TRF3520

QUESTION: Is Phase balance in theTRF3520 modulator more important than Amplitude balance?
ANSWER: No, both contribute to detectable digital errors by increasing the Sideband content of the signal. The relative contributions are combined in a simple expression:

Suppression = -10 log $((1-2A\cos\Theta + A^2)/ (1+ 2A\cos\Theta +A^2))$
Where A is the voltage gain ratio and Θ is the phase error from quadrature.

Nominal errors in the TRF3520 of under 0.2 dB and 2.0 degrees would meet a specification of -35 dBc Sideband suppression.

QUESTION: Do the I and Q inputs have to be DC coupled?
ANSWER: Most digital modulation formats contain a significant amount of energy down to DC. AC coupling will attenuate this low frequency energy causing an increase in phase error in the overall system. Furthermore, this AC coupling will require some charge time in a TDMA system and adds to overall current consumption. DC coupling is recommended.

QUESTION: How will DC offsets in the I and Q input lines effect my signal?
ANSWER: DC offsets will effect the amount of carrier rejections in the quadrature mixers. Large DC offsets will result in strong carrier feedthrough that will effect the phase accuracy of the system.

QUESTION: Is there DC offset compensation circuitry in the TRF3520?
ANSWER: The TRF3520 design and layout minimize DC offsets introduced in the chip itself due to process variations. It maintains excellent offset performance from 1.35V to 1.65V common mode.

QUESTION: Can I and I-not and Q and Q-not be swapped?
ANSWER: No, the modulation vector will rotate in the opposite direction and will be unrecognizable to the basestation.

QUESTION: Can I use single ended inputs on I and Q?
ANSWER: Yes, simply AC ground the I-not and Q-not inputs. Some reduction in output power may result.

QUESTION: Does the on-board low frequency VCO have to be used? Can an external source be used?
ANSWER: The TRF3520 was designed to utilize the on-board oscillator and so the input impedance and drive levels for external sources are not specified. Lab results do show, however, that this can be done successfully.

QUESTION: Can low side injection be used?
ANSWER: Probably, but this has not been tested or characterized.

QUESTION: Can the PLL and the receive LO share the DB2 output?
ANSWER: That output is a low level buffer and may not be high enough for some PLL's. However, when used with the TRF2020 PLL and TRF1020 receiver, a 3 dB resistive splitter will drive both loads.

QUESTION: Can the three digital control lines be common to all three TI GSM chips?
ANSWER: CLOCK and DATA can be common. But, each chip requires an independent STROBE line.