1200 G Street, NW
Suite 500
Washington, DC 20005

P: 202-628-6380
F: 202-393-5453
W: www.atis.org

February 26, 2007

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: WT Docket No. 06-203
Ex Parte Supplemental Comments

Dear Ms. Dortch:

The Alliance for Telecommunications Industry Solutions' ("ATIS") Incubator Solutions Program #4 – Hearing Aid Compatibility (AISP.4-HAC) provides the following supplemental information on technical challenges related to the iDEN™ air interface technology. This information supplements the data provided by the industry in its comments in the above-referenced proceeding pertaining to the technical challenges faced by wireless manufacturers and service providers in meeting the Commission's hearing aid compatibility (HAC) requirements.

Background. The iDEN air interface shares some of the same HAC issues as GSM, including frequency band effects and form factor challenges. Some key differences between iDEN and GSM are:

1. iDEN operates only in the 800 and 900 MHz SMR bands and, unlike GSM, does not operate in the 1900 MHZ band.
2. iDEN uses an OFDM like quad 16-QAM modulation with a peak-to-average ratio (PAR) of nearly 6 dB, rather than zero dB for GSM. As a result, iDEN has a peak power measurement of approximately 33.7 dBm, which exceeds GSM's peak power level of 33 dBm. Measured values of a typical iDEN signal peak power level and PAR to confirm these characteristics are evident in the zero span spectrum analyzer display contained in Figures 1 and 2 below.
3. iDEN employs a subaudible pulse repetition rate of 22 Hz, rather than the more audible rate of 217 Hz employed by GSM, and iDEN has a duty cycle of 33.3%, as compared to the 12.5% duty cycle characteristic of GSM.

HA Interference. The main cause of the interference experienced by a hearing aid user is the same across the different wireless technologies and hearing aids. Radiofrequency fields radiated by the handsets are AM detected by the small wires in the hearing aid, which act essentially as antennas magnifying the interference effects from the wireless device. These AM-detected signals are then transmitted to the amplifier circuitry in the hearing aid. When these signals are in the audio frequency range, they are amplified and result in an audible

sound. Most radiofrequency transmissions from cell phones consist of signal variations in the audio frequency range due to their individual modulation schemes. It is these RF power amplitude variations that eventually result in the undesirable sound from the hearing aid.

iDEN and Peak Power. It is known that hearing aids do not respond to the peak RF envelope power of wireless devices because analog phones do not cause interference. Rather, hearing aids respond to the amplitude modulation component of the air interface induced by time division modulation and the modulation PAR. This is not taken into consideration in the C63.19 Standard, which requires measurement only of peak RF power and not the modulation power.

Compare, for example, the interference to a hearing aid from an 80 % AM modulation 1 Watt average RF power wireless device to the interference from the same device operating with 10 % AM modulation with RF power increased to 1.64 watt average. Under both conditions, the devices have the same peak RF power of 1.8 watts. However, under the second set of conditions, the average RF power increased over 2 dB yet the interference in the hearing aid will be substantially reduced by about 15 dB. This is not taken into account under the hearing aid compatibility assessment metrology of the C63.19 Standard, which is based on the measurement of peak RF power rather than the recovered modulation audio power and is, therefore, inconsistent with the AM detection process on which the standard is based. While this inconsistency primarily impacts iDEN at this time, it will likely affect many future digital modulations.

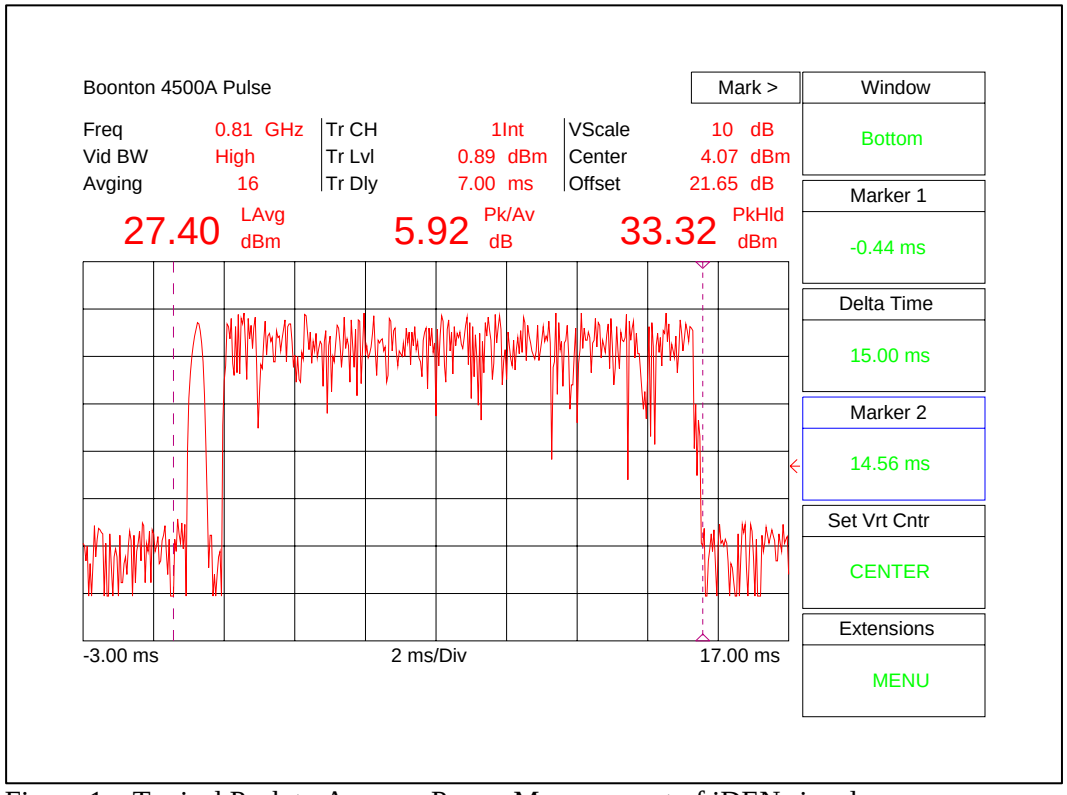

Figure 1 – Typical Peak to Average Power Measurement of iDEN signal

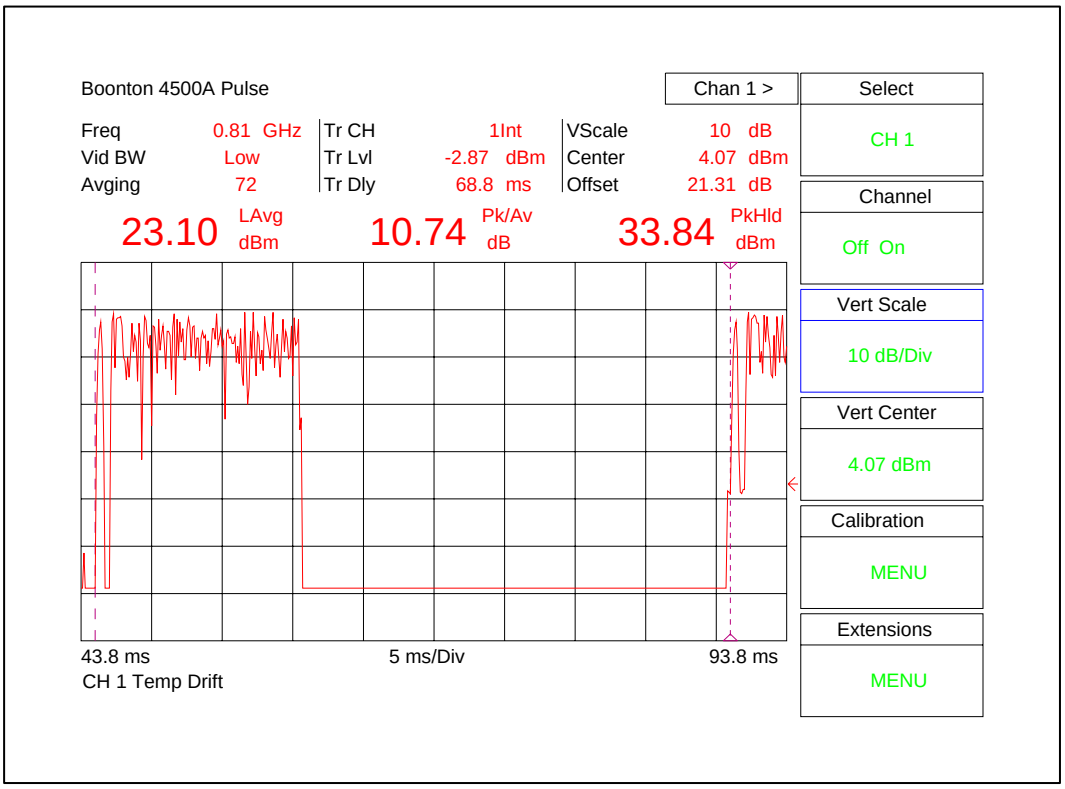

Figure 2 – Measurement of Probe Modulation Factor for iDEN signal

If there are any questions regarding this matter, please do not hesitate to contact the undersigned.

Sincerely,

Thomas Goode
General Counsel