App Note: 2021-10-23

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	🌖 Open		
and open.	$\leftrightarrow \rightarrow \checkmark \uparrow$		
	Organize - N		

)) Open					
← → × ↑ <mark></mark>	Dropbox > iMS-Studio-data > iMS files f	or AOD testing → D1422-T8	5	~ U	
Organize 👻 New f	older				
📙 Certificates ^	Name	Date modified	Туре	Size	
DESIGN Downloads	D1422_65-105M_swp_100%A.iip	26/10/2021 09:29	IIP File		5 KB

In this case we select the file; D1422_65-105M_swp_100%A.iip

This file contains three IMAGES that generate a linear frequency ramp followed by an OFF period.

Xswp-Yswp sweeps both X and Y axis simultaneously. *Xswp-Y85* sweeps X axis, Y axis fixed at mid-scan location. *X85-Yswp* sweeps y axis, X axis fixed at mid-scan location.

All three comprise of 120 image points with the same data on channel pairs. Points 1-100 are programmed with the 65-105MHz sweep at 100% amplitude or fixed 85MHz at 100% amplitude. Points 101-119 are at an arbitrary frequency (85MHz) and 0% amplitude.

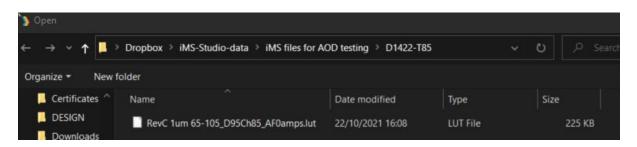
The **Sync Data (Dig)** field, is programmed with 0x0001 expect for 5 points around the mid-scan frequency (85MHz). Use the L<-> R slider bar to display. The Sync Data outputs are inverted at the output J7. This data will give a logic high signal to indicate the mid-scan position

Edit Window Tools He				. 6	<u>*</u> .>	(.)000	00.					- 0
ect Explorer	- 0	×	X(605)) Y(606) Xswn-	Yswp X X85-Yswp	Xswp-Y85					Signal Path Power Settings
age Groups / Free Images			11000	/ //00/	a nomp	isub yes isub		Ch2 Amplitude (%)	Ch2 Phase (deg)	Ch3 Frequency (MHz)	Ch3 Amplitude (%) Ch	13 F ^ 25. 50. 50. 50.
Xswp-Yswp (120 entries)		B		Ch1 Frequ	ency (MHz)	Ch1 Amplitude (%)	Ch1 Phase	100.0000	0.0000	100.0000	100.0000	
Xswp-Y85 (120 entries)		+		-)	100.0000	0.0000	100.4000	100.0000	-
X85-Yswp (120 entries)		- 1	•	65	.0000	100.0000	0.,	100.0000	0.0000	100.8000	100.0000	
X65-TSwp (120 entries)			1	65	4000	100.0000	0.2	100.0000	0.0000	101.2000	100.0000	
		10	-					100.0000	0.0000	101.6000	100.0000	
			2	65	.8000	100.0000	0.5	100.0000	0.0000	102.0000	100.0000	Ch1 Ch2 Ch3
			3	66	2000	100.0000	0.0	100.0000	0.0000	102.4000	100.0000	
			4	66	6000	100.0000	0.2	100.0000	0.0000	102.8000	100.0000	Int Int Int
				00	.6000	100.0000	0.)	100.0000	0.0000	103.2000	100.0000	DDS
			5	67	.0000	100.0000	0.0	100.0000	0.0000	103.6000	100.0000	Amplifier Enable
			6	67	4000	100.0000	0.	100.0000	0.0000	104.0000	100.0000	RF Channels 1+2 Enable
mpensation Functions			-				, , ,	100.0000	0.0000	104.4000	100.0000	
		+	7		.8000	100.0000	0.0	100.0000	0.0000	104.8000	100.0000	RF Channels 3+4 Enable
ame Entries		_	8	68	2000	100.0000	0.)	100.0000	0.0000	105.2000	100.0000	Sync Data Settings
(605) 11		-	0)	100.0000	0.0000	105.6000	100.0000	Analog Sync Output Source A
(606) 11			9	68	.6000	100.0000	0.)	100.0000	0.0000	106.0000	100.0000	ImageAnalogA
Y(606) 11			10	69	.0000	100.0000	0,)	100.0000	0.0000	106.4000	100.0000	Analog Sync Output Source B
ustom TeO2 Fc=85 B1 23			11	60	4000	100.0000)	100.0000	0.0000	106.8000	100.0000	ImageAnalogB
							0.)	100.0000	0.0000	107.2000	100.0000	
			12		8000	100.0000	0,	100.0000	0.0000	107.6000	100.0000	Digital Sync Output Source
		20		08.0000	100.0000		108.0000	100.0000	0.0000	108.0000	100.0000	ImageDigital
	21		08.4000	100.0000		108.4000	100.0000	0.0000	108.4000	100.0000	—	
Tone Buffers	- +	22		08.8000	100.0000		108.8000	100.0000	0.0000	108.8000	100.0000	Digital Sync Output Delay
Name	-	23		09.6000	100.0000		109.2000	100.0000	0.0000	109.2000	100.0000	_
	D	24		10.0000	100.0000		110.0000	100.0000	0.0000	110.0000	100.0000	0.00 🌩 µs
		26		10.4000	100.0000		110.4000	100.0000	0.0000	110.0000	100.0000	Digital Sync Pulse Length
				10.4000	100.0000	0.0000	110,4000	100.0000	0.0000	110,4000	100.0000	- Enable
					_	_	_					0.01 🖨 🗤
		Num	ber of In	nage Points:	120 😴 Defaul	t Internal Clock Rate (kHz):	166.000 😴 Default	External Clock Divider:	1 💌			Sig Cal Pla C
Hardware Console												
			1						Taba			Diawan
			In	ternal	Clock r	ale			Tabs:	Signal Path		Player

The GUI window should look similar to this:

2. Select Compensation Tab

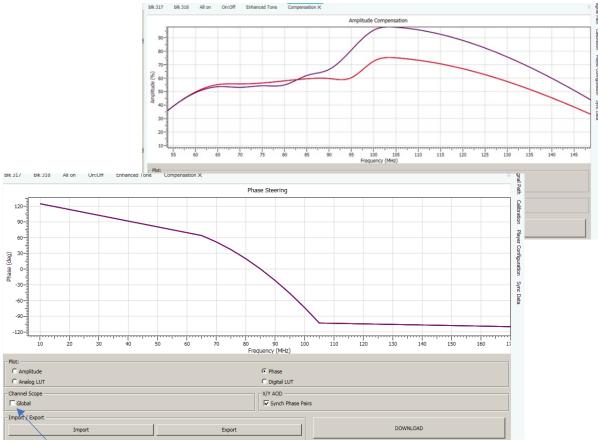
Click on Import Button Open the required *.LUT files



LUT file size = 225KB is a Channel scoped (channel specific) compensation file that can apply unique values to each channel. Global LUT files (57KB size) are not recommended for X-Y deflector use.

In this example we will open file: RevC 1um 65-105M_D95Ch85_AF0amps.LUT This compensation file is generated for a D1422 at 1um, 65-105MHz freq' range using a AF0-85T-4 amplifiers. The iMS4 Power Settings are : DDS=95% , Ch(n)=85% (See Signal tab).

The graphics will show a plot of the compensation response, Amplitude or Phase as selected by the radio buttons



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 <u>or</u> 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.

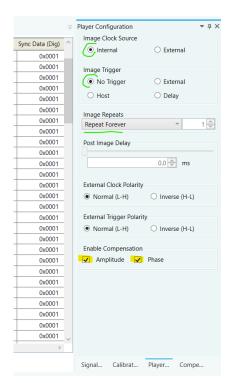
Typical settings when used with AF0-85T-4 are: DDS = 90 - 95% Ch1 = Ch2 = 80% - 85% Ch3 = Ch4 = 80% - 85%

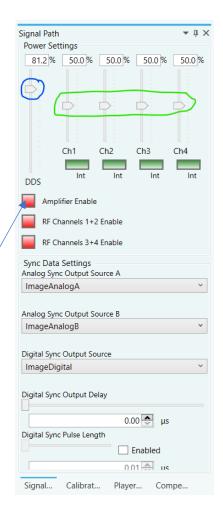
For XY AOD applications, Ch1 = Ch2 and Ch3 = Ch4

iMS4 RF output connectors. Terminate onto a 500hm input or load.

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

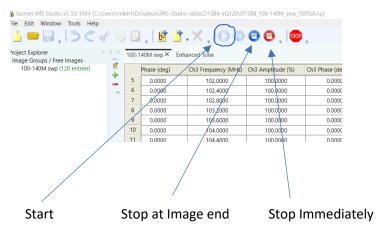
NOT NECESSARY FOR AF0-85T-4





5. Start Image Play

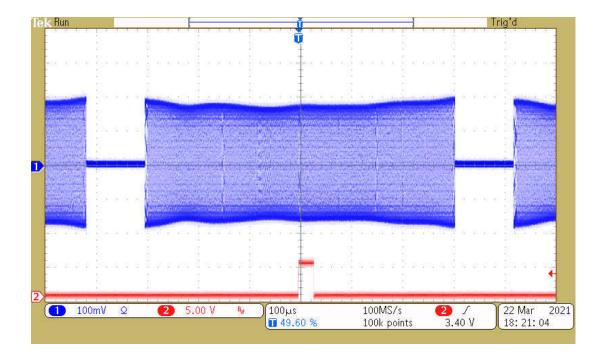
Click the *Play Button* to start Image play. (It will 'grey' out).



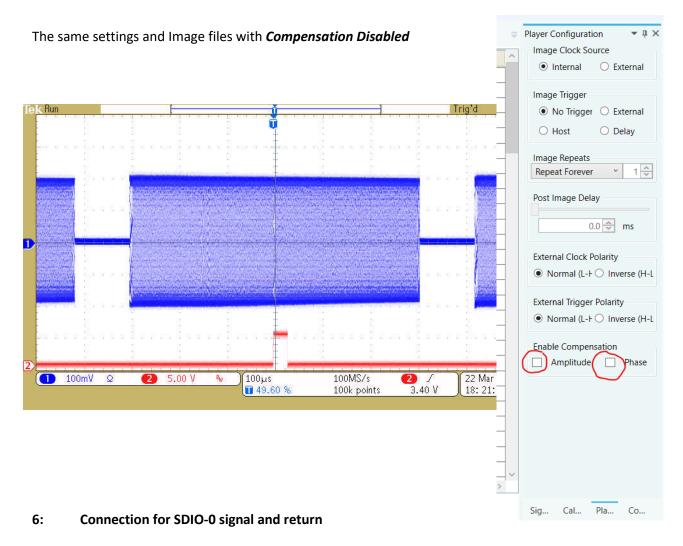
Typical output waveforms on oscilloscope for the files and signal levels described above. Internal Clock rate 166KHz

Trace 1 = RF output (50ohm terminated); J1, J2

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

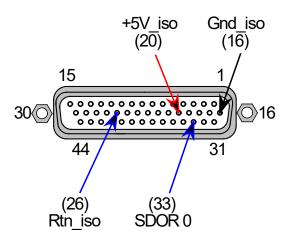


App Note: 2021-10-23



View into iMS4 connector J7

SDIO outputs are opto- isolated and require a separate +5V supply to operate



App Note: 2021-10-23

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 <u>There is no SDIO sync output in this mode</u>.

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. <u>Return to DISABLED</u> 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).

