

In page 9 of a Petition (dated April 5, 2000) from Spacenet Inc. for a Declaratory Ruling the Petition (RM-9864) requests:

"Specifically, Spacenet asks the Commission to declare that VSAT access schemes that allow collisions between remote stations on the inbound channels are permissible under Section 25.134 as long as (i) each station individually satisfies the power density limits of paragraph (a) of that Section, (ii) the probability P of k stations transmitting, for k greater than 1, is below the limit defined by $P(k)=0.38 \exp(-.38)/k!$, and (iii) the maximum duration of any single collision is less than 100 milliseconds."

ALOHA Networks agrees with conditions (i) and (iii) of the Spacenet petition. However we wish to point out that condition (ii) dealing with the probability of transmissions from multiple stations can lead to the possibility of serious interference problems, in effect eliminating the protection provided by Section 25.134.

There are three separate problems with the argument used in the Spacenet Petition.

(1) The Poisson probability model used in the Spacenet Petition is the wrong model for the Slotted ALOHA case used in the Petition. The Poisson model applies to the unslotted case only. The correct model to be applied in this case is the Binomial model. The Binomial model leads to approximately three times the interference calculated in the Spacenet petition.

(2) Even using the incorrect and understated numbers calculated in the Spacenet petition the result of this proposed declaratory ruling would be that the interference limits of Section 25.134 could be exceeded by 3db for 5% of the time. Put another way such a ruling would mean that if a VSAT network operated at the traffic level (0.38) assumed by Spacenet during the busy hour of operation, then the interference limits of Section 25.134 could be exceeded by 3db for a total of 3 minutes during such a busy hour. If this level of interference were acceptable it would follow that the interference limits of Section 25.134 are unnecessarily restrictive.

(3) The Declaratory Ruling proposed by Spacenet applies only to the case of Slotted ALOHA. Unslotted ALOHA and Spread ALOHA would require separate and similar rulings.

ALOHA Networks suggests replacing condition (ii) of the proposed Spacenet Declaratory Ruling with the following simpler and stronger condition.

(ii) the average amount of time during which the interference limits of Section 25.134 could be exceeded shall be less than 1 second per hour when the network is operated at peak load for one hour

Such a ruling could apply equally to Slotted ALOHA, Unslotted ALOHA and Spread ALOHA networks. The proposed new form of condition (ii) is simply based on the existing interference limits of Section 25.134 and requires no mathematical modelling of the network traffic by the Commission.

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