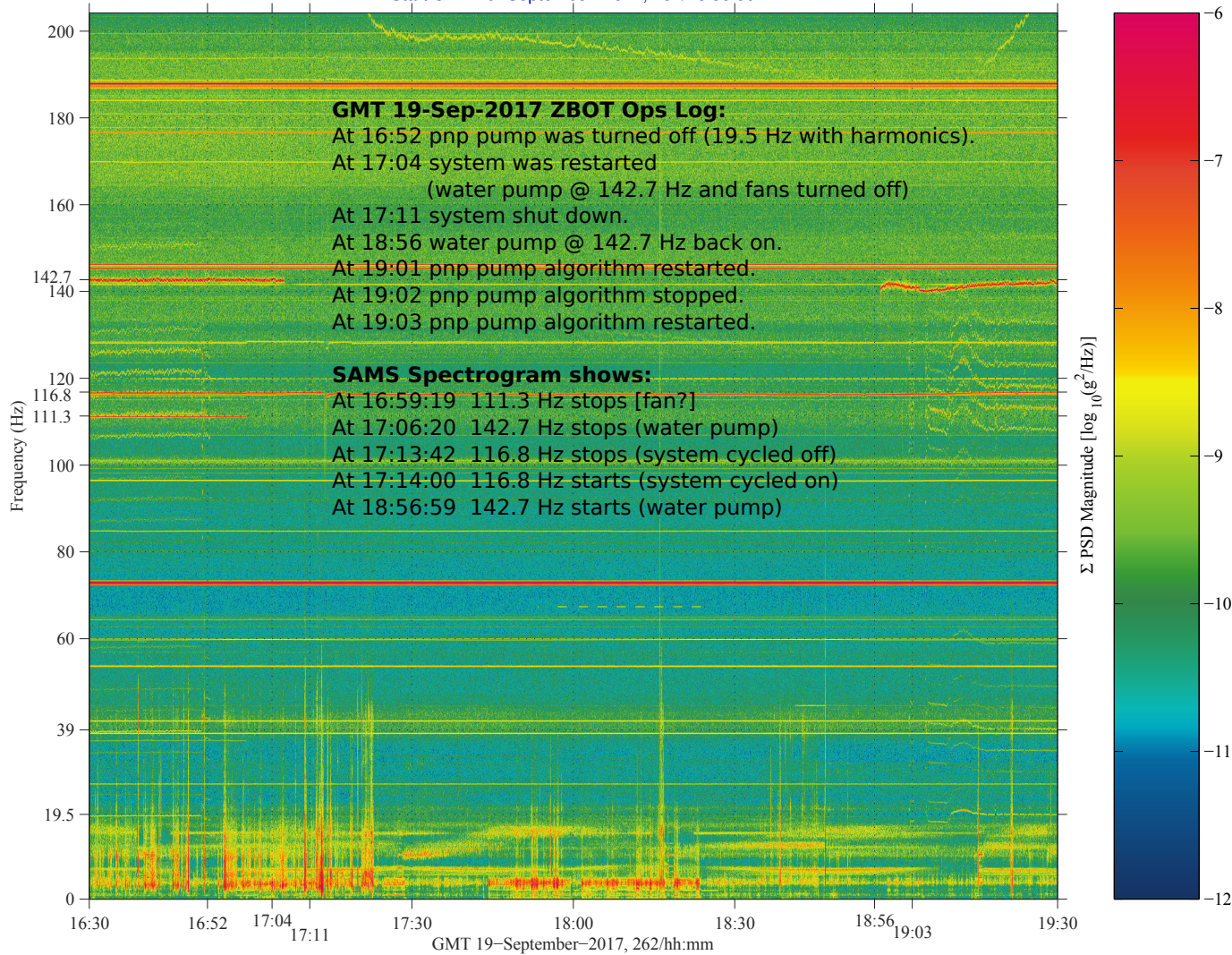


## ZBOT Checkout 2017-09-19 Qualify

sames, es09 at LAB1S2, MSG, Ceiling Plate ZBOT:[123.60 70.08 169.32]  
 500.0000 sa/sec (204.20 Hz)  
 $\Delta f = 0.122$  Hz, Nfft = 4096  
 Temp. Res. = 2.192 sec, No = 3000

SAMES, es09, LAB1S2, MSG, Ceiling Plate ZBOT, 204.2 Hz (500.0 s/sec)

Start GMT 19-September-2017, 262/16:30:00

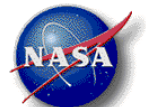


Description	
Sensor	SAMS es09 500.0 sa/sec, 204.2 Hz
Location	LAB1S2, MSG, Ceiling Plate ZBOT
Plot Type	Spectrogram

**Notes:**

- This color spectrogram was computed from measurements made by the SAMS sensor installed in the Microgravity Science Glovebox for support of ZBOT.
- The annotations show some remarks from the ZBOT console ops log and some time hacks plucked from the spectrogram too.
- The pnp signature is clearly identified with a fundamental frequency of 19.5 Hz along with several upper harmonics (see the following pages for more on this pnp pump signature).

Regime:	Vibratory
Category:	Equipment
Source:	ZBOT Checkout 2017-09-19

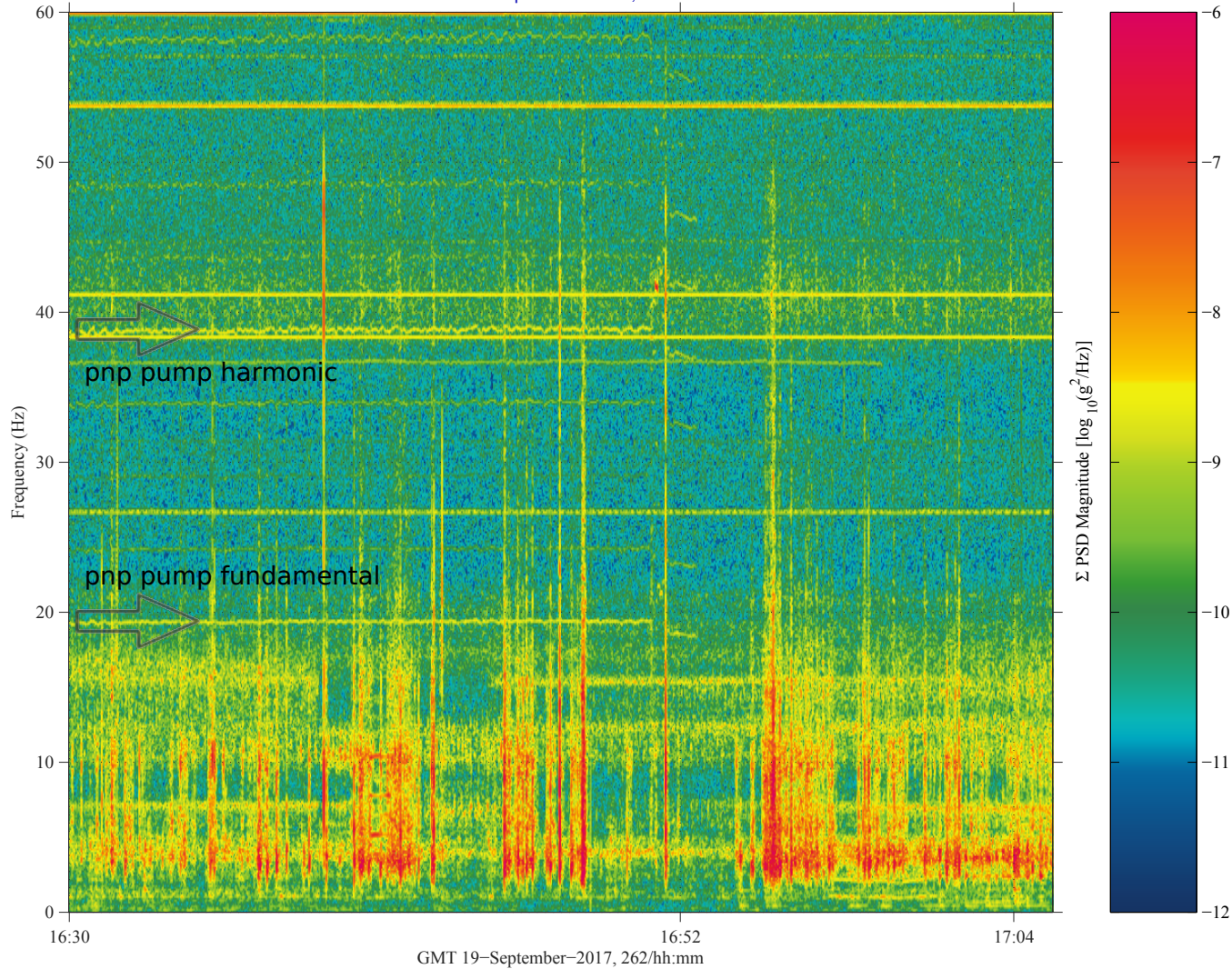


## ZBOT Checkout 2017-09-19 Qualify

samses, es09 at LAB1S2, MSG, Ceiling Plate ZBOT:[123.60 70.08 169.32]  
 500.0000 sa/sec (204.20 Hz)  
 $\Delta f = 0.122$  Hz, Nfft = 4096  
 Temp. Res. = 2.192 sec, No = 3000

SAMSES, es09, LAB1S2, MSG, Ceiling Plate ZBOT, 204.2 Hz (500.0 s/sec)

Start GMT 19–September–2017, 262/16:30:00



Sum  
 Hanning, k = 4924  
 Span = 179.85 minutes

Description	
Sensor	SAMS es09 500.0 sa/sec, 204.2 Hz
Location	LAB1S2, MSG, Ceiling Plate ZBOT
Plot Type	Spectrogram

**Notes:**

- This plot is a zoom under 60 Hz for a bit over a half hour to most clearly show the pnp pump fundamental at 19.5 Hz and a harmonic at 39 Hz turning off at around 16:52.

Regime:	Vibratory
Category:	Equipment
Source:	ZBOT Checkout 2017-09-19

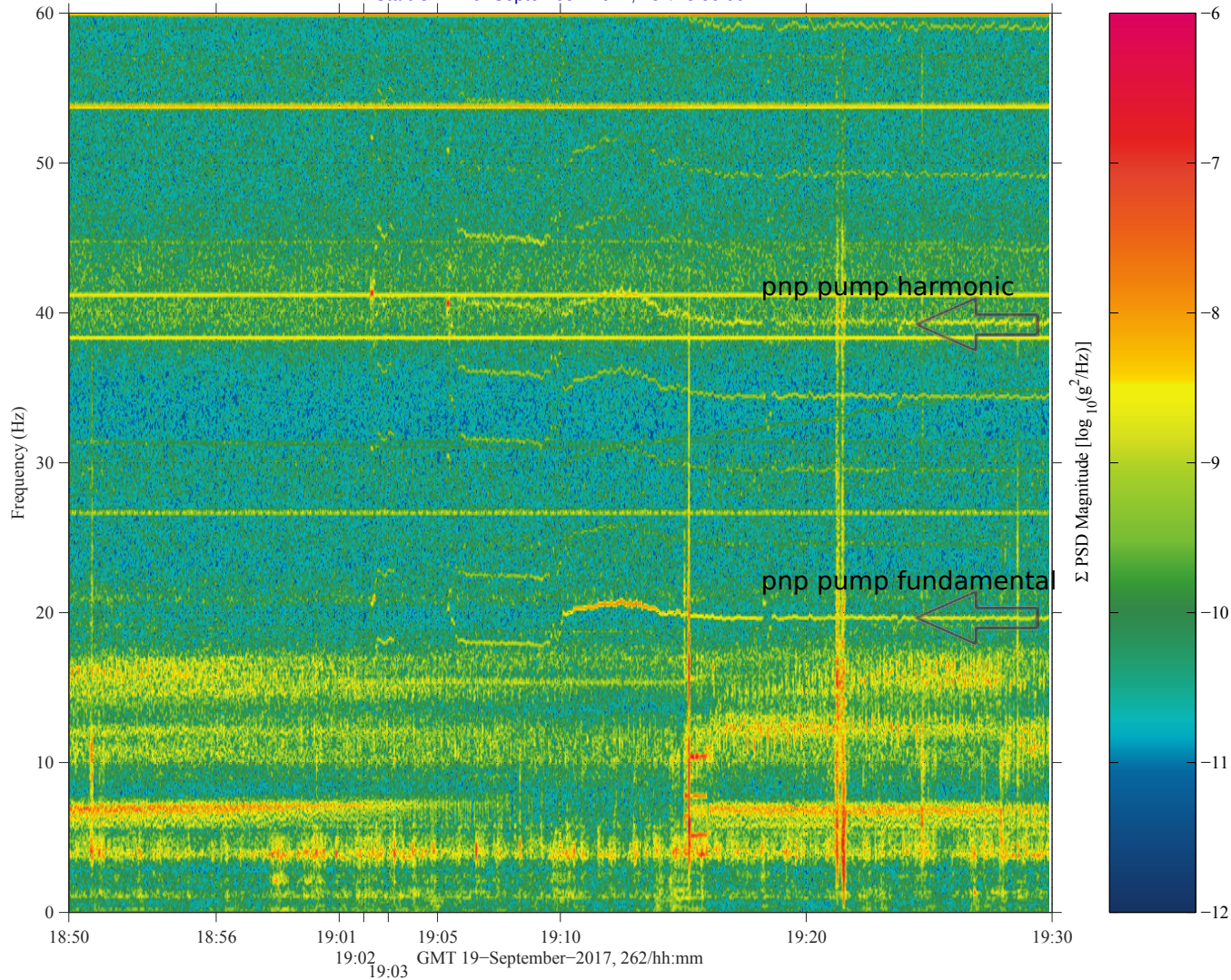


## ZBOT Checkout 2017-09-19 Qualify

samses, es09 at LAB1S2, MSG, Ceiling Plate ZBOT:[123.60 70.08 169.32]  
 500.0000 sa/sec (204.20 Hz)  
 $\Delta f = 0.122$  Hz, Nfft = 4096  
 Temp. Res. = 2.192 sec, No = 3000

SAMSES, es09, LAB1S2, MSG, Ceiling Plate ZBOT, 204.2 Hz (500.0 s/sec)

Start GMT 19-September-2017, 262/18:50:00



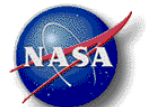
Sum  
 Hanning, k = 4924  
 Span = 179.85 minutes

Description	
Sensor	SAMS es09 500.0 sa/sec, 204.2 Hz
Location	LAB1S2, MSG, Ceiling Plate ZBOT
Plot Type	Spectrogram

**Notes:**

- This spectrogram is a zoom below 60 Hz and later on in the ops period showing the reappearance of the pnp signature when it was turned back on (and with some algorithm cycling applied to that pump).

Regime:	Vibratory
Category:	Equipment
Source:	ZBOT Checkout 2017-09-19

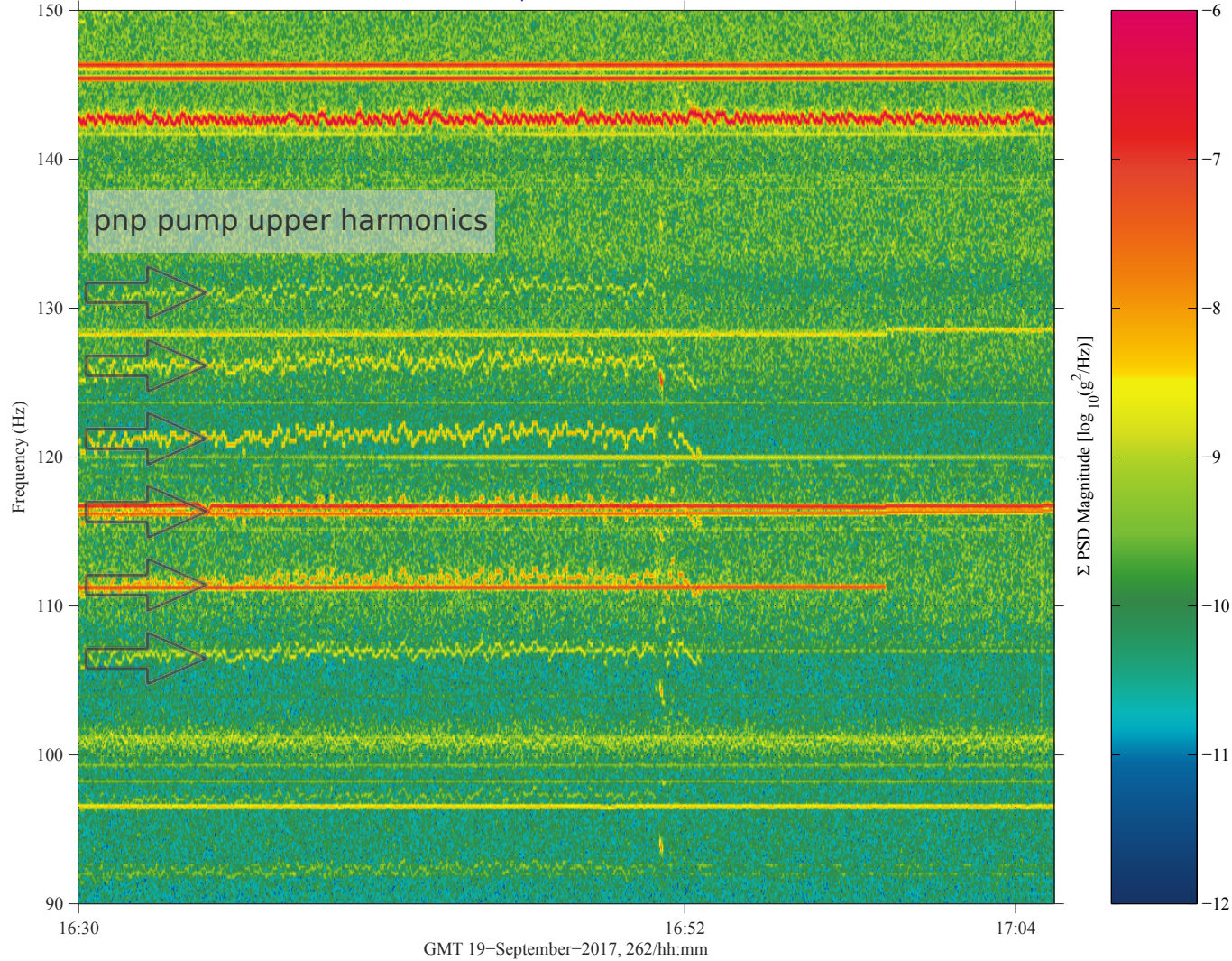


## ZBOT Checkout 2017-09-19 Qualify

samses, es09 at LAB1S2, MSG, Ceiling Plate ZBOT:[123.60 70.08 169.32]  
 500.0000 sa/sec (204.20 Hz)  
 $\Delta f = 0.122$  Hz, Nfft = 4096  
 Temp. Res. = 2.192 sec, No = 3000

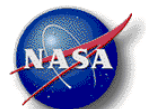
SAMSSES, es09, LAB1S2, MSG, Ceiling Plate ZBOT, 204.2 Hz (500.0 s/sec)

Start GMT 19–September–2017, 262/16:30:00



Description	
Sensor	SAMS es09 500.0 sa/sec, 204.2 Hz
Location	LAB1S2, MSG, Ceiling Plate ZBOT
Plot Type	Spectrogram
<b>Notes:</b>	
<ul style="list-style-type: none"> <li>Another zoom, but this time above 90 Hz to show the upper harmonic components of the pnp pump.</li> </ul>	

Regime:	Vibratory
Category:	Equipment
Source:	ZBOT Checkout 2017-09-19

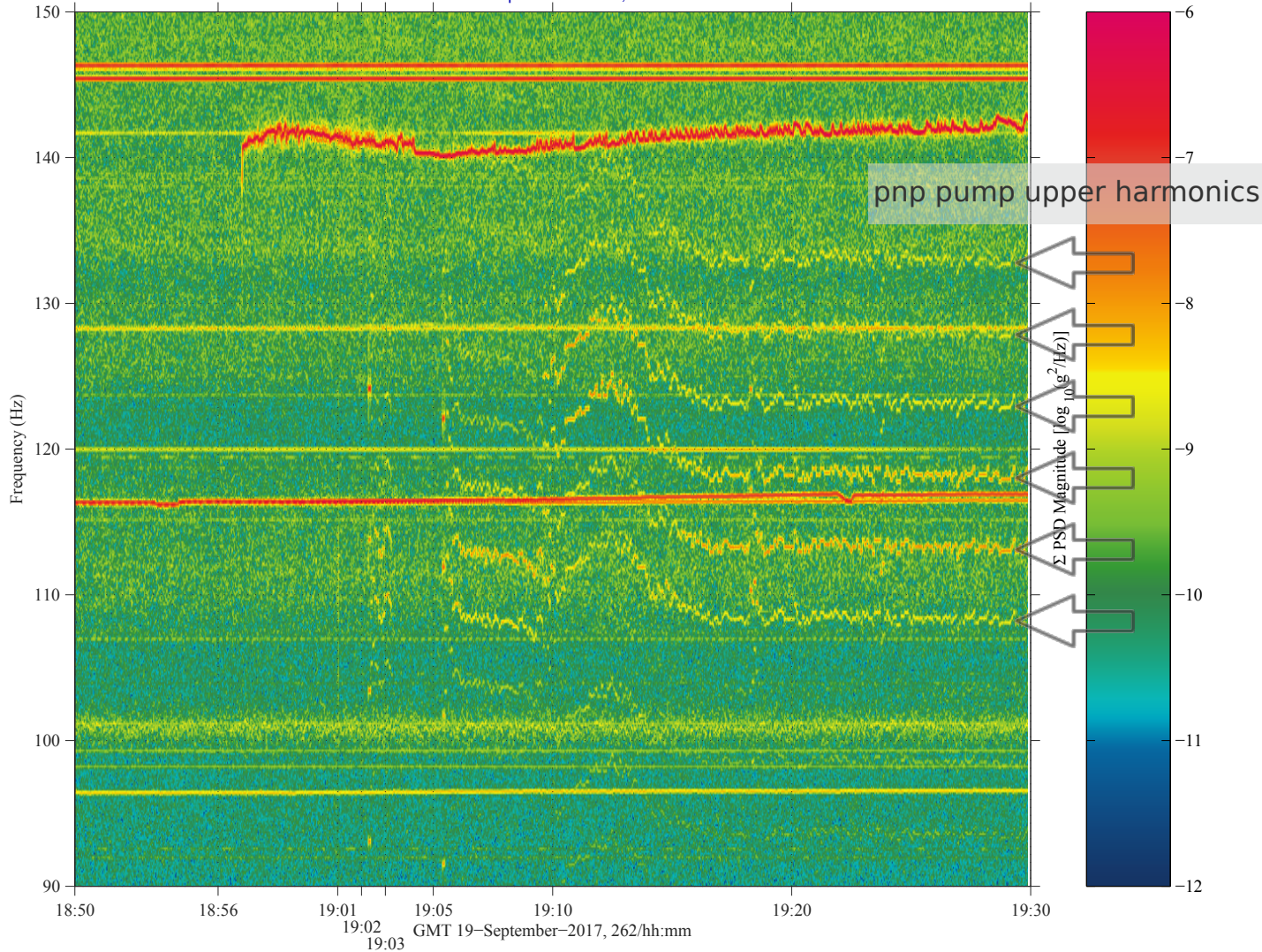


## ZBOT Checkout 2017-09-19 Qualify

samses, es09 at LAB1S2, MSG, Ceiling Plate ZBOT:[123.60 70.08 169.32]  
 500.0000 sa/sec (204.20 Hz)  
 $\Delta f = 0.122$  Hz, Nfft = 4096  
 Temp. Res. = 2.192 sec, No = 3000

SAMSES, es09, LAB1S2, MSG, Ceiling Plate ZBOT, 204.2 Hz (500.0 s/sec)

Start GMT 19-September-2017, 262/18:50:00



Sum  
 Hanning, k = 4924  
 Span = 179.85 minutes

Description	
Sensor	SAMS es09 500.0 sa/sec, 204.2 Hz
Location	LAB1S2, MSG, Ceiling Plate ZBOT
Plot Type	Spectrogram
<b>Notes:</b>	
<ul style="list-style-type: none"> <li>A final spectrogram to show the reappearance of pnp pump signature upper harmonics when the pump was restarted.</li> </ul>	

Regime:	Vibratory
Category:	Equipment
Source:	ZBOT Checkout 2017-09-19

