### TITLE: SPECIFICATION CONTROL DRAWING

PART IDENTIFIER: HR93XXXT3S

(X)=TEST CODE: A=GROUP A; B=GROUP B; C=GROUP C

(XX)=DB VALUE (01-20DB)

**DESCRIPTION:** CHIP ATTENUATOR WITH HIGH RELIABILITY TESTING.

NOTE: SINGLE LOT AND DATE CODE AVAILABLE UPON REQUEST.

**ASSEMBLY DWG: N/A** 

### 1.0 SPECIFICATIONS:

#### 1.1 ELECTRICAL:

- 1.1.1 IMPEDANCE: 50 OHMS NOMINAL.
- 1.1.2 FREQUENCY RANGE: DC-12.4 GHZ.
- 1.1.3 ATTENUATION VALUES AVAILABLE: 1-20 DB IN 1DB INCREMENTS.
- 1.1.4 ATTENUATION ACCURACY: SEE TABLE.

ATTENUATION ACCURACY								
DB	DC - 4 GHZ	4 - 8 GHZ	8 - 12.4 GHZ					
1 -3	±0.3	±0.5	±0.5					
4 - 6	±0.4	±0.5	±0.5					
7 - 10	±0.5	±0.5	±0.75					
11 - 15	±0.75	+0.5,-3.0	+0.5,-3.5					
16 - 20	±1.0	+0.5,-4.0	+1.0,-6.0					

1.1.5 VSWR: DC - 4 GHZ - 1.25 8 - 12.4 GHZ - 1.50

4 - 8 GHZ - 1.35

1.1.6 INPUT POWER (MAX @ 25°C):

1.1.6.1 AVERAGE: 2 WATTS.

1.1.6.2 PEAK: 50 WATTS FOR 10US PULSE WIDTH @ 1% DUTY CYCLE.

### 1.2 MECHANICAL:

- 1.2.1 OUTLINE DWG: SEE SHEET 3.
- 1.2.2 WORKMANSHIP: PER MIL-R-55342.

# 1.3 ENVIRONMENTAL:

- 1.3.1 ALTITUDE:
  - 1.3.1.1 NON-OPERATING: SEA LEVEL TO 50,000 FEET.
  - 1.3.1.2 OPERATING: SEA LEVEL TO 50,000 FEET.
- 1.3.2 TEMPERATURE RANGE:
  - 1.3.2.1 NON-OPERATING: -55°C TO +150°C.
  - 1.3.2.2 OPERATING: -55°C TO +150°C.
- 1.3.3 VIBRATION: PER MIL-STD-202, METHOD 204, COND. D.
- 1.3.4 SHOCK: PER MIL-STD-202, METHOD 213, COND. I.
- 1.3.5 MOISTURE RESISTANCE: PER MIL-STD-202, METHOD 106 EXCEPT SUBCYCLE STEPS 7A AND 7B AND POLARIZATION AND LOAD ARE NOT APPLICABLE.
- 1.4 ELECTROSTATIC DISCHARGE CONTROL: PER MIL-STD-1686.
- 2.0 UNIT MARKING: "DB VALUE". LEGIBILITY AND PERMANENCY PER MIL-STD-130.

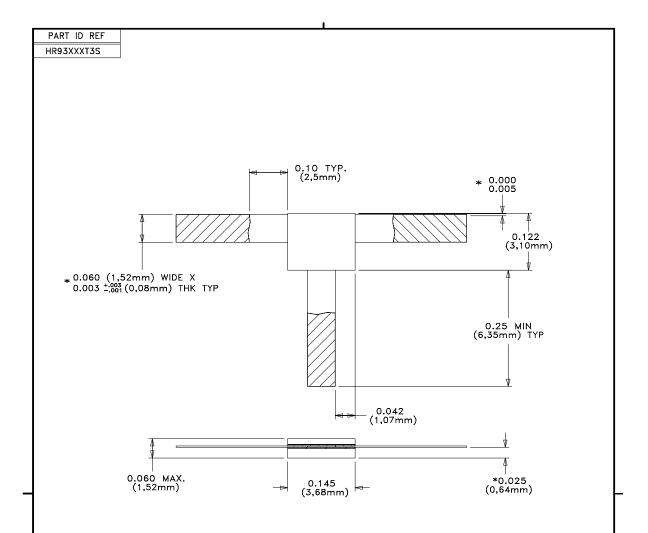
### 3.0 QUALITY ASSURANCE:

- 3.1 VERIFY 100% VISUAL PRE-CAP INSPECTION PERFORMED. PER TP-8965.
- 3.2 PERFORM GROUP A, B AND/OR C TESTING AS INDICATED BY THE PART NUMBER PER TP-8965.
  - 3.2.1 GROUP A TESTING
    - 3.2.1.1 VISUAL AND MECHNICAL INSPECTION PER THE APPROPRIATE SCD PER SHEET 3.
    - 3.2.1.2 INITIAL RF MEASUREMENTS MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
    - 3.2.1.3 THERMAL SHOCK 10 CYCLES FROM -55°C TO +125°C.
    - 3.2.1.4 AFTER THERMAL SHOCK RF MEASUREMENTS MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
    - 3.2.1.5 BURN-IN DURATION OF 168 HRS AT INPUT POWER OF PER 1.1.6.

ENG		PUR		MFG		PLAN		SM				
CC				QA								
EMC TECHNOLOGY		CAGE CODE # 24602			DWG #		100	9945	000			
8851 SW OLD KANSAS AVE. CHANGE NOTICE		ICE	EN 03-288			<b>REV LVL</b>		-				
STUA	RT, FL 34997							SHEET		1	<u>OF</u>	3

- 3.2.2 GROUP B TESTING (7 SAMPLES APPROVED FROM GROUP A).
  - 3.2.2.1 SUB-GROUP 1 (3 SAMPLES)
    - 3.2.2.1.1 LOW TEMPERATURE OPERATION
      - 3.2.2.1.1.1 USE FINAL ELECTRICAL MEASUREMENTS FROM GROUP A
      - 3.2.2.1.1.2 DISSIPATE LOW POWER FOR A DURATION OF 45 +5/-0 MINUTES. ALLOW TO STABILIZE AT 25°C FOR 24 HOURS.
    - 3.2.2.1.2 AFTER LOW TEMPERATURE ELECTRICAL MEASUREMENTS MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
    - 3.2.2.1.3 HIGH TEMPERATURE BAKE  $-+125^{\circ}\text{C}$  +/-  $5^{\circ}\text{C}$  FOR 100 HRS THEN STABILIZE AT 25°C FOR 4 HRS.
      - 3.2.2.1.3.1 VISUAL EXAMINATION INSPECT FOR EVIDENCE OF MECHANCIAL DAMAGE
    - 3.2.2.1.4 AFTER HIGH TEMPERATURE BAKE ELECTRICAL TEST MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
    - 3.2.2.1.5 TERMINATION ADHESION SOLDER A WIRE AND PULL WITH 15 GRAMS PERPENDICULAR TO AND AWAY FROM THE SURFACE AREA.
      - 3.2.2.1.5.1 VISUAL INSPECTION THERE SHALL BE NO SEPARATION OF MATERIAL.
    - 3.2.2.1.6 TERMINATION SOLDERABILITY IMMERSE EACH SAMPLE 5 SECONDS IN A SOLDER POT HELD AT 220°C +/- 5°C USING 60/40 OR 63/37 TIN-LEAD COMPOSITION.
  - 3.2.2.2 SUB-GROUP 2 (4 SAMPLES)
    - 3.2.2.2.1 INITIAL RF MEASUREMENTS USE FINAL ELECTRICAL MEASUREMENTS FROM GROUP
    - 3.2.2.2.2 LIFE TEST OPERATE SAMPLES UNITS FOR 1000 HRS AT 70°C AT INPUT POWER OF PER 1.1.6. ELECTRICAL MEASUREMENTS SHALL BE MADE AT 250 +48/-0 HRS, 500 +48/-0 HRS, AND 1000 +48/-0 HRS.
    - 3.2.2.2.3 FINAL RF MEASUREMENTS MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
- 3.2.3 GROUP C (QCI TESTING 4 SAMPLES APPROVED FROM GROUP A).
  - 3.2.3.1 LOAD LIFE TEST BURN-IN UNITS AT 70°C WITH INPUT POWER OF PER 1.1.6 FOR A DURATION OF 1000 HOURS (1½ HOURS ON, ½ HOUR OFF). MEASURE AND RECORD ELECTRICALS AT 0, 250, 500, AND 1000 HOURS.
  - 3.2.3.2 AFTER LOAD LIFE RF MEASUREMENTS MEASURE AND RECORD VSWR AND ATTENUATION AT 1 GHZ AT 25°C. TEST ACCEPTABLE LIMITS PER 4.2.1 OF TP-8965.
- 3.4 TEST DATA REQUIREMENTS:
  - 3.4.1 TEST DATA REQUIRED FOR CUSTOMER SEE PARAGRAPH 5.0 OF TP-8965.
  - 3.4.2 DATA RETENTION 24 MONTHS.
  - 3.4.3 TEST SAMPLES REQUIRED FOR CUSTOMER SEE PARAGRAPH 5.0 OF TP-8965.
- 4.0 PACKAGING: STANDARD PACK PER MC0023. (SERIALIZED WAFFLE PACK)

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## MECHANICAL SPECIFICATIONS:

SUBSTRATE:

MATERIAL - ALUMINA 96%, MIL-I-10.

TOP PLATE:

MATERIAL - ALUMINA 96%, MIL-I-10.

TERMINAL:

MATERIAL — PLATINUM GOLD, NICKEL BARRIER.
RESISTIVE ELEMENT:
MATERIAL — TANTALUM NITRIDE.
LEAD:

MATERIAL — COPPER. ASTM B152.

FINISH — GOLD, MIL—G—45204, TYPE II, CLASS 1
PRETINNED WITH Sn62 SOLDER.

LEAD ATTACHMENT:

MATERIAL — SOLDER Sn96.5 Ag3.5.

ALLOW +/-0.010 ON TOP PLATE FOR MISALIGNMENT.

\* DIMENSIONS APPLY BEFORE SOLDER. ALLOW 0.003/0.015 FOR ALL PRETINNED SURFACES. METRIC EQUIVALENTS ARE GIVEN FOR REFERENCE INFORMATION ONLY



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8851 SW OLD KANSAS AVE STUART, FL 34997 PHONE NO. (772)286-9300 FAX NO. (772)283-5286	XXX ±0.00	5   """   "	hange notic EN	03-288	DRAWING NO 100994500	0	SHEET 3	OF	3

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