FAI certified altimeter
compliant with F1 Sporting Code regulations

Congratulations with the purchase of the All-Tee altimeter. Currently it is the smallest and lightest altimeter with integrated Bluetooth and can run on 1S and 2S LiPo batteries or any power source within a 3 to 10 Volt power supply range. It records altitude data with a resolution of 10 cm in a non-volatile storage of up to 200 minutes (more than 3 hours) at 5 data per second. The integrated Bluetooth functionality, which can be enabled by swiping a magnet over the All-tee, can transfer the stored data to the All-Tee app for graphical visualization and analysis of flight altitude data over time. The Bluetooth radio will announce itself by the name 'All-Tee' followed by the user's FAI ID number. This number is fixedly programmed and cannot be changed by the user. But even without the use of the app, some data can be shown to its user. The All-Tee is equipped with a miniature push button and a short press on the button will blink three coloured LEDs: Red, yellow and green. These LEDs can signal the peak altitude in meters as well as indicate if a connected LiPo battery is empty. The button can also be used to clear the memory. The All-Tee excels in temperature stability and zero start-up drift. No stabilization period after switch on is required. All-Tee has automatic start and stop of data recording (start and landing detection).

Specifications

Dimensions 9 x 17 x 6 mm
Weight 0.8 gram
Waterproof sensor (gel filled)
Pressure sensor altitude noise 7 cm
Minimum relative altitude accuracy +/- 0.3 %
Resolution: 10 cm
Communication: Bluetooth (integrated)
Power supply voltage range: 3.5 – 10 Volt, connect to on-board LiPo battery or to stand alone LiPo, 1S or 2S (e.g. a 50 mAh capacity LiPo will do)
Non-volatile memory: 1 Mb
Data logging capacity: 200 minutes (3 hours and 20 minutes)
Data frequency 5 Hz (5 recordings per second, 0.2 s intervals)
Unique personalized FAI ID pre- programmed

Temperature compensated and calibrated pressure sensor
No start up drift, plug and play
Integrated push button to clear memory or read apogee height using 3-color
LEDs
Coloured LEDs to indicate battery status (for 1S and 2S LiPo only)
All-Tee app for graphical representation of height and sink rates (variometer).
Auto start and stop of recording (note, when memory is empty, recording starts
upon powering up the All-Tee, when a pre recorded flight(s) is present,
recording starts if height exceeds 5 meters)
Automatic start and end of flight detection ('About Time' flight time calculation)

Hardware
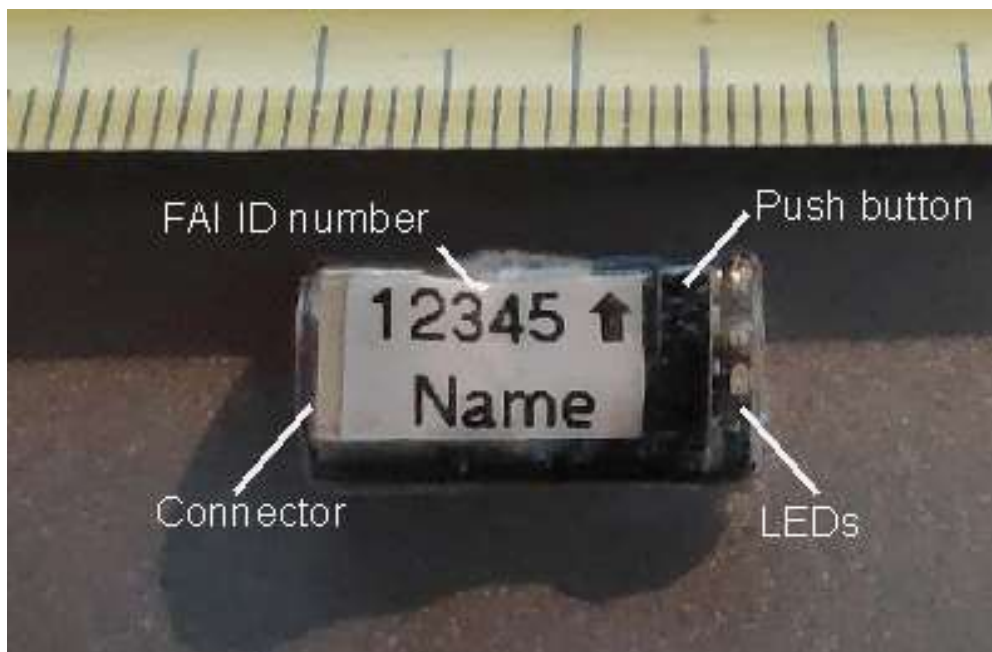
Cable: Power wire: red to be connected to positive (+), black to negative (-) of
battery. V1.2 is reverse polarity protected (**NOTE for V1.1: reverse polarity
damages the All-Tee!)**
Connector: to connect the All-tee to the power wire
Push button: press between fingers to trigger events (see below)
LEDs: to signal All-Tee status
FAI ID number: unique number for FAI sporting license holder
Name competitor: competitor's name of FAI ID number holder

First use

The All-Tee will start recording data the moment it is powered up (when
memory with recorded altitude data is empty, led blinks green) or the altitude
exceeds 5 meters (when previous flights are already stored in memory, led
blinks red) measured from the location it is switched on. It will keep track of the

latest memory position, so the next time you hook it up to a battery it will record height data after the previously recorded data up to a total of 200 minutes of recording time. A blinking LED signals the All-Tee is operational.

After powering up the All-Tee, the 3 LEDs are tested after which the red LED blinks a second only in case the connected LiPo is empty or another type of power source is used (e.g. via a voltage regulator). After this start up sequence, a blinking green LED signals the memory is empty. A blinking red LED signals there are flight data already stored and recording will start after the height exceeds 5 meters (note that height data lower than these 5 meters will also be stored).

Push button

A **short press** on the push button will indicate a sequence of flashing of all LEDs followed by the maximum altitude stored in memory:
Number of red LED flashes: hundreds of meters
Number of yellow LED flashes: tens of meters
Number of green LED flashes: single meters

Example: if a flight is made with a maximum altitude of 123 meters the following blink sequence can be seen:
One red flash, two yellow flashes, three green flashes.

The memory can be cleared, by pressing the push button for several seconds (**long press**). The red LED will first light up and after a few seconds will start blinking. Releasing the push button during the LED blinking phase will clear the memory. This is signalled, by alternating red and green blinking LEDs. The memory can also be cleared using the All-Tee app. Perform this function before every official competition flight.

LED functionality

LEDs: a red, yellow and green LED are integrated into the All-Tee for signalling different information to its user:
-status of battery (1S or 2S Lipo) after start up a red blinking LED signals an empty battery. If the battery is charged the green LED blinks.
-maximum altitude in recorded data (see 'Push Button paragraph above)
-signalling reset to zero altitude (see 'Push Button paragraph above)
-Bluetooth enabled: blinking yellow led
-Bluetooth connection active (yellow LED continuously on)
-Cleared memory (green LED blinks)
-Flight data stored in memory (red LED blinks)

All-Tee app

The All-Tee app comes for Android devices only (for the time being) and will be emailed to the buyer separately or can be obtained from the Android Play store

free of charge. Make sure the Android device is set to 'app installations from unknown sources':
On your Android device, go to settings, then advanced settings, then security. Enable 'unknown sources'. Now you can install the All-Tee app. After the installation you can disable 'unknown sources' again to keep your Android device secure again.
Make sure your Bluetooth is switched on in your device: Select 'settings', then 'Bluetooth' and make sure the Bluetooth is switched on.

If the app does not want to operate the Bluetooth, most likely the permission 'location services' has been disabled. Go to the Android general app settings and enable 'location services' for the All-tee app.

Some apps may interfere with the Bluetooth communication. It has been reported that a 'Corona app', which keeps track if you have been in proximity to a Covid infected person, interferes with the All-Tee Bluetooth communication. If you encounter issues, disable / uninstall this Covid app.

Although not designed for it, the graph screen can be used in Landscape mode.

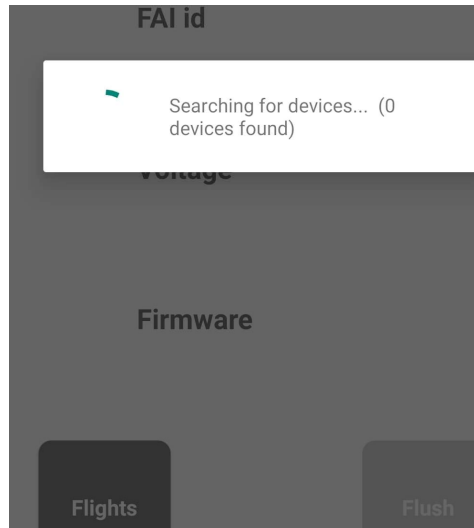**Bluetooth pairing with Android device (phone or tablet)**

Before All-Tee can be used, it must be paired with an Android device (phone or tablet). To pair an All-Tee, perform the following steps:

Start the app by pressing the All-Tee icon ![All-Tee icon] . The app opens with the following screen:
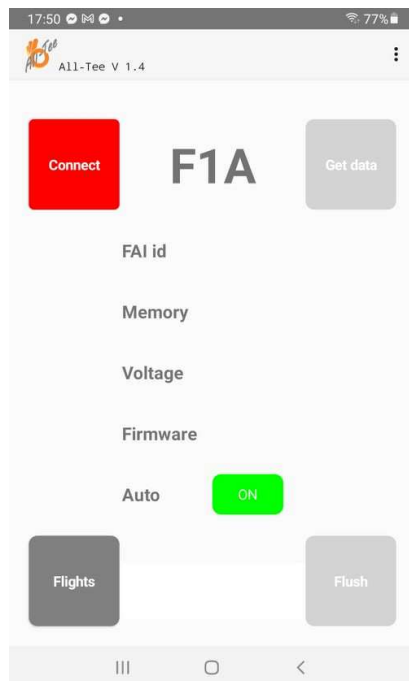
Switch on the All-Tee by connecting it to a battery or other 3.4-10V power source. Wait for a steady blinking of either the green or LED. <u>Swipe</u> a magnet over the All-Tee so that the yellow LED starts blinking. The Bluetooth function is now switched on.

Keep the Red button 'Connect' in the upper left corner of the app pressed until the following screen appears:

The App is now searching for Bluetooth devices with the name All-Tee (note, pairing is required only once per All-Tee device or after the All-Tee has been paired with another Android device).
All-Tee announces itself with its name (All-Tee) followed by the sportsman FAI-ID number, which is permanently programmed into the All-Tee's non-volatile memory. The FAI-ID number can be followed by a suffix letter, which identifies the unit if the competitor has more than one All-Tee. Example:

All-Tee 12345, All-Tee 12345A, All-Tee 12345B etc.

All-Tee: the Bluetooth device name on which the app triggers the pairing
12345: the competitor's unique FAI ID number
A, B, C etc.: the second or further All-Tee of the competitor (if the competitor owns several All-Tees e.g. for a spare models).

Tap on the device to be paired and enter the standard Bluetooth pin code '1234'. Now a Bluetooth link is established and data can be downloaded. Note that Android might present an error message, this message can be ignored.

A list of devices, which have been paired with the All-Tee app can be shown by tapping the 3 dots in the upper right corner and selecting 'Devices'. If desired, devices can be removed by selecting a device and tap on the 'Remove' button.

CONNECT

First select in which class of model the All-tee is used. This can be selected by tapping at the top of the screen on the F1A, B, C or Q indicator. Select the class.

Enter the maximum fly off flight time as set by the contest director by tapping the three dots in the upper right corner and select 'Max'. Now enter the Max time in seconds.

Once the All-Tee is paired with the Android device, a connection can be made between the All-Tee and the All-Tee app. The status of the Bluetooth connection is shown as red (disconnected) or green (connected) upper-left button on screen. In case the button is red, simply tap on it to make the connection (make sure the All-Tee blinks the yellow led, swipe a magnet over the All-tee to trigger Bluetooth). If a single All-Tee is paired, then connection and height data transfer are made instantly. If more than one All-Tee is paired, a list with All-Tee devices appears from which you can select. A connection is made and the connect button turns from red to green. Data is shown in the middle of the display: FAI ID number, voltage of connected power source (e.g. a LiPo battery) and the firmware number of the All-Tee. Upon connecting, the memory of the All-Tee is read automatically. The zero (ground) level, the launch of the model (time = zero) as well as the height at the pre-set max flight time is determined automatically and shown at the bottom of the screen. If for whatever reason this fails, the ground level and moment of launch can be set manually in the graph.

FLIGHTS

Pressing the Flights button will show a list of previously recorded flights. Each flight shows the name of the All-Tee and the Date/Time the data were transferred or edited.
Export: data can be exported to a CSV file, which can be further analysed in Excel.
-Install the (free) file manager app from the Play Store: CX File Explorer
-Press on the 'Export' button in the All-Tee app.
-The following message will appear (note down the name of the file):
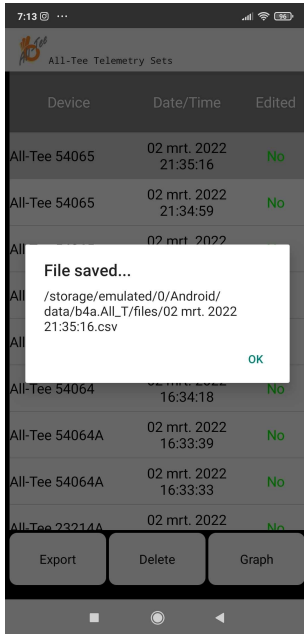
Note that the path where the file is stored does not reflect the real location in file management (an Android issue). Instead, to retrieve the exported file for further use, the installed file manager should be used:

-Open the CX file Explorer app.
-Select in this order: Android, Data, b4a.All-_T,files
-Select the file of interest by long pressing on it
-In the lower right corner, press the 3 dots
-Select 'Share'
-Select the email program you use (note, your email account must be installed on your Android device in order to email the file to another computer)
-Email the file to yourself
-On another computer you can receive this email. Save the attached file.
-*For further steps you should be familiar with Excel, the manual does not give a course in Excel use.*
-Now this CSV file can be imported in Excel. The data are comma separated.
-Three columns appear, the second column presents height in decimetres, the right column time in 0.2 seconds increments. Excel graphing tools can be used to convert these data into a graph (right column X-axis, second column Y-axis, divide by 10 for meters).

Delete: single flights can be deleted. A long press on this button allows deletion of all data in the list.

Graph: the selected flight will be shown in a graph for further analysis.

A long press on the 'Graph' button will present the flight with calculated flight time.

A window is presented allowing the flight data to be sent to the 'About Time' cloud so that anyone can access your flight data. Pressing 'OK' will present a new window where you can enter your personal data like name and country. In the model ID field you can enter your FAI ID number followed by the model number (e.g. A, B, etc or 1, 2, 3 etc) in accordance with the FAI sporting code, section IV

aeromodelling, section C.11(identification marks). Pressing OK will save these data so you only have to enter them once. The 'cancel' button will get you back to the graph screen.

Touching the screen outside of the 'About Time' window, allows you to view the flight graph, and the calculated flight time.

FLUSH

This button resets the memory pointer for the flight data to zero. Note that flight data will remain physically stored in memory and can be called (30 minutes of data) using the GET button (not to be used in competition). When connecting with Bluetooth to your Android device, only the newly recorded (fly off) data will be shown.

AUTO:

When enabled (on/green button), the All-Tee app will automatically determine moment of launch and zero ground level. When disabled this function will not be performed on the downloaded flight data. Please note that this feature is an ergonomic aid. To determine the height of the model in competition, the graph should always be used!

F1A, F1B, F1C, F1Q

Select the class you are flying in to allow the app to determine the correct moment of launch (when 'Auto' button enabled).

GET DATA

Note that flight data since the last flush action are loaded into the app the moment a Bluetooth connection is made. However, data transfer can also be triggered manually. To get the data from the All-Tee, tap on the upper right button 'Get data' (note, Bluetooth link with All-Tee must be active!). 30 Minutes of data (these might include flight data prior to the last flush action!) are now retrieved from the All-Tee and displayed in the following screen. Since flight data are not physically erased from the memory (as this would take a long time), a data pointer is reset to zero when performing a flush (using long press on the push button on the All-Tee or using the flush button in the app). When establishing a Bluetooth connection, only the data of the flight(s) since the last flush action will be shown. Using the GET button in the app will force-read about 30 minutes of flight data from memory. **In conclusion, only use the data after establishing the Bluetooth connection. Use the GET button only in exceptional cases to read the first 30 minutes of memory.**

The main part of the screen shows a **graphical representation of the flight or flights**. Horizontally, the time in seconds, vertically the height in meters. Using a 'pinching' gesture with two fingers (thumb and index finger) the graph can be zoomed in or out along the respective horizontal axis (time) and vertical axis (height). Once zoomed in, swiping a single finger over the screen will move the graph. In zoomed-in mode, the hairline can be moved by tapping a point of interest on the screen. If the graph is fully zoomed out, moving a single finger over the screen will move the red hairline over the screen to get flight data of a specific point in time.

The lower left corner of the flight screen shows important flight data:

-Max altitude: the maximum altitude over ground level the model reached during the recorded flight.

Actual altitude: The altitude over ground level at the position of the red hairline.

Elapsed: The elapsed time relative to the zero-time set point (typically the launch).

Extrapolated: if the vario is negative (model gliding down), the red hairline can be positioned over the graph and the estimated flight time up to the point the model reaches zero meters is calculated.

Local vario: the rate of sink is shown at the location of the red hairline as measured over a time frame as set in the settings.

Global vario: the rate of sink is shown at the location of the red hairline as measured over the period between time = 0 and the red hair line. In this case, position the horizontal zero shift at the position the model starts the glide (i.e. after bunt, motor- or engine run). So this value represents the average performance over the complete glide part of the flight.

Operations:

Several operations can be performed by tapping on the **3 dots** in the upper right corner:

Set start:
The red hairline is typically positioned over a point of interest (i.e. launch) and the time will be set to zero on this point. This is typically used to mark the start of a flight (note, the app performs this function automatically).

Set ground:
Similar to setting the time-zero, the height zero can be set as well. Typically in the graph prior to launch/release of the model, the height can be set to zero to get the correct reference (note, the app performs this function automatically).

Cut left and right part:
Parts of the graph leading up to the launch and after landing can be removed to cut away redundant data. Select this function, then position the red hairline over the cutting location and press 'GO'.

Settings:
A separate screen appears for two additional settings:

~~The outside (ambient) temperature can be set, as typically the pressure to height conversion calculation is done for a standard 15 degrees C. For lower ambient temperatures the real height will be less and for higher temperatures the real height will be more. It is important in competition that all competitors use the same temperature setting (e.g. by all using 'not set' or all using e.g. 20C).~~ (removed from app to avoid different temperature settings between fly off contestants).

Sink rate: the rate of descent a.k.a. rate of sink is calculated by using the altitude change over a time frame. If the value 5 is entered, the rate of sink is calculated over a period of 5 seconds. This time-frame is moved automatically with the red-hairline over the graph. It will show the glide performance of your model at the

location where the red hair line is positioned. On the main screen this is called 'local sink rate'.

Once set, press the 'Save & Close' button to save the set values and return to the flight graph, or the Android 'back' pointer in the lower part of the screen if you do not want to change anything.

Buttons lower right corner:

The main screen has in the lower right corner two more buttons:

Close: to go back the start screen

Vario: to get a graphical representation of the rate of sink of the model during the flight. This can be used for performance analysis as instead of time versus altitude, a graph with time versus rate of sink is shown. So the glide performance of the model during the flight is visualized. The graph will also tell you how 'neutral' the air really was, when the model entered lift etc. It is advised to zoom in on the part of the glide only, as circle towing, launch and DT displays a rates of sink and order of magnitude higher than the rate of sink in the glide.
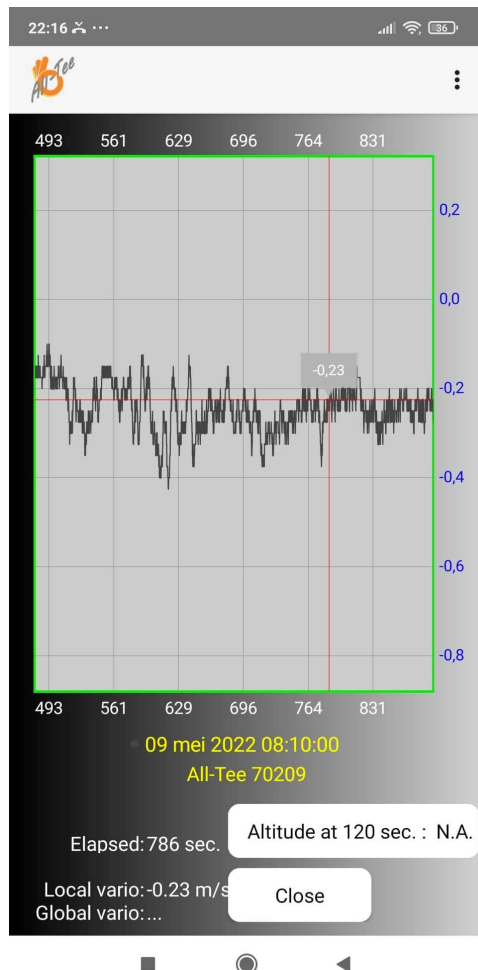
On the left, a vario graph during a 7 minute fly off flight. Although the model glided like the air was absolutely neutral, variations in the rate of sink can clearly be visualized. At the start of the flight the rate of sink was less than 20 cm/s. Then the air started to become more differential, making the model change the rate of sink from 10 cm/s to 40 cm/s. Closer to the ground towards the end of the flight, the air became progressively more neutral with a more nominal rate of sink (22 to 25 cm/s).

Use in competition

There are 2 possibilities to use the All-Tee in competitions according to the Sporting Code Rule F1.2.7:

Category 1 and 2 events (World- and regional championships, World Cups): For regular fly-off use, make sure the memory of the All-Tee is empty either by long pressing the push button or flushing using the app. All-Tee will start recording immediately after such a memory clearing action, so the 'unique signature' as dictated by the contest director prior to a fly off as well as the flight will be recorded. See also
https://www.fai.org/sites/default/files/documents/sc4_vol_f1_freeflight_21.pdf
As of 2022, it is sufficient to show the All-Tee to the time keeper who will note down the unique ID on the score card. The time keeper should verify the green blinking of the led in the All-Tee.

Category 2 events (World Cups) according to the Sporting Code Rule F1.1.4: Tap the three dots in the upper right corner of the main screen and select 'Max'. Enter the maximum as defined by the contest director for 'alternative fly off in case weather or terrain conditions do not allow a regular fly off'. After the flight, download the flight data to the app. In case the app fails to automatically detect the launch, set the zero time at the moment of launch (pitch up start for F1A, climbing above the 0 meter ground level for F1B and –C). The app will automatically determine the altitude of the model at the max time. Verify that the graph level prior to launch / release is zero meters.
**Follow these steps when you present your All-Tee to the jury after the fly off:**

-Start your All-Tee app
-Select the class you are flying (e.g. F1A)
-Press the three dots in the upper right corner and select 'Max'
-Enter the max flight time as set by the contest director in seconds (e.g. 120, 180 etc.)
-Swipe a magnet over your All-Tee to enable Bluetooth (yellow LED appears)
-Connect the app with the All-Tee by pressing the big red button. Wait for the FAI ID to appear on screen. Watch the All-Tee for any green LED flickering and wait for it to disappear. Flight data are transferred automatically to the app.
-A graph of your flight will appear (fig. A below)
-The main screen shows the height at max in the bottom of the screen (see fig. E)

In case the auto- launch detection feature failed:

-Zoom-in to the point where the model was launched by using 2-finger 'pinching' gestures in horizontal direction (fig. B below)
-Select the three dots in the upper right corner
-Select Horizontal zero shift
-Now the start of the time (zero) can be selected in the graph. Tap on the screen with one finger to select the launch. A vertical red hairline aids in positioning (see fig. C below). Note: for F1A launch, set the zero time point between 40 and 50 meters. As this is a 'fast' part of the flight (model at full speed), the time and altitude error will be marginal (centimetres).

-Press the 'Go' button in the lower right corner
-The altitude at the set max is shown in the lower right corner automatically (see fig. D below)
-The graph can be analysed by moving (using one finger), zooming in- and out (using two finger 'pinch' gestures)
-When ready, press the 'Close button'
-When asked to save the edited graph, select yes (or no if you want to discard the changes).

-NOTE: The main screen will display the height at the set max time in RED, to indicate the graph has been manually changed. In this case the contest director should analyse the graph to make sure zero ground level and moment of launch have been set correctly. See Fig. F.
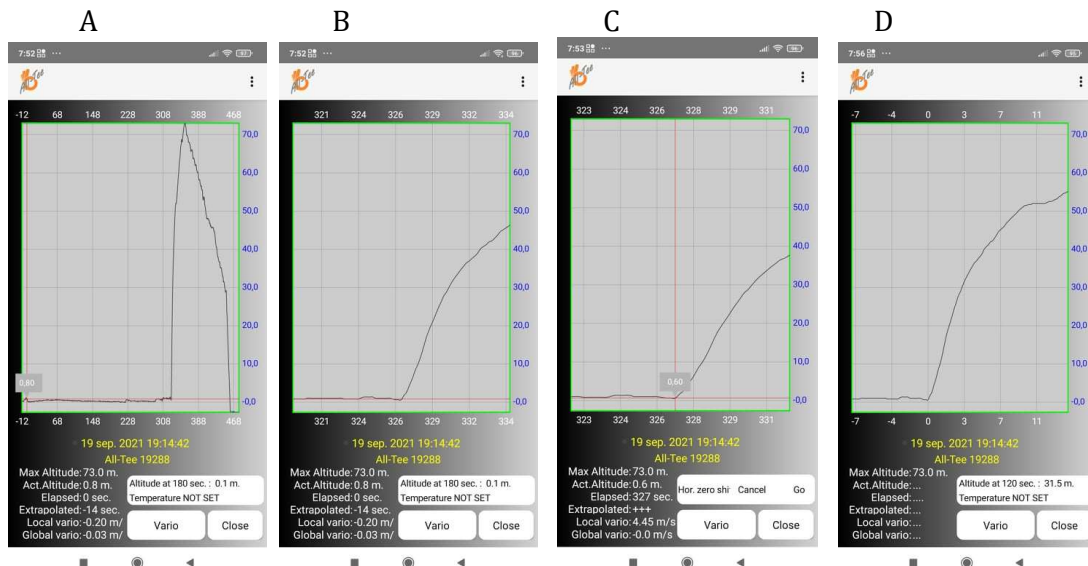
Maintenance:

Use the altimeter when possible inside the nose pod of the fuselage where it is easily accessible both for removal as well as checking the status of the LEDs. Make sure the All-Tee is protected by porous foam padding as impacts (hard landing, broken rubber motor) may damage the quarz crystal resulting in erratic timing.

Connect the cable to the power source and only if a proper connection is made, connect the All-Tee to the cable: NOTE: a wrong polarity of the power source (+ and – switched) will damage the All-Tee (note, V1.2 All-Tee is reverse polarity protected). Familiarize yourself with the way the LEDs blink. If the blinking seems odd, like too slow or erratic in some way, reconnect the battery.

Never remove the connector by pulling the cables. Remove the connector by pulling on the connector itself.

Never use water or aggressive cleaning agents.

Store in a dry space.

Don't forget to bring a magnet to the field to enable the Bluetooth function. If you are using a protective flip case for your Android device, a magnet is often integrated to keep the cover in place after closing the case. This magnet can conveniently be used by **swiping** the All-Tee over this magnet. Do not place the All-Tee on the magnet as this will continuously switch on and off the Bluetooth.

WARNING: Do not place the All-Tee near a servo, as the magnetic fields can trigger the Bluetooth functionality, which will stop the recording. Position the All-Tee as far as possible from magnetic sources. Testing is recommended in particular with the servo switched on (i.e. if the yellow led starts blinking). Magnetic fields can be blocked with a metal foil called 'MuMetal'. Ebay has several offers for this material. It can be placed between the All-Tee and the servo (e.g. on the servo). Make sure that the All-Tee cannot freely move around inside the nose pod.

FAQ:

-If I am practicing, will 3 hours of recording data be enough if I keep All-tee switched on all the time?
　　After the first flight has been recorded, the All-tee will switch off recording by an automatic landing detection and start recording by an automatic launch detection. If the All-tee memory is not flushed, many flights can be stored as the period between flight the recording is stopped automatically. It is however good practice to regularly flush the memory to avoid excessive data download times.

-How is tampering with the firmware and data prevented?
　　Multiple security features are implemented in the design. The designer of the hardware and firmware can check if the All-Tee is an original manufacture and if the firmware is the original firmware. Each All-Tee is unique and there are not two the same.

-My F1A towing sequence shows heights of over 50 meters. My towline is not too long. What is wrong?
　　Increased airflow speeds over the fuselage will cause slight pressure drops inside the nose pod. This will cause an increase in calculated height. Normal glide speeds do not have this effect, so during the glide regime the heights are accurate. This has been verified in the open wind tunnel at Delft Technical University, faculty of Aerospace, with both altimeters inside as well as outside of the fuselage.

-All-Tee yields substantially lower heights than my altimeter of brand xxx.

Each All-Tee has been individually checked for proper functioning and compared to a reference All-Tee altimeter, which has been checked in a 100m office building every second floor. The heights of these floors have been checked with a Leica laser range finder out of a window down to ground level. It is likely that your altimeter of brand xxx did not undergo this type of rigorous testing and yields wrong height data.

-What if the All-Tee of my fellow competitor gives higher results than mine?
Each All-Tee is compared with a reference to make sure the differences between All-Tees are marginal and do not affect competition outcome. If trust between competitors is lacking still, the altimeters of the fly-off pool could be randomly exchanged between the flyers.

-What power supply should I use?
Any source between 3.5 and 10V will do. Typically a 1S LiPo can be used or a power source coming directly from an on board electronic timer. Only when a 1S or 2S LiPo is used, the low battery indicator will work. When using a voltage regulator (e.g. built in timers), All-tee will signal 'empty battery' by blinking a red LED after switch on. This is no reason for concern.

-Can I use a separate power source, e.g. a small LiPo?
A small LiPo of min. 40 mAh (100 mAh recommended) can be used such that LiPo and All-tee form a single package, which can be strapped to a fuselage or positioned inside the fuselage. There will be enough capacity for about two hours of use. However the 40mAh is not recommended, as these LiPo's are very sensitive to low temperature and too high charge currents.
-I can't install the All-tee app.
Make sure that in the Android settings, the function 'allow apps from unknown sources' as well as 'allow location services' for the All-Tee app have been enabled.

-The app doesn't work
Location services and memory access should be allowed by your Android device for the All-Tee app. Check this by going to your Android setting, select 'Apps', select the All-Tee app then Permissions. Switch on location services.
Another problem could be so called 'overlays'. This is where Android apps are allowed to project information over your screen. Some screenshot apps do this. Disable the overlay functionality:

https://www.howtogeek.com/271519/how-to-fix-the-screen-overlay-detected-error-on-android/

Disable Corona related apps and Corona detection functionality.

-I can't read the full words on the buttons in the app.
In Android you can define the font size in the Android settings. Use a smaller font as you have set an increased font size.

-How is the zero meters height determined by All-tee?
The All-Tee sets the height to zero after switch-on, when flushing memory, when checking the max. altitude using the coloured LEDs and when

making a Bluetooth connection. If you want the true zero meters ground level, perform any of these functions with the model on the ground. The app detects if the model has passed the 5 meters (F1A, B, C, Q) height, deducts the typical time to reach this height and sets the height to zero at this point.

-How is the moment of launch automatically determined?
In F1A the moment the glider passes the 60 meters is detected. The time typically needed for an F1A to reach this height is deducted and at the obtained time, the flight is started (time = 0). In the classes launched from the hand, the moment the model passes 5 meters is detected. For each class the typical time the model needs to reach the 5 meters is deducted and time is set to zero.

-My F1C / F1Q model creates prop turbulence and I can't get a valid zero-height
Use the flight graph and move the red hair line to the left (back in time) to the point where the engine/motor was not yet started and set this point to ground ('Set ground'). Time = 0 is automatically determined by the app. If this didn't work, simply extrapolate the climb of the model down to the zero meters line. It will provide an accurate moment of launch. **Note that All-Tee must be switched on prior to starting the motor/engine (also to show the time keeper the green blinking LED to indicate the memory is flushed). By no means should All-Tee be switched on upon launching the model.**

-What if an alternative fly off is desired but some participants have no certified altimeter?
For a fair outcome of the competition, all participants should preferably have a certified altimeter. Maybe an altimeter can be borrowed. However, the contest director is in his right to call for an altimeter fly off. A certified altimeter should become standard equipment for competitors, similar to towlines, rubber, fuel etc. If up to the date of competition altimeters were commercially available, then an altimeter fly off may be called even if not all participants have one. If no altimeters are commercially available up to the moment of the competition, a certified altimeter fly off may only be called if all participants in the fly-off have access to use a certified altimeter.

-I finished the fly off but lost because my All-Tee didn't work.
Proper functioning of the Al-Tee should be checked prior to fly off and is the responsibility of the competitor according to the Sporting Code rule F1.2.7. The All-Tee performs a series of checks after switch-on (memory, pressure sensor). If a check fails, all three LEDs will be blinking repetitively. The All-Tee must be replaced or repaired.
One trick to test the functioning is to place All-Tee and power source in a closed hand and suck out the air from your hand. Upload the data to the app, which should show a height spike. Flush the memory and continue as usual.
Note that an (almost) empty battery is often the main cause of malfunction!!

-My model landed in water. Is my All-Tee damaged?
Although the All-Tee is not waterproof, it is water resistant provided the water is not contaminated (e.g. soap, salts or other chemicals). The pressure sensor is gel-sealed so water cannot damage it. Leave the All-Tee to dry and it can be used again. If the water was contaminated, flush the All-Tee under running tap water and leave it to dry properly.

-~~My model landed in a tree and I can't get my flight data in time to the contest director / jury.~~

~~Every few seconds the All-Tee momentary switches on Bluetooth and by using the red connect button data can be retrieved from the model in the tree (only in All-Tee hardware version 1.2, the black PCB version). A few attempts might be needed.~~ Discontinued due to potential interference with competition flight recording.

-*Where can I get extra cables / connectors and what type is used?*
These can be purchased from Ali Express. Search for
"Mini Micro SH 1,0 4-Pin JST "

-*Where can I get small LiPo batteries?*
Also Ali Express. Search for 40mAh LiPo or any capacity preferred e.g. 100mAh (preferred).

-*I get a communication time out error on device 'X' while on device 'Y' all works just fine.*
Check if location services is enabled for the All-Tee app. Check if Corona/Covid functionality (like apps and Samsung settings) is switched off. Perform the below steps:

-Remove All-Tee from list of devices in All-Tee app and shut down All-Tee app
-Got to Settings-Bluetooth, select the All-Tee device and press 'Forget'
-Switch off Bluetooth followed by switching on Bluetooth in the Android settings
-Start the All-Tee app
-Switch on Bluetooth on All-Tee by <u>swiping</u> a magnet over it
-Long press Red connect button
-Wait for All-Tee to appear and select it
-Wait for pin code message and enter 1234
-Check if data are coming through
-Please note that data are downloaded directly upon Bluetooth connection, no need to press 'Get Data' button.

-*At home I walked up and down the stairs but when getting the data to the All-Tee app, it says 'flushed'.*
The All-tee system is intended for competition use. For instance, there are minimum time and height limits below which the app will register the All-Tee as being 'flushed'. So when doing any kind of home testing it is recommended to put the All-tee in you closed fist and suck out the air with your mouth. Then wait for 20 seconds before connecting the All-Tee via Bluetooth to the All-Tee app.

-*Does All-Tee register negative heights, i.e. below the zero level of the launch area?*
All-Tee can also register negative height data should your model fly down a slope or dip in the landscape

Short list of actions for use in altimeter fly off

Action	Function
Wait for a blinking red or green LED on All-Tee after connecting to battery	Indicate memory status, Green=flushed, red=data in memory
Long press the push button on All-Tee to flush its memory (if LED blinked red)	Remove flight data from memory, LED will blink green
Make your flight	To record flight data
Start the All-Tee app by pressing All-Tee icon	On your Android device, to start the All-Tee app
Swipe a magnet over the All-Tee	To enable Bluetooth on All-Tee
Press three dots in upper right corner	In All-Tee app, to enter Max
Select 'Max'	For altimeter fly off as specified by contest director
Enter the Max time in seconds, press 'ACCEPT'	To set Max time
Select the class by pressing on e.g. F1A	Select the class you are competing in.
Press the red button 'Connect' in the All-Tee app, upper left corner	To connect to All-Tee, note that pairing with All-Tee is needed if not done so
Wait for data to be transferred	Green LED on All-Tee blinks, data transfer
The flight will be shown in graph	To analyse flight
Analyse flight if needed	Zooming / cutting
Press close	To show main screen with height at max

Guarantee

The All-Tee is guaranteed for the duration of 2 years starting at the day of (mail) delivery. If the FAI-ID requires a change or if there are questions or malfunctions, please contact by email:
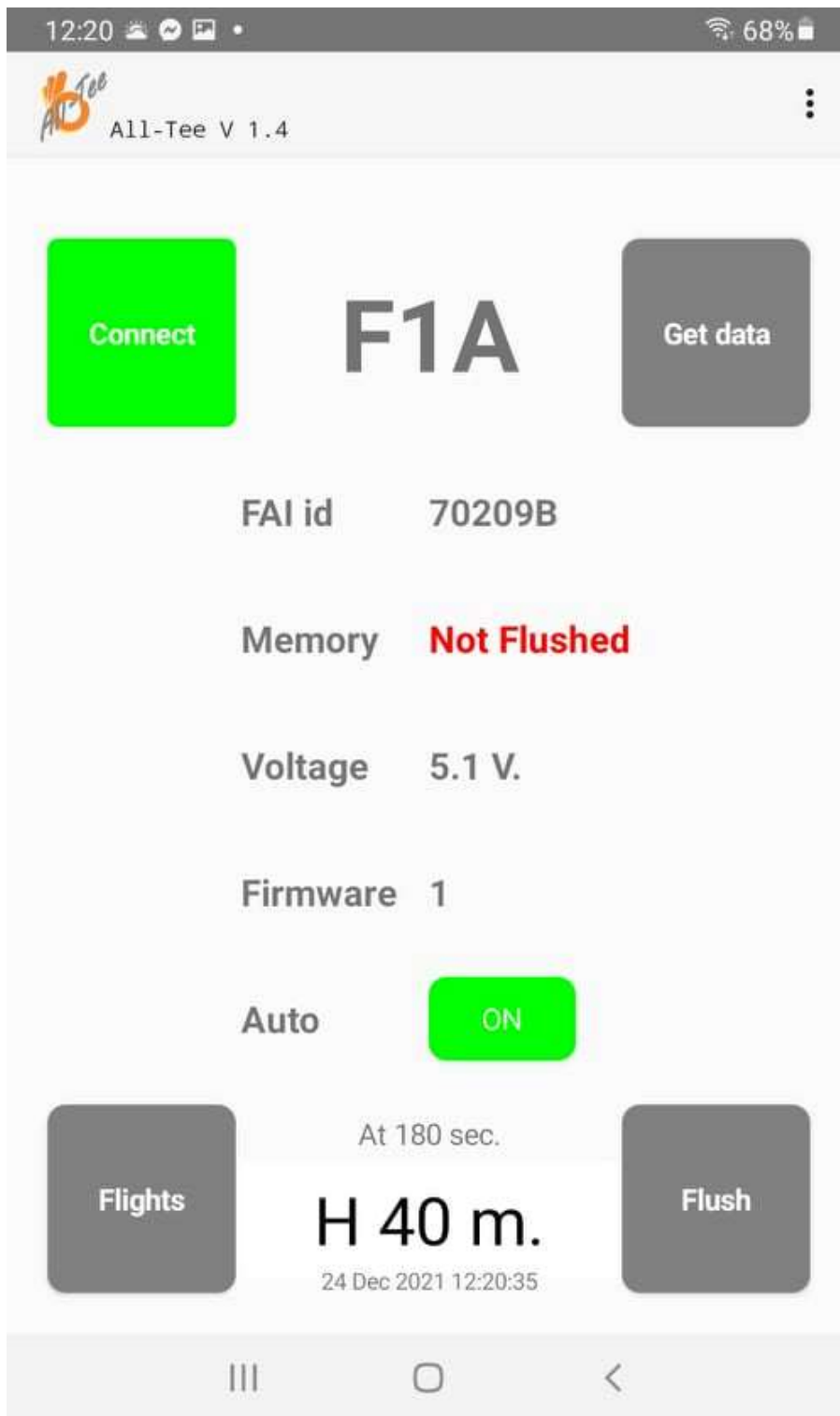
All-Tee@ziggo.nl

Fig. E

After downloading the flight data, the height at the set max time is automatically determined and shown here as 40 meters ate the pre-set max of 180 seconds.

Fig. F

After changing the graph (e.g. cutting parts, changing zero level, changing start), the determined height (41 meters) at the max time will be indicated in a red field at the bottom of the screen. Contest director should check the graph to make sure height of ground level and moment of launch have been set correctly.
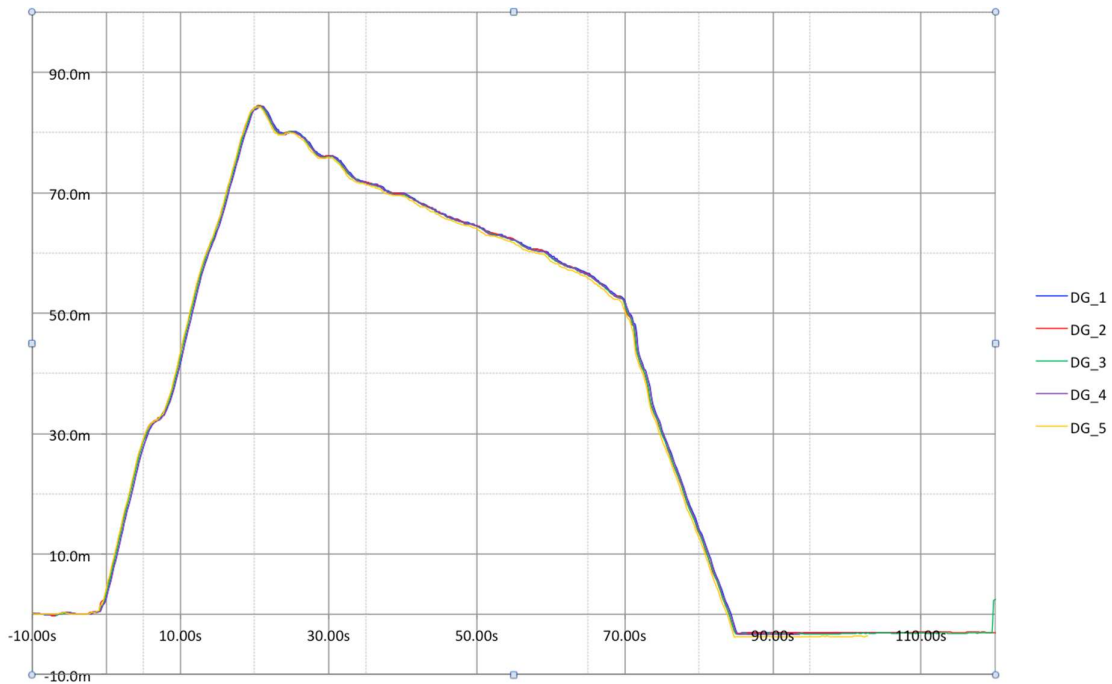
This is a graphic representation of 5 different All-tees being taken up in an F1Q model simultaneously (Excel generated graphs using the file export functionality). It shows just how low the relative error is, making it the ideal tool for altimeter fly-offs. The 'Export Data' function in the All-Tee app has been used to create a 'CSV' (comma separated values) file. Such a file can be imported into Excel and the data can be analysed.
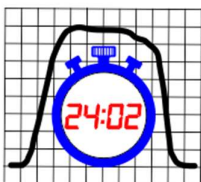
 'About Time' functionality (app version 1.6 and higher)

The All-Tee app can automatically detect the launch (in all classes) as well as the landing and can determine the actual flight time between launch and landing. As you cans see in the graph above, the height remains relatively constant after landing. The app detects the discontinuity in the graph between the flight part and the landed part and will determine the time of landing using these data. In some situations, e.g. when the model hangs in a tree in windy conditions, the app cannot detect the landing as the model is moving about too much.
Note that this function is only possible for single and unedited flights (so when reading the All-Tee after a 'flush' followed by a flight followed by a download of the flight). In a graph with multiple flights, the flight time cannot be established. Also flight data, which have already been edited (like cutting the left or right part of the graph, setting the start or ground level manually) cannot be used for the 'About Time' functionality. Pages 7 and 8 presents more info on how to use this function.

A non-edited flight (indicated in flight list page by a green 'no') can be uploaded to the 'About Time' server as follows:

-Select the flight from the list by tapping once on it.
-Long-press the Graph/Time button.
-Press on 'OK' when asked to send to the Cloud.
-Enter your names and country code (required only once).
-Select either 'official' (flight will be permanently stored in the cloud) or 'test' (flight will be deleted from the cloud after a few minutes).
-Enter model identification (numbers and/or letters like a name or unique ID).
-Press on OK.

Your flight can be retrieved from the 'About Time' server for everybody to see at the following internet address:

https://abouttime.flyingneurons.io/
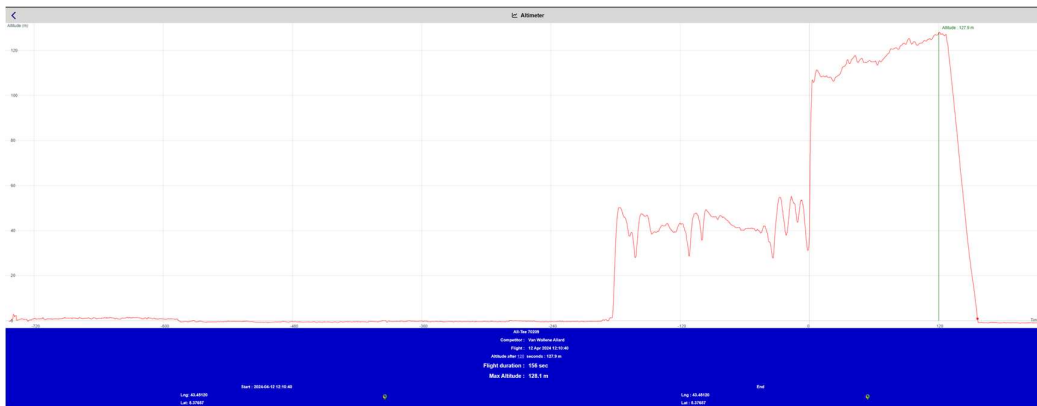
Select the date when the flight was retrieved from the All-Tee (as indicated in the list of flights in the Android All-Tee app) and press the magnifying glass icon. The flight graph (see figure above) will be shown. The red dot in the graph indicates the calculated end of flight as determined by the All-tee app. The start of the flight (time = 0) as shown in the graph is also established by the All-Tee app. You can zoom in and out by using the scroll wheel of the mouse, move the cursor with the mouse through the graph for further information and move the graph by moving the mouse while keeping the left mouse button pressed (only when zoomed in).
Note: the All-Tee has no GPS functionality, so the shown coordinates of start and landing are random.

What to do when the All-Tee totally fails to communicate with the All-Tee app

There are reasons why the All-Tee fails. Data in the memory can be corrupted or the Bluetooth connection no longer works. Of course the All-Tee can be faulty or damaged as well, but to rule this out, the following procedure should be followed first.

1. Clear the Bluetooth cache on you Android device. Go to 'Settings', 'Apps', enable 'Show System Apps' (the button for this differs between Android devices, its either under the three dots in the upper right corner or the icon on the right side of the line which reads 'Your apps', select the app called 'Bluetooth', select 'Storage', select 'Clear Cache. In case you device has a different access to the Bluetooth cache, you can search in YouTube using your Android's device brand name and "Bluetooth Cache".
2. One of the pins in the connector socket is bent. Use a magnifying glass to look into the connector. It could be that one of the pins is bent sideways. You can use a pair of needle pointed tweezers or a tooth pick to bend the pin in line with the other pins. Be careful when re-inserting the connector. Don't use force.
3. Make sure you use a fully charged power supply for your All-Tee and connect it to the All-Tee to power it up.
4. Clear the memory by long-pressing the push button on the All-Tee. Wait until the led blinks while pressing, and then release the button. The green LED should now blink to indicate the memory is flushed.
5. Put the All-Tee (switched on, green LED blinking) in your closed fist, and suck out the air from your fist with your mouth. This simulates a pressure drop caused by increased flight altitude. The red LED on the All-Tee should now blink ('flight' data are stored). Wait 20 seconds to store further data.
6. Go to your Android settings, select Bluetooth, select your All-Tee and select 'forget device'. All-Tee is now un-paired from your Android device.
7. Make sure you have installed the latest version of the All-Tee app. The version is indicated at the top of the screen of the app's main page (currently version 1.4.4). Make sure location services are enabled for this app.
8. In the All-Tee app, go to the list of devices (main screen upper right corner, press the 3 dots, select devices), select your All-Tee, select 'remove'.
9. Enable Bluetooth on your All-Tee by swiping a magnet over it. Make sure that after the swiping, the magnet is no longer close to the All-Tee. The yellow LED should blink.
10. Long-press the button 'Connect' (upper left corner) in the All-Tee app.
11. Select your All-Tee.
12. Enter pin code '1234' when asked.
13. The recorded data should now automatically be transferred to the app.

14. If the data do not appear, disconnect the Bluetooth link by pressing the green button in the upper left corner. Swipe the magnet again over the All-Tee and connect using the button 'connect' again.

15. **Please note that some Samsung devices have Bluetooth communication issues. Before sending back the All-Tee for repair, check with a non-Samsung device.**

16. If the All-Tee fails to communicate, it is most likely damaged and should be returned for replacement. It is recommended to contact the manufacturer first (email All-Tee@ziggo.nl) or by Facebook messenger. If possible, make a small video of the problem you encounter.