A. DEVICE UNDER TEST

The device is a low power data transceiver receiver used to interrogate and gather data from one or more hand transceivers (OTD-SYS400HS). The system is used in audience participation programs. This product is designed to operate under the provisions of Part 15.249 of the FCC rules. The frequency of operation is 916.5MHz nominal.

The device is powered by an external translator box which is in turn connected to a computer. Testing was performed with several different setup arrangements in as shown in the photographs order to isolate the emissions from the transceiver and establish worst case radiation. Line conducted emissions were measured with the translator box connected but with the computer turned off. The translator box is powered by a separate class 2 transformer and does not derive power from the computer.

The translator box is a class A device. Radiated emissions and line conducted emissions were measured and recorded separately.

This receiver of this device is a TRF circuit using SAW filters to achieve the desired receive frequency. A SAW delay line is employed to provide a time lag between two rf amplifiers so that the amplifiers may be alternately toggled on and off (approx. 245kHz.) and thus realize a relatively high gain without instability. The entire receiver is contained in a single monolithic integrated circuit. The only external rf element is the patch antenna. There are no tunable elements in this device.

B. MEASUREMENT PROCEDURE: RADIATED EMISSIONS

Testing of this device and its associated transceiver (OTD-SYS400HS) was conducted at the Hyak Labs. test facility in Spotsylvania, Virginia.

Field strength measurements were conducted according to the procedures set forth in ANSI C63.4 (1992). For testing purposes, the device was provided with special software that issued a constant 5KHz on/off keyed pulse stream. The software also included a mode to send a stream of the standard query commands.

The device under test was placed on a rotating turntable 0.8

meters high, centered at 3 meters distant from the measurement antenna. The device was set up in the various position shown in the photographs. The emissions from the transceiver measured separately as a group and recorded on the data sheet. The duty cycle correction factor per Part 15.35 is approximately –6dB but the peak readings were all sufficiently below the limits so the correction factor was not applied to the calculations.

The field strength measurements were taken using an HP8596E spectrum analyzer, an EMCO 3121C dipole set and an Avantek UJ210 preamp. The device was scanned from 30MHz. to 10GHz and all emissions were noted.

At each detected frequency, the device was measured by rotating the turntable and adjusting the antenna height over a range of 1 to 4 meters to obtain the maximum output level. This procedure was performed with both horizontal and vertical polarizations with the device in the positions described above. The peak reading for each frequency was recorded in the second column on the data sheet. No emissions were detected above 6GHz.

Line conducted measurements were taken using an HP8591E spectrum analyzer and a Compliance Design LISN. Scans were run from 450KHz to 30MHz and plotted on an HP7475A pen plotter. Peaks were identified with markers.