
TECHNICAL NOTE TN-1189
TB8100 VCO Out of Lock Alarms

21 June 2006

Applicability

TB8100 400 to 520MHz (H1, H2 and H3 band) Reciters using RF PCB 220-02025-08.

1. Introduction

Investigation was carried out on 3 reciters that were exhibiting TX and RX VCO out of lock alarms on the when they have been running for approximately 2 hours.

The Service Kit reported several out of lock alarms on all three units under the following conditions

- Hot and cold temperature extremes
- Room temperature
- Touching sensitive areas in both VCO's and synthesiser cans

2. The Problem

In all cases the synthesiser was actually locked and on frequency. The problem was the input voltage to the comparator that indicates an out of lock state was very close to the trigger point, just 21mV away on one of the reciters. Any noise on the DC supply or change in DC conditions with temperature will cause the comparator output to change, raising a VCO out of lock alarm.

Alarms may be raised frequently enough to cause a buffer overflow, incrementing the watchdog reset counter and causing the Service Kit to appear to lock up.

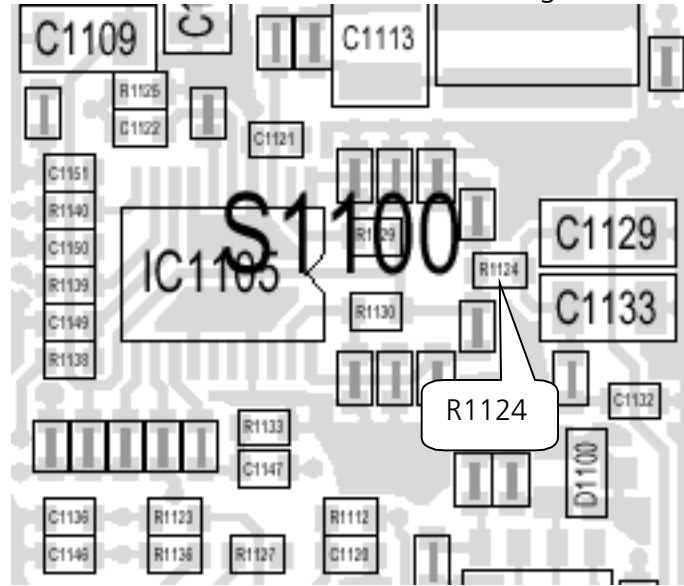
3. The Solution

A resistor change decreases the input voltage to the comparator to at least 300mV below the trigger point for an alarm. This was tested under the same conditions and eliminated the VCO out of lock alarms on all 3 reciters.

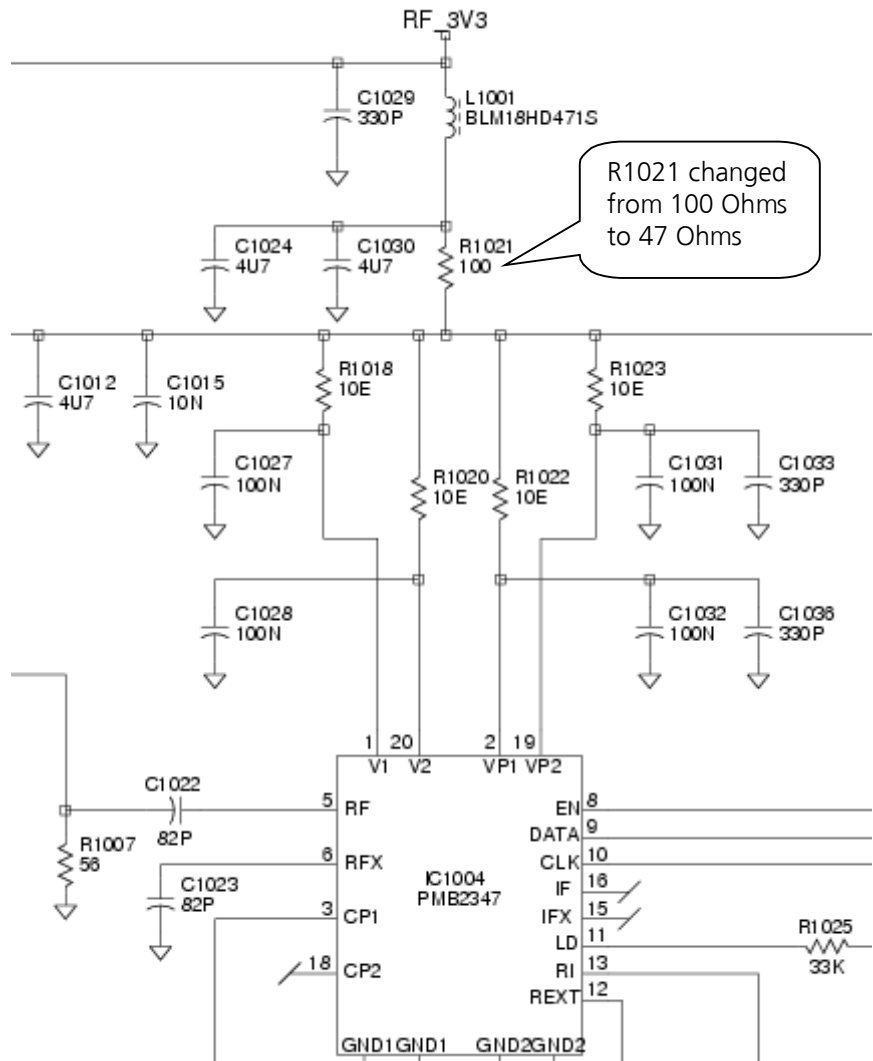
A change has been raised to modify all production from the factory from 21 June 2006. RF PCB's that have not been assembled into reciters will also be modified.

Both the TX and RX VCO's need to be modified.

Locate R1124 in the TX VCO and change to 47 Ohms.



RX VCO schematic showing the location of R1021. TX VCO schematic is the same, component designations differ.



**CSO and Service
Centre Instruction**

This change should not be needed on all reciters, only those with a fault report of VCO out of lock alarms. The factory reports approximately 20 of these have been picked up during testing in the past year. There is no need to recall any base stations in the field, this is an advisory note only.

4. Issuing Authority

**Name and Position
of Issuing Officer**

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