EXHIBIT E

Paragraph 2.983(d)(8)

Instruction Manual

circuitry prevents the output RF amplifier from saturating long-term. This AGC circuitry has an adjustable threshold, settable from about 12 to 22 dBm. The recommended setting is 20 dBm. This allows 7 dB headroom for instantaneous peak handling. The high-output threshold may be increased by adjusting the pot clockwise, or if pot adjustment cannot reach the highest desired AGC threshold, the value of R36 (10K) may be decreased slightly or R34 (1.2K) increased slightly from the design values.

2.0 ALIGNING THE DOWNLINK

Orient the PC Board so that 'CELLULAR SPECIALTIES" is readable and at the lower right of the board. (The following instructions will ask for left (OFF) or right (ON) positions of a section of switch S1.)

Connect the downlink input and output to a network analyzer (either scalar or vector type, but make sure its receiver can handle signals up to 500 milliwatts, otherwise add 10 dB fixed attenuation at its input), and set the analyzer's sweep generator to output less than -65 dBm (to ensure that even at max gain, the amplifier doesn't saturate), center frequency to 860 MHz, span to 100 MHz. Apply power, be sure the two off-board voltage regulators are heat sinked. Switch all sections of switch S1 to the OFF position (left). Turn all trimpots (R57, R17, R35, R23) fully clockwise and R47 fully counterclockwise. If the downlink overload indicator LED comes on, reduce the downlink gain by adjusting R35 counterclockwise just enough to extinguish the indicator LED. Next, reduce the gain down to 52 dB across the center portion of the band, by adjusting R35 counterclockwise. Then continue turning R35 to reduce the gain towards 30 dB. If while doing this the gain decreases too abruptly, fix the problem by adjusting the "attenuator linearity adjustment" (R47) clockwise until the right balance of high amplifier gain and smoothness of and range of adjustment of R35 is achieved. If you turn R47 too far clockwise, you might constrain the maximum gain achievable and reduce the adjustment range of gain. Keep adjusting R35 and R47 for the right balance. After you have set the linearity adjustment, immobilize it with a drop of nail polish or equivalent. When you have set the gain to 52 dB, immobilize that pot also. Make sure that the overload indicator LED is not lighted.

Next, verify that the step attenuator is functioning properly by switching in 4, then 8, then 16 dB of attenuation using S1. The downlink gain should follow the amount of reduction chosen when switching S1 sections on or off. Finally, switch all attenuation OFF, and leave AGC OFF.

3.0 ALIGNING THE UPLINK

Alignment is similar to the downlink, except for the setting of the AGC Threshold control. The AGC PEDESTAL adjustment (R57) functions to set the upper bound of gain in the absence of AGC. The AGC THRESHOLD control (R23) affects the gain only when the AGC ON switch is set to ON. When that switch is OFF, the AGC THRESHOLD pot sets the output RF power above which the uplink oveload LED lights.

Disconnect the network analyzer from the downlink and connect it to the uplink (generator to J1, analyzer receiver to J2).
Set the analyzer for 815 MHz center frequency and 100 MHz span. Use a -65 dBm generator level from the analyzer.

Make sure the AGC threshold control is maximum clockwise and set AGC LINEARITY (R17) fully counterclockwise. If the uplink overload indicator LED comes on, reduce the uplink gain by adjusting R57 counterclockwise just enough to extinguish the indicator LED. Next, reduce the gain down to 52 dB across the center portion of the band, by adjusting R57 counterclockwise. Then continue turning R57 to reduce the gain towards 30 dB. If while doing this the gain decreases too abruptly, fix the problem by adjusting the "attenuator linearity adjustment" (R17) clockwise until the right balance of high amplifier gain and smoothness of adjustment and desired adjustment range of R57 is achieved. If you turn R17 too far clockwise, you might constrain the maximum gain achievable or shrink the adjustment range of R57 too much. Keep adjusting R57 and R17 for the right balance. After you have set the linearity adjustment, immobilize it with a drop of nail polish or equivalent. When you have set the gain back to 52 dB, immobilize that pot (R57) also. Make sure that the overload indicator LED is not lighted. Next, increase the analyzer's RF generator output level by 30 dB to -35 dBm and reduce sweep span to zero (i.e., generator mode set to CW). Verify that the AGC threshold trimpot (R23) can be adjusted over a wide enough range to either extinguish or to light the uplink overload LED. Then increase generator level to -27 dBm. Switch AGC ON (use S1) and then measure the RF output power level coming from the uplink at J2. Adjust R23 for +20 dBm. Then turn R23 more clockwise to verify that +22 dBm can be achieved. If you turn this pot all the way clockwise and you fall short by 1 to 6 dB, change the value of fixed resistor R34 to 1.8K. If you still can't get enough output power, there is a fault in the amplifier that needs to be repaired.

Next, verify that the step attenuator is functioning properly be switching in 4, then 8, then 16 dB of attenuation using S1. The uplink gain should follow the amount of reduction chosen when switching S1 sections on or off. Finally, switch all attenuation OFF, and leave AGC OFF.

4.0 VERIFY CORRECT BANDWIDTHS

Pen plot the frequency response of both uplink and downlink. You must stay small-signal, i.e., -65 dBm into either the uplink or downlink (being careful not to trigger the AGC action in the uplink, keep AGC ON/OFF to OFF via switch S1 (top left). These penplots must conform to the superposition of the individual filter responses within +/- 2dB. And they should also conform to factory tolerance window for frequency response at selected points of frequency.