**SeaTel 8297 Demonstration of Compliance with Section 25.222 Criteria**

In response to Section 25.222(a) and (b) of the FCC's Rules, L-3 Communications, Interstate Electronics Corporation ("IEC") provides the following information with respect to the Sea Tel Model 8297 Ku-band ESV antenna specified in this application.

In particular, IEC supplies the E.I.R.P. density charts pursuant to Section 25.222(b)(3) of the Commission's Rules for the Sea Tel Model 8297 (Sea Tel report attached). The following is filed with the application to which this amendment corresponds:

1.      In pursuant of  Section 25.222(b)(3)

    25.222(a)(1) – (a)(4) are not required as the input power densities entered in the Schedule B demonstrate that the off-axis E.I.R.P. spectral density envelope set forth in Sections 25.222(a)(1) – (a)(4) are met.

2.      Non-Circular ESV Antennas – 25.222(a)(5)

    The ESV 8297 antenna specified in this application use circular antennas, the antenna performance power spectral density requirements are met in the minor axis.

3.      Pointing Error and Auto-Shut Off – 25.222(a)(6) & (7)

    IEC uses stabilized antenna systems for 8297 ESV that operates with ± 0.2° pointing accuracy of the exact position of the satellite through which the ESV is communicating. There are only a few exceptional conditions, described below, under which the antenna could be mispointed by more than 0.5°. Even under these highly unusual conditions, the ESV antenna controller can detect within 100 milliseconds if the pointing error should ever exceed 0.5°and cease transmissions immediately. The controller would then suppress transmissions until the pointing accuracy is within ± 0.2°.

    The stabilized antenna systems used by IEC employ closed-loop servo systems and highly accurate sensors to continuously monitor the antenna's position in inertial space. When operating properly, the servo mechanism will keep the antenna pointing within ± 0.1° RMS, 0.2° peak.

    In the event an unforeseen condition occurs which causes the antenna to be mis-pointed outside of these specifications the antenna controller can detect a pointing error that exceeds 0.5° and cease transmissions within 100 ms.

    Under these circumstances, transmissions will be inhibited until the pointing error is reduced to less than ± 0.2°.  This pointing and auto shutoff system accomplishes this with the sensors mounted on the antenna to measure antenna position with a resolution of better than 0.01°. The key to this robust system operation and reliable error reporting is that the antenna position data is processed before being used to drive an error comparator. In addition to antenna position, many sources of data are available to the system to make a robust decision about the accuracy of the antenna pointing. They are:

- Satellite modem synch lock;
- Short-term integrated rate sensor antenna position;
- Long-term accelerometer and heading reference sensors readings;
- AGC level data; and
- Calculated azimuth and elevation positions based on ship latitude, longitude and desired satellite longitude.

If for any reason the satellite modem should lose synch with the satellite down-link, the system will cease transmission immediately, regardless of the pointing accuracy, and not re-transmit until it has re-synchronized with the satellite and the pointing accuracy is within ± 0.2°. At all times the antenna controller compares a running average of the measured azimuth and elevation to the desired azimuth and elevation positions. If the results exceed the 0.5° threshold, then transmissions will cease immediately and not resume until the pointing accuracy is within ± 0.2°. The threshold detection algorithm has been used successfully for more than 10 years to insure that the stabilized antenna system is operating within the desired limits.

In addition, new software has recently been developed to continuously monitor the instantaneous pedestal pointing error and will trip an error flag whenever an unexpected event occurs that causes the pointing error to exceed 0.5 degrees. This flag will not clear until the pedestal error remains below 0.2 degrees for a period of 5 seconds. The state of this flag is used as an additional logic input to the existing "Transmit Mute" function of the Sea Tel below decks controller. By connecting the "Transmit Mute Output" of the Sea Tel below decks controller to the "Mute Input" of the satellite modem, the provisions of Section 25.222(a)(7) are satisfied.

4.      Point of Contact – 25.222(a)(8)

| Site Name | Site Code | Operator | Telephone Number |
|---|---|---|---|
| USNS WATERS | ESV | Mr. Ron Chatfield | (321) 853-8317 or (954) 885-5755 |
| DARC Cape Canaveral, FL | BAX | Mr. Larry FitzGerald | (321) 266-2572 |
| IEC Anaheim, CA. | BAX | Mr. Thuy Tran | (714) 758-3211 |
| Naval Air Warfare Center Weapons Division Pt. Mugu, CA. | BAX | Ms. Robyn Buehler | (805) 989-7101 |
| Building 1061 Cape Canaveral, FL | BAX | Mr. Tom Keogh | (321) 853-2554 |
| PATS* US Virgin Island St. Croix | BAX | Mr. Larry FitzGerald | (321) 266-2572 |

Fight Test Safety Systems (FTSS) staff engineer technical liaison contact information is Mr. Paul Watts at (714) 758-4147 or at mobile number (714) 469-4147, 24/7/365 availability.

The IEC Program Manager Mr. Tom Murphy can be reached at (714) 758-3391 or at mobile number (714) 920-9467, 24/7/365.

For reference, FTSS Engineering Manager is Mr. Stanley Wang at (714) 758-2711; FTSS Staff engineer Mr. Branden Boyak at (714) 758-4266; and IEC, Anaheim California may be reach by dialing (800) 854-6979 or (714) 758-0500. IEC observes a 9/80 work week.

5.      Excessive Radiation – 25.222(a)(9)

IEC's 8297 ESV does not exceed the radiation guidelines of Section 1.1310 of the FCC's Rules, as demonstrated by the Radiation Hazard Studies included as Radiation Hazard Study to the application.

6.      Geographic Area – 25.222(a)(10)

IECs applicant for a Ku-band earth stations on vessels ("ESV") license (SES-LIC-20020611-00939) has previously provided by paper filing additional information requested by Commission staff concerning the intended areas of operation of the Ku-band ESVs but includes the information herein via electronic filing. IEC will operate the Ku-Band ESV, which by design can only operate in oceans and other very large bodies of water and in deep ports, in the Atlantic and Pacific Oceans, the Gulf of Mexico and in ports along the U.S. Coastal waters. If, however, IEC were ever to operate in any other areas, including any areas within i) 100 km of Guam and/or White Sands, New Mexico using the band 14.0-14.2 GHz, or ii) 45 km of St. Croix, Virginia Islands, 125 km of Mauna Kea, Hawaii or 90 km of Puerto Rico on the band 14.47-14.5 GHz, IEC commits first to coordinate such uses with NTIA and the Commission subject to the requirements contained in Section 25.222(d) and (e).

7.      E.I.R.P. density charts – Section 25.222(b)(3)

The Sea Tel Model 8297 Ku-band ESV antenna meets Section 25.209 as indicated in Table 1 and Table 2 of the Sea Tel Plots (Report 8736-700, page 6) provided herein.

The Sea Tel Model 8297 Ku-band ESV antenna report attached hereto contains the measured test data that demonstrate the off-axis EIRP spectral density requirements are satisfied for all relevant angles, provided that the transmit power density at the antenna input is kept below -19 dBW/4kHz of occupied bandwidth as required in Section 25.212(c).  IEC limits the power density during operation to -25 dBW/4kHz.