

Preface

January 2002 issue of Japanese CQ Ham Radio Magazine has an article on IC-756PROII. The article was written by Mr. Saito JA7SSB. He discusses the RX performance of 756PROII in view of the IMD and the DSP filter characteristics. Here is my English summary for non-Japanese HAMS. It should be noted, however, that CQ publishing corporation and JA7SSB clearly have the copyright of the article, and hence I offer only a summary here.

IMD

To measure the IMD, the system shown in Figure 1 is used. Two signals, 14.200MHz and 14.202MHz, are fed into the antenna connector of the 756PROII. The strength of each signal is -35dBm , which is equivalent to S9+45dB on the S-meter scale.

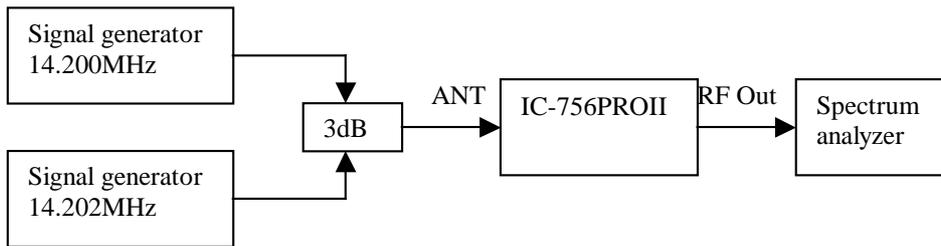


Figure 1. Block diagram of the IMD measurement system

Figures 2, 3, and 4 show the IMD measurement results with no Preamp, Preamp1, and Preamp2, respectively. Figure 3 indicates that Preamp 1 has about 7dB gain. The third order of IMD can be seen at -38dB . Figure 4 reveals that Preamp 2 has about 14dB gain. The third and fifth order of IMD can be observed.

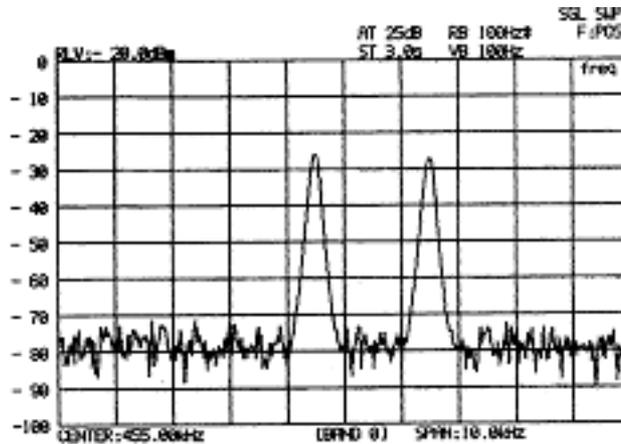


Figure 2. RF out – preamp off

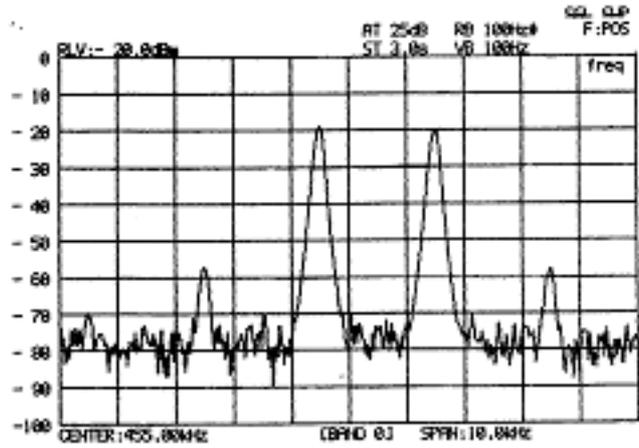


Figure 3. RF out – preamp 1 engaged

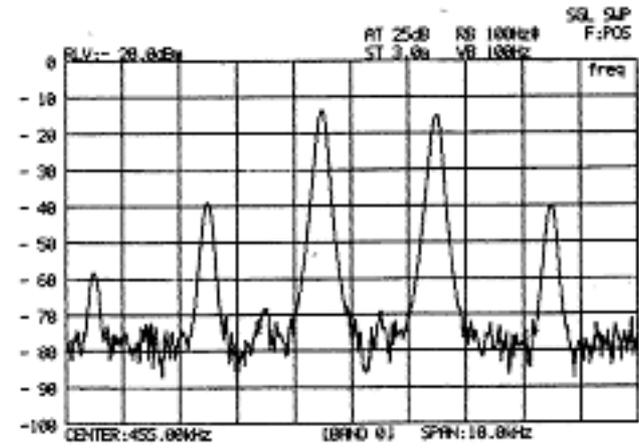


Figure 4. RF out – preamp 2 engaged

The most interesting point is that two signals that are only 2kHz apart do not cause IMD. This certainly is outstanding RX performance. 756PROII surely has better IMD characteristics than 756PRO.

DSP filter

756PROII allows users to select the shape factor of the DSP filter. ICOM calls them SOFT and SHARP. To measure the DSP filter shape, the rig-internal noise is used. Figure 5 illustrates the block diagram.

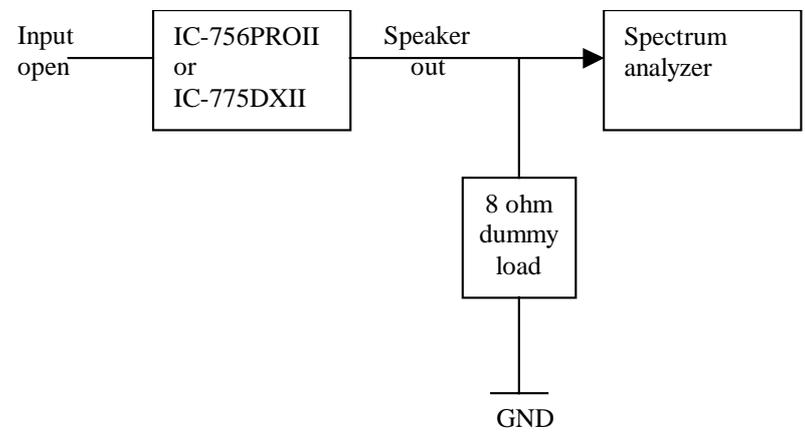


Figure 5. Block diagram of filter shape measurement system

Figure 6 shows the frequency characteristics of the 3kHz Sharp filter. The in-band gain is very flat. Figure 7 shows that of the Soft filter. Lower and upper edges of the pass band have about 10dB attenuation.

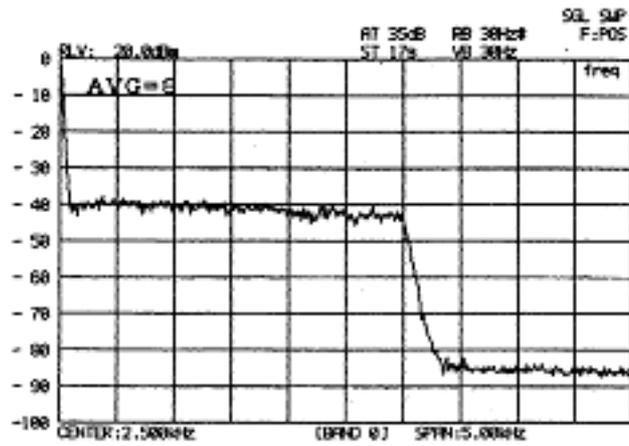


Figure 6. Bandwidth = 3kHz, Sharp

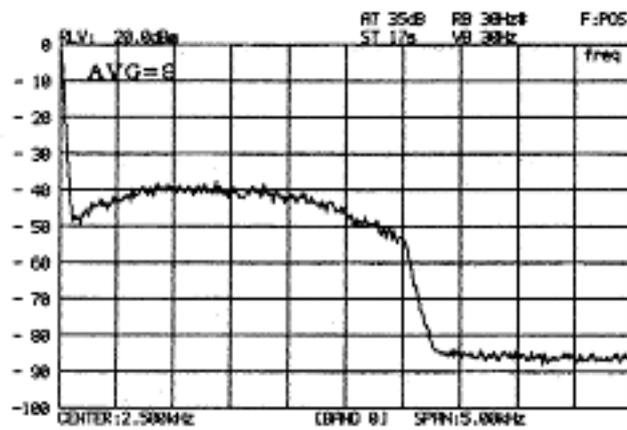


Figure 7. Bandwidth = 3kHz, Soft

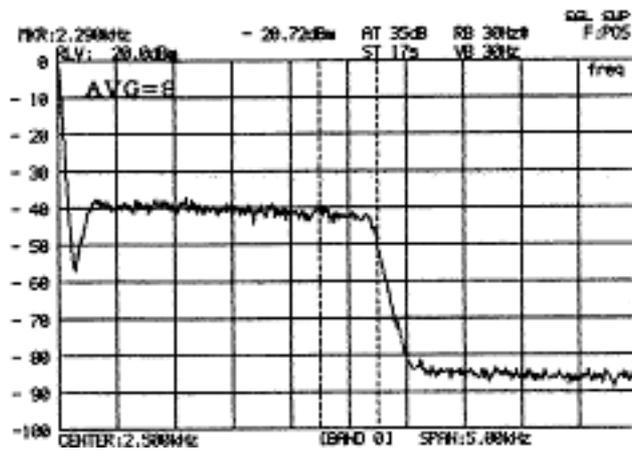


Figure 8. Bandwidth = 2.4kHz, Sharp

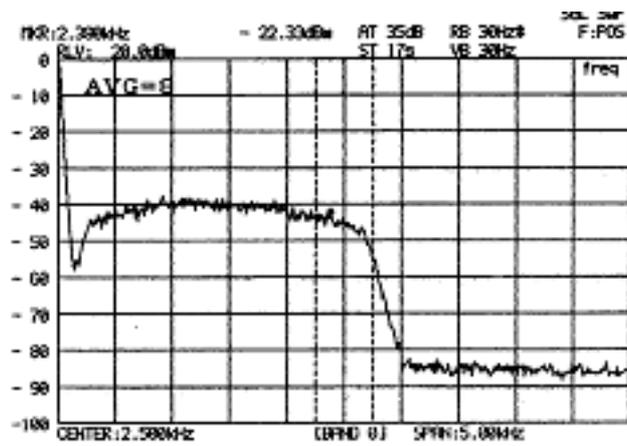


Figure 9. Bandwidth = 2.4kHz, Soft

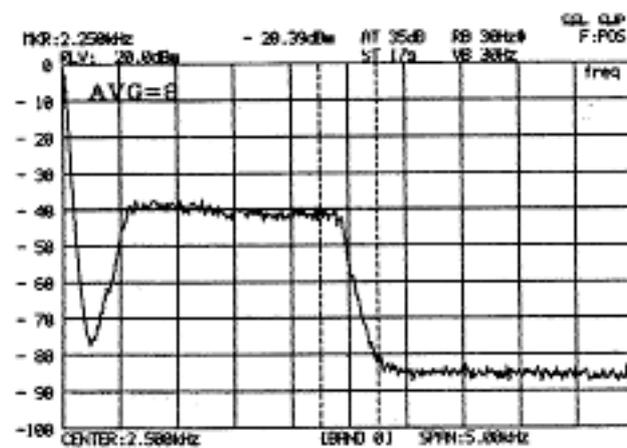


Figure 10. Bandwidth = 1.8kHz, Sharp

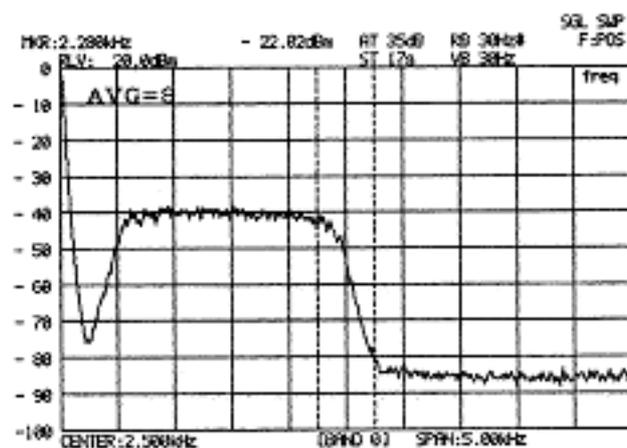


Figure 11. Bandwidth = 1.8Hz, Soft

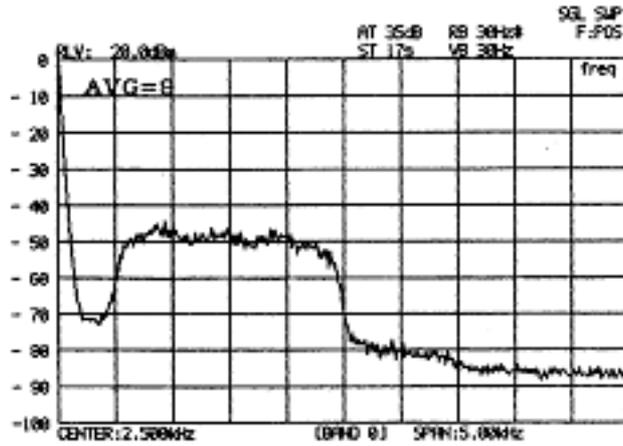


Figure 12. Bandwidth = 1.8kHz, IC-775DXII

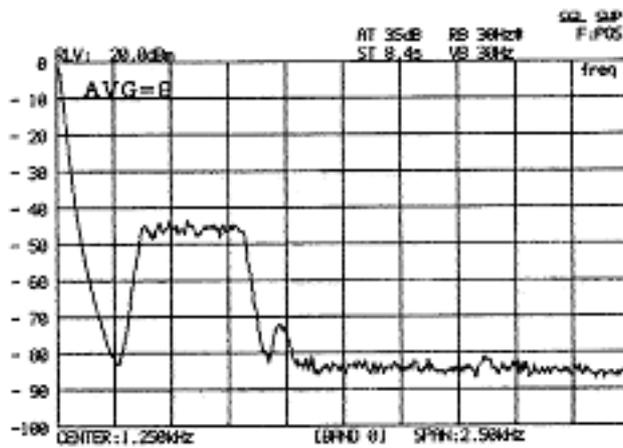


Figure 13. Bandwidth = 450Hz, Soft

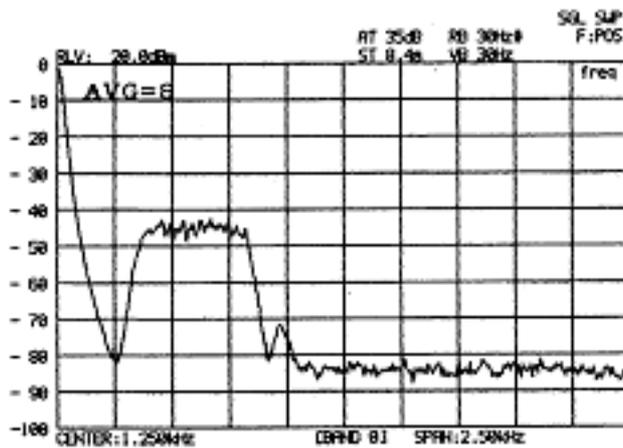


Figure 14. Bandwidth = 450Hz, Soft

Figure 12 is the result of IC-775DXII for comparison. The irregularities of the in-band gain reaches 5dB, and the difference of in-band and out-band gain is about 30dB, which clearly is worse than 756PROII. The in-band gain of 756PROII is very flat. This difference between 756PROII and 775DXII is noticeable with human ears.