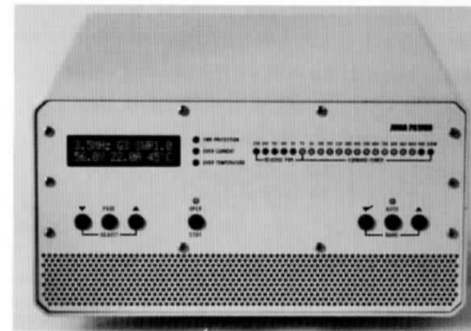


My overall summary

I like this radio – in fact I tend to turn it on rather than the FT-5000 since I bought it. It makes a great second shack / portable radio or even a main shack radio if you don't want too many knobs and switches and you are happy without the second receiver. With its size and weight (4.2 kg) and competitive receiver performance, I think it is a serious contender for a DXpedition radio. I can't wait to see its big brother, the recently announced IC-7610 which has additional features for the DXer / contest, particularly a second receiver, separate RX antenna input, and ability to use an external monitor.

JUMA PA-1000 FOLLOW UP

CHRIS DUCKLING, G3SVL



In the last Digest I wrote a review of my Juma PA-1000 solid state amplifier. It left an open question on the nature of the failure of one of the two amplifiers we took to ZL7G – we now have that data. I have also received questions about the CE marking of the amplifier and its harmonic performance on 6m. I will address both topics in this update.

The failed amplifier at ZL7G

You may recall that the amplifier belonging to Justin, G4TSH failed during our DXpedition. All we could ascertain was that the amplifier needed more drive to get the required RF output and the standing bias current was zero. We exchanged e-mails with Matti, OH7SV of Juma Kits and he said it was too difficult to diagnose remotely, so we withdrew that amplifier from use. On return to the UK Justin boxed up and returned the amplifier to Finland and it was repaired, soak tested and shipped back free of charge. In all an excellent support service which Justin rated as ten out of ten.

Matti reported one LDMOS gate was shorted (300 ohms) to GND which forced the bias voltage low. He opened up the LDMOS device and visually it looked good. He said he couldn't establish the reason for the failure and that it may be related to the individual LDMOS part failing or to overdrive. He replaced the LDMOS and said that they are now fitting three low capacitance TVS diodes to the gates. These provide protection against accidental overdrive and any other sudden transient appearing at the gates.

Matti further offered that if the amplifier is not on the same band as the driver, it is possible to overdrive the gates of the device as you would tend to increase the drive but not see any power out (the worst case being a 30/40m situation). This could happen if the amplifier was being used without band data which was the case when we were using the KX3.

So it looks as if any problem, which may have existed, is fixed by the addition of diodes, and these are really only necessary if you are not using automatic band switching. Matti has offered to update my amplifier free of charge too.

CE Marking and 6m harmonic performance

The Editor and I received the following from Peter, G3RZP following publication of my article. Tim M0AFJ asked a similar question:

An interesting review of the JUMA PA1000. It is noticeable that the photographs do not show a CE marking, (mandatory within the EU for any commercially available equipment) and the harmonic performance on 6 metres (<http://www.jumaradio.com/juma-pa1000/JUMA-PA1000-performance.html>) does not meet the requirements to allow CE marking - nor does the harmonic level on 6 metres meet the requirements of CEPT ERC Rec 74-01 for 'Unwanted Emissions in the Spurious Domain' or the requirements of the international Radio Regulations as expressed in ITU-R Rec SM 329, which is specified in a somewhat convoluted manner in the Radio Regulations.

These require harmonics and other unwanted emissions to be a minimum of $43 + 10 \log P$ dB down while not needing to be more than 50dB down for transmitters operating below 30MHz and not needing to be more than 70dB down for transmitters operating above 30MHz. The level of harmonics above 30MHz from a transmitter operating below 30MHz is the same level as for harmonics below 30MHz, and a polite enquiry when I was at ITU TG1/5 some 20 years ago as to why this anomaly existed led to a response of 'don't go there - it would upset the broadcasters!'

The US, having signed up to the Radio Regulations, have ignored the international limits and have 43dB below 30MHz and 60dB above 30MHz! Incidentally, except in the US, these limits supposedly apply worldwide to all transmitters since Jan 1st, 2012.

However, since the level of enforcement on both CE marking and actual performance is basically non-existent as far as amateur equipment is concerned, I don't suppose it matters, but it might be a good idea to add a low-pass filter for 6 metres in other than fairly remote locations. It would be interesting to know what the Power Factor is at various outputs: for anything drawing more than 750 watts from the mains, there are requirements under the EMC Regulations.

I put this point to Juma Kits and received the following response:

"JUMA PA1000 is basically a kit which does not need CE marking. The first amplifiers are delivered fully assembled to get user hands-on feedback.

73 Matti OH7SV"

Justin and I bought our amplifiers from Juma Kits so essentially we bought something that was designed by Juma Kits and was assembled for us by OH Kits; we effectively paid OH Kits (Yrjo OH3YP) to build them for us. Whether in future Juma Kits decide to offer only kits (thus not requiring CE marking) or whether they provide only fully built and tested units is a matter for them.

Regarding the 6m harmonic performance that Peter refers to we agree with Peter's advice to have an additional output filter.

CDXC supports
Youngsters on the Air
(YOTA) 2017



CDXC has donated £500 in support of IARU's Youngsters on the Air Summer Camp being held in August at Gilwell Park, the UK Scouting HQ. Up to 80 young people under the age of 26 from all over IARU Region One will come to the UK to take part.

The week-long programme includes a special event station, a buildthon, antenna building, an ARDF Contest, SOTA activation and visits to the National Radio Centre and Science Museum at Bletchley Park.

Full details at <http://rsgb.org/main/about-us/yota-2017/>.