

Antenna Characterization Data, Station 17, January 2017

There are antenna connections at all four DCS operating positions of Station 17—one each at Positions 1, 3 and 4; and, three at Position 2, for a total of six. This report summarizes relevant standing wave ratio (SWR) measurement data for each of these six antennas. A given antenna connection may have been intended for operation on a particular band. However, for completeness, each antenna is measured and characterized over several bands to establish a more thorough understanding of its capabilities.

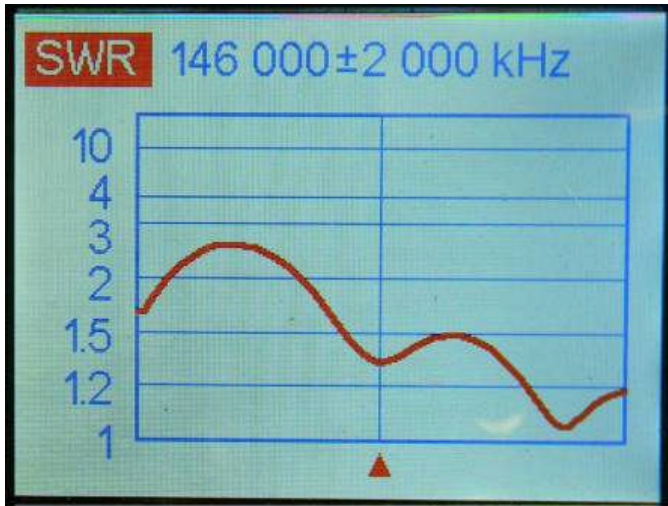
The following shows the four operating positions, numbered from left to right.



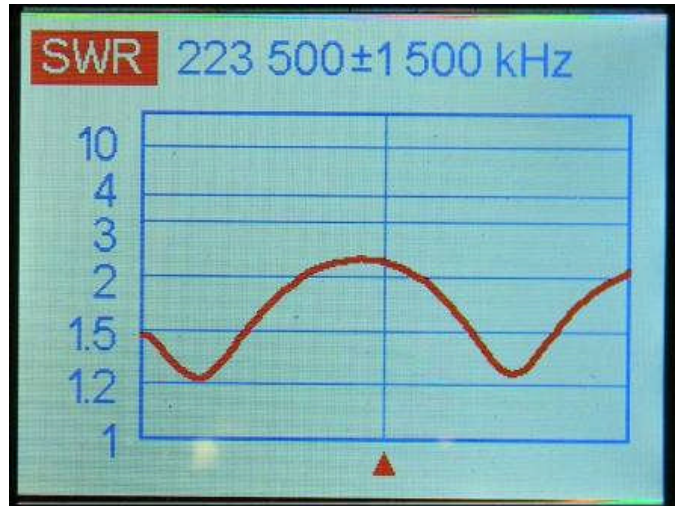
Position 1—one antenna connector.

Antenna connector: PL-259 on end of two-foot coax cable exiting hole at rear center of desk surface; no label on coax. This is connected to the Motorola VHF radio.

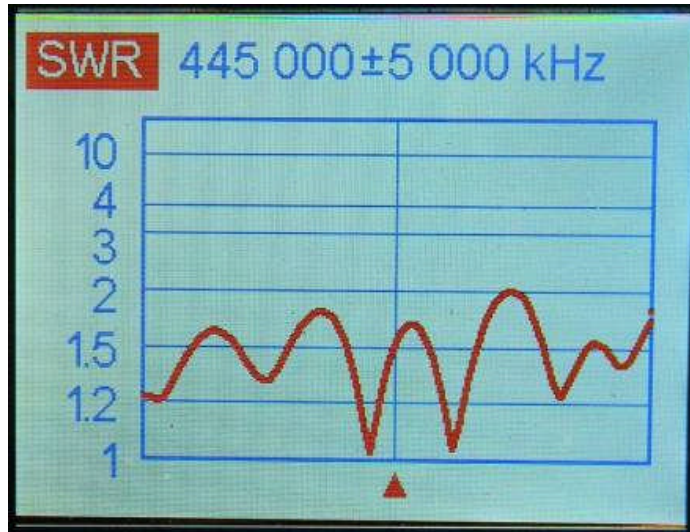
SWR on 2m band:



SWR on 1.25cm band:



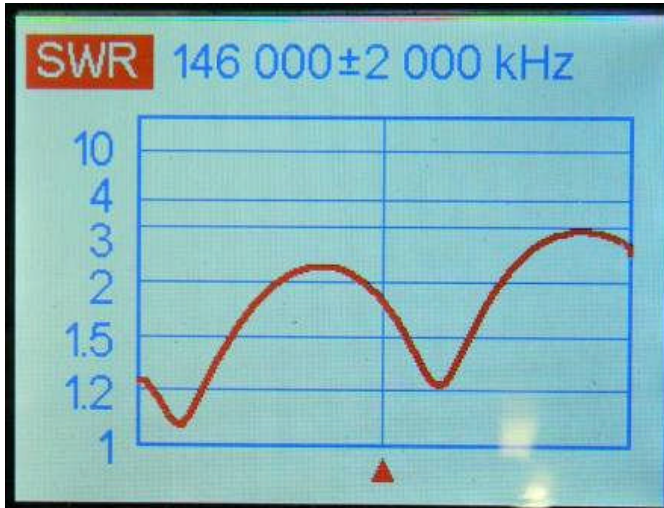
SWR on 70cm band:



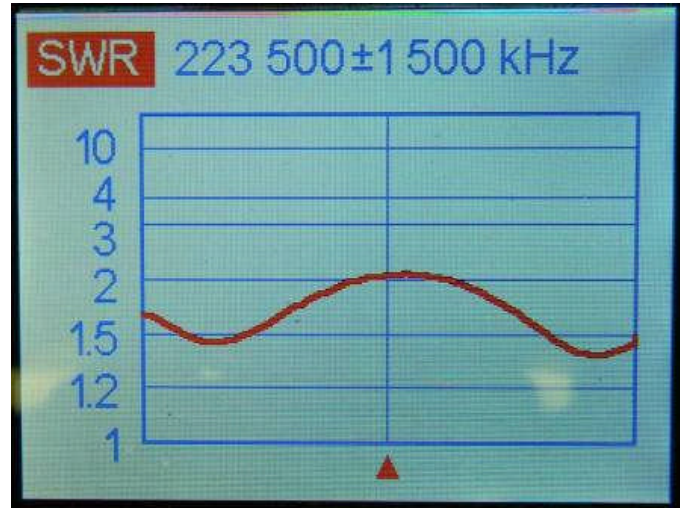
Position 2—three antenna connectors.

Antenna connector #1 at Position 2: SO-239 fixed-mounted at rear center of desk surface; two labels at connector say "8" and "2m/TOP". This is connected to the ICOM 2m radio.

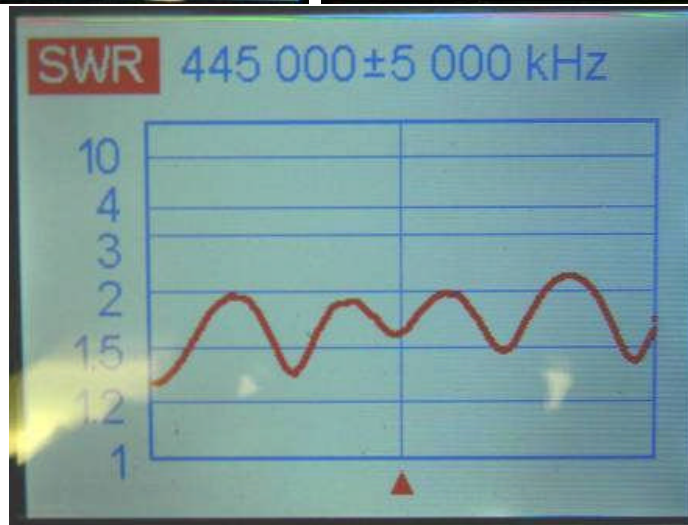
SWR on 2m band:



SWR on 1.25cm band:

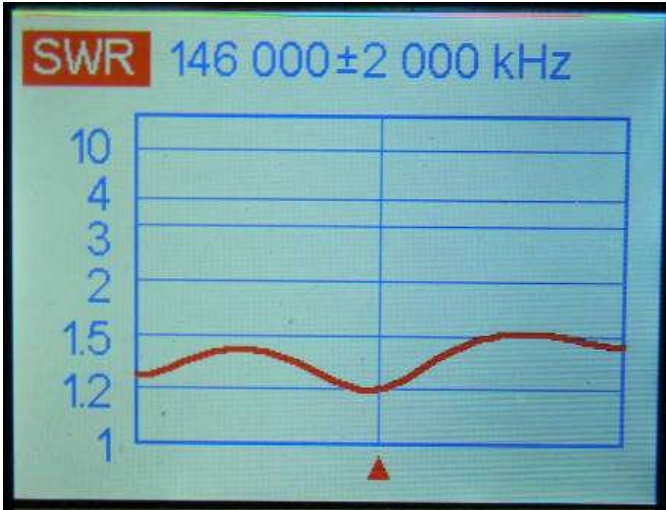


SWR on 70cm band:

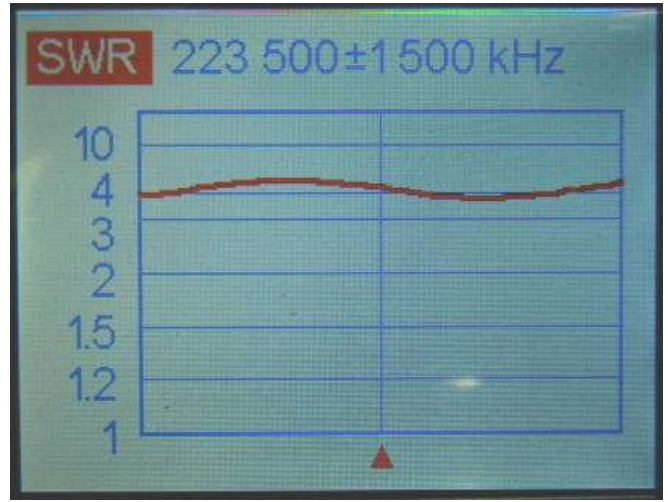


Antenna connector #2 at Position 2: PL-259 on end of two-foot coax cable exiting hole at rear center of desk surface; terminating at V/UHF input to duplexer; label on coax says "440". This is connected to the tri-band (2m/440/1.2GHz) antenna and the FT8900 through a 2m/440 duplexer.

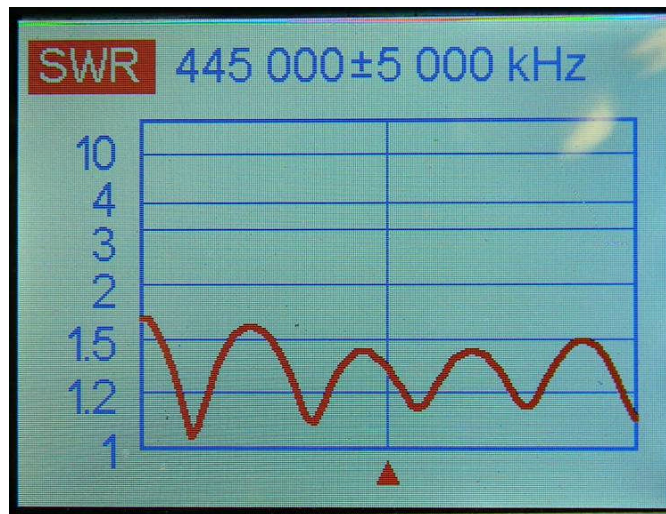
SWR on 2m band:



SWR on 1.25cm band:

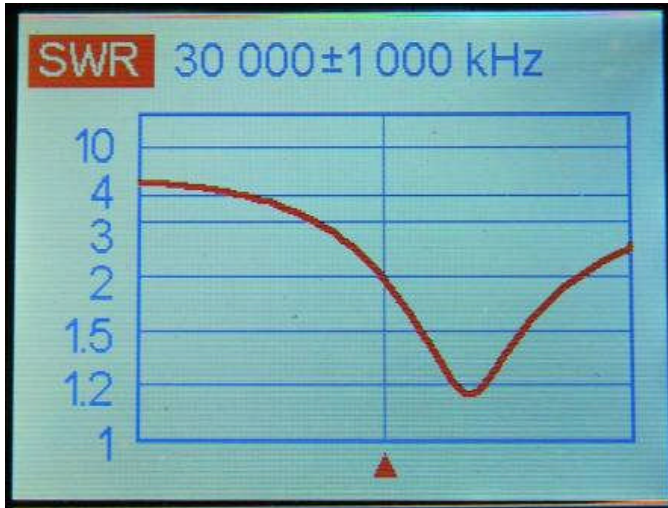


SWR on 70cm band:

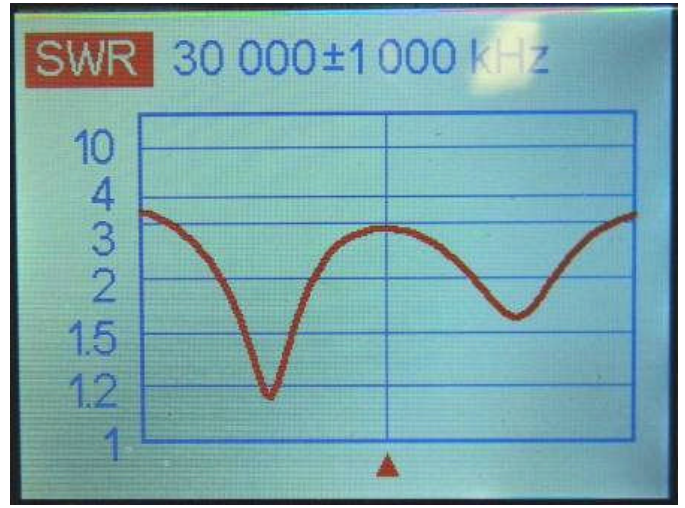


Antenna connector #3 at Position 2: PL-259 on end of two-foot coax cable exiting hole at rear center of desk surface; PL-259 terminates at input to phase shifter (matchbox), which in turn is connected to HF input of duplexer; no label on coax. This is connected to a dual band 10m/6m antenna and the FT8900 via the duplexer.

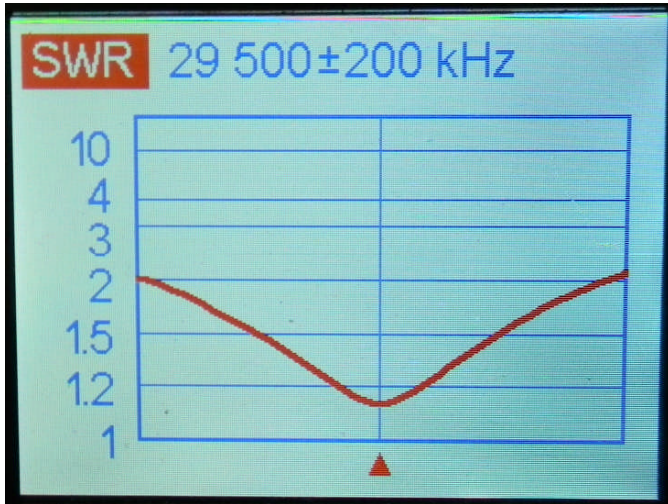
SWR on 10m FM band, without matchbox (desired operation is 29.5MHz):



SWR on 10m FM band, with matchbox (desired operation is 29.5MHz):



SWR on 10m FM band, with matchbox, centered on desired operating frequency of 29.5MHz:



SWR on 6m band, with matchbox (desired operation is 51.5MHz)



This characterization graph of Antenna connector #3 at Position 2 is made with phase shifter (matchbox) in place, to characterize the antenna performance at 6m, operating frequency 51.5MHz.

The foregoing two antennas (440 and HF with matchbox) are connected to a duplexer (Comet CF-706), which is connected to the quad-band FT8900 transceiver (2m, 440, 10m and 6m).

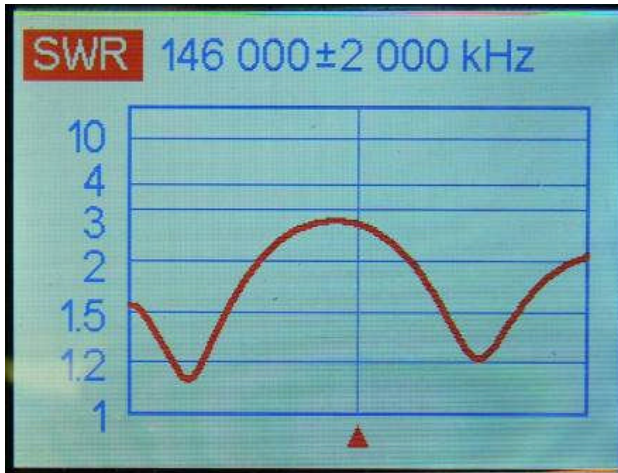


Additional SWR measurements were made at the output of this duplexer with both these antennas connected to confirm that the respective SWR data (previously measured without the duplexer) had not changed. The results were identical, i.e., the duplexer is operating properly.

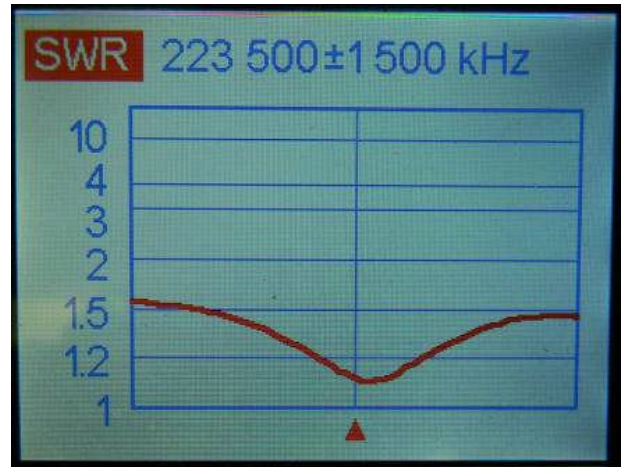
Position 3—one antenna connector.

Antenna connector: SO-239 fixed-mounted at rear center of desk surface; two labels at connector say “7” and “220”. This is the 220 antenna connected to the Alinco 220 radio.

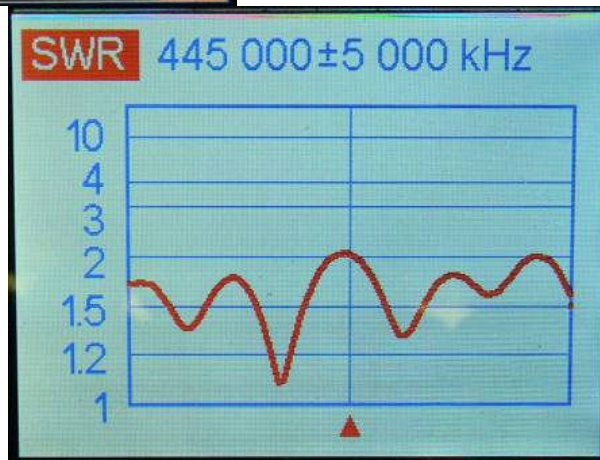
SWR on 2m band:



SWR on 1.25cm band:



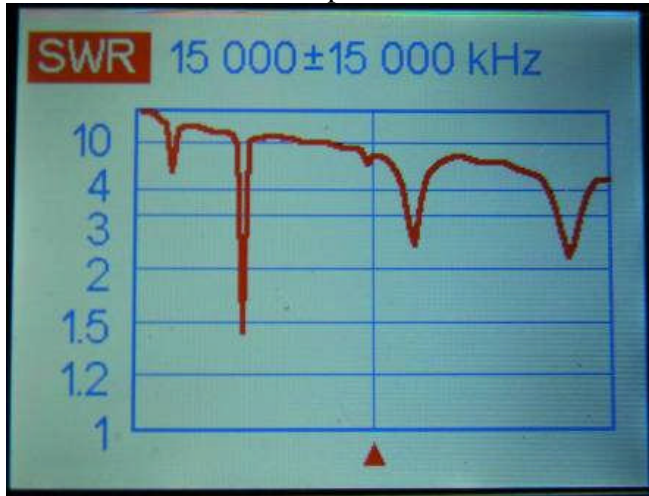
SWR on 70cm band:



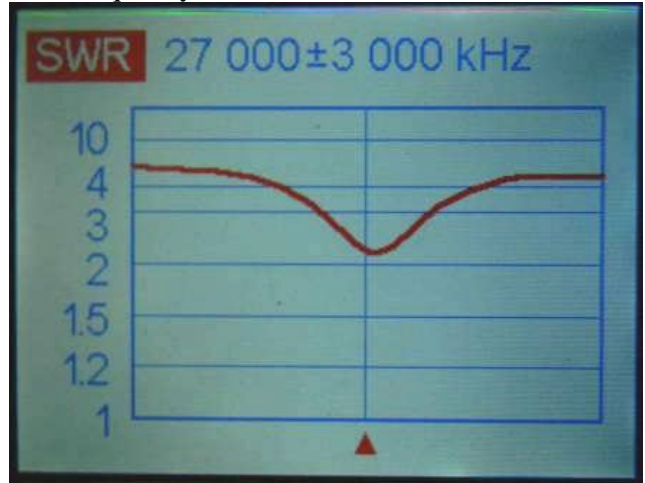
Position 4—one antenna connector.

Antenna connector: PL-259 on end of two-foot coax cable exiting hole at rear center of desk surface; label on coax says “HF Ant”. It is connected to a random wire tuner mounted on the side of the tower.

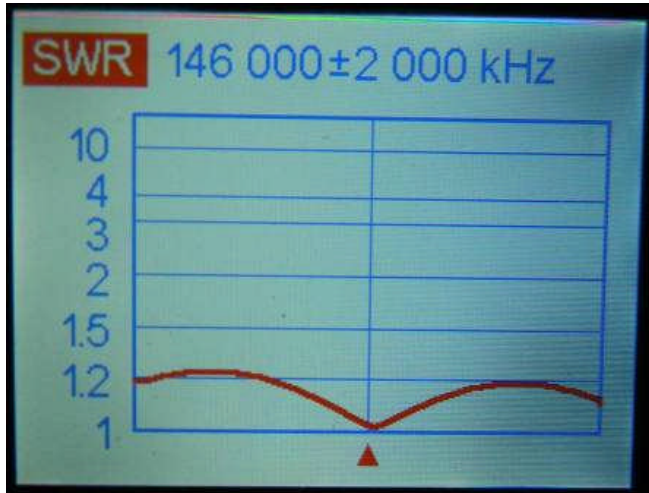
Broadband HF SWR sweep from DC to 30MHz:



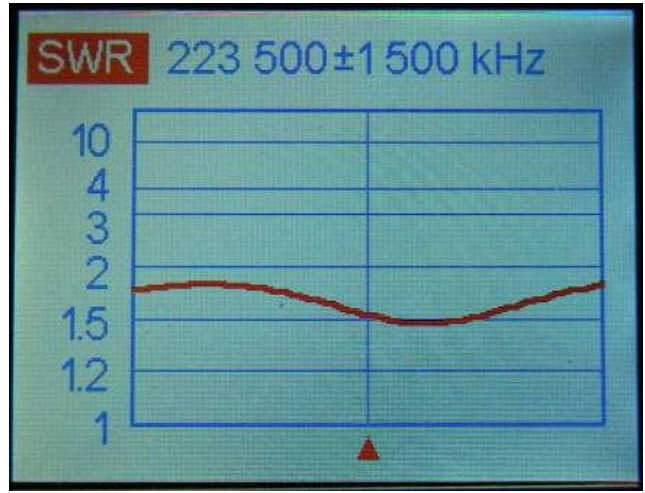
Narrowband HF SWR sweep centered at lowest-SWR frequency closest to 10m:



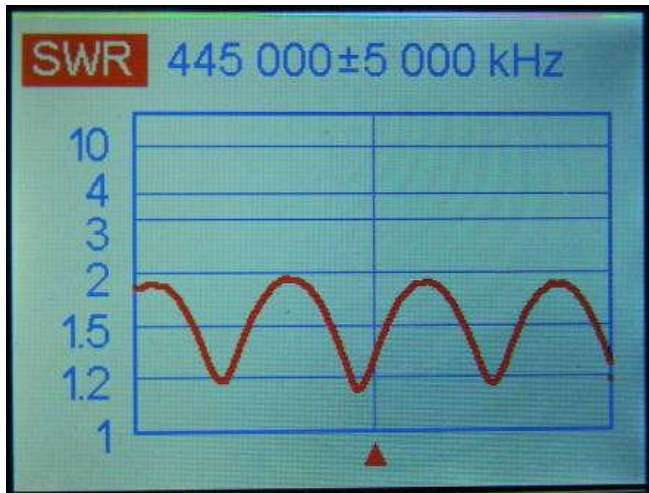
SWR on 2m band:



SWR on 1.25cm band:



SWR on 70cm band:



SWR on 6m band (desired operation is 51.5MHz):

