6.2 Wireless Microphone Field Tests

6.2.1 Introduction

Field tests were conducted to evaluate the performance of the WSDs in detecting wireless microphones under real-world conditions. Arrangements were made with the National Football League (NFL) and the ESPN Network (ESPN) to perform tests before and during a pre-season football game at FedEx Field in Landover, MD and with the Majestic Theatre in New York City to perform tests before and during a performance of a Broadway play.

ESPN offered to simulate a game day broadcast at FedEx Field from 10:30 AM in the morning until 5:00 PM in the afternoon before the start of the game. During this time they would turn all their wireless microphones on or off upon request. The WSDs were operated and spectrum measurements were taken at four different locations at the venue: on the east (home field) side of the playing field from 10:30 AM to 12:00 PM, at the "tailgate" area outside the stadium from 12:40 PM to 2:00 PM, on the upper deck from 2:20 PM to 3:30 PM, and in the Press Box from 4:00 PM on. At 5:00 PM, ESPN was required to cease transmissions so the NFL could set up and test their wireless microphones for use during the game, which began at 7:00 PM. From 6:20 PM to 7:00 PM during pre-game activities and from 7:20 PM to 7:45 PM during the first quarter of the game, the WSDs were operated and spectrum measurements taken.

At the Majestic Theatre, WSD tests and spectrum measurements were taken at three different locations before the performance: on the sidewalk at the entrance to the theater, in the middle of the mezzanine and in the orchestra seating area. Measurements were also taken at one location during the performance (entrance ramp to the orchestra seating area). Before the performance, measurements were performed with the wireless microphones to be used during the show turned on and off upon request.

6.2.2 Test Procedure

At each location the Philips and I2R WSDs were set up with their receive antennas located approximately 2 meters from the wireless microphone base unit. The frequency spectrum was scanned by the WSDs from TV channels 21 to 51 with the wireless microphones turned on and off. The channels indicated as occupied by the WSD were recorded in each case. The frequency spectrum was also observed and recorded with a spectrum analyzer using a ground plane vertical antenna with a gain of approximately 0 dBi from channels 21 to 51.

6.2.3 Test Results

Tables 6-29 through 6-48 show the results of the WSD scans. "X" indicates the channels on which ESPN, the NFL or the Majestic Theatre were operating wireless microphones and the channels which the WSDs reported as occupied with the microphones off and on. The channels indicated as NFL channels are those on which it appears that there were NFL microphones based on the spectrum scans. The spectrum plots obtained with the spectrum analyzer under the same conditions are given in Appendix A for FedEx Field and Appendix B for the Majestic Theatre.

Additionally, during two of the field tests of the of the white space devices' ability to detect TV signals, brief tests were conducted to check the ability of the Philips and the I2R devices to detect wireless microphones. At the Portals location, it was found that the Philips device could detect the Shure UR1 and the Lectrosonics UM 700 microphones at distances up to 30.5 meters (100 feet) within the building with intervening walls. The I2R device reported detection of the Shure UR1 with less than 100% probability at 4.6 meters (15 feet) or less but could not detect the microphone at 30.5 meters (100 feet). The I2R device reported detection of the Lectrosonics unit with 100 % probability at distances up to 6.1 meters (20 feet) but with only 60% probability at distances of 30.5 meters (100 feet) and 61 meters (200 feet). At the #3 test site, a residential location, the Philips device could not be tested because it indicated that all channels were occupied. At this location, the I2R device could not detect the Shure UR2 even as close as 1.5 meters (5 feet) but it could detect the Lectrosonics UM 700 at distances up to 15.2 meters (50 feet) where the reported probability of detection decreased to 50%.