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29 June, 2006

Mr. Kal Krautkramer
Satellite Policy Branch, International Bureau
Federal Communications Commission
445 12th Street, S.W., 6th Floor
Room 6B451
Washington, DC, 20554

Subject: Call Sign S2663 - Amendment of Minor Modification for SPACEWAY-3 (SAT-AMD-20060306-0025)

Dear Mr Krautkramer;

This letter is in response to your request for additional information on the amendment of the minor modification filed by Hughes Communications Inc. ("Hughes").[1] You have asked us to explain the technical constraints obligating the SPACEWAY-3 spacecraft to use telemetry, tracking and command (TT&C) frequencies which are not exactly on the edge of the allocated band, as is required in §25.202(g).

The SPACEWAY-3 spacecraft has been designed to receive TT&C command signals on two specific frequencies in the range from 29,500 to 29,515 MHz. The spacecraft also receives a TT&C beacon signal on either of two specific frequencies in the range from 29,525 MHz to 29,535 MHz. The TT&C beacon frequencies are not exactly on the band edge, and thus this explanation of the frequency selection will focus on the two TT&C beacon frequencies.

In our amendment to the minor modification, Hughes indicated that the SPACEWAY uplink antenna consists of 112 small spot beams which are created by a corresponding number of feed horns arranged in a beam forming network. The beam pattern is fixed and can not be changed after launch. Given the small size of the uplink beams and their precise coverage of the United States, it is critical that the satellite be kept accurately pointed toward the Earth. Variations in pitch, roll and yaw, that would normally be acceptable to a satellite operating in C or Ku band, would cause significant signal variation throughout the entire service area of the SPACEWAY Ka-band spacecraft, and result in a significant disruption of the network.

In order to provide accurate attitude control of the spacecraft, the TT&C beacons are transmitted from two very carefully located earth stations. These two locations have been selected to be at a center point between three receive spot beams. By monitoring the beacon level on all three adjacent beams, the precision beacon tracker can accurately assess spacecraft attitude and correct minor variations.

To function correctly, the precision beacon tracker relies on accurate power measurements of the uplink beacons through the three uplink cells. To achieve the

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[1] Hughes Communications, Inc. owns 100% of Hughes Network Systems, LLC.

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needed accuracy, frequencies had to be chosen near the mid-band of one of the sub-bands (the lowest sub-band frequency range is 29,500 to 29,562.5 MHz), while at the same time, taking into account the interference from users on the same polarization, users on the opposite polarization and external sources.

Grant of Hughes' request for waiver of §25.202(g) is in the public interest. The SPACEWAY-3 spacecraft will provide satellite broadband service to the United States at a significantly higher throughput than classic satellites are able to provide today. To do so, however, requires greater precision in attitude control than has been traditional to date. The TT&C beacon signal will be transmitted so as to have an EIRP density less than the levels specified in §25.138 of the FCC's rules. As a result, a grant of the waiver would not lead to additional interference into adjacent satellites. Furthermore, a grant of this waiver would also be consistent with previous FCC decisions which approved the identical TT&C frequency approach and the identical attitude control mechanism for the SPACEWAY-1 and -2 spacecraft (presently in-orbit and providing Ka-band service to U.S. customers).

Please feel free to contact me if you require any additional material in support of the amendment filed by HNS.

Respectfully submitted,

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