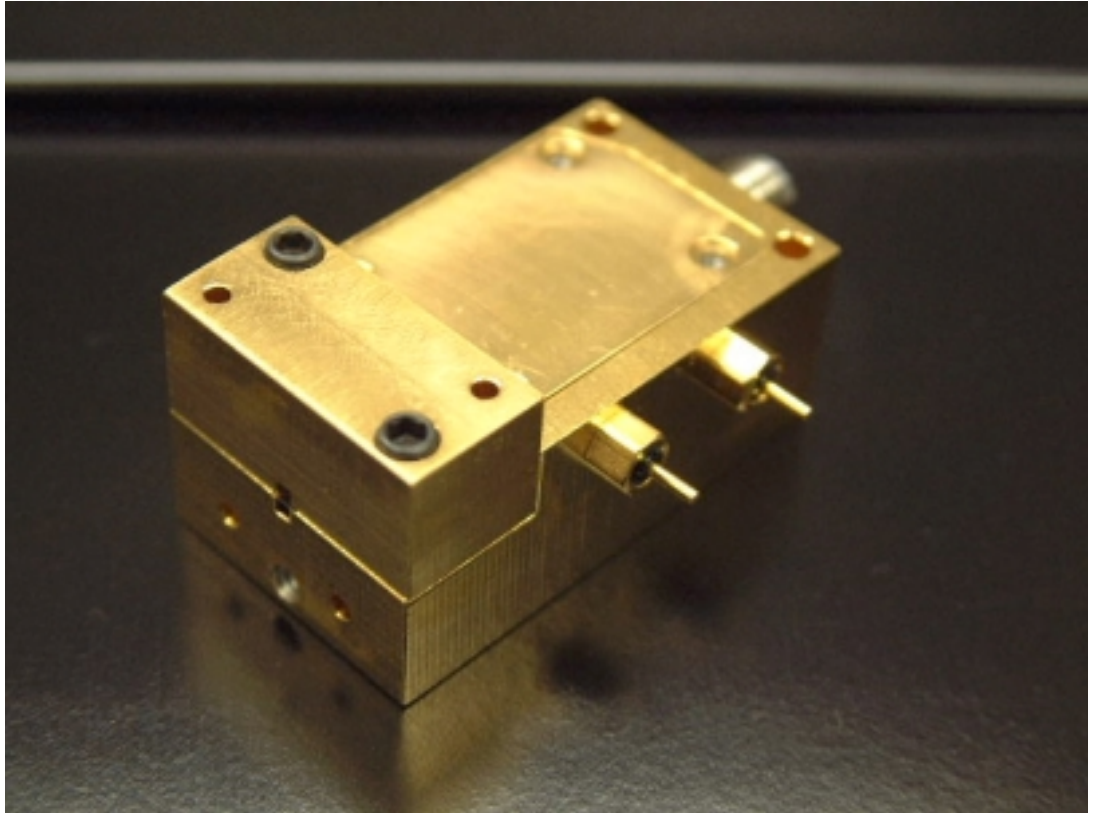
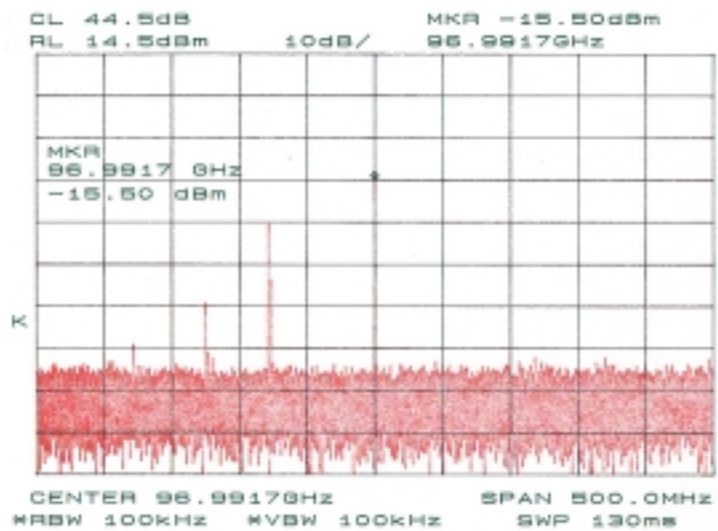




Figure 4: TLC's Ka-Band to W-Band Multiplier
 (Based on TLC's New O-Chip III MMIC)



Size: 0.5" x 0.75" module includes Amp + O-Chip III w/ microstrip/waveguide transition to WR 10 waveguide output



Data 16.15 GHz to 97 GHz without Amplifier (10 dBm input)



Table II a
W-Band Module Test: #001W

Vd = 5 V Vg = -5 V
Id = 0.232 A Ig = 0.3 A

Fin (GHz)	Pin (dBm)	Fout(GHz)	Pout (dBm) (At Sp. Ana)	Pout(dBm) (Actual)	Conv. Gain
15.8	10	94.8	-14.67	5.33	-4.67
	12		-14.5	5.5	-6.5
	14		-14.5	5.5	-8.5
15.85	10	95.1	-15	5	-5
	12		-14.33	5.67	-6.33
	14		-14.33	5.67	-8.33
15.9	10	95.4	-15	5	-5
	12		-14.33	5.67	-6.33
	14		-14.17	5.83	-8.17
15.95	10	95.7	-14.33	5.67	-4.33
	12		-13.83	6.17	-5.83
	14		-13.83	6.17	-7.83
16	10	96	-13.17	6.83	-3.17
	12		-12.83	7.17	-4.83
	14		-13	7	-7
16.05	10	96.3	-12.83	7.17	-2.83
	12		-12.5	7.5	-4.5
	14		-12.5	7.5	-6.5
16.1	10	96.6	-13	7	-3
	12		-12.83	7.17	-4.83
	14		-12.67	7.33	-6.67
16.15	10	96.9	-12.17	7.83	-2.17
	12		-12.67	7.33	-4.67
	14		-12.67	7.33	-6.67
16.2	10	97.2	-12.83	7.17	-2.83
	12		-13.17	6.83	-5.17
	14		-12.83	7.17	-6.83

Table II b
W-Band Module Test: #002W

Vd = 5 V Vg = -5 V
Id = 0.293 A Ig = 0.338 A

Fin (GHz)	Pin (dBm)	Fout(GHz)	Pout (dBm) (At Sp. Ana)	Pout(dBm) (Actual)	Conv. Gain
15.8	10	94.8	-13.67	6.33	-3.67
	12		-12.5	7.5	-4.5
	14		-13	7	-7
15.85	10	95.1	-19.67	0.33	-9.67
	12		-11.5	8.5	-3.5
	14		-11.83	8.17	-5.83
15.9	10	95.4	-16	4	-6
	12		-10.83	9.17	-2.83
	14		-11	9	-5
15.95	10	95.7	-17	3	-7
	12		-9.67	10.33	-1.67
	14		-10	10	-4
16	10	96	-13.17	6.83	-3.17
	12		-9.17	10.83	-1.17
	14		-9.33	10.67	-3.33
16.05	10	96.3	-16.5	3.5	-6.5
	12		-9	11	-1
	14		-9.17	10.83	-3.17
16.1	10	96.6	-12.5	7.5	-2.5
	12		-9.33	10.67	-1.33
	14		-9.67	10.33	-3.67
16.15	10	96.9	-10.83	9.17	-0.83
	12		-9.17	10.83	-1.17
	14		-9.17	10.83	-3.17
16.2	10	97.2	-9.17	10.83	0.83
	12		-8.83	11.17	-0.83
	14		-8.83	11.17	-2.83