

## Exhibit B: Explanation of Necessary Bandwidths

The following table shows the terminal, data rate, modulation type, baud (modulation rate), and corresponding necessary bandwidth for each type of terminal to be used in the MT demonstrations. All data transmitted in these demonstrations will be digital. BPSK modulation is used for the 600-bps data rate transmissions and QPSK or offset-QPSK (OQPSK) is used for all other transmissions. As can be found in numerous references on the topic, the bandwidth efficiency for BPSK-modulated emissions is 1 bit/s/Hz, while that for QPSK-modulated emissions is 2 bits/s/Hz.

Transmissions from the AERO/H, WorldPhone Marine, and Saturn-B terminals will use concatenated (220,200) Reed-Solomon and 7/8-rate Viterbi FEC codes that will increase the coded data rate. The baud will be half the coded data rate, due to QPSK bandwidth efficiency. The HPA will be driven into saturation during transmission, expanding the necessary emission bandwidth approximately 20% above the baud.

| Terminal Type           | Data Rate (bps) | Coding Rate (chips/s) | Digital Modulation | Baud   | Necessary Bandwidth (Hz) |
|-------------------------|-----------------|-----------------------|--------------------|--------|--------------------------|
| AERO/I                  | 600             | Uncoded               | Aviation BPSK      | 600    | 600                      |
| AERO/I                  | 10500           | Uncoded               | Aviation QPSK      | 5250   | 5250                     |
| AERO/H                  | 256000          | 322000                | OQPSK              | 161000 | 193000                   |
| Saturn-Bm/Bt2           | 512000          | 644000                | OQPSK              | 322000 | 386000                   |
| WorldPhone Marine w/TPU | 16000           | 20100                 | OQPSK              | 10100  | 12100                    |