Date: 02/12/2004
From: Mark Angliss
To: Tim Dwyer
RE: FCC RNP/SNP Power Amplifier Concerns

Tim,

Transmit Duty Cycle for RNP2400 & SNP2400

This device is used in a voice system where the audio is digitized and broken into packets for transmission in a TDD/TDMA system. The worst case duty cycle will occur for the lowest data rate of 1Mb/sec. The worst case duty cycle will also occur for the shortest audio packet length which is 20msec.

After a data packet is received the unit will first send out a short acknowledgement. The acknowledgement packet length is only dependant on the data rage and for 1Mb/sec will be 304usec. This will be followed by the transmit data packet. The length of the transmit data packet is dependant on the audio coding rate, the audio packet length and the data rage. The worst case audio coding rate will be the 64kb/sec. This gives you a transmit packet length of 2080usec. This is then followed by a probe request pack that is 720usec in length. The response to the probe request is ten acknowledged with another 304usec transmit packet.

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The total transmit on time is found by adding up all of these transmit packet times: 304 + 2080 + 720 + 304 to give a total of 3408usec out of 20msec. This gives a duty cycle of 17.04%. For the highest power output rating of 100mW the time averaged transmit power output will be 17.04mW.

The following drawing shows the general sequence of transmitter on events for worst case operation. The drawing is NOT to scale.