

Initiated by: Dave Emrich

Project Manager: Tom Booler

Proposed Priority: Fast Track Normal

Title: MWA and EDA LNA Amplifier End-of-Life

Affected item(s):

All MWA and EDA Rev3C LNAs using ATF-54143 input amplifier chips (four per board).

Technical description of change:

The above LNA amplifier design may need to be revised to support a new amplifier chip, and a plan adopted for rolling out these new designs into the field at the MRO. We have purchased 3000pcs of these as a stop-gap measure while we redesign the LNA board.

This change depends on final acceptance of the locally produced LNA boards, which in turn depends on a comparison with 27 brand new boards being shipped by Burns Industries.

If the new design of MWA/EDA LNA board is sufficiently similar in performance to the current design, it can be intermixed in tiles in the field for servicing purposes with no degradation to the tile performance. Remaining spare ATF-54143 chips can be used to manufacture last-run existing design boards, and/or repair faulty boards returned from the field.

If the performance of the new design of MWA/EDA LNA boards is “too different” then they can be used to repair tiles as a 16-unit lot, and the instrument M&C recalibrated to cope with the new performance of the repaired tile. Of the 16 removed boards, those that test out OK can be used to repair other “current LNA” tiles, while those that are faulty could be repaired, again using remaining ATF-54143 parts until they are exhausted.

[Latest info, courtesy Budi Juswardy.] It appears there may be a drop-in part available from Mini-circuits but we will still need to test to confirm if this chip performs identically to the ATF-54143.

Reason for change and expected benefits:

Broadcom/Avago Technologies, manufacturer of the ATF-54143 amplifier chip used in the above LNA design has announced end-of-life of that chip and all similar chips. Last buys are still available until 1 June 2018, but the part will become unavailable during Q4 2018 (see external document OBS120117WSD3-PLMM.pdf). There is no direct drop-in replacement from Avago. Also we have discovered during testing that the LNA design appears to operate very close to the “bottom end” of the frequency range this chip operates at, and the gain appears to drop off quickly towards the low-end of the MWA operating range.

Thus, a new amplifier chip will prevent obsolescence of the MWA LNA design and possibly improve low-frequency performance.

Effective Date: (dd-mm-yyyy)	2018-12-31 for completed solution.		
Reason for given effective date:	This change requires potential CAD/Altium work and design cycles as well as acceptance testing before it can be fielded.		
Expected impact on cost (\$AUD):	Unknown at this stage until suitable amplifier chip is sourced.		
Impact on schedule:	Minimal since we have purchased "tide-over" parts while we solve this issue.		
Other impacts:	None anticipated.		
Attached Document(s):			
OBS120117WSD3-PLMM.pdf – End-of-life notice from Broadcom/Avago covering our current part.			
Author:	Dave Emrich	Signature:	
Email:	d.emrich@curtin.ed.au	Date:	2018-02-08