

Before the
Federal Communications Commission
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
Petition For Rulemaking To Address)
Satellite Network Unwanted Emissions)

File No. RM-9740

COMMENTS

CCI International N.V. ("Constellation"), by its counsel, submits these Comments in response to the Commission's Public Notice¹ of the joint letter dated July 1, 1999, from Motorola Satcom, Teledesic, and Hughes Space and Communications Corporations requesting that the Commission initiate a proceeding to revise and bring up-to-date its Rules relating to out-of-band emissions from satellite networks. The Notice requests comment on how the Commission should move forward with a rulemaking proceeding and the scope of the issues to be addressed in considering unwanted emissions from satellite networks.

Constellation is licensed by the Commission to construct a low earth orbit ("LEO") 1.6/2.4 GHz mobile-satellite service ("MSS") system,² and has pending before the Commission an application for a 2 GHz MSS system.³ Section 25.202(f) of the Commission's Rules⁴ currently specifies the out-of-band emission limits applicable to the

¹ Public Notice, DA 99-2601 (rel. Nov. 19, 1999) ("Notice").

² *Constellation Communications, Inc.*, DA 97-1366, (rel. July 1, 1997).

³ Application of Constellation Communications, Inc., File Number 181-SAT-P/LA-97(46).

⁴ 47 CFR §25.202(f).

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Constellation system. Constellation therefore has an interest in this proceeding to ensure that any revisions to the rules are reasonable.

Constellation offers the following comments on the specific questions raised in the joint letter.

1. *Should the generic out-of-band (“OOB”) mask be in dBc, dBs, or PFD units or some combination?*

Constellation sees no benefits in changing the current approach of specifying spurious emission limits in terms of dBc.⁵ Use of dBs units would make a determination of compliance dependent on the actual waveform, which could be ambiguous for satellites which repeat various types of signals through a frequency changing transponder. Moreover, converting the spurious emission standard from dBc to dBs may result in unnecessarily more stringent requirements on satellite transmitters. Use of PFD units may make the design impact of the standard dependent on the altitude of the satellite, and thus may impose more stringent requirements on LEO satellites such as those employed in the Constellation system. The use of PFD levels based on protecting receivers on the ground could also allow higher level spurious emissions to be transmitted than permitted by the current standard which could adversely affect satellite receivers in nearby bands or in bands allocated for bi-directional use.

2. *Should the emissions of a multi-carrier system with a wideband frequency allocation be treated differently than those of a system with a single broadband carrier?*

As discussed in response to the next question, Constellation believes that the spurious emission standard should be related to the transponder bandwidth for space

⁵ “dBc” refers to dB with respect to the unmodulated carrier power, “dBs” refers to dB relative to mean power spectral density, and “PFD” denotes power flux density.

stations employing simple frequency changing transponders and not to the emissions of any signal being repeated by the transponder.⁶ Even if the signal is modulated on board the satellite, rather than being repeated, the bandwidth of such a signal used to determine the mean power level should be much less than the allocated frequency band in which the satellite is being operated.

3. Should the mask be defined as a function of authorized bandwidth (FCC approach) or necessary bandwidth (ITU approach)?

For satellites employing simple frequency changing transponders, such as those in the Constellation system, the relevant bandwidth should be taken as the -3 dB transponder bandwidth.⁷ In this case, the authorized bandwidth and the necessary bandwidth (for purposes of applying the spurious emission limit) should have the same value. Thus, if the Commission were to modify Section 25.202(f) to be expressed in terms of the “necessary” bandwidth rather than the “authorized” bandwidth, it would be necessary to include the provision noted above that the necessary bandwidth of a frequency changing transponder is to be taken as the -3 dB bandwidth of the transponder itself and not the necessary bandwidth of any emission being repeated through the transponder.

4. Should a generic mask be used for all space services allocations unless otherwise specified?

The objective of a spurious emission standard should be to define an upper limit on the amount of noise in other frequency bands caused by a space station transmitter that must be tolerated by the receivers in those other bands. Such a limit should be generic

⁶ The use of the term “allocation” in the joint letter is confusing in this context since the reference bandwidth associated with the spurious emission standard is either the transponder bandwidth or the bandwidth of a signal on a particular RF carrier frequency.

and apply to all space services and bands in order to avoid relaxing receiver design requirements in any one particular band at the cost of imposing more stringent design requirements on satellite transmitters operating in all the bands allocated to space services.

5. *Should the FCC Rules incorporate out-of-band values agreed in Recommendations of the ITU-R?*

Limits on out-of-band emissions are not currently specified in the ITU Radio Regulations,⁸ and the joint letter provides no basis on which to adopt more stringent requirements than those currently specified in Section 25.202(f) of the Commission's Rules.

Constellation notes that limits on spurious emissions from satellite transmitters are being addressed by the 2000 World Radiocommunications Conference (WRC-2000).⁹ Since LEO MSS systems are global in nature, Constellation believes that it would be preferable for only one standard to be applicable to such systems. Any standard adopted by the Commission should therefore be no more stringent than that incorporated into the Radio Regulations of the ITU.¹⁰ Moreover, it would be premature for the Commission to begin any rulemaking proceeding to modify its current out-of-band emission limits in

⁷ See ITU Radio Regulations, Appendix S3, paragraph 11.

⁸ See ITU Radio Regulations, Appendix S3, paragraph 1 and Radio Regulation No. S4.5.

⁹ Agenda Item 1.2. See also the United States' Proposals for this agenda item.

¹⁰ ITU Radio Regulation No. S3.6 and Appendix S3.

Section 25.202(f) until after the WRC-2000 is concluded and the final version of the applicable ITU Radio Regulations are known.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Albert Shuldiner", with a long horizontal flourish extending to the right.

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