

VDisplay

Quick Start



DOCUMENT REVISIONS

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Contents

Introduction.....	4
Operation.....	5
<i>Real Time</i>	6
<i>Historical</i>	8
Sweep Display	8
Sweep Data	9
Sweep Started	11
PSS View.....	11
Comments	11
Summary PSS.....	12
Sweep Summary Display	13
<i>Download</i>	14
<i>Import Folder (USB)</i>	15
<i>Comms</i>	15

Introduction

VDisplay runs on a Windows Computer. It connects to the Force 3 through an Ethernet connection which can be either wired with an RJ-45 patch cable or by using Open Mesh WiFi. The Force 3 requires firmware version 30.31 or newer.

Whenever a sweep is executed in the Vibrator, VDisplay will display critical information to the screen and save it to the PC for historical viewing. All the raw VSS data is saved to the disk, allowing the user to view the raw data for each sweep using SrcSig or VibTest.

VDisplay data includes all possible Force Limits shown in the correct units. This allows the user to verify Force and Limits Control performance.

VDisplay shows the following graphs:

- **Frequency** – Instantaneous Frequency of the sweep (Hz)
- **Phase Error** – Computed Phase Error (degrees)
- **Fundamental Force** – Computed fundamental Ground Force (percent)
- **Target Force** – Computed from sweep design (percent)
- **Force Error** – Computed Force Error (percent)
- **Peak Force** – Peak Ground Force (percent) (limits reached)
- **THD** – Total Harmonic Distortion (percent)
- **Viscosity** – Computed Viscosity
- **Stiffness** – Computed Stiffness
- **Torque Motor Current** – (milliamps) (limits reached)
- **Valve Displacement** – Percent of full-scale displacement (percent) (limits reached)
- **Mass Displacement** – Percent of full-scale displacement (percent) (limits reached)
- **Peak Reaction Mass Force** – (percent) (limits reached)

The following data is also displayed to the screen:

- **Sweep Parameters**
- **PSS data**
- **Vibrator #**
- **Force 3 Serial Number**

Operation

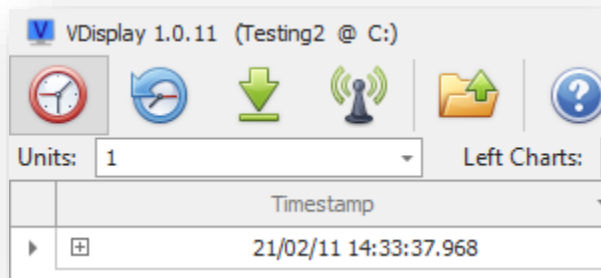


From left to right, the main VDisplay buttons are:

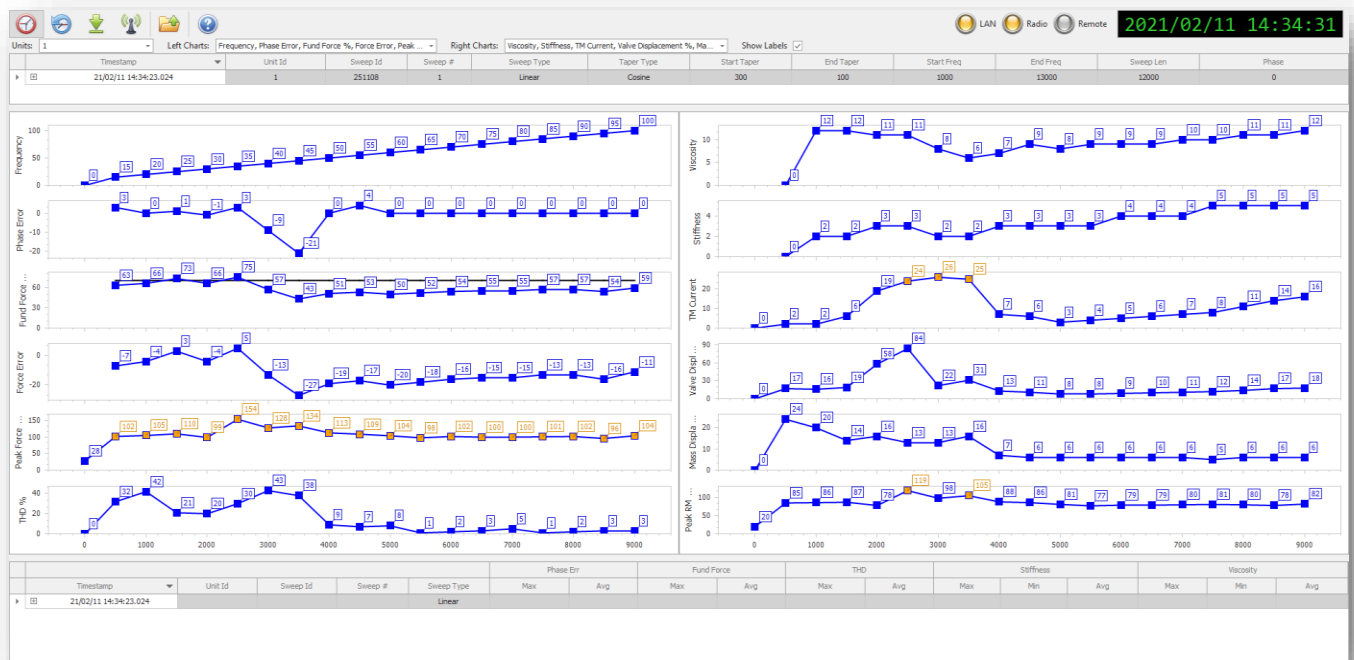
- **Real Time** – View real time data from a connected Force 3
- **Historical** – View historical data from a connected Force 3, or imported from a folder
- **Download** – Download and messaging information to show real time communications
- **Comms** – Select method of communication and see messaging information
- **Import Folder** – Import a folder for historical viewing
- **Help** – View software information

Real Time

Select the Real Time button to view data while sweeping. Begin by selecting the Unit Id of the unit you want to view.



Sweep data will then be displayed to the screen whenever you run a sweep.



Note: Force 3 firmware versions 30.31 – 30.43 will show up slightly differently than later firmware. Later firmware only shows orange for samples where a limit has been reached. Older firmware will show orange for the remainder of the sweep after a limit has been reached.

Note: The Keyboard Sweep Parameters are not valid when using a Stored Sweep.

Time (min)	Fund Force % (Measured)	Fund Force % (Predicted)
0	0	22
10	0	24
20	2	26
30	14	28
40	24	30
50	33	32
60	42	34
70	49	36
80	57	38
90	63	40

Figure 10 is a waterfall plot showing the Force Error (in dB) for the 100th iteration of the proposed algorithm. The plot displays a sequence of 100 steps, with the error starting at approximately -26 dB and converging to 0 dB. The error values are labeled in blue boxes above the bars.

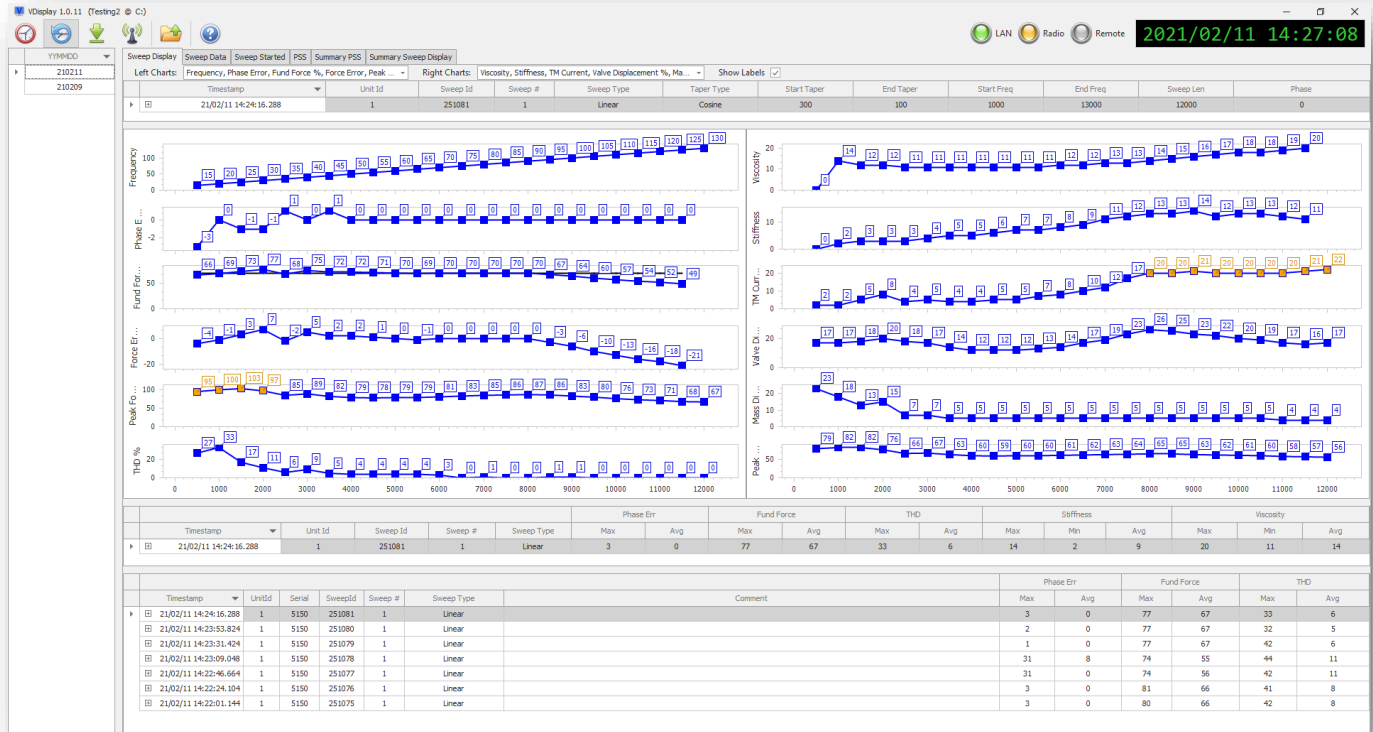
Iteration	Force Error (dB)
1	-26
2	-23
3	-18
4	-12
5	-8
6	-5
7	-2
8	0
9	3
10	5
11	4
12	3
13	1
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0
29	0
30	0
31	0
32	0
33	0
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	0
51	0
52	0
53	0
54	0
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58	0
59	0
60	0
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80	0
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85	0
86	0
87	0
88	0
89	0
90	0
91	0
92	0
93	0
94	0
95	0
96	0
97	0
98	0
99	0
100	0

7 | Page

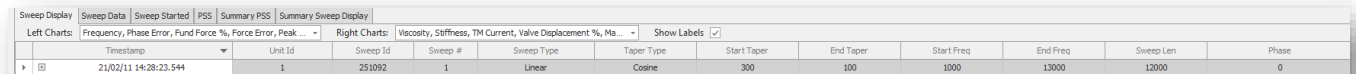
Historical

Sweep Display


The Historical View allows you to view saved data.



Double Click on a Date to the left side of the screen to view a list of Sweep Times under the graph area. Double click on one of the Records to view the graph for that saved data. Details for the Sweep can be seen over the graph.



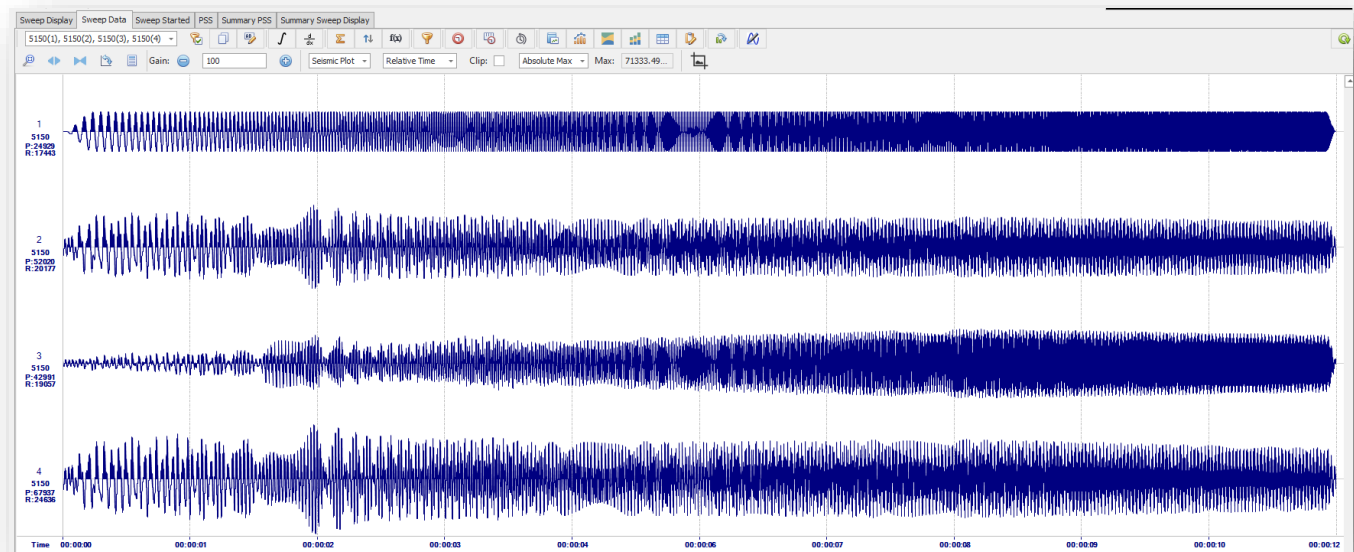
Click on the +/- button to view more details about each Sweep.

Charts		Plot														Phase Err			Fund Force	
	Timestamp	UnitId	SweepId	Sweep Type	Sweep #	Max	Avg	Max												
	20/03/11 14:45:26.808	1	20	7	0	6	0	73												
Sweep Displays																				
Seis ...	Crew ...	Sour...	Unit Id	Repe...	Swee...	Time ...	Frequ...	TM C...	Valve...	Mass ...	Peak ...	Peak ...	Phas...	Fund...	THD	Limit ...	Stiffn...	Visco...	Scale...	Phase...
5152	1	129	1	0	20	0	3	6	6	2	0	0	0	0	0	0	0	0	18	0
5152	1	129	1	0	20	502	3	6	6	3	1	0	0	0	0	0	0	0	21	0
5152	1	129	1	0	20	1001	3	6	6	3	1	1	-24	0	2	0	0	2	23	1
5152	1	129	1	0	20	1505	4	6	7	5	1	1	-26	0	4	0	1	12	26	1

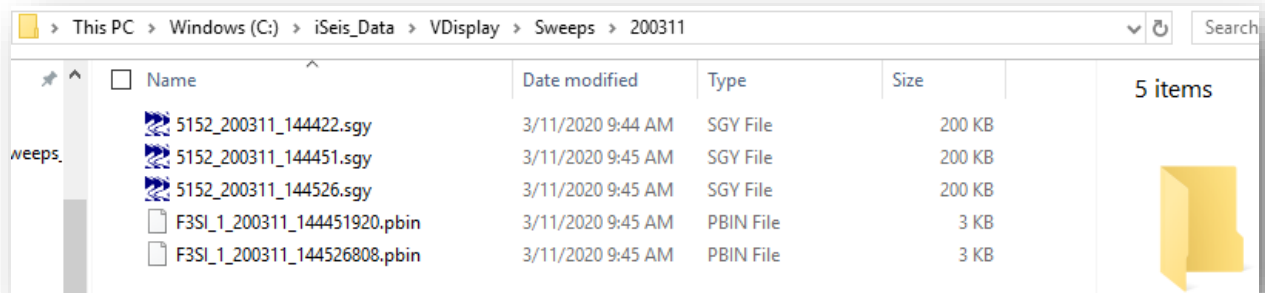
Sweep Data

The Sweep Data tab allows you to view the .dat file from the Vibrator Signature of the Sweep.

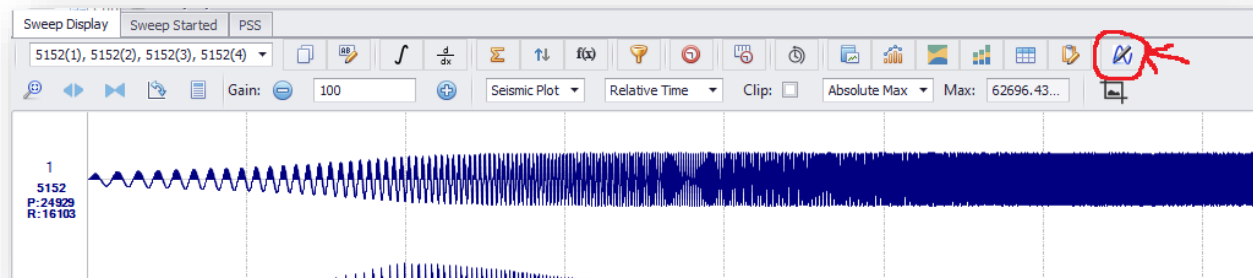
- **Trace 1** – Reference
- **Trace 2** – Reaction Mass Acceleration
- **Trace 3** – Baseplate Acceleration
- **Trace 4** – Ground Force



All the VSS data is saved to the hard drive.

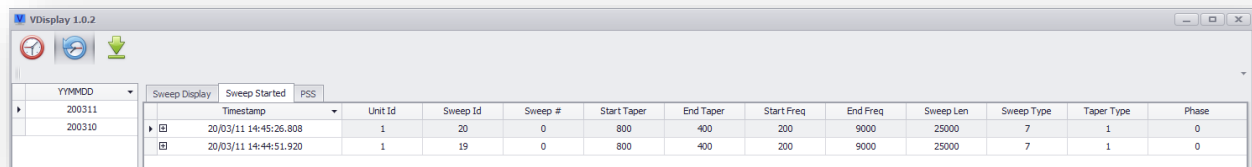


You can use SrcSig or VibTest to open these files and view the details.



Sweep Started

The Sweep Started tab shows a list of saved data with GPS start time and Sweep information.

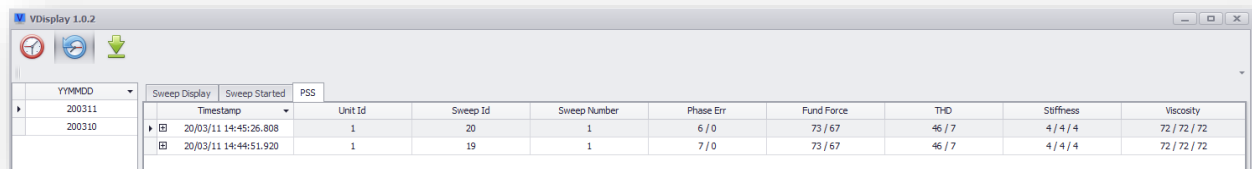


The screenshot shows the VDisplay 1.0.2 application window with the 'Sweep Started' tab selected. The table displays sweep data with columns for Timestamp, Unit Id, Sweep Id, Sweep #, Start Taper, End Taper, Start Freq, End Freq, Sweep Len, Sweep Type, Taper Type, and Phase.

Timestamp	Unit Id	Sweep Id	Sweep #	Start Taper	End Taper	Start Freq	End Freq	Sweep Len	Sweep Type	Taper Type	Phase
20/03/11 14:45:26.808	1	20	0	800	400	200	9000	25000	7	1	0
20/03/11 14:44:51.920	1	19	0	800	400	200	9000	25000	7	1	0

PSS View

The PSS Tab shows a list of saved data with the reported PSS values for each Sweep.

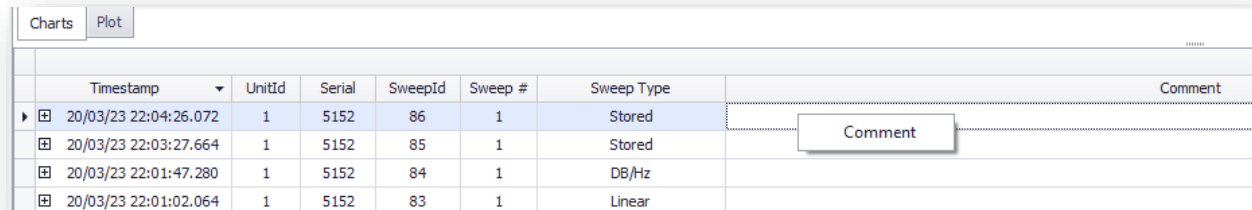


The screenshot shows the VDisplay 1.0.2 application window with the 'PSS' tab selected. The table displays PSS data with columns for Timestamp, Unit Id, Sweep Id, Sweep Number, Phase Err, Fund Force, THD, Stiffness, and Viscosity.

Timestamp	Unit Id	Sweep Id	Sweep Number	Phase Err	Fund Force	THD	Stiffness	Viscosity
20/03/11 14:45:26.808	1	20	1	6 / 0	73 / 67	46 / 7	4 / 4 / 4	72 / 72 / 72
20/03/11 14:44:51.920	1	19	1	7 / 0	73 / 67	46 / 7	4 / 4 / 4	72 / 72 / 72

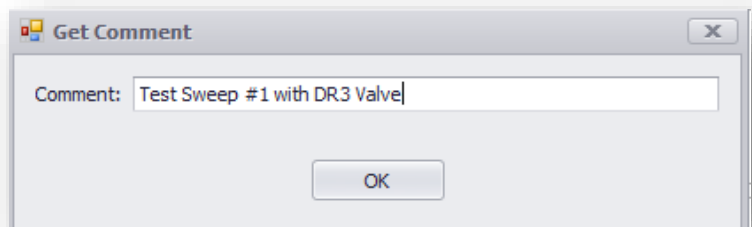
Comments

Right Click in the Comment Field and click on **Comment** to enter a comment.



The screenshot shows a table with columns for Timestamp, UnitId, Serial, SweepId, Sweep #, Sweep Type, and Comment. A right-click context menu is open over the Comment column, showing a 'Comment' option.

Timestamp	UnitId	Serial	SweepId	Sweep #	Sweep Type	Comment
20/03/23 22:04:26.072	1	5152	86	1	Stored	
20/03/23 22:03:27.664	1	5152	85	1	Stored	
20/03/23 22:01:47.280	1	5152	84	1	DB/Hz	
20/03/23 22:01:02.064	1	5152	83	1	Linear	



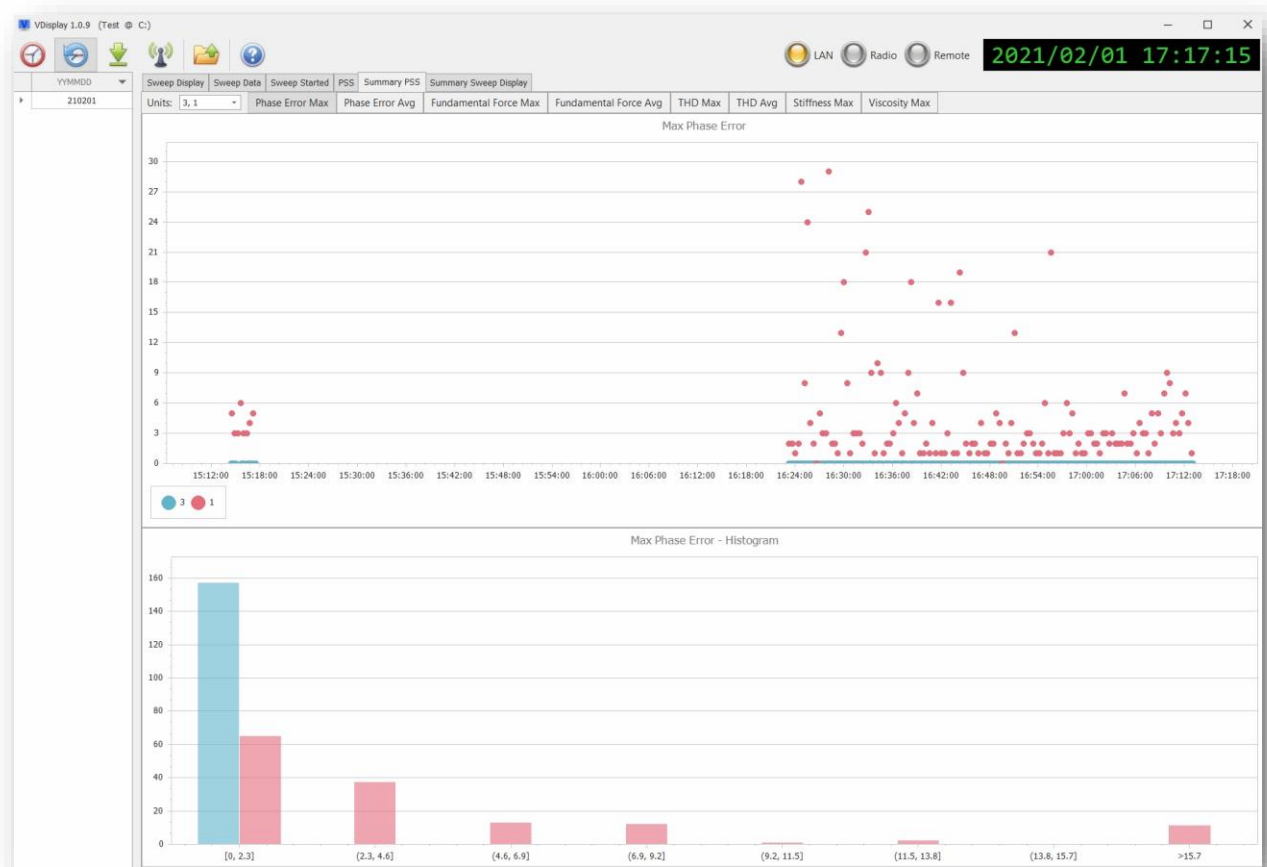
The screenshot shows a 'Get Comment' dialog box with a text input field containing 'Test Sweep #1 with DR3 Valve' and an 'OK' button.

Comment:

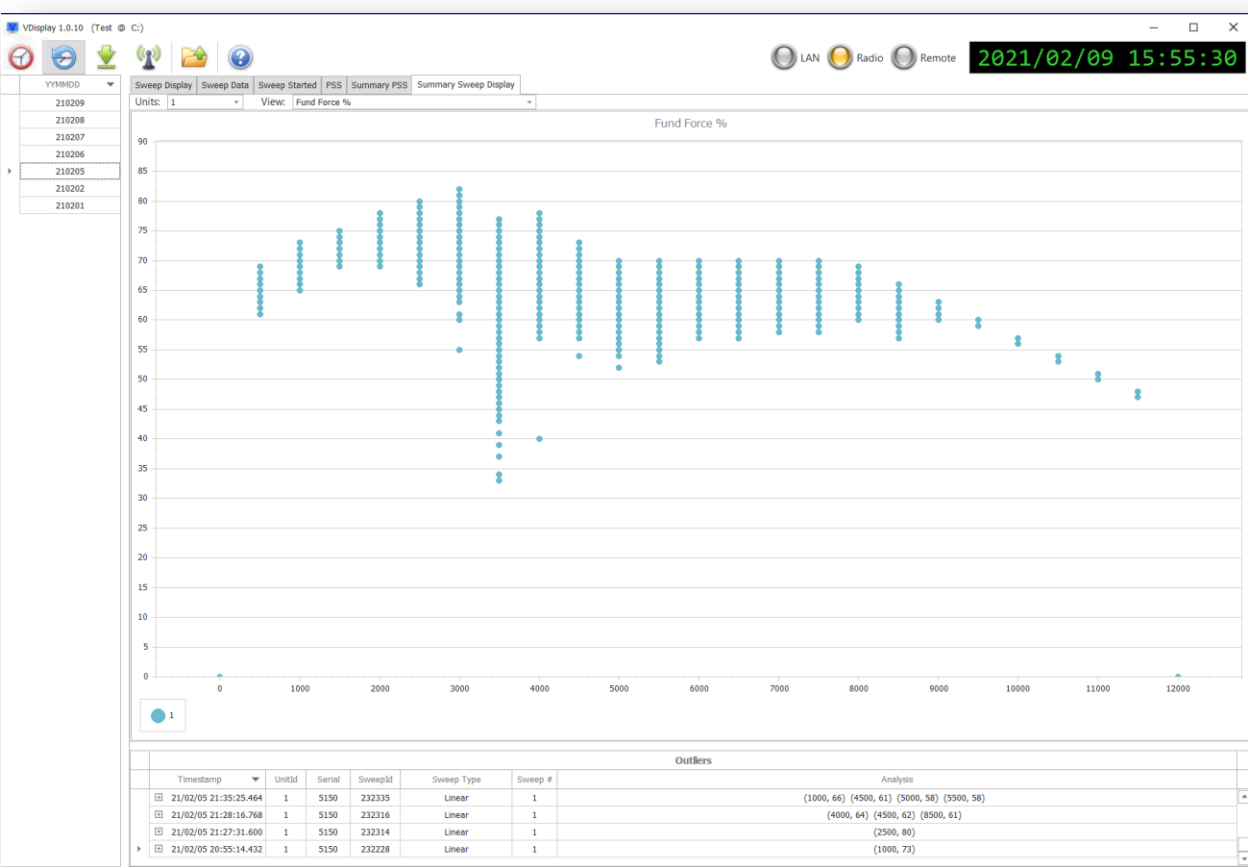
OK

Summary PSS

The Summary view will analyze all the data in the Historical memory.



Sweep Summary Display



Download

The Download view shows the details of the Data Downloaded from the units. This view shows what units are currently connected and the status of the connection.

VDisplay 1.0.2

Project: VDisplay Drive: C Num Threads: 5 Restart Units with FTP Problems: True 2020-03-11 15:07:10

Download Times

Start	Stop
20/03/11 14:44:07	99/12/31 23:59:59

Active Downloads

Unit	State	Queued	Downloaded	Speed (K...	Last Download	Last Save
5152	Idle	0	3	562	20/03/11 14:45:26	20/03/11 14:45:26

Historical Downloads

Unit	Downloaded Files
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Message Log

Timestamp	Type	Message
15:07:01:834	Debug	FindAndDownloadNewFiles - Connect(10.0.51.52) Dir: /DAQ3/00000076
15:07:01:682	Debug	FindAndDownloadNewFiles - Connect(10.0.51.52)
15:07:01:681	Debug	CurrentUnitDateTime: 20/03/11 15:07:01.681 TimeDelta: 0 seconds
15:06:01:335	Debug	FindAndDownloadNewFiles - Connect(10.0.51.52) Dir: /DAQ3/00000076
15:06:01:166	Debug	FindAndDownloadNewFiles - Connect(10.0.51.52)
15:06:01:165	Debug	CurrentUnitDateTime: 20/03/11 15:06:01.165 TimeDelta: 0 seconds
15:05:01:626	Debug	FindAndDownloadNewFiles - Connect(10.0.51.52) Dir: /DAQ3/00000076

Import Folder (USB)

Used to import a folder, typically from a USB stick used in the Force 3 during sweeping. This data typically includes:

- VDisplay Data
- VSS dat files
- PSS Data
- Log File Information

Comms

The Comms menu allows you to select the communication method. When using Ethernet or WiFi, use the LAN selection. When using the Viblink TDMA radio system, use the Radio selection. When using a cellular connection, use the Remote selection. TDMA and Cellular are not currently covered in this Quick Start.

