

A. DEVICE UNDER TEST

The device is a low power data transceiver operating under the provisions of Part 15.249 of the FCC rules. The transmit and receive frequencies are the same, operating in simplex mode at 916.5MHz. nominal. The modulation mode is on/off keying at rates up to 14400 baud.

The receiver section is a TRF type using sequentially tuned amplifier stages that are clocked at a nominal 245kHz. No signals relating to the receiver clock frequency were detectable as radiated emissions.

B. MEASUREMENT PROCEDURE: RADIATED EMISSIONS

Transmitter field strength measurements were conducted according to the procedures set forth in ANSI C63.4 (1992). 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 placed in the center of the turntable and tested in the two logical positions as shown in the photographs. This device contains an internal mercury tilt switch that limits operation to normal handheld positions. This is done to increase battery life.

The device is powered from an integral 7.2V NiCad battery and is internally regulated at 5V. The test was conducted with the battery at full charge. Several spare batteries were on hand for the test but the first battery was checked periodically and never dropped below 85% capacity. The device maintains regulation down to 72% battery capacity. For the purposes of testing, the device was locked in a constant transmit pattern generated by a special test routine programmed into the internal micro-controller. The field strength measurements were taken using an HP8596E spectrum analyzer, EMC0 3121C dipole set, an EMC0 3115 double ridge guide horn, and an Avantek UJ210 preamp. The device was scanned from 30MHz. to 9.2GHz. and all emissions were noted. In this case the only emissions detected were those harmonically related to the fundamental transmit frequency.

At each detected frequency of emission, 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 antenna 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. The readings for the 5th, 6th and 7th, harmonics were obtained by reducing the distance from the measurement antenna to 1 meter and entering a -9.5dB distance correction factor into the final calculation for those measurements. Harmonics above the 7th were not detectable.

The calculations for this device were made without factoring in a duty cycle correction factor. Although the transmission mode is on/off keying and yields a correction factor of approximately -8dB., all emissions were sufficiently below the applicable limits to ignore the offset.