STEREO Telecommunications Status
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- HGA high-rate science downlink design guidelines:
  - One axis gimbaled HGA always pointed towards earth within $\leq$0.1 deg (carrying 0.2)
  - Design point goal 5 Gbit @ 1AU with 8 hr contact
    - Translates to 200 kbps in 7 hr downlink time
  - RS + 6:1 convolutional coding
  - Bit rate
    - Max rate based on recorder dump in 3 hrs downlink time
    - Min rate set by link @ 2 AU earth distance
  - Downlink margin $\geq$3 dB, BER <10E-6

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- HGA high-rate science downlink design guidelines cont:
  - Ground system DSN 34 m BWG antenna system
  - DSN coverage
    - 0 to 0.56 AU…..4 hrs/day
    - 0.56 to 0.7 AU….6 hrs/day
    - 0.7 to 2.0 AU……8 hrs/day

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- Preliminary HGA high-rate science downlink analysis:
  - Preliminary link analysis for:
    - 1.1m, 1.3m, 1.5m HGA
    - 10w, 20w, 40w amplifiers
    - existing BWG antenna system
    - upgraded BWG antenna system
    - Lag 30 orbit
  - Preliminary set of bit rates and downlink time:
    - existing BWG antenna system
    - upgraded BWG antenna system

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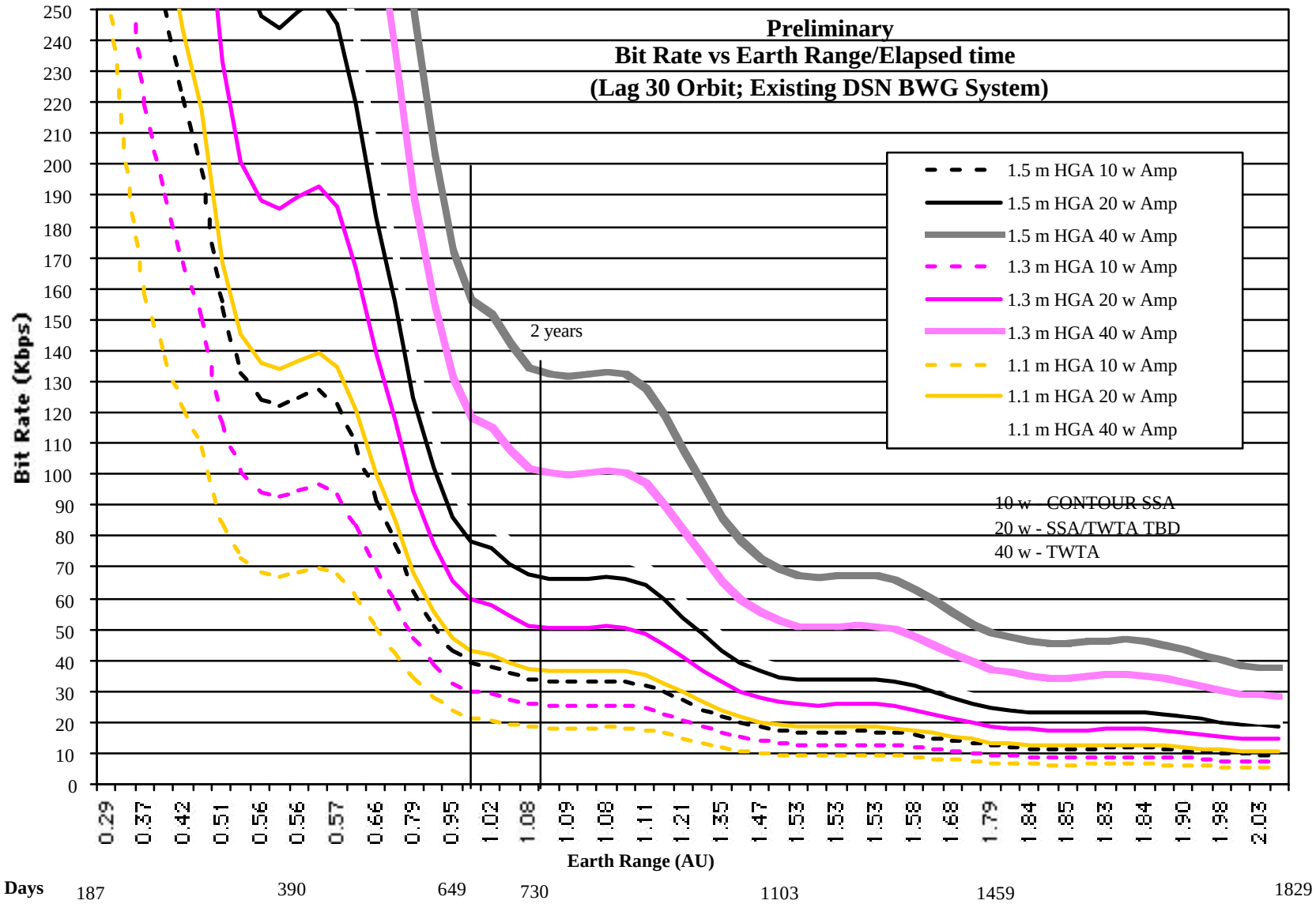

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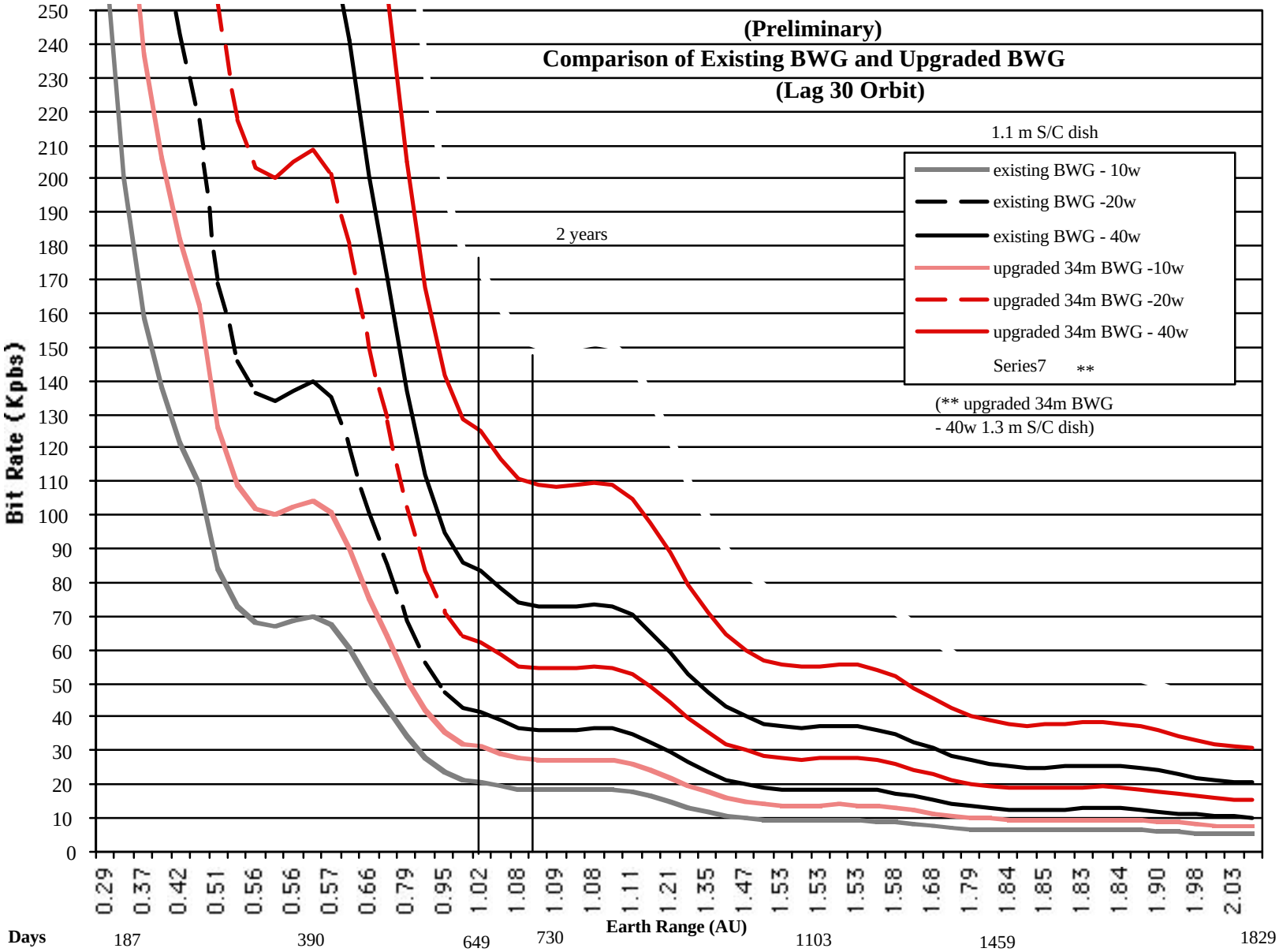

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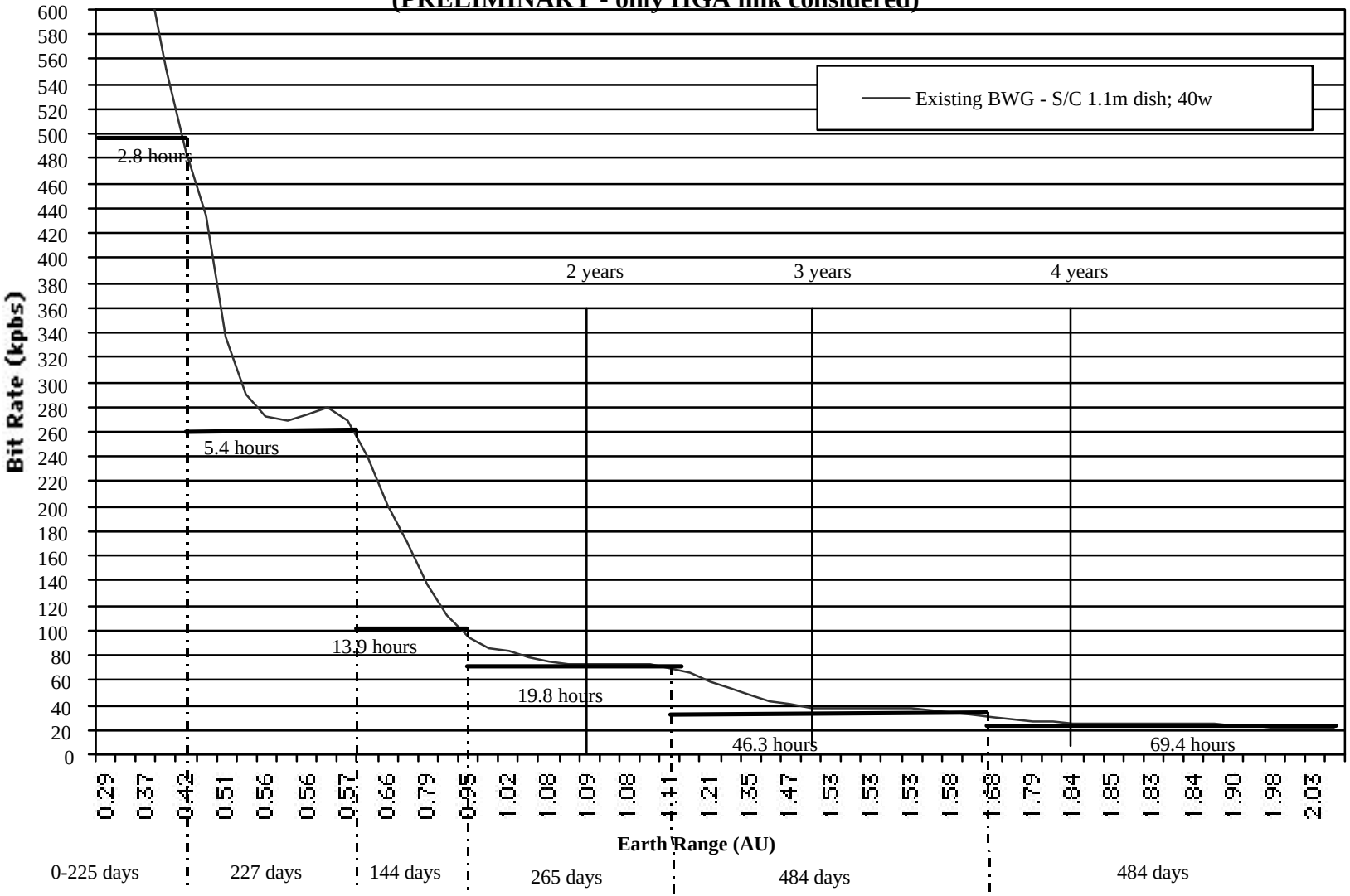
Set of Bit Rates & DSN Downlink Time for 5 Gbits Total

Existing BWG System

(PRELIMINARY - only HGA link considered)



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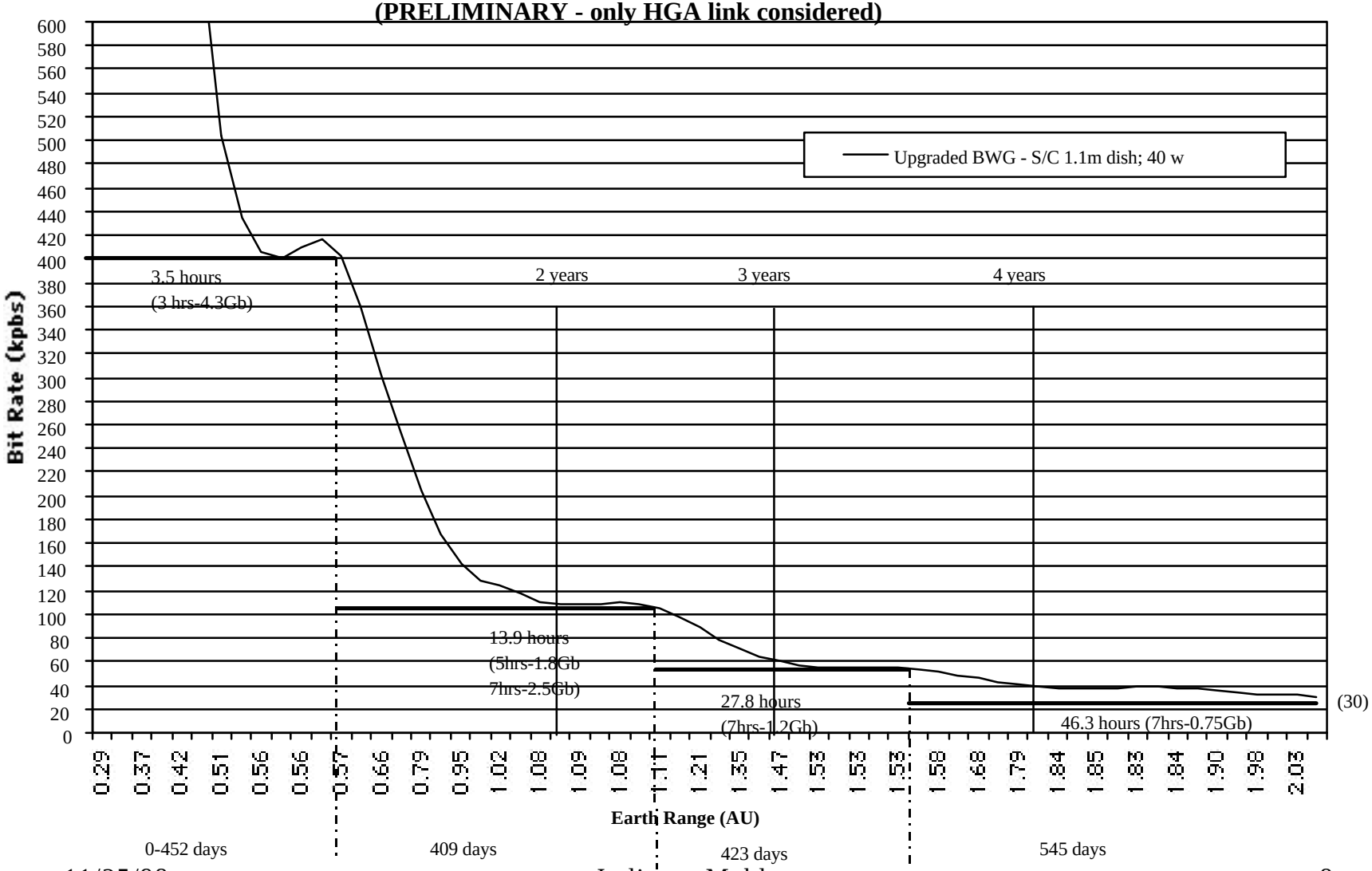
Set of Bit Rates & DSN Downlink Time for 5 Gbits Total
Upgraded BWG System
(PRELIMINARY - only HGA link considered)