



Hilberling

24768 Rendsburg, GERMANY

Proudly Introduces Its New

HF/VHF-Transceiver



PT-8000 A·B·C

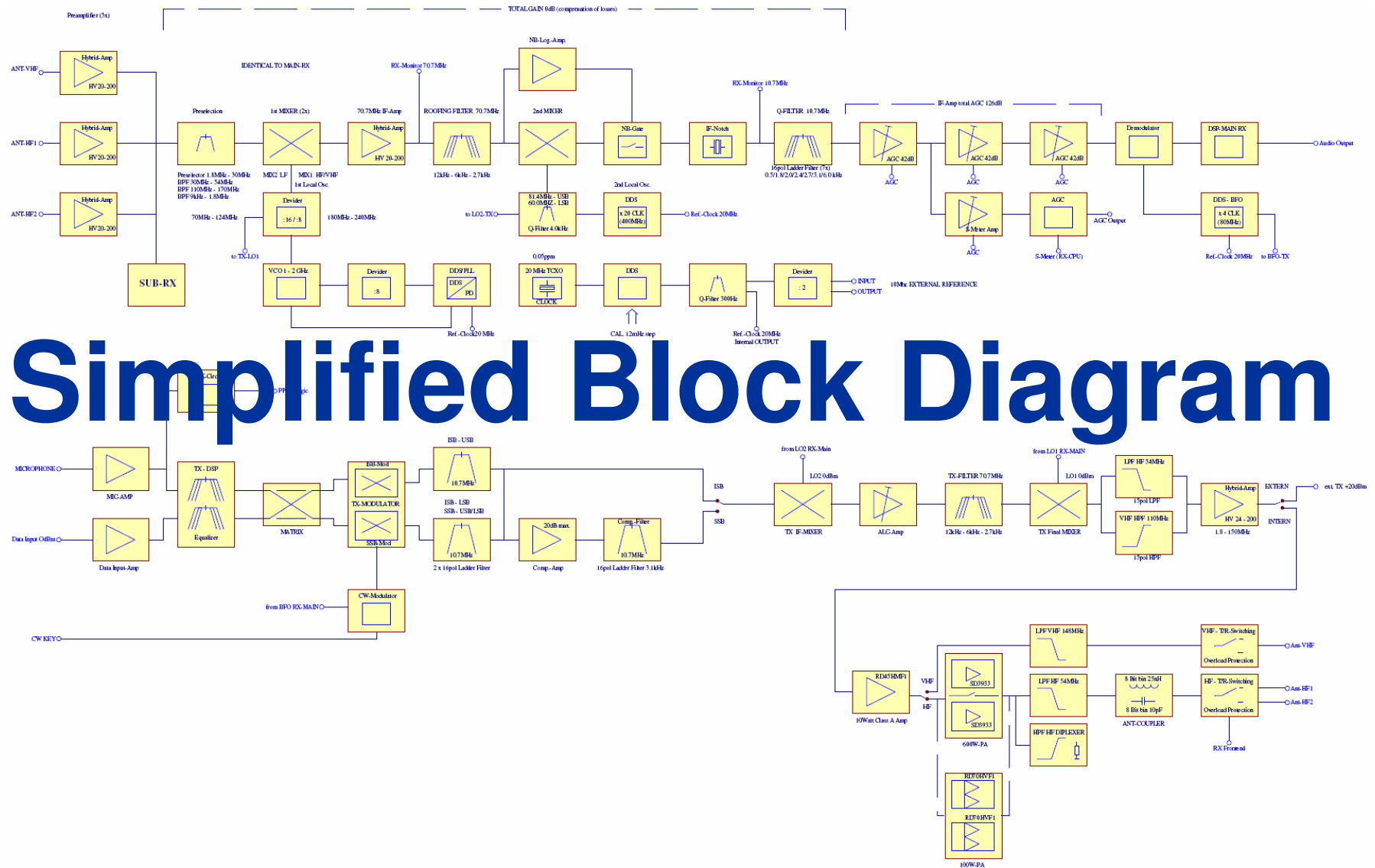
Briefing

Technical Concept

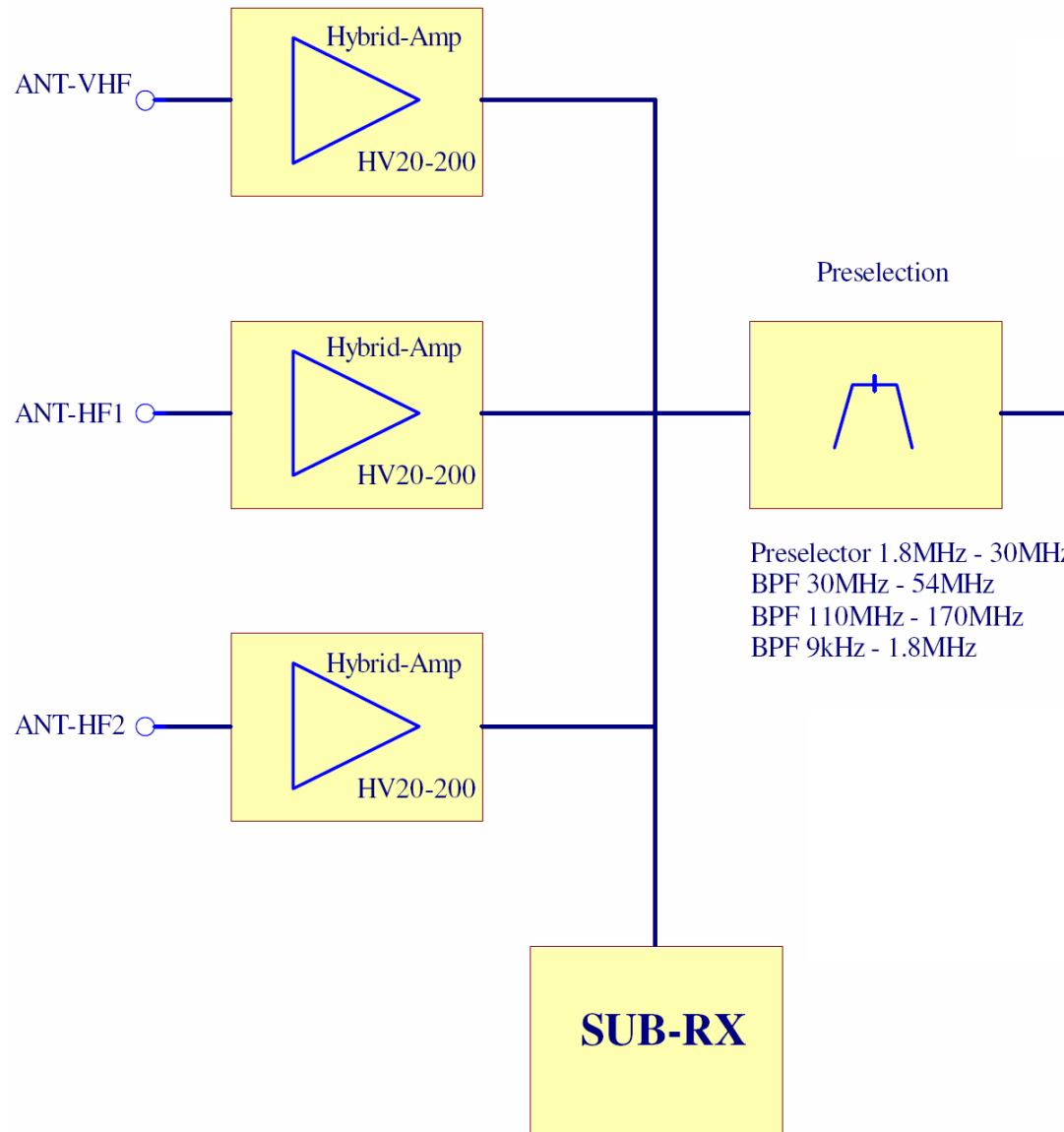
Design Requirements

- TX and 2 independent, identical RX
- VHF integral part, same performance than HF – not an afterthought
- Frequency range expandable by TRANSVERTERS
- ISB-capability
- Analog and digital signal processing
- High output on 160 – 6m using efficient RF-MOSFETs @100 Volt





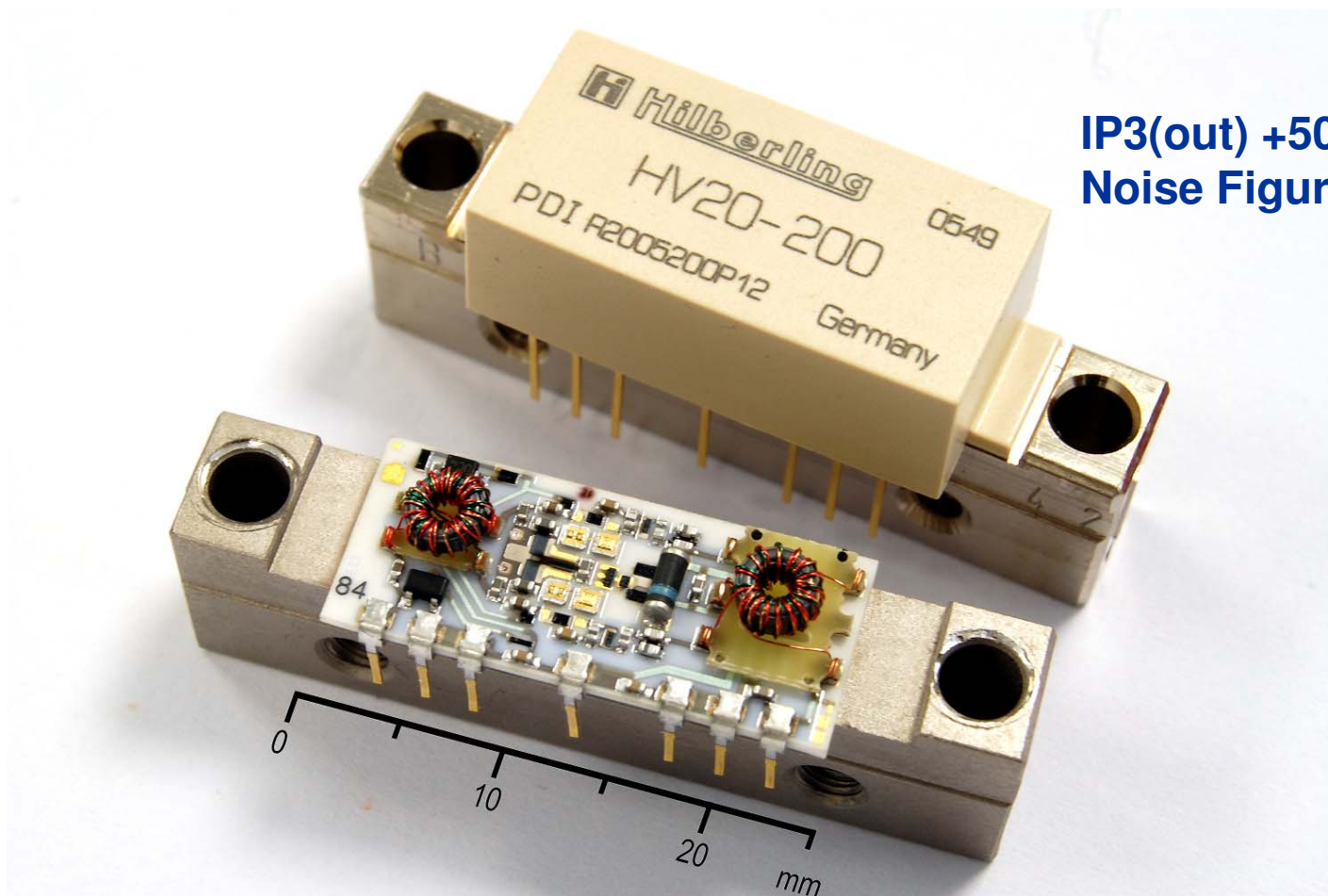
Simplified Block Diagram



Front-End:

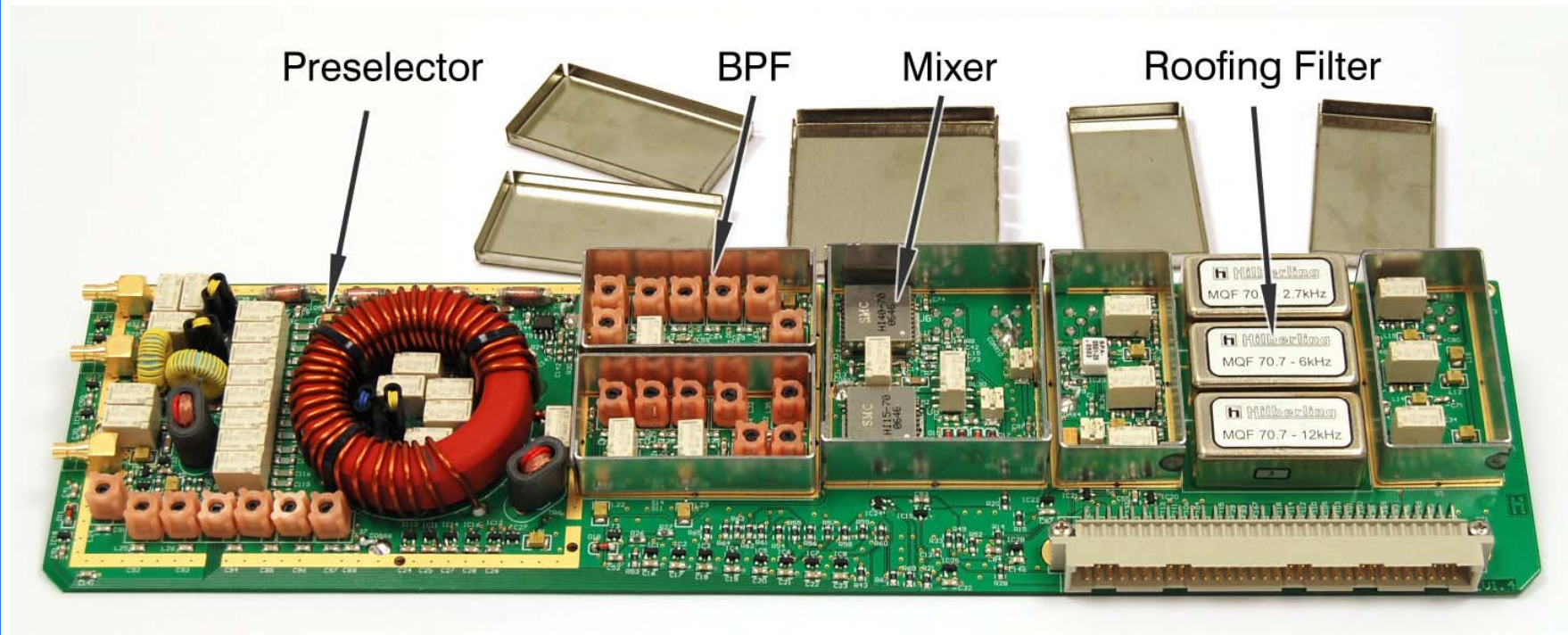
- **Antenna distribution**
- **BPF 110 MHz ... 170 MHz**
- **BPF 30 MHz ... 54 MHz**
- **BPF 9 kHz ... 1.8 MHz**
- ***tracking* Preselector 1.8 MHz ... 30 MHz**

Hybrid Amplifier 1.8 MHz ... 200 MHz



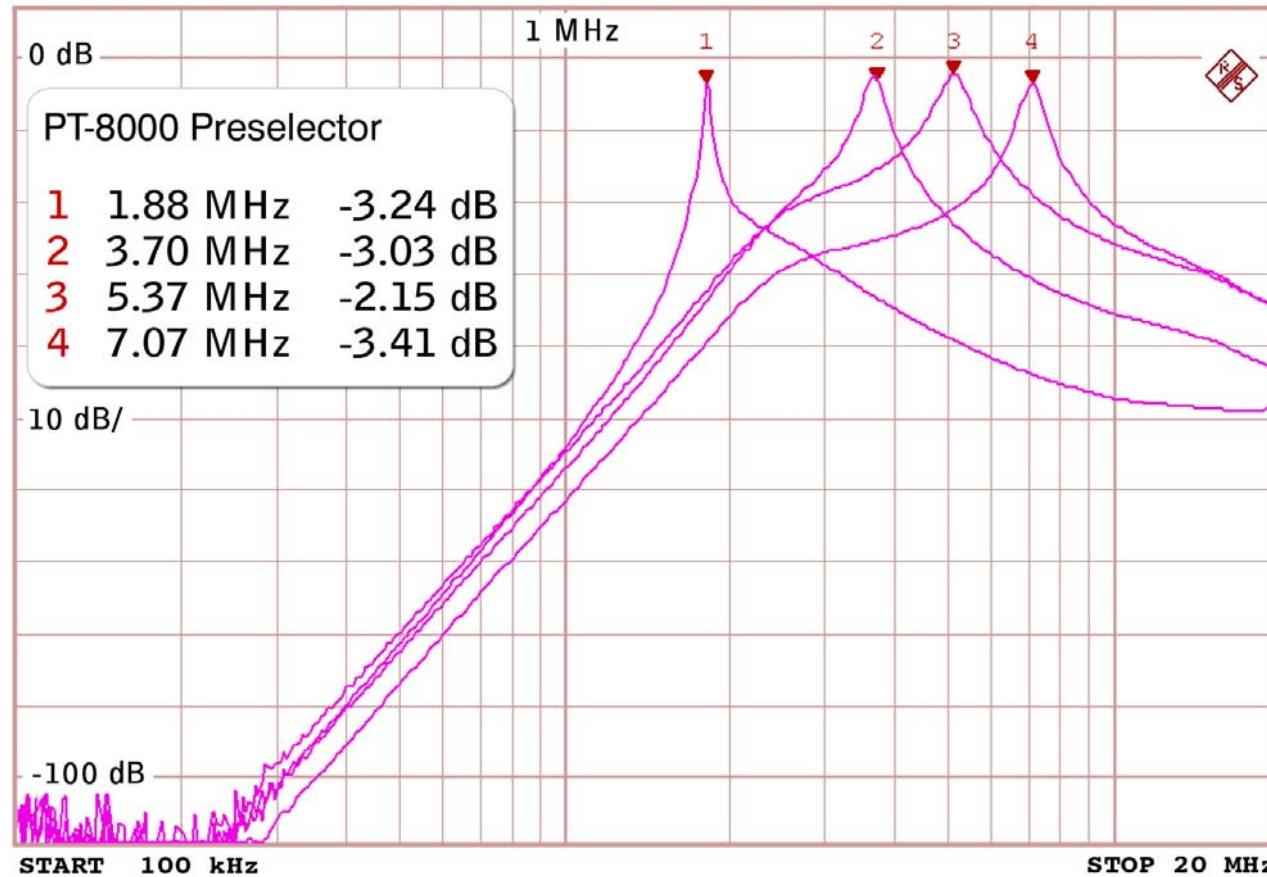
IP3(out) +50 dBm
Noise Figure 1.8 dB

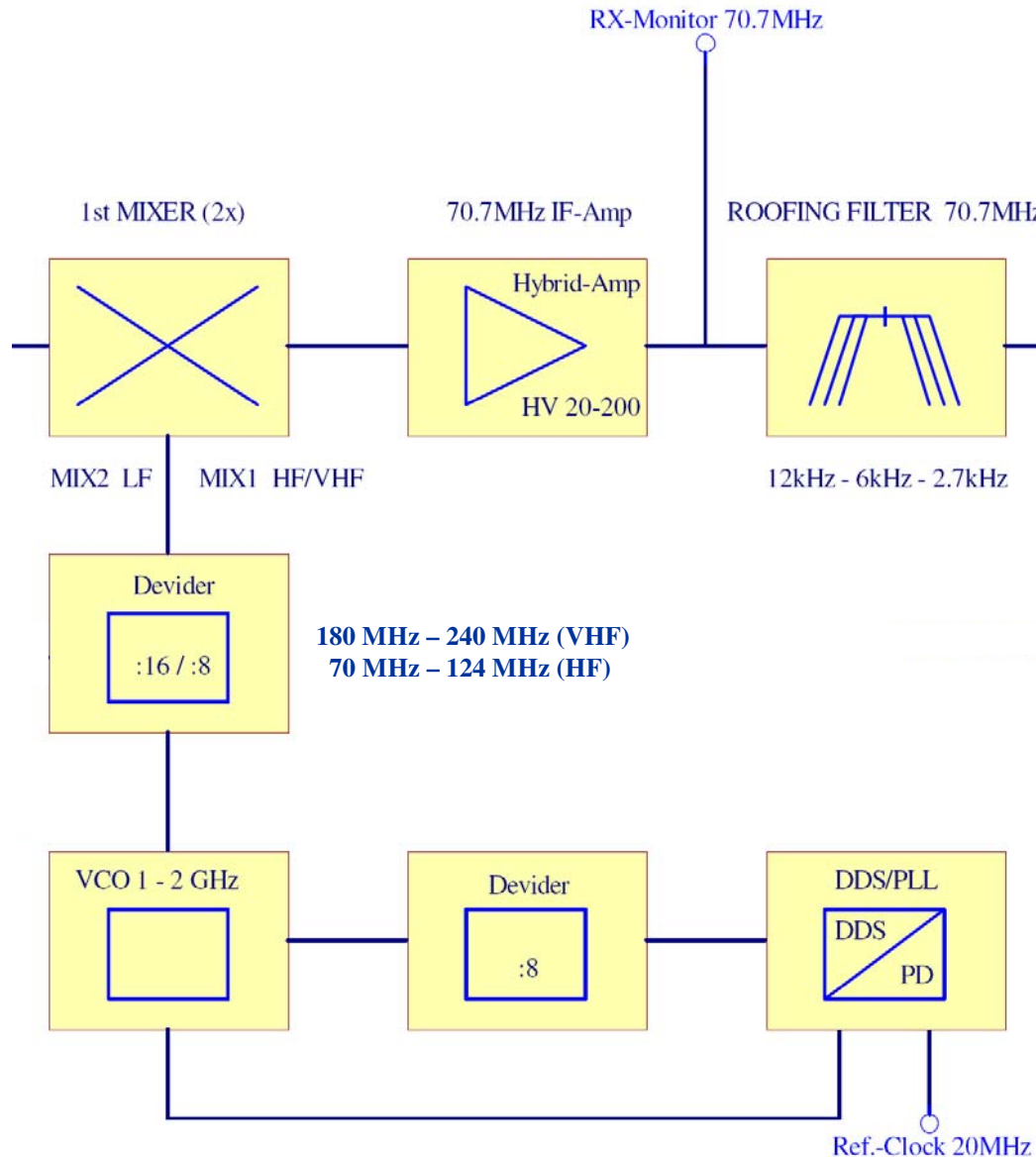
Frontend – designed for +39dBm IP₃ from HF to VHF



Frequency Response Preselection

Hilberling RF-Laboratory



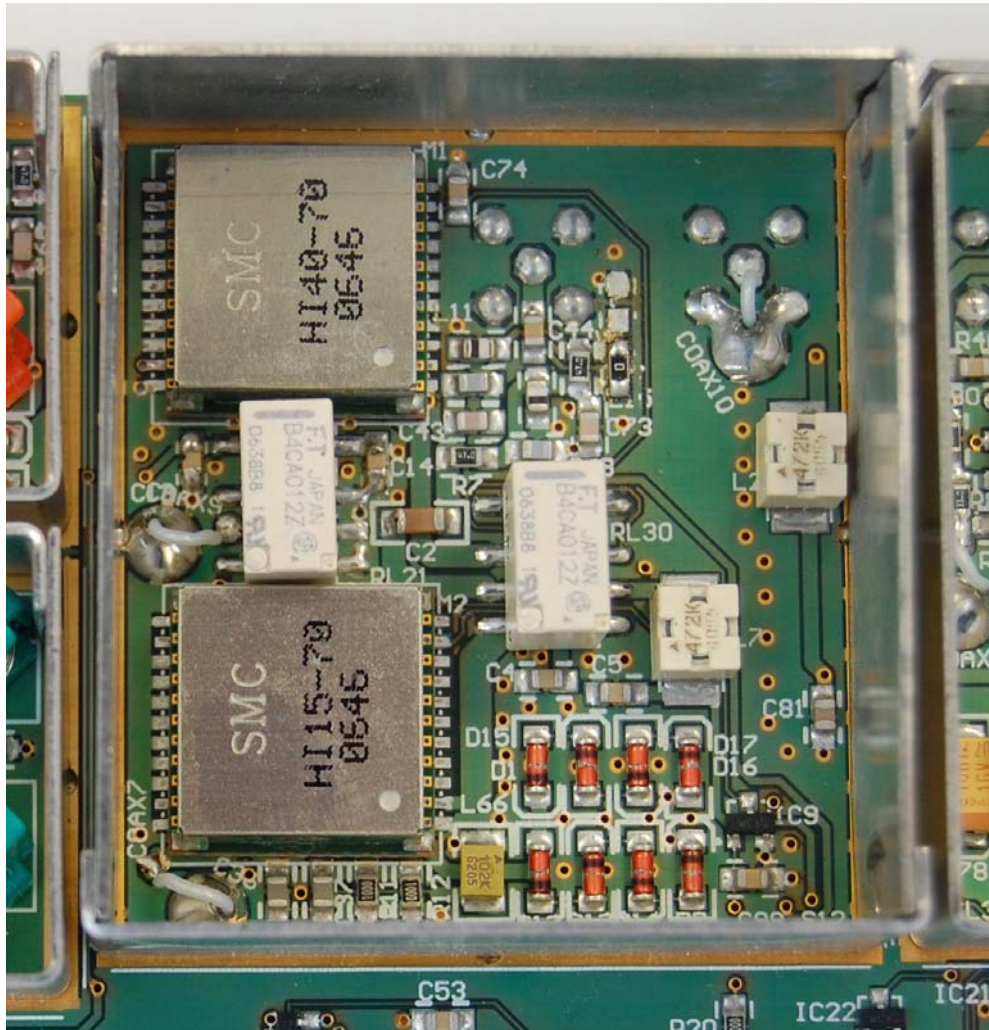


1st Mixer(s) from SMC
+40dBm IP3
7 dB Losses

6pol Roofing Filters

Low Noise
Quadruple VCOs

Noise Advantage
= 20log(N)



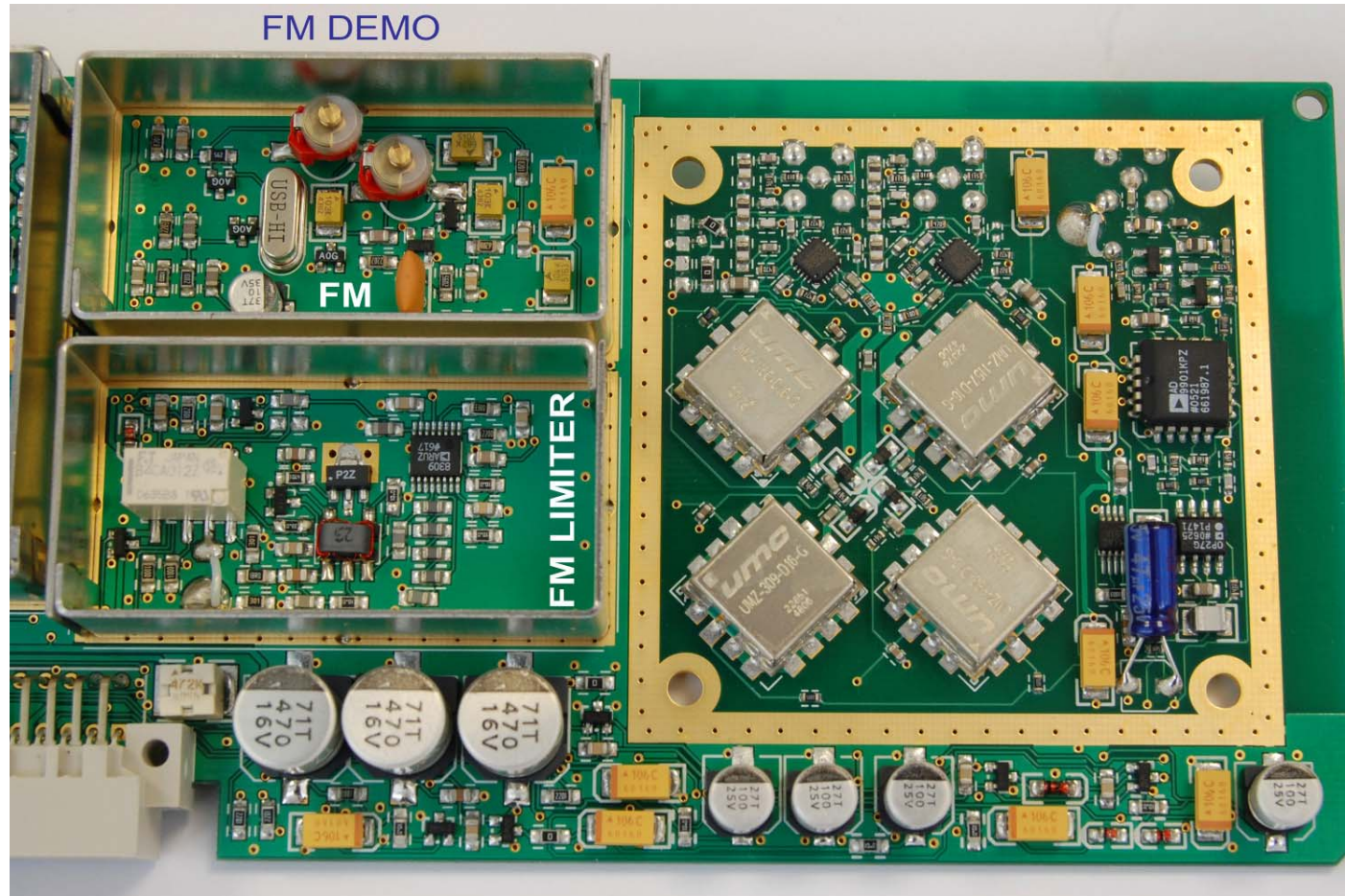
1st Mixers => 70.7 MHz 1st IF

**9 kHz ... 1.8 MHz (VLF/HF)
1.8 MHz ... 170 MHz (HF/VHF)**

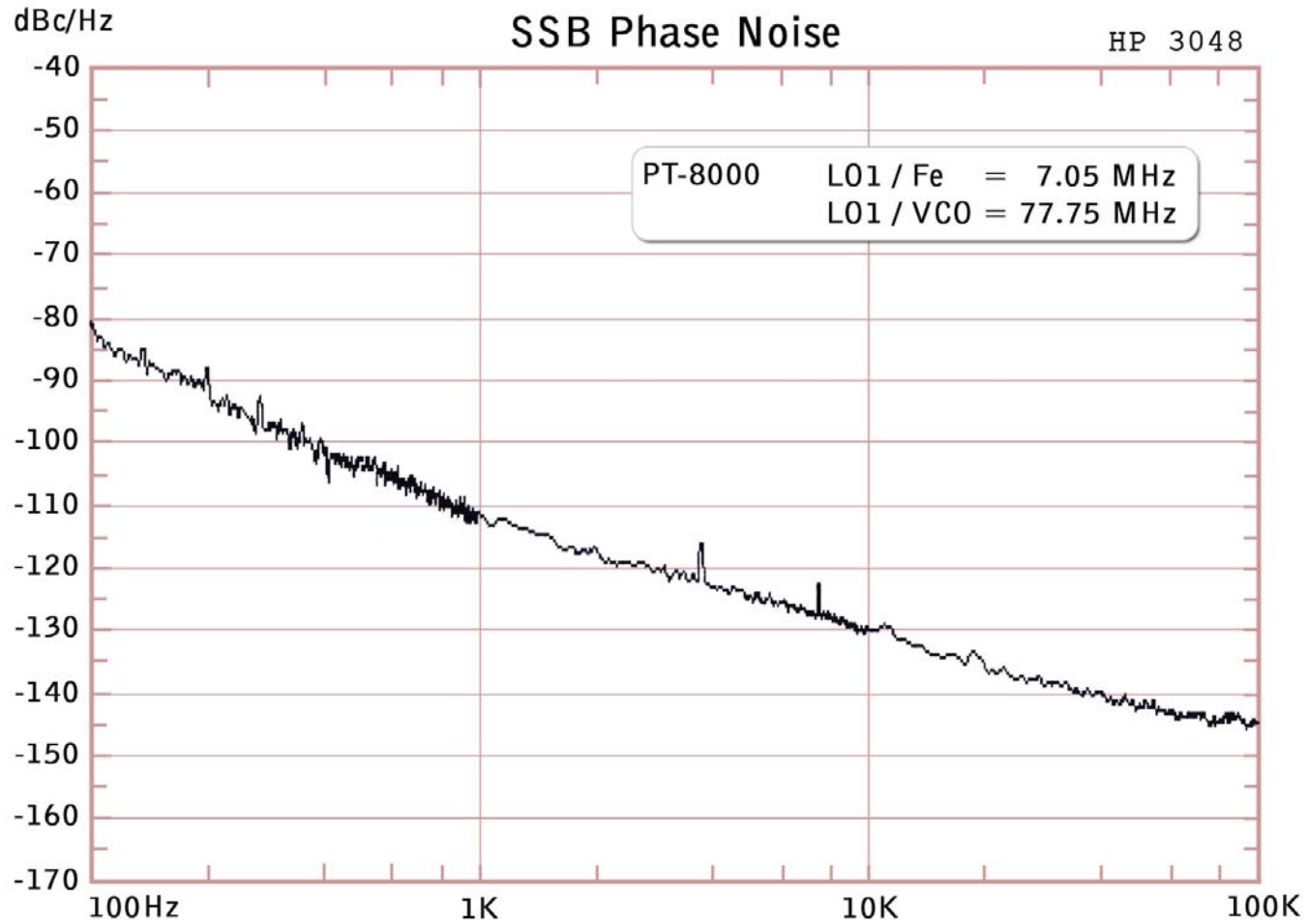
from

**Synergy
Microwave
Corporation**

Quadruple Microwave VCOs 1.0 – 2.0 GHz



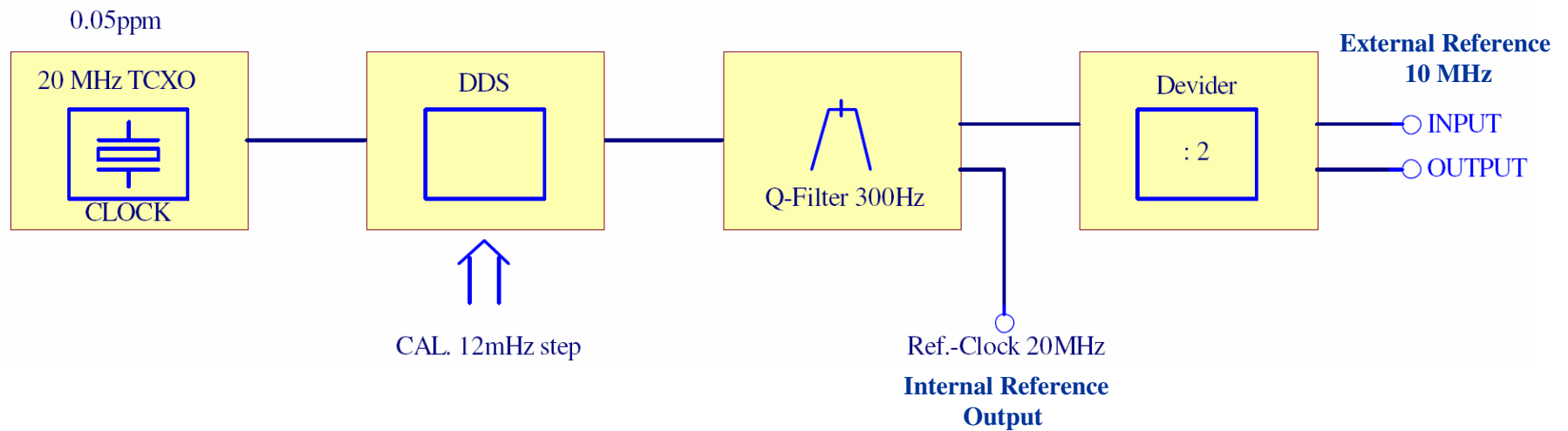
Phase Noise 1st Local Oscillator



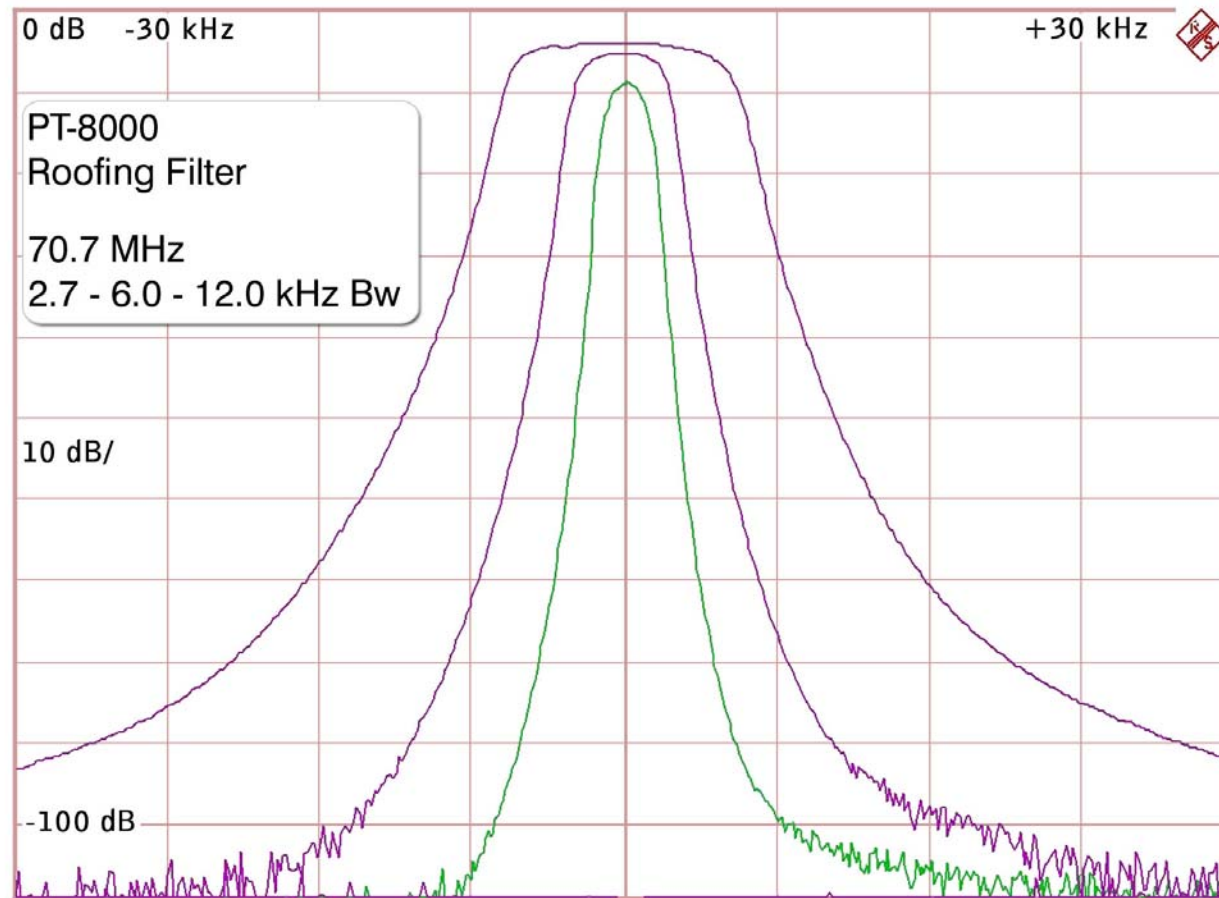
**20 MHz reference oscillator
on Stratum 3**

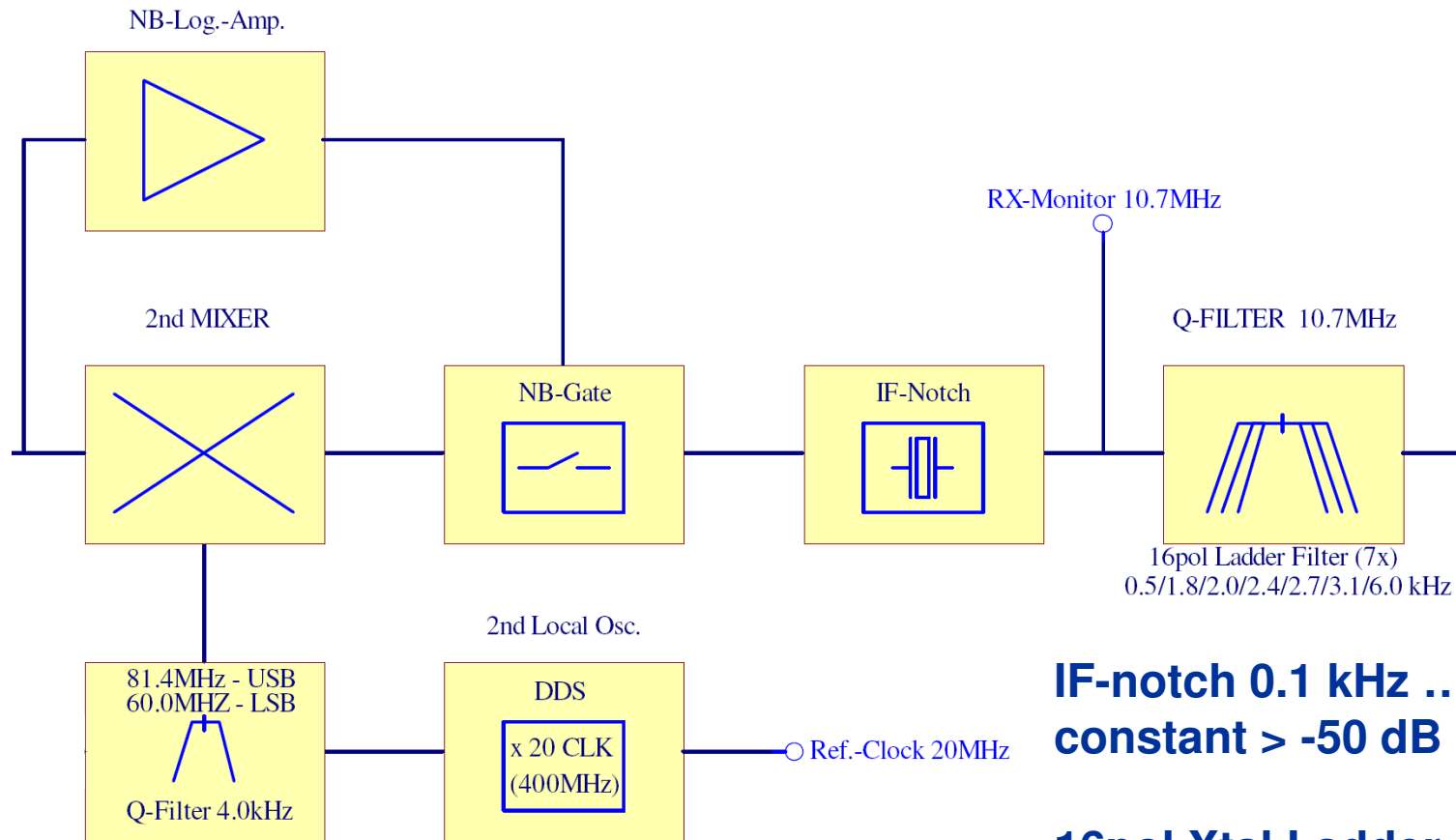
**DDS allows tuning in 12mHz step
(even ext. reference)**

**Xtal filter improve
noise sidebands
by 20 ... 50 dB**



6-pol Xtal Ladder Filter





Noise Blanker -65 dB

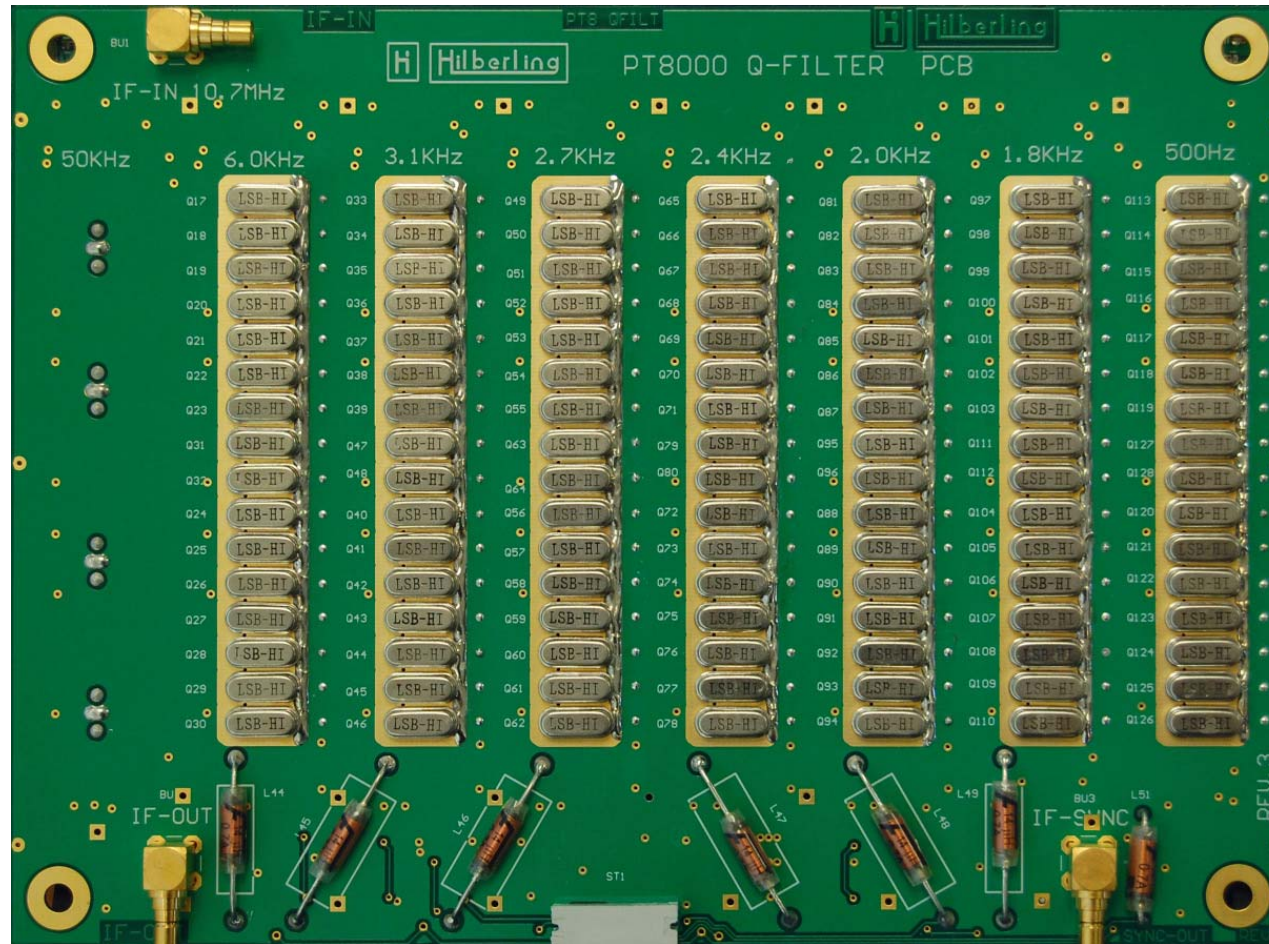
**Low Noise 2nd LO
4.0 kHz Xtal filter**

**IF-notch 0.1 kHz ... 4 kHz
constant > -50 dB**

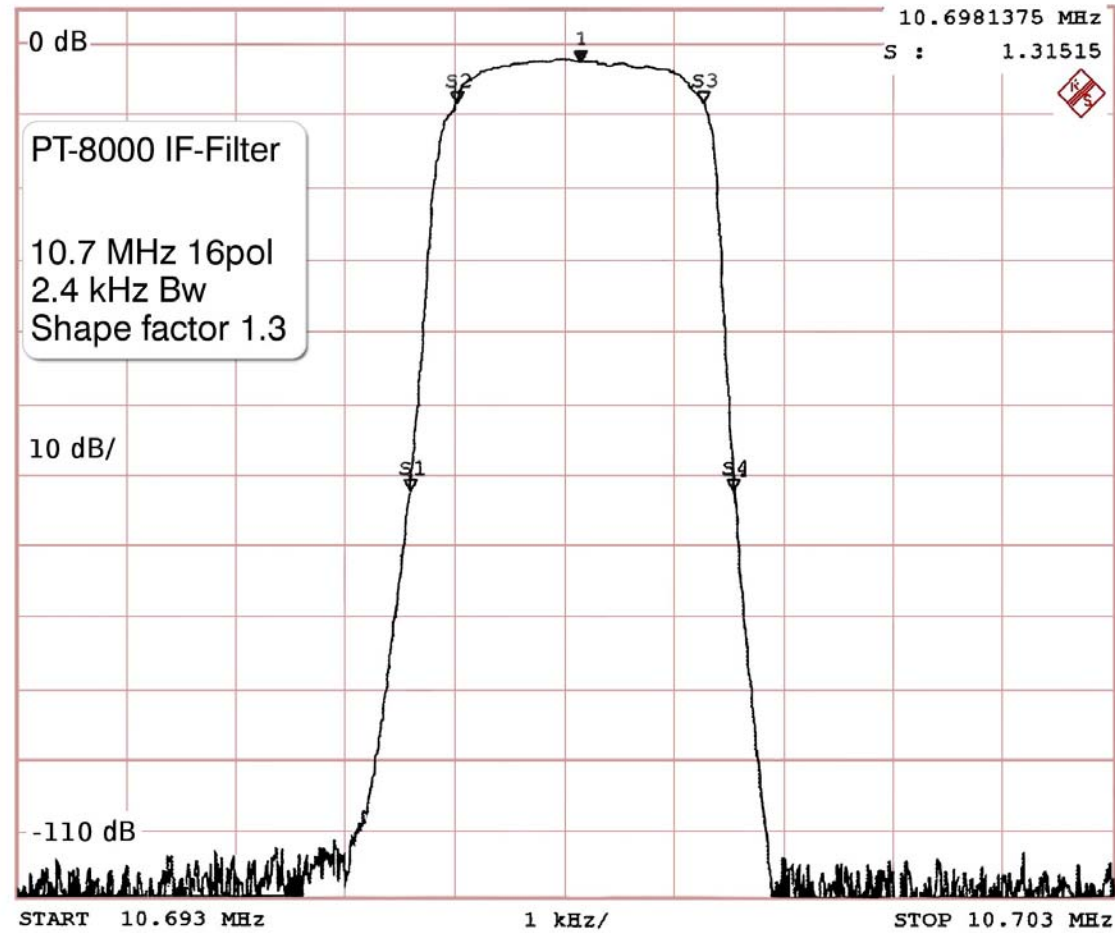
16pol Xtal Ladder Filter

Enhancement by DSP

Channel Filters 2nd IF - 16pol Xtal Ladder Filter



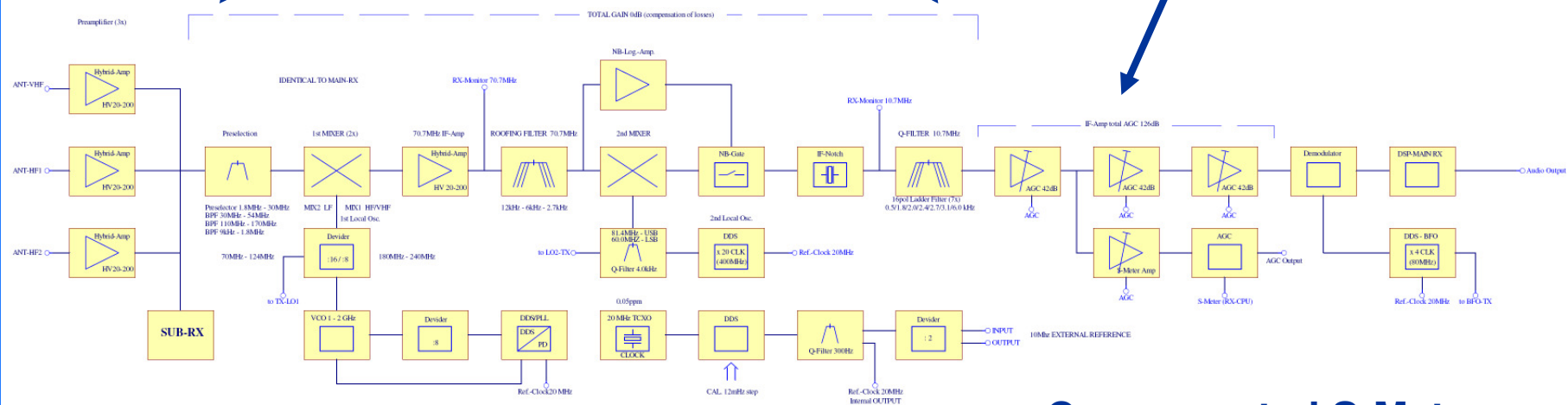
Channel Filters 2nd IF



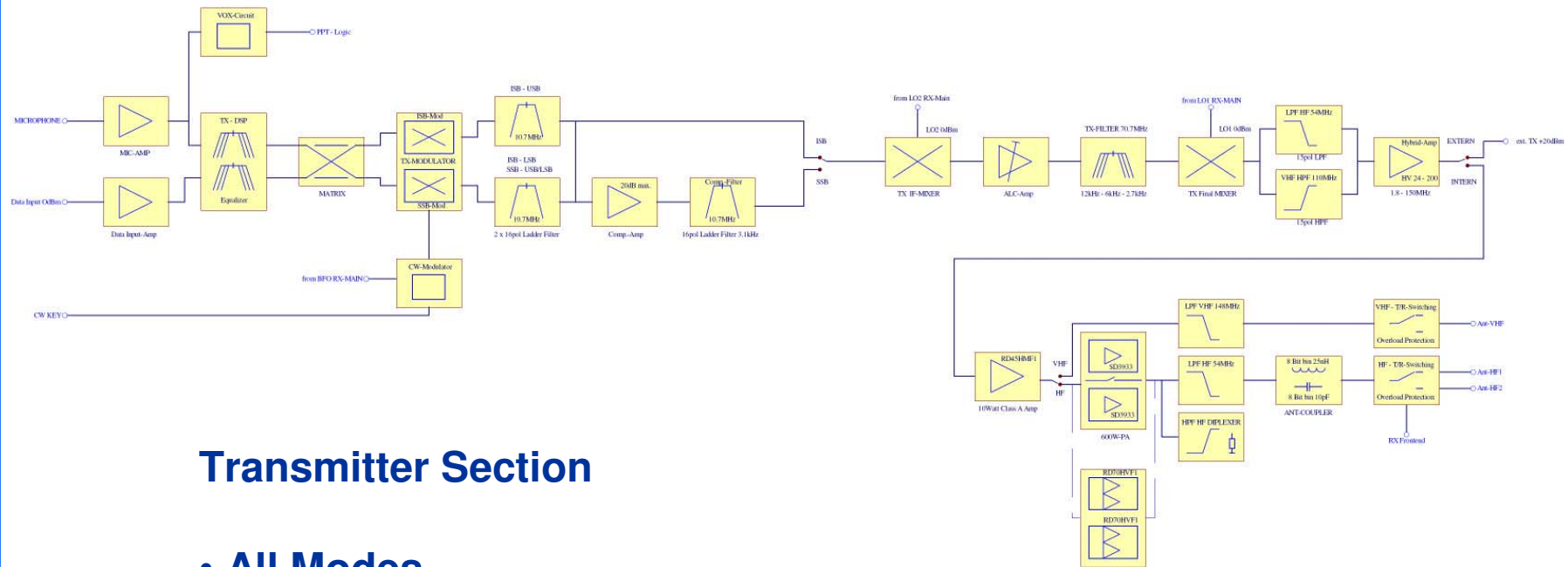
Gain Distribution:

... from antenna input (preamp off) to 2nd IF amplifiers 0 dB: compensation for losses only. No AGC until that point!

126 dB max. gain for 2nd IF and AGC

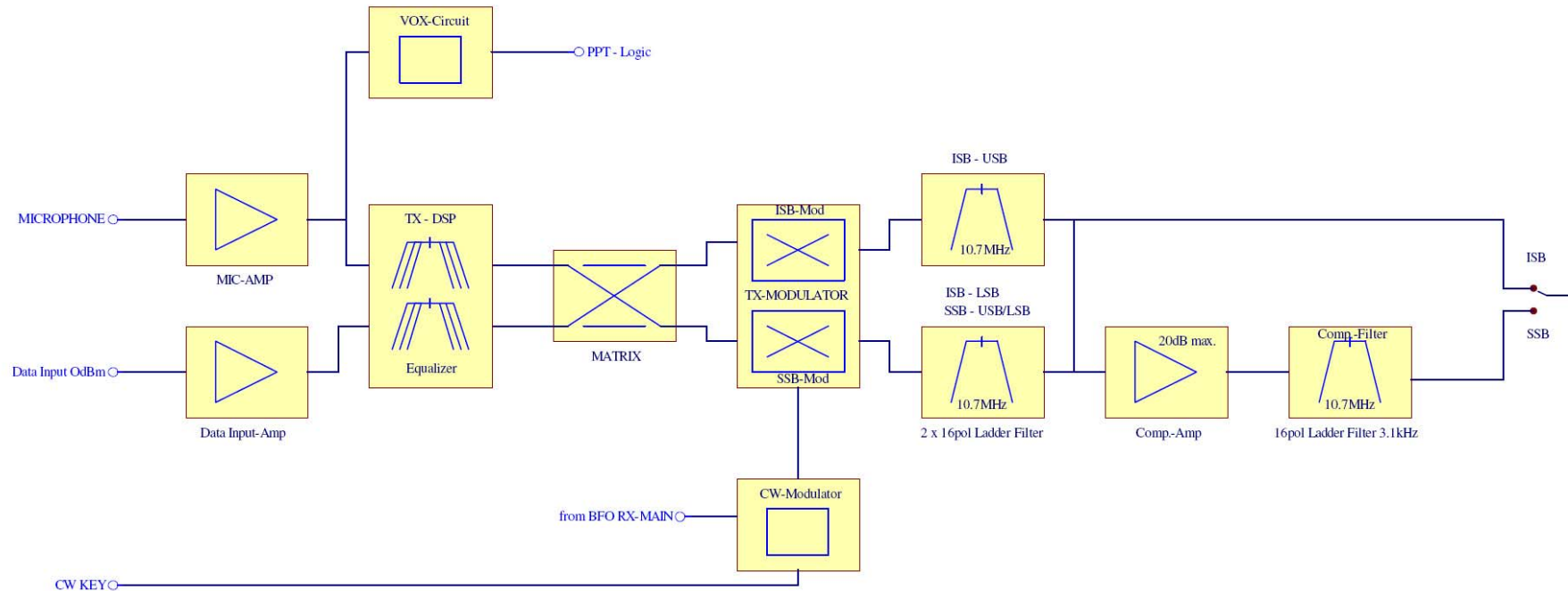


**Compensated S-Meter
S-Units; dBμV; dBm**



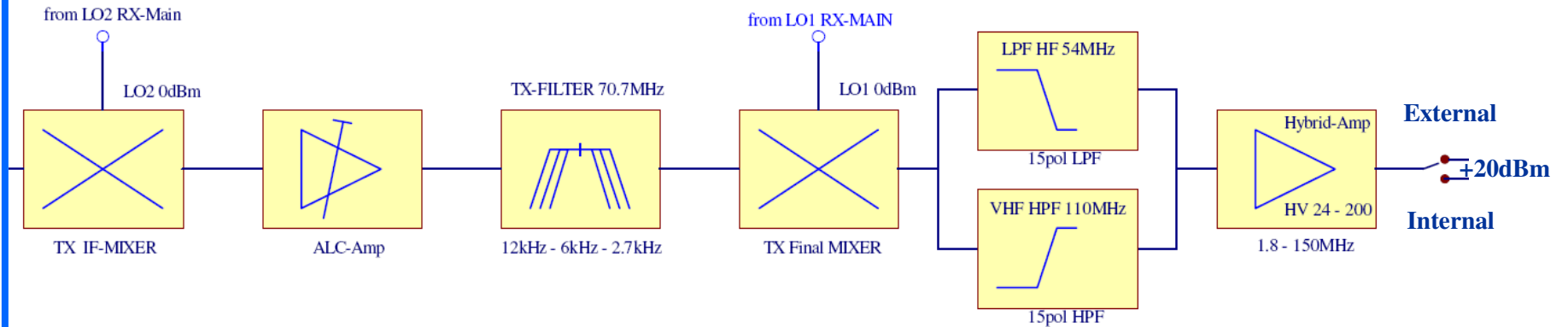
Transmitter Section

- All Modes
- 0dBm Data Input
- RS232 CAT Interface
- Wide PA Power Spectrum



Modulator / 10.7 MHz section

- **ISB - Independent Sideband; AM/AME; FM; SSB; CW**
- **MIC-Amp with Leveler**
- **3 x 16pol Xtal filters**

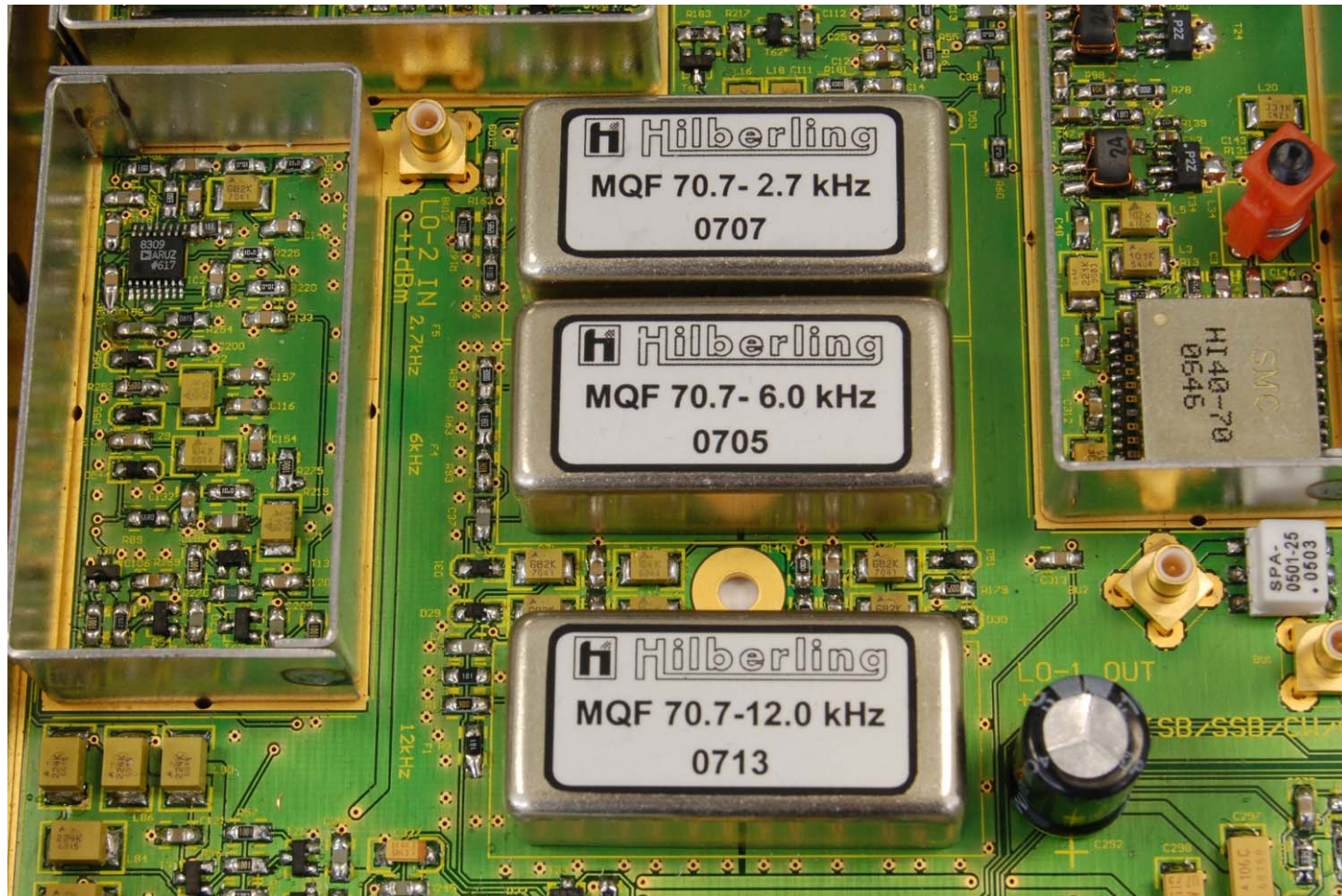


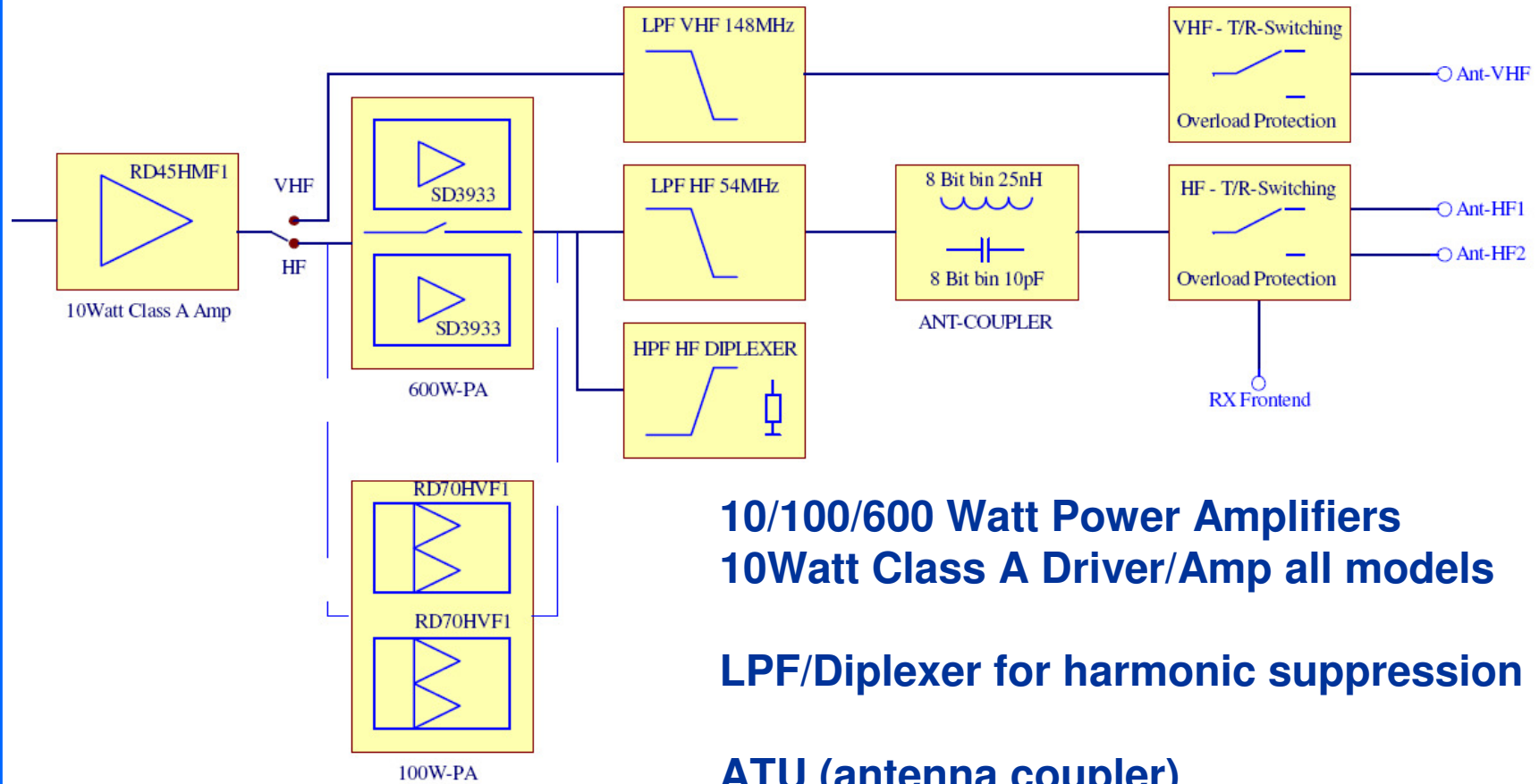
TX with 70.7 MHz „roofing filters“

Hybrid-Amp 1.8 ... 150 MHz

+20dBm TX out (external)

TX – 70.7 MHz Xtal Filters





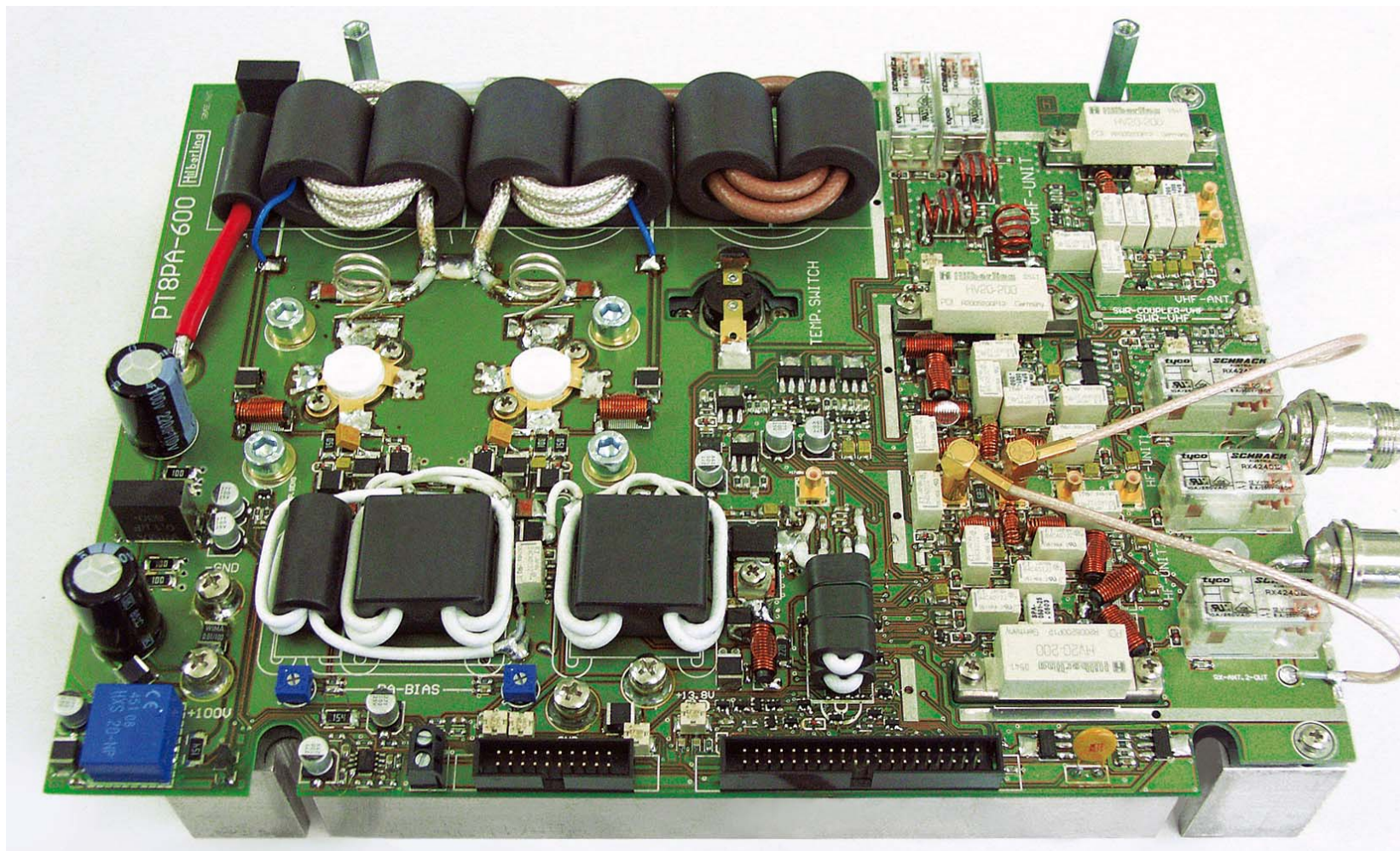
10/100/600 Watt Power Amplifiers
10Watt Class A Driver/Amp all models

LPF/Diplexer for harmonic suppression

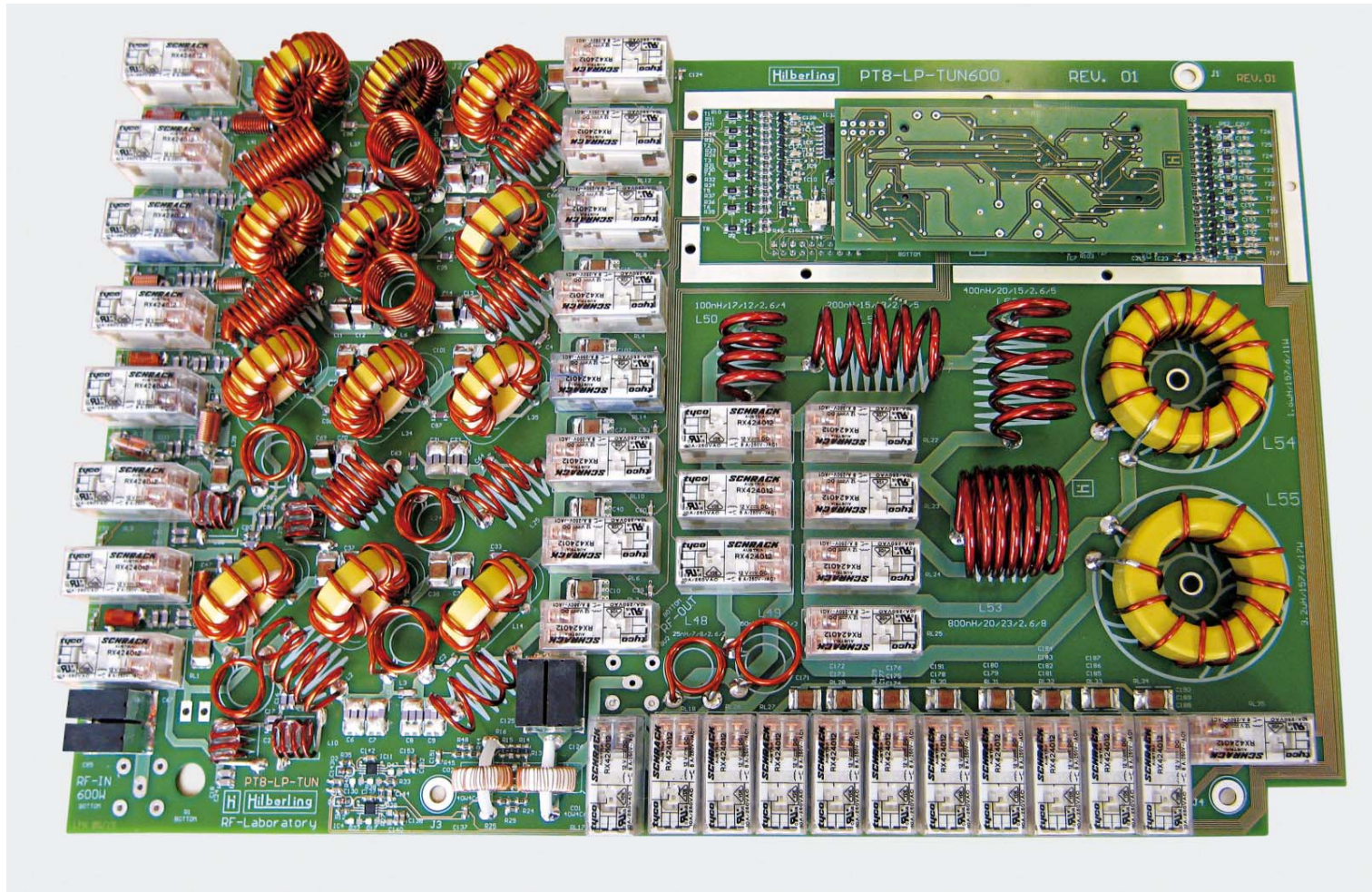
ATU (antenna coupler)

PIN-diodes T/R-switching

600 Watt Power Amplifier



LPF – Diplexer - ATU





PT-8000 A/B/C may be customized in color and features (through software/hardware mods) for commercial applications such as communication for

- Government (civil / military)***
- NGOs***
- MARS***

RF-Laboratories

24768 Rendsburg, Germany
www.hilberling-usa.com



Who is Hilberling GmbH?

Established 1988 In Rendsburg, Germany
35 Employees, 7 Engineers

Founded By
Hans Hilberling, DK7LG
RF Engineer And
Veteran Amateur Radio Operator



HAMVENTION Dayton, Ohio – 2007



Core Competence

- **Professional RF Communication Equipment**
- **RF Power Generators For LASER Applications**
- **RF Microwave Measurements Of All Kinds**
- **RF Data Transmission And Process Control**
- **AC Pulsed Power Supplies**

www.hilberling.de

**PT-8000, HN-8000 and T9
are
developed and manufactured in the EU**

by

Hilberling GmbH

**Kieler Strasse 53
24768 Rendsburg
Germany**

