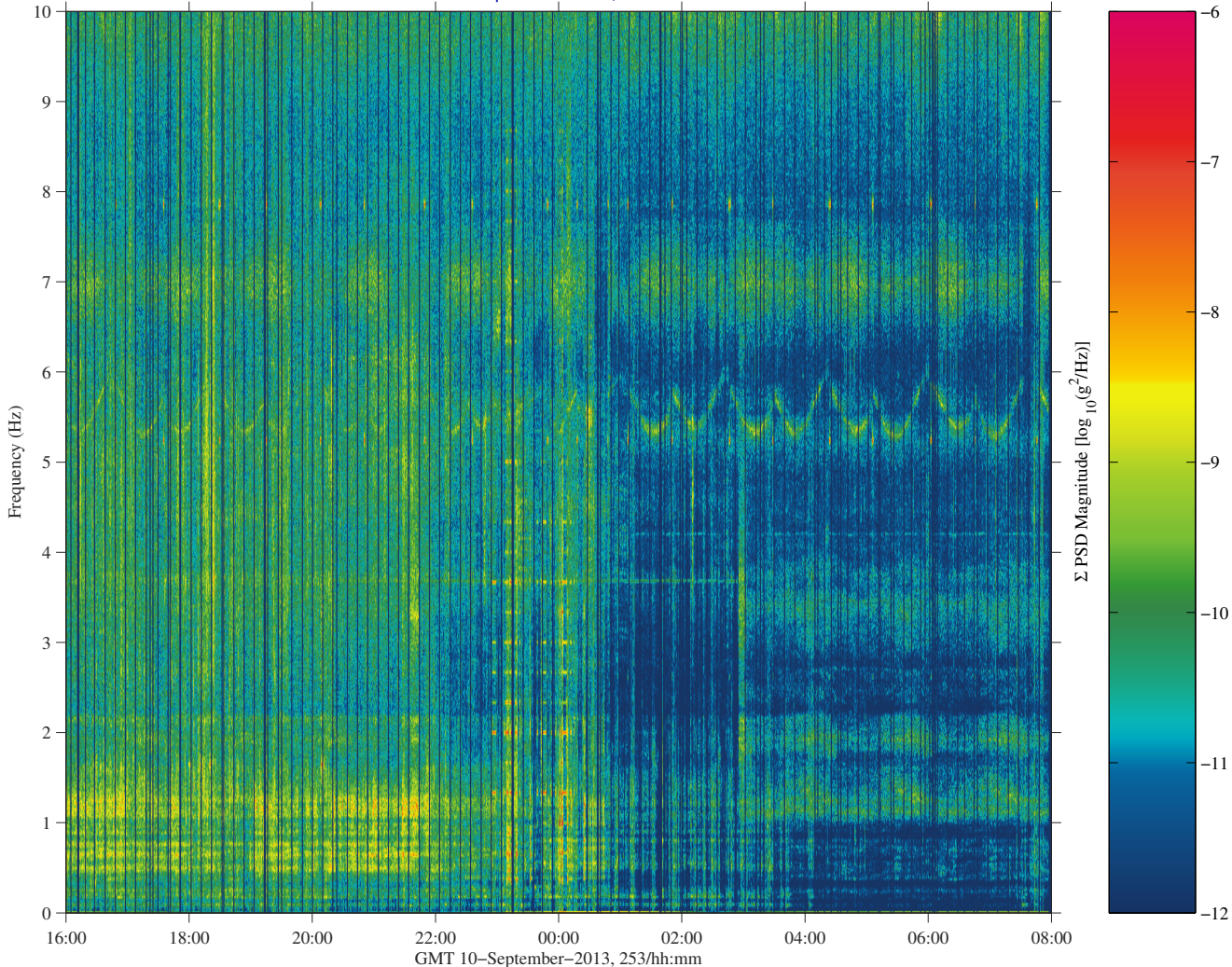


Soyuz 35S Undocking Qualify

sams2, 121f03 at LAB1O1, ER2, Lower Z Panel:[191.54 -40.54 135.25]
 500.0000 sa/sec (200.00 Hz)
 $\Delta f = 0.015$ Hz, Nfft = 32768
 Temp. Res. = 32.768 sec, No = 16384

sams2, 121f03

Start GMT 10-September-2013, 253/16:00:00.01



Sum
 Hanning, k = 1754
 Span = 16.0 hours

Description	
Sensor	121f03 500 sa/sec (200 Hz)
Location	LAB1O1, ER2, Lower Z Panel
Plot Type	spectrogram (Σ); $f < 10$ Hz

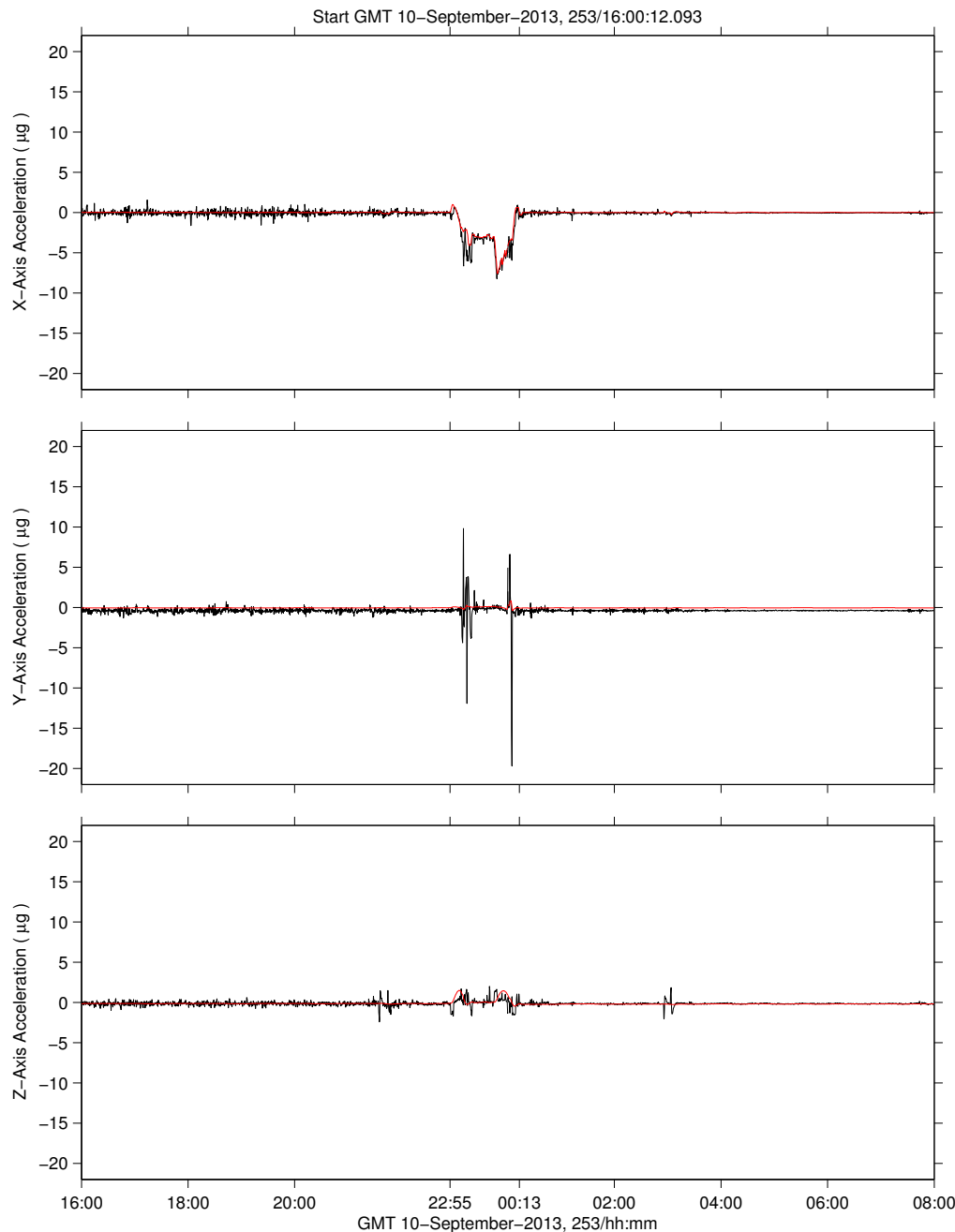
Notes:

- The Soyuz 35S crew vehicle undocked from the ISS on GMT 10-Sep-2013 at about 23:35.
- This spectrogram shows events leading up to and after undock including: (1) maneuver to undocking attitude from 22:55 - 23:25, (2) free drift period with undocking event 23:33 - 23:37, and (3) maneuver to LVLH Torque Equilibrium Attitude .
- A similar spectrogram focused on the Z-axis (not shown) indicates excitation of a structural mode at about 0.29 Hz, briefly and just after the separation event.

Regime:	Vibratory
Category:	Vehicle
Source:	Soyuz 35S Undocking



Soyuz 35S Undocking Quantify



Description	
Sensor	ossbtmf 0.0625 sa/sec (0.01 Hz)
Location	LAB102, ER1, Lockers 3, 4
Plot Type	acceleration vs. time

Notes:

- A primary impact that happens during a vehicle undocking is the necessary attitude maneuvers used to orient the ensemble for optimal separation of soon-to-be two vehicles.
- Between about GMT 253/22:55 and 254/00:13, this plot of quasi-steady acceleration versus time shows a maneuver from +XVV/+ZLV to the undocking attitude of +ZVV/-XLV, then back again to +XVV/+ZLV for nominal operations after the Soyuz departs. These 2 maneuvers are separated in time by free drift to allow the Soyuz to undock without attitude corrections that might occur otherwise.

Regime:	Quasi-Steady
Category:	Vehicle
Source:	Soyuz 35S Undocking



Soyuz 35S Undocking Ancillary Information

Maneuver Start-Stop GMT	Attitude Name	Event	Remarks
			9/10/2013
253/22:51	+XVV/+ZLV TEA	Handover US to RS	
253/22:55-23:25	+ZVV/-XLV (undock)	Mnvr to 34S Undocking Attitude	
253/23:33-23:37	drift	Free Drift for Undocking (Soyuz on MRM-2)	
253/23:37	+ZVV/-XLV	RS Snap and Hold	
253/23:43-254/00:13	+XVV/+ZLV TEA	Mnvr to Post Undocking LVLH TEA	
254/00:45	+XVV/+ZLV TEA	Handover RS to US Momentum Management	VV#3a N2neze, PSARJ 270, SSARJ 90. SARJs parked for comm to free-flight Soyuz.
254/02:55-03:00	+XVV/+ZLV TEA	Mnvr to SARJ Auto TEA	TEA for VV#3a N2neze, PSARJ Auto, SSARJ Auto

