

Attachment 2 New Reaction Wheel Assembly Series 'Type L-A' Environmental Test condition

ID	item	Contents		
1	Temperature Range	Storage : $-20^{\circ}\text{C} \sim +50^{\circ}\text{C}$ Transportaion : $-20^{\circ}\text{C} \sim +40^{\circ}\text{C}$ On-orbit non-operation : $-30^{\circ}\text{C} \sim +70^{\circ}\text{C}$ *1) Turn-on : $-15^{\circ}\text{C} \sim +60^{\circ}\text{C}$ *1) On-orbit operation : $-5^{\circ}\text{C} \sim +60^{\circ}\text{C}$ *2) *1)Temperature range that does not cause any failure or unrecoverable degradation *2)Temperature range that satisfies sepcifications for function and performance and operate properly		
2	Sine wave vibration (including acceleration)	Qualification Test Level	Protoflight Test Level	Acceptance Test Level
		5 ~ 27.96Hz : 12.7 mm DA 27.96~100 Hz : 196.1m/s^2 o-p (20Go-p) sweep : 2oct/min, 1 round trip	5 ~ 27.96Hz : 12.7 mm DA 27.96~100 Hz : 196.1m/s^2 o-p (20Go-p) sweep : 4oct/min, 1 round trip	N/A
3	Random vibration (including acoustic)	<in-plane> 20 ~ 70 Hz : +6 dB/oct 70 ~ 145 Hz : $48.0\text{ m}^2/\text{s}^4/\text{Hz}$ 145 ~ 214 Hz : -8.6 dB/oct 214 ~ 1000 Hz : $15.7\text{ m}^2/\text{s}^4/\text{Hz}$ 1000 ~ 2000 Hz : -8 dB/oct Over All : $159.4\text{m/s}^2\text{rms}$ (16.3 Grms) <out-of-plane> 20 ~ 70 Hz : +3 dB/oct 70 ~ 220 Hz : $48.0\text{ m}^2/\text{s}^4/\text{Hz}$ 220 ~ 325 Hz : -6 dB/oct 325~ 1000 Hz : $22.1\text{ m}^2/\text{s}^4/\text{Hz}$ 1000 ~ 2000 Hz : -5.8 dB/oct Over All : $195.9\text{m/s}^2\text{rms}$ (20.0 Grms) time : 120 sec	<in-plane> 20 ~ 70 Hz : +6 dB/oct 70 ~ 145 Hz : $48.0\text{ m}^2/\text{s}^4/\text{Hz}$ 145 ~ 214 Hz : -8.6 dB/oct 214 ~ 1000 Hz : $15.7\text{ m}^2/\text{s}^4/\text{Hz}$ 1000 ~ 2000 Hz : -8 dB/oct Over All : $159.4\text{m/s}^2\text{rms}$ (16.3 Grms) <out-of-plane> 20 ~ 70 Hz : +3 dB/oct 70 ~ 220 Hz : $48.0\text{ m}^2/\text{s}^4/\text{Hz}$ 220 ~ 325 Hz : -6 dB/oct 325~ 1000 Hz : $22.1\text{ m}^2/\text{s}^4/\text{Hz}$ 1000 ~ 2000 Hz : -5.8 dB/oct Over All : $195.9\text{m/s}^2\text{rms}$ (20.0 Grms) time : 40 sec	<in-plane> 20 ~ 70 Hz : +6 dB/oct 70 ~ 145 Hz : $24.0\text{ m}^2/\text{s}^4/\text{Hz}$ 145 ~ 214 Hz : -8.6 dB/oct 214 ~ 1000 Hz : $7.8\text{ m}^2/\text{s}^4/\text{Hz}$ 1000 ~ 2000 Hz : -8 dB/oct Over All : $112.8\text{m/s}^2\text{rms}$ (11.5 Grms) <out-of-plane> 20 ~ 70 Hz : +3 dB/oct 70 ~ 220 Hz : $24.0\text{ m}^2/\text{s}^4/\text{Hz}$ 220 ~ 325 Hz : -6 dB/oct 325~ 1000 Hz : $11.1\text{ m}^2/\text{s}^4/\text{Hz}$ 1000 ~ 2000 Hz : -5.8 dB/oct Over All : $138.7\text{m/s}^2\text{rms}$ (14.2 Grms) time : 40 sec
4	Shock	SRS(Q = 10) [m/s^2] 100~800Hz: +8dB/oct 800~4000Hz: 9800 {1000G}		
5	Thermal vacuum	$-30^{\circ}\text{C} \sim +70^{\circ}\text{C}$ 1 cycle, $-5^{\circ}\text{C} \sim +60^{\circ}\text{C}$ 8 cycle, Vacuum : $< 133 \times 10^{-5}\text{ Pa}$ ($1 \times 10^{-5}\text{ Torr}$)		
6	Radiation	Resistance of total dose : above 300Gy		