

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 any of several test sites.

There will be up to four terminals, each located at one of the following locations: El Segundo, CA; Thousand Oaks, CA; Albuquerque, NM; Hill AFB, UT; and Chantilly, VA. Three terminals will have a maximum EIRP of 57.2 dBWi each with a 1.5° half power beamwidth. Each of these terminals will be located in El Segundo, Thousand Oaks, Albuquerque, or Hill AFB. The fourth will have a maximum EIRP of 60.0 dBWi with a 1.2° half power beamwidth, and will be located only in Chantilly. 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 the SES 2 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.

Transmission will occur over an assigned 4 MHz bandwidth between 14.0 and 14.5 GHz. The current lease on SES 2 is for 14033.4 to 14037.4 MHz.

Manufacturer

Number of Units: 4

Station Locations

Note: the number of station exceeds the number of units. Not all stations will have a terminal at the same time.

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 14.0-14.5 GHz (14033.4-14037.4 MHz on SES 2)
- Orientation: pointed toward SES 2, 87W

- Signal: DVB-S2 QPSK

Location 2: Thousand Oaks, California (34°10'31"N 118°58'02"W)

- Maximum terminal EIRP: 57.2 dBWi
- Terminal beamwidth: 1.5°
- Band: Assigned 4 MHz slot between 14.0-14.5 GHz (14033.4-14037.4 MHz on SES 2)
- Orientation: pointed toward SES 2, 87W
- Signal: DVB-S2 QPSK

Location 3: Albuquerque, New Mexico (35°03'15"N 106°37'11"W)

- Maximum terminal EIRP: 57.2 dBWi
- Terminal beamwidth: 1.5°
- Band: Assigned 4 MHz slot between 14.0-14.5 GHz (14033.4-14037.4 MHz on SES 2)
- Orientation: pointed toward SES 2, 87W
- Signal: DVB-S2 QPSK

Location 4: Hill Air Force Base, Utah (41°07'22"N 112°00'55"W)

- Maximum terminal EIRP: 57.2 dBWi
- Terminal beamwidth: 1.5°
- Band: Assigned 4 MHz slot between 14.0-14.5 GHz (14033.4-14037.4 MHz on SES 2)
- Orientation: pointed toward SES 2, 87W
- Signal: DVB-S2 QPSK

Location 5: Chantilly, Virginia (38°52'44"N, 77°27'30"W)

- Maximum terminal EIRP: 60.0 dBWi
- Terminal beamwidth: 1.2°
- Band: Assigned 4 MHz slot between 14.0-14.5 GHz (14033.4-14037.4 MHz on SES 2)
- Orientation: pointed toward SES 2, 87W
- Signal: DVB-S2 QPSK