

TO: Office of Engineering and Technology
Mr. John Kennedy

RE: FCC File #0379-EX-ST-2004 [Reference Number: 3076]
Confirmation Number: EL14615

Please find below our responses to the questions posed by Mr. Kennedy to Mr. Klaus Bender on June 30, 2004. Please do not hesitate to call if there are any further questions I may answer or if any further support is needed in this matter.

1. *What is the minimum number of units needed for the full system test?*

The AMDS automatic meter reading system is a point to multi-point system where the meters may be installed on homes, businesses and industrial sites in any terrain that a utility may operate in. Utilities are concerned that there will be coverage holes in their diverse terrain or that there will be temporary outages of signal quality. AMDS' engineers developed a predecessor technology using short range spread spectrum unlicensed radio links. There are now over 13 million of these installed but the initial utility customers demanded these same kind of reliability and coverage area trials prior to commercialization. AMDS' new system provides Next Generation features such as blackout avoidance and actual voltage real-time readings that can help utilities increase energy efficiency.

AMDS seeks to test its poll and response algorithms in the field compared to computer modeling. This test will determine how many meters can reasonably respond to an interrogation signal and still have the information received at the collection point.

AMDS' test plan involves increasing the number of units that respond to a poll signal until data collisions restrict the reception of accurate information. In addition, the meters report autonomously on a randomized time schedule that causes data collisions which must be overcome by spatial and temporal redundancy. The computer model shows this number as 500 units to provide a statistically valid sample, hence the request.

500 units also provide enough data to allow for statistically accurate results proving the systems ability to work in the presence of real-world fading environments. Fading measurement techniques require a large number of samples over a large number of wavelengths. The AMDS system needs to test both static and dynamic fading environments which also requires large numbers of units.

Another concern is the utility desires that AMDS to show the system response time and reporting accuracy when the power to large areas to the utility coverage area are interrupted. The system allows the units to enter a reduced power state and transmit at random intervals after power loss to make sure that the radio channel is not clogged at one time. Research into the proper interval, dithering time, and other useful system information needs to be tested overall statistically large population of units.

2. *What is the difference between the link budget test and the full system test in regards to the quantity of units that are being requested for each type of test?*

We wish to clarify that the system is not a point-to-point microwave line (i.e. one fixed station to another fixed station). It is an AMR (Automatic Meter Reading) system and operates Point to Point and Point to Multi-Point, with MAS capability as well.

The link budget test allows AMDS to place meters in a multiplicity of installation scenarios (i.e. basements, in hilly terrain, in courtyards, non-Line-Of-Sight installations, power meter installations, water meter installations, gas meter installations, etc) and monitor the system's operation over various installation scenarios and types.

A count of 50 units would allow for multiple antenna placements around a test building (for example, a factory, an apartment complex) to ascertain the variations in propagation media for events such as slow fading and fast fading, shading, etc.

Since the system provides for two-way communication between the meter to the base station, propagation models need to be confirmed for this part of the link as well as to prove out base station ERP levels so that the system does not unnecessarily transmit higher ERP from the base station than it needs.

Please do not hesitate to contact us if any more questions arise. You should feel free to contact either the applicant or Benjamin J. Aron, Esq, at (202) 347-8580.