Engineering Bulletin

RF TECHNOLOGY Pty Ltd
PO BOX 328 Wahroonga NSW 2076
Australia
Ph : +61 2 9476 5929
Fax : +61 2 9476 4932

ECLIPSE
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Product : T150A, T150B, R150A, R150B

Topic : Changes required to allow 2.5kHz step sizes

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Our VHF exciters and receivers default to using frequency step sizes of either 6.25kHz or 5kHz.

Several customers have wanted to program frequencies which are multiples of 2.5kHz, but which are not multiples of 5kHz, or 6.25kHz.

To do this, the Phase Locked Loop (PLL) chip must be programmed to use a phase detector frequency of 2.5kHz instead of 5kHz, or 6.25kHz. This, though, requires changes to the characteristics of the PLL loop filter.

In the exciter, the following hardware changes are required:

C28: 4n7F ⇒ 3n3F
R9: 2k7 ⇒ 10K
C108: 1uF ⇒ 220nF
C12: 47nF ⇒ 33nF
C103: 47nF ⇒ 33nF
L5: 0.15H ⇒ 1.2H
R111: 2k2 ⇒ 4k7
C107: 47nF ⇒ 10nF

In the receiver, the following hardware changes are required:

C78: 4n7F ⇒ 3n3F
R57: 4k7 ⇒ 10K
C91: 1uF ⇒ 220nF
C82: 47nF ⇒ 33nF
C79: 47nF ⇒ 33nF
L23: 0.15H ⇒ 1.2H
R58: 2k2 ⇒ 4k7

After these modifications, these units will need to be re-initialised. Please contact RF Technology to get copies of the following initialisation files, which are entitled T150A2.INI, or T150B2.INI, or R150A2.INI, or R150B2.INI.

These files should be copied into the directory on your computer from which you run ServiceMonitor.

Connect the unit to be upgraded to the serial port of your computer, and run ServiceMonitor. From the command bar at the top of the ServiceMonitor window, select “Setup”, then the sub-menu item

“Initialise”. This will prompt you for the appropriate model. Select the appropriate one of these four new model types, and ServiceMonitor will then install that initialisation file into the unit itself.

This will now allow the units to have frequencies which are multiples of 2.5kHz.

On any VHF receiver, the channel bandwidths are 7.5kHz, 12.5kHz or 25kHz. NB. the channel bandwidth is not affected by the step size. The channel bandwidth on the receiver can be modified by changing resistors R15, R24, and channel filter CF1.

Channel Bandwidth	R15	R24	CF1
7.5kHz	470	33K	CFR455D
12.5kHz	470	33K	CFS455G
25kHz	10	22K	CFS455H

An exciter’s “bandwidth” is defined by its maximum deviation. This is typically 5kHz for a 25kHz channel bandwidth, 2.5kHz for a 12.5kHz channel bandwidth, and 1.5kHz for a 7.5kHz bandwidth. This parameter can be set by the user, by adjusting RV1.

David leComte
Chief Engineer
RF Technology Pty Ltd