

AnaPico CalToolv3

Quick-Start Guide

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Pre-requisites

- The 'AnaPico Calibration Tool User Guide' document will be referenced throughout this document. It will be referred to as simply the 'User Guide'. Please refer to referenced sections as necessary.
- An AnaPico signal generator is connected to the calibration PC via USB.
- [For scenarios A and B] A supported power sensor is connected to the channel to calibrate (on the DUT) and to the calibration PC via USB.
- The user has followed the 'First Start-Up & Instrument Connections' section within the User Guide. This means that a valid license is installed, a results directory has been set and connections have been established to the DUT and the connected power sensor (as appropriate).
- The device 'Controller Temperature' has stabilised i.e. has reached a constant state with minimal fluctuation. [see below]



- When connecting to an AnaPico device, the *default* parameters for calibration are loaded automatically. Unless otherwise noted, these will be the parameters to use.

Scenario A - Recalibration of a Device

Device arrives for a periodic calibration which typically involves checking accuracy of the power output and then performing a recalibration to improve performance.

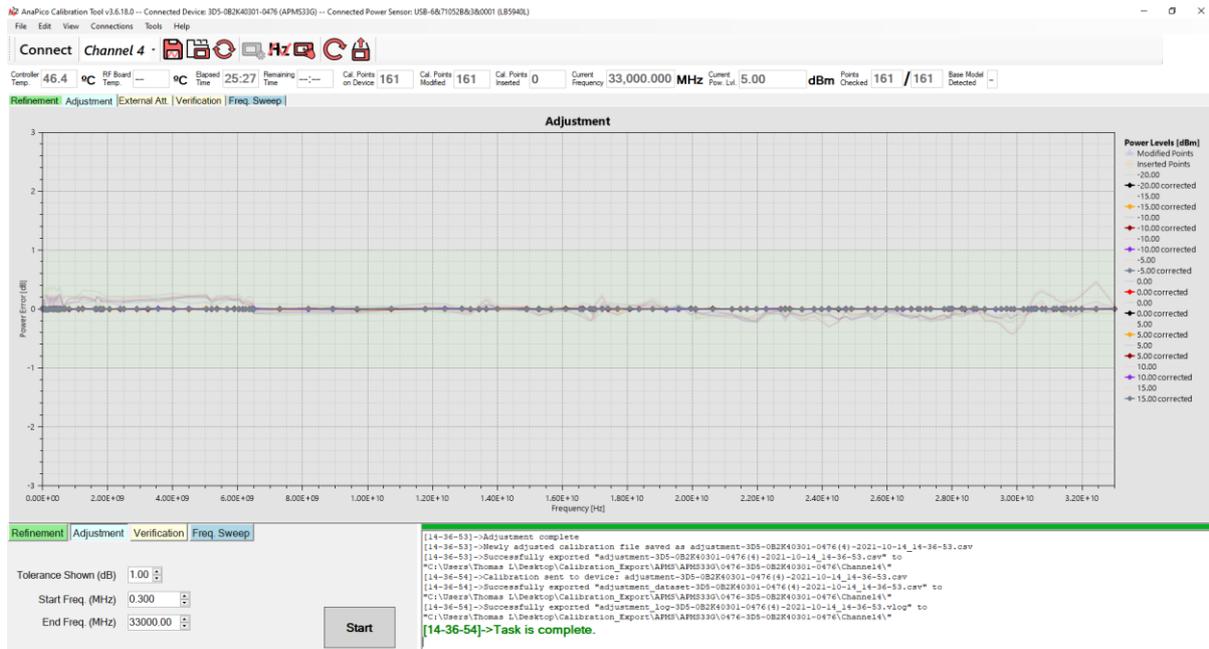
1. Run a frequency sweep across the whole frequency range using the default parameters (across entire frequency range of device). This should be a minimum of 250 points per 10GHz range (i.e. 1000 points minimum for a 40GHz device). [for details see 'Frequency Sweep' section within the User Guide]

The initial verification is done to give a picture of the current power flatness of the device, prior to recalibration.



2. Run an Adjustment with default parameters across the full device frequency range and a displayed tolerance of +/- 1dB. [for details see 'Adjustment/Verification' section within the User Guide]

The adjustment step is done to ensure that all factory-calibrated frequencies are as precise as possible before we check the performance between calibrated frequencies.



- Run a refinement with default parameters. This will be 3 'additional points' and a tolerance of 0.35dB, run across the full frequency range of the device. [for details see 'Refinement' section within the User Guide]

The initial refinement step is done to check the performance of frequencies in between factory-calibrated frequencies and if necessary, to calibrate new frequencies which are presently out of tolerance.

For some devices, two separate refinements will have to be run, one to ensure accuracy with ALC Off and one with ALC on. For these devices, first run the refinement with the 'Verify with ALC On' checked and when complete, run a second time with the option unchecked. The other settings used should be identical for each run.

Currently the second refinement is required for APVSG devices only.

AnaPico Calibration Tool v3.6.18.0 -- Connected Device: 305-082K40301-0476 (APMS33G) -- Connected Power Sensor: USB-6A71052B8380001 (8.9594L)

File Edit View Connections Tools Help

Connect Channel 4

Control Temp: 47.6 °C RF Board Temp: --- °C Elapsed Time: 23:08 Remaining Time: 00:00 Cal. Points on Device: 163 Cal. Points Modified: 1 Cal. Points Inserted: 2 Current Frequency: 33,000.000 MHz Current Pow. Lev: 15.00 dBm Points Checked: 12 / 12 Base Model Detected: ---

Refinement Adjustment External Att Verification Freq. Sweep

Power Levels (dBm): 20.00, 15.00, 10.00, 5.00, 0.00, -5.00, -10.00, -15.00

Refinement Adjustment Verification Freq. Sweep

Additional Points: 3
Error Tolerance (dB): 0.30
Start Freq. (MHz): 0.300
End Freq. (MHz): 33000.00

Start

```
[15-14-04]->Starting refinement pass 2
[15-14-37]->Refinement Completed Successfully
[15-14-37]->Newly adjusted calibration file saved as refinement-305-082K40301-0476(4)-2021-10-14_15-14-37.csv
[15-14-37]->Successfully exported "refinement-305-082K40301-0476(4)-2021-10-14_15-14-37.csv" to
"C:\Users\Thomas\Desktop\Calibration_Export\APMS33G\0476-305-082K40301-0476\Channel14\"
[15-14-38]->Calibration sent to device: refinement-305-082K40301-0476(4)-2021-10-14_15-14-37.csv
[15-14-38]->Successfully exported "refinement_dataset-305-082K40301-0476(4)-2021-10-14_15-14-37.csv" to
"C:\Users\Thomas\Desktop\Calibration_Export\APMS33G\0476-305-082K40301-0476\Channel14\"
[15-14-38]->Successfully exported "refinement_log-305-082K40301-0476(4)-2021-10-14_15-14-37.vlog" to
"C:\Users\Thomas\Desktop\Calibration_Export\APMS33G\0476-305-082K40301-0476\Channel14\"
[15-14-38]->Task is complete.
```

Calibration Refinement Adjustment Verification Freq. Sweep Schedule

Additional Points: 3
Error Tolerance (dB): 0.35
Start Freq. (MHz): 0.300
End Freq. (MHz): 40000.00

Verify with ALC On

Start

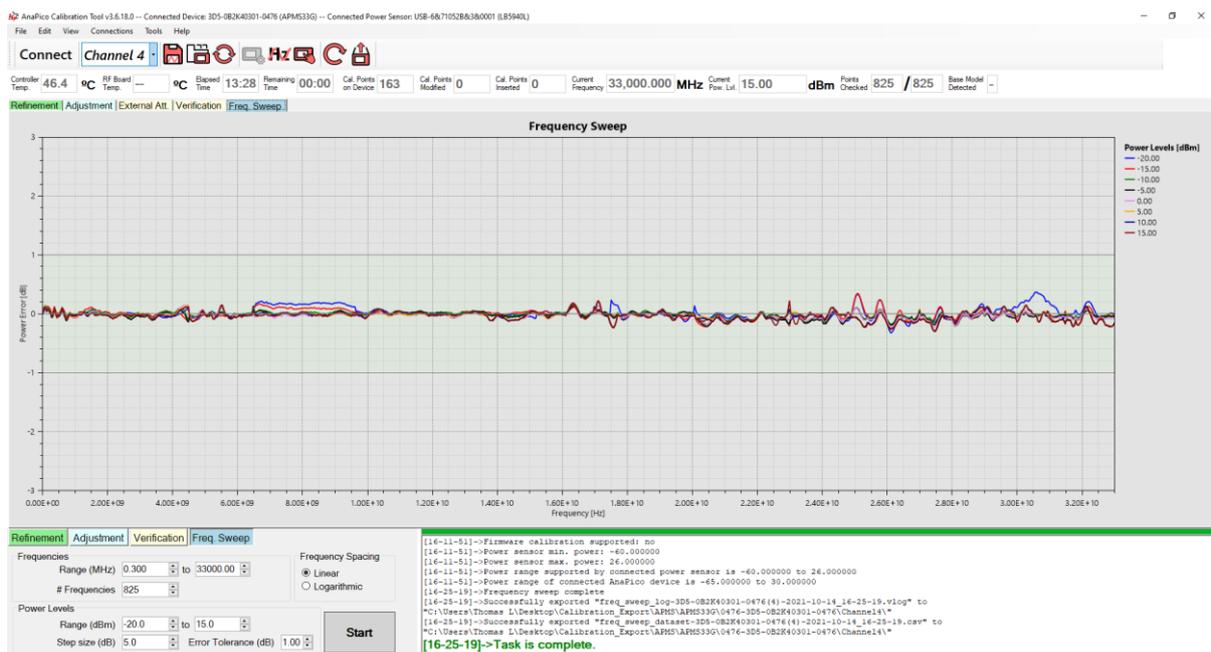
- Run an additional refinement with an error tolerance of 1.0dB (i.e. change the tolerance from the default of 0.35 to 1.0) and leave the other settings unchanged.

This second run is to verify the accuracy of frequencies in-between calibrated frequencies to give a clear picture of the device performance.



- Run a frequency sweep across the whole frequency range using the default parameters (across entire frequency range of device). This should be a minimum of 250 points per 10GHz range (i.e. 1000 points minimum for a 40GHz device). [for details see 'Frequency Sweep' section within the User Guide]

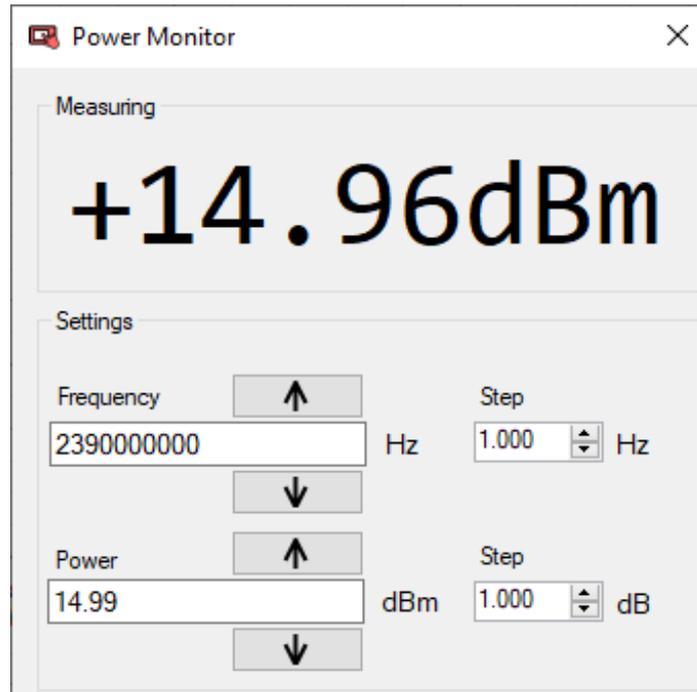
This final frequency sweep allows the overall device performance following calibration, to be compared with the performance before calibration began.



Scenario B – Manually Verify Calibration

Manually checking the power output may be useful if, during an adjustment or refinement task, the observed power error is outside of the specified tolerances ($\pm 1.0\text{dB}$).

1.  Open the 'Power Monitor' tool from the toolbar.



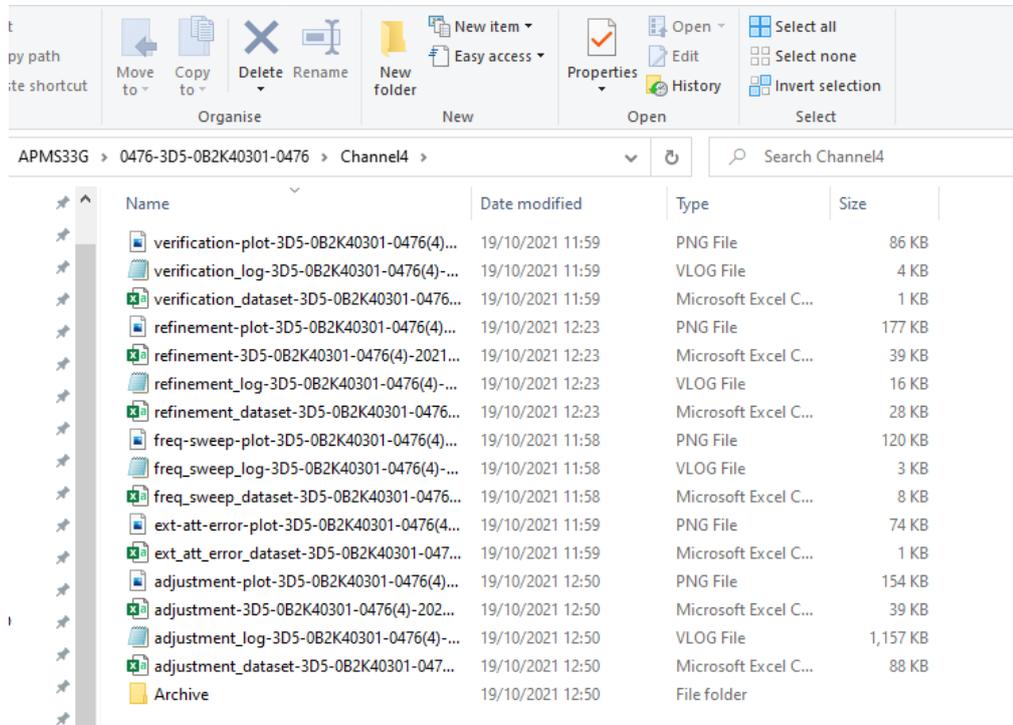
2. Enter the desired frequency to verify, followed by the units i.e. '10' followed by 'h' for Hz, 'k' for kHz, 'm' for MHz or 'g' for GHz (or omit the units to keep the current unit displayed). Now press the enter key.
3. Enter the desired power output to verify in dBm and press the enter key.
4. Read the displayed power output from the sensor and compare with the expected power output.
5. Frequency/power can be adjusted finely with the up/down arrows. The step-size with each click will depend on the corresponding 'Step' which has been set.

Troubleshooting

Reporting Calibration Data to AnaPico



1. Click this icon whilst connected to the DUT (and the correct channel) and the directory containing calibration results will be opened [ensure the folder name matches the channel in question]



2. Compress all files and folders within this directory into a zipped folder and email to AnaPico alongside details of your calibration query.

Re-upload an Older Calibration

If a problem occurs during an adjustment or refinement, it may be necessary to upload the previous calibration to the device.



1. Click the 'Browse/Upload Calibration' icon on the toolbar.
2. Open the 'Archive' directory in the folder which appears.
3. Sort the files by date modified and select the most recent file starting with 'calibration_backup' and click 'open'.
4. The calibration will be uploaded to the device and a confirmation will appear when the upload was successful.
5. Click OK.