

**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  
ηadd=40%(TYP.) @f=1.9GHz,Pin=17dBm
- Hermetic Package

**APPLICATION**

- For UHF Band power amplifiers

**QUALITY**

- GG

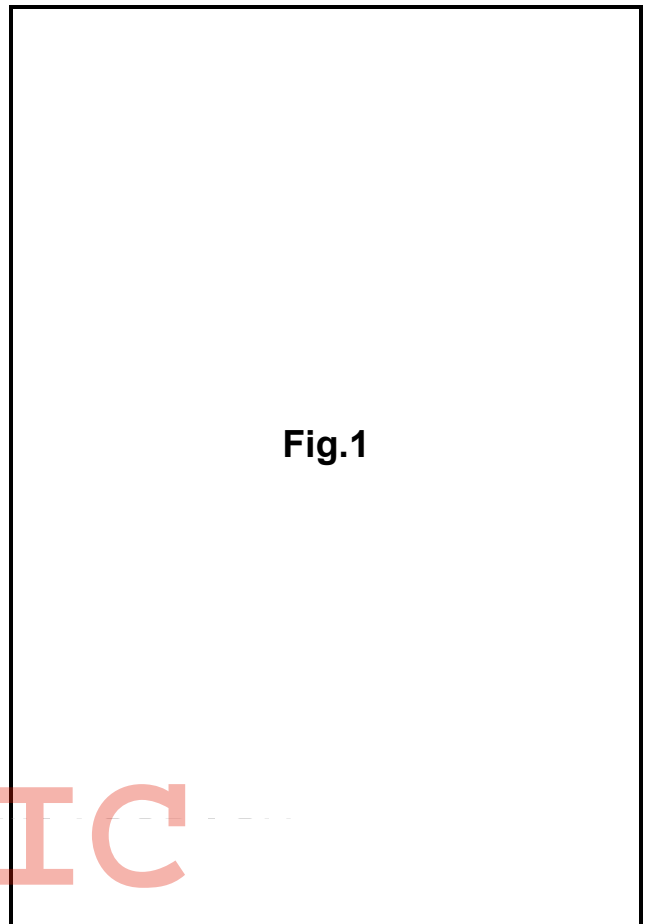
**RECOMMENDED BIAS CONDITIONS**

- Vds=10V • Ids=500mA • Rg=200Ω

**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

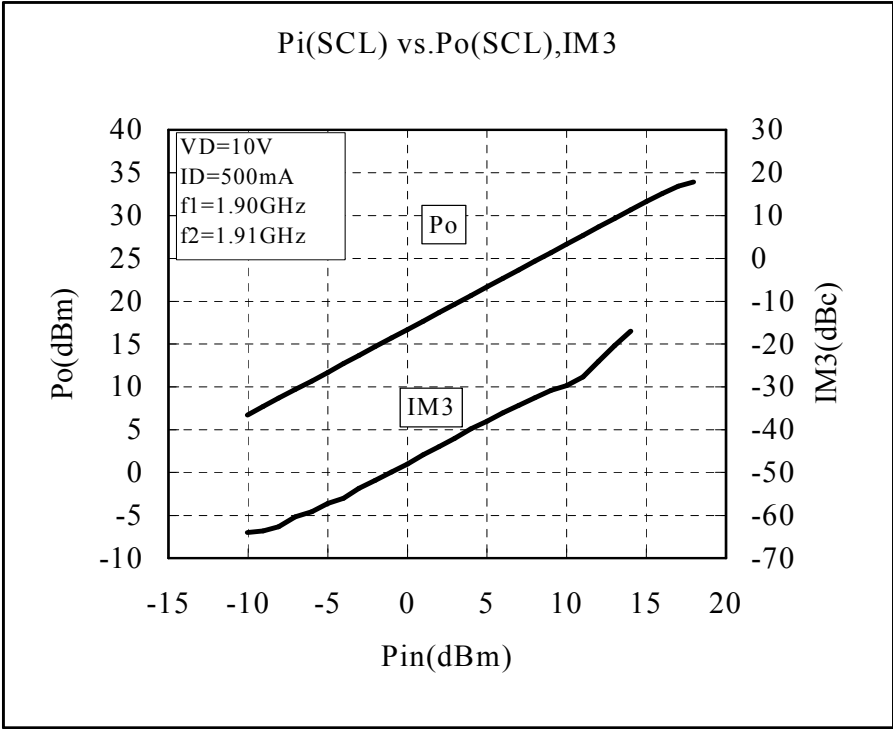
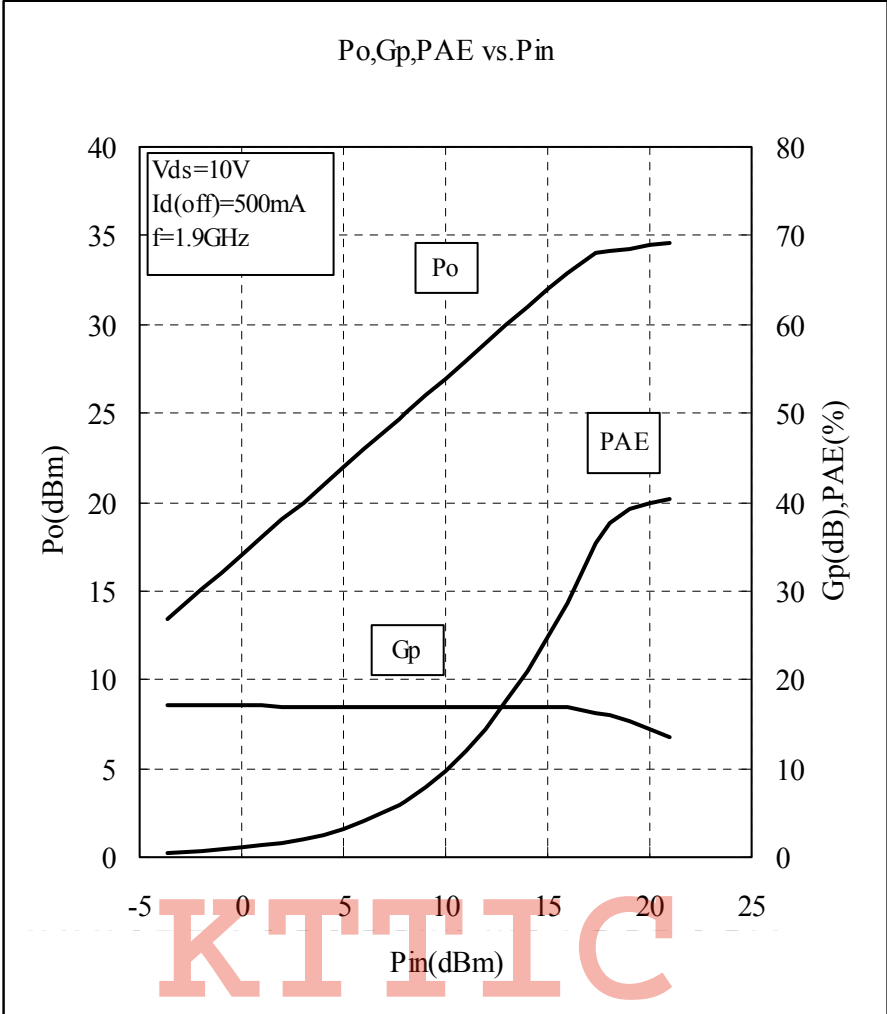


**Electrical characteristics** (Ta=25°C)

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
ηadd	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	ΔVf Method	-	11	15	°C/W

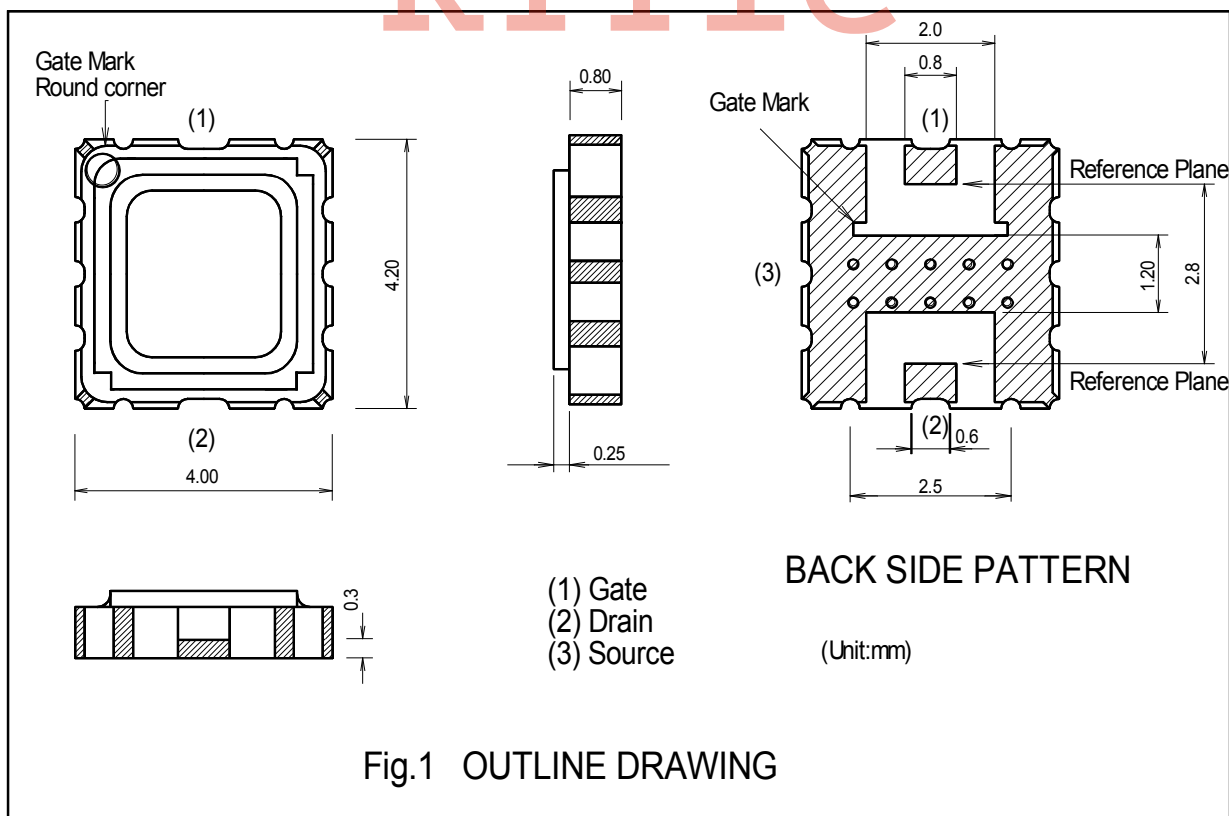
\*1:Channel to case / Above parameters, ratings, limits are subject to change.

MGF0921A TYPICAL CHARACTERISTICS

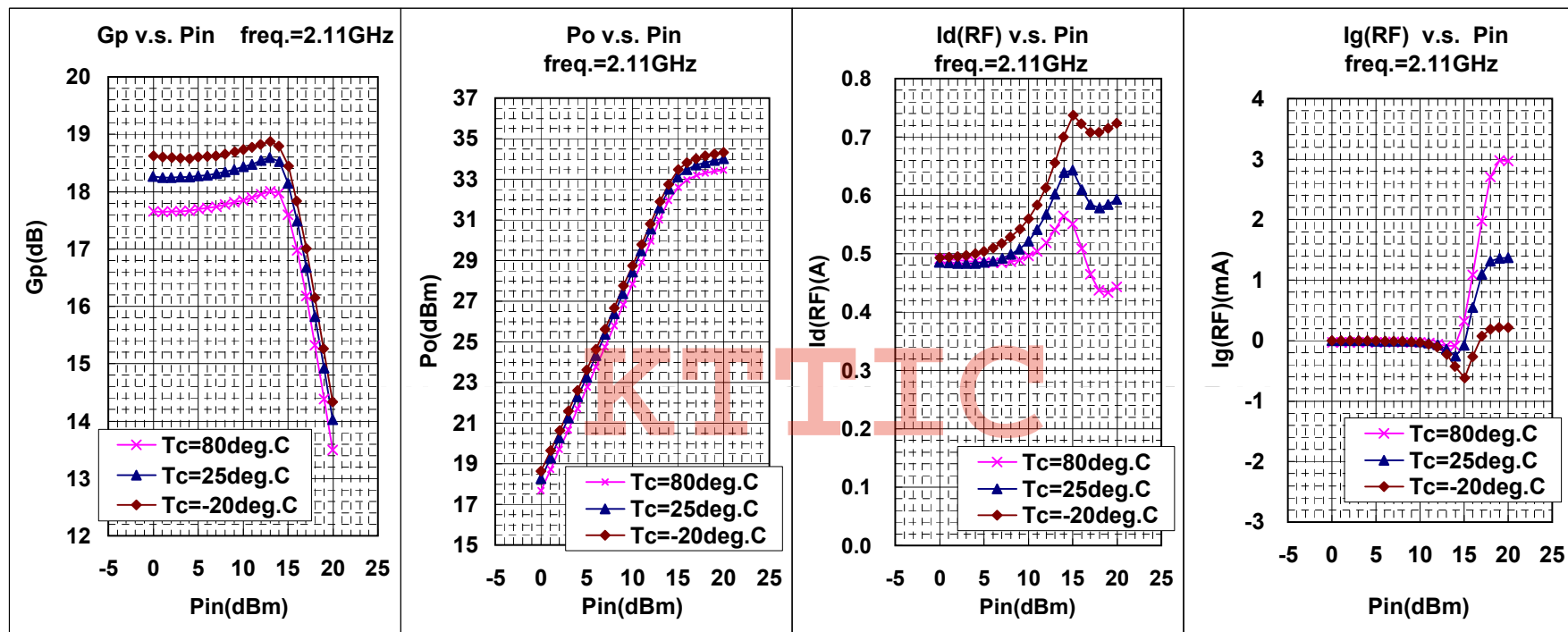


**MGF0921A S PARAMETERS** (Ta=25°C,VD=10V,ID=500mA, Reference Plane see Fig.1)

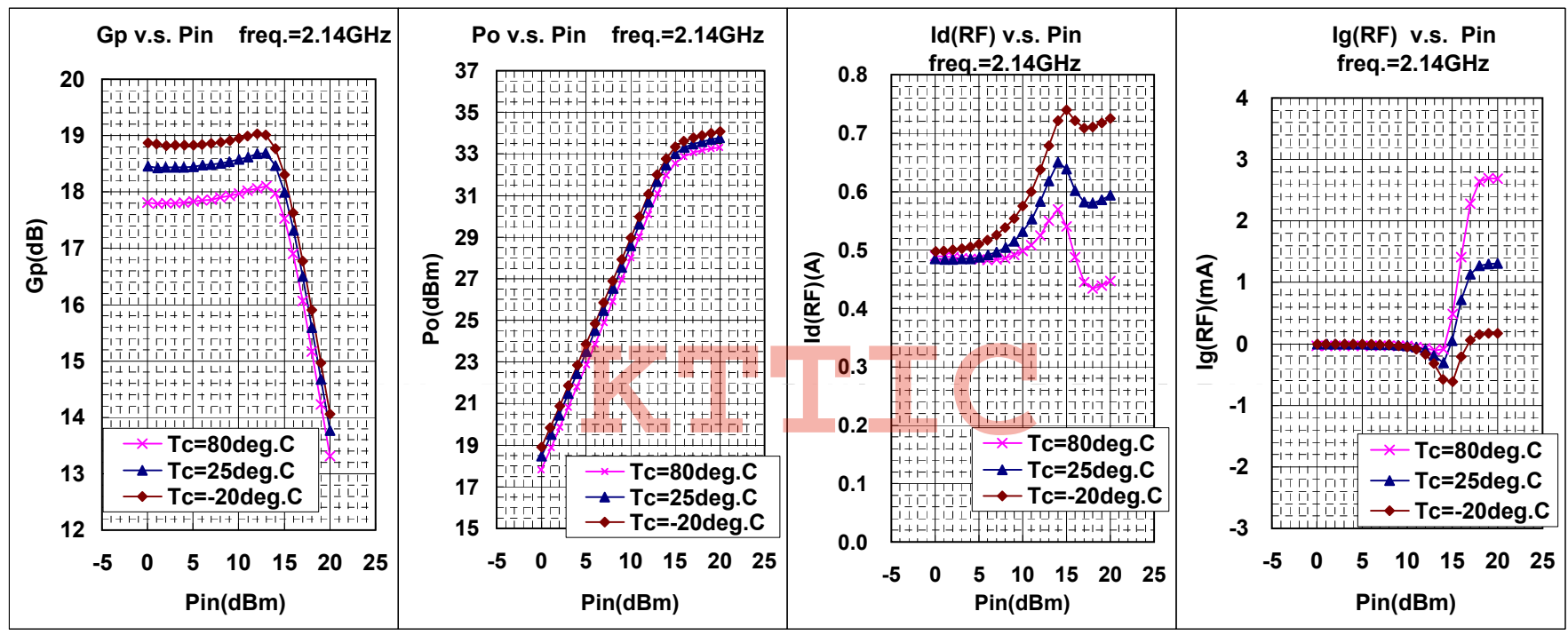
freq. (MHz)	S11		S21		S12		S22		K	MAG/MSG (dB)
	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)		
600	0.928	-120.29	6.597	111.05	0.018	31.80	0.605	-172.68	0.29	25.64
1000	0.922	-144.64	4.629	94.88	0.022	22.95	0.619	-173.49	0.37	23.23
1400	0.919	-156.53	3.312	82.95	0.023	17.64	0.633	-173.69	0.46	21.58
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



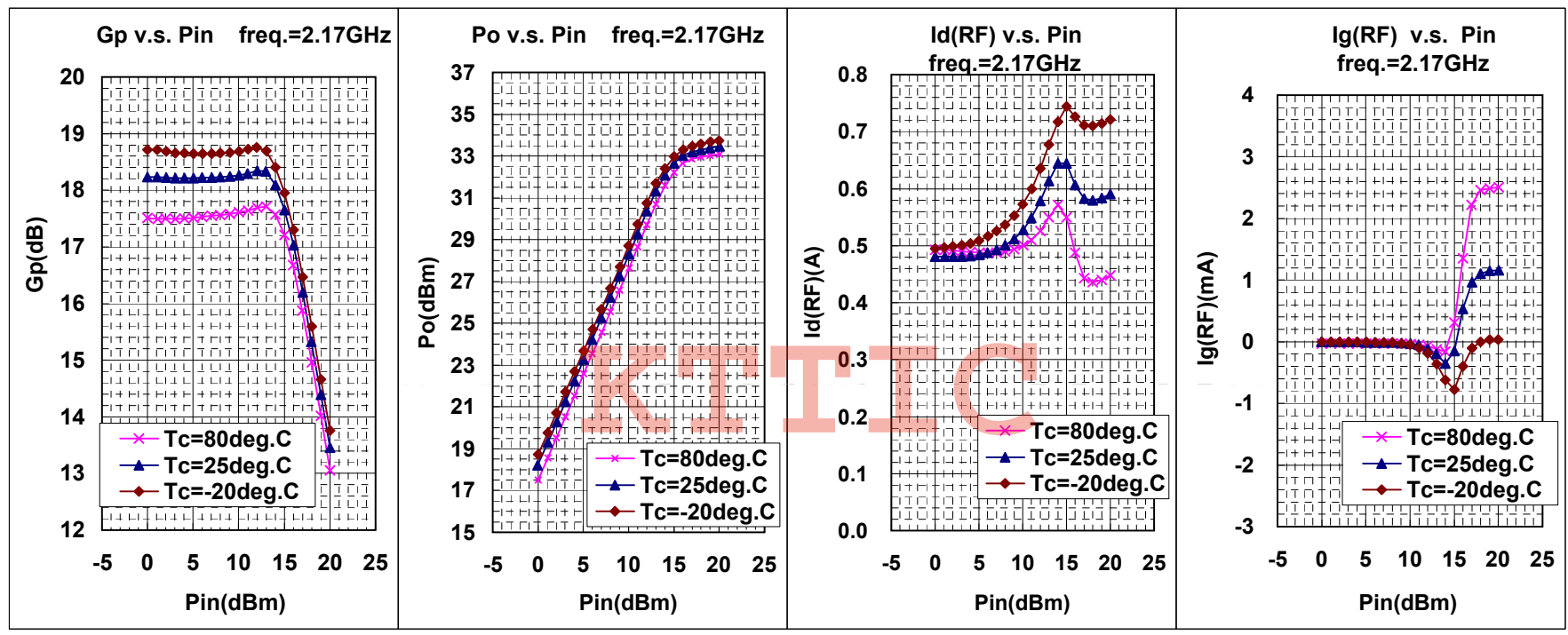
MGF0921A RF TEST DATA(CW) VD=10V, IDQ=0.5A  
 Gp, Po, Id(RF), Ig(RF) v.s. Pin



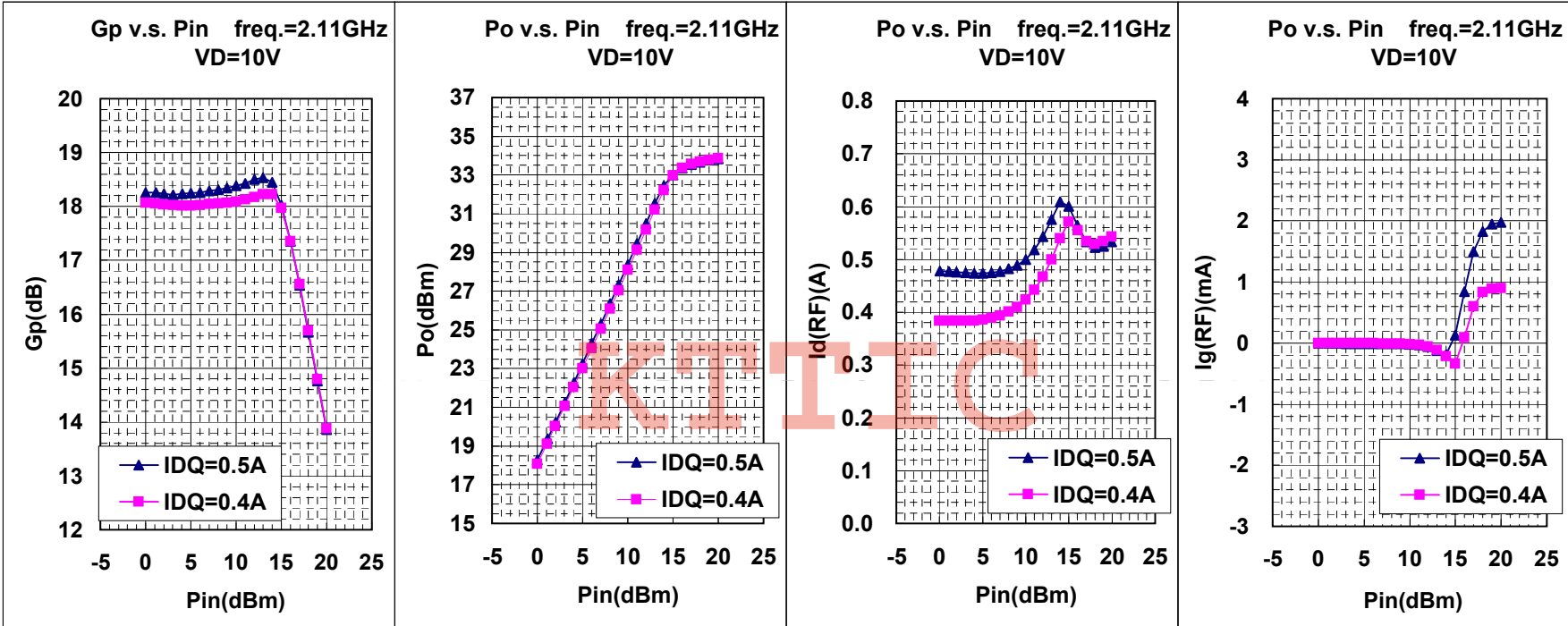
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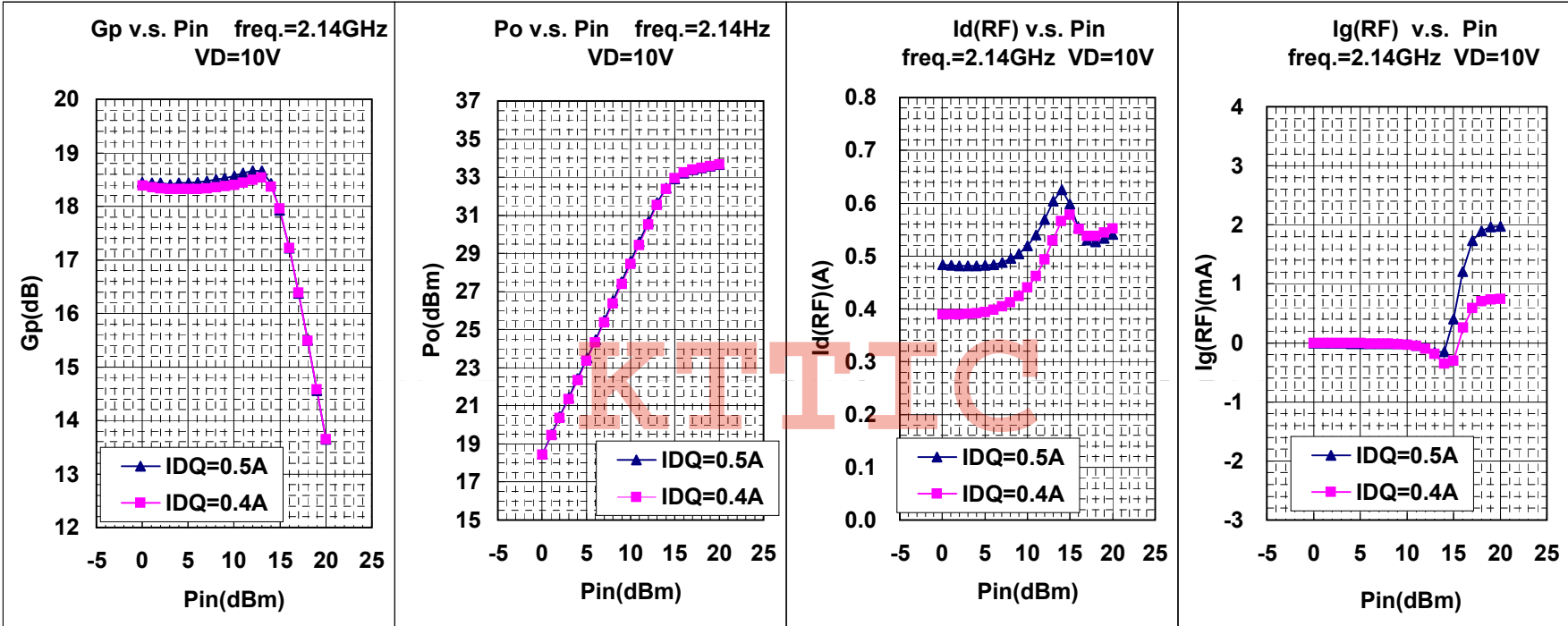
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 Gp, Po, Id(RF), Ig(RF) v.s. Pin



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

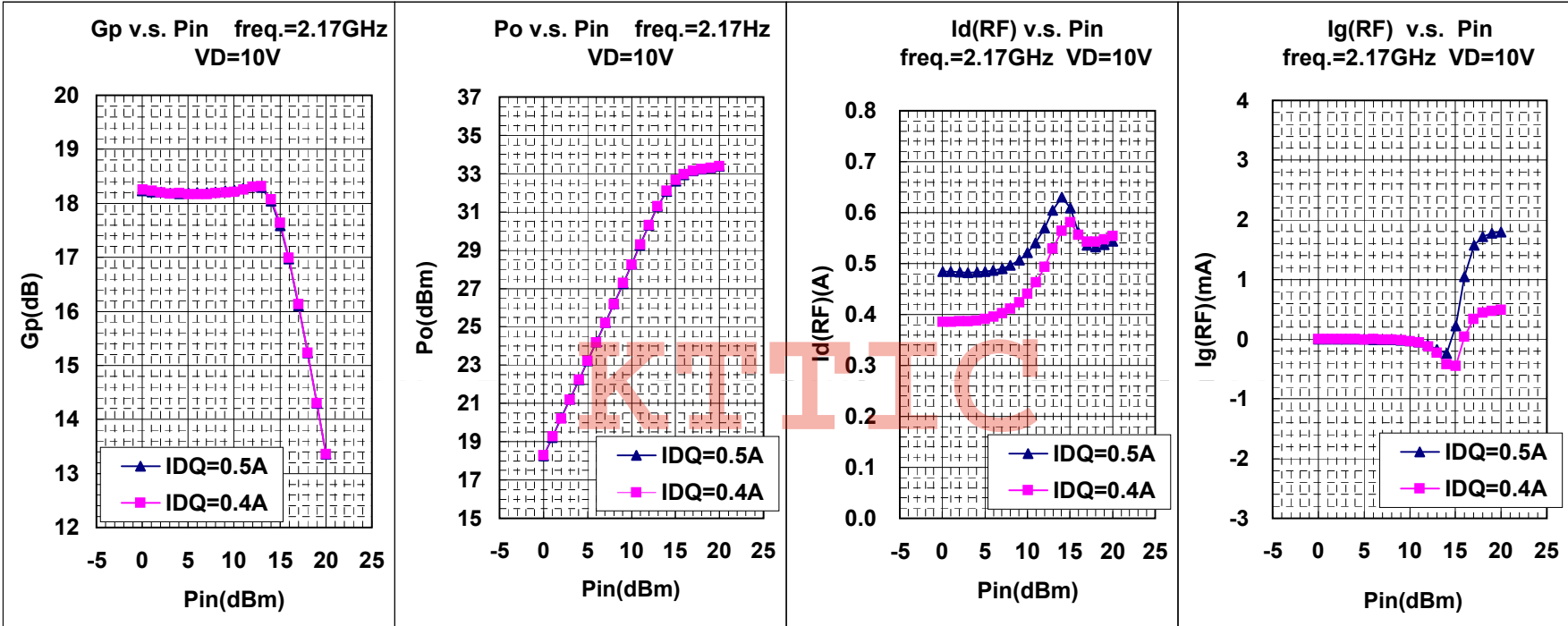


MGF0921A RF TEST DATA(CW)  
 Gp,Po,Id(RF),Ig(RF) v.s. Pin

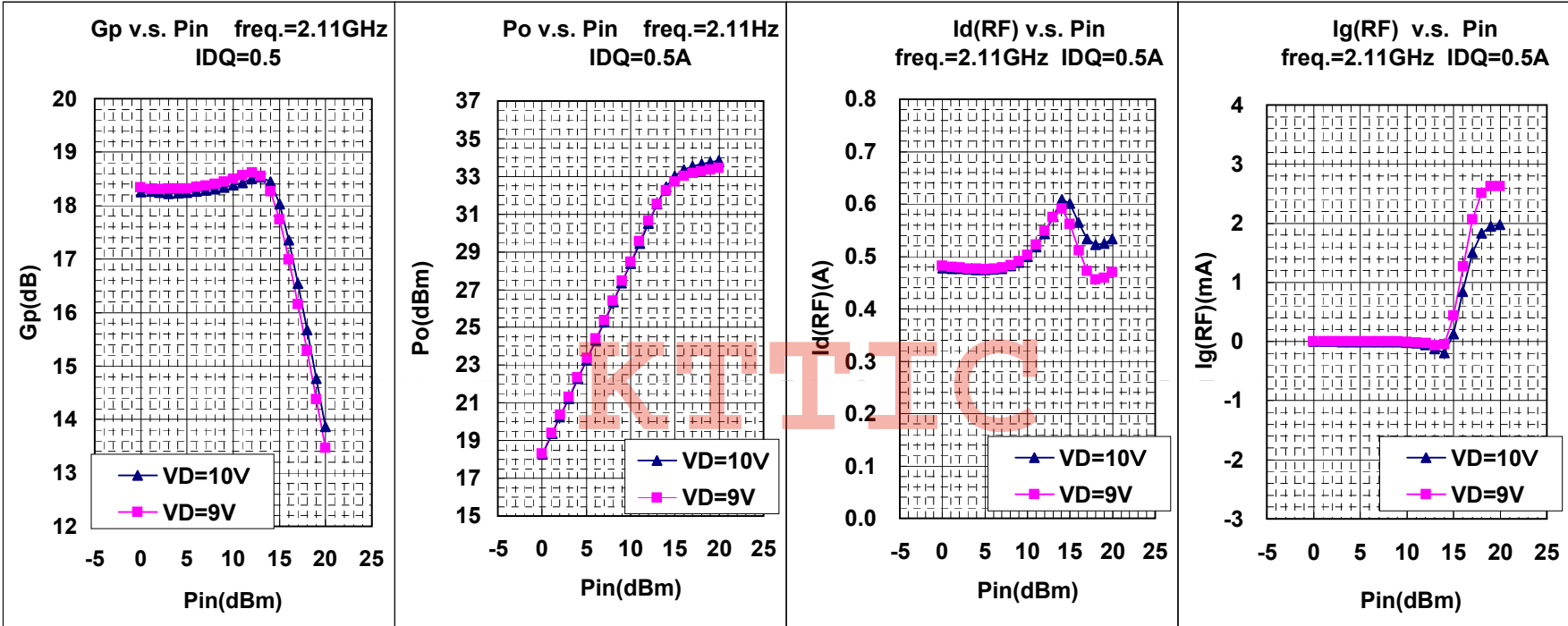




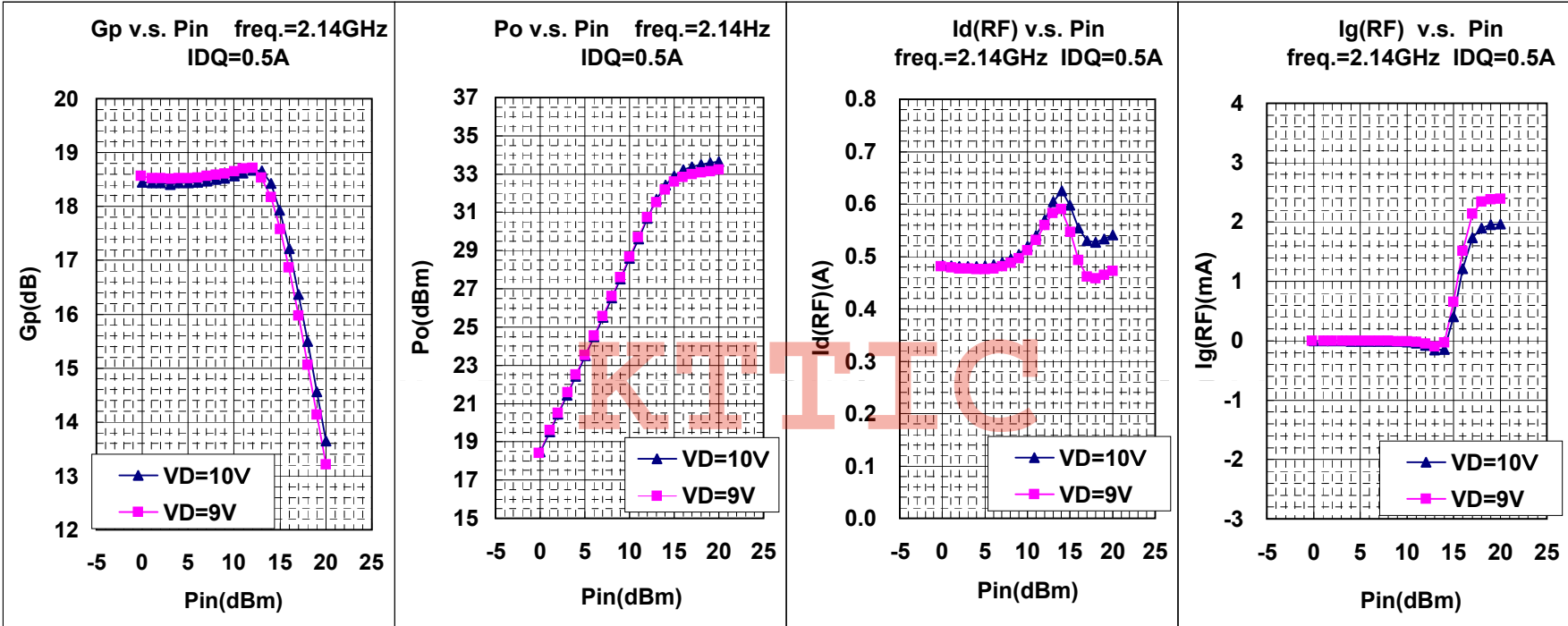
MGF0921A RF TEST DATA(CW)  
Gp,Po,Id(RF),Ig(RF) v.s. Pin



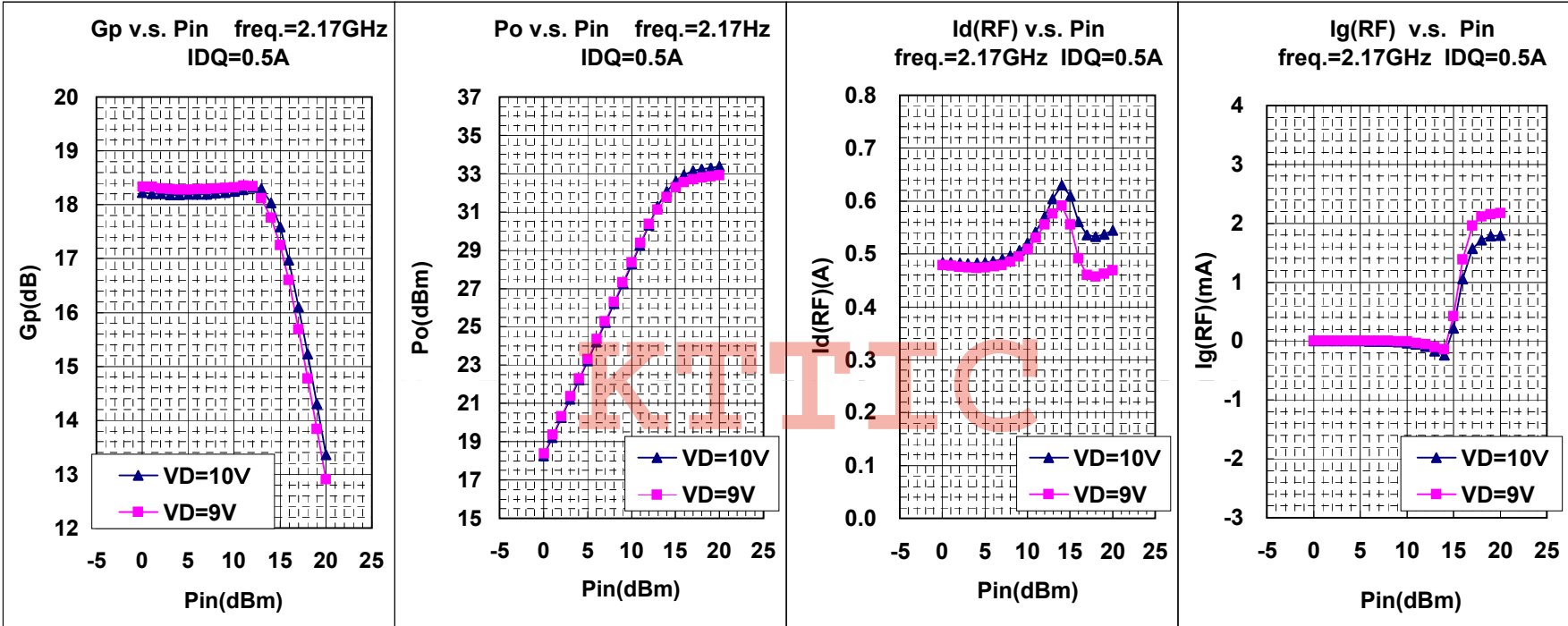
MGF0921A RF TEST DATA(CW)  
 Gp,Po,Id(RF),Ig(RF) v.s. Pin



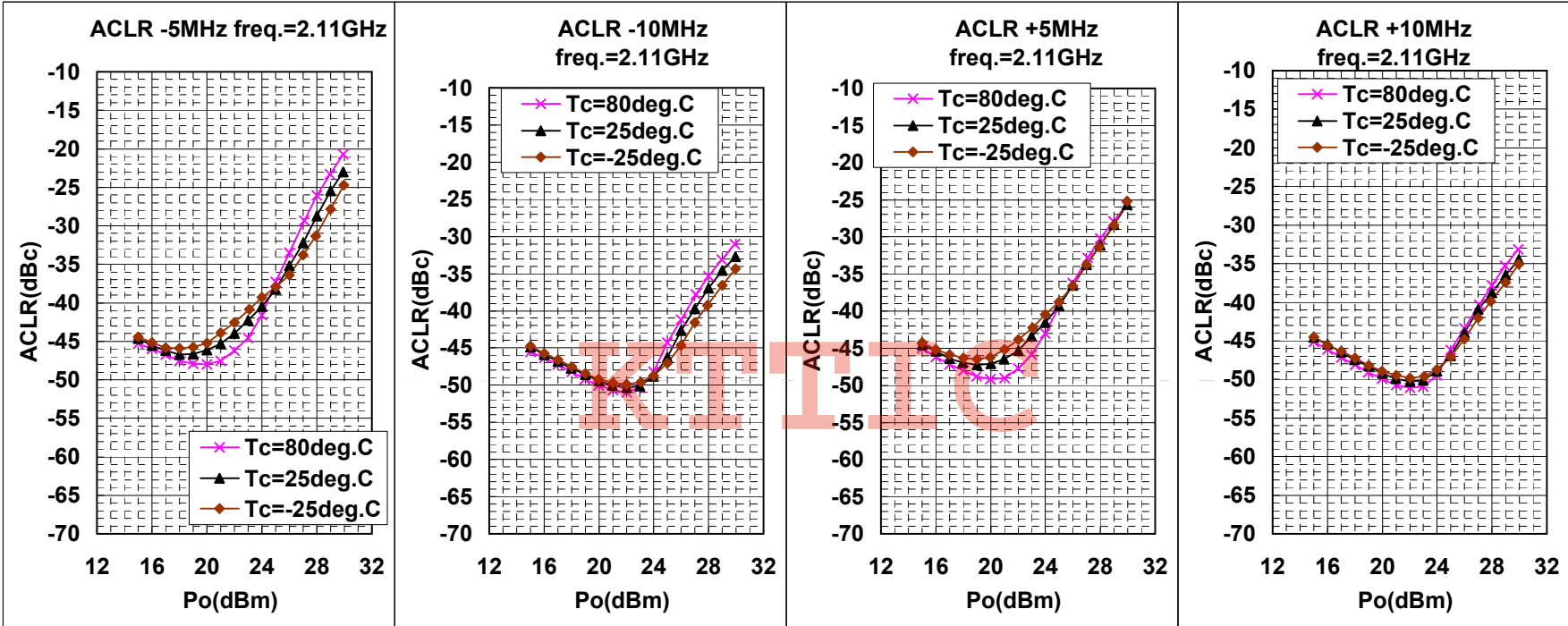
MGF0921A RF TEST DATA(CW)  
 Gp,Po,Id(RF),Ig(RF) v.s. Pin



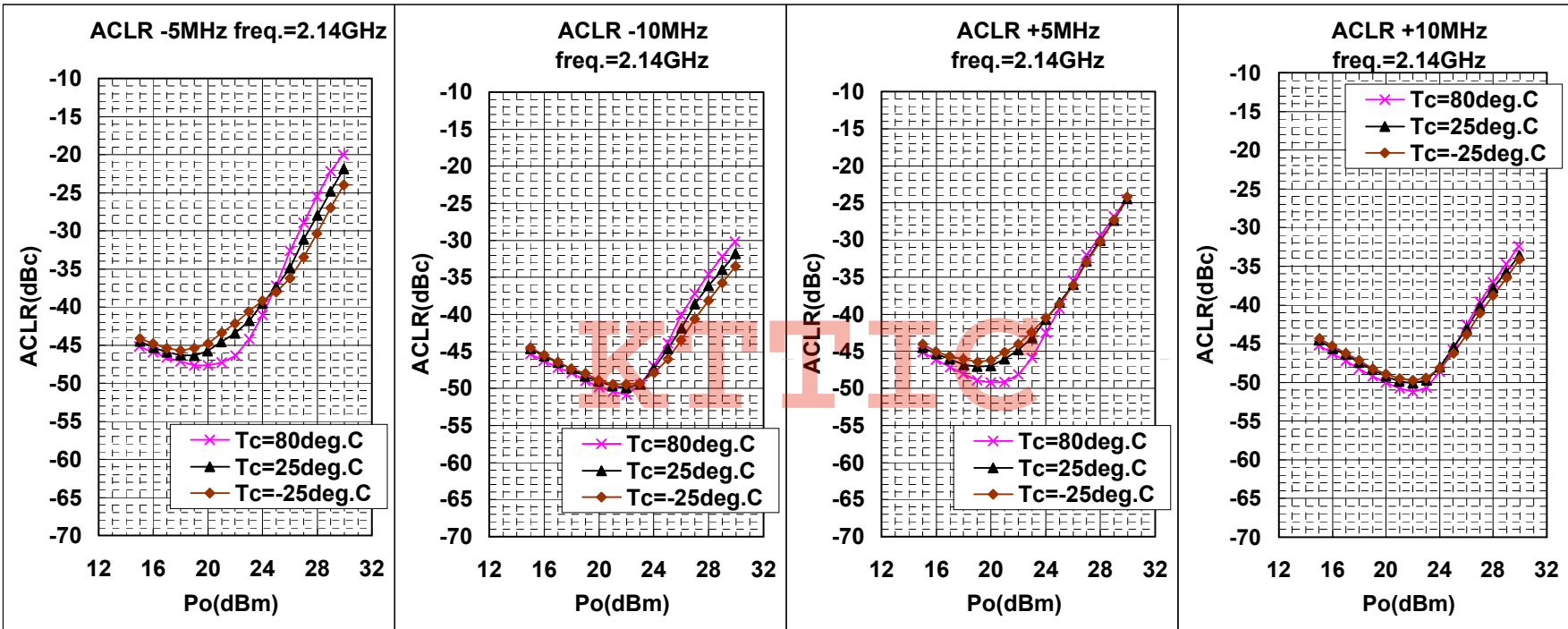
MGF0921A RF TEST DATA(CW)  
 Gp,Po,Id(RF),Ig(RF) v.s. Pin



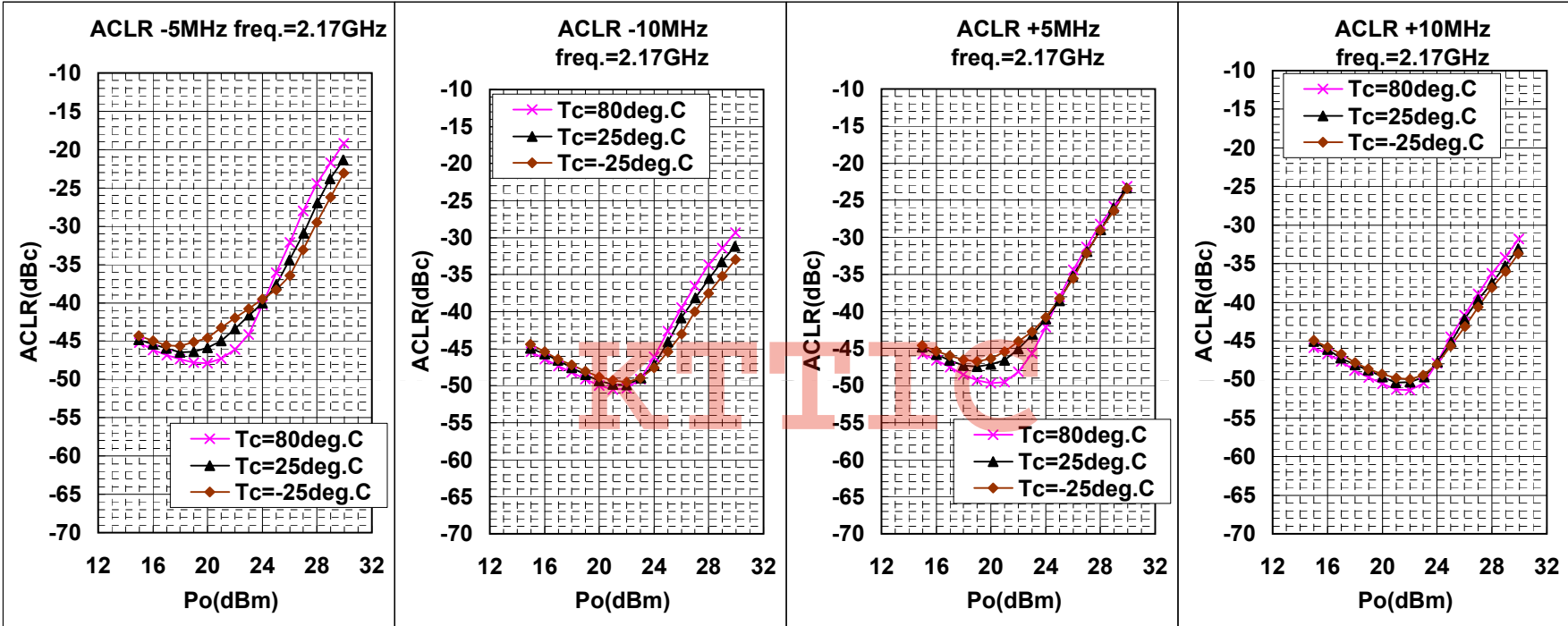
MGF0921A RF TEST DATA(W-CDMA) VD=10V,IDQ=0.5A  
ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal



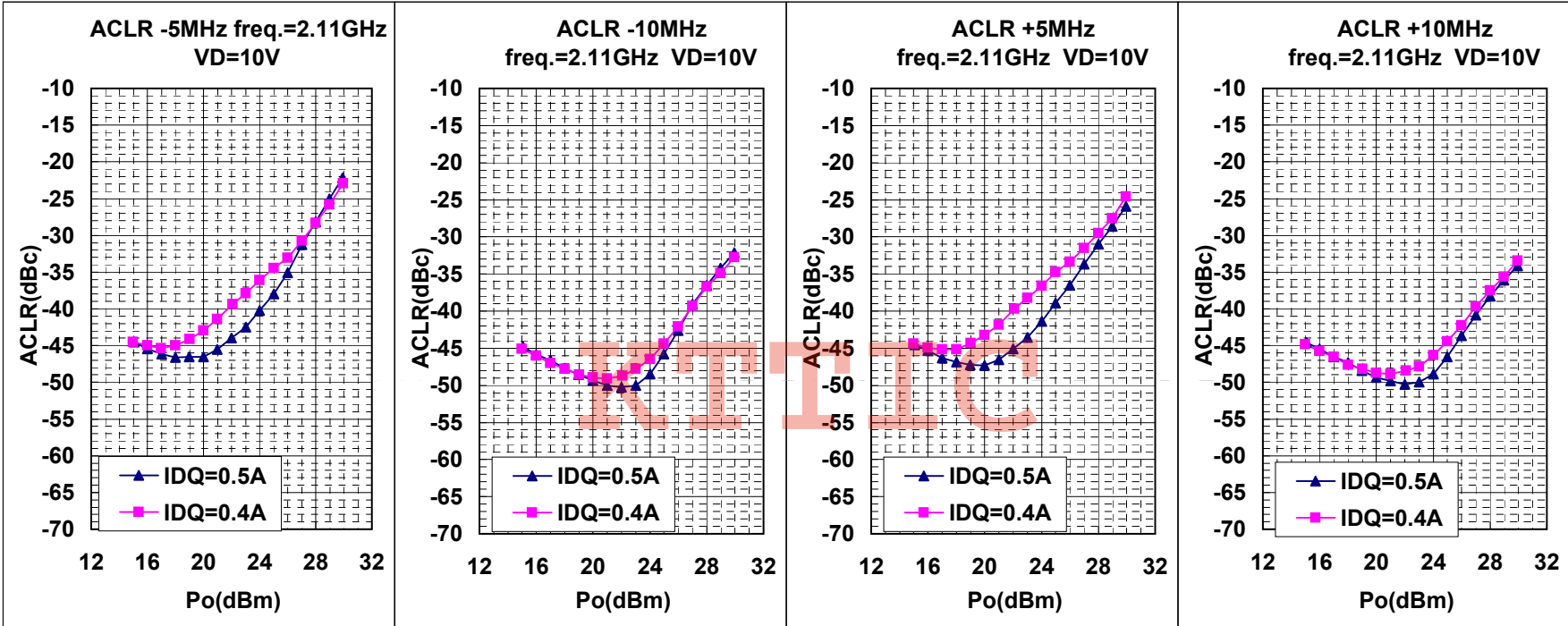
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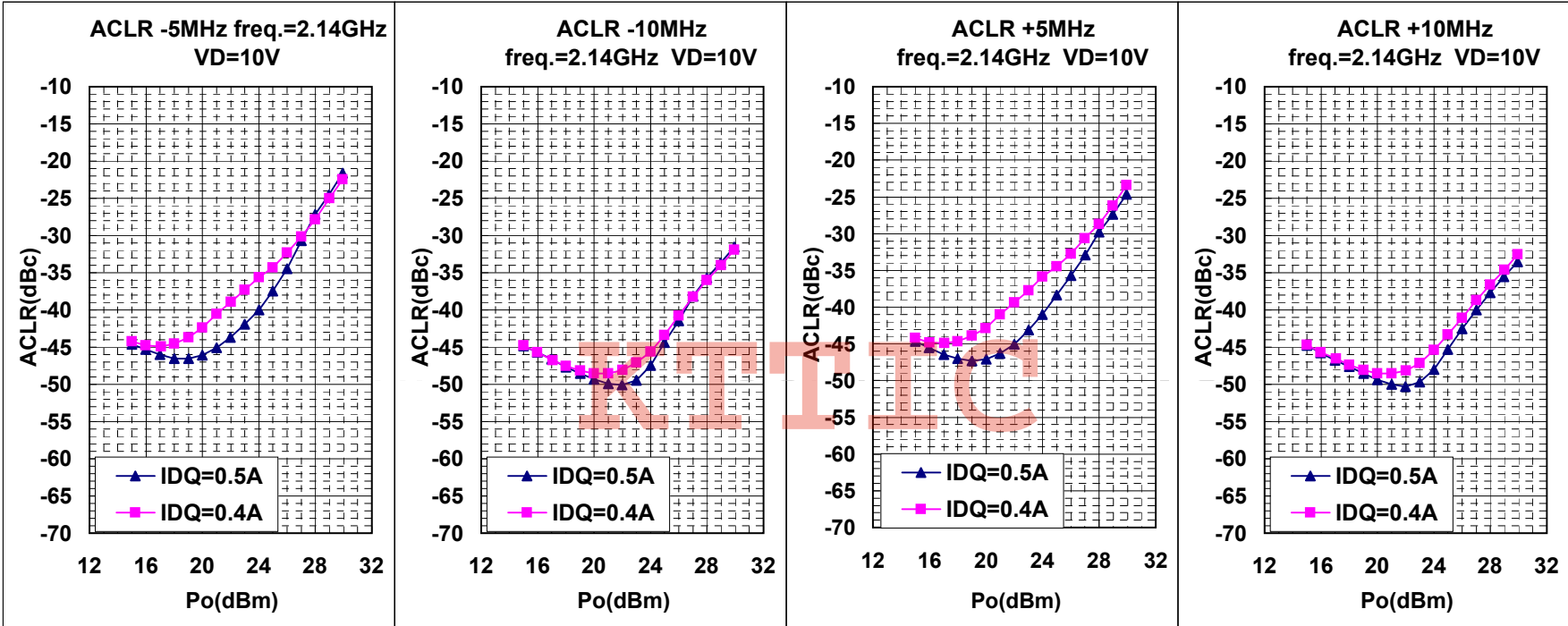


**MGF0921A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**

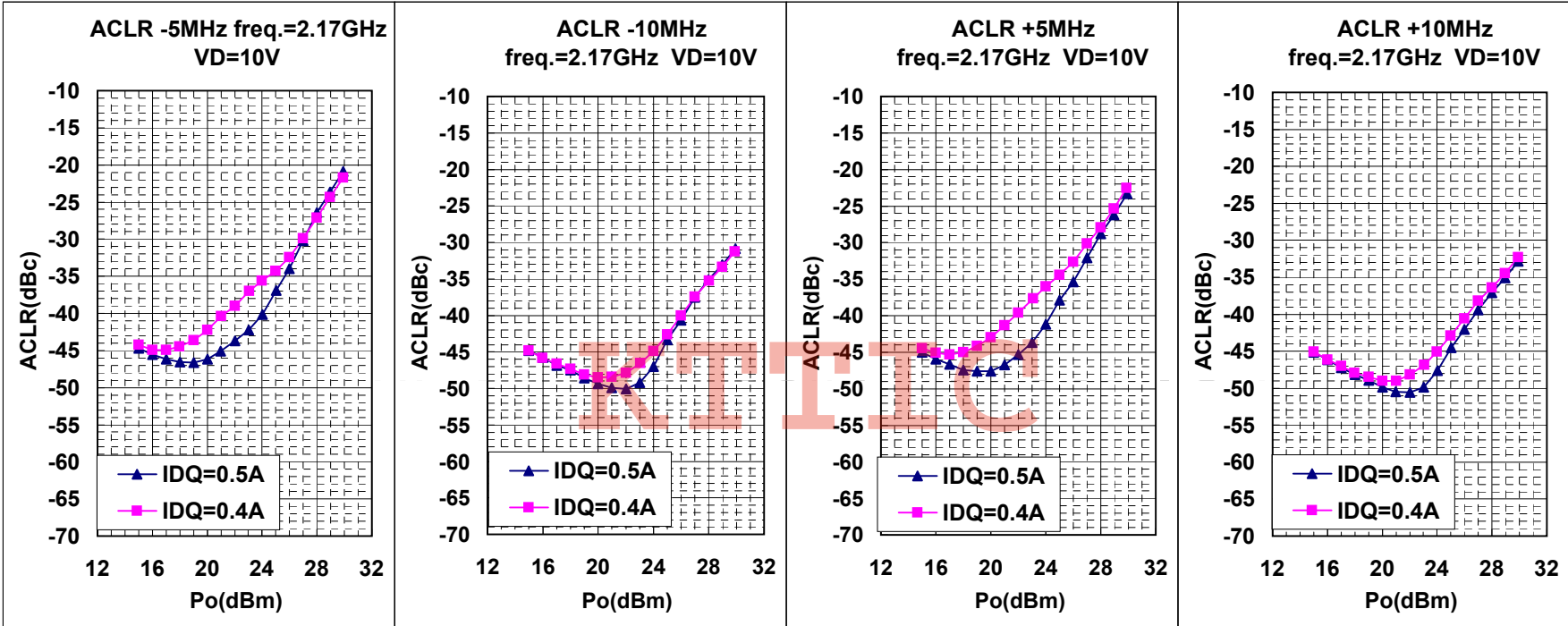




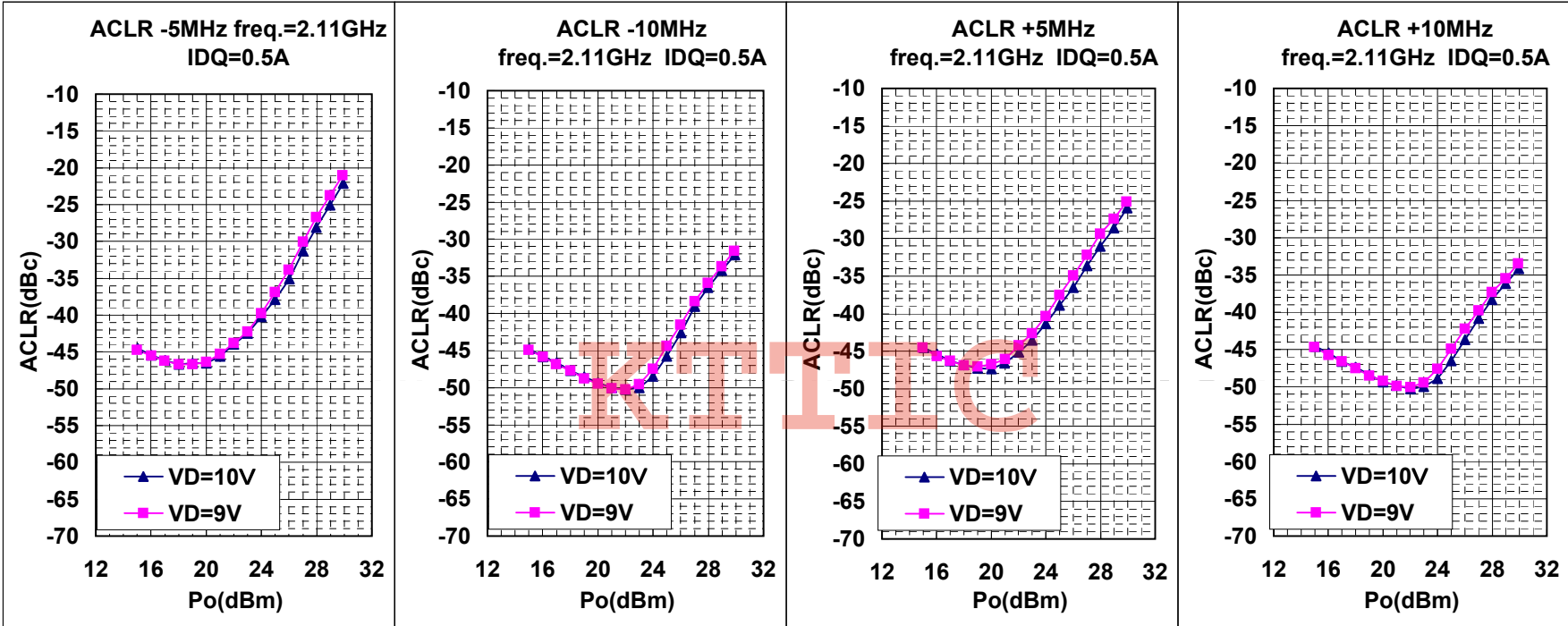
**MGF0921A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**



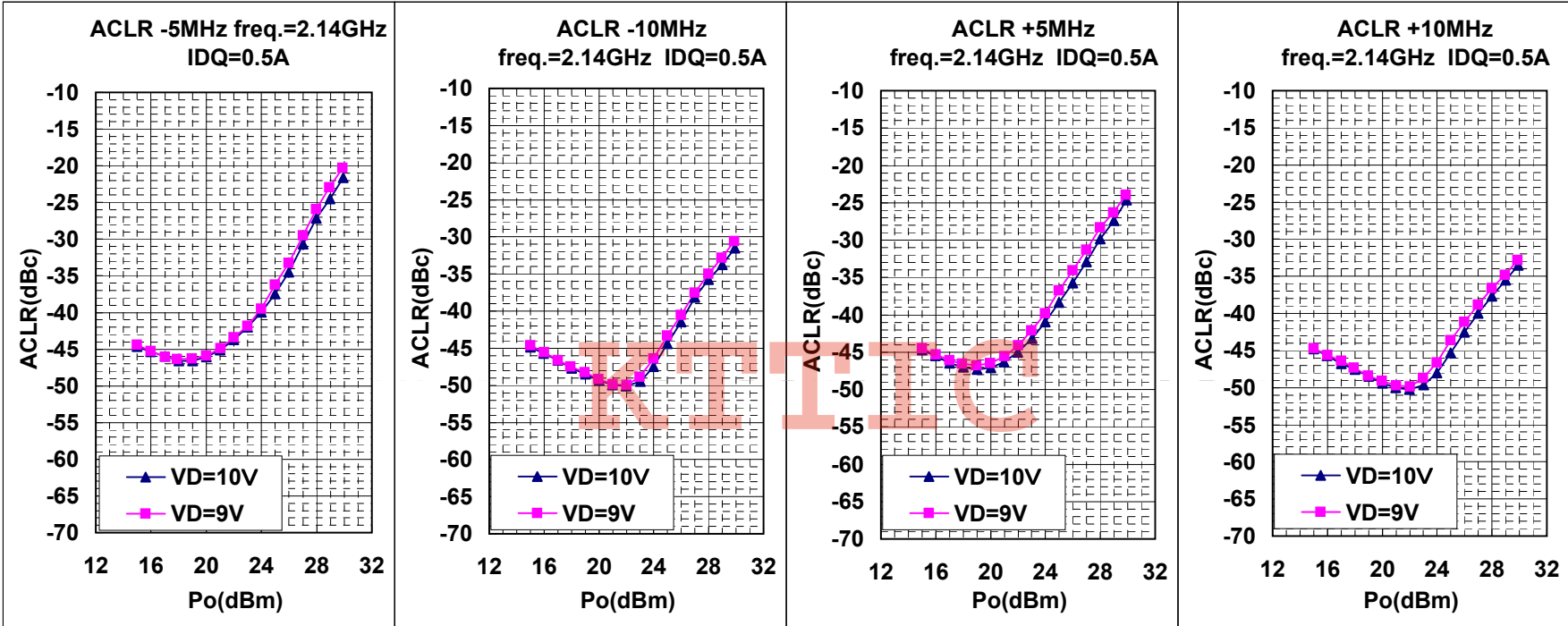
MGF0921A RF TEST DATA(W-CDMA)  
 ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal



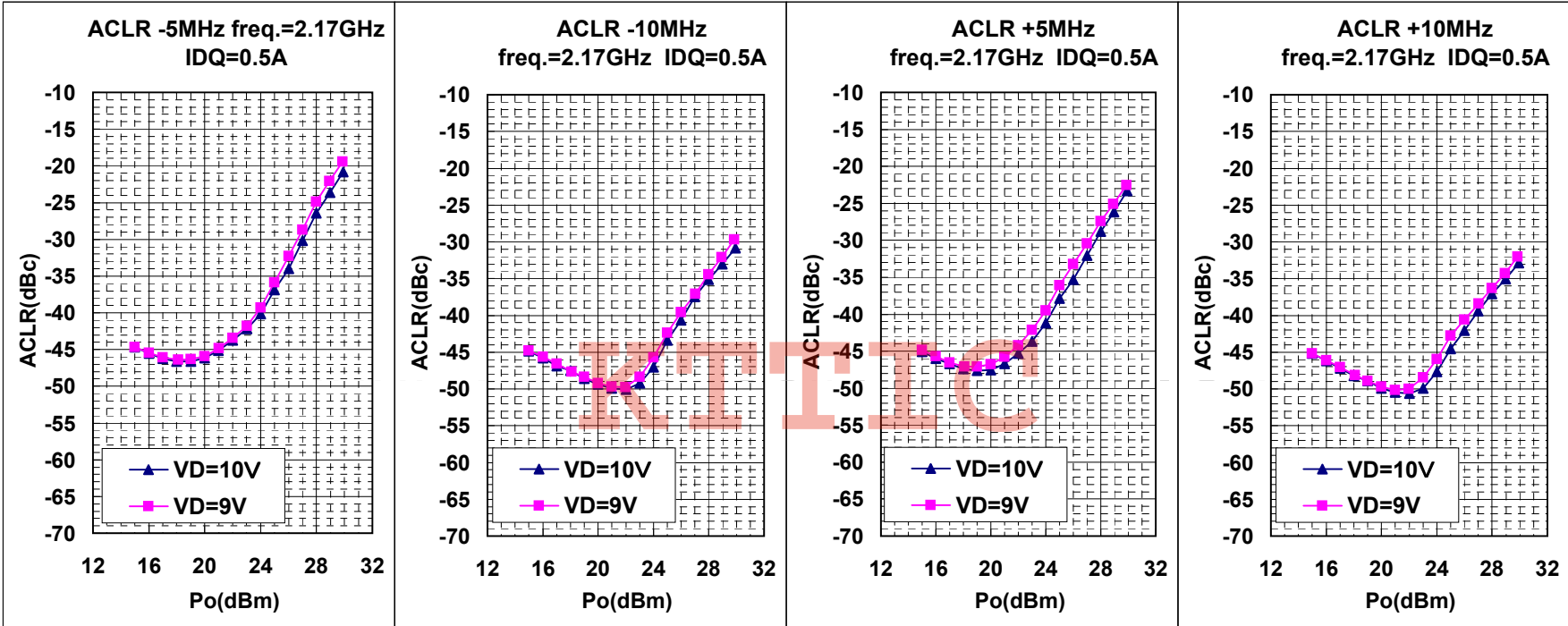
MGF0921A RF TEST DATA(W-CDMA)  
 ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal



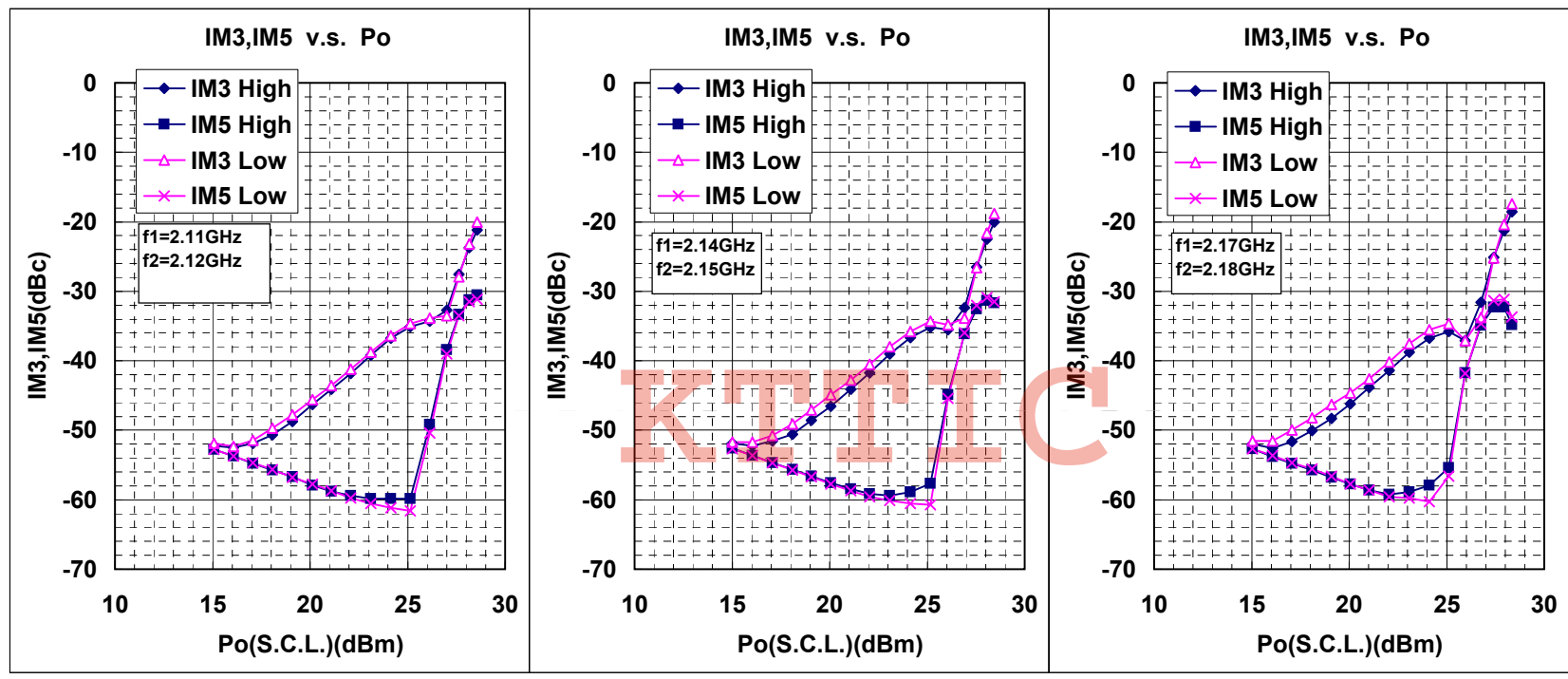
MGF0921A RF TEST DATA(W-CDMA)  
ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal



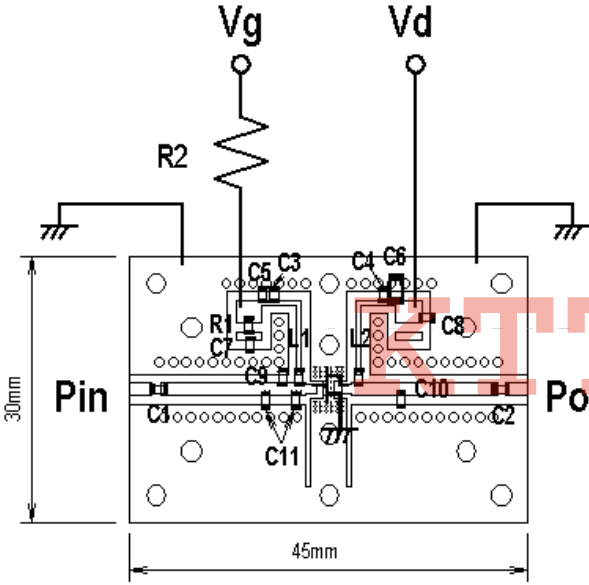
**MGF0921A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's 2carrier Signal**



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

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