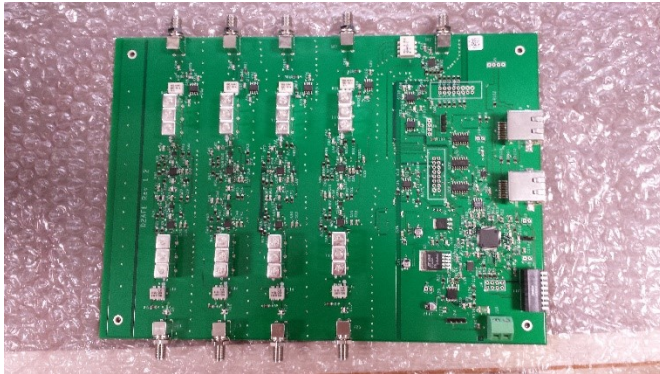


# Setting up D2AFE

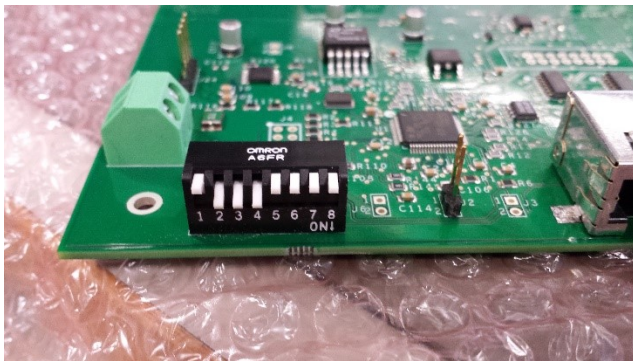
## Initial board Setup

Populated PCBAs should be delivered with all components fitted.

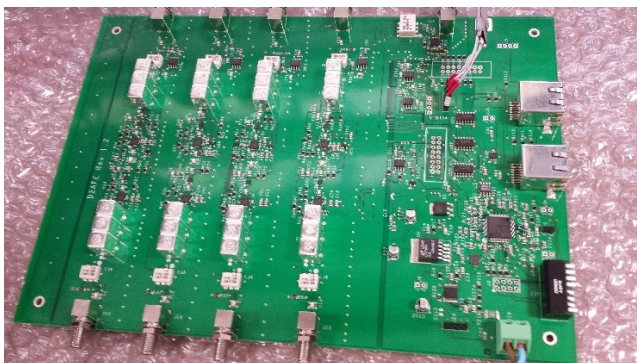


Wear a wrist strap and observe static sensitive precautions when handling the boards!

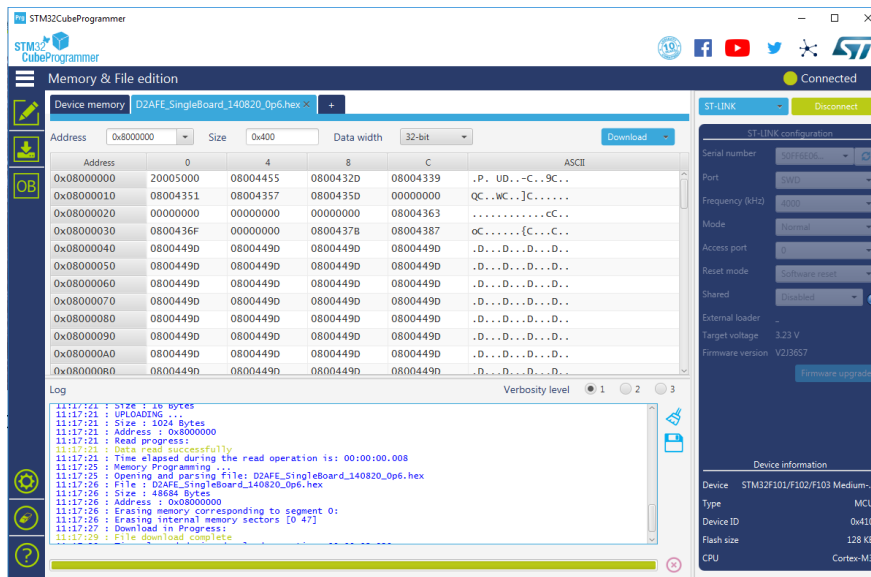
Set the RS485 address to 1 for initial setup



Connect +7V to the DC power input the current should be approximately 0.7Amps. Connect the ST programming header to J1 with the white mark on the header cable (pin4) towards the power connector and plug the USB cable from the programmer into the PC.

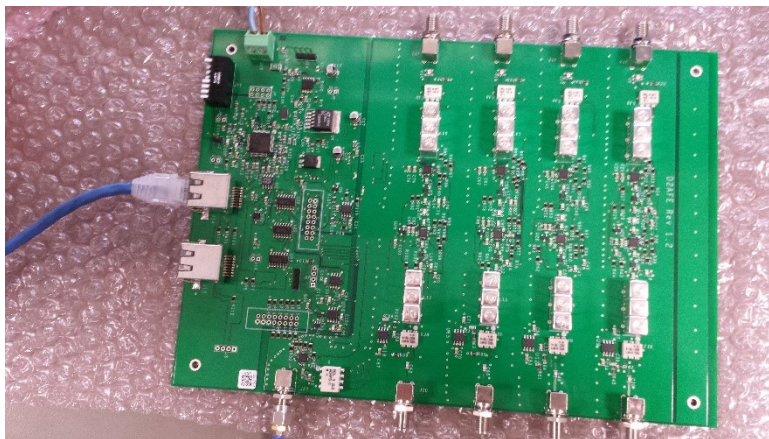


Open the STM32CUBE programmer application on the PC. Select the hex file to be downloaded and press connect to connect to the MCU. Press download to load the flash image.

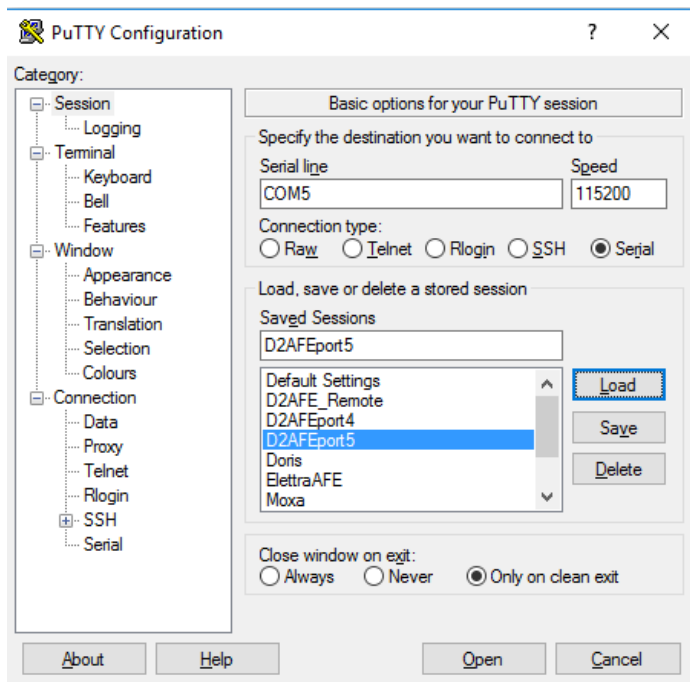


Press disconnect to finish the download process and disconnect the programming cable from the PCBA. Turn the DC power off.

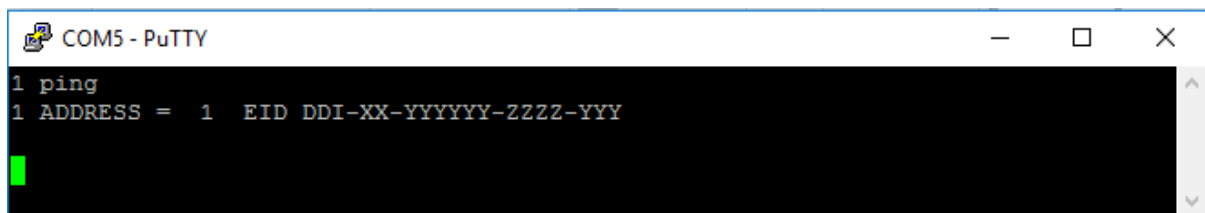
Connect the RS485 cable from the D2AFE test unit to J14. Connect the pilot cable from the test unit to J22. Turn the DC power back on.



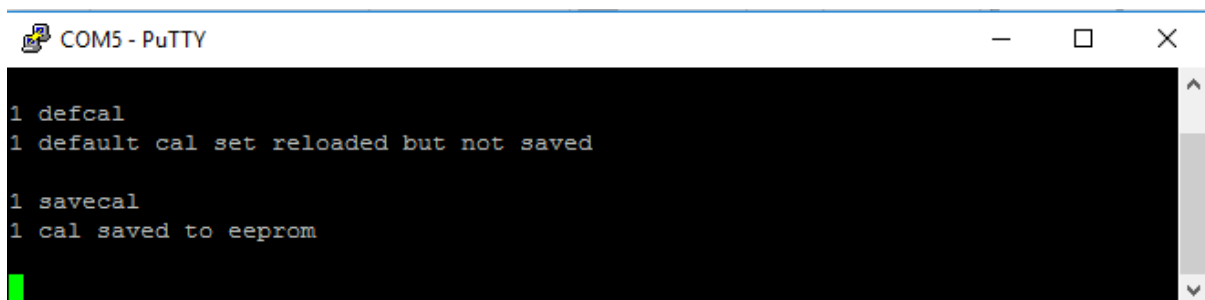
Open the Putty application on the PC



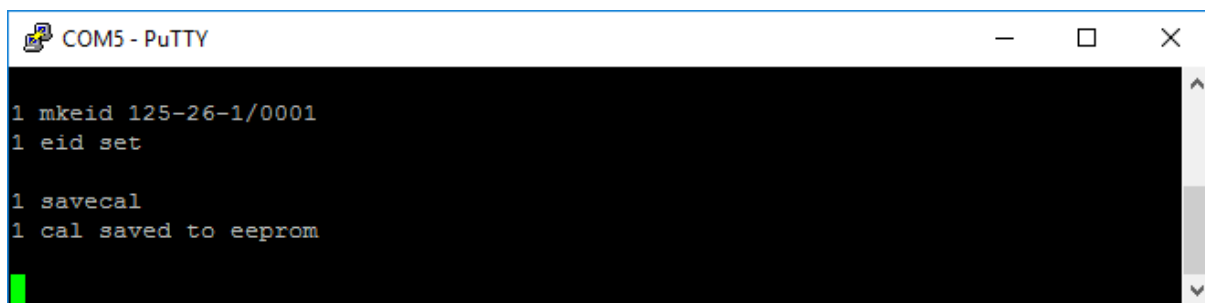
Enter the command 1 ping into the command window. The PCBA should respond with the default equipment id.



To load the default calibration values type 1 defcal. Then type 1 savecal to save it to eeprom.



Now enter the PCBA serial number using the mkeid command e.g mkeid 125-26-1/0001 and save that to eeprom using the savecal command.



Now set all attenuators to their default values using the command sequence:

1 atten 1 1 0

1 atten 1 2 15

1 atten 2 1 0

1 atten 2 2 15

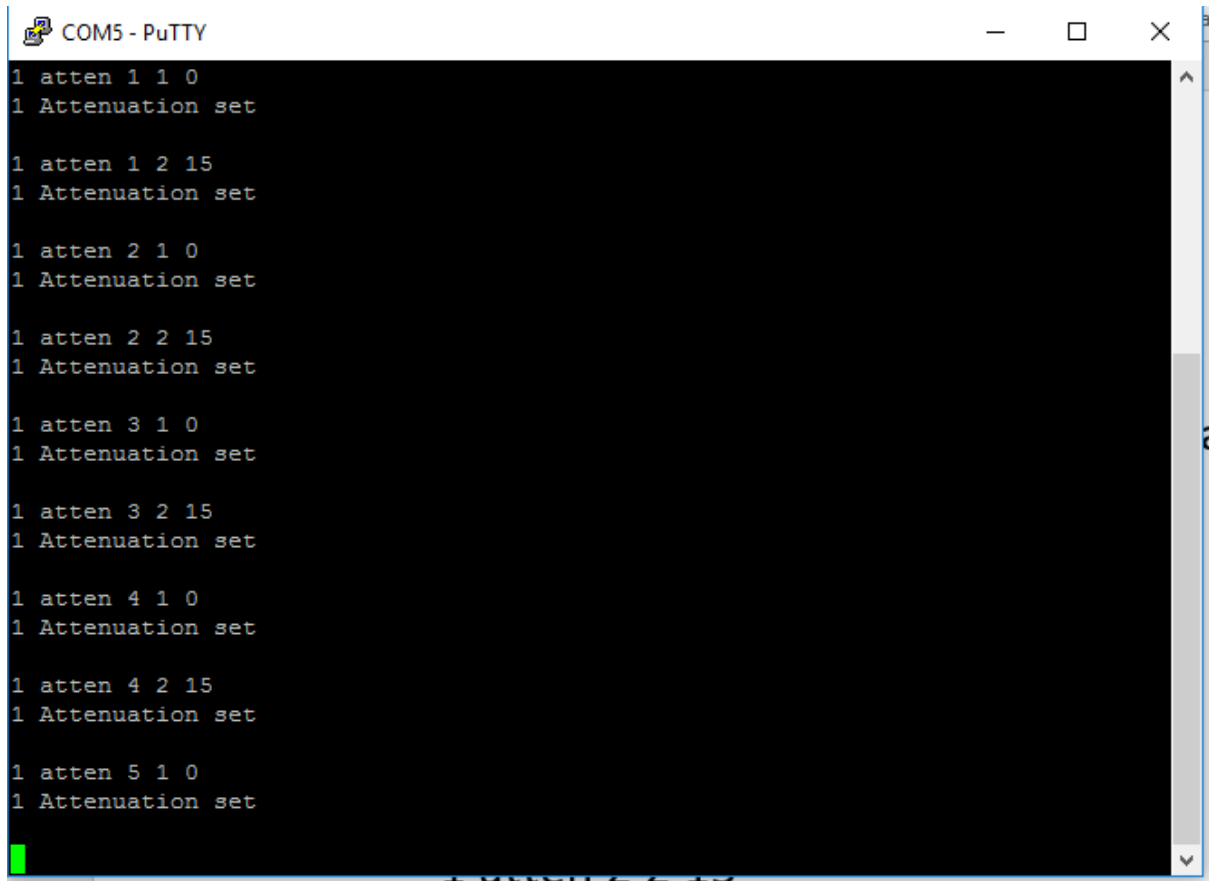
1 atten 3 1 0

1 atten 3 2 15

1 atten 4 1 0

1 atten 4 2 15

1 atten 5 1 0



```
COM5 - PuTTY
1 atten 1 1 0
1 Attenuation set

1 atten 1 2 15
1 Attenuation set

1 atten 2 1 0
1 Attenuation set

1 atten 2 2 15
1 Attenuation set

1 atten 3 1 0
1 Attenuation set

1 atten 3 2 15
1 Attenuation set

1 atten 4 1 0
1 Attenuation set

1 atten 4 2 15
1 Attenuation set

1 atten 5 1 0
1 Attenuation set
```

Now enter the command 1 status

```
1 stat
1+ .....

1+ Status report

1+ Equipment ID  = 125-26-1/0001

1+ Calibration ID  = Not calibrated

1+ RS485 Address:1

1+ .....
```

```
1+ CH#1 Temp = 32.246 deg C
1+ CH#2 Temp = 33.897 deg C
1+ CH#3 Temp = 33.923 deg C
1+ CH#4 Temp = 32.476 deg C
1+
1+ Fast RF Trip is armed
1+ CH#1 IN Attenuator = 0.0 dB
1+ CH#1 OUT Attenuator = 15.0 dB
1+ CH#2 IN Attenuator = 0.0 dB
1+ CH#2 OUT Attenuator = 15.0 dB
1+ CH#3 IN Attenuator = 0.0 dB
1+ CH#3 OUT Attenuator = 15.0 dB
1+ CH#4 IN Attenuator = 0.0 dB
1+ CH#4 OUT Attenuator = 15.0 dB
1+ Pilot Attenuator = 0.0 dB
1+
1+ CH#1 RFout = 6.561 dBm
1+ CH#2 RFout = 7.315 dBm
1+ CH#3 RFout = 6.980 dBm
1+ CH#4 RFout = 7.029 dBm
1+
1+ Rad sense = 1.617 V
1+ DC Input = 6.746 V
1+ 5V Rail = 4.966 V
1+ Icc = 713.464 mA
1+ Uptime(sec) = 963
1+ Inbuff peak bytes = 23
1
```

Turn the DC power off, disconnect the RS485 and pilot cable, mark the board as tested and fill in the record sheet. Quarantine any boards that fall outside the test limits in the test sheet.



## Setup Record Sheet

		Lower Limit	Upper Limit
D2AFE Serial Number			
Firmware version			
Icc (mA)		600	800
Temperature ch 1		20	40
Temperature ch 2		20	40
Temperature ch 3		20	40
Temperature ch 4		20	40
RF Power (dBm) ch 1		+3	+10
RF Power (dBm) ch 2		+3	+10
RF Power (dBm) ch 3		+3	+10
RF Power (dBm) ch 4		+3	+10
RAD SENS		1.5	1.7

RF Power measured with 0dB input attenuation, 15dB output attenuation and +8dBm pilot input at 500.750MHz.

## RF CAL

With the heatsink baseboard fitted power the D2AFE off 12V using a bench supply.

Turn the supply off.

Connect channel 1 input and output to the network analyser using the following settings



Frequency range 490 to 510 MHz

RF Power -11dBm

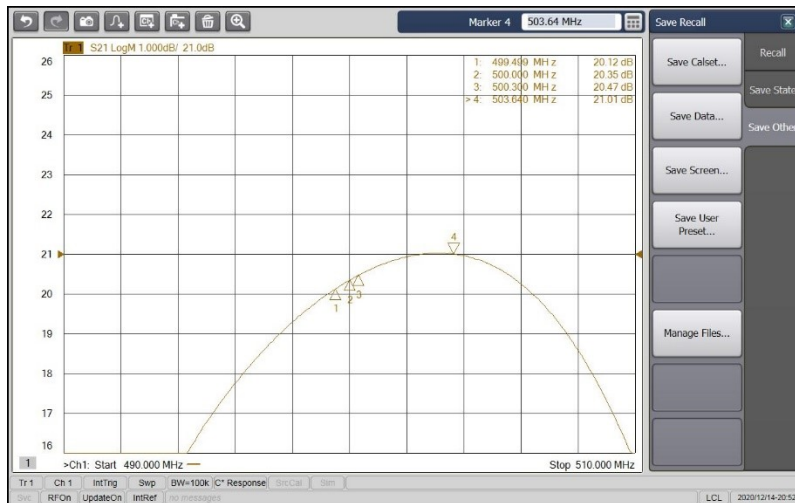
Meas S21

Set marker 1 at 499.499 MHz

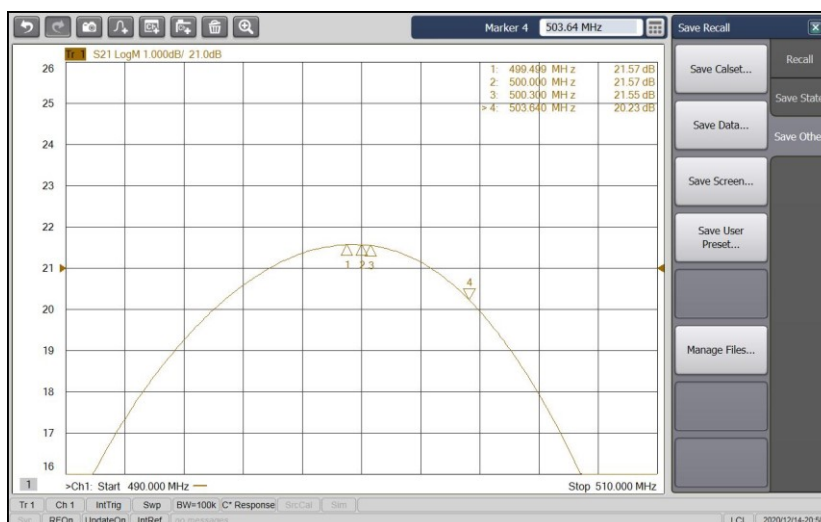
Connect the network analyser ch1 to a D2AFE input, connect network analyser ch2 to the D2AFE output.

Turn the supply on.

Measure S21



On the D2AFE adjust the centre tap of each Helical filter, using an insulated screwdriver, to move the filter centre frequency to marker 1.



Repeat for all 4 channels.

Once complete assemble the remaining mechanics



## Burn-in

Place the assembled units in a burn-in oven for 96 hours at 85 deg C.

