Satellite Communication Test Description

Explanation

Please explain in the area below why an STA is necessary:

The Aerospace Corporation will be conducting satellite communication tests over several months. The tests will use up to four separate transmitting terminals, each of which will be capable of transmitting to a geostationary satellite transponder through which Aerospace will lease bandwidth for the purpose of the study.

Purpose of Operation

Please explain the purpose of operation:

The system is designed to permit a variety of satellite communication tests. As part of this, it will also permit communication links through a satellite transponder between El Segundo, CA and Chantilly, VA.

There will be up to four terminals, each located either at Aerospace's El Segundo, CA or Chantilly, VA facilities. Three terminals will have a maximum EIRP of 57.2 dBWi each with a 1.5° half power beamwidth, and the fourth will have a maximum EIRP of 60.0 dBWi with a 1.2° half power beamwidth. However, terminal EIRP will be scaled down as required to comply with transponder flux density requirements and test objectives. The terminals will transmit DVB-S2 communication signals with bandwidths not to exceed 4 MHz. Symbol rates will not exceed 3 MSym/sec, with square-root, raised-cosine (SRRC) pulse-shaping.

When operational, each terminal will be pointed only at a commercial satellite transponder through which Aerospace will lease bandwidth. At no point will terminals be on while they are not pointed at the assigned transponder and tuned to the assigned bandwidth. The number of terminals operating simultaneously can vary from one to four.

Transmission will occur over an assigned 4 MHz bandwidth between 13.75 and 14.5 GHz. The exact band will depend on the bandwidth being leased, which has not yet been finalized.

Manufacturer

Number of Units: 4 (at Aerospace facilities in California and Virginia)

Station Locations

Location 1: El Segundo, California (33°54'52"N, 118°22'47"W)

- Maximum terminal EIRP: 57.2 dBWi
- Terminal beamwidth: 1.5°
- Band: Assigned 4 MHz slot between 13.75-14.5 GHz
- Orientation: pointed toward assigned satellite transponder
- Signal: DVB-S2 QPSK

Location 2: Chantilly, Virginia (38°52'44"N, 77°27'30"W)

- Maximum terminal EIRP: 60.0 dBWi
- Terminal beamwidth: 1.2° or 1.5°
- Band: Assigned 4 MHz slot between 13.75-14.5 GHz
- Orientation: pointed toward assigned satellite transponder
- Signal: DVB-S2 QPSK