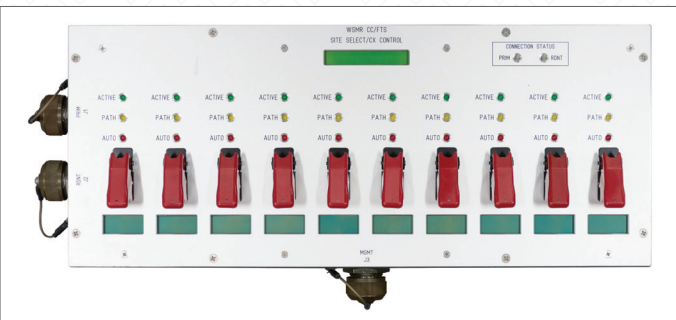


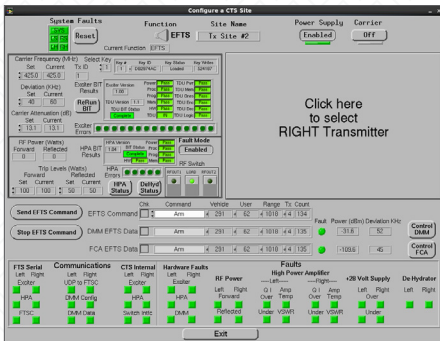


# FLIGHT TERMINATION SYSTEM

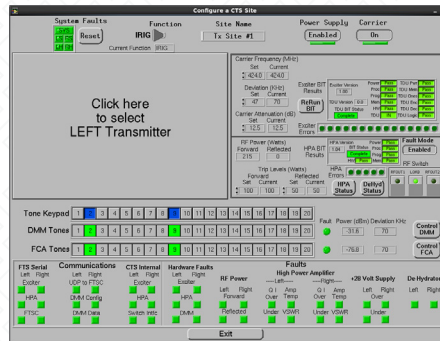


ECS's (formerly SPC) Flight Termination System (FTS) is a self contained, solid-state, fully programmable system with a flexible architecture to meet the challenges of today's evolving test and range requirements. ECS's FTS is a fully redundant configuration that includes its Command Transmitter System (CTS) and custom command and control subsystems. It can concurrently provide remote control and flight termination functions from multiple sites spread over a large geographic area via a network of fully redundant and automated transmitters over multiple control systems via a shared CTS unit to allow multiple missions to be run simultaneously from a single site.

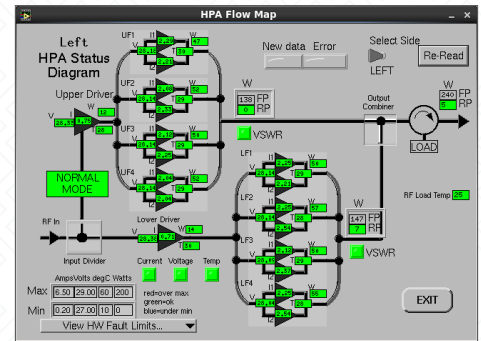
The FTS control systems feature graphical user interfaces easily customized to suit specific requirements. FTS software automatically coordinates communication and control among range control subsystems, site control subsystems, and CTS sites. The programmable command library provides the user with a variety of mission specific command tones in addition to the required Command Destruct sequence.



CTS Control and Status (IRIG Tone Mode)



CTS Control and Status (EFTS Mode)



Built-in-Test (HPA Map)

At the core of the CTS is ECS's Exciter Unit. This subassembly generates the RF carrier and modulates tones, tone sequences, EFTS messages and provides remote control for flight termination commands. The Exciter incorporates state-of-the-art direct-synthesis technology to standard Inter-Range Instrumentation Group (IRIG) secure tone commands. It is capable of simultaneously generating up to 8 of 20 available standard IRIG tones. Complete configuration and real time control is provided via a front panel user interface, which incorporates discrete tone and command switches with indicators. Additionally the Exciter provides full remote control functionality via an opto-isolated serial port (RS422/RS232 selectable), a discrete logic level interface port or UDP Ethernet. A ferrite isolator is used for RF output protection. The Exciter provides .5 watt output power to drive a High Power Amplifier (HPA). For standalone operation, the unit is configured with a 25 watt amplifier.



ECS also offers a 370-450 MHz wide band high power circularly polarized UHF omnidirectional antenna. This antenna supports both fixed site and mobile applications. The antenna provides hemispherical coverage over a frequency range of 370 MHz to 450 MHz and is capable of handling 1KW of continuous power (CW).

This antenna design provides maximum life cycle over a broad temperature range in the most extreme environments including salt, sand, and radial ice. ECS provides customizable antenna configurations that can be purchased in alternate frequency bands with various power handling options to meet customer specifications.



## UHF ANTENNA

<b>Frequency Range</b>	370-450 MHz
<b>Gain</b>	0 dBic
<b>Beam Width</b>	46° Nominal
<b>Impedance</b>	50 ohms
<b>VSWR</b>	1.2:1 max
<b>Polarity</b>	LHCP
<b>Connector</b>	LC female or 7/16 DIN
<b>CW Power Handling</b>	1 KW
<b>Mounting</b>	Adjustable Az-EI brackets
<b>Wind Survival</b>	140 mph
<b>Operating Temperature Range</b>	-28°C to +65°C

# FLIGHT TERMINATION SYSTEM

<p><b>Mission Programmability</b></p>	<p>Select from available site equipment that participates in a particular mission</p> <p>Up to 25 EFTS vehicles</p> <p>Up to 16 sites</p> <p>Up to 60 control functions can be any combination of tone patterns or EFTS messages</p>
<p><b>Command Programmability</b></p>	<p>Support for multiple receiver formats conforming to RCC 208 and EFTS Command Link IRD.</p> <p>IRIG: Individual IRIG tone, Continuous tone and tone patterns</p> <p>EFTS: CPFSK 3DES Encryption.</p>
<p><b>Command Response Time</b></p>	<p>Button Push to ON-AIR &lt; 10 milliseconds*</p> <p>System carrier fail over &lt; 10 milliseconds</p>
<p><b>Redundancy</b></p>	<p>Dual Controller System with seamless manual or automatic switchover on fault detection</p> <p>Auto recovery of restored communication paths</p> <p>Dual Paths for operator controls of commands and carrier</p>
<p><b>Fault Indicators</b></p>	<p>Visual &amp; Audible Alarms</p> <p>Controller communication link fault detection</p> <p>Detection of command transmitter internal faults at LRU level</p> <p>Communication between subsystems uses packetized messages with error detection (32 Bit CRC)</p>
<p><b>System Monitoring</b></p>	<p>Display and Recording of OFF-AIR or closed loop carrier and tone decode activity</p> <p>Monitor of carrier power (dBm) and modulation deviation (kHz) at a 15-millisecond rate</p> <p>Recording of all operator inputs (command and carrier)</p> <p>Record of communications stored with each participating site</p> <p>Record of all ON-AIR transmissions</p> <p>Visual system interconnection diagrams with real-time monitored data (at transistor level): Amplifier Temperature, Current; Power, Voltage</p>
<p><b>User Interface</b></p>	<p>User friendly GUI</p> <p>Ability to save and recall setups</p>
<p><b>Security</b></p>	<p>Three levels of password protection on all control &amp; monitor computers</p>

\* Does not include multi-site configuration range network delays