



## **APPLICATION NOTICE**

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EQUIPMENT:	DIGIT and DIGIT CD exciters	BULLETIN NO:	FM- 580-WCF
		Part No:	773-5000-020
		DATE:	November
			2008
UNITS AFFECTED:		ECN NO:	47034
		PAGES:	4
PURPOSE:	Power Amplifier Self Oscillation (C29 Replacement)		

Failure of C29 in the exciter's RF PA will cause unstable exciter operation and possible transmitter faults. Symptoms include unstable forward power indication that jumps around 2 to 5 watts. A variable tone may also be heard in the audio. Z series transmitters can exhibit PA over-current faults and PT series transmitters can exhibit Basler supply over-current faults. Measurement of the exciter's DC voltage on the PAV test point (TP7) on the Regulator Board will show an oscillation as viewed on an oscilloscope.

The problem has been tracked to PA self-oscillation caused by failure of C29 in the RF amplifier module. When this problem was first noticed several years ago all of the confirmed cases of a failed C29 (47uF@63V Harris part number 522-0573-000) were of the same capacitor manufacturer (NIC) and of the same date code (9705). Now we are seeing failures of C29 capacitors simply due to age.

We recommend replacing C29 if the exciter has the symptoms or is more than 7 years old.

This procedure entails the removal of C29 without accessing the bottom of the circuit board. Removal of the circuit board is not recommended due to the complexity involved in creating the thermal interface between the RF devices and the heat sink.

The replacement 82uF capacitor has been used in all exciters since Mar 2001.

Time Required:	1 Hour	
Parts:	82uF@63V	522-0654-000
Tools Required:	Philips screwdriver, 25 watt Soldering iron, Solder, Pliers	

Wire cutters

#### **Procedure for Field Modification:**

#### I. PA Module Access:

- 1. Turn off the exciter and remove AC power.
- 2. Remove the eight screws from the top of the exciter.
- 3. Remove the four counter sunk screws along the front bottom edge.
- 4. Remove the four (two per side) screws along the front edge of both the left and right side of the exciter.
- 5. Slowly tilt the front panel back and disconnect the ribbon cables connected to A2J7, A2J4 & A2J6. This will allow access for the next step.
- 6. Now disconnect the yellow plug with the white wires (A2J3), the orange plug (A2J2) and the white plug (A2J1).
- 7. Remove and set aside the front panel.
- 8. The PA module (A1) is now visible to the lower right. In order to remove the PA module, disconnect A1A1J2 and A1A1J3 by pulling straight off with a slight twisting motion.
- 9. Now remove the four counter-sunk screws holding the PA from the bottom of the exciter.
- 10. Gently slide the PA module straight out the front.
- 11. **WARNING Leave A1A1J1 connected to the PA.** This plugs into a delicate RFI header, which can easily break if removed.

### II. C29 Replacement:

- 1. Place the PA on the bench with the heat sink down.
- 2. Remove the 12 screws holding the cover in place.
- 3. Using pliers (fingers work as well), gently rock the capacitor side to side. This will work the leads loose from their internal connections to separate them from the capacitor (figure 1).



Figure 1

Figure 2

- 4. Using wire cutters, cut the capacitor leads off flush with the circuit board.
- 5. Now take the new C29 capacitor (82uf/63v 522-0654-000) and bend the leads at a 90° angle about 3/16" (5mm) from capacitor body and clip the leads as shown below in figure 3.
- 6. Solder the cap in place using the solder as the means of securing the cap to the circuit board as shown in Figure 4. The positive (+) lead goes on the narrow trace next to the lead for L8/R20.



Figure 3

Figure 4

- 7. This completes the modification.
- 8. Replace the cover on the PA module.
- 9. Reverse steps 10 through 2 (of part I.) to reinstall the PA module in the exciter.

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> Service Bulletins are available on the GatesAir Web Site at <u>www.gatesair.com</u> Should you have any questions relating to this bulletin, please contact:

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