



To: Federal Communications Commission
445 12th Street SW
Washington, DC 20554
Subject: Tzero Technologies STA Application, Public Exhibit I
Date: 9 July 2006

Gentlemen,

An experimental license is being sought for the development of an Ultra Wide-Band (UWB) wireless data system. Testing of the product within the engineering labs at Tzero Technologies has been completed. In order to further the development of the product and verify its performance in a "real world" environment, Tzero is seeking an STA to allow it to conduct verification tests outside of the engineering lab environment.

The necessity for an STA is not expected to be longer than 6 months. This document addresses some of the Commissions concerns regarding experimental licenses / STAs.

If additional information / clarification is required, please do not hesitate to contact me.
Regards,

A handwritten signature in black ink, appearing to read 'David Waitt'.

David Waitt
Consultant Representing Tzero Technologies
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Overview / Applications of the Tzero system.

Entertainment:

With the availability of digital content and the rapid adoption of digital TV, flat panel displays, DVD, DVR, etc., a high-quality method for wireless connectivity is a requirement. Existing standards have addressed the need for data networking, but do not come close to the demanding requirements of video networks. To date, sharing of content between devices has required installation of specialized cabling and wires, an expensive and invasive process.

The goal of digital video content distribution is easily delivered with a wireless technology. Tzero has used the broad spectrum of ultra wideband technology to provide high bandwidth while at the same time avoiding link fading due to broad channel spectrum

Tzero has built a robust architecture on top of ultra wideband technology which provides:

- Broadcast-quality video (less than one packet error in greater than two hours of high-definition video)
- Link reliability (consistent connection eliminates pixelated video or lost frames)
- Interference avoidance
- State-of-the-art radio frequency performance



Personal Computers

Perhaps one of the most visible areas where wireless technology has taken hold is in the area of personal computing. Multiple wireless networking technologies are being adopted by personal computers including:

- 802.11 (WiFi)
- Wireless USB: PC cable replacement targeting printers, external hard drives, etc. for data download and storage.
- Infrared: used for low data rate, short range connections.

Integrating wireless support for broadcast-quality video into desktop computers will lead to the convergence of computers and consumer electronics devices. This application transforms the computer from being simply a filing system of digital photos and movies, to being a source of content for large screen displays as well as a mobile display.

Reason for Experiment

Complete program of research and experimentation proposal including description of equipment and theory of operation:

A key application of TZero technology is in-home video distribution between set-top boxes and displays. The main objective of the experiment is to validate the performance of the Tzero UWB system in a wide variety of different homes for this application. While thorough testing has been conducted in the engineering lab, it is imperative to validate system performance in a typical customer environment.

Obviously a typical household environment, while similar in some respects to the office environment, is in many ways different from the office environment in which the original engineering evaluation was performed. Different applications of UWB technology require individual trials to validate the effectiveness of the technology, and provide feedback for engineering successful systems. Especially for an application as demanding as set-top box video distribution. Houses are constructed of many different materials, internal walls can be made of many different materials, with a variety of floor plans, each of which presents a different "RF propagation" environment in which the Tzero system must operate. Therefore, it is crucial to validate the system performance in many different environments for this application.

Applicable Rules and Standards

The proposed system meets the requirements of FCC Part 15.517 ("Technical requirements for indoor UWB systems") incorporating the Petition for Waiver of the Part 15 UWB Regulations filed with the FCC (ET Docket No. 04-352 Adopted March 10, 2005.) (Included in this app).

It is an implementation of the standard ECMA 368, which is based on the WiMedia MB-OFDM PHY Specification Final Release 1.1. The ECMA 368 standard ("*High Rate Ultra Wideband PHY and MAC Standard*" December 2005) specifies a distributed medium access control (MAC) sublayer and a physical layer (PHY) for wireless networks. (Included in this app)

Specific Objectives sought to be accomplished:

The main objective of the proposal is to verify acceptable performance of the Tzero UWB system in multiple "typical" household environments.

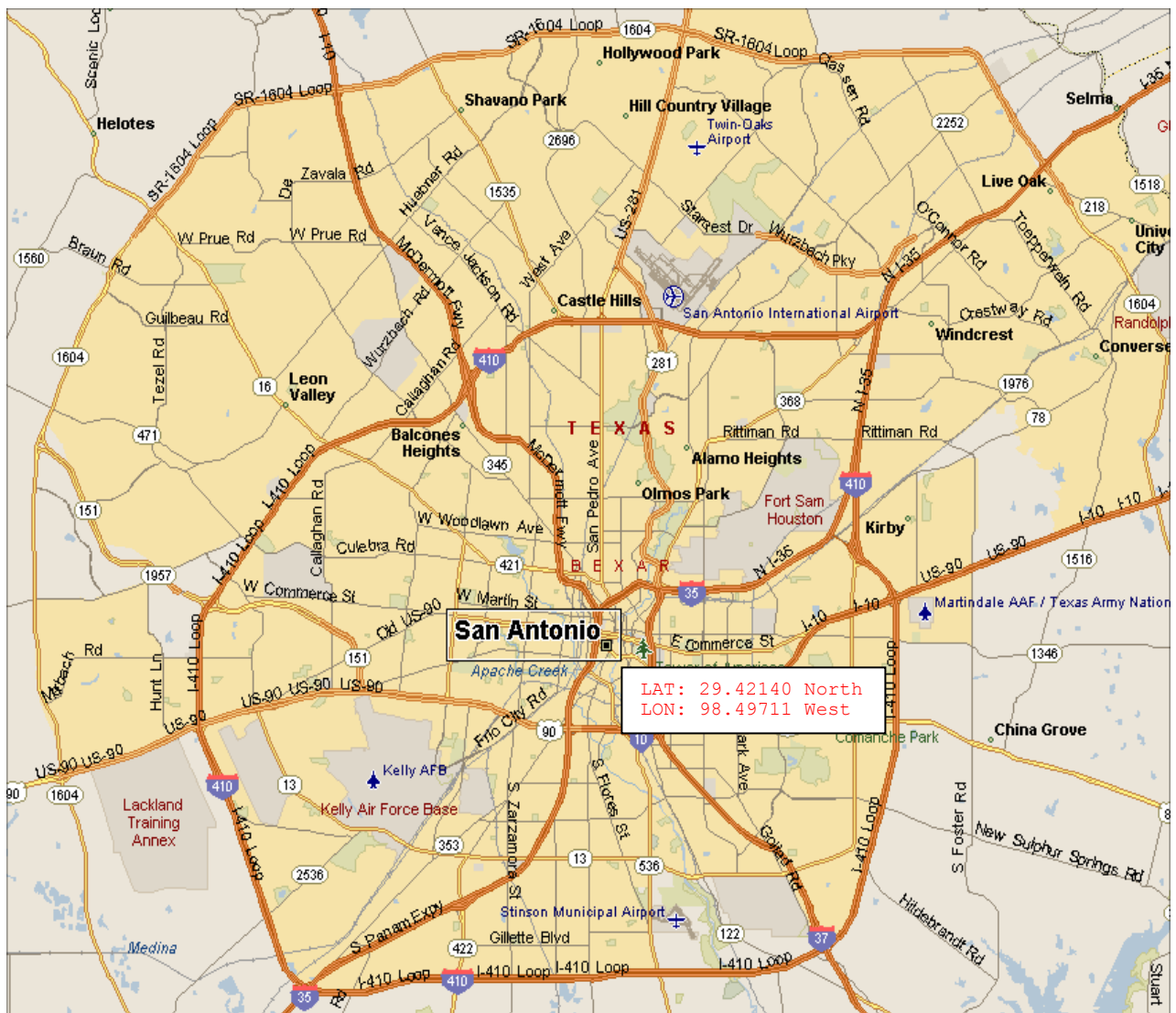
How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion, or utilization of the radio art, or is along the line not already investigated:

UWB is a promising new technology and has many different uses. To date (6 July 2006), there have only been 54 UWB products certified by the FCC. These products are being used in a very wide range of applications (automotive applications to manufacturing applications), but there is little actual field engineering data available for Tzero to draw upon for this specific application. It is therefore necessary for Tzero to perform its own controlled field trials. This additional data and experience will add to the overall breadth and understanding UWB products and their possible applications.

The proposed system would be used at various household locations throughout the San Antonio, Texas area. The units will all be in "Temporary Fixed " locations within a 20 mile radius of the center of San Antonio, Texas (LAT: 29.42140 North LON 98.49711 West).

The specific homes in which the test will be conducted will be chosen based on building material (wood, brick, masonry) floor plan, number of floors, placement of video equipment within the home, anticipated customer usage, and a number of other variables in order to characterize system performance in a wide variety of environments.

Upon completion of the field experiments, all of the units will be uninstalled and returned to Tzero in California.



Labeling of Units:

The text shown will appear on a label that will be affixed to the outside of the unit in a conspicuous location per FCC Part 2.803. XXXXXX will be replaced by the issued experimental license number

This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained. Exp Lic: XXXXXXXX

Positioning of Units Within The Home:

The RF transmit power is well below the threshold that would require an RF exposure evaluation, nonetheless the units will be positioned within the home so as to provide a minimum of 20cm separating distance between the radiating element and all persons.

Possibility of Harmful Interference

One of the main characteristics of UWB is its ability to mitigate the possibility of causing harmful interference. The low level signal is spread over a very wide bandwidth; the power spectral density is extremely low. To most other communications systems this UWB signal will appear to be only low level background noise. Given the very wide spreading of the data, the very low power spectral density and the fact that operation will be indoors only, the likelihood of the UWB system interfering with another communications system is extremely low.

Proposed Certification Procedure

Tzero has a platform UWB technology that will be certified for multiple applications. The trial will help refine the Tzero product for this application, and allow it to move forward with FCC Certification and bring this product to market as soon as possible. It is anticipated that the system validation experiment will last for approximately 30 days. Assuming that no major flaws are uncovered during the course of the experiment Tzero will begin the FCC certification process after the conclusion of the trial. Tzero is working with a test lab for certification of other applications of this platform technology.

Technical Summary

Modulation: OFDM
"Band" Bandwidth: See table below
Channel frequency Bandwidth: 528 MHz
Antenna gain: 0dBi
Operating Bands: See Table Below

	Low Edge (MHz)	Center Freq (MHz)	High Edge (MHz)	Bandwidth (MHz)
Band 1	3168	3432	3696	528
Band 2	3696	3960	4224	528
Band 3	4224	4488	4752	528

Integrated Transmit Power
(Channels 1,2,3,&4) (max): -10dBm (.0001 W)
(Channels 5,6,&7) (max): -15dBm (.000031 W)
Channel Dwell Time
(1,2,3,&4) 312.5 nS
(5,6,& 7) Non-hopping
Data Rate(s) (MBPS) 53.3, 80, 106.7, 160, 200, 320, 400, 480