

TECHNICAL ANNEX FOR TRANSPONDER CAPACITY

1. Introduction

This appendix contains the technical characteristics for the satellite system used by NewSat.

2. Communication Antenna Pointing

NewSat or its supplier will maintain the orientation of its satellite communications antennas relative to the earth such that the specified EIRP, G/T and SFD are maintained.

3. Communication System Performance Characteristics

3.1 EIRP, G/T and SFD Performance of the Transponders

NewSat's suppliers specify minimum EOL (end-of-life) full Transponder performance values for EIRP, G/T and SFD for all satellite beams. To verify the Customer's EIRP performance, NewSat's suppliers will use a reference monitoring location and extrapolate the data.

3.1.1 Estimated EIRP, G/T and SFD for Contours within Footprint

NewSat can provide uplink G/T contours and downlink EIRP contours for the allocated capacity. These contours allow the user to estimate EIRP, G/T and SFD for locations within the overall footprint. The contours are provided for estimation purposes. It is recommended that a 1 dB margin be incorporated when utilising the contours.

3.1.2 Saturation

For the purposes of this Section, saturation is defined as the point on the single carrier power-out versus power-in transfer curve corresponding to the operating point that provides the maximum specified EIRP output power.

3.1.3 Multi Carrier Operation

While subject to final approval by NewSat based on the specific transponder configuration, in general multi-carrier operations (3 or more) must be conducted with a composite output and input back-off. For shared use transponders, additional power constraints may be imposed in order to reduce the generation of intermodulation or other spurious signals.

3.1.4 Input Attenuators

The gain of each Transponder may be adjustable by ground command. The gain setting for each Transponder will be chosen by NewSat or their supplier, in consultation with the Customer, taking into consideration uplink coordination restrictions and the need to limit co-channel interference.

3.1.5 Transponder Gain Stability

Under nominal operating conditions, Transponder gain will be maintained within ± 1.5 dB over any 24 hour period.

3.2 Satellite Communication System Expected Performance

3.2.1 Cross Polarization

Cross polarization isolation between co-frequency Transponders is expected to be a minimum of 27 dB for most locations within the -3 dB downlink/uplink gain contour (relative to beam center). NewSat reserves the right to review and approve all frequency plans in order to minimise the level of co-channel interference.

3.2.2 Adjacent Satellite Interference

The decrease in total link C/N of a given carrier due to adjacent satellite interference will be less than 1 dB when that link is operated in accordance with NewSat's suppliers' specified parameters. NewSat reserves the right to review and approve all frequency plans in order to minimise mutual interference between adjacent satellites and to ensure compliance with applicable coordination agreements with other networks.

3.2.3 Nominal Transponder Assignment

NewSat reserves the right to assign and reassign specific transponders using specific uplink and downlink beam pairs, or transponders using beams with comparable performance, in order to minimise mutual interference between adjacent satellites, to ensure compliance with applicable coordination agreements with other networks, or to permit efficient loading of the Satellite.

3.2.4 **Carrier Frequencies**

As previously indicated in Sections 3.2.1, 3.2.2 and 3.2.3, NewSat reserves the right to review and approve all carrier frequency plans in order to minimise interference between co-frequency Transponders and reduce interference to and from adjacent satellite networks. Analog television and high carrier density transmissions will, of necessity, be limited to specific designated frequencies, taking into account coordination agreements reached with other networks.

3.2.5 **Performance at Particular Locations**

In the event of a bona fide dispute regarding whether the Service Specifications are being met, NewSat or their suppliers will take measurements from their monitoring stations or at other convenient locations and extrapolate data for the particular locale.

End of Appendix