

TEM Consulting, LP

Memorandum

Date: January 31, 2023

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Subject: MK II Maximum Duty Cycle

This memo describes the testing performed to determine the maximum duty cycle the MK II is capable of.

Maximum Duty Cycle

The maximum duty cycle was measured at 14.1% while transmitting data at the maximum possible data rate.

Once the phones are configured a picture is transmitted from one phone to the other, creating a high rate of data transfer. The MK II's will be transmitting data at their maximum power as fast as they can transfer data.

Data Sources & Loads

The MK II can receive data for transmission through three processes:

- Transmission of a text message (The source may be a voice message which has been transcribed into a text message.)
- Transmission of a GPS location
- Transmission of a picture

While all of these require user actions to initiate a transmission by the MK II, the first two result in a small amount of data and so a short transmission. A consequence is that the amount of time required for the user to setup a series of transmissions will dominate the time between each transmission.

Transmitting a picture is different from the first two processes in that, which the user must still setup the transmission, the data in a picture file is much greater resulting in the MK II transmitting at its maximum rate of speed until the file has been sent. This is the process used to make the duty cycle measurement reported in this memo.

Measurement Overview

The balance of this memo gives detailed descriptions of the connection and transmission process.

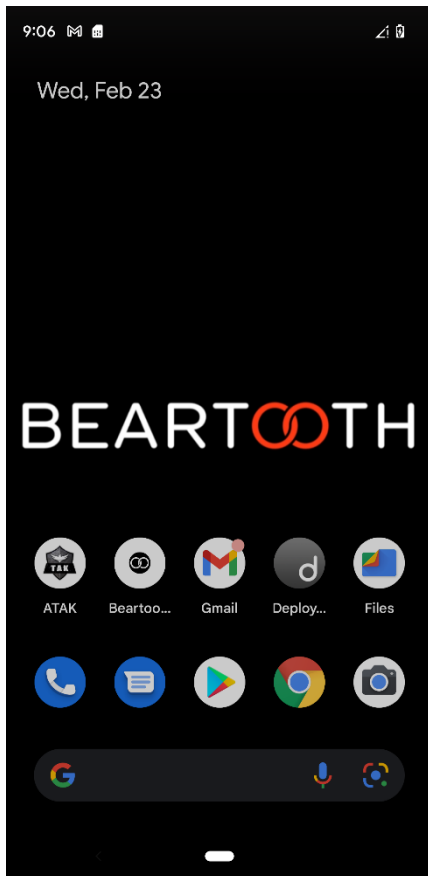
A spectrum analyzer, connected to an antenna, was used to monitor the transmission. The antenna was placed close to the MK II that would be transmitting the picture. Once the transmission started the frame duration and transmission time were measured multiple times. The duty cycle reported is the transmission time divided by the frame duration.

As reported above, the maximum duty cycle measured was 14.1%.

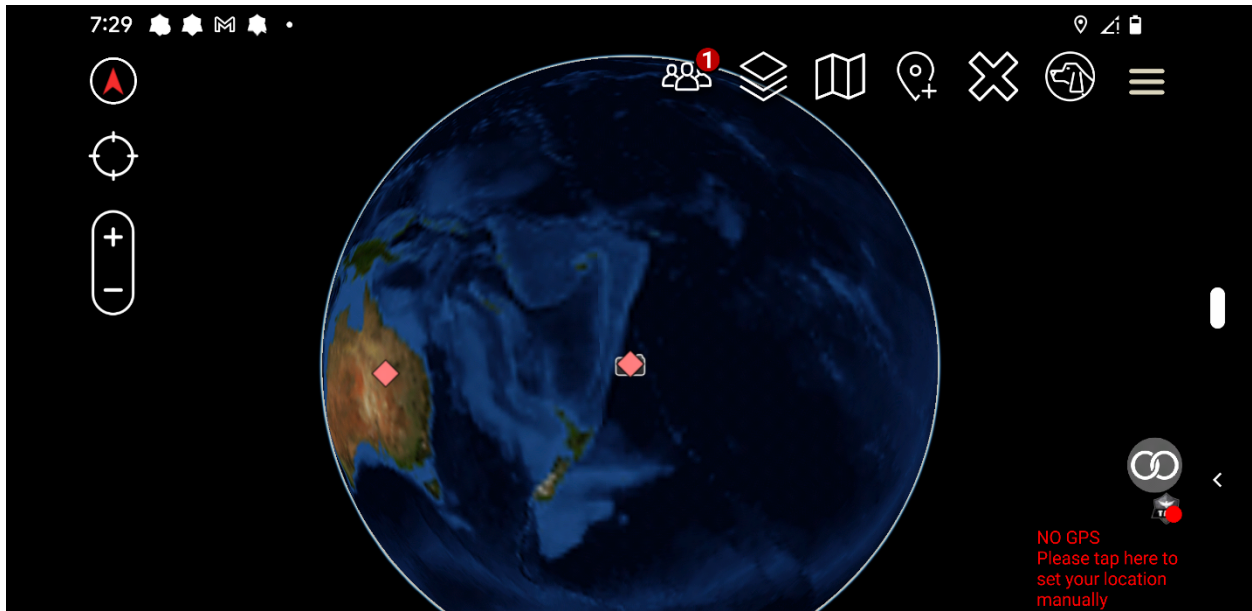
The balance of this memo describes in detail the setup and measurement process.

Connect Phones to MK II's

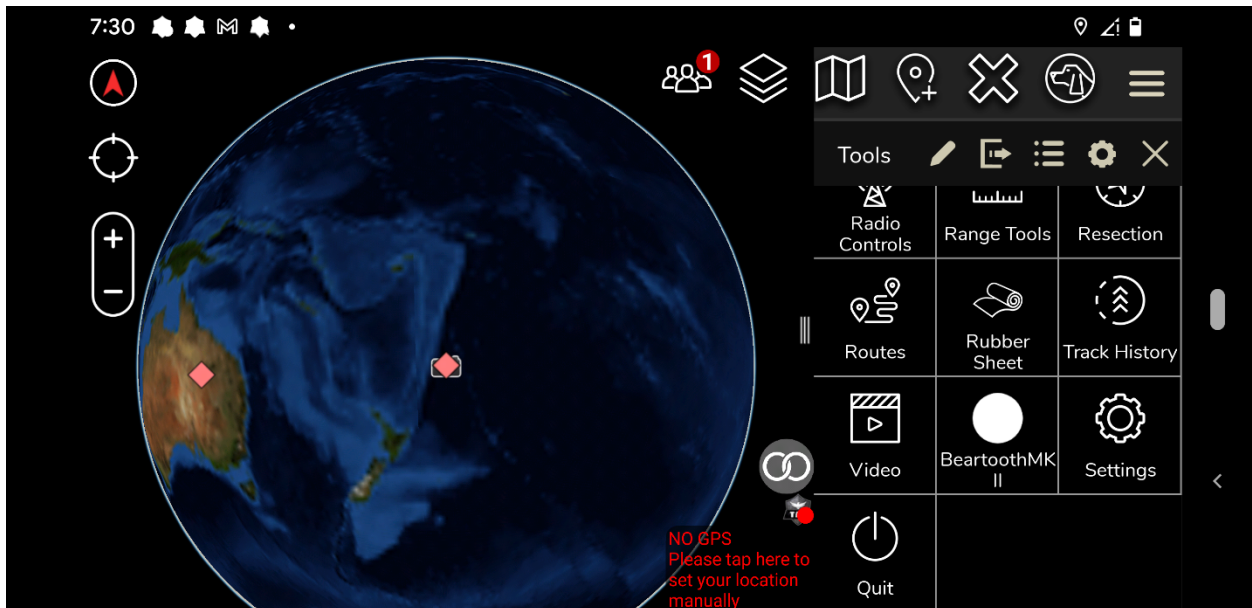
Power on the 1st phone. At the 1st screen swipe up from the bottom of the screen. The following screen should appear:



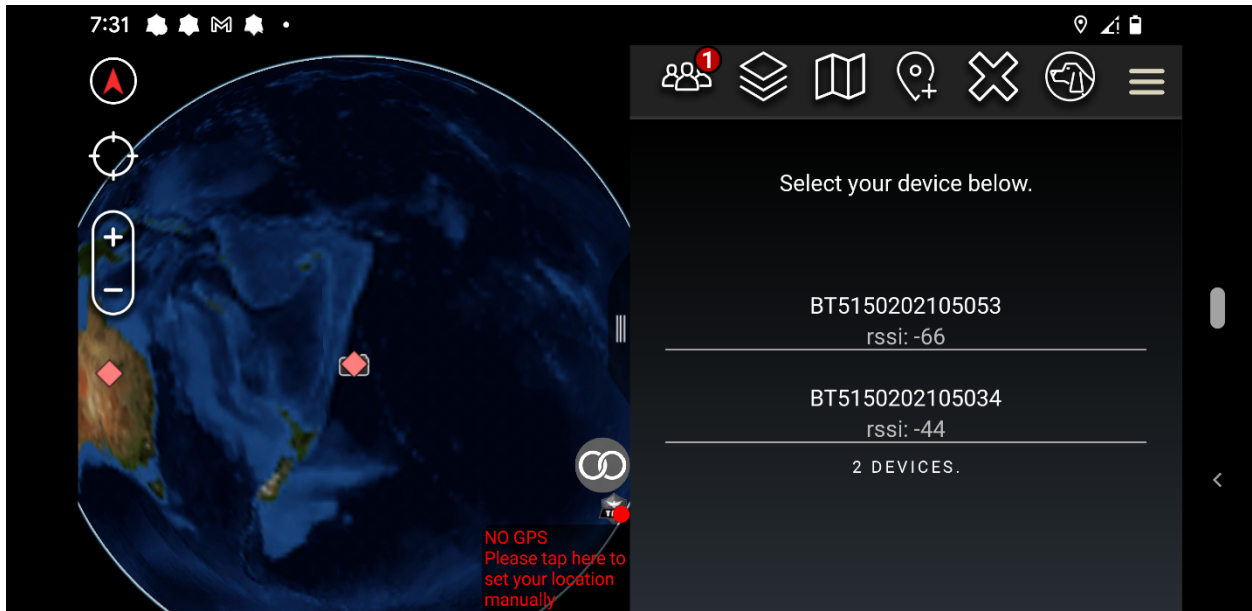
Select the 'ATAK' app. The following screen should now be displayed:



Select the icon on the top right, the 3 horizontal bars. Scroll through the options until the Beartooth MK II option appears:



Select Beartooth MK II option. Now turn on one of the MK II's. Its serial number will appear on the screen:



Select the MK II and the Pixel 3 XL will connect to it.

Now repeat these steps with the other phone and MK II to connect them.

Connect Phones

On the 2nd phone select the left icon, showing three figures.

Several contacts will appear, choose "Beartooth Broadcast". This will bring up the next screen:

