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POWER GENERATION AND INTERMODULATION CONTROL IN TLB0183E AND TLB0186E

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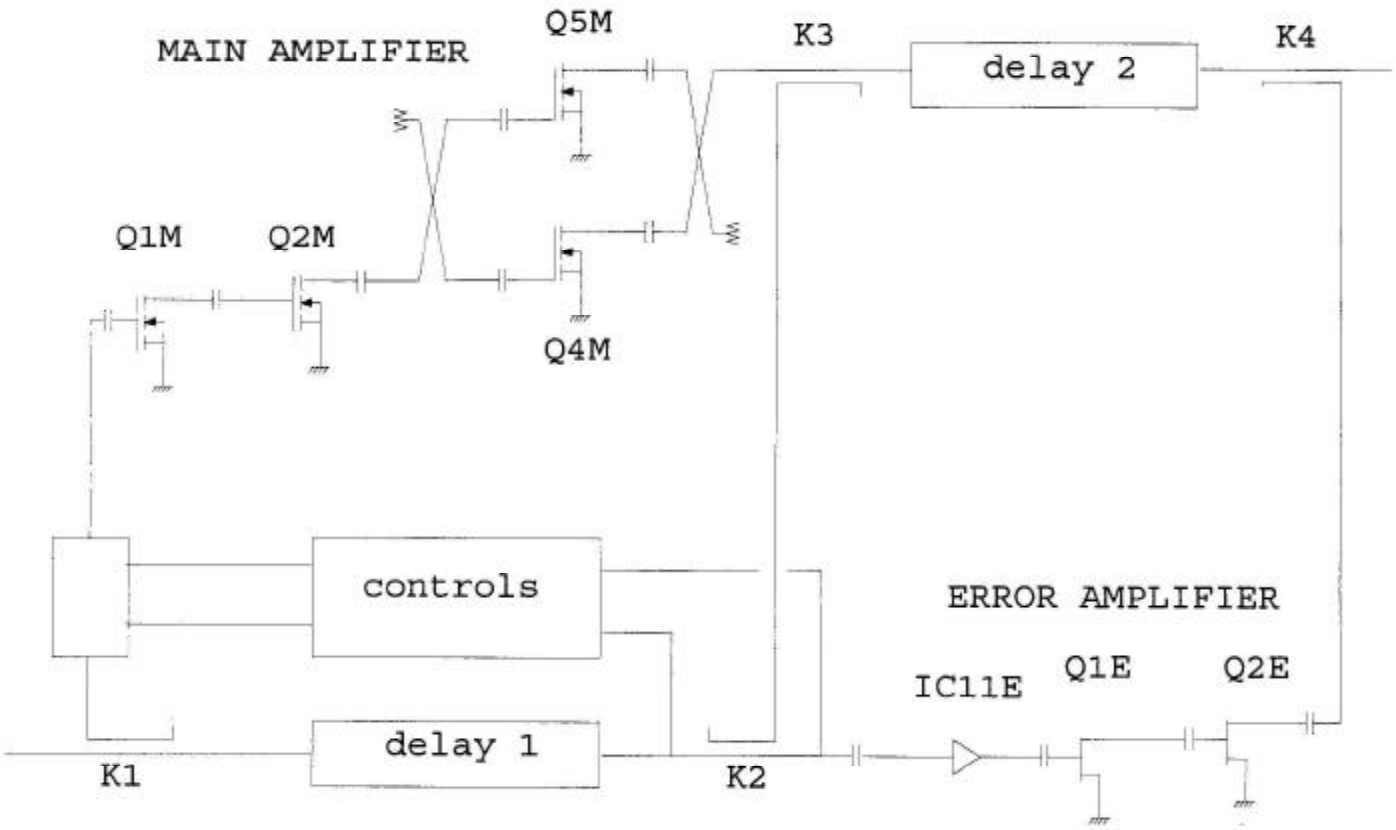
1. GENERAL DESCRIPTION

The TLB0183 and the TLB0186 are feedforward amplifiers operating respectively in the cellular band (869-894MHz) and in the PMR band (851-869MHz). They have 26dB of gain and a maximum intermodulation level of -55dBc when operated with 2 tones at 7.5W each (30W peak) output power.

The signal amplification is done by the main amplifier operating in class AB. The distortion correction is done with the injection of a distortion with opposite polarity at the coupler K4 after amplification in the error amplifier operating in class A. The delay lines 1 and 2 insure a broadband cancellation of the distortion.

The block diagram of these amplifiers showing the general organisation and the power transistors is the following :



2. POWER GENERATION DEVICES

The RF power amplification is done by the main amplifier. The RF devices used for that amplification and their bias are described in the following table :

Transistor	part #	Type	Peak power class AB	Manufacturer	Class of operation	Bias
Q1M	MRF6522-5	Mosfet	5W	Motorola	A	24V / 0.18A
Q2M	MRF6522-10	Mosfet	10W	Motorola	AB	26V / 0.08A
Q4M	PTE10052	Mosfet	30W	Ericsson	AB	26V / 0.32A
Q5M	PTE10052	Mosfet	30W	Ericsson	AB	26V / 0.32A

3. CORRECTION CIRCUITRY

The main amplifier distortion is extracted from the signal in coupler K2. It is then amplified in the error amplifier before being injected to the output, by coupler K4, 180° out of phase relative to the distortion coming from the main amplifier. This distortion is therefore cancelled and is dissipated in the isolation resistor of coupler K4.

The scaling of the distortion prior to cancellation in K4 is done by the error amplifier. The RF devices used in the error amplifier are the following :

Transistor	part #	Type	Peak power class A	Manufacturer	Class of operation	Bias
IC11E	ERA1-SM	HBT	0.01W	MCL	A	3.7V / 0.06A
Q1E	CLY05	GaAs	0.5W	Siemens	A	7V / 0.2A
Q2E	MGF0905A	GaAs	2.5W	Mistubishi	A	9.1V / 0.84A

4. OUTPUT POWER LIMITATION

The current consumption is limited to 6.0A max (5.0 typ), insuring that the output power will never exceed 30W. An input overdrive, an oscillation or any signal at higher level will therefore trigger a shut down.