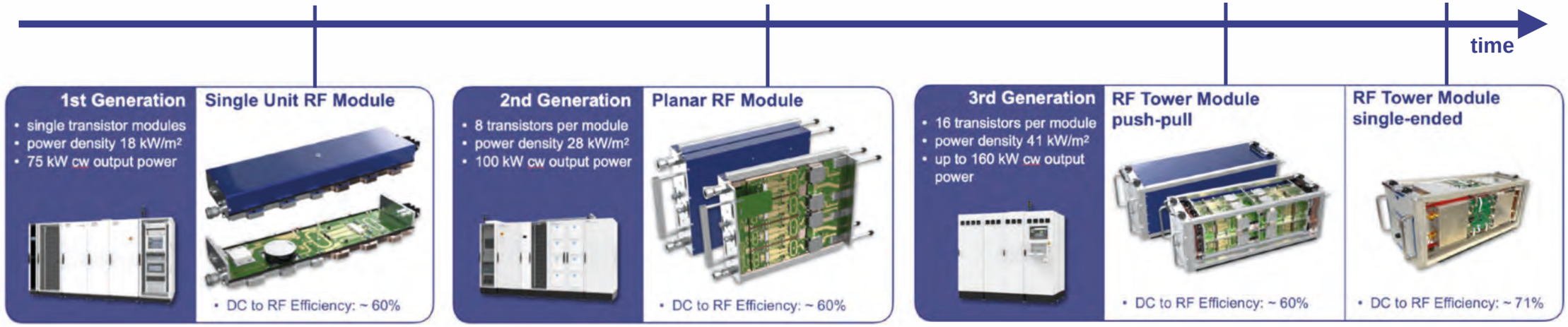
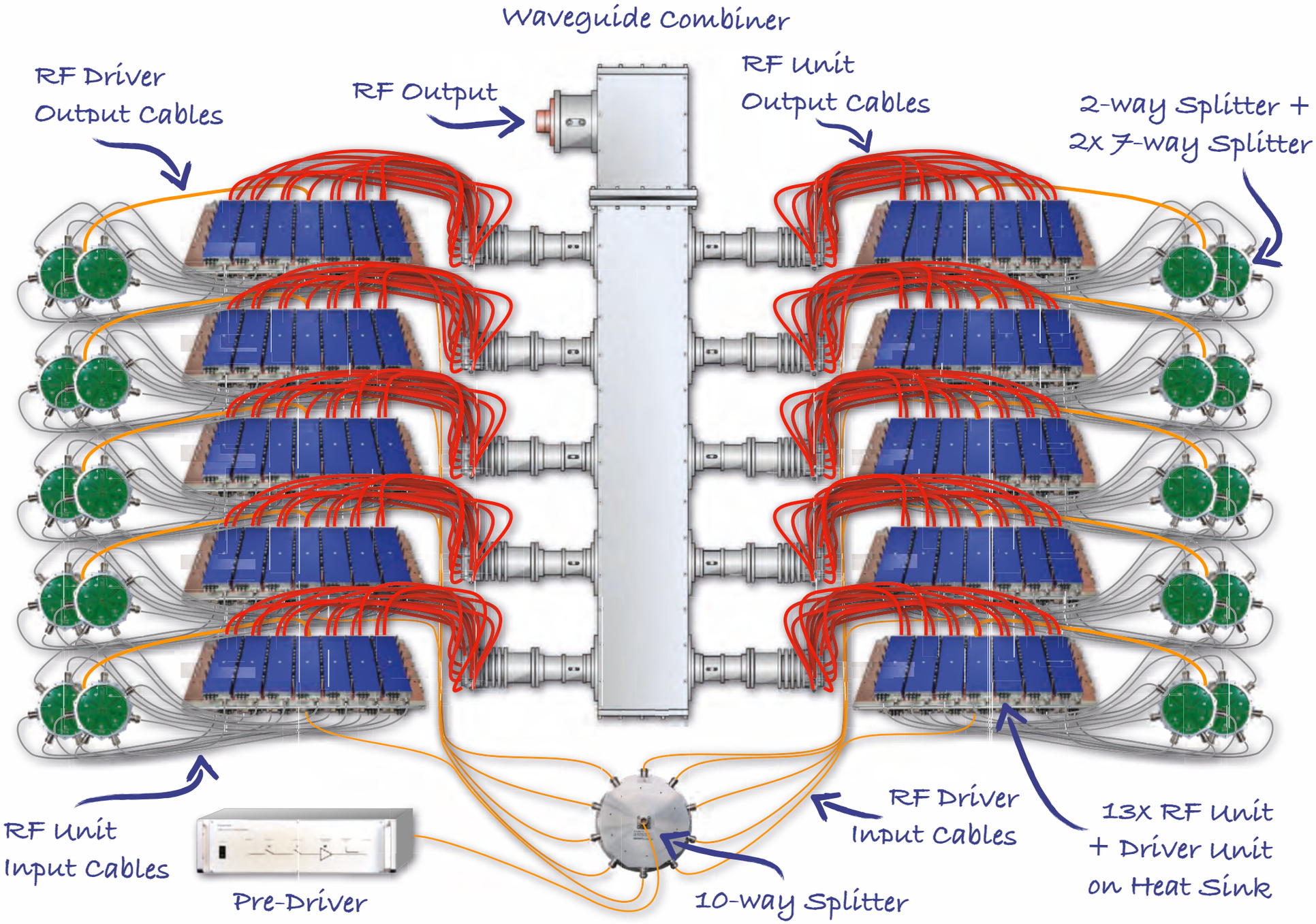
Robustness of the 3rd Generation of High-Power Solid-State RF Amplifiers for 500 MHz

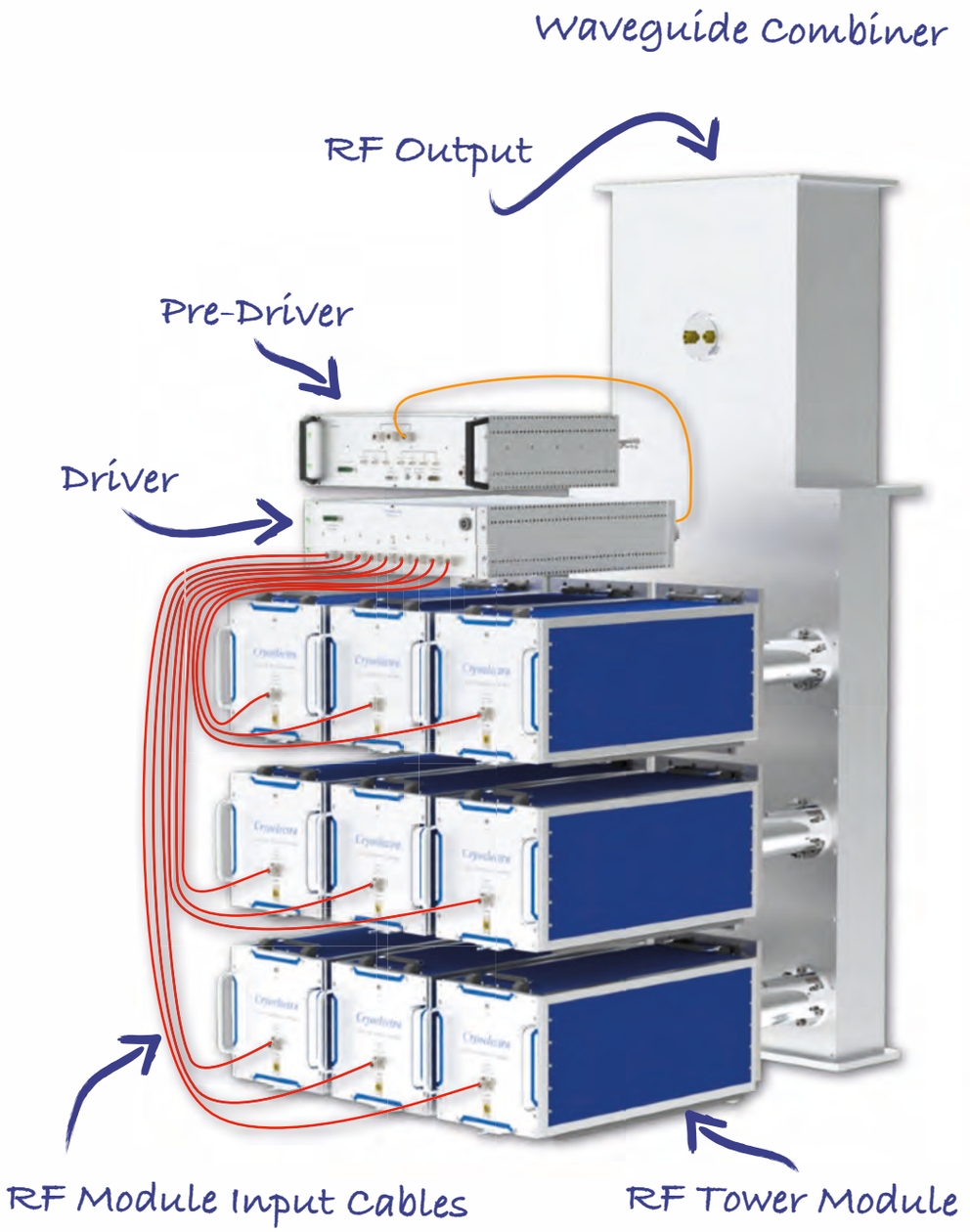
Continuous Development



1st Generation Solid-State Amplifier - CRE-331D 75kW cw - RF Scheme



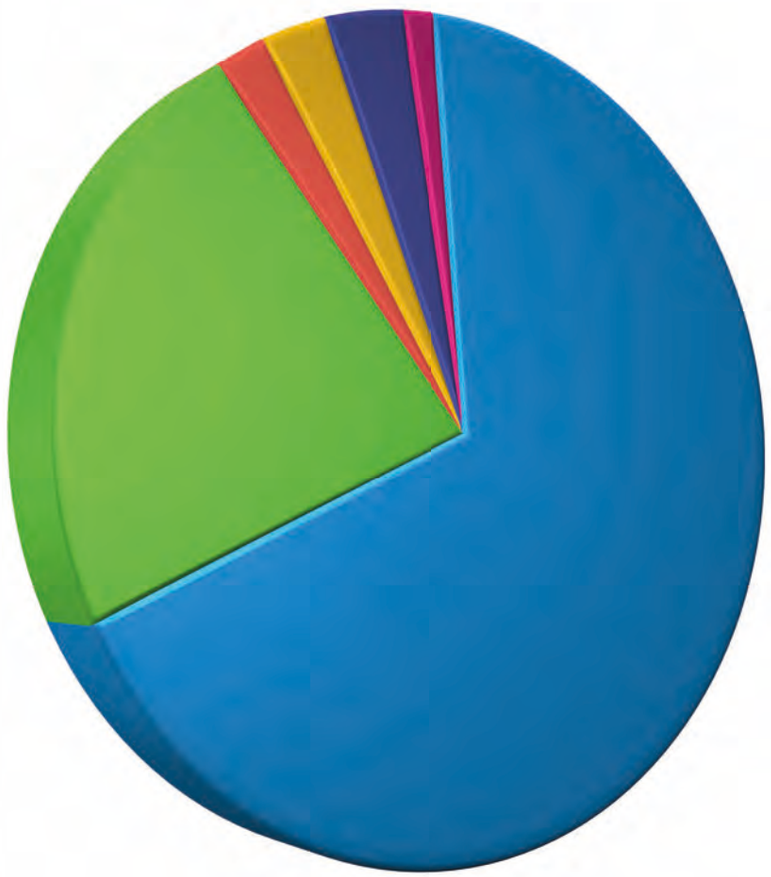
3rd Generation Solid-State Amplifier - CRE-331S 120kW cw - RF Scheme



1st Generation RF Unit Failure Statistics

Failed Components of RF Unit

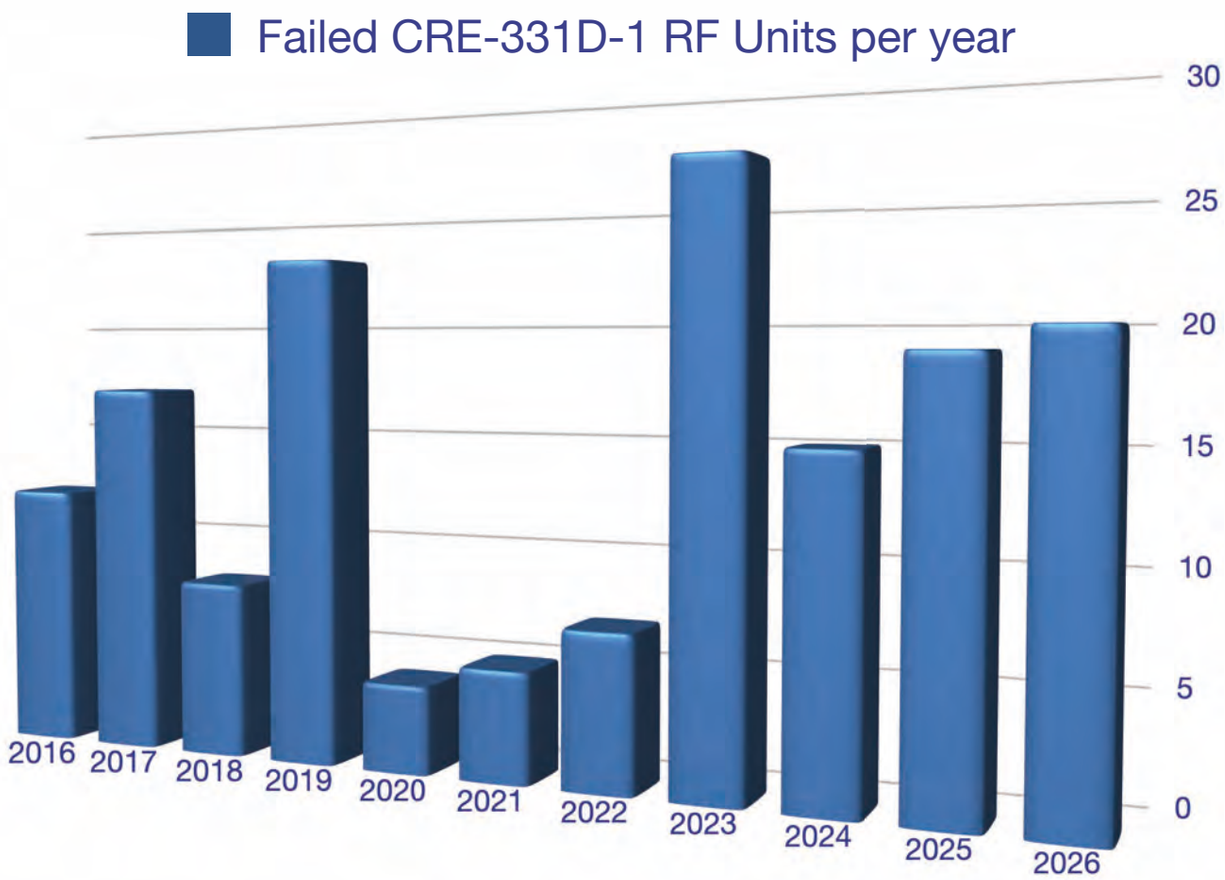
- Circulator / Circulator Soldering
- Output Connector Soldering
- Transistor
- Misc
- Mica Capacitor
- Input Connector Soldering



The 910 RF units of type 331D-1 have logged a total of 54,040,000 operating hours, with 157 of them having failed during that time. Based on the historical data, the **MTTF is 344,200 hours**.

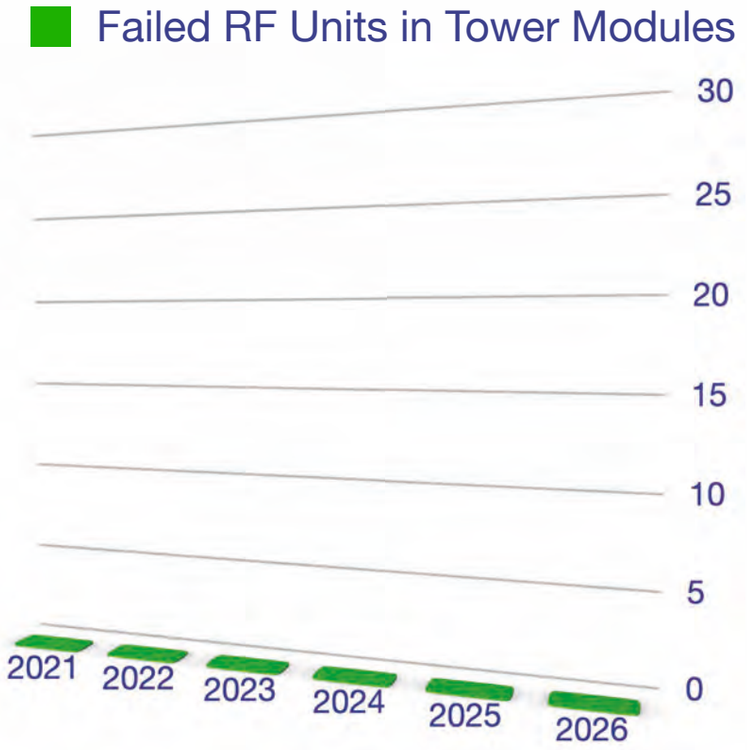
The lower bound[1] based on a 95% confidence level is **MTTF ≧ 310,510 hours**.

[1] $MTTF_L = 2T/\chi^2_{(r+1);C}$

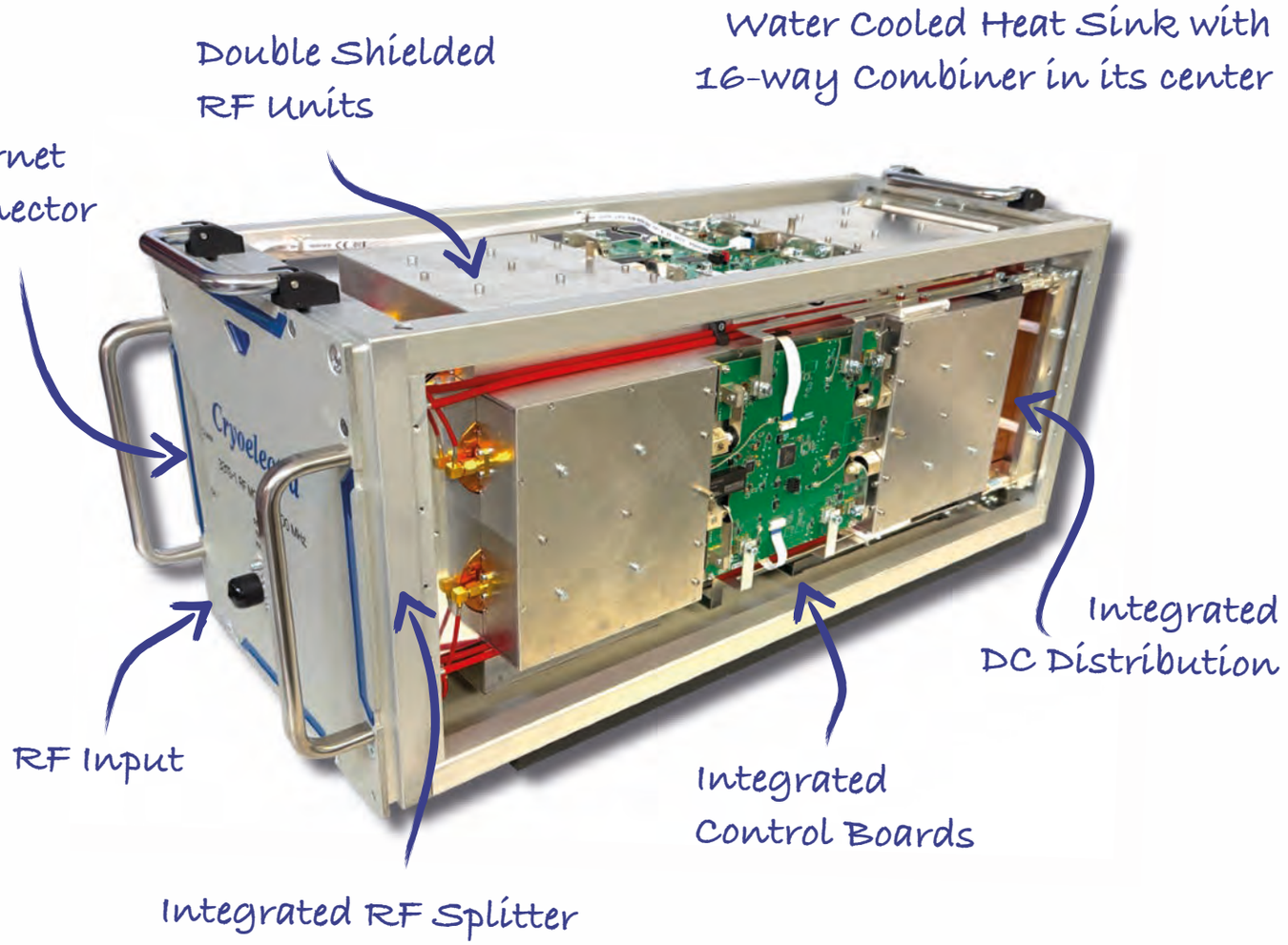


3rd Generation RF Unit Failure Statistics

A total of 2,160 RF units have collectively accumulated 18,850,800 operating hours without failure. Based on a 95% confidence level, this results in a lower bound[1] of **MTTF ≧ 6,292,600 hours**.



Gen 3.2 RF Tower Module Improvements



[1] $MTTF_L = T/[-\ln(1-C)]$.