

**L & S BAND GaAs FET [ SMD non – matched ]****DESCRIPTION**

The MGF0921A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

**FEATURES**

- High output power  
Po=33dBm(TYP.) @f=1.9GHz,Pin=17dBm
- High power gain  
Gp=17dB(TYP.) @f=1.9GHz
- High power added efficiency  
 $\eta_{add}$ =40%(TYP.) @f=1.9GHz,Pin=17dBm
- Hermetic Package

**APPLICATION**

- For UHF Band power amplifiers

**QUALITY**

- GG

**RECOMMENDED BIAS CONDITIONS**

- Vds=10V • Ids=500mA • Rg=200 $\Omega$

**Delivery** -01:Tape & Reel(1K), -03:Trai(50pcs)

**Absolute maximum ratings** (Ta=25°C)

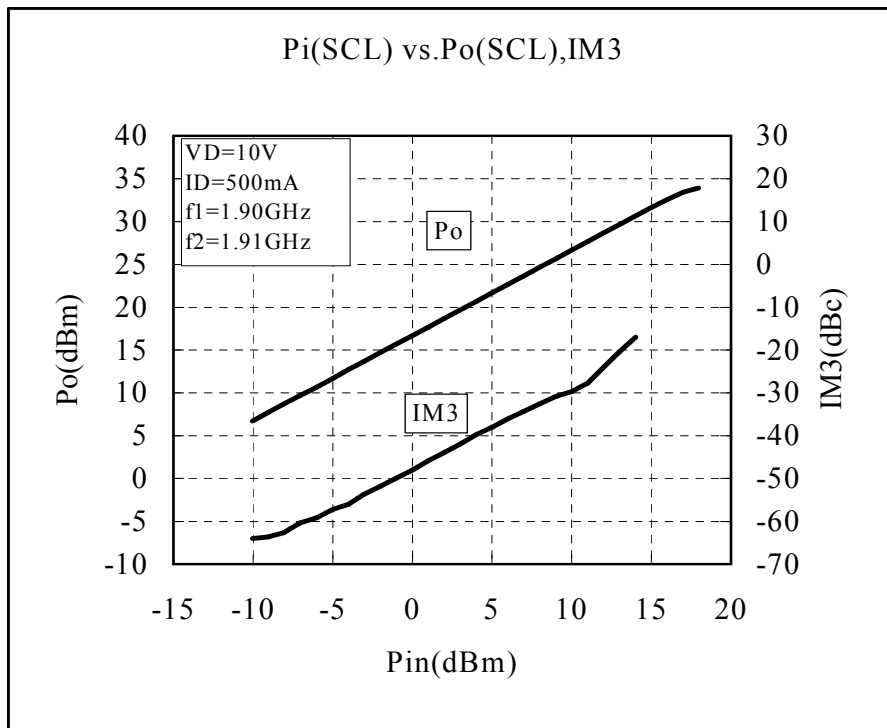
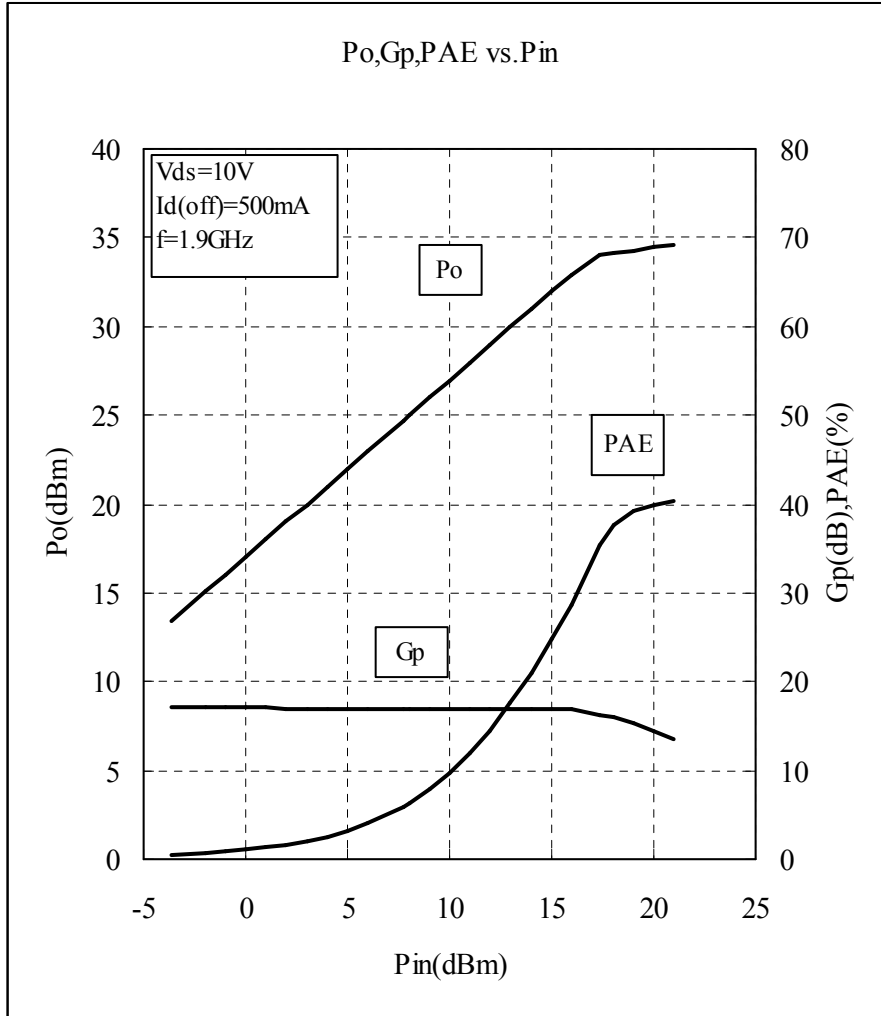
Symbol	Parameter	Ratings	Unit
VGSO	Gate to sourcebreakdown voltage	-15	V
VGDO	Gate to drain breakdown voltage	-15	V
ID	Drain current	1800	mA
IGR	Reverse gate current	-5.0	mA
IGF	Forward gate current	15	mA
PT	Total power dissipation	10	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

**Fig.1****Electrical characteristics** (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	--	1100	1800	mA
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=4.0mA	-1.0	-	-5.0	V
gm	Transconductance	VDS=3V,ID=500mA	-	370	-	mS
Po	Output power	VDS=10V,ID=500mA,f=1.9GHz	31	33	-	dBm
$\eta_{add}$	Power added Efficiency	Pin=17dBm	-	38	-	%
GLP	Linear Power Gain	VDS=10V,ID=500mA,f=1.9GHz	15	17	-	dB
Rth(ch-c)	Thermal Resistance *1	$\Delta$ Vf Method	-	11	15	°C/W

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

MGF0921A TYPICAL CHARACTERISTICS



**MGF0921A S PARAMETERS** (Ta=25°C,VD=10V,ID=500mA, Reference Plane see Fig.1)

freq. (MHz)	S11		S21		S12		S22		K	MAG/MSG (dB)
	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)		
600	0.928	-120.29	6.597	111.05	0.018	31.80	0.605	-172.68	0.29	25.64
1000	0.922	-144.64	4.629	94.88	0.022	22.95	0.619	-173.49	0.37	23.23
1400	0.919	-156.53	3.312	82.95	0.023	17.64	0.633	-173.69	0.46	21.58
1800	0.918	-162.98	2.465	73.91	0.023	14.81	0.646	-173.51	0.59	20.30
2200	0.918	-167.59	1.943	66.76	0.022	13.62	0.657	-173.14	0.78	19.46
2600	0.918	-171.55	1.638	60.71	0.021	13.45	0.666	-172.72	0.97	18.92
3000	0.918	-174.74	1.467	55.23	0.020	13.81	0.673	-172.38	1.14	16.41
3400	0.917	-176.80	1.369	49.96	0.021	14.36	0.679	-172.19	1.13	15.92
3800	0.915	-178.13	1.306	44.67	0.022	14.88	0.684	-172.23	1.12	15.64
4200	0.912	179.10	1.252	39.24	0.023	15.23	0.689	-172.51	1.13	15.19
4600	0.907	178.57	1.195	33.65	0.025	15.31	0.692	-173.04	1.11	14.81
5000	0.901	176.73	1.130	27.89	0.028	15.10	0.695	-173.79	1.07	14.40
5400	0.893	173.69	1.060	22.01	0.030	14.57	0.698	-174.72	1.16	13.09
5800	0.884	169.77	0.990	16.05	0.033	13.75	0.699	-175.77	1.23	11.91
6200	0.875	165.38	0.927	10.04	0.036	12.62	0.699	-176.86	1.31	10.79
6600	0.865	160.90	0.879	4.00	0.040	11.18	0.697	-177.90	1.35	9.89
7000	0.854	156.64	0.851	-2.11	0.044	9.40	0.691	-178.80	1.39	9.13
7400	0.843	152.74	0.848	-8.33	0.048	7.23	0.683	-179.47	1.40	8.72
7800	0.831	149.18	0.871	-14.76	0.054	4.59	0.670	-179.82	1.31	8.71
8200	0.817	145.73	0.917	-21.54	0.061	1.36	0.652	179.47	1.22	8.93
8600	0.800	142.03	0.981	-28.84	0.070	-2.57	0.630	178.51	1.12	9.39
9000	0.778	137.54	1.056	-36.86	0.082	-7.38	0.602	177.26	1.03	10.07
9400	0.750	131.70	1.132	-45.79	0.095	-13.23	0.571	175.75	1.00	10.76
9800	0.711	123.95	1.201	-55.85	0.112	-20.32	0.536	173.84	1.01	9.78
10200	0.671	113.89	1.253	-67.22	0.132	-28.83	0.502	171.52	1.01	9.09
10600	0.636	101.36	1.285	-80.02	0.154	-38.94	0.470	169.20	1.01	8.57
11000	0.623	86.68	1.295	-94.34	0.179	-50.78	0.447	167.97	0.96	8.59
11400	0.643	70.74	1.293	-110.12	0.205	-64.45	0.369	169.96	0.95	8.00
11800	0.699	55.29	1.297	-127.21	0.231	-79.99	0.293	178.54	0.90	7.49
12200	0.778	43.12	1.342	-145.25	0.256	-97.34	0.281	-154.64	0.84	7.20

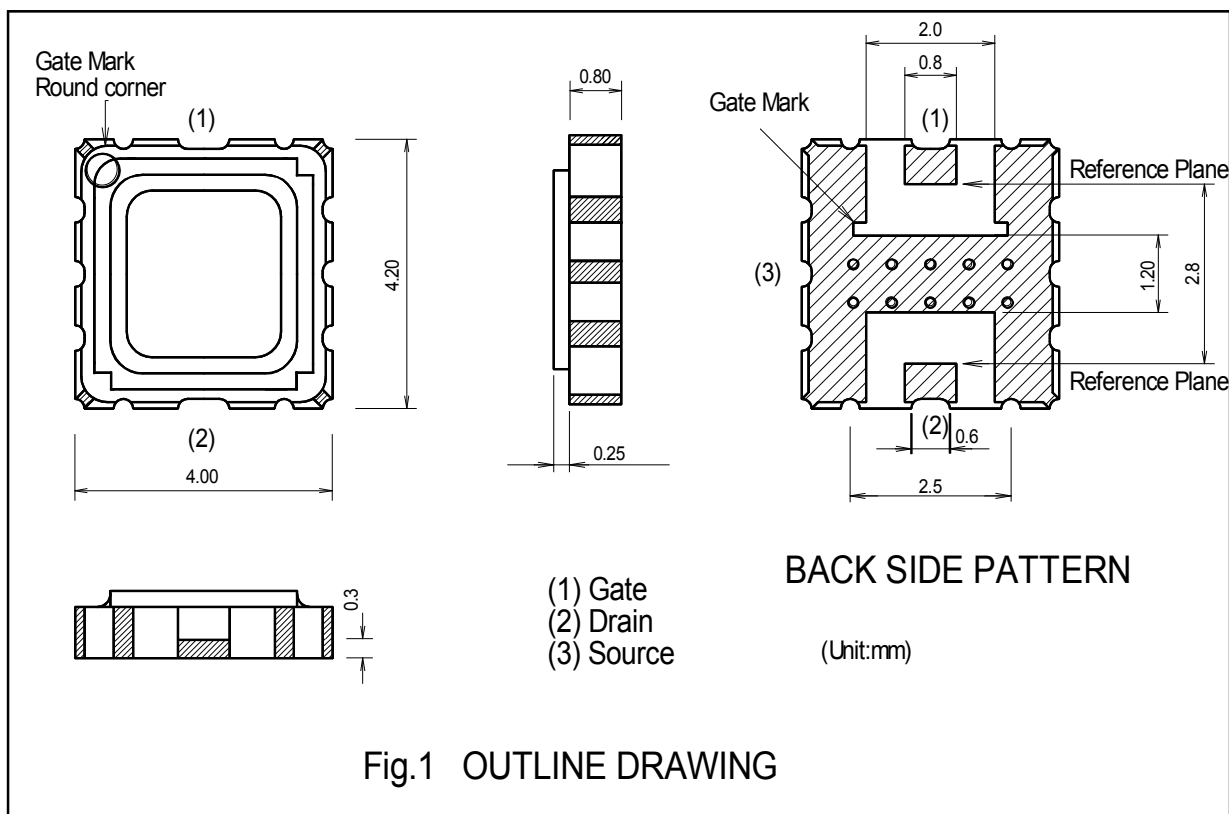
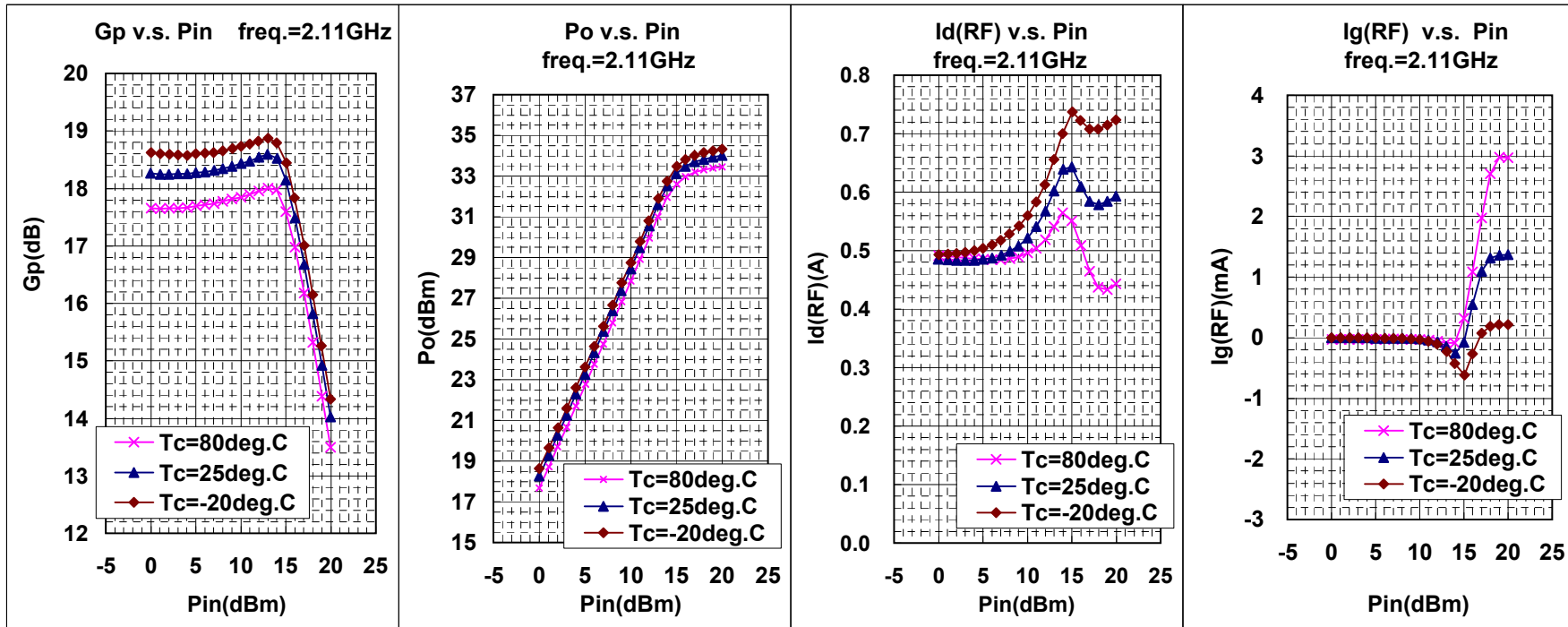
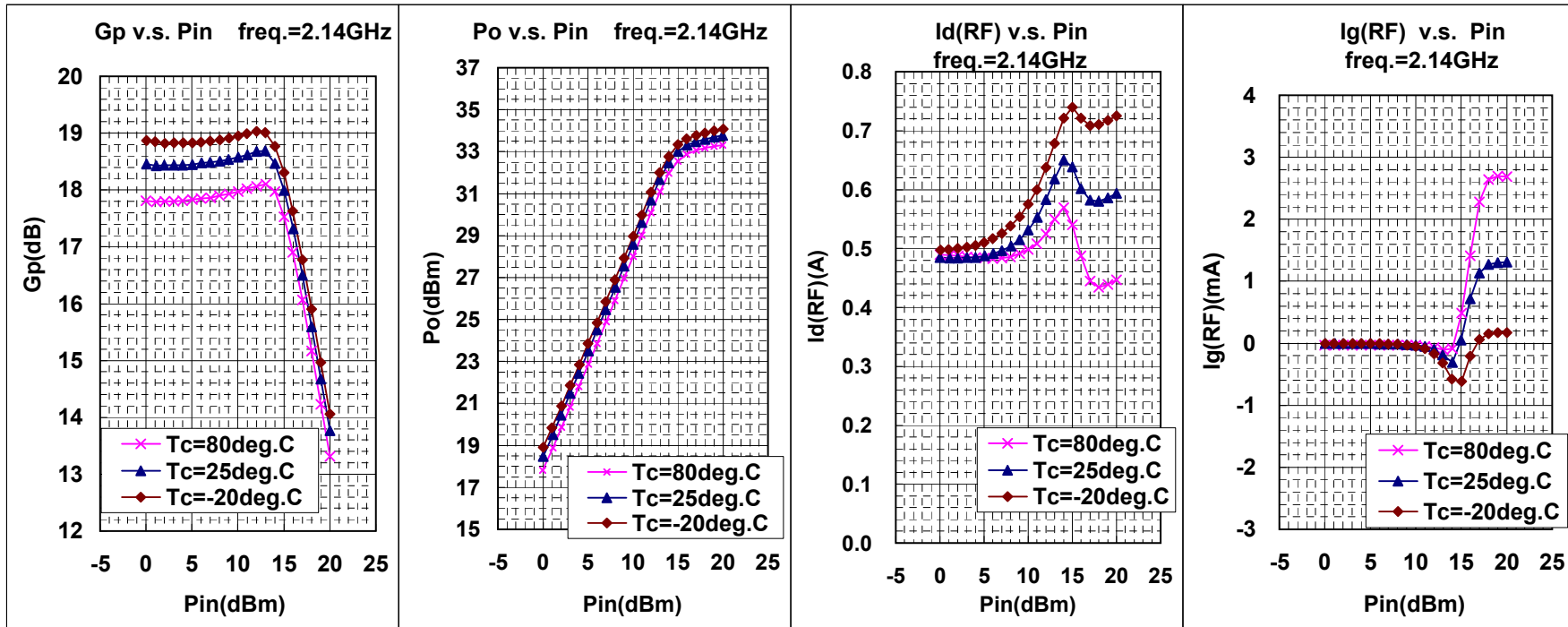


Fig.1 OUTLINE DRAWING

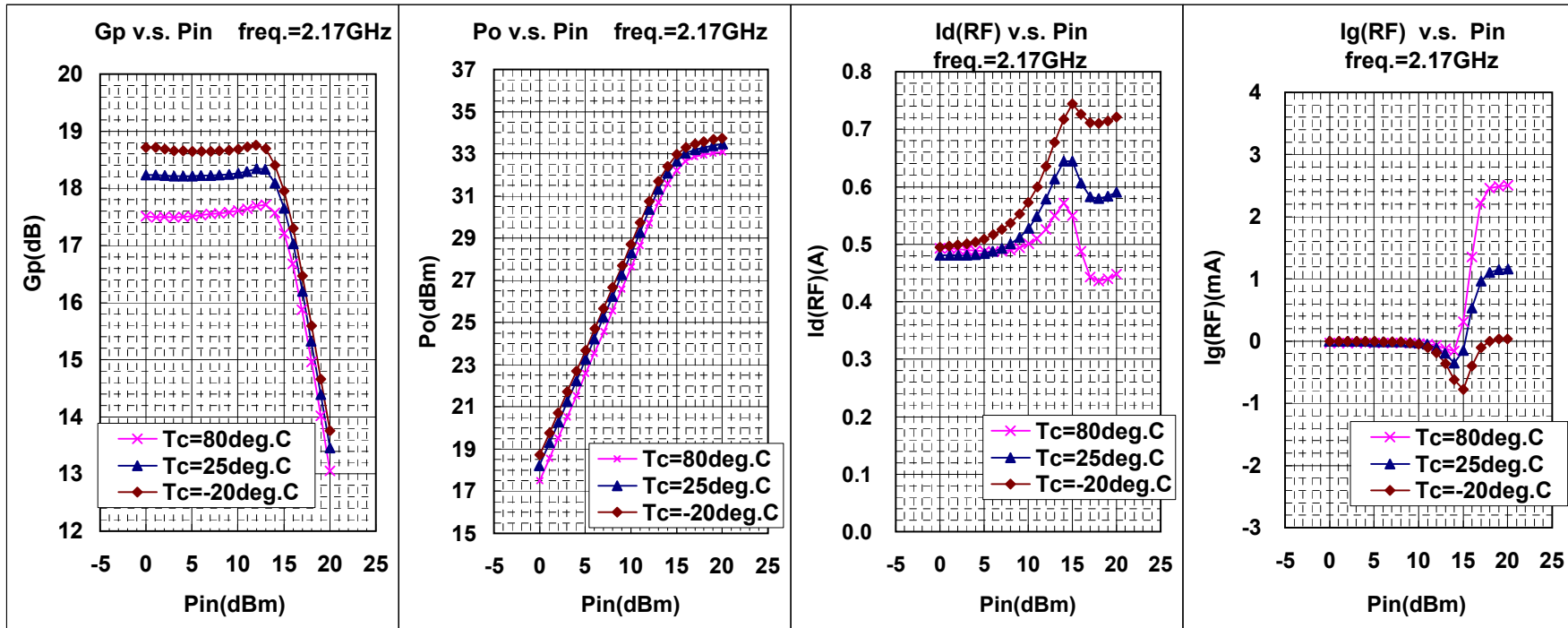
MGF0921A RF TEST DATA(CW) VD=10V, IDQ=0.5A  
 Gp, Po, Id(RF), Ig(RF) v.s. Pin



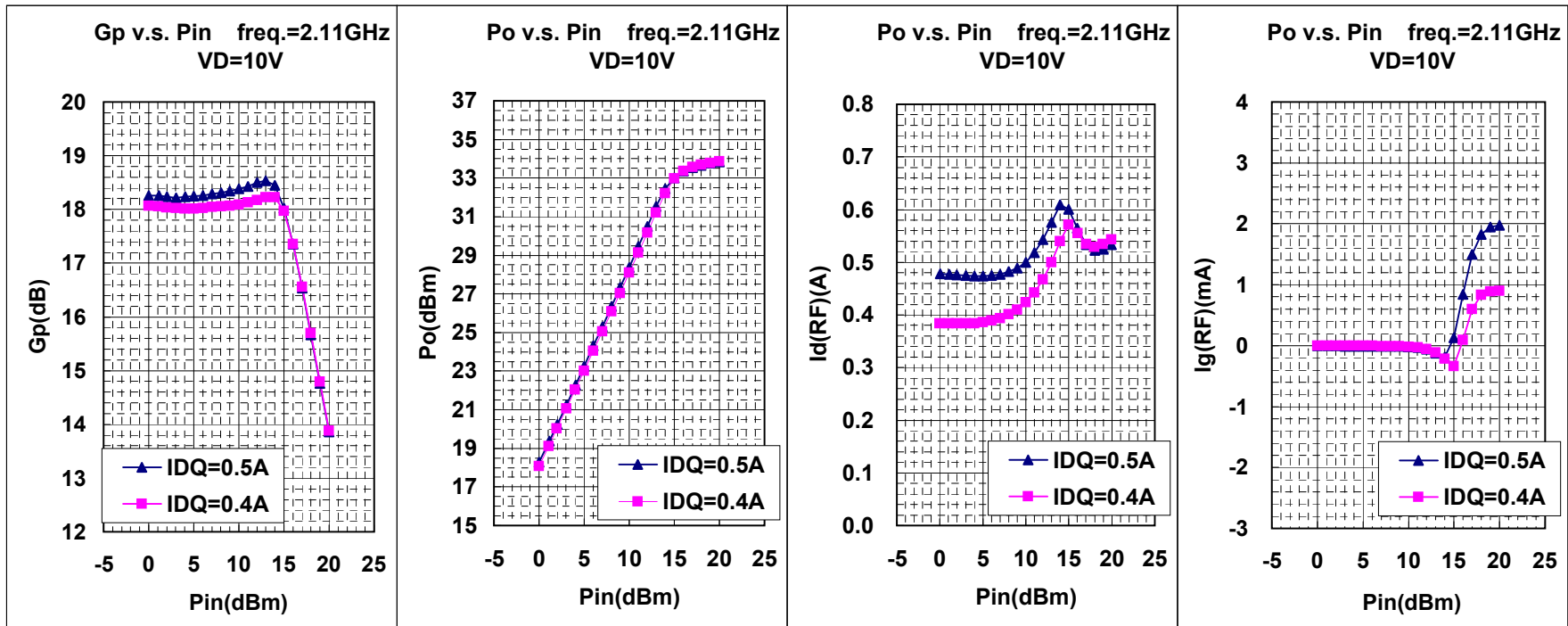
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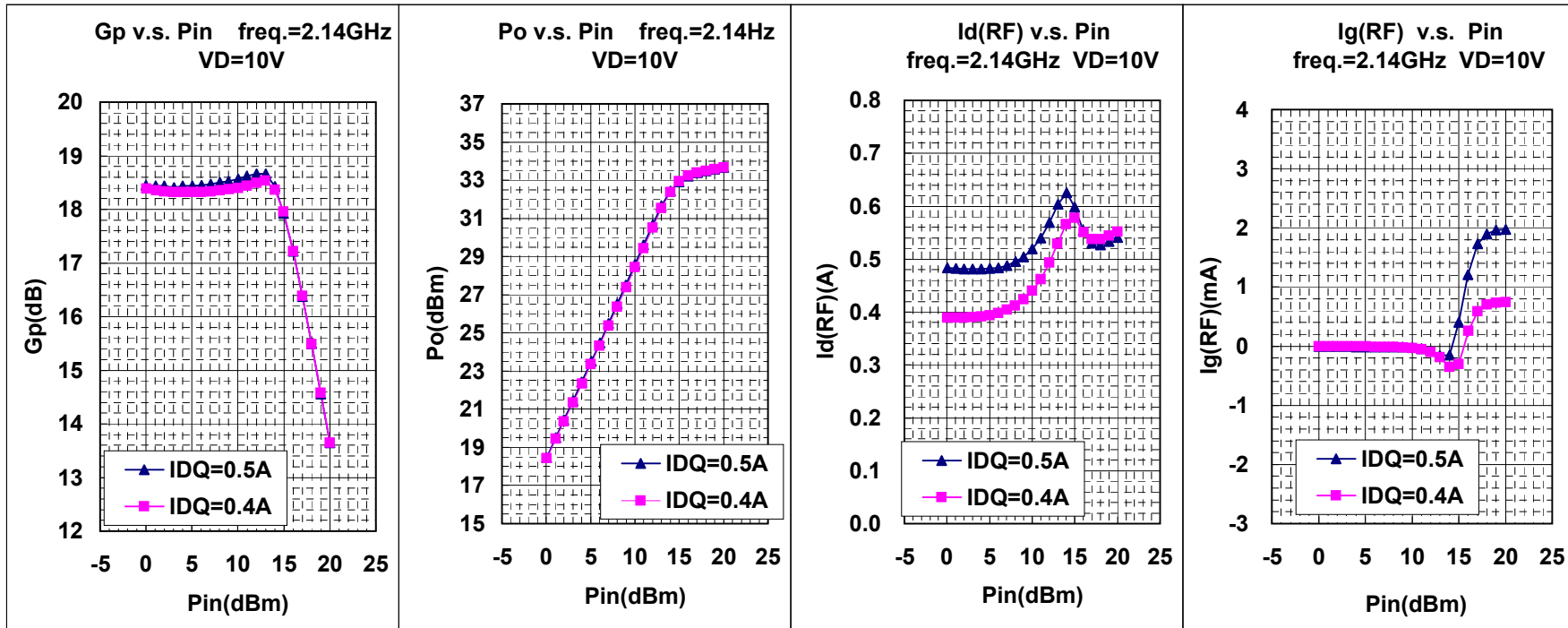
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**MGF0921A RF TEST DATA(CW)**  
**Gp,Po,Id(RF),Ig(RF) v.s. Pin**

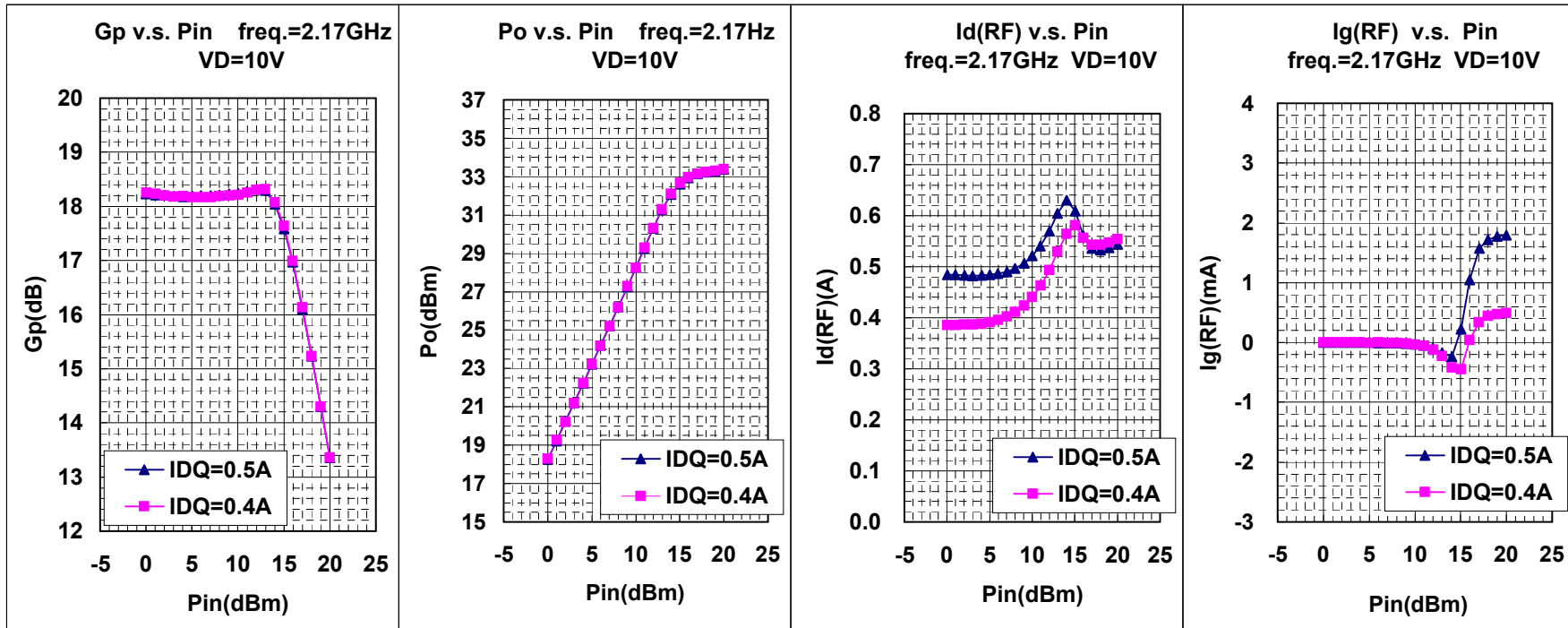


**MGF0921A RF TEST DATA(CW)**  
**Gp,Po,Id(RF),Ig(RF) v.s. Pin**



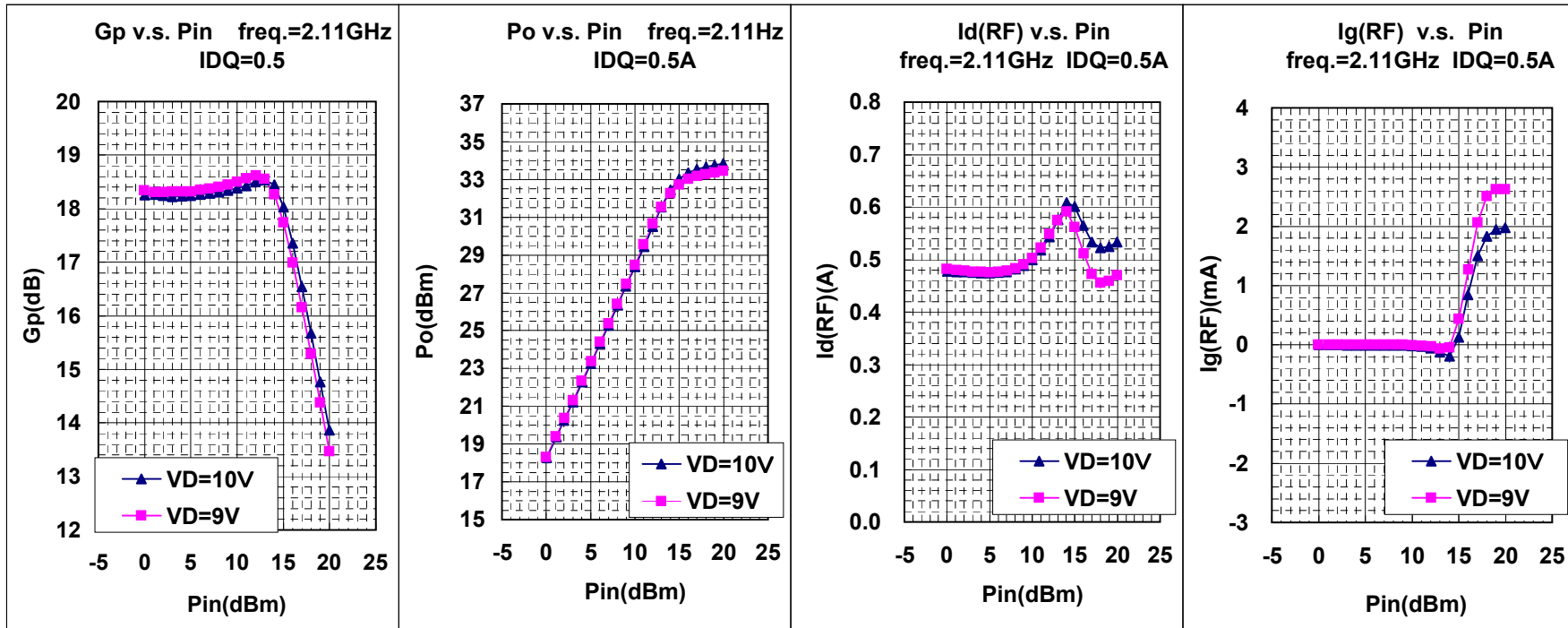


**MGF0921A RF TEST DATA(CW)**  
**Gp,Po,Id(RF),Ig(RF) v.s. Pin**

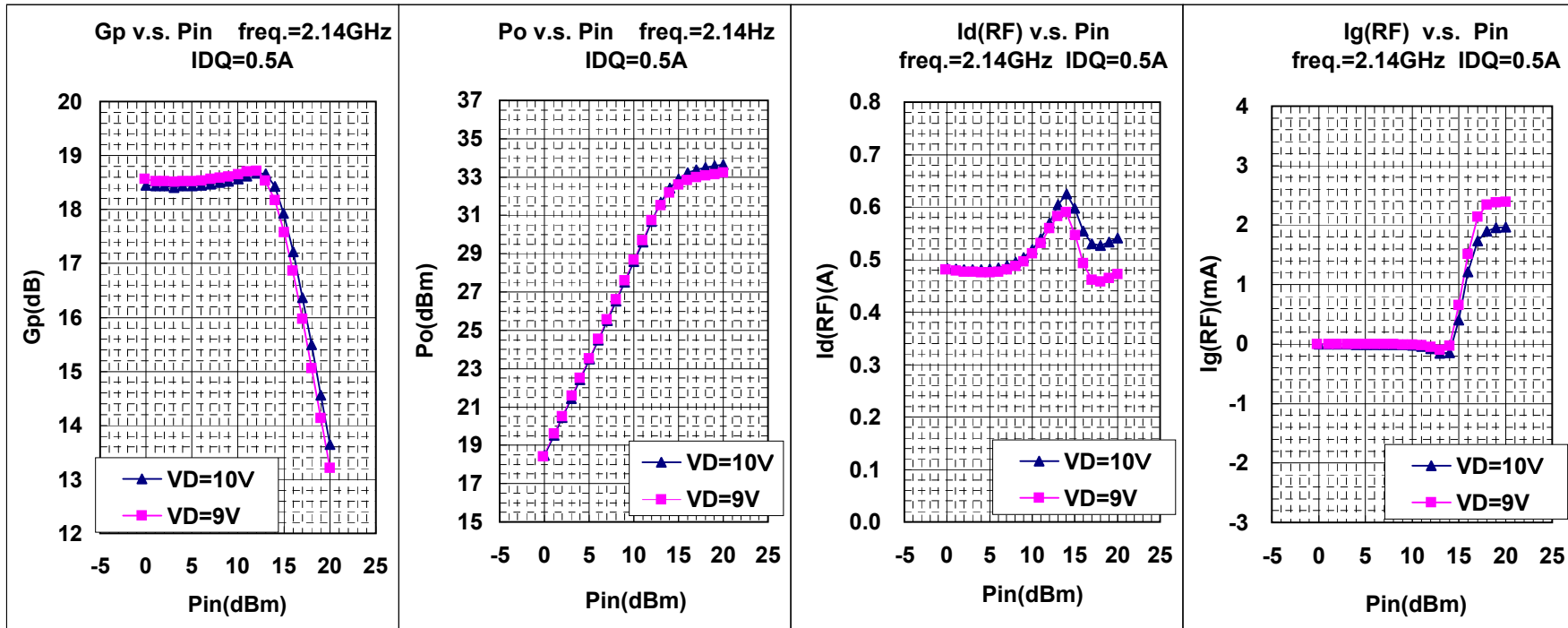


MGF0921A RF TEST DATA(CW)

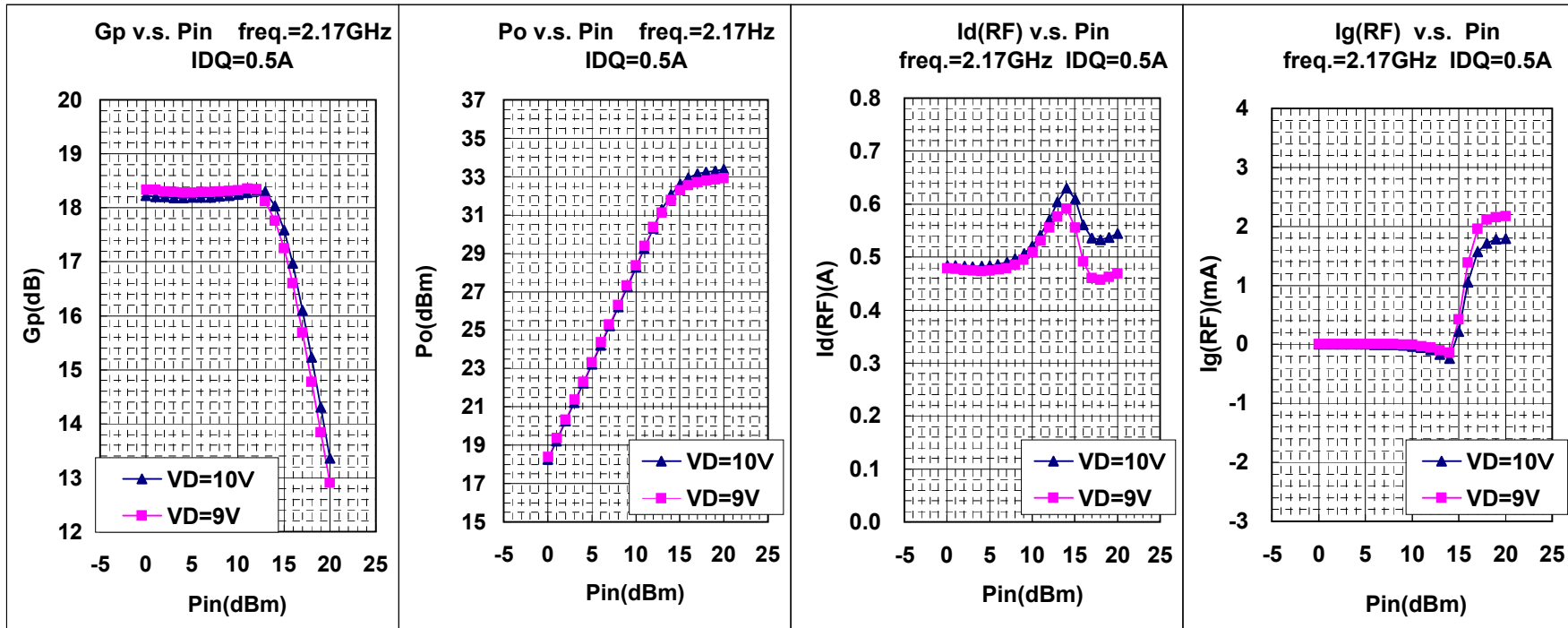
Gp,Po,Id(RF),I<sub>g</sub>(RF) v.s. Pin



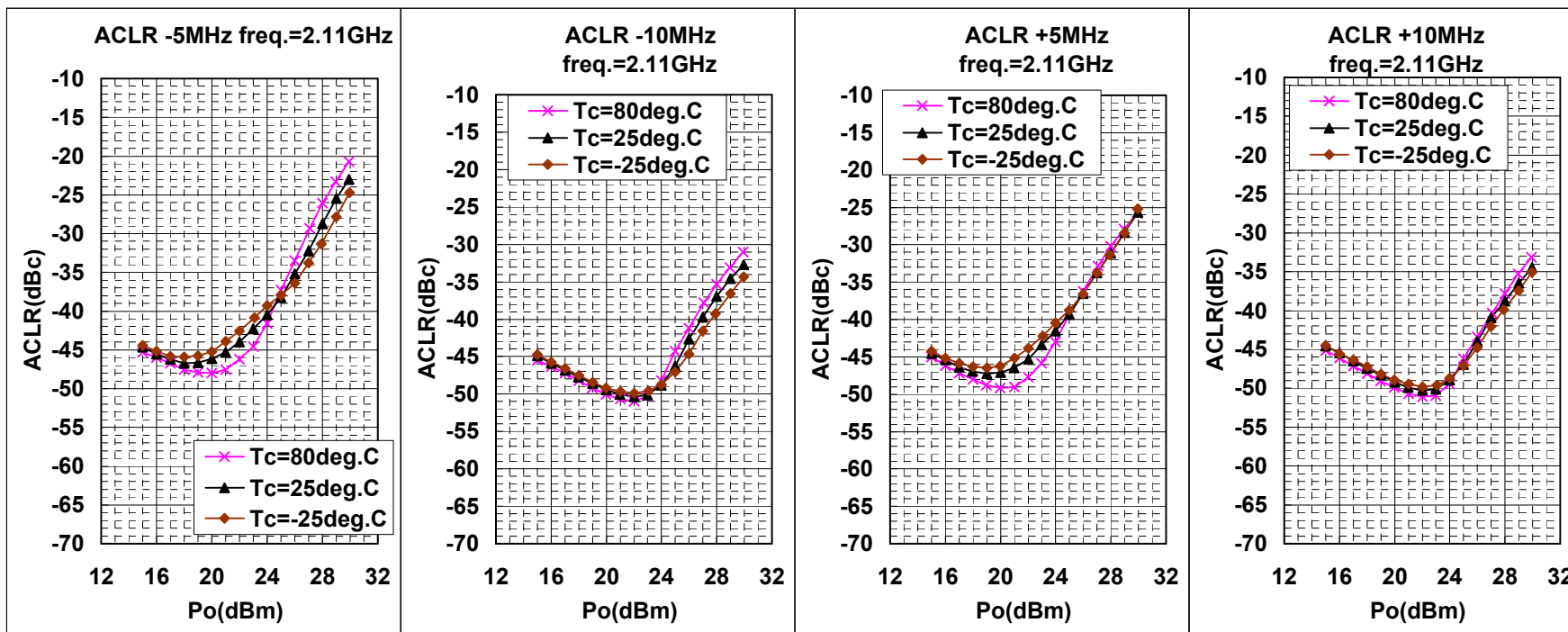
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**Gp,Po,Id(RF),Ig(RF) v.s. Pin**



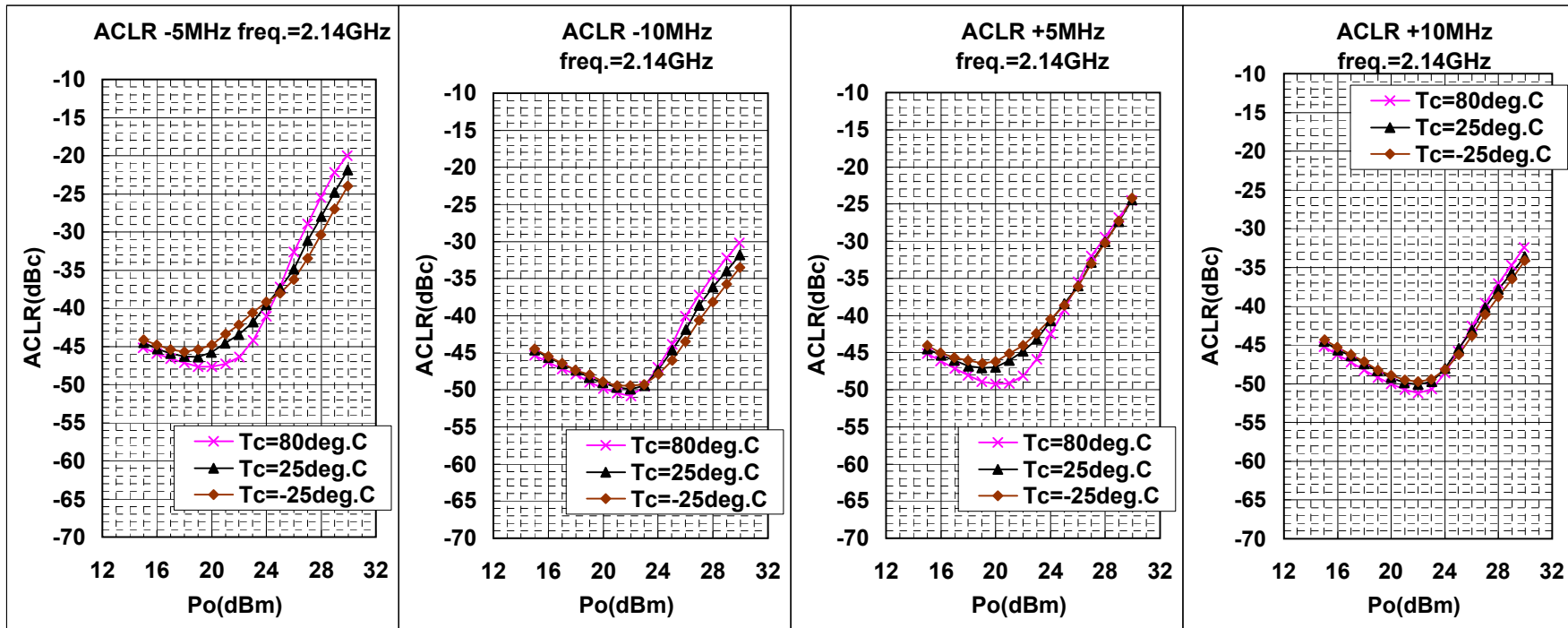
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**Gp,Po,Id(RF),Ig(RF) v.s. Pin**



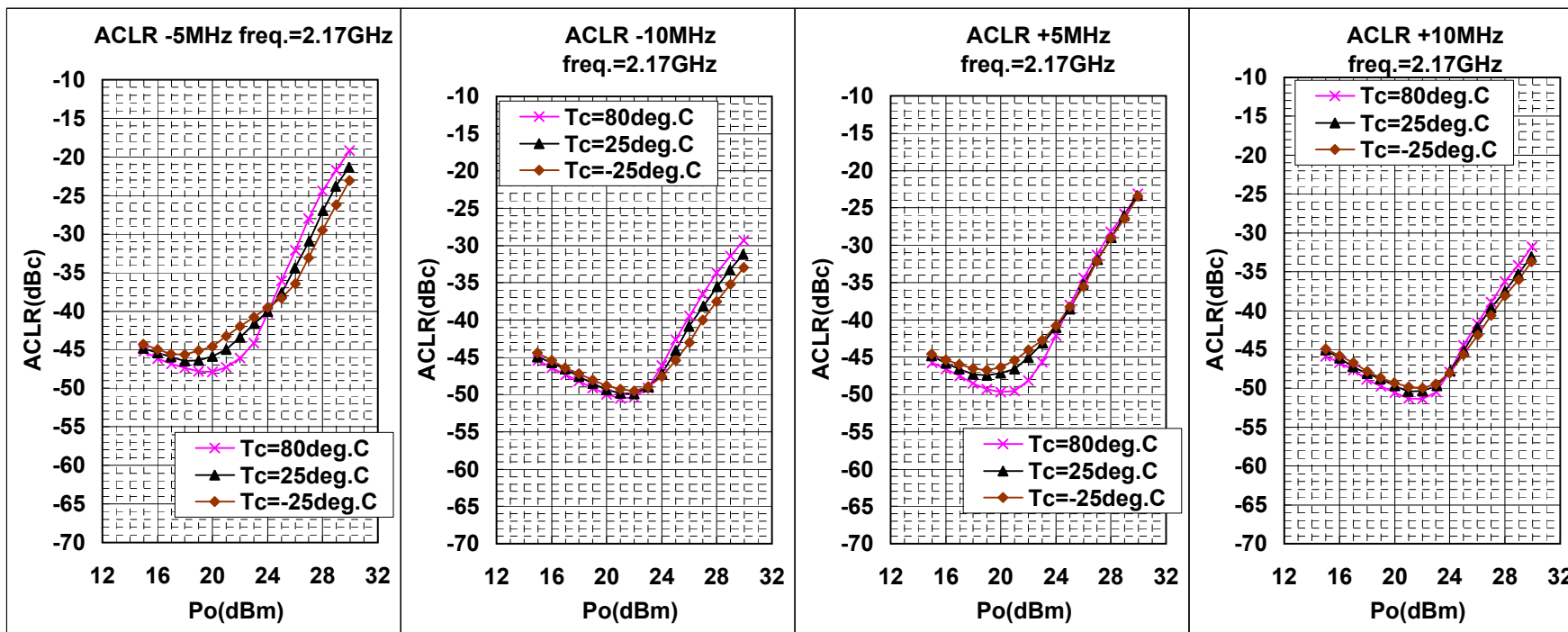
**MGF0921A RF TEST DATA(W-CDMA) VD=10V,IDQ=0.5A**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**



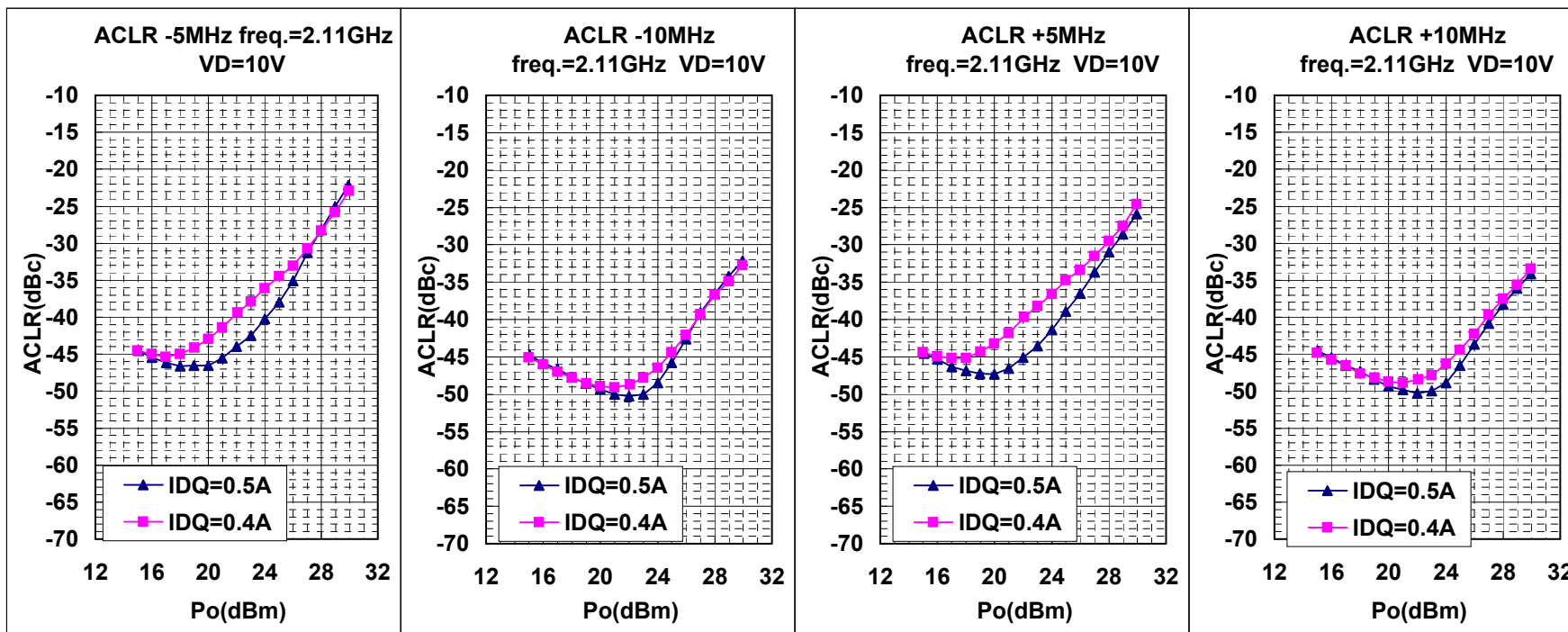
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 ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal



**MGF0921A RF TEST DATA(W-CDMA) VD=10V, IDQ=0.5A**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**

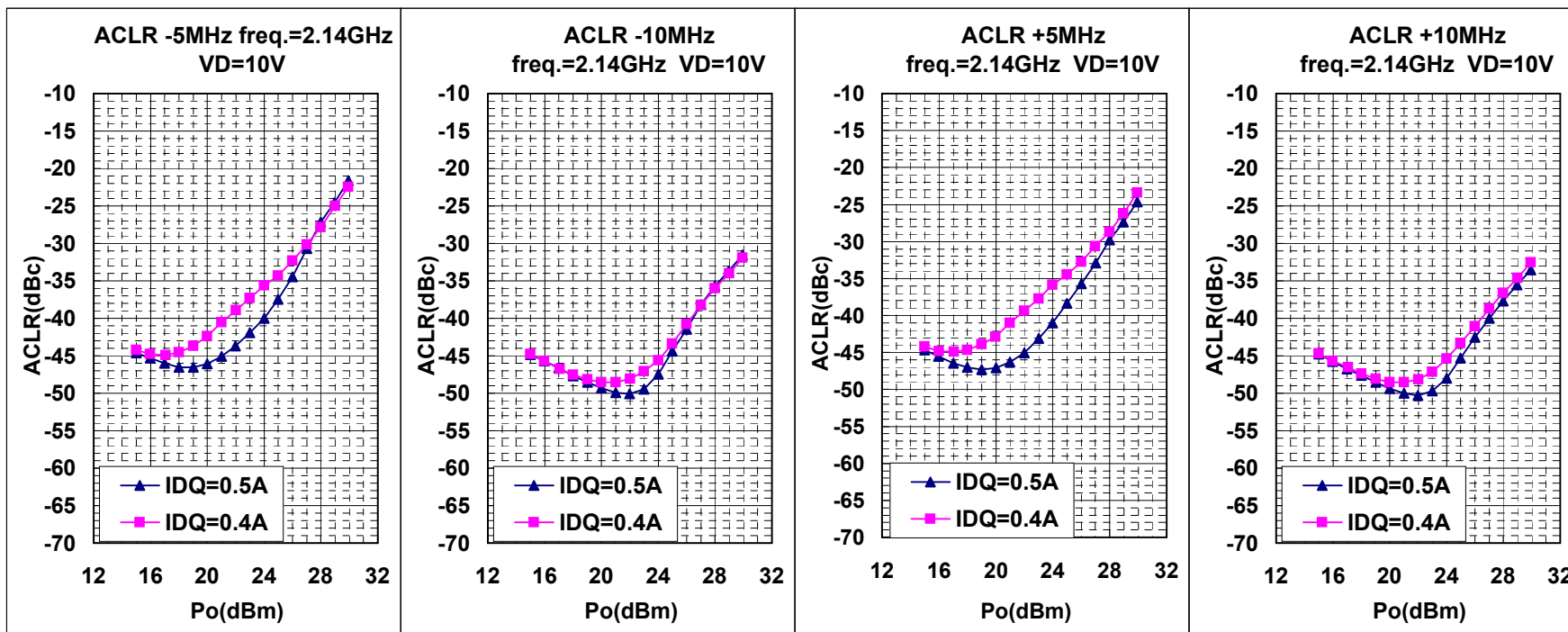


**MGF0921A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**

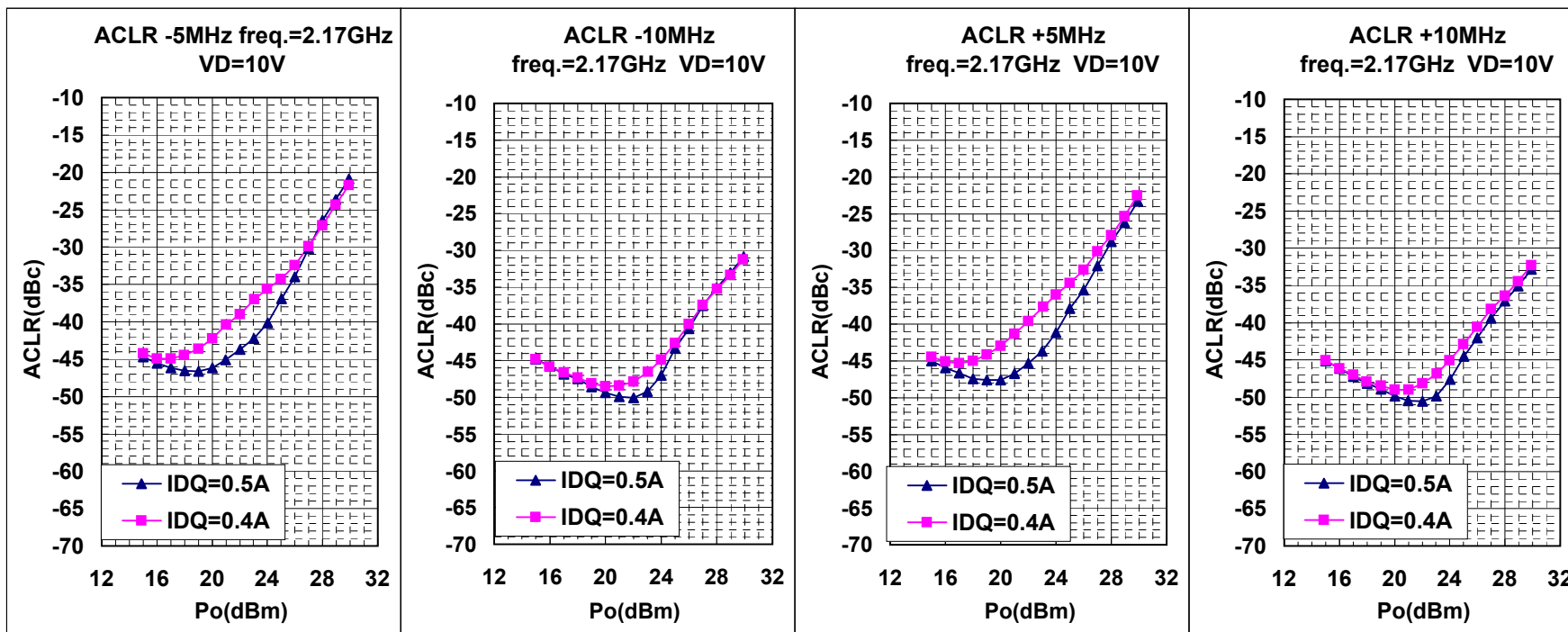




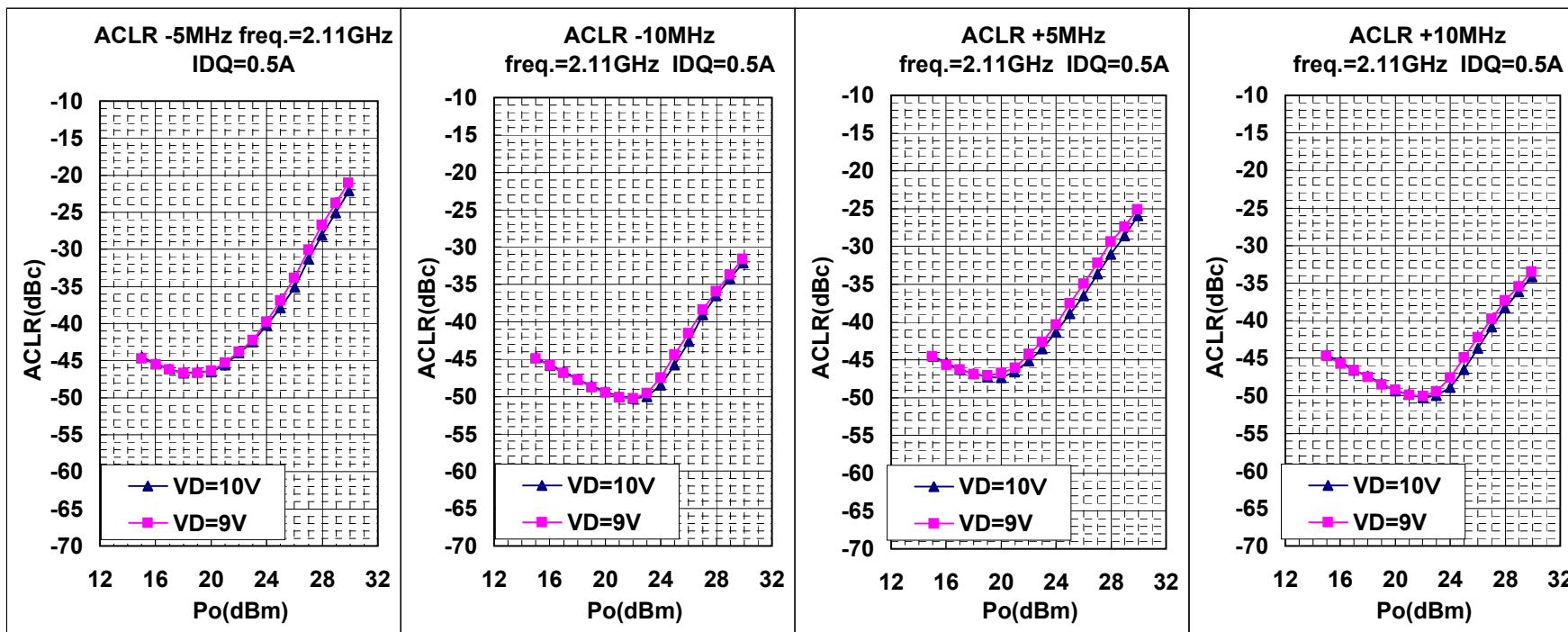
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**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**



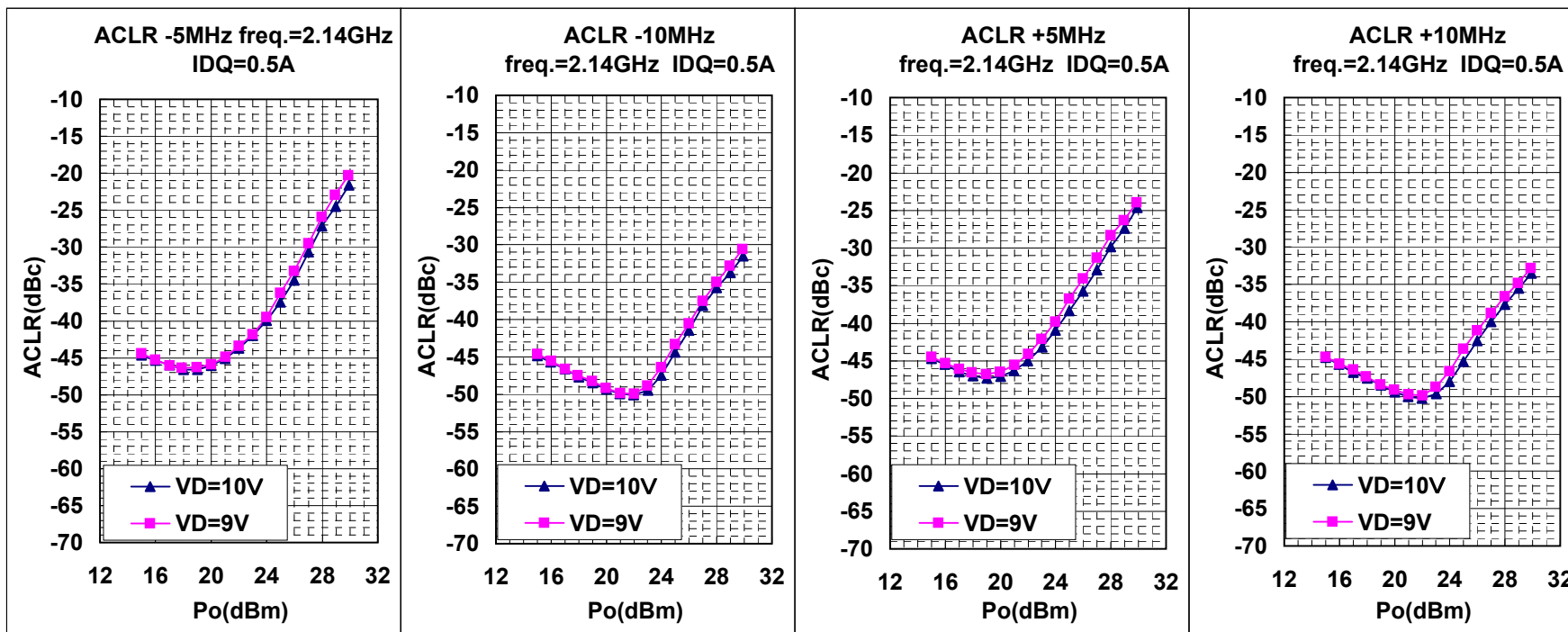
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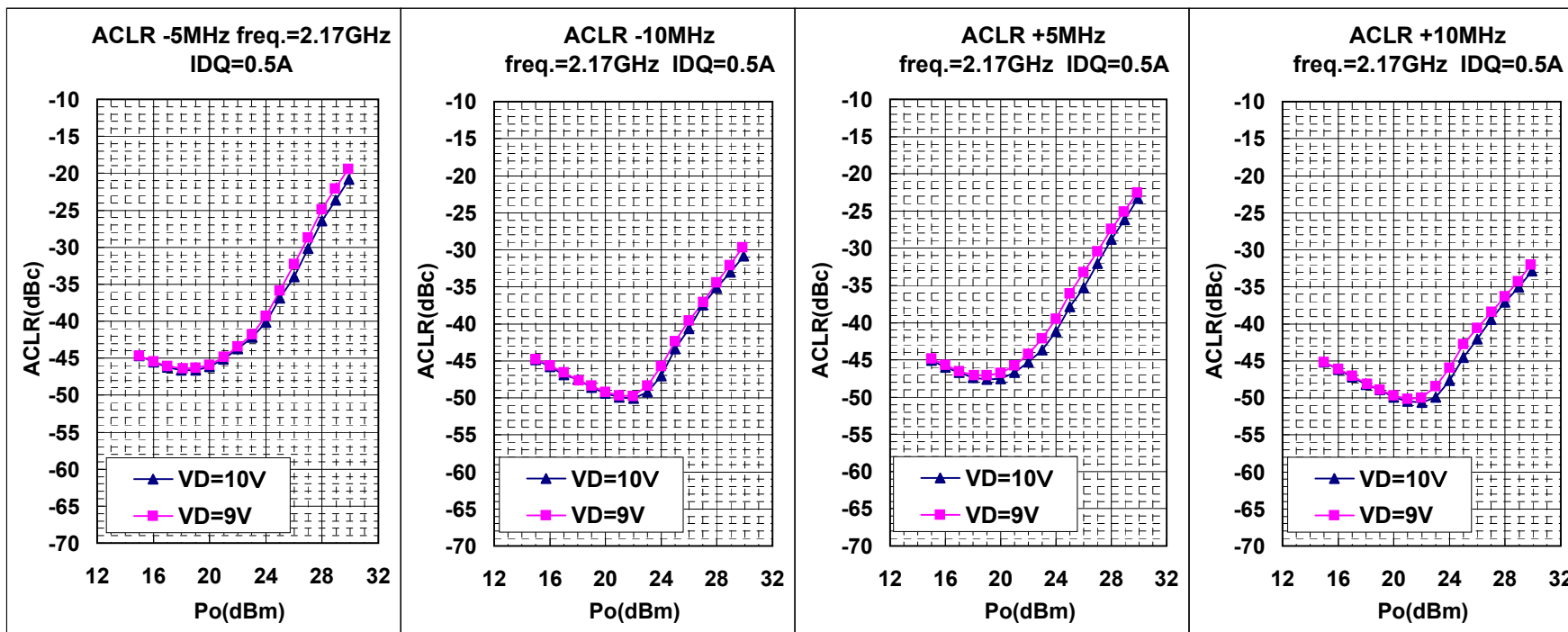
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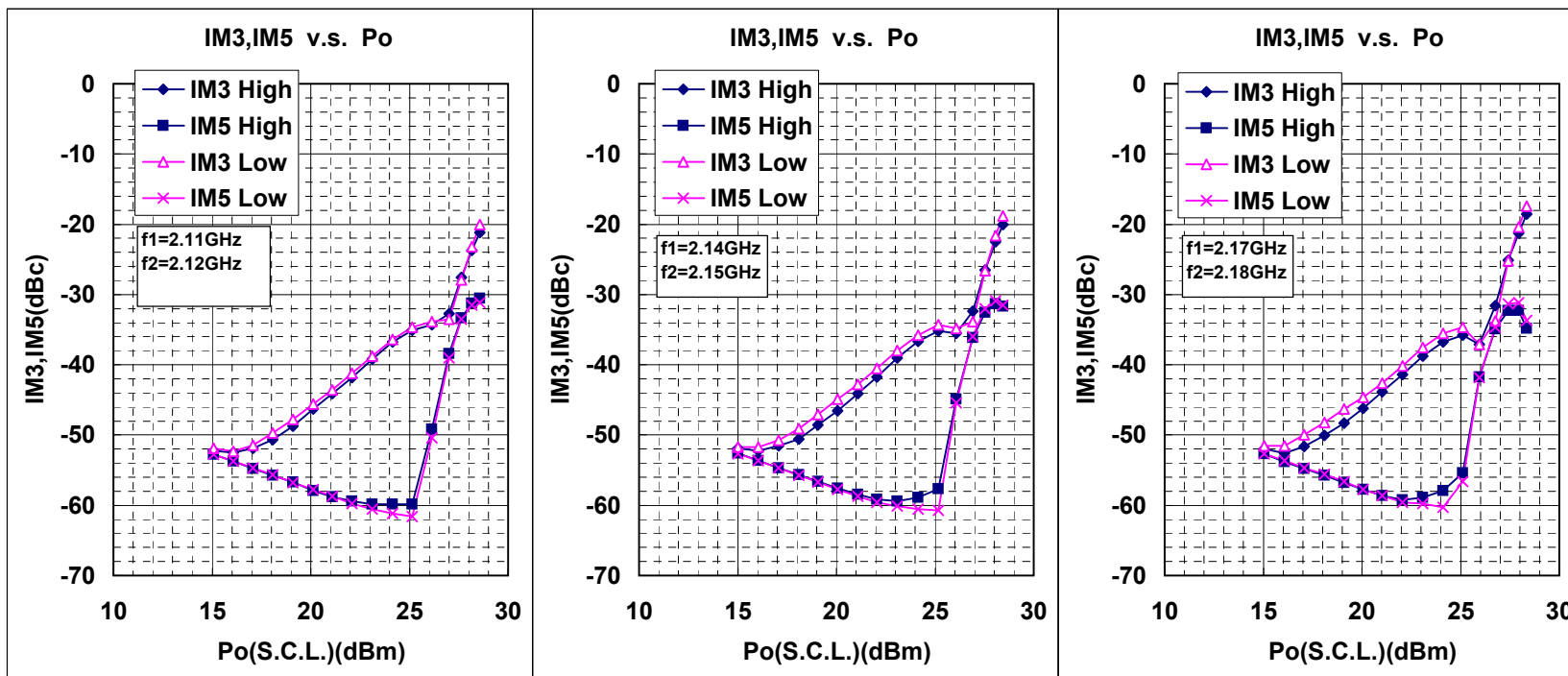
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**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**



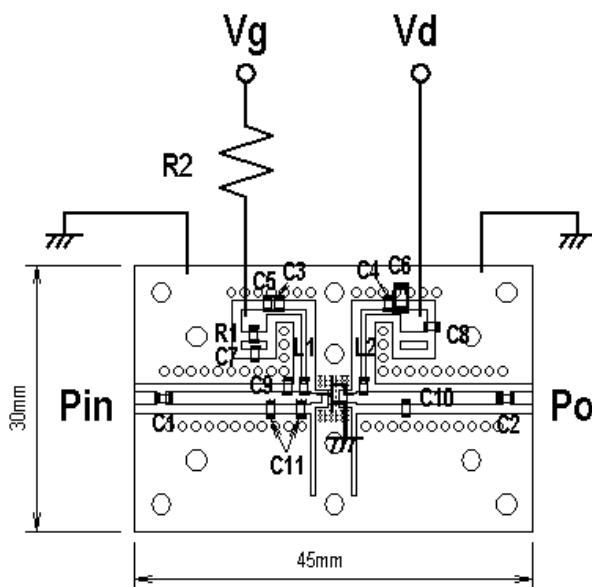
**MGF0921A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**



**MGF0921A RF TEST DATA VD=10V, IDQ=0.5A**  
**IM3, IM5 v.s. Pin**



# MGF0921A TEST FIXTURE $f=2.11-2.17\text{GHz}$



C1, C2, C3, C4=20pF  
C5, C7, C8=1000pF  
C9, C10, C11=2pF  
C6=4.7uF  
L1, L2=12nH  
R1=51ohm  
R2=200ohm

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

**L & S BAND GaAs FET [ SMD non – matched ]****Requests Regarding Safety Designs**

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