



May 03, 2012.

Attn: To Whom It May Concern

Subject: Notification of Potting Material Replacement for Tusonix Filter Products.

Our supplier provided us with an EOL notice for the potting material we have been using on some Tusonix Filter Products we have been selling to your company. The products families involved are listed in attachment A

The replacement potting compound will show a black color instead of the red brownish color of the existing material.

Tusonix Inc. has performed a thorough evaluation to qualify the replacement compound it will be using to manufacture the Tusonix products.

The test results of qualification show that the product meets all the required electrical specifications, therefore the quality and performance of the product will not be negatively affected.

Attachment B is a summary of our life testing used to qualify this replacement.

PD. Samples can be provided upon request

Very truly yours.

A handwritten signature in black ink, appearing to read "Manuel Bugarini".

Manuel Bugarini
Tusonix Quality Mgr.
manuel.bugarini@ctscorp.com

Attachment A

Product family for epoxy replacement:

Bushing Feed-Through Capacitors.

2425 series

2430 series

2470 series

Bushing Filters.

4200 series

4201 series

4205 series

4251 series

4260 series

Bushing Multilayer.

4400 series

4401 series

4402 series

4403 series

4404 series

Therminal Blocks

7600-000 series

7600-500 series

7600-700 series

Attachment B

Reliability/Qualification Tests:

Capacitance:

Capacitance is measured at 25°C +/- 2°C at 40 – 50 % R.H.

High dielectric constant (Hi K) Capacitors or Filters are measured at 1 KHz. At 1.0 Volts or less.- Temperature compensating types are measured at 1 MHz through 1000 Pf, 1 KHz above. The device shall meet the electrical specification.

Dissipation Factor (DF %):

Measurement condition are the same as for capacity measurement. The device shall meet the electrical specification.

Dielectric Withstanding Voltage:

Test condition:

Working Voltage DC

500 Volts and Less

Above 500 Volts

Test Voltage DC

3.0 Times working

1.75 Times working

The test voltage will be applied to the capacitors or filters leads for 2 sec. with charging current limited to 50 m Amps..- The device shall meet the electrical specification.

Insulation Resistance:

The insulation resistance shall be 50 G ohms minimum for TC Dielectric types and 10 G ohms minimum for Hi K types at room temperature (25°C +/- 2°C at 40 – 50 % R.H.).

When measured at 100 VDC in series with a protective resistance not exceeding 1 M ohms. The electrification time shall be not more than 2 minutes nor less than 30 sec.

The device shall meet the electrical specification.

Hot Insulation Resistance:

Same as above except extreme temperatures of 85°C and 125°C were tested.

Insertion loss:

The Insertion Loss is measured at room temperature (25°C +/- 2°C at 40 – 50 % R.H.) according with Mil-STD-220, 50 ohms, no load.

Parts are tested on the following frequencies:10 MHz, 100 MHz, 1 GHz, 10 GHz.

The devices shall meet the minimum Db electrical specification requirements.

Thermal Shock:

The test is performed in an air-to-air thermal shock chamber, each temperature cycle normally consists of 15 minutes minimum after reaches at -55°C followed by 15 minutes minimum after reaches at + 125°C with a 60 seconds maximum transition time between temperature extreme. The normal test duration is 5 Cycles. All electrical parameters shall meet the specifications.

Immersion test:

The capacitors were subjected to successive cycles of immersions, each cycle consisting of immersion in a hot bath of fresh (tap) water at a temperature of 65 +5 – 0 °C, followed by immersion in a cold bath. Ref. Mil-Std-202G Method 104 condition A.

Resistance to Soldering Heat:

Parts were subjected to soldering dip method at 260 +/-5 °C for 10 +/- 1 sec. Ref. Mil-Std-202G condition B.

Life Test:

The capacitor shall be placed on test under the following condition.

Working Voltage DC	Test Voltage DC	Time
500 V and Less	2 times working	1000 hours @ 85 °C
Above 500 V	1.5 time working	1000 hours @ 85 °C

At the end of this period the capacitance shall not have change by more than 1% or 0.5 Pf (whichever is greater) for TC units, 5% or 0.5Pf (whichever is greater) for extended TC units, nor more than +/- 20% for Hi-K units. The insulation resistance shall be 2 G ohms minimum. For TC ceramics, the Q shall be 250 minimum for values of 30 pf. and above decreasing in a straight line function to 100 minimum at 0.1 pf. For Hi-K ceramic the Dissipation Factor shall not be greater 4%.

Note:

All the above testing will be depending of the individual product specification.