communications

Interstate Electronics Corporation
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1 November 2004

Inmarsat
99 City Road
London, EC1Y 1AX

Re: Application of L3 Communications, Interstate Electronics Corporation (IEC)
Call Sign: E020160
FCC File Number SES-LIC-20020611-00939

Interstate Electronics Corporation (IEC), a division of L-3 Communications has an earth station application pending before the U.S. Federal Communications Commission (FCC). IEC plans to use this Ku Band system to communicate with Intelsat Americas 5 (IA-5), which is located at 97 degrees west longitude. Your company operates the Inmarsat 2 F2, located at 98.10 degrees west longitude. As your satellite is within 6 degrees of IA-5, the FCC requires we obtain an affidavit from you on our proposed system.

You have the right to reply to the enclosed material and may reply directly to the FCC, citing the above file number. If you do not reply within thirty (30) calendar days from the date of this notice, the FCC will construe your lack of reply as an assent to the grant of IEC's earth station application.

Sincerely,

cc.
Scott Kotler, International Bureau
Michelle A. McClure, Irwin, Campbell & Tannenwald, P.C.

Interstate Electronics Corporation (IEC), a division of L-3 Communications
Adjacent Satellite Operator Notification
Earth Station Onboard Vessel Performance

As part of a license application filed by Interstate Electronics Corporation (IEC), a division of L-3 Communications in support of the U.S. Navy TRIDENT test program, IEC operates Ku-band satellite network to facilitate the transfer of test data. IEC purchases two different bandwidth services both in the Ku-band spectrum from Telecommunications International Inc., a bandwidth reseller. IEC network architecture consist of six temporary-fixed 2.4 meter Ku-band (14.0 – 14.6 GHz) earth stations (VSATs) and two Earth Stations on aboard Vessel (ESV) - one temporary-fixed 2.0 meter and one temporary-fixed 2.4 meter. ESVs are located on aboard the USNS WATERS, which operate at least 100 miles off United States Coast line in Atlantic or Pacific Oceans during these tests. The first leased service is non-preemptible one megahertz of fulltime transponder bandwidth and the second is a 4.5-megahertz of occasional use transponder bandwidth. All the bandwidth is located on IA-5 (formally T5). IA-5 which is located 97° west. All bandwidth links are established and maintained with the IntelSat® Carrier Assurance Center. Full time bandwidth is located on IA-5 Transponder K17 Center Frequency of 14322.0/h 12022.0/v. Although IEC has full leased bandwidth, none of are links are operational 24/7/365 and when operational they are always manned by qualified personnel. The Federal Communications Commission (FCC) is requiring that IEC notify all operators of satellites that are within 6° of the orbital location of IA-5, the satellite which IEC's ESVs communicate when operating. This document provides the technical basis for adjacent satellite operators to determine that IEC's ESV systems are operating in compliance with the terms of the inter-system coordination agreement and, therefore, do not pose any more potential for interference than a land-based earth station with the same performance characteristics.

The ESV antenna system is mounted on a three axis stabilization assembly that provides free motion with 3° of freedom. This assembly allows the inertia of the antenna system to hold the antenna pointed motionless in inertial space while the ship rolls, pitches and yaws beneath the assembly. Three low friction torque motors attached to each of the three free axes of the assembly provide the required force to overcome the disturbing torque imposed on the antenna system by cable restraints, bearing friction and small air currents within the radome. These motors are also used to re-position the antenna in azimuth and elevation. This insures that the ESVs will operate with a ±0.2° pointing accuracy of the exact position of the satellite. Currently the operator will terminate ESV transmission when the antenna goes beyond ± 0.5° under conditions such as when the satellite is out of range or when the satellite track is lost. Although not yet implemented an automatic muting solution will be implemented to terminate the transmission to the satellite under the same conditions. Conditions of rain fade or some type of external blockage will also mute transmission to the satellite until such time as the pointing accuracy is within a ±0.2° pointing accuracy of the satellite.

The attached table from IntelSat® provides the transmission parameters related to the operational performance of the ESV systems. Figures 1 thru 4 have been provided by the IntelSat® Carrier Assurance Center to show the co-pole and cross-pole performance of the ESV systems in the plane of the geo-stationary satellites.

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ESV link parameters

Satellite	IA5 / Intelsat 3005
Orbital Location	97 West / 263 East
Beam	KU-North American Spot Beam
Transponder	K17 – 27 MHz transponder
Saturated Satellite Flux Density dBW/m^2 (be)	-76.5 dBW/m^2 (Beam Edge)
Saturates Satellite EIRP	40.9 dBW (beam Edge)
Total Transponder Back-off, Input	-7.6 dB
Total Transponder Back-off, Output	-3.8 dB

Modulation & Carriers	**Values**
Type of Service	Occasional and Full time use
Modulation	QPSK
ESV (1) – Uplink	14.322 GHz
Polarization	Horizontal
ESV (1) - Downlink	12.022 GHz
Polarization	Vertical
VSAT – Uplink	14.322 GHz
Polarization	Horizontal
VSAT – Downlink	12.022 GHz
Polarization	Vertical

ESV (1) Antenna 8297	**Values**
Antenna Diameter	2.05 Meter
Major Axis	Circular 80.7 inches
Minor Axis	Circular 80.7 inches
Offset Angle	Center feed, Prime Focus, 0 degree Offset
TX gain at 14.0 GHz	47.7 dBi
RX gain at 12.5 GHz	46.6 dBi
TX cross polarization at 14.318250 GHz	30 dBi

ESV (1) Power	**Values**
Input Power	8 watt, AnaCom AnaSat transceiver
Aggregate Data Rate, FEC, Overhead	256.0 Kbit/s / 0.750 / 0.0%
Allocated & Occupied Bandwidth	247.5 / 170.7 KHz
Power Effective Bandwidth (PEB)	510 KHz

ESV (1) Power Spectral Density	**Values**
Antenna Diameter, Transmit Gain	47.1 dBi
Uplink entry transmit EIRP	57.3 dBW
Uplink Noise Density	41.0 dBW/4 KHz (Beam Edge)
Xpndr Noise Density	-18.5 dBW/4 KHz (Beam Edge)
Uplink Thermal C/NO (C/KT)	79.8 dBHz

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Satellite	IA5 / Intelsat 3005
Orbital Location	97 West / 263 East
Beam	KU-North American Spot Beam
Transponder	K17 – 27 MHz transponder
Saturated Satellite Flux Density dBW/m^2 (be)	-76.5 dBW/m^2 (Beam Edge)
Saturates Satellite EIRP	40.9 dBW (beam Edge)
Total Transponder Back-off, Input	-4.6 dB
Total Transponder Back-off, Output	-2.5 dB

Modulation & Carriers	**Values**
Type of Service	Occasional and Full time use
Modulation and Service	QPSK – Occasional Use
ESV (2) – Uplink	14.322 GHz
Polarization	Horizontal
ESV (2) – Downlink	12.022 GHz
Polarization	Vertical
VSAT – Uplink	14.322 GHz
Polarization	Horizontal
VSAT – Downlink	12.022 GHz
Polarization	Vertical

ESV (2) Antenna 9997	**Values**
Antenna Diameter	2.4 Meter
Major Axis	Circular 94.5 inches
Minor Axis	Circular 94.5 inches
Offset Angle	Center feed, Prime Focus, 0 degree Offset
TX gain at 14.0 GHz	48.9 dBi
RX gain at 12.5 GHz	47.7 dBi
TX cross polarization at 14.318250 GHz	30 dBi

ESV (2) Power	**Values**
Input Power	8 watt, AnaCom AnaSat transceiver
Aggregate Data Rate, FEC, Overhead	896.0 Kbit/s / 0.750 / 0.0%
Allocated & Occupied Bandwidth	832.5 / 597.3 KHz
Power Effective Bandwidth (PEB)	1320 KHz

ESV (2) Power Spectral Density	**Values**
Antenna Diameter, Transmit Gain	49.1 dBi
Uplink entry transmit EIRP	61.6 dBW
Uplink Noise Density	39.8 dBW/4 KHz (Beam Edge)
Xpndr Noise Density	-18.5 dBW/4 KHz (Beam Edge)
Uplink Thermal C/NO (C/KT)	83.9 dBHz

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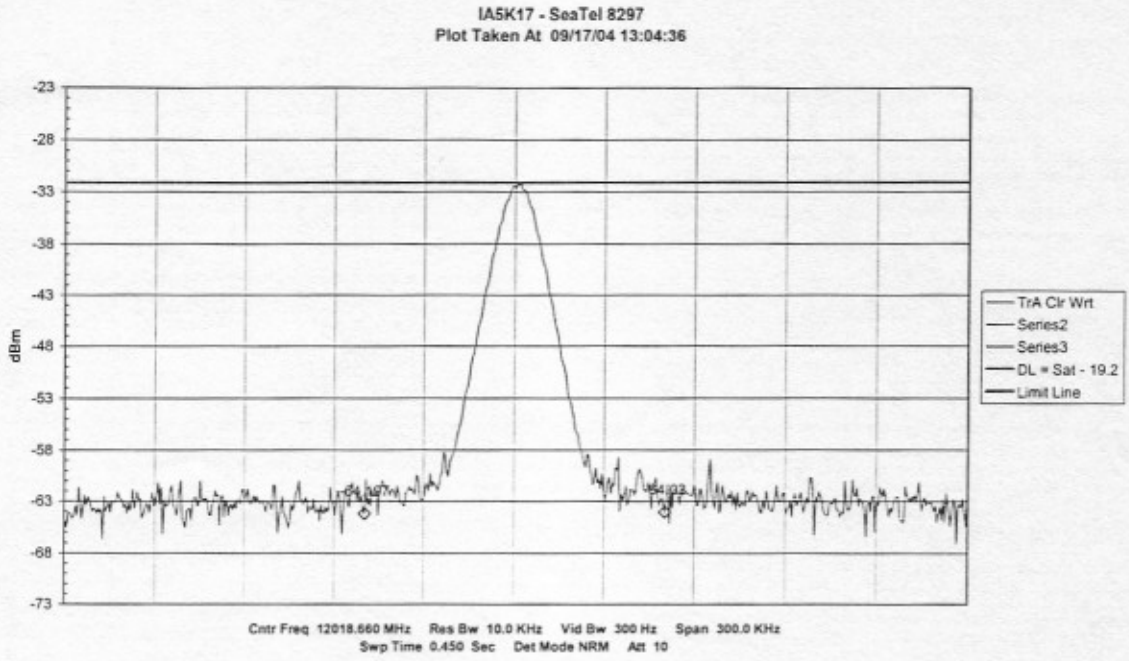

Figure 1 ESV (1) 8297 Co-pol

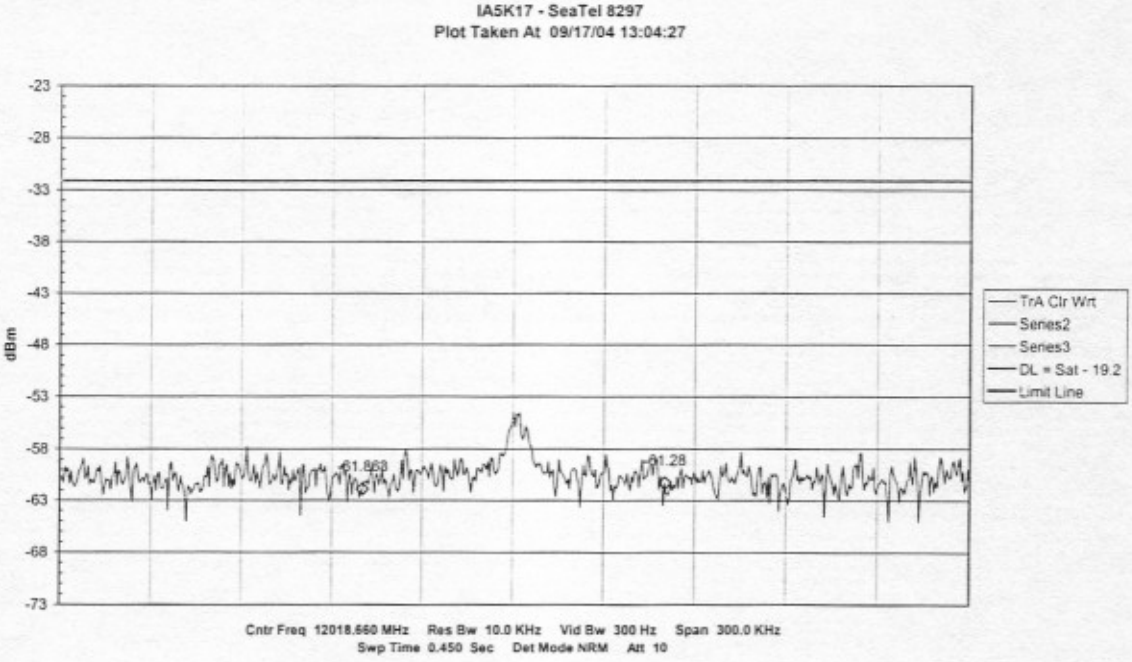

Figure 2 ESV (1) 8297 Cross-pol

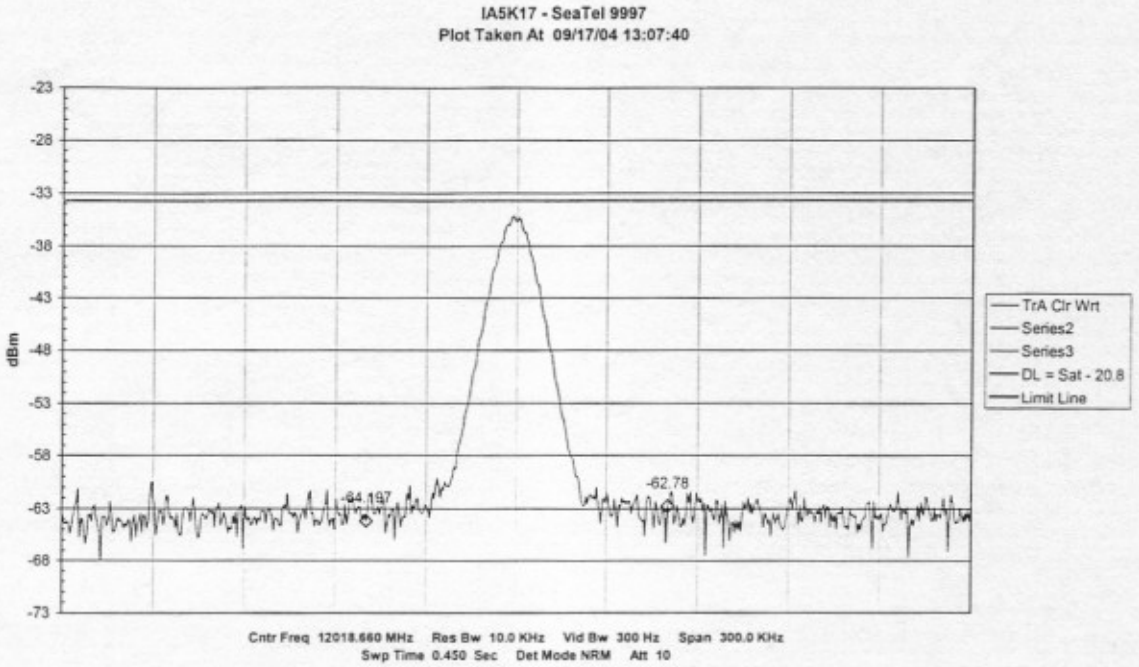

Figure 3 ESV (2) 9997 Co-pol

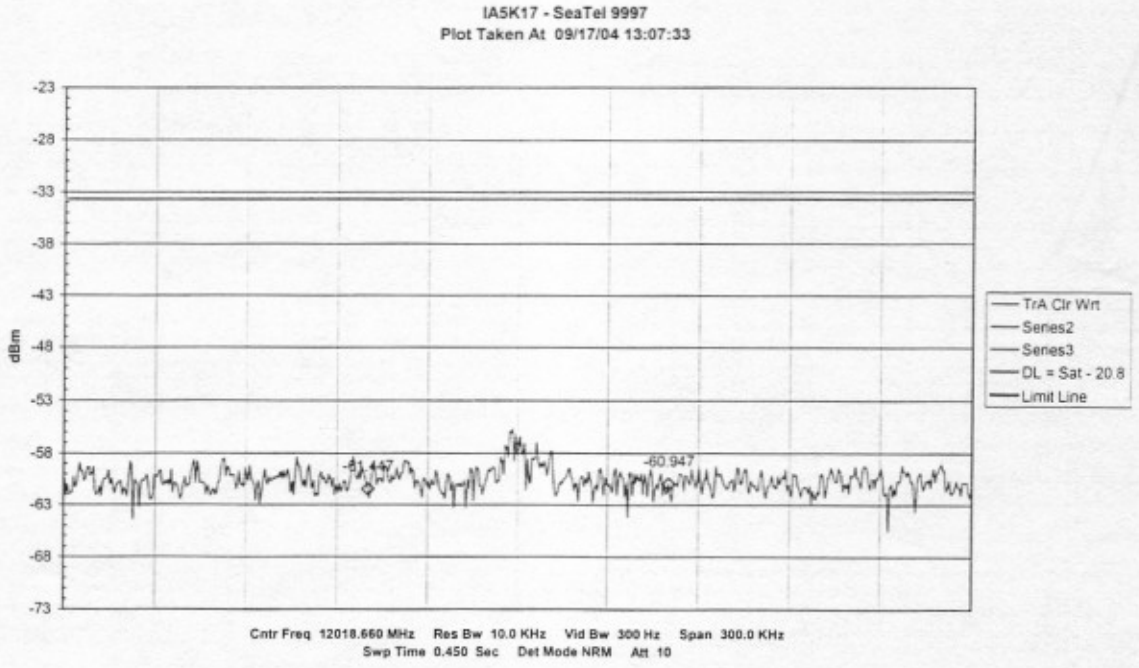

Figure 4 ESV (2) 9997 X-pol