

RPW In-Flight EMC Characterization

This page presents the EMC characterization for RPW in-flight.

EMC Frequency Coverage

Frequency (Hz)	Origin	Impact on RPW
8	AOCS Synchronisation pulse (ASP)	Impact on SCM which could be mitigated
15 360	MAG drive	
Around 50 000	Due to Bias currents. See EMC_Teleconf_11032021_RPW_Status.pdf below for more details.	Large impact on TNR-HFR and TDS
80 000 + harmonics	Reaction wheel (RW) electronic box	Large impact on TNR-HFR
120 000	120 kHz lines of the central power distribution unit (PCDU APR converters) radiated by the Solar Panels	Major impact on TNR-HFR Major impact on TDS but which could be mitigated (flight S/W update) No impact on LFR

Hereafter the number (6) and frequencies expected from the PCDU APRs DC/DC Converters (data from frequency plan provided by ADS).

APR#1 DC/DC Converter (~120 kHz)	117,6	Not Xtal	~84Hz/degC. For a 5 degC variation over 1 hour, f/f=0.3%; during TVAC frequency drift <100 ppm/h for 4 degC variation of PCDU temperature
APR#2 DC/DC Converter (~120 kHz)	118,4	Not Xtal	~84Hz/degC. For a 5 degC variation over 1 hour, f/f=0.3%; during TVAC frequency drift <100 ppm/h for 4 degC variation of PCDU temperature
APR#3 DC/DC Converter (~120 kHz)	119,3	Not Xtal	~84Hz/degC. For a 5 degC variation over 1 hour, f/f=0.3%; during TVAC frequency drift <100 ppm/h for 4 degC variation of PCDU temperature
APR#4 DC/DC Converter (~120 kHz)	120,7	Not Xtal	~84Hz/degC. For a 5 degC variation over 1 hour, f/f=0.3%; during TVAC frequency drift <100 ppm/h for 4 degC variation of PCDU temperature
APR#5 DC/DC Converter (~120 kHz)	121	Not Xtal	~84Hz/degC. For a 5 degC variation over 1 hour, f/f=0.3%; during TVAC frequency drift <100 ppm/h for 4 degC variation of PCDU temperature
APR#6 DC/DC Converter (~120 kHz)	121,1	Not Xtal	~84Hz/degC. For a 5 degC variation over 1 hour, f/f=0.3%; during TVAC frequency drift <100 ppm/h for 4 degC variation of PCDU temperature

Meetings

- [EMC_Teleconf_05032020_Perturbations_on_RPW.pdf](#)
- [EMC_Teleconf_02092020_RPW_Status.pdf](#)
- [EMC_Teleconf_11032021_RPW_Status.pdf](#)

Related Issues

- About a new and serious interference appeared on RPW starting from January 24th (after RPW was switched back on after the CSW update): <https://gitlab.obspm.fr/ROC/OpsLib/-/issues/70>