

QUALIFICATION CERTIFICATE

NanoCom AX100

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1. Introduction

1.1 Purpose

This document describes the environmental qualification tests carried out on the following products:

- 200315 - NanoCom AX100U
- 200317 - NanoCom AX100UL
- 200318 - NanoCom AX100V

In the following sections, the tests and the corresponding test results are described.

1.2 References Standards

Table 1 presents the tests included in the Qualification Program with reference to ECSS documentation.

Table 1: Reference Standards

Test	ECSS/ESCC Reference	
Structural and Mechanical	Random Vibration	ECSS-E-ST-10-03C
	Sinusoidal Vibration	ECSS-E-ST-10-03C
	Mechanical Shock	ECSS-E-ST-10-03C
	Quasi static	ECSS-E-ST-10-03C
Thermal	Thermal Ambient	ECSS-E-ST-10-03C
	Thermal Vacuum	ECSS-E-ST-10-03C
Radiation TID	ESCC 22900	

2. Qualification tests

It is hereby certified that the product mentioned above has been subjected to the tests executed in relation to the standards mentions in section 1.2

2.1 Structural and Mechanical tests

Sinusoidal Vibration		
	Frequency [Hz]	Level [g]
Sine Sweep Vibration	5-8	20mm peak-peak
	8-100	4,5
Sweep rate: 2 Octaves per minute		

Random Vibration		
	Frequency [Hz]	ASD Level [g^2/Hz]
Sine Sweep Vibration	20	0,026
	20-50	0,16
	50-800	0,16
	800-2000	0,026
	2000	0,026
	Overall	14,1G rms
Duration: 120 Seconds on each axis		

Mechanical shock		
	Frequency [Hz]	Level [g]
Mechanical shock	2000	1500G
No. of pulses: 2 pulses on X,Y and Z		

Mechanical Quasi-Static			
	Frequency [Hz]	Cycles	Level[g]
Sine Burst	15	19	11,2G
No. of burst: 8 (\approx 10sec)			

Remarks: None

2.2 Thermal Vacuum Test

Thermal Vacuum Qualification levels		
Temperature range: -45°C to +55°C		
Pressure level: < 1.0 x 10 ⁻⁵ mbar		
Number of Cycles: 8		
Thermal Vacuum Test	CFT	Temperature [°C]
	1	22
	2	55
	3	-45
	4	-5
	5	55
	6	-5
	7	-45
	8	22

Remarks: None

2.3 Radiation TID Tests

Total Ionizing Dose	
Dose Rate:	0-11kRad: 2,3kRad/h 11-16kRad: 0,360kRad/h 16-22kRad: 2,36kRad/h
Dose	22 kRad (SI)
Annealing	>24 hours, 25degC
Aging	168 hours, 85degC

Remarks: None

2.4 Flight Heritage

The NanoCom AX100 is TRL 9 and has extensive flight heritage including GomSpace missions like GOMX3 as well as many customer missions.

3. Conclusion

The NanoCom AX100[U,UL,V] is tested according to the above-mentioned conditions and is fully functional and have the expected performance.

This certificate ensures that performance, test condition and test equipment are according to GomSpace quality.