

Equipment Profiles

- NordMende 8001/ST FM Stereo/Multi-Band Receiver
- Tandberg 1241X Stereo Tape Recorder
- Dual Model 1212 Automatic Turntable
- Sennheiser HD-414 Stereo Headphones

NordMende Model 8001/ST FM Stereo/Multi-Band Receiver

MANUFACTURER'S SPECIFICATIONS:

Tuner Section. Frequency Ranges: FM, 108.5 to 87.5 MHz; AM, 515 to 1650 kHz; LW (Long Wave), 160 to 400 kHz; SW (Short Wave), 5.1 to 9.8 MHz. FM Sensitivity (IHF): 2.2 μ V. FM Total Harmonic Distortion: 0.6%. FM Signal-to-Noise Ratio: 64 dB. Alternate Channel Selectivity (IHF): 60 dB. Spurious Response Rejection: 90 dB. Image Frequency Rejection: 74 dB. IF Rejection (@ 100 MHz): 90 dB. Capture Ratio: 2.5 dB. FM Stereo Separation (@ 400 Hz): 35 dB.

Amplifier Section. Power Output (rms): 30 watts/channel. Total Harmonic Distortion: 0.5%. IM Distortion: < 0.7%. Power Bandwidth (IHF): 17 to 32,000 Hz. Sensitivity: Low Input, 4 mV; High Input, 600 mV; Tape Head, 450 μ V. Frequency Response: 30 to 20,000 Hz \pm 2 dB. Tone Control Range: Bass, \pm 16 dB @ 50 Hz; Treble, \pm 11 dB @ 10 kHz. Rumble Filter: -11 dB @ 50 Hz. High Filter: -15 dB @ 10 kHz.

General. Dimensions: 19 $\frac{1}{2}$ " W x 6" H x 15" D. Weight: 26.5 lbs. Supplied with metal cover and ebony side panels. Price: \$429.95.

The audio enthusiast intent upon listening to short-wave broadcasts from around the world usually makes a second investment in a multi-band receiver manufactured by a specialist in that field. Among the receivers that combine both broadcast formats is the new NordMende HiFi 8001/ST, distributed by Sterling High Fidelity.

Resplendent with just about every feature imaginable in a high fidelity stereo receiver, this new unit from West Germany offers a "band" for short-wave listeners as well as a "long wave" band for weather reports and marine communications covering frequencies from 160 kHz to 400 kHz. The short-wave band, spanning frequencies from 5.1 to 9.8 MHz, includes the popular 31-, 41-, and 49-meter segments that are used for long-distance communication. More about results obtained with these extra bands later. First, let us consider this receiver in terms of its high fidelity uses.

At first glance, the front panel of this receiver, shown in Fig. 1, seems like a lot to digest. Careful examination, however, discloses a logical arrangement of controls and dial scales.

The lower left edge of the chrome-finished panel has five horizontally mounted push buttons of the interlocking type. The extreme left button turns off power, while the other four select Tape, Crystal Phono, Magnetic Phono, and Radio. Running vertically along the left side of the panel are five similar push buttons for controlling secondary features—Rumble Filter, Scratch Filter, Presence Control, Mono/Stereo, and a button marked "Flat" (for disabling the variable tone controls when absolutely flat response is desired). This latter feature is usually found only in the most expensive separate preamplifiers or integrated amplifiers. Above these buttons is the stereo indicator light.

The four primary rotary controls (Treble, Bass, Balance, and Volume) are also arranged vertically, next to the aforementioned push buttons. Balance, Bass, and Treble potentiometers have an interesting feature: You can "feel" the center mechanical position of each of these controls because there seems to be an actual "notch" or physical depression at the point of rotation

that corresponds to "flat" or center (in the case of the tone controls) or "equal gain" in the case of the balance control. Very handy!

Nearly all the rest of the front panel contains a huge, brilliantly illuminated dial glass, behind which are the four dial scales and a peak-indicating tuning meter which works for all bands—not just for FM. Four push buttons at the right of the glass select LW, AM, SW, or FM, and two separate flywheel-controlled tuning knobs do the station selecting (AM, LW, and SW with one, FM with the second).

At the lower left of the glass area are five more miniature dial scales, running vertically up the panel and placed side by side. Associated with these scales are six combination miniature controls. Five of these enable you to pre-select your five favorite FM stations. That is, when any one of these five buttons is depressed, the main FM tuning dial is defeated and a pre-set frequency is selected. Each of the desired stations is pre-set by means of a rotary control concentric with each of the five push buttons. The sixth button is pushed when normal, continuous frequency tuning of FM stations is desired and its rear portion is used to apply or defeat the AFC circuitry. All of this versatility on FM is made possible by the use of a new varactor-tuned front end (application of a d.c.

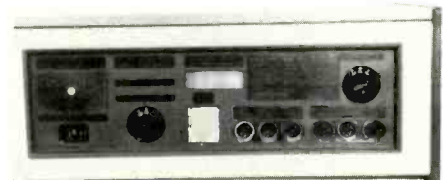


Fig. 2—Rear panel of receiver.

voltage determines frequency—there is no moving variable capacitor at all!).

The rear connection panel is shown in Fig. 2. Multi-conductor DIN plugs are used to connect phono and tape inputs, and outputs for the speakers. While these specialized plugs are all supplied in the accessory bag, it does mean soldering all your leads of inputs and outputs to these little plugs. The inexperienced solderer would do well to have his serviceman do this job at the outset. Once accomplished, however, this method offers easy disconnects for cleaning, moving, and the like—though we still favor the simple pin-jack for inputs and the simpler barrier terminal strip for speaker connections. Notably absent are any convenience outlets—especially odd since a plastic cover plate implies that they will be found beneath the plate. We found only two blank holes for what appears to be a design change—coming up, we hope.

A voltage selector knob easily selects U.S. or foreign supply-voltage opera-

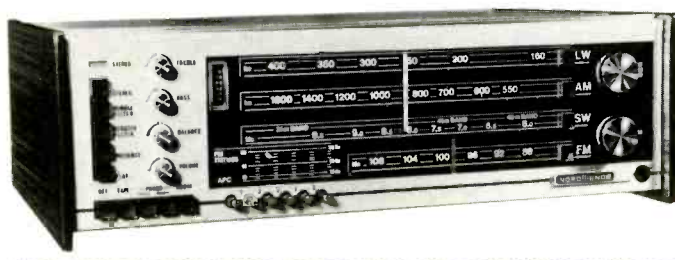


Fig. 1—Front panel view of the NordMende HiFi 8001/ST Receiver.

Equipment Profiles (continued)

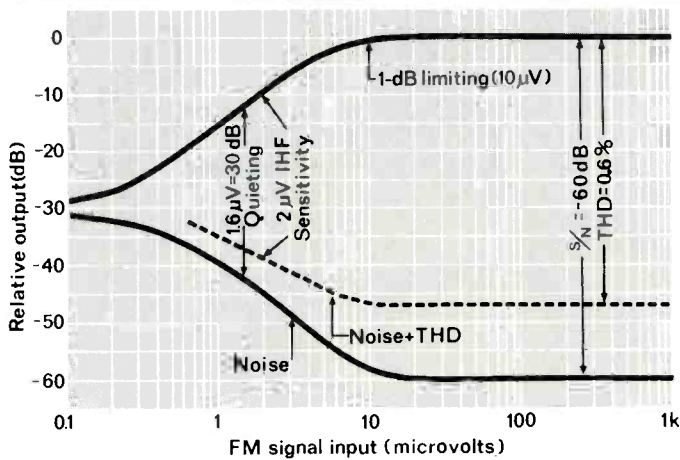


Fig. 3—FM performance characteristics of the NordMende Receiver.

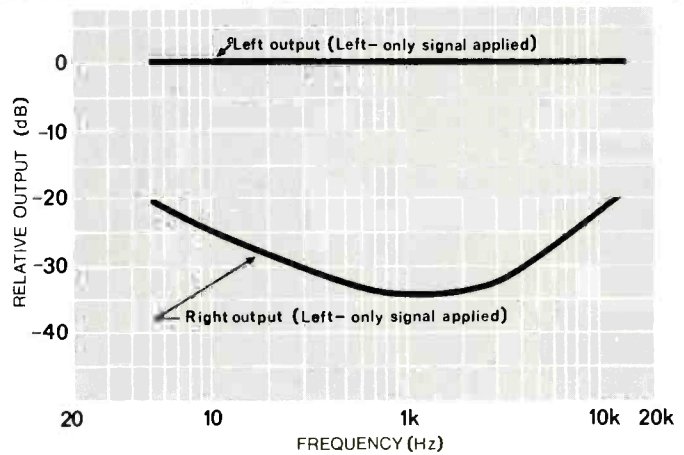


Fig. 4—FM stereo separation characteristics.

Fig. 5—THD and IM distortion characteristics of the NordMende amplifier section.

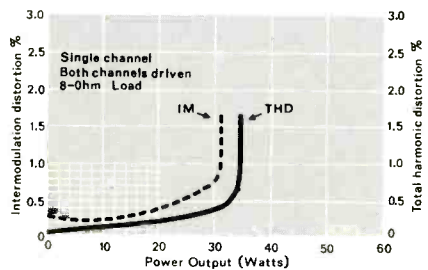


Fig. 6—Power bandwidth curve, single channel.

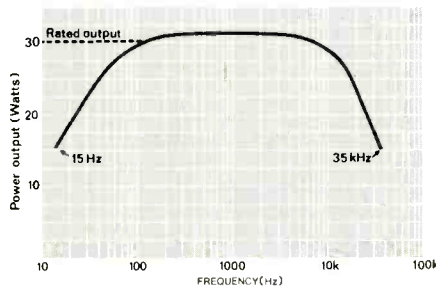
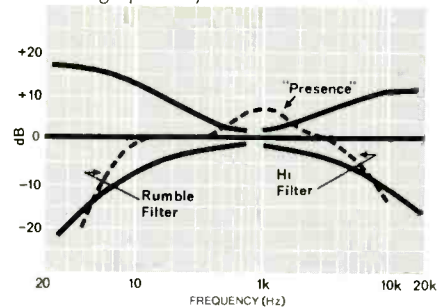


Fig. 7—Tone-control, rumble-filter, hi-filter, and presence-control actions are all shown graphically in these curves.



tion. Perhaps it's a bit too easy, as a less knowledgeable user might "twiddle" this control, with disastrous results. Here's where a safety cover might be in order.

As for actual circuitry, there's so much crammed into this package that space does not permit a detailed analysis. The unique front end has no less than four tuned circuits using four back-to-back variable-capacitance diode pairs. These provide more linear frequency calibration and greater trackability from tuned circuit to tuned circuit. FET's are used for the r.f. amplifier and the converter stages. In all, this receiver uses 61 transistors (of which 5 are FET's) and 26 diodes.

Measured Performance

Specifications were generally met or exceeded by this receiver. FM Usable Sensitivity measured $2.0 \mu\text{V}$ at mid-band, falling to $2.5 \mu\text{V}$ at the high end. Full details of FM performance can be seen in the curves of Fig. 3. While full audio recovery (1 dB limiting) does not occur until $10 \mu\text{V}$ of signal has been applied, this is more than compensated for by the nearly 60 dB of signal-to-noise ratio already obtained for that low signal level. Stereo separation at mid-band was a respectable 30 dB and held to better than 20 dB even at the frequency extremes of 50 and 15,000 Hz, as can be seen in Fig. 4. FM mono distortion (THD) was 0.6 per cent, as claimed, while THD in

stereo was 0.8 per cent. Automatic FM stereo switching was effective at an input signal strength of about $5 \mu\text{V}$ and there was no erratic action of this function with marginal signal strengths.

There is no built-in antenna (loop-stick) for AM on this unit, since the AM-RF section works for LW and SW as well as for AM. To test reception in these modes, we connected about 25 feet of wire for an antenna and attached a good ground as well. So doing, we picked up more AM stations than is usual for our location. In the evening, in fact, there was literally "no space between stations" on the AM band. We couldn't get too much on the LW band and would have preferred to see another band in the MHz region, say 12 to 20 MHz or so, instead.

Amplifier power checked out at just over 32 watts per channel for rated distortion (0.5 per cent), while rated IM distortion was reached at 30 watts, as claimed. Curves are shown in Fig. 5. Power bandwidth was better than claimed, reaching end frequencies of 15 and 35,000 Hz, as shown in Fig. 6. Tone-control and filter actions are shown in Fig. 7 and conform nicely to published specs. The "presence hump," an off-again, on-again favorite in domestic receivers, peaks out at about 1500 Hz, also shown in Fig. 7.

Listening Tests

We found the gain and power of the HiFi 8001/ST sufficient to drive a pair

of low-efficiency, bookshelf speakers to room-filling dynamic levels. Since there are no connection facilities for secondary sets of speakers, power division for feeding multiple sets of speakers is academic.

FM and FM Stereo performance was as good as anyone could require, with 13 FM Stereo stations coming in clearly and with adequate quieting. There was no evidence of SCA interference, though three of the stations are known to be transmitting 67 kHz SCA service (background music private subscriber programs). Total number of listenable FM stations (mono plus stereo) was 38, just about maximum for our location.

Usually, we listen to a receiver under test for at least two weeks—in the belief that a true evaluation can only be made by "living" with a piece of equipment for that length of time. We must confess, however, that part of that time was spent listening to the 31 meter band—with such unusual treats as *Radio Cairo* and *Communist China Radio* keeping us "glued" to the set for hours on end. If we had to guess, we would estimate that no more than about 10 or, at maximum, 15 per cent of the cost of the HiFi 8001/ST is in the short-wave circuitry. Therefore, if you want your high fidelity neatly packaged with an excellent short wave receiver, it would make good sense to consider the merits of the NordMende HiFi 8001/ST.

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