

Product Description:
8 Watt 400 MHz Transmitter Amplifier

Service Bulletin No: SB-0005
Revision: A
Date: Feb 2003

DE Reference / ECO:
ECO# 731

Amplifier Modification to Prevent Oscillation

Model Number	Board Versions
UT-3/420-CX0X00	43-931613
UT-3/420-SXCX00	43-931613
UT-3/460-CX0X00	43-931613
UT-3/460-SXCX00	43-931613

Symptoms

Some UHF 8 watt exciter modules may become unstable and oscillate when connected to reactive non 50Ω loads and produce excessive spurious emissions.

Cause

The final amplifier RF transistor, Q1, does not present a stable load to the hybrid RF driver, U4, when the RF output is connected to a reactive non 50Ω load.

Solution

This modification reduces the gain and improves the stability of the final amplifier stage. R15, at the input of the final amplifier transistor is reduced in value from 100Ω to 20Ω.

- R15 is replaced with a 20Ω, 0.5W metal film resistor (a 2W resistor is removed.)
- The amplifier will require complete re-tuning after the resistor is replaced. This may require the select value of C19 to be changed, in the event that variable capacitors C17 and C24 fall out of range. Refer to Section 3.6.2, UT-3/400 Amplifier Alignment, in the Instruction Manual. Also, see the attached "Amplifier Alignment Notes" section of this bulletin.
- Environmental testing is not necessary after modification.
- It is recommended that the transmitter be checked for spurious emissions under the load to be used in its final installation, after modification and re-tuning.

Please refer to the attached photographs and drawings.

Parts Required

Qty	UOM	Description	Part Number	Designators
1	Each	RESISTOR, 20R METAL FILM, 5%, 0.5W	1101-1A0200JP	R15
Select one of the following capacitors as required				
1	Each	CAP., SM, 24pF PORCEL., 5%, 500V	1036-1B2240J5	C19
1	Each	CAP., SM, 30pF PORCEL., 5%, 500V	1036-1B2300J5	C19
1	Each	CAP., SM, 33pF PORCEL., 5%, 500V	1036-1B2330J5	C19
1	Each	CAP., SM, 36pF PORCEL., 5%, 500V	1036-1B2360J5	C19
1	Each	CAP., SM, 39pF PORCEL., 5%, 500V	1036-1B2390J5	C19
1	Each	CAP., SM, 43pF PORCEL., 5%, 500V	1036-1B2430J5	C19
1	Each	CAP., SM, 47pF PORCEL., 5%, 500V	1036-1B2470J5	C19
1	Each	CAP., SM, 51pF PROCEL., 5%, 500V	1036-1B2510J5	C19
1	Each	CAP., SM, 56pF PROCEL., 5%, 500V	1036-1B2560J5	C19

Return Requests

To have affected product returned to Daniels Electronics for servicing (or replacement, etc...), please contact the service department to obtain an RMA number and return shipping instructions as 1-800-664-4066

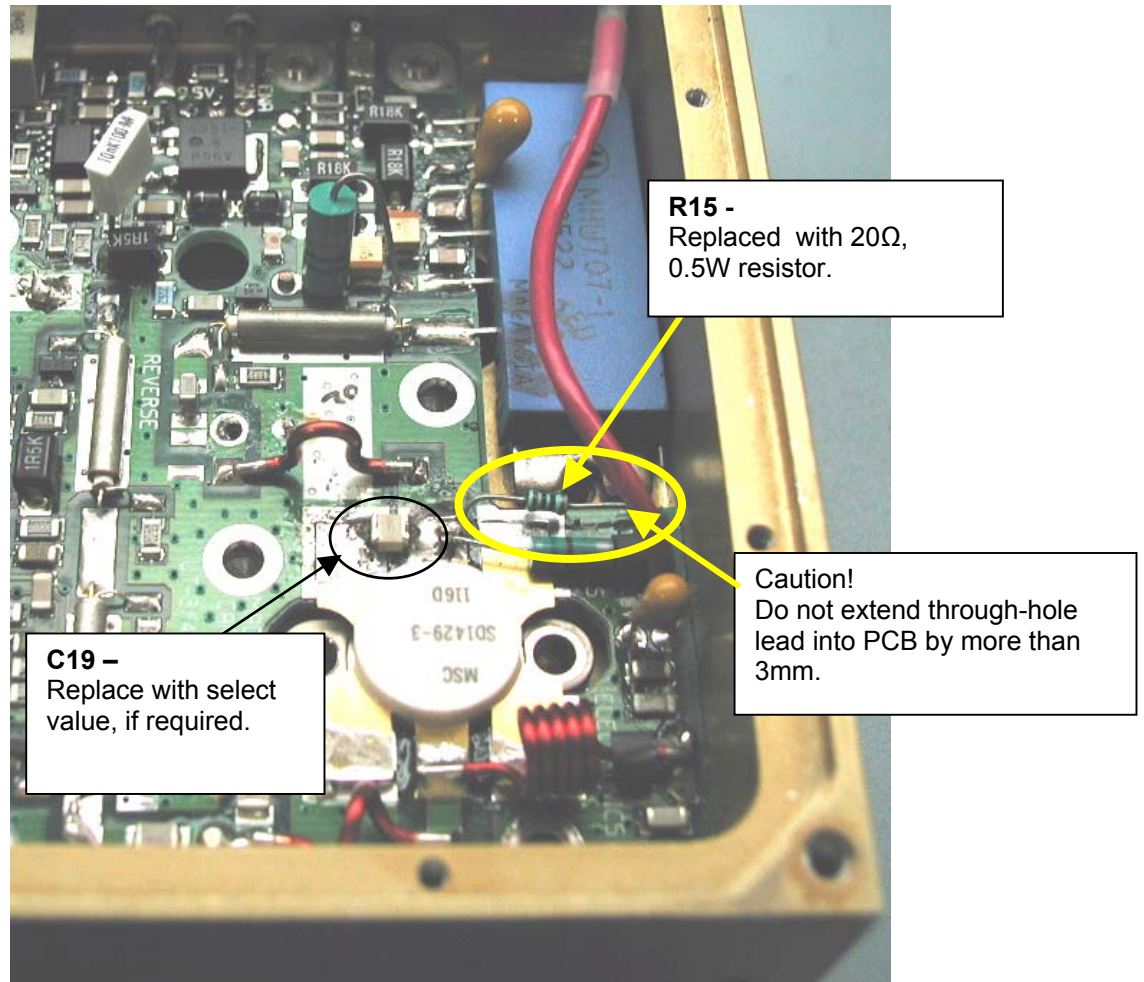
Service Bulletin Revision History

Rev	Date	Description
A	Feb 2003	Added Clarification of alignment procedures and capacitor C19 select value table.

Additional Information

Modification to PCB 43-931613, UHF Transmitter Amplifier Board:

- Remove R15. Note that the one side is soldered onto the surface trace and the other is inserted into a plated hole.
- Replace R15 with a 20Ω, 0.5W resistor. Take care not to short the through hole lead to the case underneath by keeping the insertion less than 3mm.



Additional Information

Amplifier Alignment Notes:

Refer to the UHF Amplifier Instruction Manual, Section 3.6.2.1, UT-3/400 Amplifier Adjustment – General Setup.

The input and output capacitors (C17 & C24) are adjusted to provide the minimum total current consumption with maximum output power.

- To prevent damage to the final amplifier transistor during tuning, do not exceed 1.5A from either the 9.5V or 13.8V supply for extended periods. Temporarily reduce the RF drive by adjusting R7 as required.
- Final adjustments should produce an output power of 8 Watts with a current draw from the 9.5V supply of <1.4A and <2.5A total current for both supplies.
- For some frequencies, capacitor C19 may require replacement with another value to obtain these results. Please refer to the table below to determine the range of values.

C19 FREQUENCY BAND SELECT VALUES			
406 – 430 MHz	450 – 470 MHz	470 – 495 MHz	495 – 512 MHz
30 to 56 pF	24 to 51 pF	30 pF	30 pF

Portion of UHF Transmitter Amplifier Schematic (PCB 43-931613):

