

Meshcore Bandwidth, bitrate and airtime

Taken from: [MrAlders0n](#) [On Discord], —
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Airtime on 910.525

Quick reference on what our default preset actually gives us.

The preset

910.525 MHz, SF7, BW 62.5 kHz, CR5. That is the USA/Canada recommended setting and what every node in Ottawa should be running.

How much spectrum

62.5 kHz wide, so roughly 910.494 to 910.556 MHz. The 902 to 928 band has room for more than 400 channels that size. We all share one of them.

How much data

2,734 bps at the physical layer. That is not per node, that is the total for everyone inside earshot of each other.

What a packet costs

Time on air at our settings:

16 bytes	103 ms
32 bytes	144 ms
64 bytes	236 ms
120 bytes	400 ms (a signed advert)
200 bytes	635 ms

Airtime percentages

LoRa has no real collision avoidance, so throughput starts dropping once the channel is busy more than about 15 to 20 percent of the time. That is the number to stay under.

Take 30 repeaters in range of each other. A flood advert gets rebroadcast by each one, so a single advert costs around 12 seconds of shared airtime. All 30 doing it once is roughly 370 seconds of

channel time.

47 hour flood interval: 0.2 percent airtime

1 hour flood interval: 10 percent airtime

15 minute interval: 41 percent airtime

Zero hop adverts are single transmissions with no rebroadcast, so a 4 hour zero hop interval across 30 repeaters costs under 0.1 percent. Those are cheap.

Takeaway

Keep flood adverts at 47 hours. That one setting is the difference between adverts using a fraction of a percent of our airtime and using a large share of it. Messages, telemetry and room posts all come out of whatever is left.

Numbers assume the worst case where every repeater hears every other one. Real coverage is patchier and repeaters that cannot hear each other transmit at the same time, so actual figures run lower, but the ratios hold.

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