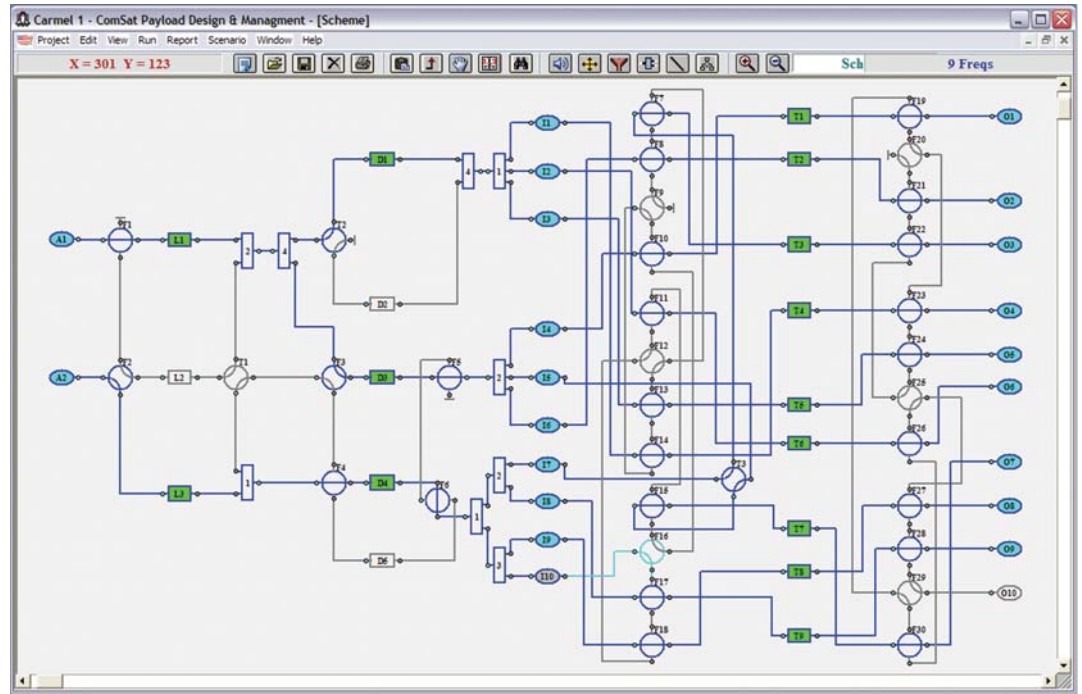


Product Description



Sample Payload Scheme Window in TRECS

TRECS™ (Transponder Reconfiguration System) enables communications satellite designers to rapidly and efficiently plan payload structures and configurations which satisfies multiple requests for channels assignments.

Using TRECS, designers can build vast number of scheme versions composed of a large number of I/O Antennas, Amplifiers, Frequency Converters, IMUX and OMUX filters, TWTAs, Switches of 2; 3; and 4 positions, Splitters of 2-and 3-ways and Wave Guides. Utilizing a clickable menu set, these elements are connected on the Scheme by Waveguides characterized by various levels of Power Loss. Easy relocation and zooming capabilities of the entire Scheme, or any subset of it, facilitates comprehension and orientation. Visual facilities exist to expose problems such as short circuits, dead-ends and other path failures. A constructed Scheme displays all appropriate and erroneously connected channels. TRECS displays automatically and transparently all elements' information and stores it in a database, including the entire set of satellite command instructions needed to manipulate each element's status; e.g. status On/Off for Amplifiers and commands for Switches' positions.

Designers can optimally configure the payload system as defined by its current Scheme components to achieve a desired request via payload channel reassignments. Changing a payload assignment involves an easy manual redefinition of an interface table then launching of a specially designed, very powerful computerized mathematical algorithm to find all feasible solutions, sort them by output signal quality while rejecting many millions of non-feasible solutions. The solutions will be optimal in terms of signal quality, satisfy given needs while minimizing disruption to existing configurations.

Adding or removing Transponder elements to the Scheme enables cost/benefit analysis. A marginal Switch or Amplifier may significantly affect the performance which can be measured by obtaining optimal solution subject to the existing Scheme. Another change can be solved again – enabling immediately and easily multiple comparisons between alternative Schemes.

TRECS brings together the strengths of Integral Systems command and control systems, and LIDM Software System's ComSat Payload Design & Management Program optimization and configuration product into a versatile tool for the Satellite Designer.

TRECS™

Transponder Reconfiguration System - Designers

TRECS for Designers

Features

Benefits

- Model Defined per Satellite
 - Easily supports multiple satellites
 - Models easily and quickly developed by user using cut & paste, as well as drag and drop functions
- Optimal configurations determined quickly
 - Powerful optimization algorithm can search through many millions of combinations in a few minutes.
 - Solutions are ordered by “cost” function to minimize loss of signal quality across the paths.
 - Solution scenarios can be saved and reloaded from disk for comparative analysis or planning
 - Busy paths can be marked to ensure no disruption to desired/existing customer paths.
 - Equipment on/off status taken into account for searches.
 - Searches can be tested on input through output by frequency or by total channels
 - Quick determination of feasible/non-feasible configurations.
 - Faulty (aged) payload elements are marked on the Scheme and the optimizing algorithm is utilized to alternatively re-configure the best means of satisfying all requests
- Snapshots of configurations can be saved and reloaded from disk.
 - Switch and on/off status can be read from telemetry.
 - Intermediate or pre-planned payload configurations may be easily maintained.
- Graphical User Interface
 - Color coded graphical layout to speed evaluation of complex solutions.
 - User may override the optimal solution by manually configure components then run the path (primal task) program to inspect results...
 - Both tabular and graphical representation of data.
 - Reports can be saved or printed for results.
 - High (1200x1600) resolution for enhanced visibility
- Direct Command Generation
 - Once plan is selected, a simple menu selection will generate a command procedure for the EPOCH realtime control system to configure the spacecraft.
 - Multiple command types supported

Applications/Usage

TRECS provides a sophisticated modeling and graphical environment enabling payload designers and test engineers to develop payload reconfigurations, Antennas, Amplifiers, Frequency Converters, TWTAs, IMUX and OMUX filters. Switches can be structured and connected on the user friendly graphical scheme. Virtually transparent to designers, constructing the Scheme results with a complete set of needed information to the optimizing algorithm. The same program is used by the satellite operators – ensuring perfect compatibility between the design and operation phases. Runs on affordable and available Windows PCs (Windows XP).

