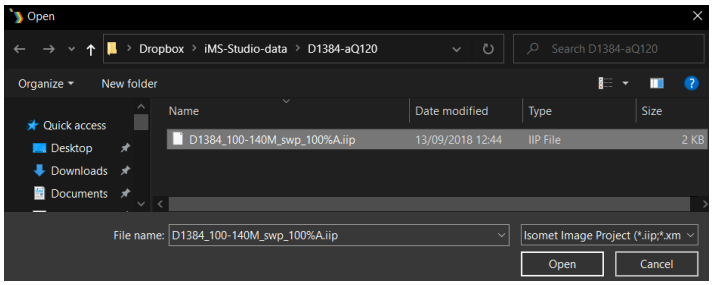
App Note: 2021-03-23

Running the example Isomet iMS Studio Projects

Run the Isomet iMS Studio, e.g. from the desktop icon

1. Load Example Project

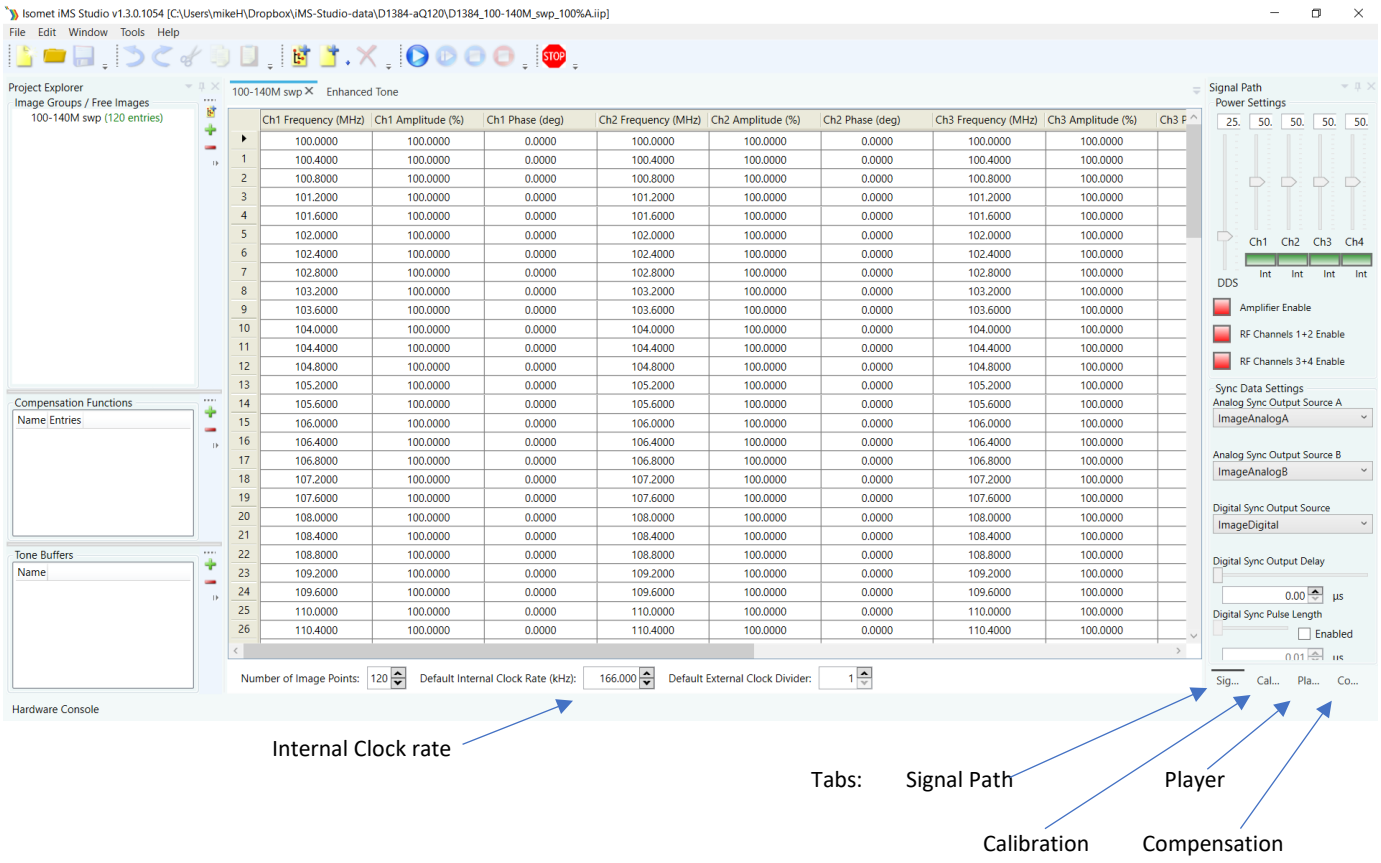
Go to ***Tool bar > File > Open***
Select example project file *.ipp and open.



In this case we select the file; ***D1384_100-140M_swp_100%A.iip***
This IMAGE file generates a linear frequency ramp followed by an OFF period. It comprises of 120 image points with the same data on all four iMS4 channels. Points 1-100 are programmed with the 100-140MHz sweep at 100% amplitude. Points 101-119 are at an arbitrary frequency (131MHz) and 0% amplitude.

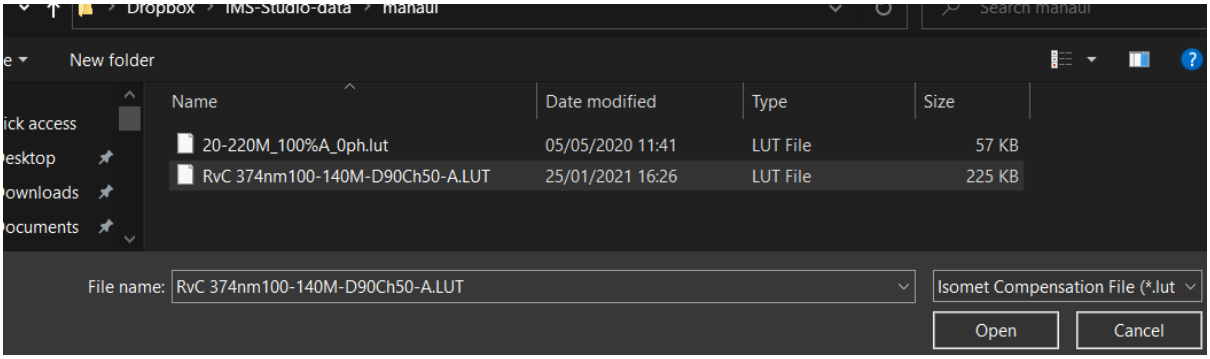
The ***Sync Data (Dig)*** field, is programmed with 0x0001 expect for 5 point around the mid-scan frequency (120 – 121 MHz). Use the L<-> R slider bar to display. The Sync Data outputs are inverted at the output J7. This data will give a logic high signal to indicate the mid-scan position

The GUI window should look like this:



2. Select Compensation Tab

Click on Import Button
Open the required *.LUT files



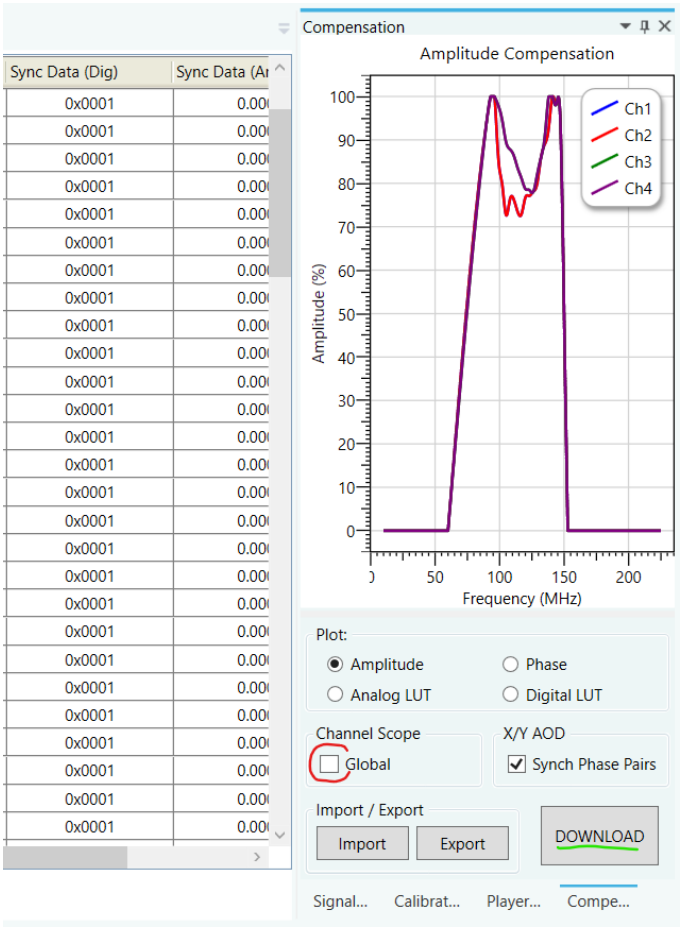
LUT file size = 57KB is a ***Global*** compensation file that applies the same data to ALL outputs of the iMS4. (This is the only option for older Rev-A and Rev-B of the iMS4 Synthesizers).

LUT file size = 225KB is a Channel scoped (channel specific) compensation file that can apply unique values to each channel. This is the recommended LUT option for X-Y deflector use.

In this example we will open:

RvC 374nm100-140M-D90Ch50-A.LUT

[This Compensation file generated for a D1384 at 374nm. 100-140MHz freq' range using a RFA0120-4-15 amp. iMS4 Power Settings DDS=90% , Chn=50% (See Signal tab)]

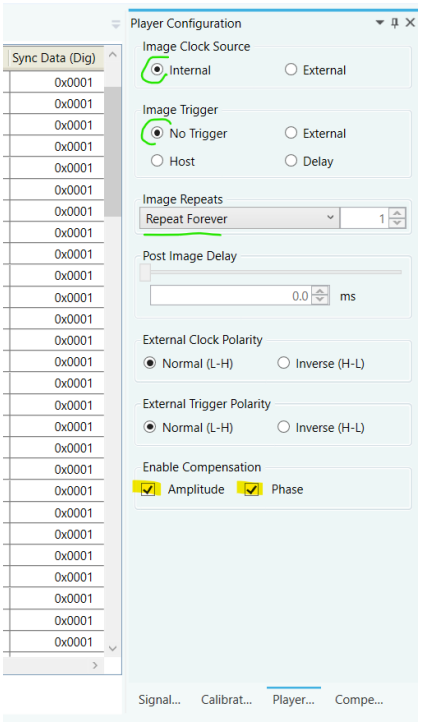


The graphic will show a plot of the compensation response

Make sure ***Global*** box is unchecked

Click ***Download***

3. Select Player Tab



This example will use the ***Internal*** clock source and ***No Trigger*** with repeated image play (***Repeat Forever***). Internal clock rate is set on the lower tool bar, main window

*For external signals, check **External** buttons and apply:*

- *Trigger input to J10*
- *Clock input to J11*

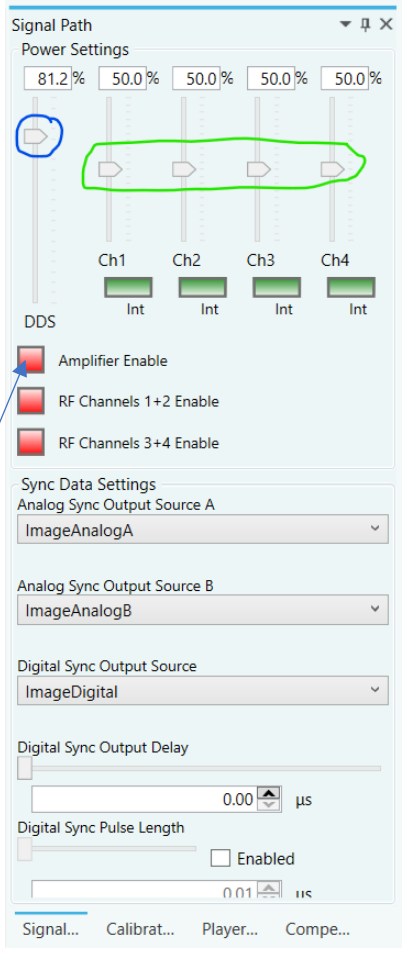
And when using with an RF amplifier with control through J5 connector of the iMS4 apply:

- *Gate input to J9*

Note: If you do not want to use a compensation *.LUT file (see previous section) , then uncheck the highlighted boxes to disable compensation.

The RF output will be zero unless a *.LUT file is downloaded into the iMS4 or these boxes are unchecked.

4. Select Signal Tab



Two ***Power Settings*** control the RF output level:

- ***DDS*** is common to all four outputs.

- ***Ch1, Ch2, Ch3, Ch4*** sliders set the power for each output channel independently.

Typical settings when used with RFA0110-2-15 are:
DDS = 70% - 90%
Ch1 = Ch2 = 40% - 60%
Ch3 = Ch4 = 40% - 60%

For XY AOD applications, Ch1 = Ch2 and Ch3 = Ch4

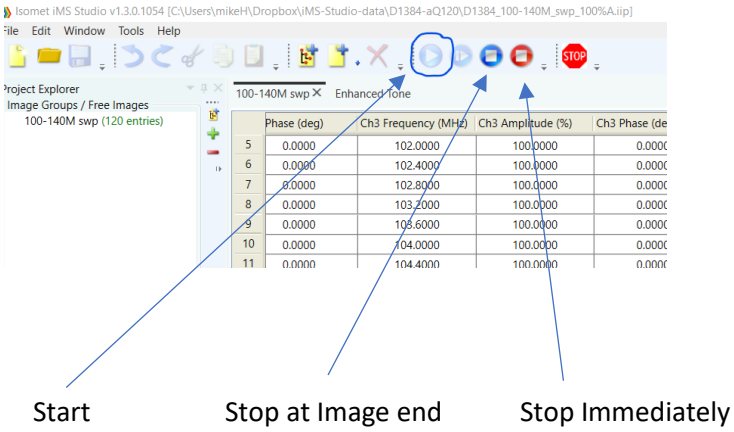
iMS4 RF output connectors.
Terminate onto a 50ohm input or load.

J1 = Ch1, J2 = Ch2, J3 = Ch3, J4 = Ch4

To enable the RF amplifier output, toggle the Amplifier Enable button (-> Green)

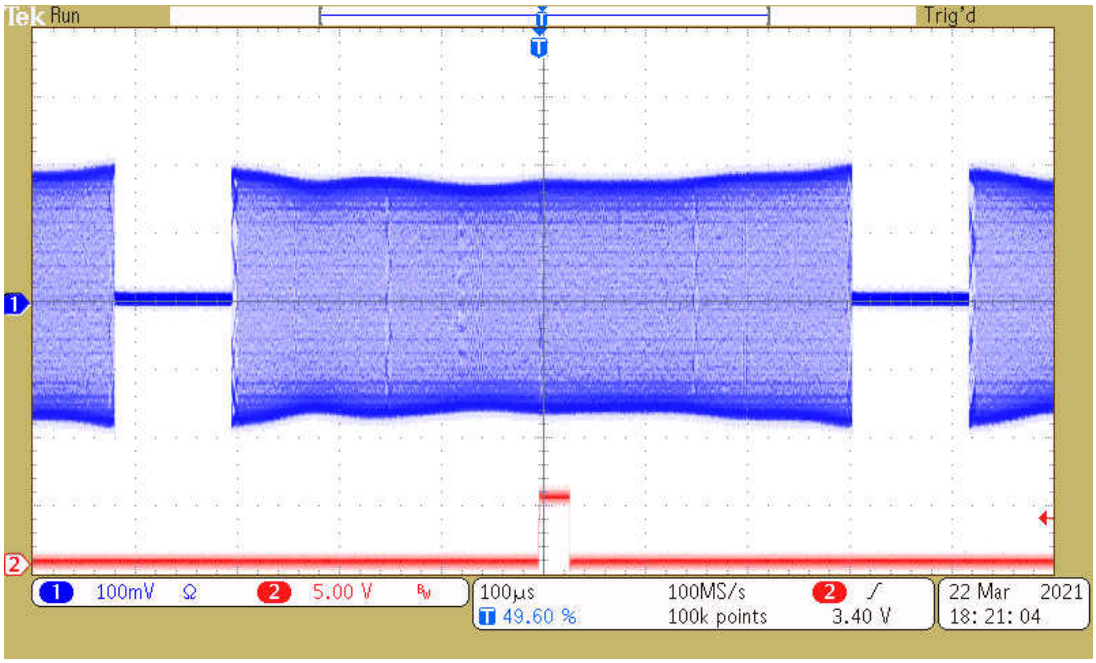
5. Start Image Play

Click the ***Play Button*** to start Image play.
(It will 'grey' out).

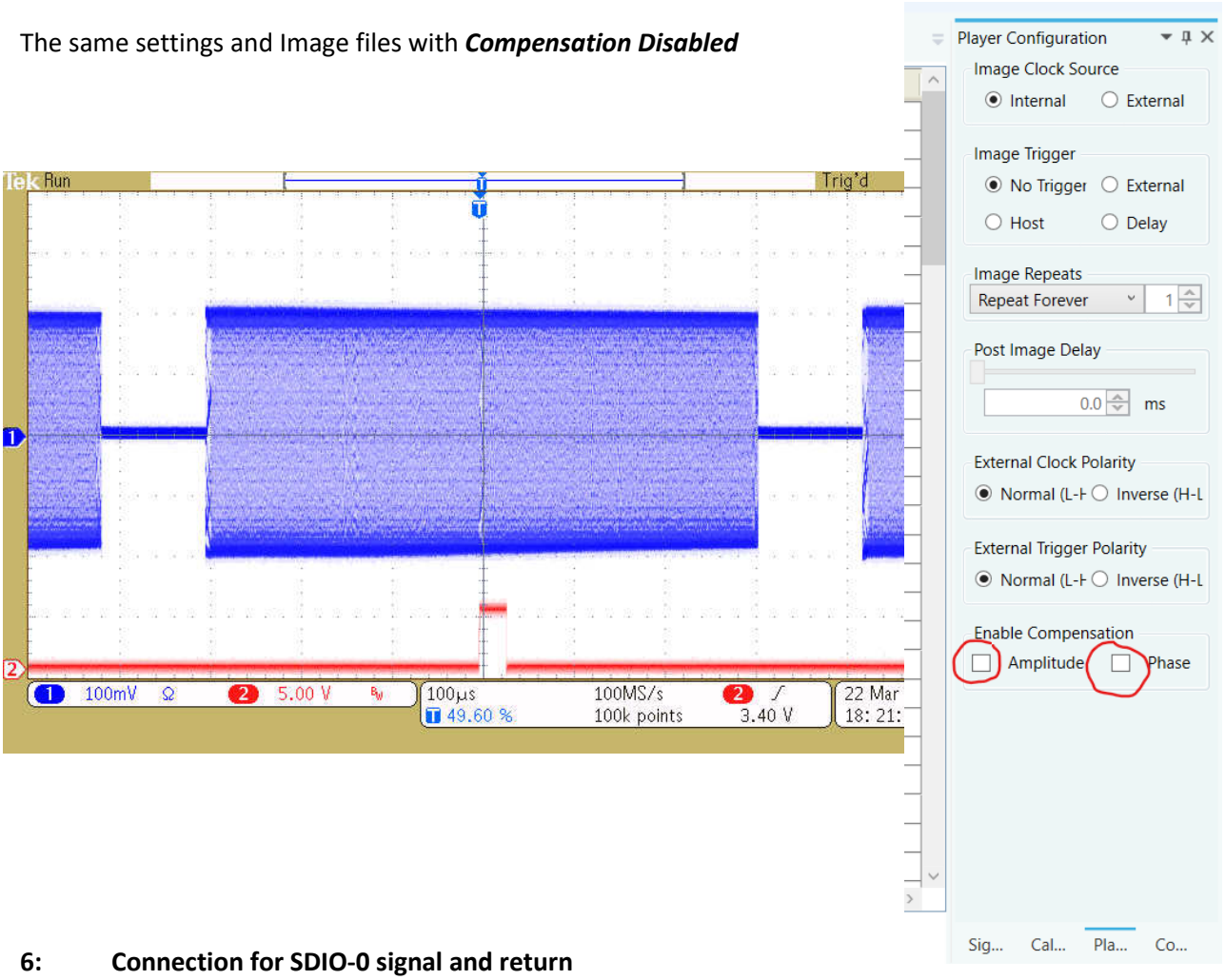


Typical output waveforms on oscilloscope for the files and signal levels described above.
Internal Clock rate 166KHz
Trace 1 = RF output (50ohm terminated); J1, J2

Trace 2 = SDIO-0; J7 pin 33, (rtn pin 26)

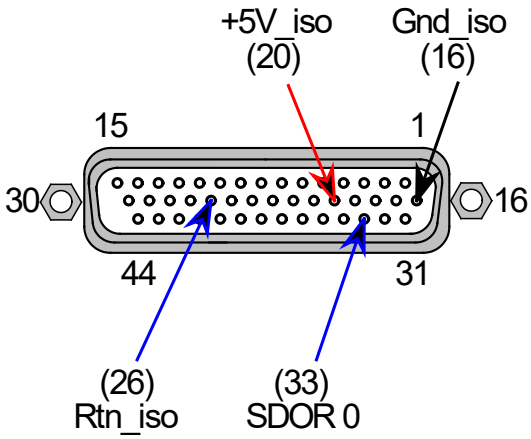


The same settings and Image files with ***Compensation Disabled***



6: Connection for SDIO-0 signal and return

View into iMS4 connector J7
SDIO outputs are opto- isolated and require a separate +5V supply to operate



7: Does my iMS4 work ?

Single Tone mode provides a basic functional and communication check with the Host PC.
This will generate a constant RF signal on the output channels, J1…J4
There is no SDIO sync output in this mode.

Select Calibration Tab

Select the **DISABLED** button. It will change to **ENABLED** and the RF outputs will be active.
Adjust the Frequency and Amplitude sliders as required.

Note: This mode will prevent Image Play. Return to DISABLED when finished.

At 100 % amplitude, the RF output on J1, J2, J3 or J4 will be 100-650mV peak to peak into 50 ohms, depending on the power level settings in the **Signal tab** (See Section 4 above).