FRG-100 SWL Tips
VERSION 1 ©2008

The information below is not guaranteed to be error free.

1. Introduction

Although not recommended in my guides the Yaesu FRG-100 is great for SWL[1]. The FRG is discontinued and costs ~$380 used. Strong points include the analog s-meter, bright display, and memory knob. Sensitivity is excellent and the FRG is good at DX. The tips below pertain to SWL.

2. Use Sideband-Selected AM

I discussed using AM mode tricks to reduce selective fading distortion[2]. The FRG is ideal for these tricks because of its good audio (via headphones or external speaker), nice 4-kHz filter, and great slow AGC with a perfect 0.9 µV threshold. Engage the 4-kHz filter (AM/N), slow AGC (button out), and offset tune by 2.0 kHz upward for USB or 2.0 kHz downward for LSB. Using this AM trick the FRG is not hindered by lack of a SAM detector. During carrier dropouts the audio momentarily but minimally distorts and then returns to low distortion envelope detection. Detection on the FRG in AM mode consists of a silicon Schottky barrier diode (1SS198) followed by a ~7.2 kHz RC LPF.

This works best on new (1994^{+}) units (so-called FRG-100B) where a LF-H2S filter replaces the CFW455I. The new tighter 4.5-kHz filter has superior shape (1:1.71) and ultimate rejection (70 dB). Offset tuning by 2.0 kHz simulates usage of a high fidelity ~8.5 kHz filter. The FRG has no keypad but the FAST tuning rate can be set to 5.0 kHz steps via: SET+FAST; dial in 5.0; SET. Using this setup one dial revolution covers 5 MHz and normal tuning is 0.1 kHz for offset tuning. An indoor tuned loop antenna can be used to null out local noise and is ideal for urban locations.

3. Use Precision ECSS

The FRG is good at SSB with its 10 Hz tuning steps and ±10 ppm stability. ECSS (tuning DSBc signals as SSB) is often superior to SAM during heavy selective fading[2]. The 6-kHz filter can be switched in briefly to zero ECSS: SET+SEL; dial in 6.0; tune till flutter stops; SSB (aborts filter change). The FRG allows audio shaping through a SSB offset adjustment: SET+MEM/CLEAR; dial in 453.40 for LSB and 456.60 for USB; SET. ECSS for SWL is rarely needed with the FRG.

REFERENCES

[1] Phil's SW Radio Buying Guide
[2] Tuning Tricks Challenge SAM
http://groups.yahoo.com/group/phils_radio_articles/

dr phil
just_rtfm@<NOSPAM>yahoo.com