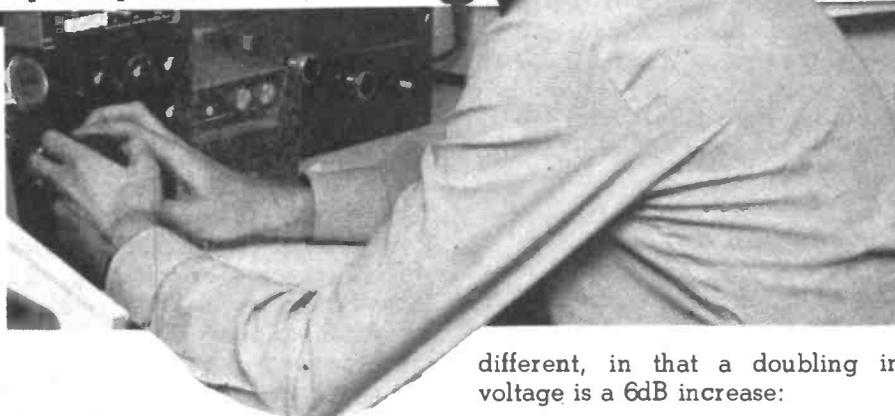


FORUM

By Tony Bailey G3WPO



indoors. However, and this is the first time I have heard of this happening, they took down the mast (guyed), removed the top five feet complete with rotator and 4 ele beam, and added the control unit and an SWR Bridge to complete the haul. So, it appears, nothing is sacred anymore.

If anyone is offered a Hirshmann HR250 Rotator, with the colour codes of the connections scratched on the casing, locally, you know who to contact. On a lighter note, I did suggest that maybe the neighbours were fed up with the TVI, and had decided on drastic action...

Mentioning Rotators...

What have you got on top of your rotator? Yes, a beam(s). Have you considered whether it/they will stay there during the next gale? Many people don't worry too much when they use a fairly small rotator, often intended for a TV type array, to carry a largish VHF array. As the rotator seems to turn it OK, there doesn't appear to be a problem. However, if you think about how the rotator is constructed, and then consider where the stresses are when a heavy wind blows, you may see that it is possible that the gearing used will not withstand this force. The result of the turning motion applied by the aerials can be that the gearing strips, and allows the top half of the rotator to run freely. Braking systems are not usually fitted to small rotators, so this is a distinct possibility.

It is even possible that the rotator housing may part company with the rest of the system. If either of these happens, you could have a distinct mess on your hands, especially if the gale keeps going. So, give some thought to using the correct rotator to the job, and take the advice of your local dealer, it could save a lot of heartbreak and effort in the long run.

More Licence problems

There seems to be some confusion over the recent Licence changes with regard to the specifying of the power levels in dBW, rather than the rather more straightforward statements of actual power in watts, so I thought it might be useful to cover the area of dB's and how you are most likely to meet them in Amateur activities. As well as dBW, and straight dB's, you will also come across dBi, and dBd, not to mention dBm!

The decibel is a RELATIVE power unit — a statement of 12dB doesn't mean anything unless you also state what you are referring to. It is a logarithmic unit, and arose from the fact that the human ear has a logarithmic response — if you listen to a signal say running 5W output (RF or Audio) and then increase this to 50W, you might guess that the apparent loudness had increased by a factor of two. If you conducted the same test running 1W initially, and increased this to 10W, you would make the same estimation (or 500W to 5kW, etc). The formula for decibels equal to a POWER ratio is:

$$\text{dB (power)} = 10 \log \frac{P_2}{P_1}$$

So, the increases above are 10dB or a ten times increase. 3dB is twice the power, 6dB four times, 20dB is 100 times etc, etc. The word POWER was emphasized above, as voltage or current ratios are slightly

different, in that a doubling in voltage is a 6dB increase:

$$\text{dB (voltage)} = 20 \log \frac{V_2}{V_1}$$

The important thing to remember is that the second formula can only be used for comparing voltage ratios if the impedance across which each voltage is being measured is the same.

If the answer is positive, you have gained in the system, if negative, a loss.

Relative dBs

As we said earlier, the decibel is a relative unit, and when used in this manner needs a reference value. The term "dBW", now used in the licence to specify transmitter output, means "dB's relative to 1 watt", so that 0dBW is the reference level (NOT 1dBW) of 1 watt. Then you just factor it up depending on the number preceding the reference. 10dBW would be 10W, 20dBW = 100W, 22dBW = 160W etc. You can use log tables to get the actual factors, or much easier use a calculator.

dBm's are another one — this time the reference is 1 milliwatt (0dBm). You will sometimes see levels of spurious radiation specified as not exceeding XdBm — so that 15dBm would refer to 32mW of power. Incidentally, the +ve sign ahead of these ratios is omitted by convention, but a negative sign would be used if needed. A figure such as -3dBW would indicate a power drop by a factor of 2 — in this