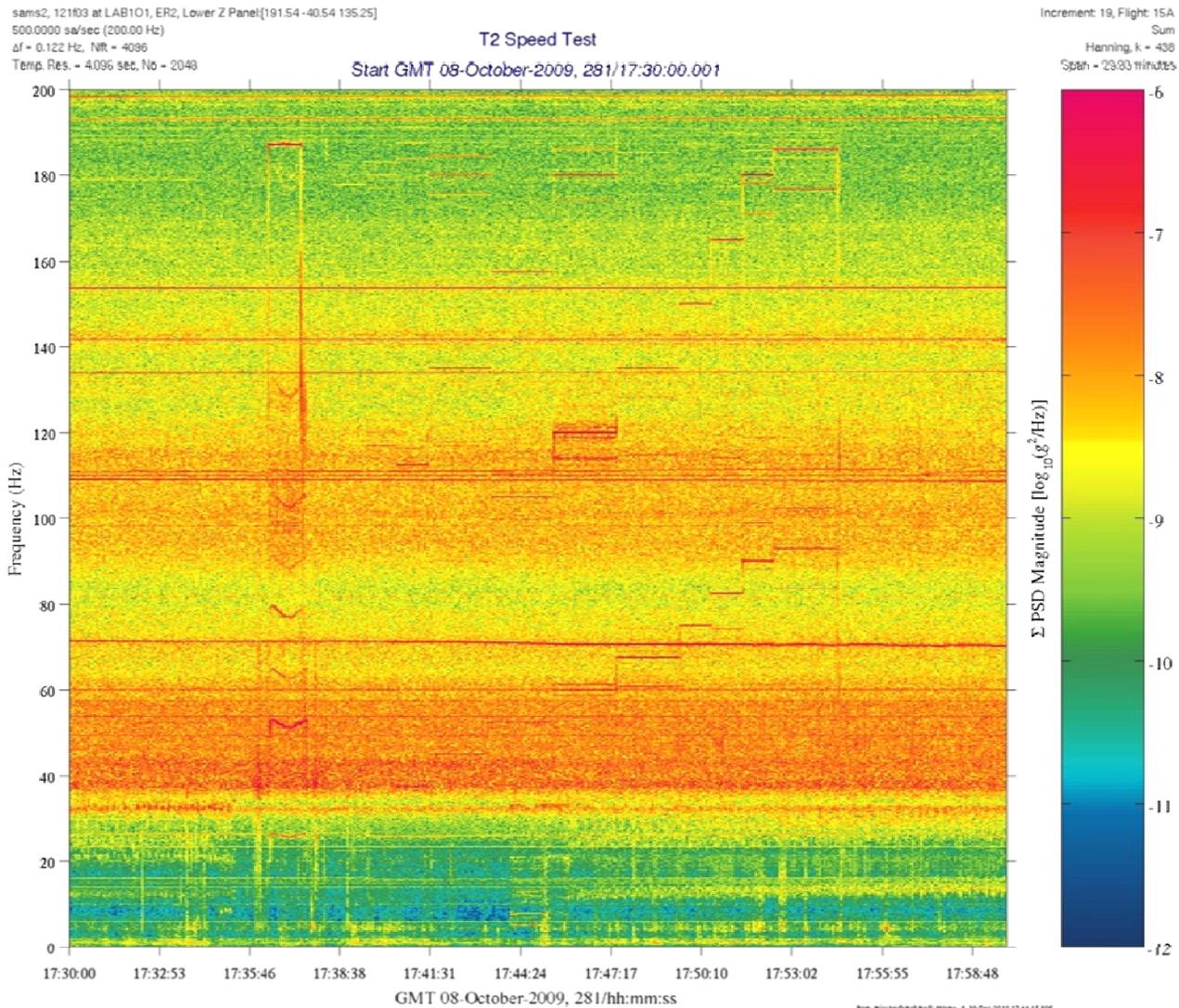


## T2 (COLBERT) Speed Test



Microgravity Science Division



Glenn Research Center

PIMS ISS Acceleration Handbook  
 Date last modified 12/30/10

Description	
Sensor	121f03 500 sa/sec (200.00 Hz)
Location	LAB101, ER2, Lower Z Panel
Orientation	Space Station Analysis (SSA)
Inc/Flight	Increment:21
Plot Type	Spectrogram

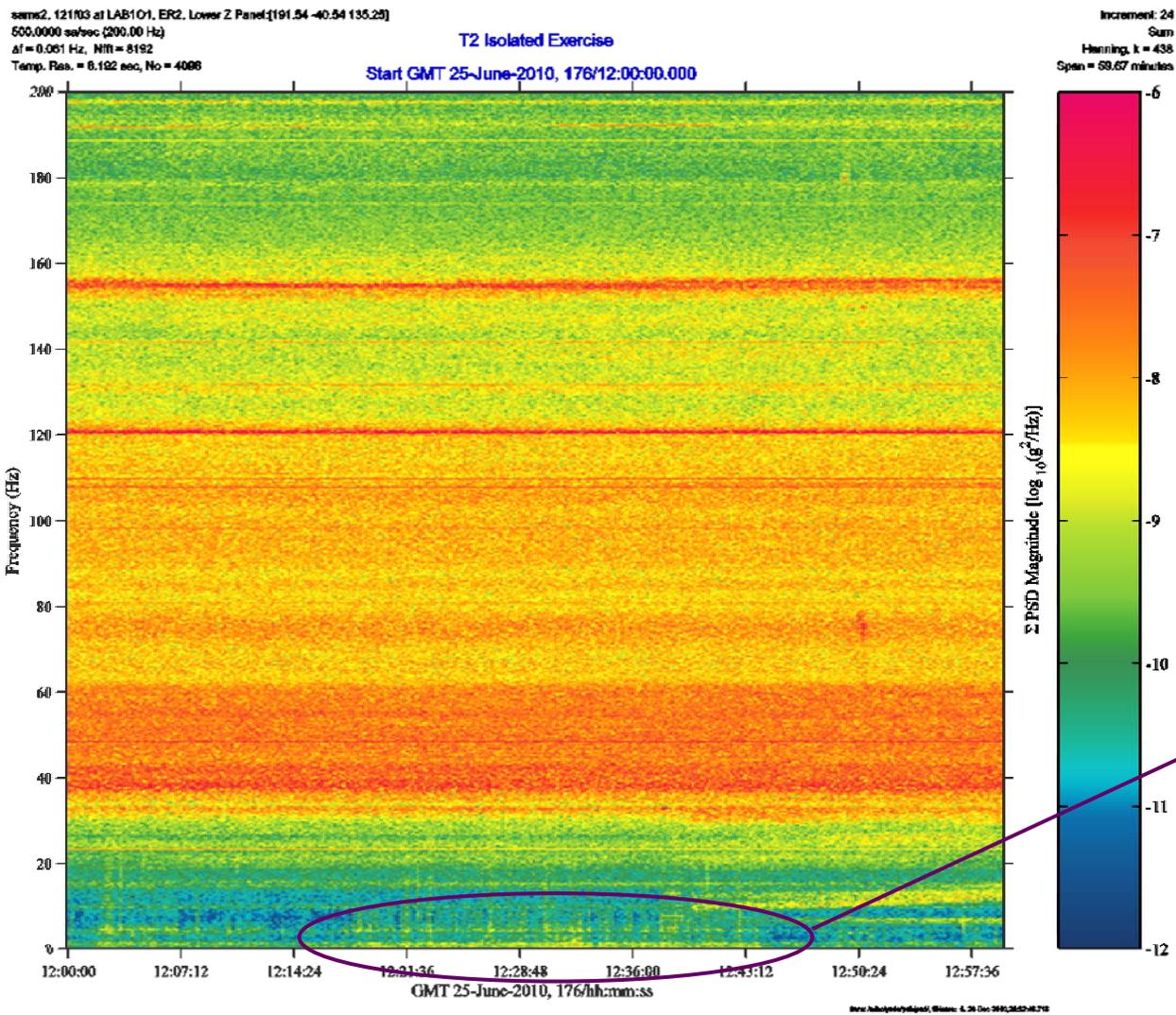
### NOTES:

- The T2 or COLBERT (Combined Operational Load Bearing External Resistance Treadmill) is a frequently used treadmill with vibration isolation. Originally installed in Node 2 in September 2009, it was later relocated to Node3 in April of 2010.
- During initial activation and checkout on October 9<sup>th</sup> 2009, an **unmanned** speed test was performed. During the test, the T2 was **not** in an vibration isolation configuration.
- The spectrogram to the left shows the effect of different speeds, ranging from 60Hz to 190 Hz for 15 minutes beginning at 17:40.
- A comparison of the spectrogram to the procedure indicates that the fundamental frequency is approximately 7.5 Hz per MPH of treadmill speed.

Regime:	Vibratory
Category:	Crew
Source:	T2 / COLBERT



## T2 (COLBERT) Qualify - Isolated



Description	
Sensor	121f03 500 sa/sec (200.00 Hz)
Location	LAB101, ER2, Lower Z Panel
Orientation	Space Station Analysis (SSA)
Inc/Flight	Increment:24
Plot Type	Spectrogram

**NOTES:**

- The spectrogram on the left shows a confirmed example of manned T2 operation from June 25, 2010 (GMT 176/12:18 – 12:45).
- Contrasting with the un-isolated case, the disturbance is limited to below 6 Hz, and mainly between 1-2 Hz. The effect is also considerably less evident than that of the isolated case.



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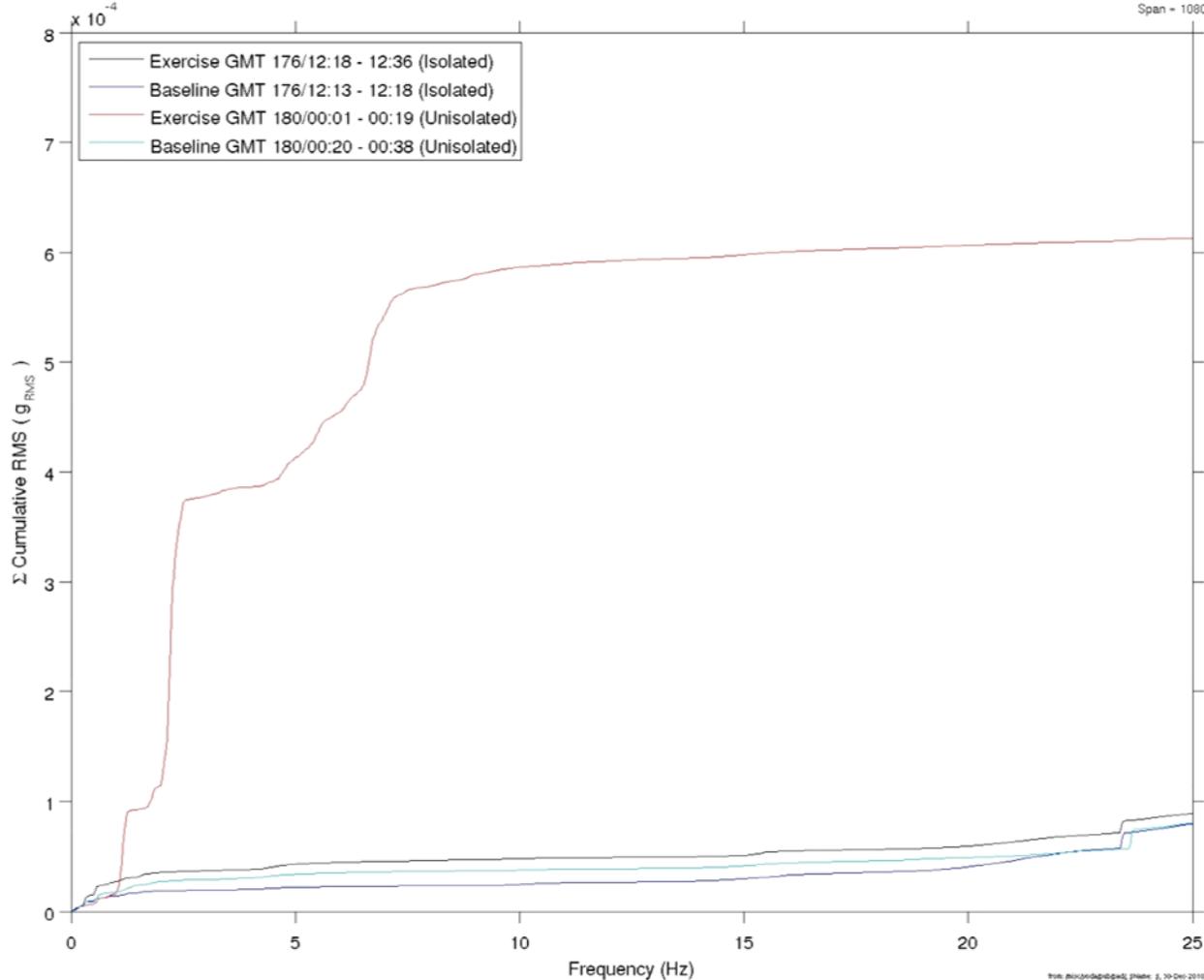
Regime:	Vibratory
Category:	Crew
Source:	T2 / COLBERT

## T2 (COLBERT) Quantify

sams2, 121f03 at LAB101, ER2, Lower Z Panel[181.54 -40.54 135.25]  
500.0000 sa/sec (200.00 Hz)  
 $\Delta f = 0.031$  Hz, Nfft = 16384

Comparison of Isolated vs. Unisolated Exercise on T2

Increment:24  
Sum  
Hanning, k = 33  
Span = 1080.00 sec.



Description	
Sensor	121f03 500 sa/sec (200.00 Hz)
Location	LAB101, ER2, Lower Z Panel
Orientation	Space Station Analysis (SSA)
Inc/Flight	Increment:24
Plot Type	Cumulative RMS

### NOTES:

- To quantify the contribution of exercise on T2, for both isolated and un-isolated cases, a cumulative RMS plot was computed. For reference, baselines were computed during periods of no exercise.
- The table below lists the approximated contribution of T2 for significant bands in  $\mu\text{gRMS}$ :

Band	Isolated	Unisolated
0 - 10 Hz	40	590
10 - 25 Hz	50	30
0 - 25 Hz	90	620



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Regime:	Vibratory
Category:	Crew
Source:	T2 / COLBERT