§ 25.222 Blanket Licensing provisions for Earth Stations on Vessels (ESVs) receiving in the 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) frequency bands and transmitting in the 14.0-14.5 GHz (Earth-to-space) frequency band, operating with Geostationary Satellites in the Fixed-Satellite Service.

(a) All applications for licenses for ESVs receiving in the 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) frequency bands, and transmitting in the 14.0-14.5 GHz (Earth-to-space) frequency band, to Geostationary Satellites in the fixed-satellite service shall provide sufficient data to demonstrate that the ESV operations meet the following criteria, which are ongoing requirements that govern all ESV licensees and operations in these bands:

(1) The off-axis EIRP spectral density for co-polarized signals, emitted from the ESV in the plane of the geostationary satellite orbit as it appears at the particular earth station location (*i.e.*, the plane determined by the focal point of the antenna and the line tangent to the arc of the geostationary satellite orbit at the position of the target satellite), shall not exceed the following values:

$15 - 25\log(\theta)$ dBW/4kHz	for	$1.25° \leq \theta \leq 7.0°$
-6 dBW/4kHz	for	$7.0° < \theta \leq 9.2°$
$18 - 25\log(\theta)$ dBW/4kHz	for	$9.2° < \theta \leq 48°$
-24 dBW/4kHz	for	$48° < \theta \leq 180°$

(2) In all other directions, the off-axis EIRP spectral density for co-polarized signals emitted from the ESV shall not exceed the following values:

$18 - 25\log(\theta)$ dBW/4kHz	for	$1.25° \leq \theta \leq 48°$
-24 dBW/4kHz	for	$48° < \theta \leq 180°$

(3) For $\theta > 7°$, the values given in paragraphs (a)(1) of this Section may be exceeded by no more than 10% of the sidelobes, provided no individual sidelobe exceeds the criteria given by more than 3 dB.

(4) In all directions, the off-axis EIRP spectral density for cross-polarized signals emitted from the ESV shall not exceed the following values:

$5 - 25\log(\theta)$ dBW/4kHz	for	$1.8° \leq \theta \leq 7°$
-16 dBW/4kHz	for	$7° < \theta \leq 9.2°$

Where θ is the angle in degrees from the axis of the main lobe.

(5) For non-circular ESV antennas, the major axis of the antenna will be aligned with the tangent to the geostationary satellite orbital arc at the target satellite point, to the extent required to meet specified off-axis EIRP criteria.

(6) A pointing error of less than 0.2°, between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna.

(7) All emissions from the ESV shall automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°, and transmission will not resume until such angle is less than 0.2°.

(8) There shall be a point of contact in the United States, with phone number and address

included with the application, available 24 hours a day, seven days a week, with authority and ability to cease all emissions from the ESVs, either directly or through the facilities of a U.S. Hub or a Hub located in another country with which the U.S. has a bilateral agreement that enables such cessation of emissions.

(9) ESVs that exceed the radiation guidelines of Section 1.1310 Radiofrequency radiation exposure limits must provide, with their environmental assessment, a plan for mitigation of radiation exposure to the extent required to meet those guidelines.

(10) There shall be an exhibit included with the application describing the geographic area(s) in which the ESVs will operate.

(b) Applications for ESV operation in the 14.0-14.5 GHz (Earth-to-space) to geostationary satellites in the fixed-satellite service must include, in addition to the particulars of operation identified on Form 312 and associated Schedule B, the following data for each earth station antenna type:

(1) A series of EIRP density charts or tables, calculated for a production earth station antenna, based on measurements taken on a calibrated antenna range at 14.25 GHz, with the off-axis EIRP envelope set forth in paragraphs (a)(1) through (a)(4) of this Section superimposed, as follows:

(i) showing off-axis co-polarized EIRP spectral density in the azimuth plane, for off-axis angles from minus 10° to plus 10°and from minus 180° to plus 180°.
(ii) showing off-axis co-polarized EIRP spectral density in the elevation plane, at off-axis angles from 0° to plus 30°.
(iii) showing off-axis cross-polarized EIRP spectral density in the azimuth plane, at off-axis angles from minus 10° to plus 10°.
(iv) showing off-axis cross-polarized EIRP spectral density in the elevation plane, at off-axis angles from minus 10° to plus 10°.

Or

(2) A series of gain charts or tables, for a production earth station antenna, measured on a calibrated antenna range at 14.25 GHz, with the Earth station antenna gain envelope set forth in Section 25.209(a) and b superimposed, for the same planes and ranges enumerated in paragraphs (b)(1)(i) through (b)(1)(iv) of this Section, that, combined with input power density entered in schedule B, demonstrates that off-axis EIRP spectral density envelope set forth in paragraphs (a)(1) through (a)(4) of this Section will be met.

Or

(3) A certification that the ESV antenna conforms to the gain pattern criteria of 25.209(a) and (b), that, combined with input power density entered in schedule B, demonstrates that the off-axis EIRP spectral density envelope set forth in paragraphs (a)(1) through (a)(4) of this Section will be met.

(c) ESVs receiving in the 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) frequency bands, and transmitting in the 14.0-14.5 GHz (Earth-to-space) frequency band shall operate with the following provisions:

(1) For each ESV transmitter a record of the ship location (*i.e.*, latitude/longitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a period of not less than 1 year. Records will be recorded at time intervals no greater than every 20 minutes while

the ESV is transmitting. The ESV operator will make this data available upon request to a coordinator, fixed system operator, fixed-satellite system operator, NTIA, or the Commission within 24 hours of the request.

(2) ESV operators communicating with vessels of foreign registry must maintain detailed information on each vessels country of registry and a point of contact for the relevant administration responsible for licensing ESVs.

(3) ESV operators shall control all ESVs by a Hub earth station located in the United States, except that an ESV on U.S.-registered vessels may operate under control of a Hub earth station location outside the United States provided the ESV operator maintains a point of contact within the United States that will have the capability and authority to cause an ESV on a U.S.-registered vessel to cease transmitting if necessary.

(d) Operations of Earth Stations on Vessels (ESVs) in the 14.0-14.2 GHz (Earth-to-space) frequency band within 125 km of the NASA TDRSS facilities on Guam (located at latitude: 13° 36' 55" N, longitude 144° 51' 22" E) or White Sands, New Mexico (latitude: 32° 20' 59" N, longitude 106° 36' 31" W and latitude: 32° 32' 40" N, longitude 106° 36' 48"W) are subject to coordination through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC). When NTIA seeks to provide similar protection to future TDRSS sites that have been coordinated through the IRAC Frequency Assignment Subcommittee process, NTIA will notify the Commission that the site is nearing operational status. Upon public notice from the Commission, all Ku-band ESV operators must cease operations in the 14.0-14.2 GHz band within 125 km of the new TDRSS site until after NTIA/IRAC coordination for the new TDRSS facility is complete. ESV operations will then again be permitted to operate in the 14.0-14.2 GHz band within 125 km of the new TDRSS site, subject to any operational constraints developed in the coordination process.

(e) Operations of Earth Stations on Vessels (ESVs) in the 14.47-14.5 GHz (Earth-to-space) frequency band within a) 45 km of the radio observatory on St. Croix, Virgin Islands (latitude 17° 46' N, longitude 64° 35' W); b) 125 km of the radio observatory on Mauna Kea, Hawaii (at latitude 19° 48' N, longitude 155° 28' W); and c) 90 km of the Arecibo Observatory on Puerto Rico (latitude 18° 20' 46" W, longitude 66° 45' 11" N) are subject to coordination through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC).

(f) In the 10.95-11.2 GHz (space-to-Earth) and 11.45-11.7 GHz (space-to-Earth) frequency bands ESVs shall not claim protection from interference from any authorized terrestrial stations to which frequencies are either already assigned, or may be assigned in the future.

14. Section 25.271 is amended by revising paragraphs (b) and (c) and adding a new paragraph (f), to read as follows:

§ 25.271 Control of transmitting stations.

* * * * *

(b) The licensee of a transmitting earth station, other than an ESV, licensed under this part shall ensure that a trained operator is present on the earth station site, or at a designated remote control point for the earth station, at all times that transmissions are being conducted. No operator's license is required for a person to operate or perform maintenance on facilities authorized under this part.

(c) Authority will be granted to operate a transmitting earth station, other than an ESV, by remote control only on the conditions that:

* * * * *

(f) Rules for control of transmitting ESVs are provided in §§ 25.221 and 25.222.

15. Section 25.277 is amended by revising paragraph (b) and the introductory language of paragraph (c), to read as follows:

§ 25.277 Temporary fixed earth stations.

* * * * *

(b) When a station, other than an ESV, authorized as a temporary fixed earth station, is to remain at a single location for more than six months, application for a regular station authorization at that location shall be filed at least 30 days prior to the expiration of the six-month period.

(c) The licensee of an earth station, other than an ESV, which is authorized to conduct temporary fixed operations in bands shared co-equally with terrestrial fixed stations shall provide the following information to the Director of the Columbia Operations Center at 9200 Farmhouse Lane, Columbia, Maryland 21046, and to the licensees of all terrestrial facilities lying within the coordination contour of the proposed temporary fixed earth station site before beginning transmissions:

* * * * *

PART 101 -- FIXED MICROWAVE SERVICES

16. The authority citation for Part 25 continues to read as follows: Authority: 47 U.S.C. 154, 303.

17. Section 101.101 is amended by deleting rows 11,700-12,200 and 14,200-14,400 of the table.

18. Section 101.107 is amended by modifying footnote 1 to read as follow:

§ 101.107 Frequency tolerance.

(1) Applicable only to common carrier LTTS stations. Tolerance for 2450-2500 MHz is 0.005%. Beginning Aug. 9, 1975, this tolerance will govern the marketing of LTTS equipment and the issuance of all such authorizations for new radio equipment. Until that date new equipment may be authorized with a frequency tolerance of .03% in the frequency range 2,200 to 10,500 MHz and .05% in the range 10,500 MHz to 12,200 MHz, and equipment so authorized may continue to be used for its life provided that it does not cause interference to the operation of any other licensee. Beginning March 1, 2005, new LTTS operators will not be licensed and existing LTTS licensees will not be renewed in the 11.7-12.2 GHz band.

* * * * *

19. Section 101.113 is amended by adding a reference to footnote 12 in the table on the line that starts with 14,200-14,400, and adding new text for footnote 12 to read as follows:

(12) Beginning March 1, 2005, no new LTTS operators will be licensed and no existing LTTS licensees will be renewed in the 14.2-14.4 GHz band.

20. Section 101.147(a) is amended by modifying footnote 24 to read as follows:

§ 101.147 Frequency assignments.

* * * * *

(24) Frequencies in these bands are available for assignment to television pickup and television non-broadcast pickup stations. The maximum power for the local television transmission service in the 14.2-14.4 GHz band is +45 dBW except that operations are not permitted within 1.5 degrees of the geostationary orbit. Beginning March 1, 2005, no new LTTS operators will be licensed and no existing LTTS licenses shall be issued in the 11.7-12.2 and 14.2-14.4 GHz bands.

* * * * *

21. Section 101.803 is amended by modifying Section (d) and footnotes (a)(3) and (a)(8) and (d)(3) to read as follows:

§ 101.803 Frequencies.

(a) * * *

Notes * * *

(3) This frequency band is shared, on a secondary basis, with stations in the broadcasting-satellite and fixed-satellite services. As of March 1, 2005, no new LTTS operators will be licensed in the 11.7-12.2 GHz band. LTTS operators authorized prior to March 1, 2005 may continue to operate in 11.7-12.2 GHz band until their license expires; no existing LTTS licenses will be renewed in the 11.7-12.2 GHz band.

(8) The maximum power for the local television transmission service in the 14.2–14.4 GHz band is +45 dBW except that operations are not permitted within 1.5 degrees of the geostationary orbit. As of March 1, 2005, no new LTTS operators will be licensed in the 14.2-14.4 GHz band. LTTS operators authorized prior to March 1, 2005 may continue to operate in 14.2-14.4 GHz band until their license expires; no existing LTTS licenses will be renewed in the 11.7-12.2 GHz band.

* * * * *

(d) Frequencies in the following bands are available for assignment to television STL stations in this service:

3,700 to 4,200 MHz (1)
5,925 to 6,425 MHz (1),(5)
10,700 to 11,700 MHz (1),(6)
11,700 to 12,100 MHz (3)

13,200 to 13,250 MHz (2)
21,200 to 22,000 MHz (2),(4),(7),(8)
22,000 to 23,600 MHz (2),(6),(8)
31,000 to 31,300 MHz (9)

Notes * * *

(3) This frequency band is shared with space stations (space to earth) in the fixed-satellite service. As of March 1, 2005, no new LTTS operators will be licensed in the 11.7-12.2 GHz band. LTTS operators authorized prior to March 1, 2005 may continue to operate in 11.7-12.2 GHz band until their license expires; no existing LTTS licenses will be renewed in the 11.7-12.2 GHz band.

* * * * *

22. Section 101.809(d) is amended by adding footnote /2/ to the line of the table that starts 10,700 to 12,200 and adding a footnote number 2 to the table as follows:

§ 101.809 Bandwidth and emission limitations.

* * * * *

(d) * * *

/2/ As of March 1, 2005, no new LTTS operators will be licensed in the 11.7-12.2 GHz band. LTTS operators authorized prior to March 1, 2005 may continue to operate in 11.7-12.2 GHz band until their license expires; no existing LTTS licenses will be renewed in the 11.7-12.2 GHz band.

* * * * *

STATEMENT OF CHAIRMAN MICHAEL K. POWELL

Re: In the Matter of Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and the 14.0-14.5 GHz/11.7-12.2 GHz Bands (Adopted December 15, 2004).

Today we open another frontier for broadband – the world's oceans. We expect to be connected wherever we are, even if that means in the middle of the ocean. Whether for vacationers on a cruise ship, students taking academic courses at sea, or merchant ships communicating to their coastal headquarters – Earth Stations on Vessels (ESVs) help to provide telecommunications services and internet access for any marine craft large enough for a satellite dish.

Today we establish licensing and service rules for ESVs in the C- and Ku-bands. It is our goal to strike the appropriate balance between the interests of ESV and incumbent users in the bands. Thus, today's order allows ESVs to continue operating in the C-and Ku-bands, but requires ESV operators to protect fixed terrestrial and fixed-satellite service incumbents from interference and requires operators in both bands to collect and maintain vessel tracking data to assist in identifying and resolving sources of interference.

As broadband technologies continue to expand and become an increasingly vital component of modern communications, the market for broadband via satellite continues to grow. Thus, by continuing to support licenses for ESV operations, we are today, advancing the Commission's goals and objectives for market-driven deployment of broadband technologies. I thank the International Bureau and my fellow Commissioners for all of their hard work on this item.