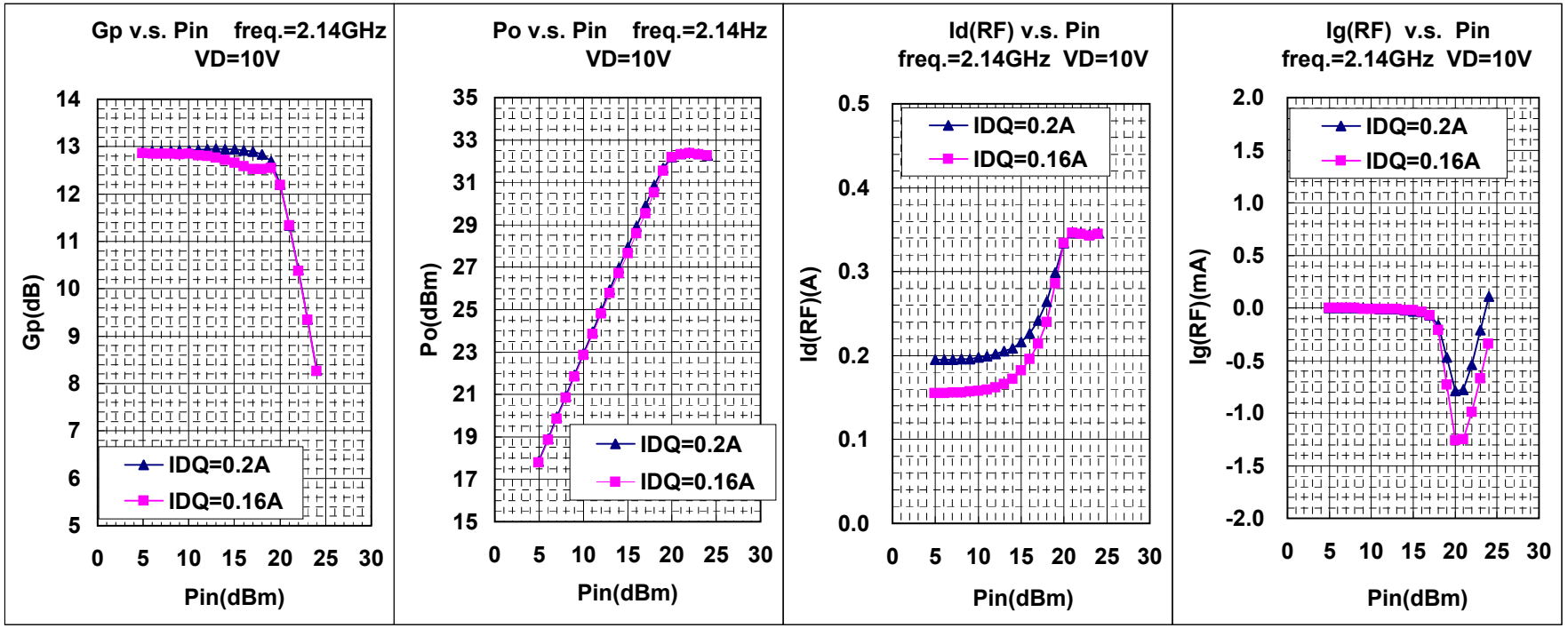
MGF0951P RF TEST DATA(CW) VD=10V,IDQ=0.2A
Gp,Po,Id(RF),Ig(RF) v.s. Pin



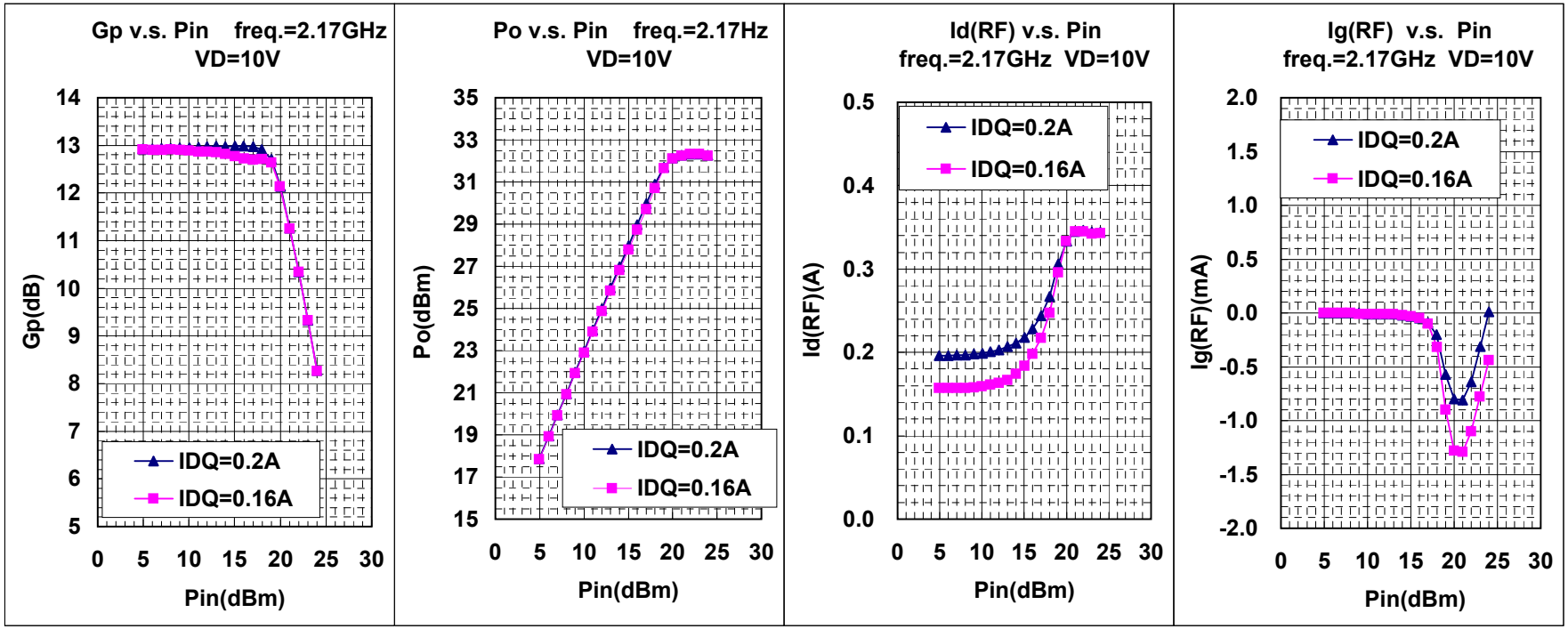
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



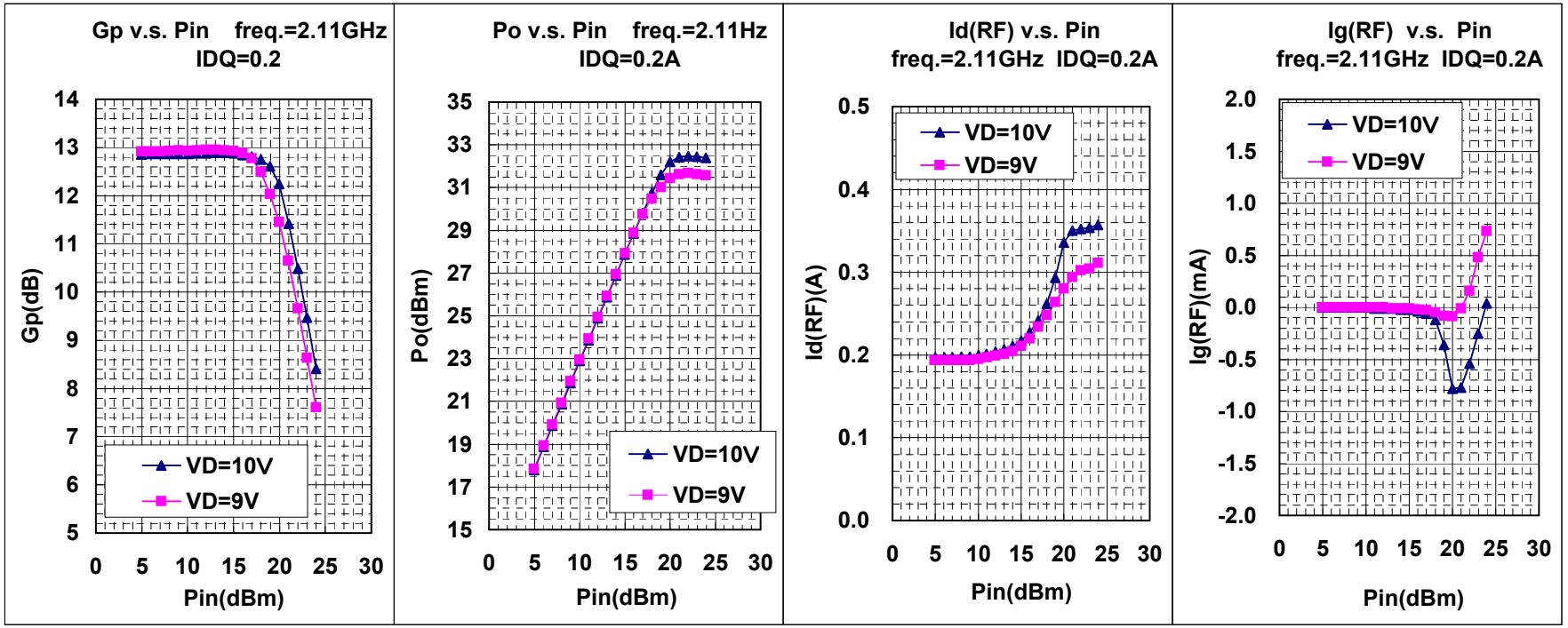
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



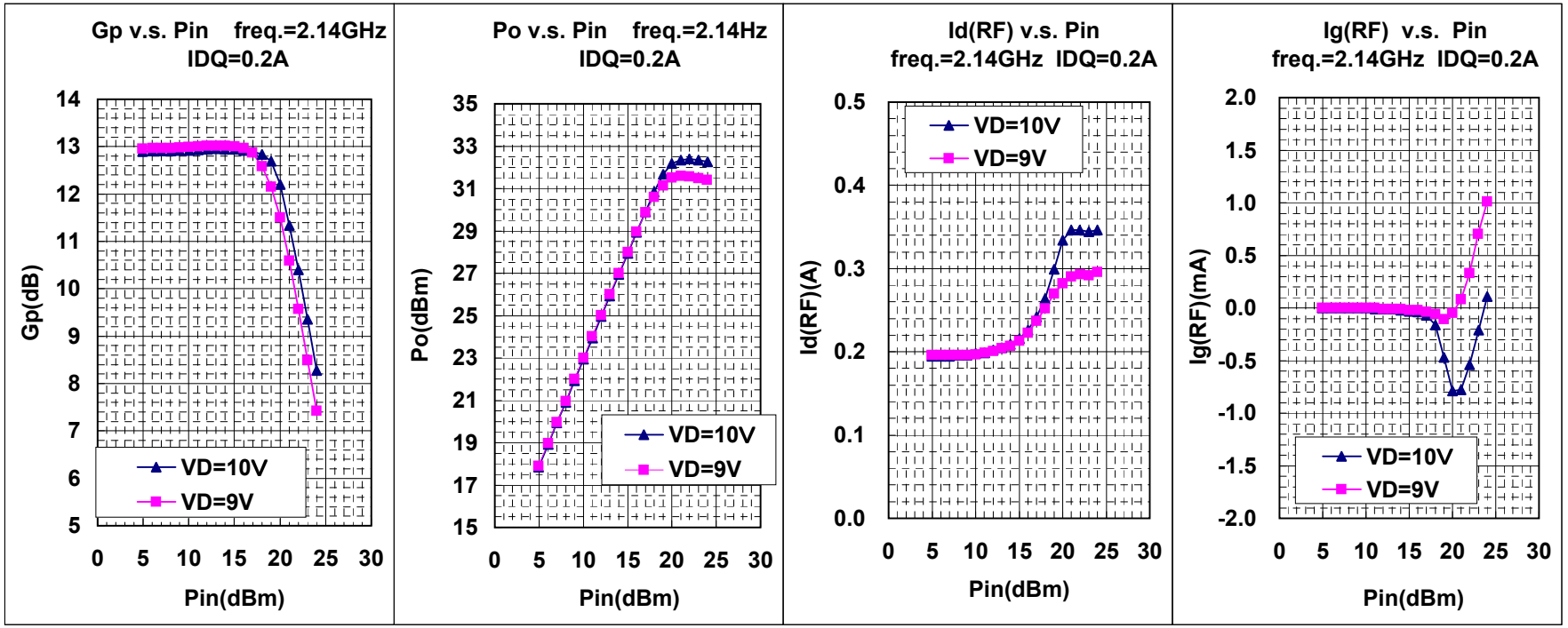
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin



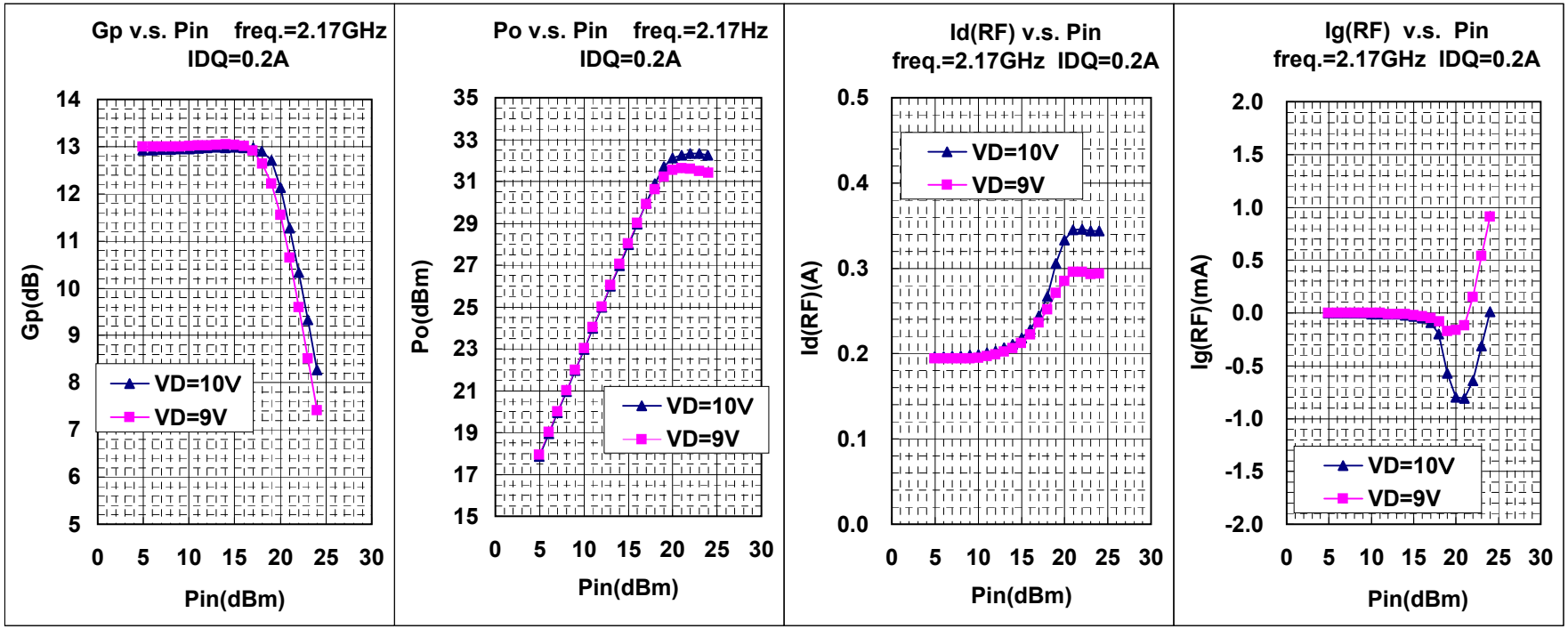
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin

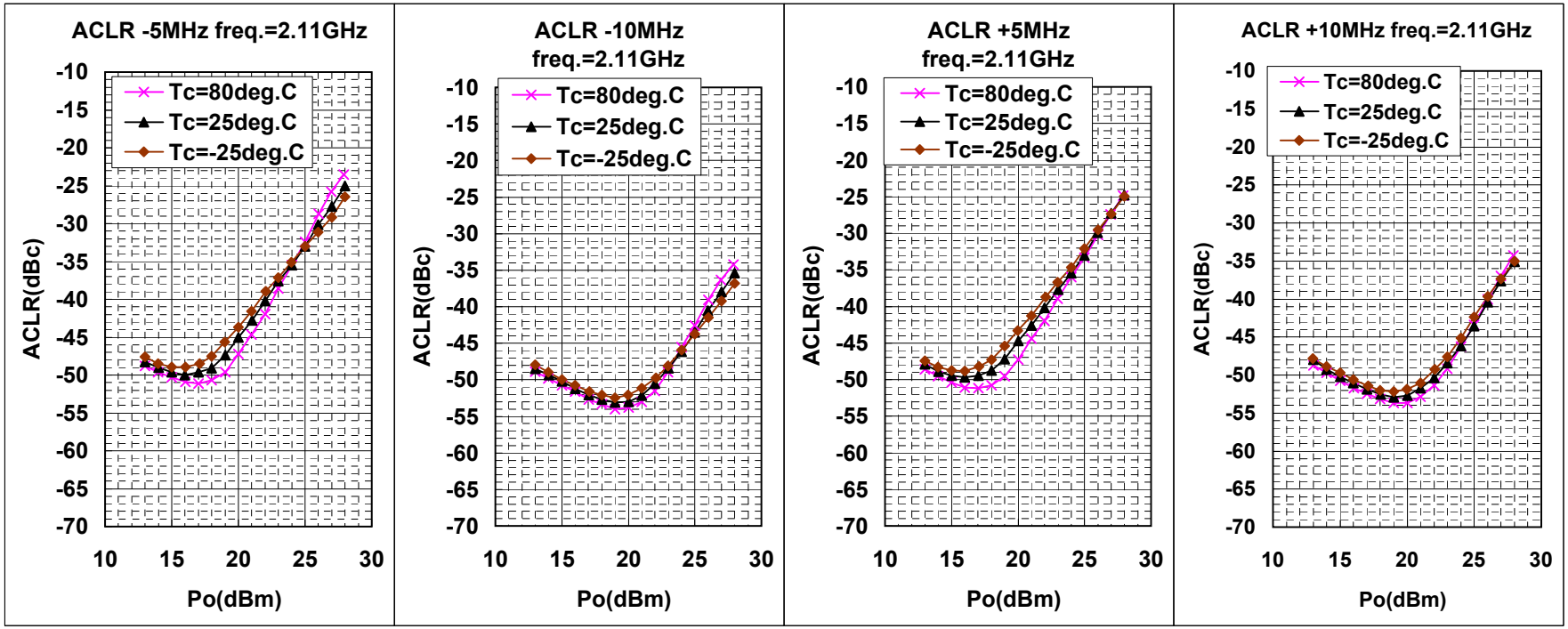


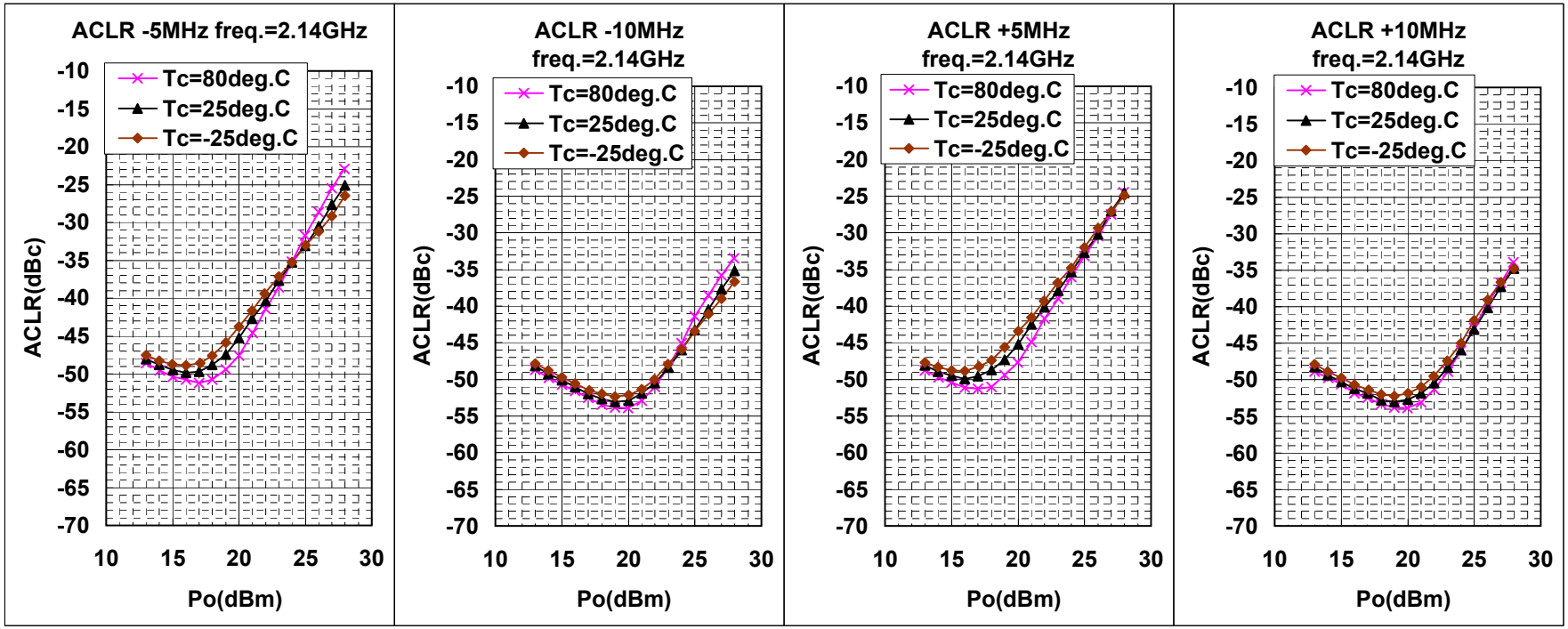
MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin

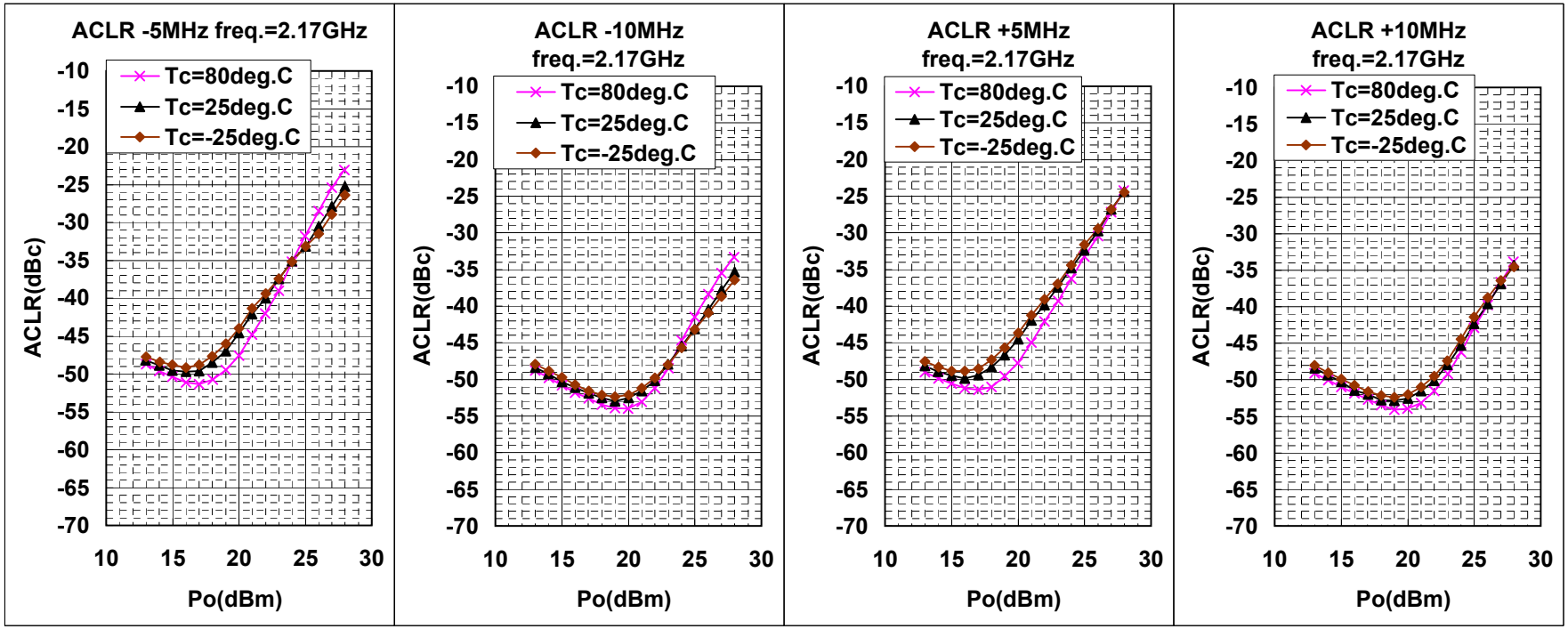


MGF0951P RF TEST DATA(CW)
Gp,Po,Id(RF),Ig(RF) v.s. Pin

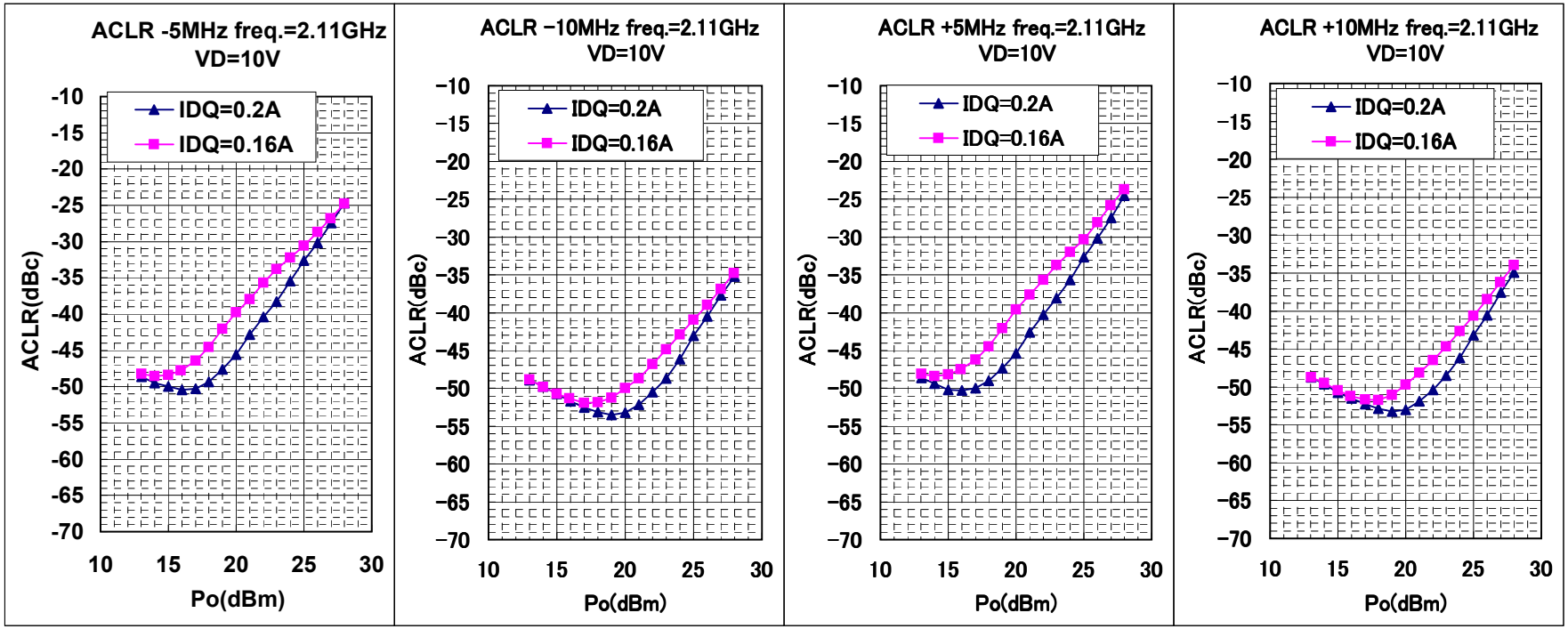


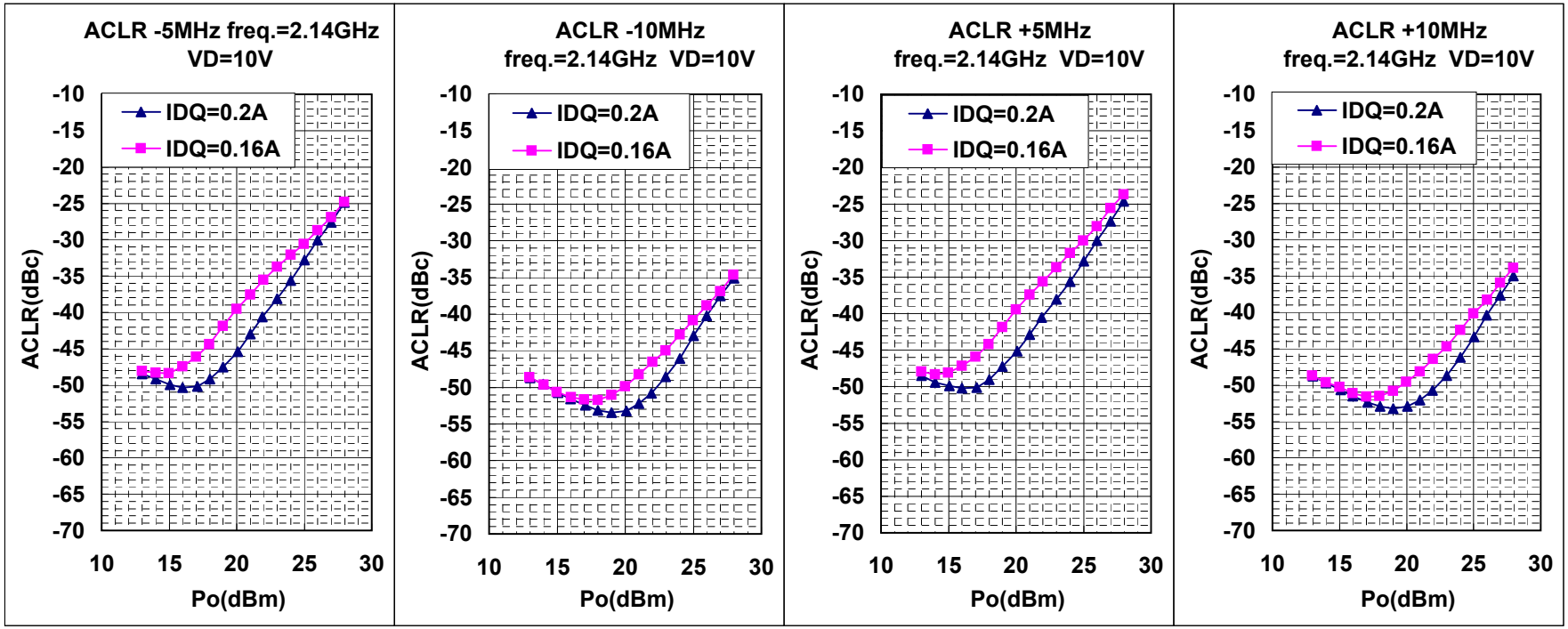

ACLR -5MHz freq.=2.11GHz
ACLR -10MHz freq.=2.11GHz
ACLR +5MHz freq.=2.11GHz
ACLR +10MHz freq.=2.11GHz
Tc=80deg.C
Tc=25deg.C
Tc=-25deg.C
ACLR(dBc)
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
10
15
20
25
30
Po(dBm)

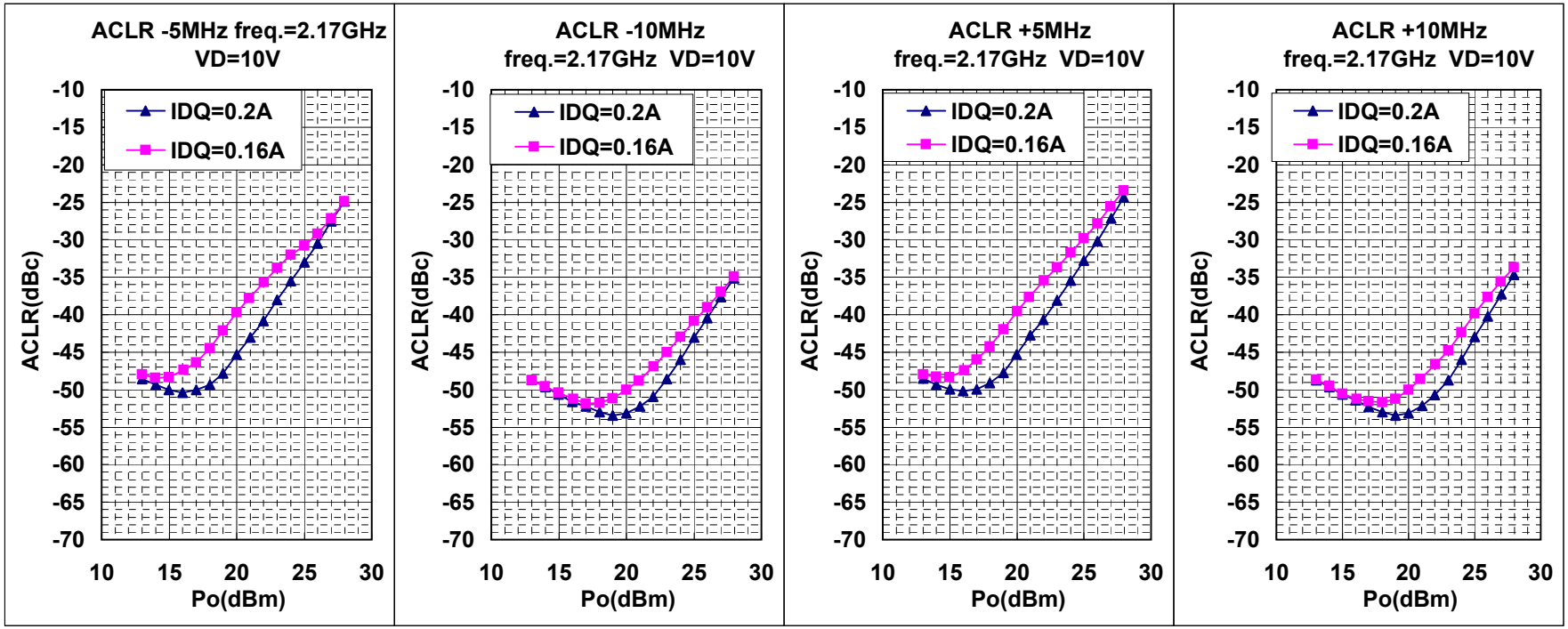

ACLR -5MHz freq.=2.14GHz
ACLR -10MHz freq.=2.14GHz
ACLR +5MHz freq.=2.14GHz
ACLR +10MHz freq.=2.14GHz
Tc=80deg.C
Tc=25deg.C
Tc=-25deg.C
ACLR(dBc)
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
10
15
20
25
30
Po(dBm)


ACLR -5MHz freq.=2.17GHz
ACLR -10MHz freq.=2.17GHz
ACLR +5MHz freq.=2.17GHz
ACLR +10MHz freq.=2.17GHz
Tc=80deg.C
Tc=25deg.C
Tc=-25deg.C
ACLR(dBc)
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
10
15
20
25
30
Po(dBm)

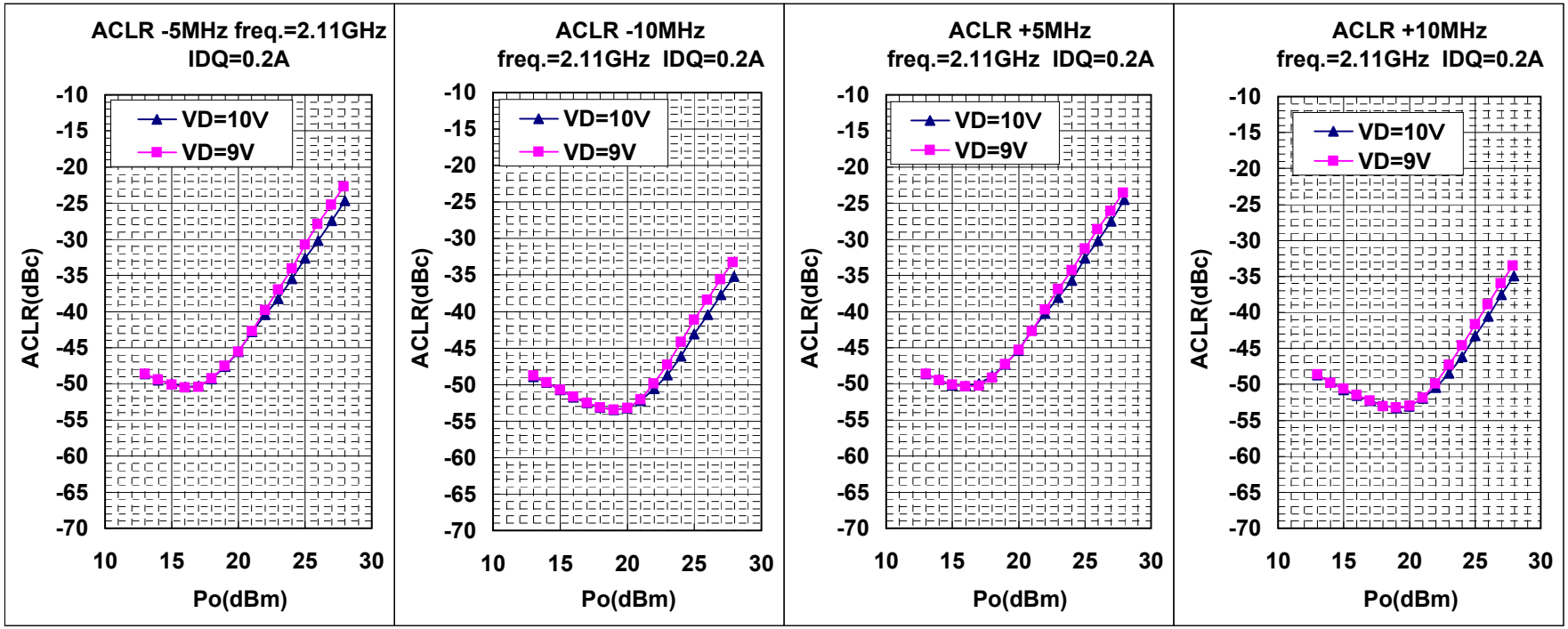
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal

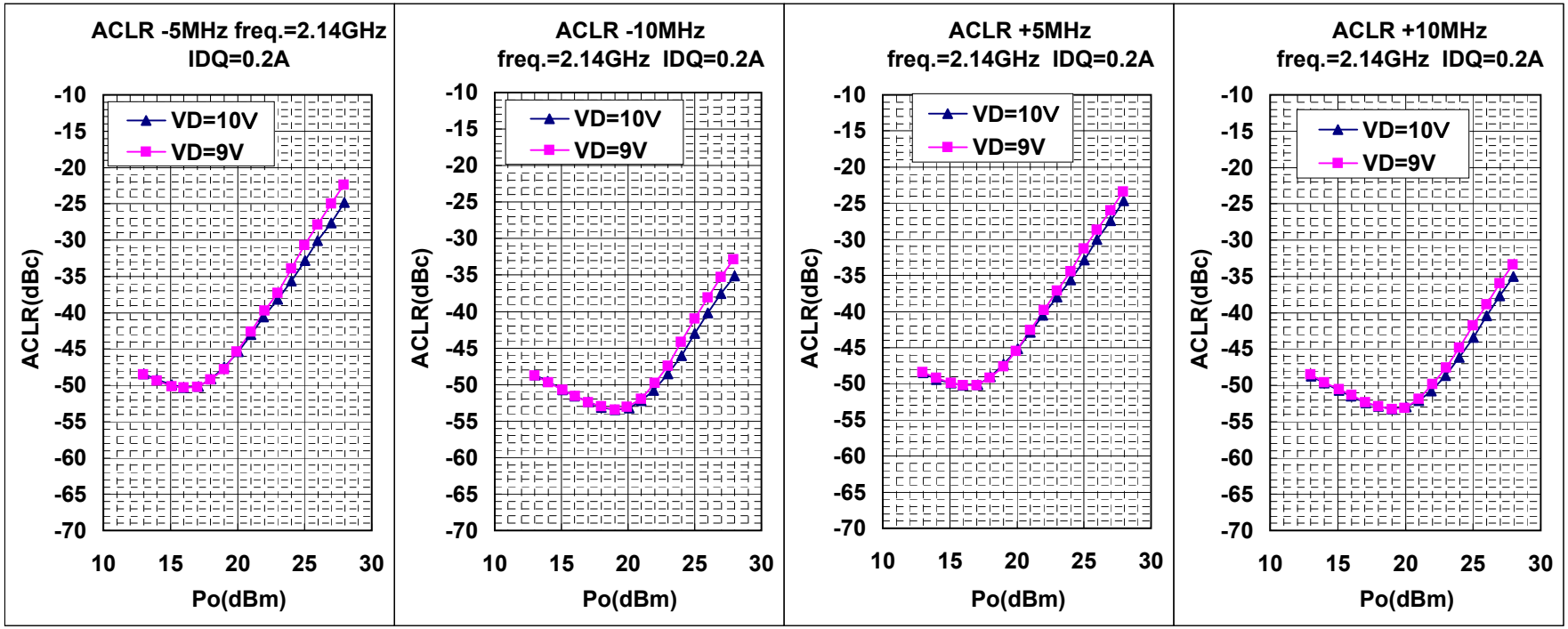



ACLR -5MHz freq.=2.14GHz
VD=10V
ACLR -10MHz
freq.=2.14GHz VD=10V
ACLR +5MHz
freq.=2.14GHz VD=10V
ACLR +10MHz
freq.=2.14GHz VD=10V
IDQ=0.2A
IDQ=0.16A
ACLR(dBc)
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
10
15
20
25
30
Po(dBm)

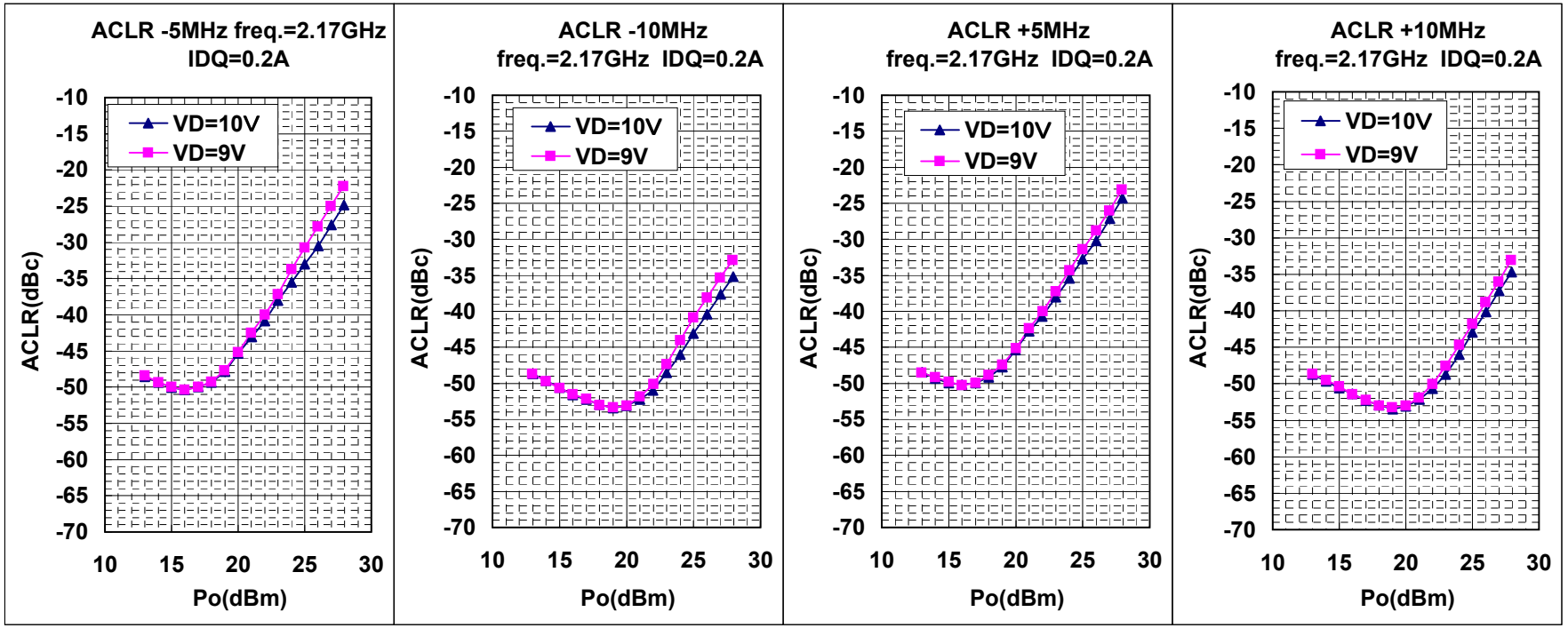

ACLR -5MHz freq.=2.17GHz
VD=10V
ACLR -10MHz
freq.=2.17GHz VD=10V
ACLR +5MHz
freq.=2.17GHz VD=10V
ACLR +10MHz
freq.=2.17GHz VD=10V
IDQ=0.2A
IDQ=0.16A
ACLR(dBc)
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
10
15
20
25
30
Po(dBm)

MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal

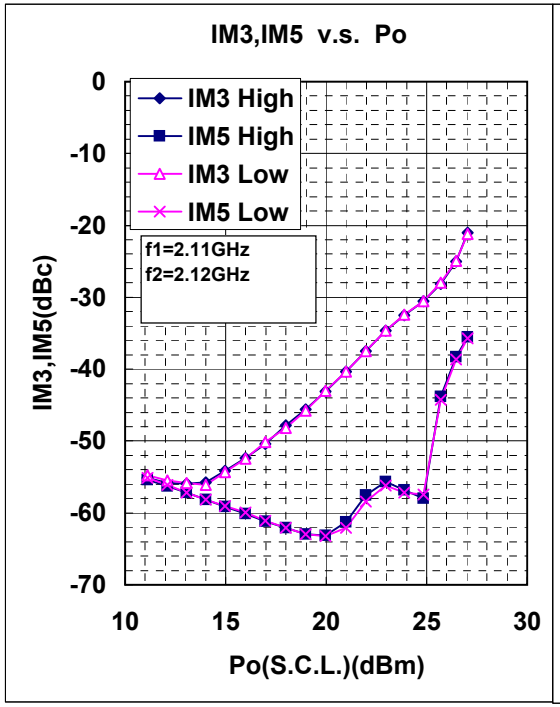


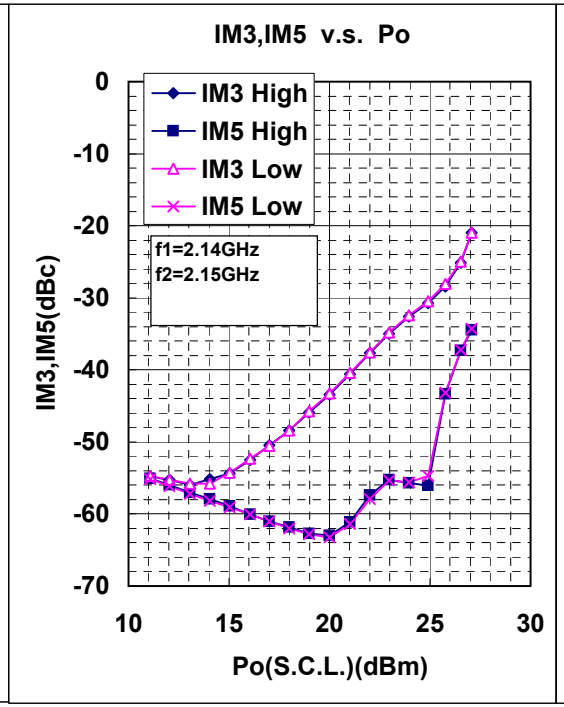

ACLR -5MHz freq.=2.14GHz
IDQ=0.2A
ACLR -10MHz
freq.=2.14GHz IDQ=0.2A
ACLR +5MHz
freq.=2.14GHz IDQ=0.2A
ACLR +10MHz
freq.=2.14GHz IDQ=0.2A
VD=10V
VD=9V
ACLR(dBc)
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
10
15
20
25
30
Po(dBm)

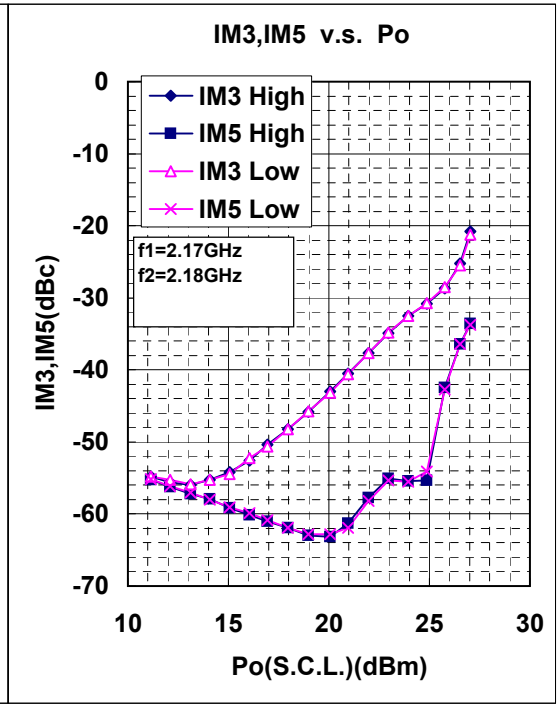
MGF0951P RF TEST DATA(W-CDMA)
ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal



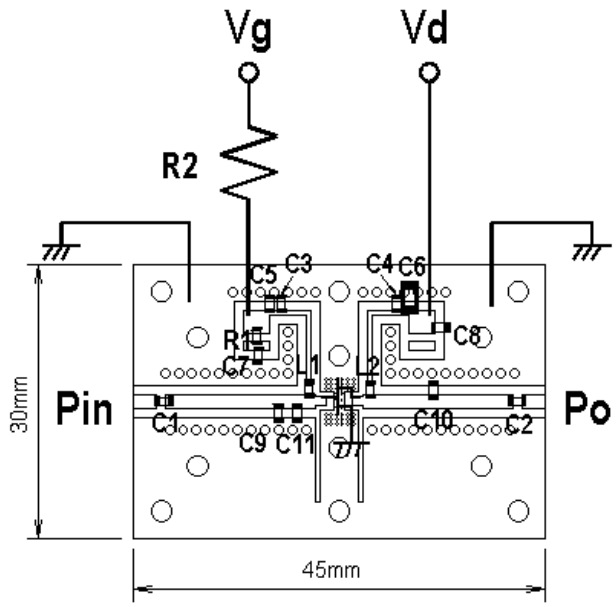
IM3,IM5 v.s. Pin







MGF0951P TEST FIXTURE f=2.11-2.17GHz



C1,C2,C3,C4=20pF
C5,C7,C8=1000pF
C9=2pF
C10=1pF
C11=0.5pF
C6=4.7uF
L1,L2=12nH
R1=51ohm
R2=500ohm

Board material:FR4 Thickness=0.8(mm)
Specific dielectric constant=4.4

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