

## Attachment 2 Environmental resistance

(Applicable to both of the 4 mode MTP and the USB/QPSK mode MTP)

	Property	Characteristics	
1	Temperature range	<Ground> Storage / Transportation: -20 to +52°C	<On-orbit> Turn on: -25 to +60°C Standby / storage: -30 to +60°C Operations: -20 to +55°C
2	Radiation resistance	≥30 krad (TID tolerance)	≥60 MeV/(mg/cm <sup>2</sup> ) (SEL tolerance)
3	Random vibration (Qualification test level)	In-plane (X / Y axis) 20 to 70 Hz :+ 6 dB/oct 70 to 700 Hz :0.2 G <sup>2</sup> /Hz 700 to 823 Hz :−8 dB/oct 823 to 1000 Hz : 0.13 G <sup>2</sup> /Hz 1000 to 2000 Hz :−8 dB/oct OA :15.08 Grms	Out of plane (Z axis) 20 to 70 Hz :+ 3 dB/oct 70 to 700 Hz :0.7 G <sup>2</sup> /Hz 700 to 823 Hz :−7.5 dB/oct 823 to 1000 Hz : 0.24 G <sup>2</sup> /Hz 1000 to 2000 Hz :−4 dB/oct OA :22.5 Grms
4	Sine wave vibration (Qualification test level)	In-plane (X / Y axis) 5 to 100 Hz :245 (m/s <sup>2</sup> ), or 25G Out of plane (Z axis) 5 to 100 Hz :245 (m/s <sup>2</sup> ), or 25G	Level tolerance: ±10% Frequency tolerance: ±2% or ±1 Hz
5	Shock (Qualification test level)	100 to 800 Hz :+ 8 dB/oct 800 to 1144 Hz :9807 m/s <sup>2</sup> srs 1144 to 1500 Hz :+9 dB/oct 1500 to 4000 Hz : 14710 m/s <sup>2</sup> srs	Level tolerance: +100% (1500 Hz to 4000 Hz), -10% Frequency tolerance: ±2% or ±1 Hz