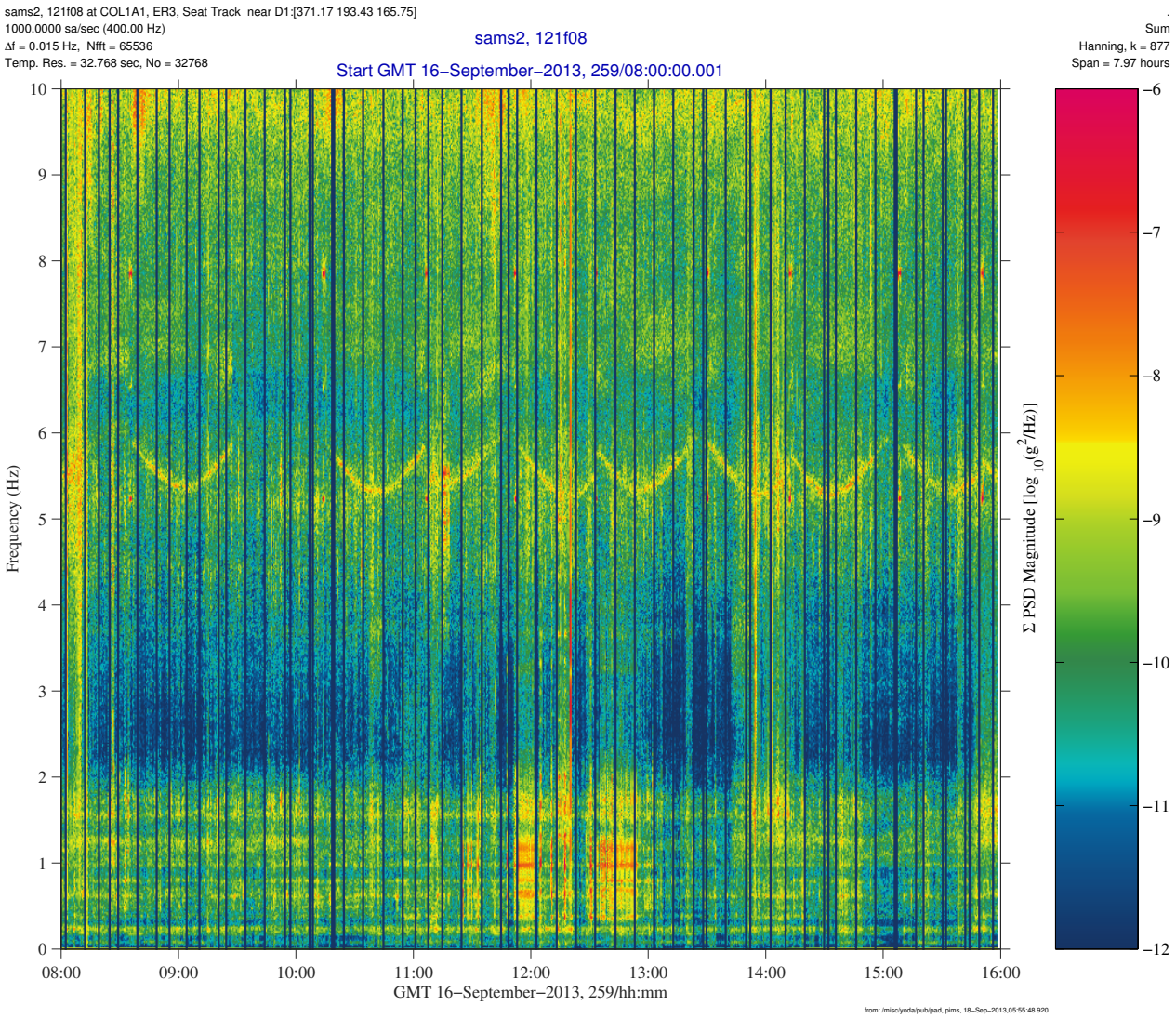
ATV-4 Thruster Test
Qualify



Description	
Sensor	121f08 1000 sa/sec (200 Hz)
Location	ER3, Seat Track near D 1
Plot Type	spectrogram (Σ); f < 10 Hz

Notes:

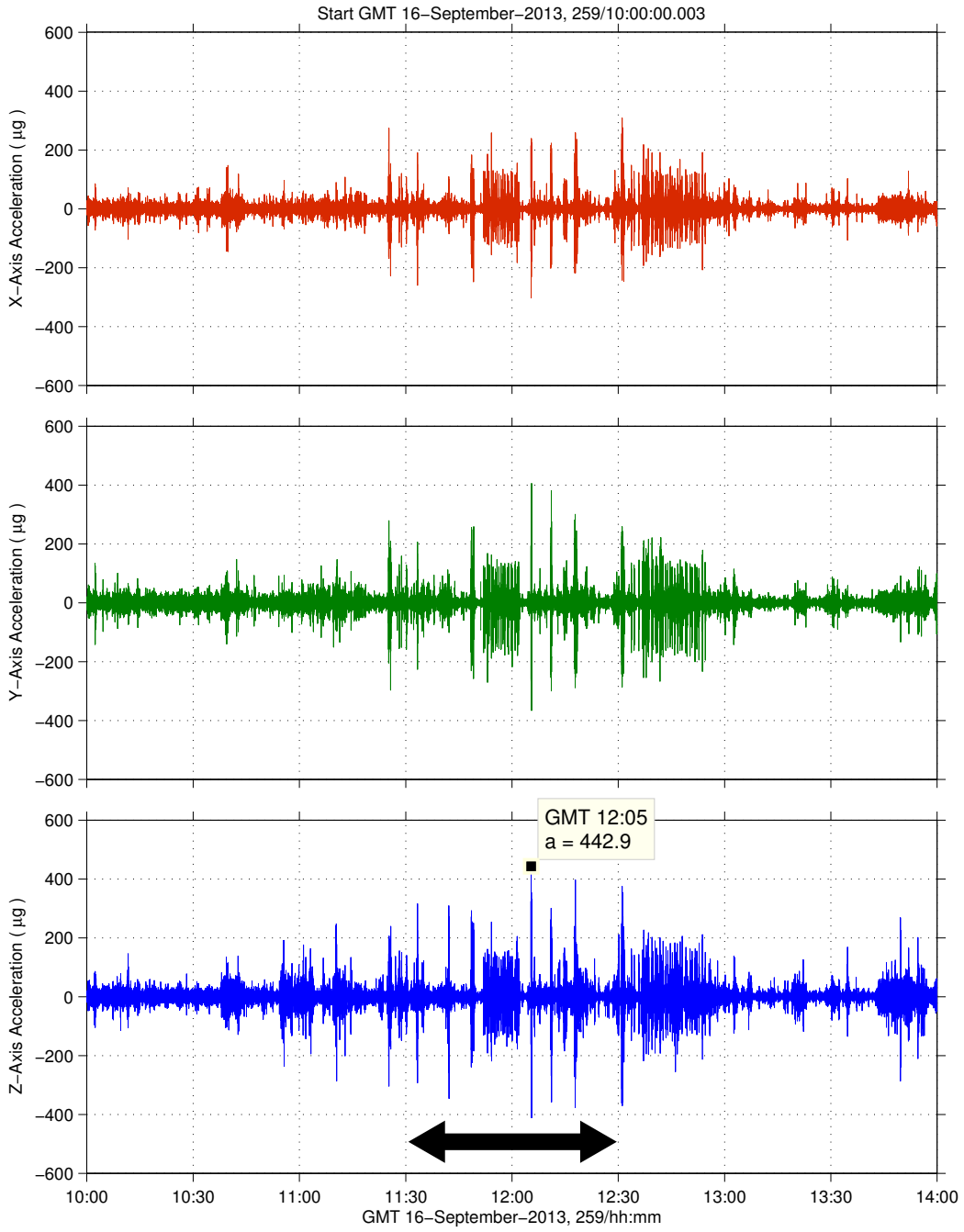
- A sequence of ATV-4 thruster test firings was performed on GMT 16-Sept-2013 between about 11:29 and 12:23.
- This spectrogram shows the transient impact of the thruster test sequence as a set of orange-to-red vertical streaks in the GMT time range cited above. Note the subsequent elevated vehicle structural mode excitation below about 2 Hz.

Regime:	Vibratory
Category:	Vehicle
Source:	ATV-4 Thruster Test

sams2, 121f03006 at LAB1O1, ER2, Lower Z Panel:[191.54 –40.54 135.25]
142.0000 sa/sec (6.00 Hz)

SSAnalysis[0.0 0.0 0.0]

SAMS2, 121f03006, LAB1O1, ER2, Lower Z Panel, 6.0 Hz (142.0 s/sec)



ATV-4 Thruster Test
Quantify

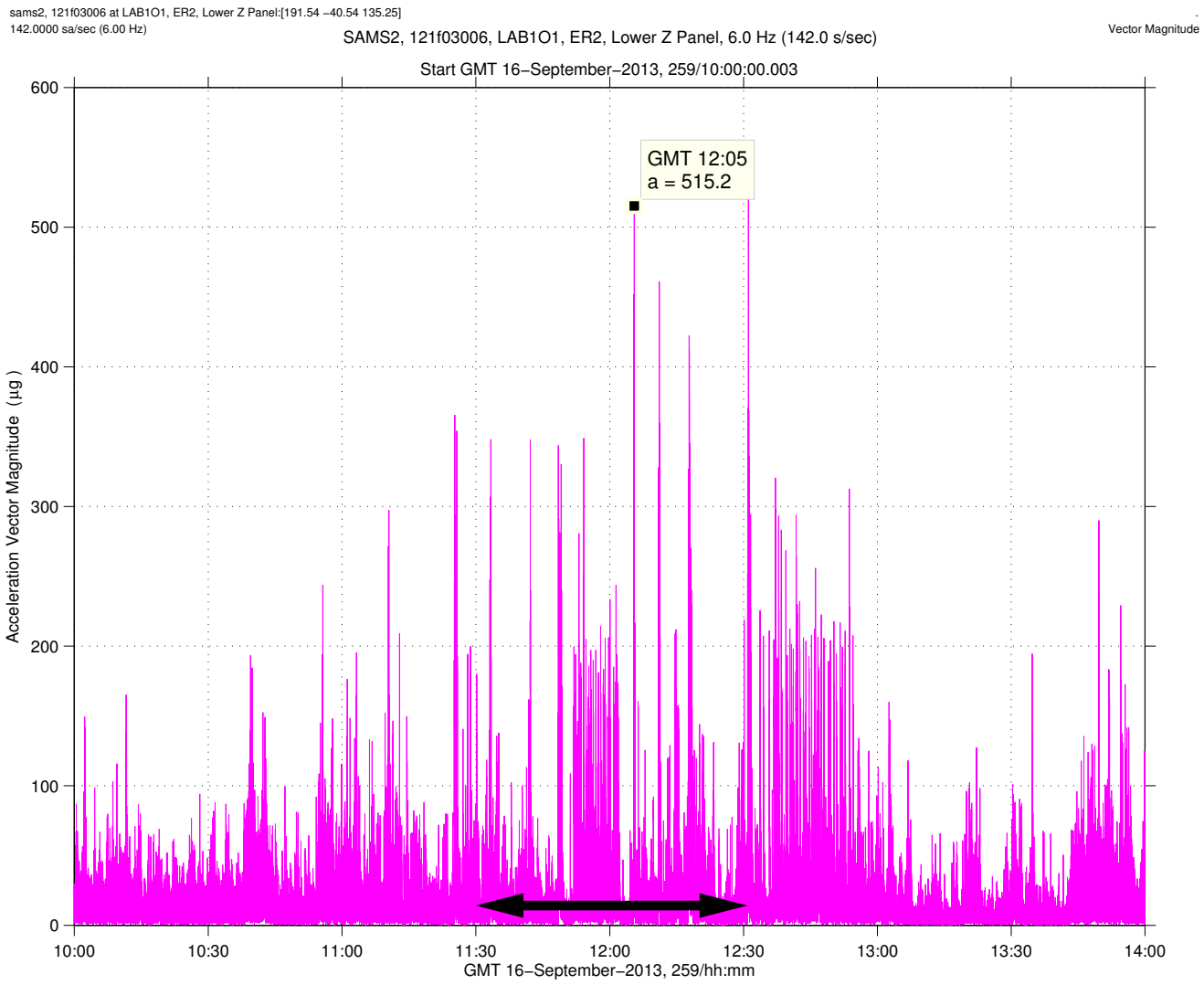
Description	
Sensor	121f03 (low-pass filtered) 142 sa/sec (6 Hz)
Location	LAB1O1, ER2, Lower Z Panel
Plot Type	Acceleration vs. time, xyz

Notes:

- The sequence of ATV-4 thruster test firings performed on GMT 16-Sept-2013 between about 11:29 and 12:23 shows up in this figure as a series of acceleration spikes in the GMT time range cited above.
- Note the peak acceleration of about 443 ug occurred on the Z-axis at about 12:05.

Regime:	Vibratory
Category:	Vehicle
Source:	ATV-4 Thruster Test

ATV-4 Thruster Test
Quantify



Description	
Sensor	121f03 (low-pass filtered) 142 sa/sec (6 Hz)
Location	LAB1O1, ER2, Lower Z Panel
Plot Type	Accel. Magnitude vs. time

Notes:

- This figure again shows the transient impact of the thruster test sequence as a series of acceleration spikes between GMT 11:29 and 12:23.
- Note the max acceleration vector magnitude during the thruster test was about 515 ug at GMT 12:05.

Regime:	Vibratory
Category:	Vehicle
Source:	ATV-4 Thruster Test

ATV-4 Thruster Test
Ancillary Information

Start-Stop GMT	Event	Remarks
259/11:16	Handover US to RS	
259/11:24-11:29	Quaternion Update	
259/11:29-11:32	Free Drift for Thruster Test (ATV on SM Aft)	Reference chit 11610 for thruster test details
259/11:29	Cyclogram 1 impulse 1 (0.05s)	
259/11:30	Cyclogram 1 impulse 2 (0.075s)	
259/11:31	Cyclogram 1 impulse 3 (0.1s)	
259/11:32	Cyclogram 1 impulse 4 (0.15s)	
259/11:32	Cyclogram 1 impulse 5 (0.2s)	
259/11:32-11:37	Quaternion Update	Free Drift recovery
259/11:38-11:42	Free Drift for Thruster Test (ATV on SM Aft)	
259/11:38	Cyclogram 2 impulse 1 (0.05s)	
259/11:39	Cyclogram 2 impulse 2 (0.075s)	
259/11:40	Cyclogram 2 impulse 3 (0.1s)	
259/11:41	Cyclogram 2 impulse 4 (0.15s)	
259/11:41	Cyclogram 2 impulse 5 (0.2s)	
259/11:42	Quaternion Update	Free Drift recovery
259/12:01-12:05	Free Drift for Thruster Test (ATV on SM Aft)	
259/12:02	Cyclogram 3 impulse 1 (0.05s)	
259/12:02	Cyclogram 3 impulse 2 (0.075s)	
259/12:03	Cyclogram 3 impulse 3 (0.1s)	
259/12:04	Cyclogram 3 impulse 4 (0.15s)	
259/12:05	*Cyclogram 3 impulse 5 (0.2s)*	*Peak accel. magnitude (f < 6 Hz) SAMS 121f03*
259/12:05-12:10	Quaternion Update	Free Drift recovery
259/12:11-12:14	Free Drift for Thruster Test (ATV on SM Aft)	
259/12:11	Cyclogram 4 impulse 1 (0.05s)	
259/12:11	Cyclogram 4 impulse 2 (0.075s)	
259/12:12	Cyclogram 4 impulse 3 (0.1s)	
259/12:13	Cyclogram 4 impulse 4 (0.15s)	
259/12:14	Cyclogram 4 impulse 5 (0.2s)	
259/12:14-12:19	Quaternion Update	Free Drift recovery
259/12:20-12:23	Free Drift for Thruster Test (ATV on SM Aft)	
259/12:20	Cyclogram 5 impulse 1 (0.05s)	
259/12:20	Cyclogram 5 impulse 2 (0.075s)	
259/12:21	Cyclogram 5 impulse 3 (0.1s)	
259/12:22	Cyclogram 5 impulse 4 (0.15s)	
259/12:23	Cyclogram 5 impulse 5 (0.2s)	
259/12:23-12:28	Quaternion Update	Free Drift recovery
259/12:55	Handover RS to US Momentum Management	VV#3a N2neze, PSARJ Auto, SSARJ Auto

"Cyclogram 3 impulse 5 (0.2s)" registered the largest acceleration vector magnitude at the SAMS sensor (121f03) location, which was mounted on the lower Z-panel of EXPRESS Rack 2 in the USL. Note that to distinguish these individual impulsive events, the SAMS data was low-pass filtered at 6 Hz; otherwise, these thruster firings would be difficult to distinguish among the higher-frequency vibrations.