FLEXXON®

RAD-HARD NAND Storage For **Aerospace** and **Outer Space Data** (AOSD)

Storage Requirements in Aerospace Applications

Systems for space exploration

- Rovers
- Telescopes
- Satellites

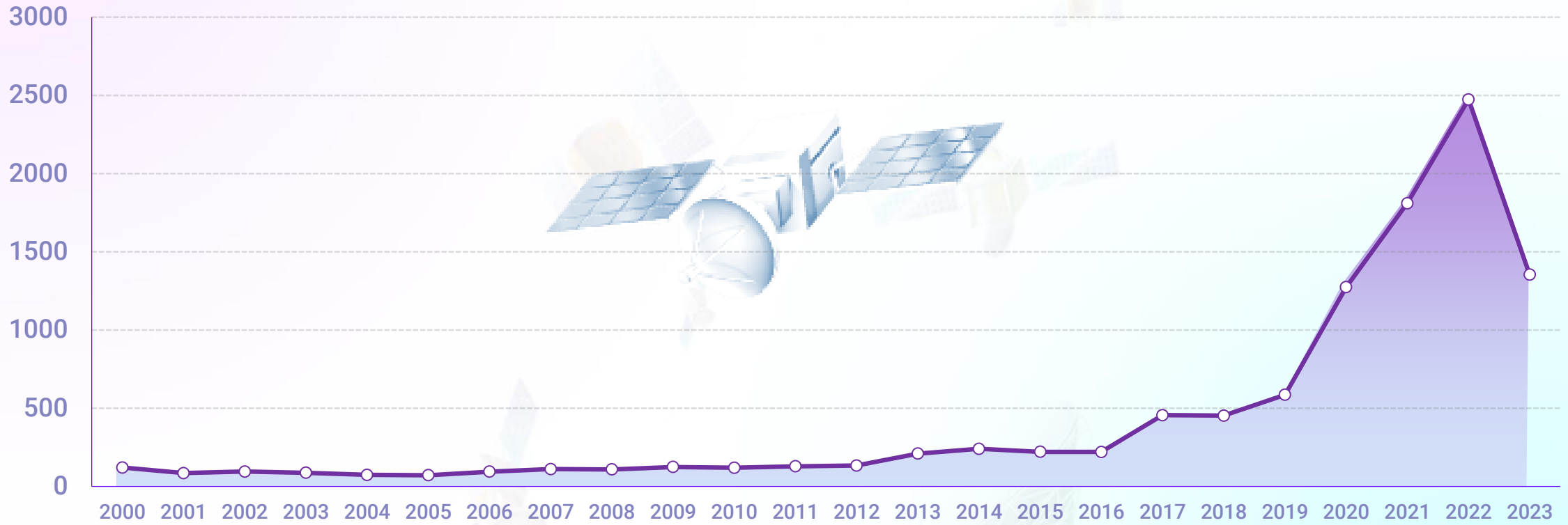
Systems for everyday life

- Weather sensors
- Cell communications
- Commodity GPS
- Defense & intelligence

Space-based terrestrial communications

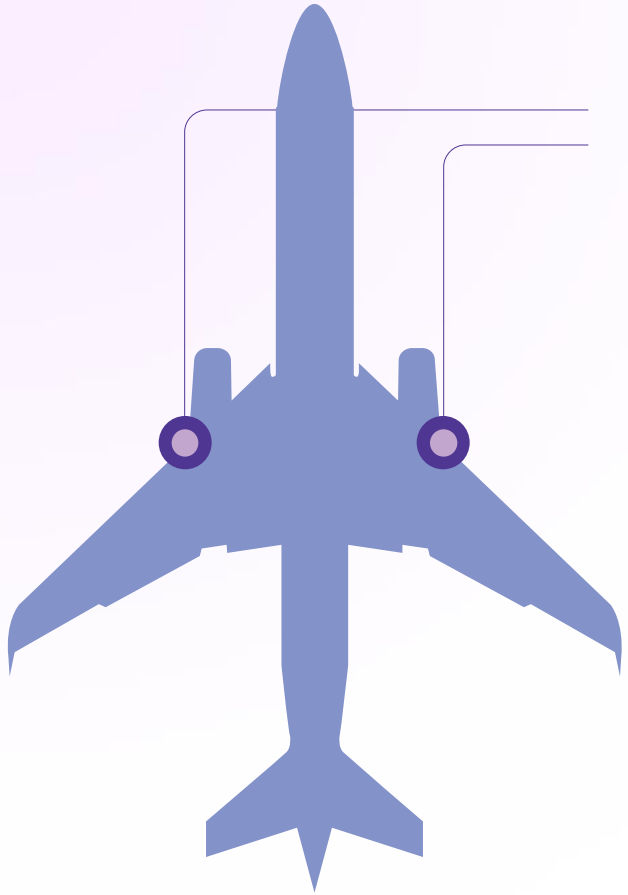
- IOT
- 5G

Number of Satellites Launched Per Year



Data source: Union of Concerned Scientist

Big Data Takes Center Stage



20 TB x **2** x **6** x **28,537** x **365**

20 terabytes of information per engine every hour

twin-engine Boeing 737

six-hour cross-country flight from NY to LA

# of commercial flights in the sky in the US on any given day

days in a year

= 2,499,841,200 TB

Sensors data from a cross-country flight

Data source: Big Data in the Aerospace Industry

NAND Storage Radiation Test for Space Applications

To ensure the storage devices can withstand the radiation environment of space without experiencing critical failures, there are some key radiation specifications and metrics to consider

Total Ionizing Dose (TID)

- ✓ Measure the cumulative ionizing radiation dose absorbed by a device
- ✓ measure in Gy (Grays) or rads (radiation absorbed doses)
- ✓ ASTM E1249, ESA/SCC Basic Specification No. ESCC 22900

Single Event Effects (SEE)

- ✓ Effects of a singe ionizing particle hitting a device and causing a transient or permanent change.
- ✓ MIL-STD-883 Method 1019.7, ESA/SCC Basic Specification No. ESCC 23600

Neutron Radiation

- ✓ Significant concern in space environments, especially in deep space missions.
- ✓ Can cause displacement damage.
- ✓ MIL-STD-883 Method 1017.2, ESA/SCC Basic Specification No. ESCC 25100

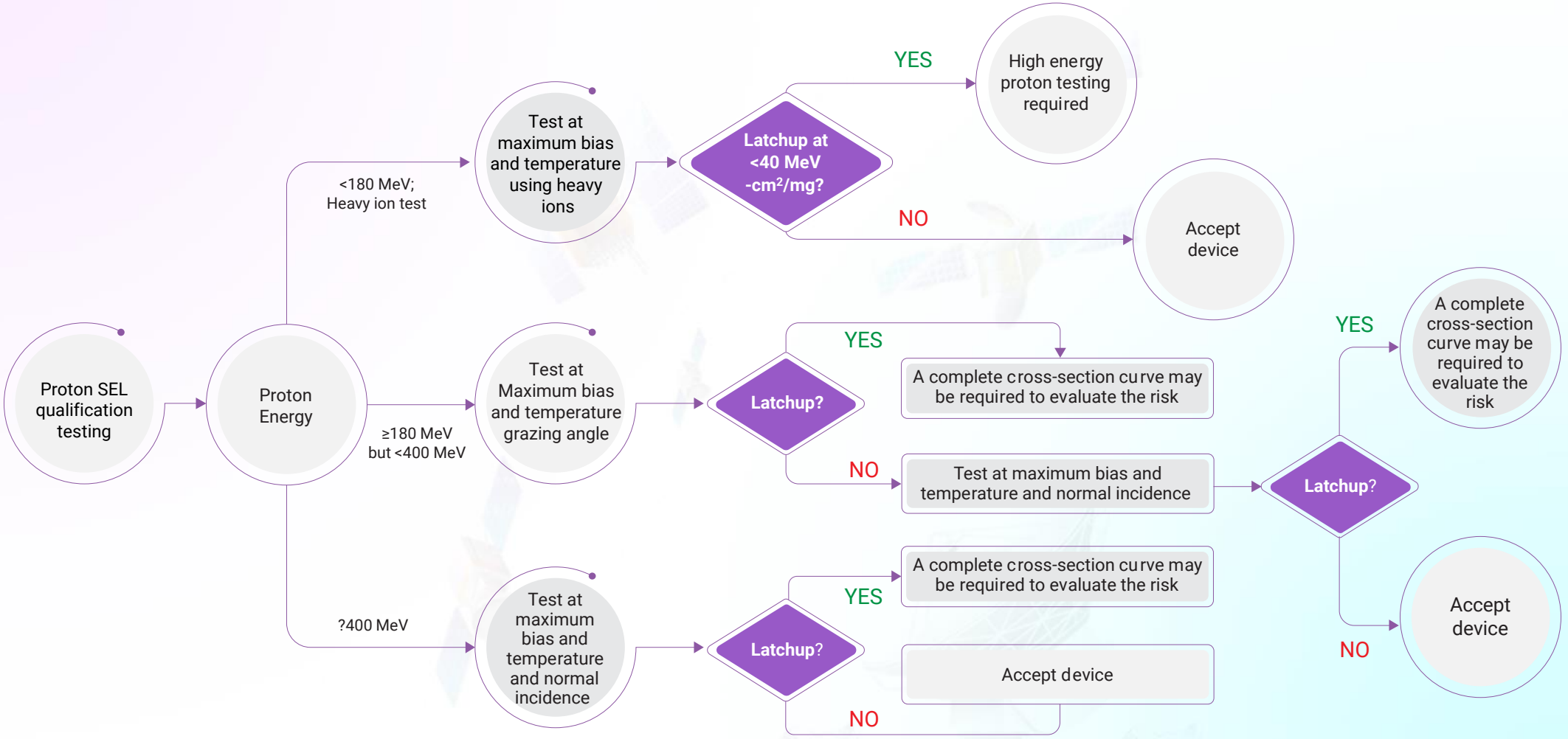
Total Non-Ionizing Dose (TNID)

- ✓ Refer to the cumulative of non-ionizing radiation dose.
- ✓ ESA/SCC Basic Specification No. ESCC 22910

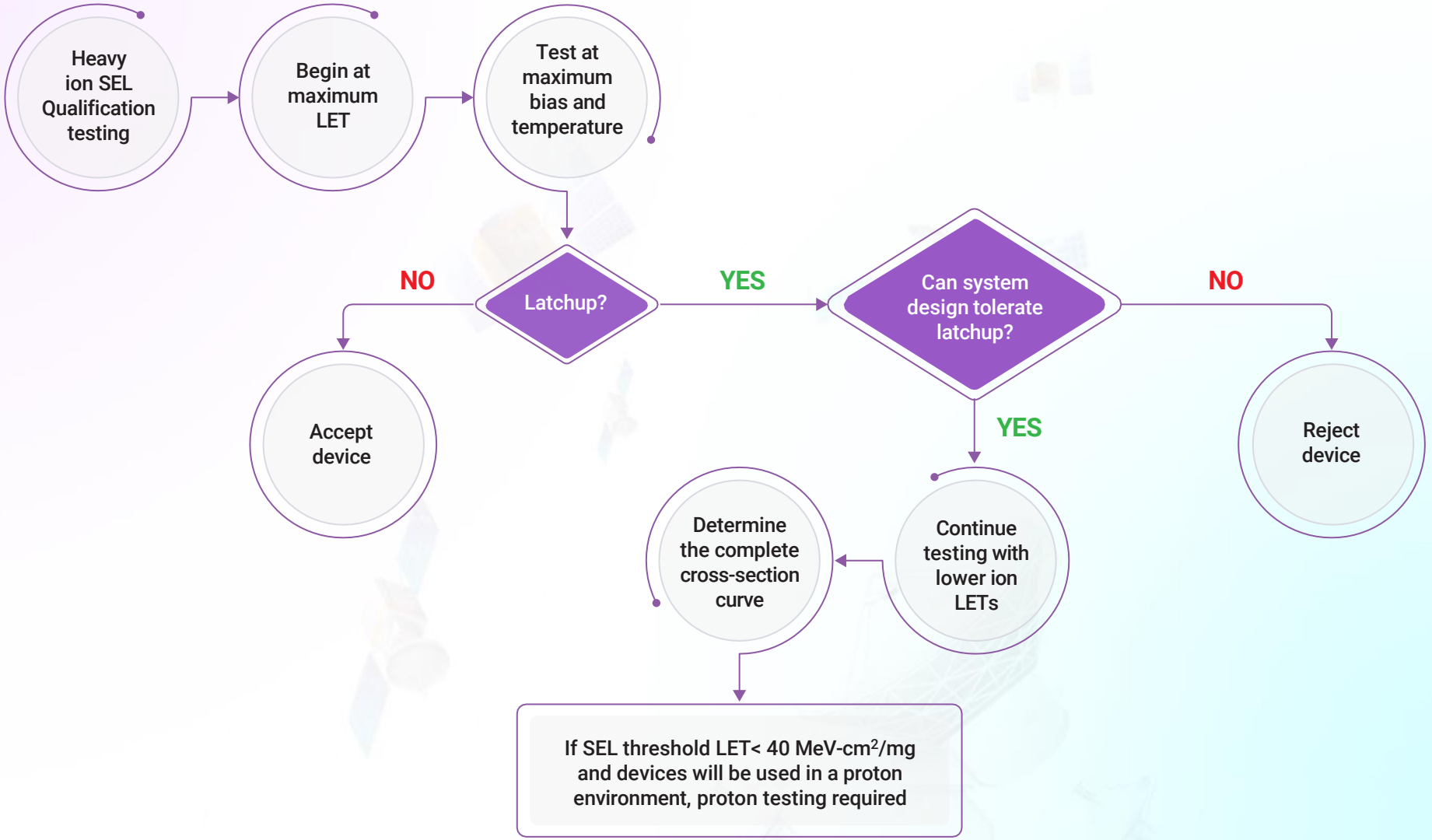
Temperature and Vacuum

- ✓ MIL-STD-883 Method 1008
- ✓ ASTM E595

Proton Radiation Test (Qualification chart)



Heavy Ion Radiation Test (Qualification chart)



FLEXXON Key Features

Highest Quality
Extremely Stringent Reliability

RAD Hard Design
Designed with RAD Hard Compliance

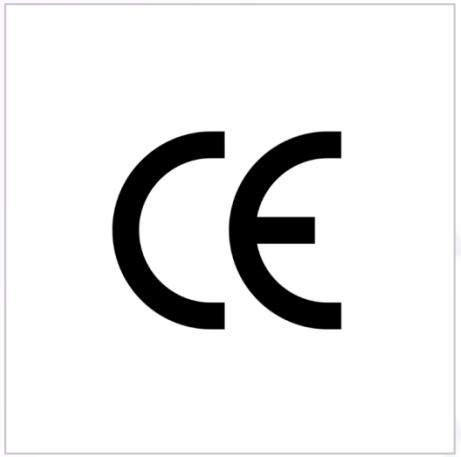
Longevity
Fixed BOM

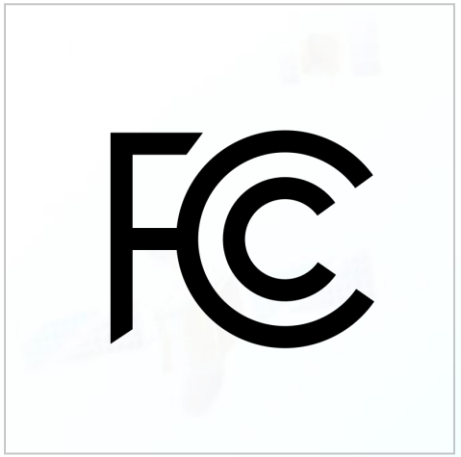
Military-grade compliance
100% Tested with MIL Requirements

Data security
Hardware and firmware design for security

Sustained Performance
Sustained both sequential and random read/write performance

CE and FCC Certified





CE and FCC Test are primarily focused on electromagnetic compatibility (EMC) and radiated emissions compliance, which relate to how electronic devices emit electromagnetic interference (EMI) and respond to electromagnetic disturbances.

Flexxon PCIe SSD (HIX Series)

- Support up to 8TB capacity
- FIPS 140-2 certified
- Hardware power loss protection
- AES 256 , TCG OPAL data encryption

Applications

Data Centre

Server

Military & Avionics system

Flexxon SSD (CE Certified)

HIX Series

EN 55032 / CISPR 32

- Emission Test
- Measures radiated and conducted emissions

EN 55024 / CISPR 24

- Measures device's susceptibility to electromagnetic disturbances and interference from external sources.

AS/NZS CISPR 32 Class B

- Similar to the CISPR 32 test
- Specific to Australia and New Zealand markets

IMMUNITY EN 61000-3-2

- Immunity test against voltage fluctuations and flicker caused by external sources.

EN 61000-3-3

- Immunity test against voltage dips, short interruptions, and voltage variations.

Flexxon SSD (FCC Certified)

HIX Series

FCC CFR Title 47 Part 15 Subpart B: Section 15.107 & 15.109

- Ensures that devices do not emit excessive electromagnetic radiation

ANSI C63.4-2014

- Measures EMI (include radiated and conducted emissions)

ICES-003 Issue 6: 2016 Class B

- Canadian standard EMC tests

Flexxon eMMC (XTRA VII Series)

Automotive Grade
Up to AEC Q100 Grade 2 (-40C-105C)

Certification
CE, FCC Certified

Radiation Test
Passed the 1 Gy X-ray test

Mainstream Capacity
3D TLC: 32GB~128GB
3D pSLC: 8GB~32GB

Applications

Military & Avionics

Drone

Networking system

Flexxon Memory Card (FxAdv II Series)

Industrial Diamond Grade
Support operating temperature (-40C-85C)

Certification
CE, FCC Certified

Radiation Test
Passed the 1 Gy X-ray test

High Performance
Up to C10, U3, V30, A2

Applications

Military & Avionics

Medical Imaging Device

Networking System

Questions?

THANK YOU

Contact Us

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