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Wolfspeed GaN Radiation Qualification Test Report

Part Number: CGH40025F

1. Summary

This document defines the Radiation Qualification Test requirements and the successful completion of 1,545,120 Rad (Si) for the Cree CGH40025. A 25w unmatched, gallium nitride (GaN) high electron mobility transistor (HEMT). This unit is supplied on a screw-down, flange package with a frequency of operation up to 6.0 GHz.

2. Reference Documents

- a. MIL-PRF-38534
- b. MIL-STD-883J

3. Product Information

- a. Test Vehicle: CGH40025
- b. Product Function/Frequency: 25-W RF Power GaN HEMT .5 – 6 GHz

4. Exposure Report

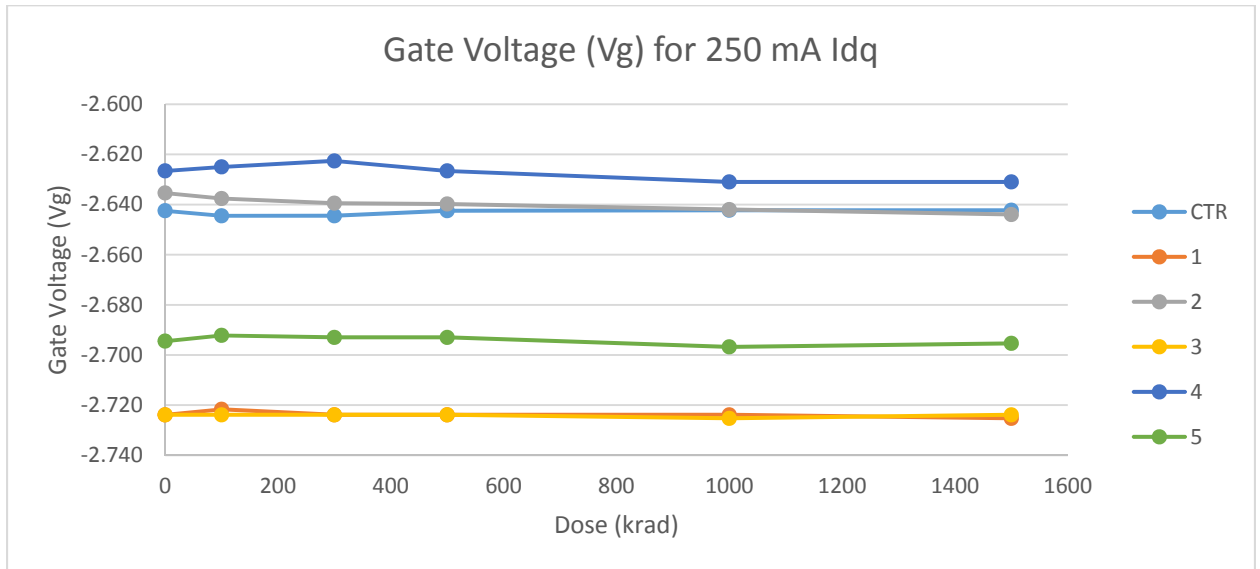
Testing Lab: VPT Rad, Radiation Lab & Test Services, Chelmsford, MA
Irradiation Date: May 14, 2015
Product: CGH400225F
Source Number: GC 220
Dosimetry Equipment: Bruker Biospin escan # 0162
Calibration due: (NIST) 03/2017 (Batch # T030901)

5. Dosimetry Results:

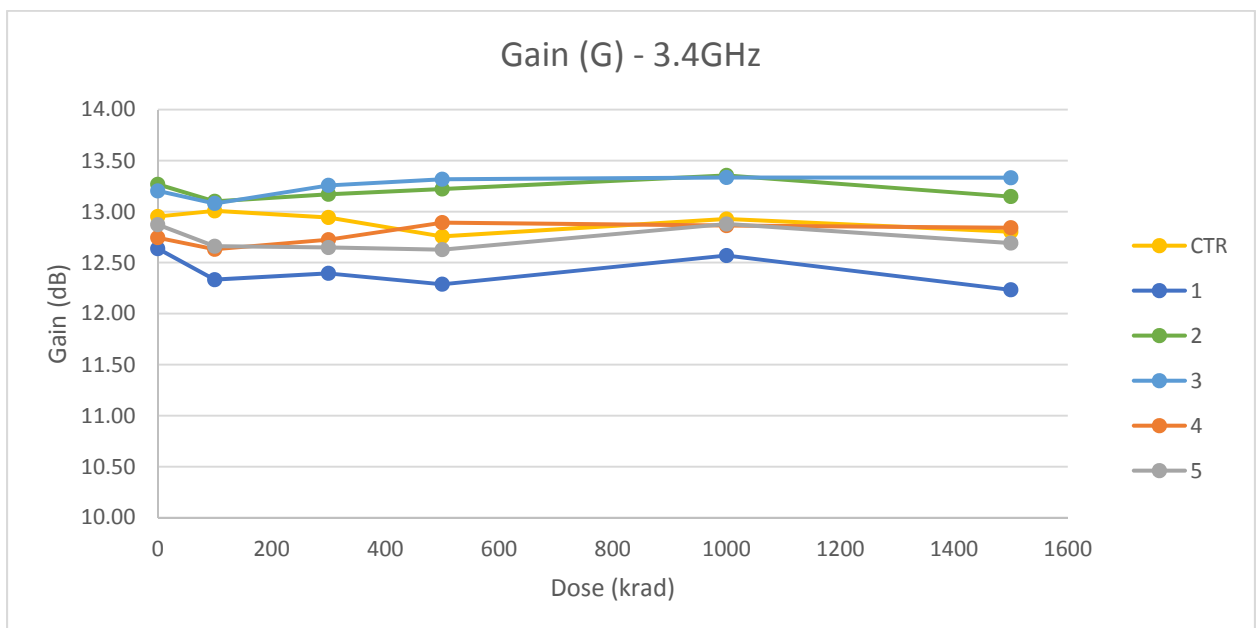
- a. The Irradiation Schedule/Dose Levels are based on the dosimetry map generated on 1/1/2015. The average dose rate is corrected for radiological decay and used to calculate the exposure time for the requested dose levels. The test specimens were exposed in an enclosed Pb/Al container to minimize dose enhancement effects.

Table 1			
Irradiation Schedule/Dose Levels			
Dose Rate Rad(Si)/sec	hr:min:sec	Incremental Dose Rad(Si)	Cumulative Dose Rad(Si)
148+/-3.0%	0:11:36	103,008	103,008
	0:23:12	206,016	309,024
	0:23:12	206,016	515,040
	0:58:00	515,040	1,030,080
	0:58:00	515,040	1,545,120

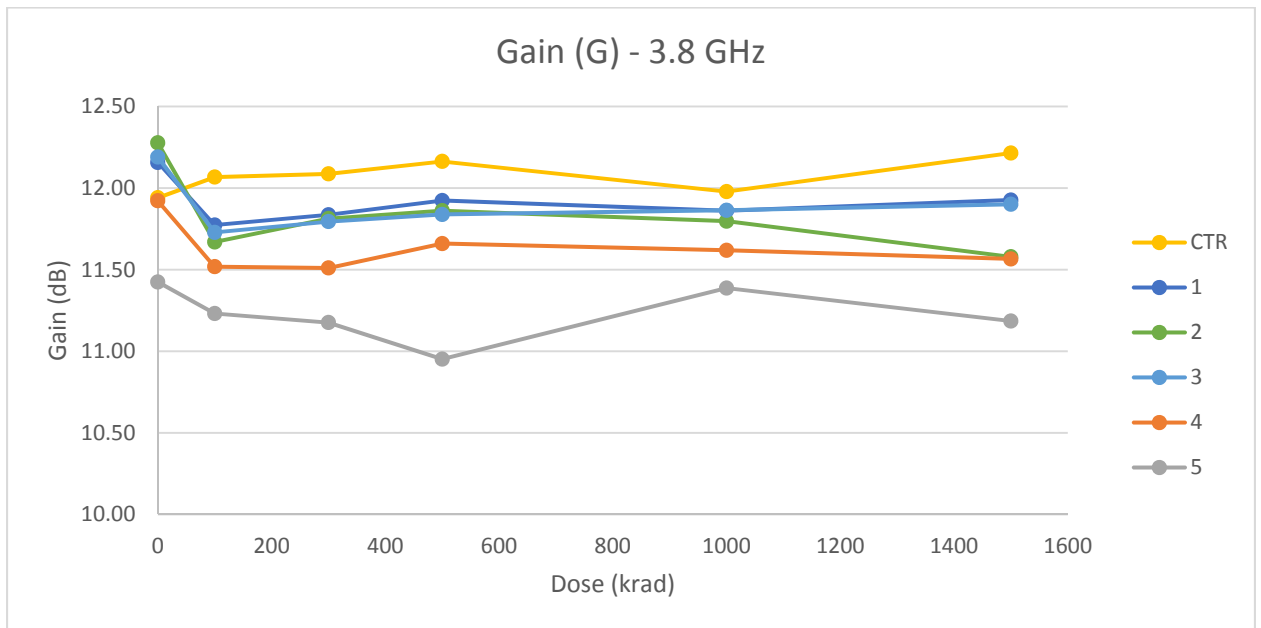
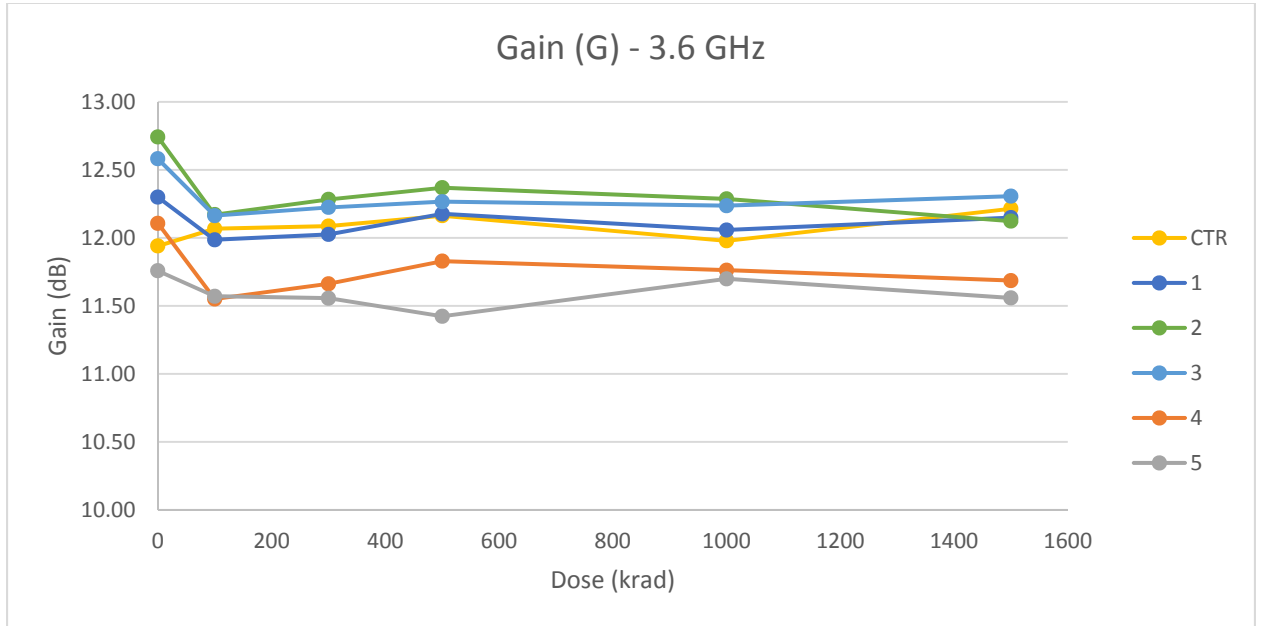
6. Test Results – Gate Voltage



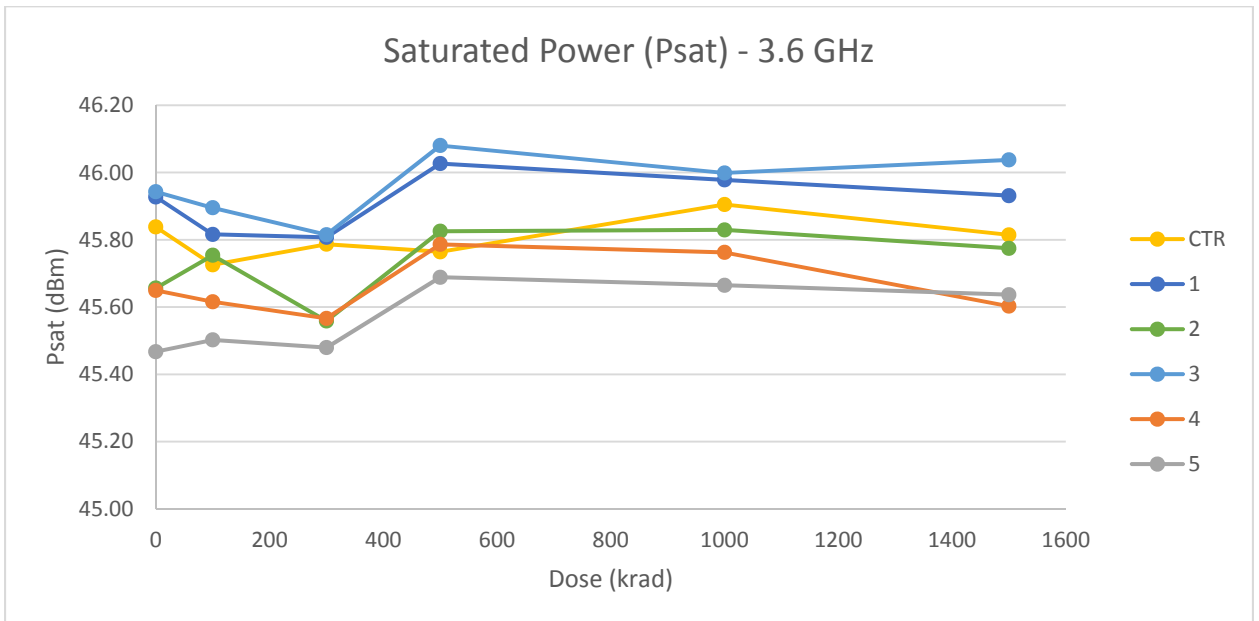
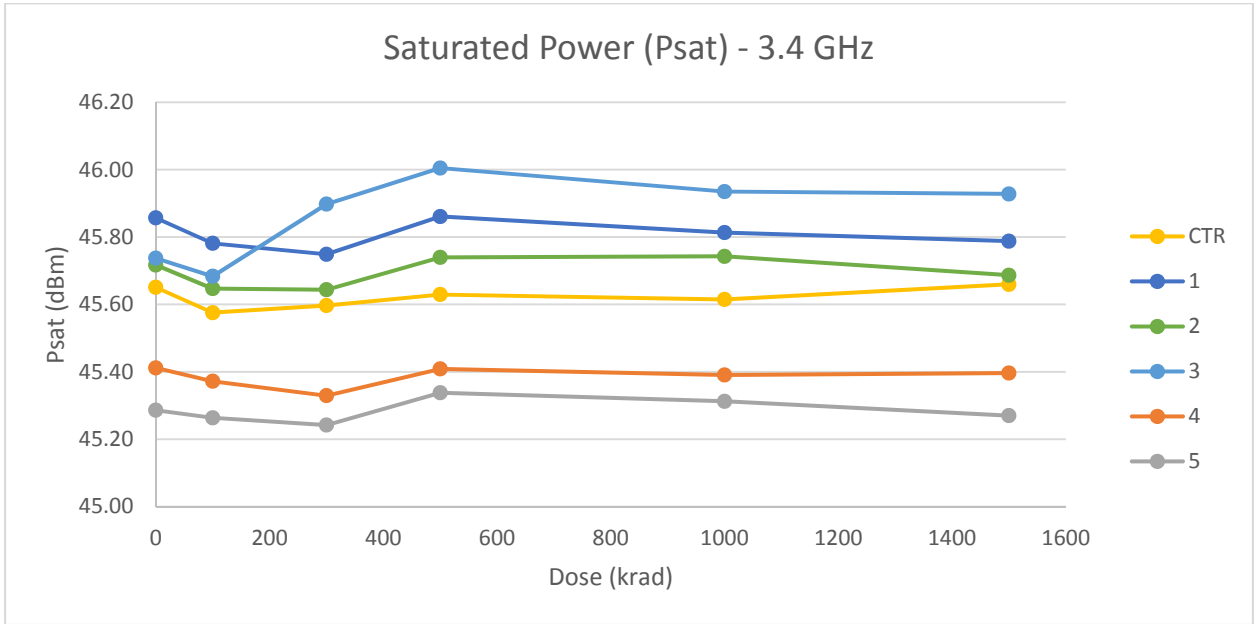
7. Test Results – Gain 3.4, 3.6 & 3.8GHz



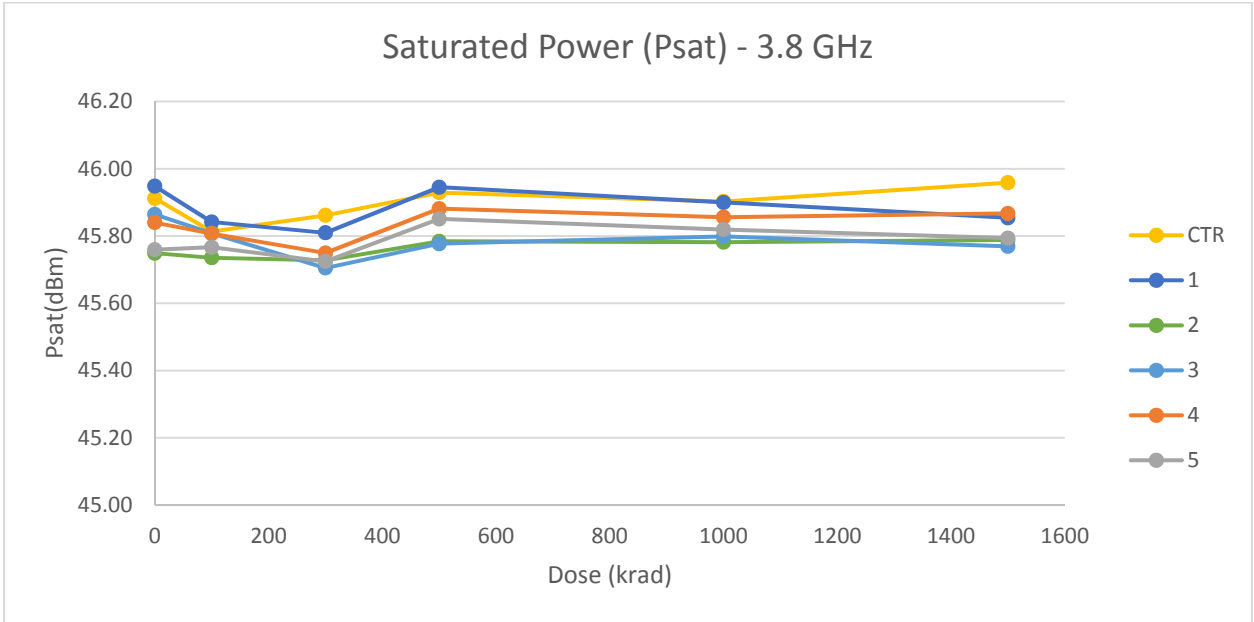
7. (cont.) Test Results – Gain 3.4, 3.6 & 3.8GHz



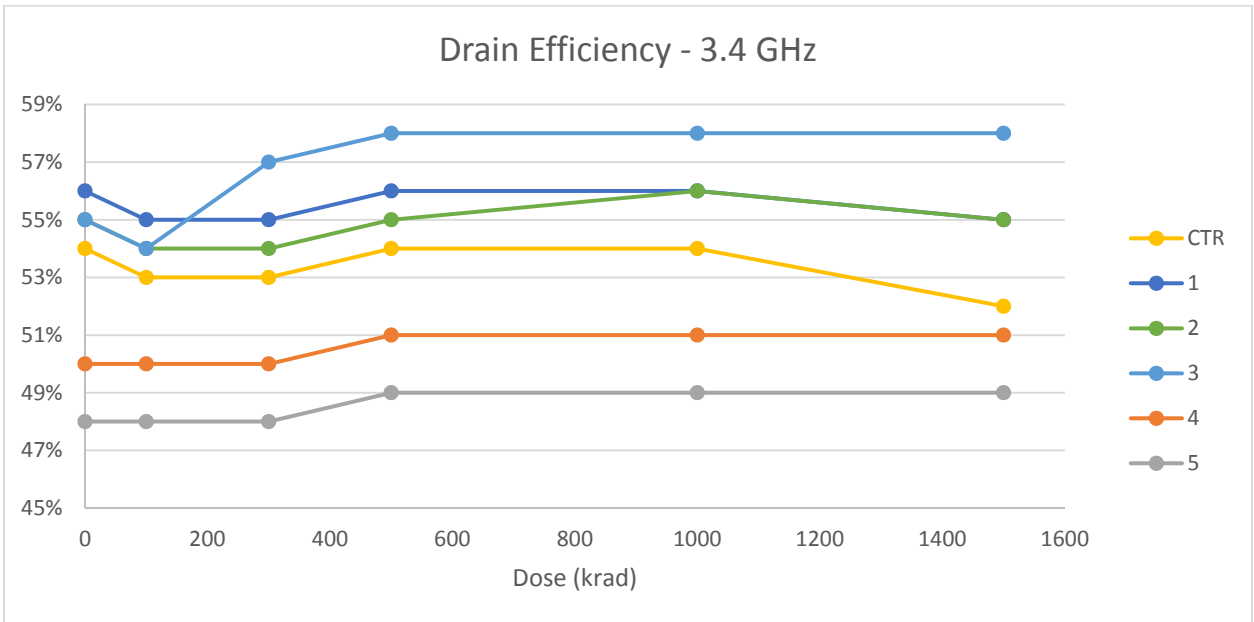
8. Test Results – Saturated Power (P_{sat}) – 3.4, 3.6 & 3.8 GHz



8. (cont.) Test Results – Saturated Power (Psat) – 3.4, 3.6 & 3.8 GHz



9. Test Results – Drain Efficiency – 3.4, 3.6 & 3.8 GHz



9. (cont) Test Results – Drain Efficiency – 3.4, 3.6 & 3.8 GHz

