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## High Temperature Operating Life (HTOL) Summary

Cage Code	SIZE	Version			
0UC32	A	#	Description	Date	Approved
Document No.		1.2	Add to Docuware	09/14/22	JCG
<b>051-07133</b>		1.1	Added more part numbers	9/14/22	MZ
Test Summary		1.0	Changed format and to Docuware versioning	3/10/21	MG

### 1. Purpose and Scope

This stress is used to identify any failure mechanisms accelerated by DC bias and elevated temperature that could occur during the lifetime of the product under test. Typical failure mechanisms that may occur include gate oxide breakdown, ionic contamination, and electromigration for silicon (Si) technologies, or gate sinking, ohmic contact degradation, and trap generation for gallium arsenide (GaAs) and gallium nitride (GaN) technologies. Process and/or assembly defects may be detected by this test in either technology. Devices are biased and operated at junction temperatures between 100°C and 160°C. MIL-STD-883 Method 1015 is used as a guideline.

### 2. Reference

MIL-STD-883, Method 1005 & 1015

Test Method Standard Microcircuits

### 3. Test Results

Part	Description	Condition	Sample Size	Date	Results
ADM-8096PC	MMIC GaAs AMP 0.09 GHz to 6 GHz	250Hrs @ 130°C, +6V	15	9/7/22	Pass
ADM-8007PC	MMIC GaAs AMP 1.5 GHz to 38 GHz	500Hrs @ 150°C, +6/+6/+5/+5V	13	8/13/22	Pass
ADM-7693	Broadband MMIC GaAs Driver AMP	1000Hrs @ 110°C, 5dBm at 10GHz, +5/+5V	20	7/7/22	Pass
MM1-0330TS	MMIC High Linearity Double Balanced Mixer	1000Hrs @ 125°C, If = 30mA	6	4/1/22	Pass
AKA-1500	MMIC Amplifier	1000Hrs @ 125°C, If = 47.6mA	12	3/28/22	Pass
APM-7516PA	GaAs MMIC Amplifier 1 - 20 GHz	1000Hrs @ 85°C, 18dBm at 4GHz, +6/+6V	15	10/8/21	Pass
AMM-7199UC	Broadband MMIC GaAs Driver AMP	1000Hrs @ 85°C, 9dBm at 15GHz, +4/-0.4V	3	6/16/21	Pass
HLM-40U	MMIC High Power Limiter	1000Hrs @ 100°C, 30dBm at 2GHz	4	6/22/21	Pass
ATN10-0067	GaAs MMIC Attenuator	1000Hrs @ 100°C, 22dBm	2	12/9/20	Pass
ATN06-0067	GaAs MMIC Attenuator	1000Hrs @ 100°C, 22dBm	2	12/9/20	Pass
BAL-0020SLG	Broadband Balun 10MHz – 20GHz	1000Hrs @ 100°C, 24dBm	4	1/11/21	Pass
MT3A-0113LPA	MMIC Mixer with Integrated Amplifier	1000Hrs @ 85°C, 7dBm input at +8/+8V	4	10/6/20	Pass
APM-7099PA	MMIC Broadband Distributed	1000Hrs @ 85°C, 16dBm input at +8/+8V	4	9/11/20	Pass
APM-7098PA	MMIC Broadband Distributed	1000Hrs @ 85°C, 16dBm input at +8/+8V	4	9/2/20	Pass
MM1K-0320LS	MMIC Mixer RF 3 - 20 GHz	1000 Hrs@100°C Rf 17dBm	11	7/31/20	Pass
MM1K-0320LS	MMIC Mixer RF 3 - 20 GHz	2000 Hrs@100°C Rf 17dBm	10	6/29/20	Pass
BAL-0003SMG	Broadband Balun 500 kHz - 3 GH	250Hrs @ 125°C, 16.8dBm	3	3/16/20	Pass
APM-6849PA	MMIC Broadband Low Phase Noise	1000Hrs @ 100°C, 15dBm input at 10GHz, +5/+5V	3	12/2/19	Pass
EVAL-MEQxx-xxA	MMIC Equalizers	312Hrs @100°C DC 60mA	20	12/2/19	Pass

PD-0030	Resistive Power Divider. DC to 30GHz	1000Hrs @ 125°C, 19dBm at 10GHz, +1.5V	11	11/26/19	Pass
PD-0040	Resistive Power Divider. DC to 40GHz	1000Hrs @ 125°C, 19dBm at 10GHz, +1.5V	11	11/26/19	Pass
MM2K-0530LS	MMIC Mixer RF 5 - 30 GHz	528Hrs @150°C 9dBm @10GHz	4	11/11/19	Pass
MM2K-0530LS	MMIC Mixer RF 5 - 30 GHz	528Hrs @150°C -29dBm @10GHz	8	11/11/19	Pass
PD-0020	Resistive Power Divider. DC to 20GHz	528Hrs @150°C 9dBm @10GHz	4	11/11/19	Pass
PD-0010	Resistive Power Divider. DC to 10GHz	528Hrs @150°C 9dBm @10GHz	3	11/11/19	Pass
BAL-0010	Broadband Balun 200 kHz - 10 G	528Hrs @150°C 4dBm @10GHz	1	11/11/19	Pass
T3-18LS	T3 Mixer 10MHz – 18GHz	528Hrs @150°C -29dBm @10GHz	1	11/11/19	Pass
MM1H-0320HS	MMIC Mixer RF 3 –20GHz	528Hrs @150°C -29dBm @10GHz	12	11/11/19	Pass
T3-20LS	T3 Mixer 10MHz – 20GHz	528Hrs @150°C -29dBm @10GHz	3	11/11/19	Pass
MM1K-1140HS	MMIC Mixer RF 11 – 40GHz	528Hrs @150°C 9dBm @10GHz	12	11/11/19	Pass
PD-0030G	Resistive Power Divider. DC to 30GHz	528Hrs @150°C 9dBm @10GHz	1	11/11/19	Pass
EVAL-MEQxx-xxA	MMIC Equalizers	312Hrs @125°C DC 60mA	20	10/14/19	Pass
EVAL-T3A-07	T3A Mixer with integrated amp	1000°C @ 70°C case temp. 16dBm input, +/--.2V	6	10/14/19	Pass
BT09035	Bias tee 2 - 6 GHz	1000Hrs @ 125°C	8	9/17/19	Pass
EVAL-AMM-6702	MMIC Broadband LO Buffer AMP	1000Hrs @ 125°C 19dBm input at 15GHz, +/--.5V	4	9/17/19	Pass
EVAL-MEQxx-xxA	MMIC Equalizers	525Hrs @125°C DC 60mA	20	9/17/19	Pass
MM1-1140HS	MMIC Mixer RF 11 - 40 GHz	216Hrs @ 150°C RF -28dBm at 10GHz	12	9/4/19	Pass
MM2K-0530LS	MMIC Mixer RF 5 - 30 GHz	276Hrs @ 150°C RF 16dBm at 10GHz	12	9/4/19	Pass
MM1-0320HS	MMIC Mixer RF 3.5 - 20 GHz	276Hrs @ 150°C RF 16dBm at 10GHz	12	9/4/19	Pass
EVAL-MEQxx-xxA	MMIC Equalizers	1992Hrs @125°C DC 60mA	20	8/26/19	Pass
MM2K-0530LS	MMIC Mixer RF 5 - 30 GHz	96Hrs @ 150°C RF 11 – 16dBm at 10GHz	12	8/20/19	Pass
MM1-0320HS	MMIC Mixer RF 3.5 - 20 GHz	96Hrs @ 150°C RF 11 – 16dBm at 10GHz	12	8/20/19	Pass
ML1-1850LS	Microlithic Mixer RF 18-50 GHz	930 Hrs @ 100°C RF 20dB at 20GHz	6	7/8/19	Pass
ADM1-0026PA	MMIC Broadband Distributed AMP	1000 Hrs @ 100°C. 20dB output power, +/--.3V	3	7/8/19	Pass
ADM1-0026PA	MMIC Broadband Distributed AMP	500 Hrs@100°C RF 19dBm at 5GHz, +/--.3V	1	3/28/19	Pass
PD-0R510	Power divider, 0.5 to 10 GHz	500 Hrs@100°C RF 19dBm at 5GHz	3	3/28/19	Pass
MT3-0113LCQG-2	MMIC T3 COTS Mixer RF 1.5 - 13	500 Hrs@100°C RF 19dBm at 5GHz	6	3/28/19	Pass
PD4-0126	4-way power divider, 1-26 GHz	540 Hrs@100°C RF 20dBm at 5GHz	1	2/21/19	Pass
ADM1-0026PA	MMIC Broadband Distributed AMP	540 Hrs@100°C RF 20dBm at 5GHz. +/--.3V	4	2/21/19	Pass
PD-0R510	Power divider, 0.5 to 10 GHz	540 Hrs@100°C RF 20dBm at 5GHz	3	2/21/19	Pass
MT3-0113LCQG-2	MMIC T3 COTS Mixer RF 1.5 - 13	540 Hrs@100°C RF 20dBm at 5GHz	6	2/21/19	Pass
A-0015EZP	Amp 5 MHz-15 GHz	1000 Hrs@100°C Rf 17dBm at 5Ghz	3	1/24/19	Pass
PD4-0126	4-way power divider, 1-26 GHz	1000 Hrs@100°C Rf 17dBm at 5Ghz	3	1/24/19	Pass
MM2K-0530LCH-2	MMIC Mixer RF 5-30 GHz +9 to17	1000 Hrs@100°C Rf 17dBm at 5Ghz	12	1/24/19	Pass
MM2K-0530LCH-2	MMIC Mixer RF 5-30 GHz +9 to17	1469 Hrs@125°C Rf 17dBm at 5Ghz	10	10/22/18	Pass
PD4-0126	4-way power divider, 1-26 GHz	1469 Hrs@125°C Rf 17dBm at 5Ghz	3	10/22/18	Pass
PD-0020G	Power Divider DC-20 GHz	1187 Hrs@100°C If = 4.5mA	8	10/10/18	Pass
M1-0420HP	Mixer RF 4-20 GHz +16 dBm A pkg	1000 Hrs@125°C, If = +12.8mA(500Hrs)&If = -12.8 (500Hrs)	10	4/20/18	Pass
M1-0420LP	Mixer RF 4-20 GHz +7 dBm A pkg	1000 Hrs@125°C, If = +12.8mA(500Hrs)&If = -12.8 (500)	10	3/27/18	Pass

MM1K-1140HCH-2	MMIC Mixer RF 11 - 40 GHz +15	1320 Hrs@125°C, If = +4.5mA(500Hrs)& If = -4.5mA (500Hrs)	10	2/6/18	Pass
M1-0420HP	Mixer RF 4-20 GHz +16 dBm A pkg	500 Hrs@125°C, Rf +17dBm	24	5/30/17	Pass
M1-0420LP	Mixer RF 4-20 GHz +7 dBm A pkg	500 Hrs @ 125°C, Rf +12sBm	24	5/30/17	Pass
Schotty Diode	Used in Marki Microwave Microlithics	48Hrs @ 125°C, If = 5mA	94	2011	Pass
Schotty Diode	Used in Marki Microwave Microlithics	1000 Hrs @ 125°C, If = 15mA	20	2011	Pass
Schotty Diode	Used in Marki Microwave Microlithics	1000 Hrs @ 125°C, If = 1mA p-p 60GHz	10	2010	Pass
Schotty Diode	Used in Marki Microwave Microlithics	1000 Hrs @ 125°C, If = 1mA p-p 60GHz	10	2008	Pass
Schotty Diode	Used in Marki Microwave Microlithics	240 Hrs @ 120°C, if = 30mA	185	2008	Pass
Schotty Diode	Used in Marki Microwave Microlithics	1000 Hrs @ 125°C, If = 15mA	11	2008	Pass
Schotty Diode	Used in Marki Microwave Microlithics	1000 Hrs @ 150°C, If = 1mA p-p 60Hz	12	2008	Pass
Schotty Diode	Used in Marki Microwave Microlithics	240 Hrs @ 120°C, IF =5mA Peak Vr=1V 60Hz	10	2007	Pass
Schotty Diode	Used in Marki Microwave Microlithics	1000 Hrs @ 120°C, IF =5mA Peak Vr=1V 60Hz	10	2007	Pass

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345 Digital Drive, CA 95037 | Ph: 408.778.4200 | Fax 408.778.4300 | info@markimicrowave.com