Radio-quiet notebook computers

June 2010

A web page on "radio-quiet" notebook computers ???? You have to be nuts - yes ??

Actually, no. Not quite crazy - but interested enough to ask the viewers of this page about their experiences about using notebook computers and the amount of interference they produce in their receivers.

The reason you have landed on this web page is because you are probably looking for the same information that I was. I did a Google search as to what notebook computers were suitable for use on a amateur radio field day - went looking for model numbers etc.. since my recent experiences have been rather dismal. Of course, the same information is applicable to DXpeditions so those planning - or have been on one lately - will all be looking for the same information - or can supply some.

The background is that one of my current interests is participating in Field Day operations - both on HF and VHF/UHF. I have now tried 3 notebook computers and been sorely disappointed with 2 of them - simply too much noise was generated just by switching them on. Whether it is the backlight inverter, radiation from the motherboard layout, lack of shielding, etc.., I don't know - BUT - what is important to me (and presumably others too) is that you can grab a suitable Brand/Model notebook and have a reasonable expectation that it will be "quiet" enough to be able to be used for field day / contest logging plus maybe real-time internet access. In technical terms, something with a low EMI (Electro Magnetic Interference) rating.

One of the issues in the evaluation of any computer is that it has to be in the 'real environment' and not just in a workshop. In a FD (Field Day) and/or Dxpedition environment, the antennas are typically physically close to the equipment - radios & computer - so that the generated noise is radiated quite well from the device to the antenna. The resulting received "white noise" / buzzes / noises will inhibit weak signal reception at least and at most will stop you from working anything less than the proverbial "S9". For example, a S9+10 'sync' buzz/birdy/noise on 7.090 MHz will stop you from working around that frequency, and will most likely be accompanied by additional buzzes/noises at frequencies offset at the video sync rate / backlight inverter frequency/....

I suspect that the older models had better shielding inside the plastic casings, the newer lighter-weight models have dispensed with the shielding in favour of the lower weight and quicker/cheaper construction. That makes the newer ones typically less acceptable for FD use. Most logging software does not require an ultra-fast PC and provided there is enough RAM for Win2000 or WinXP to run efficiently, the actual CPU speed is not important. The older models typically had a serial port (RS232) fitted and that made it easier to get the linkage for frequency and emission mode details back into the log, at least where the software supported it. I haven't noted a serial port on any of the newer notebooks (rightly so, after all it is considered a legacy port) but there are a number of USB products available that are directly designed for specific models (eg Icom CIV) to overcome that deficit.

Just a note about serial port connections at this stage - a few FD's ago when I was using the Armada 1750 plus VKCL (http://web.aanet.com.au/mnds/) plus Omnirig (http://www.dxatlas.com/OmniRig/), I noticed an almost-regular noise pulse/interference on at least one band on the main transceiver (IC-7400). Shutting down the VKCL software stopped the noises (because it shut down the active Omnirig function). The connection from the serial port to the Icom CIV was via an actual Icom-brand OPC-478 device - which has a shielded output wire to the 2.5mm stereo plug - but I found that adding a short wire from the frame of the RS232's DB9 on the back of the notebook directly to the earth screw on the Icom 7400 reduced the pulsing interference down to virtually nil. Subsequent FD trips have always had a pre-made short braided wire between the two and notebook noises in the receiver have been minimal ever since.

My trusty old Compaq Armada 1750 developed a hardware issue - no HDD access - though it would boot up, video on screen etc... but that made it necessary to seek a replacement notebook for a recent VHF/UHF Field Day (VK WFD 2010 (/~vk4adc/web/../2010wfd.php)). My son-in-law came up with an old-ish IBM R31 Celeron that was no longer in use so I dutifully cleaned off the HDD, reloaded WinXP and installed my logging software (VKCL (http://web.aanet.com.au/mnds/))etc.. I made sure that it would 'talk' to the Icom transceiver via the serial port connector on the expansion dock through Omnirig (http://www.dxatlas.com/OmniRig/) and thought that I was on a winner. My testing in the workshop made it seem like it was relatively quiet but once it was on-site and powered up, a broadband "white noise" blanketed both the 50MHz and 144 MHz bands to the point that I considered them unusable. I didn't have HF antennas up at that time so have no idea what it was like down there ! As soon as the notebook was powered off, the noise disappeared. Back to paper logging for that event !

I would like to compile a list of "known good" (low EMI) notebooks so that other like-minded amateurs don't have to go through the same experiences as I have of late. By the same token, we need to know what notebooks are "known bad" (high EMI) for field day/Dxpedition use and for both these areas, I need input from you : the page reader/viewer. A quick email to me to provide a Brand & Model & rating (1-10) as to "bad-to-good", plus, in brief, an insight of your experiences with it, will provide data that can be published here on this page.

If you have been very happy about the "radio-quietness" of a specific notebook in FD/DXpedition circumstances and found that it is quiet then rate it somewhere above 5. If it has been noisy then rate it below 5. If it was ultra-noisy then it needs to be around a 1 or 2. Ultra-good/quiet makes it 9 or 10.

Email me at "doug at vk4adc.com" { you will have to edit that to the normal form : xxx@xxxxx.xxx (mailto:xxx@xxxxx.xxx) (listed here this way to reduce the spam I receive) } with your experiences (in brief), model info, rating etc... Just make the subject line "RQNC" (for Radio Quiet Notebook Computer) to make it easier to sort out from other emails please.

P.S. It doesn't matter where you are in the world because most notebook makes and models are literally found worldwide so send in your info...
This web site is accessed by viewers world-wide on a daily basis - my web access log tells me so - and my test searches for 'field day notebooks' and 'dxpedition notebooks' under Google shows this page up in the first few results listed...

Make :	*Model :* *(include CPU & speed where possible)*	*Rating :* *1....2....3....4....5....6....7....8....9....10 where 1 = very bad & 10 = very good*	*Supplied by :* *(callsign, name, experiences, comments etc)*
Compaq	Armada 1750 - P2 366MHz / Armada 1700 P2 266MHz	9	Doug VK4ADC : good (1700 is the same M/B, case etc with slower CPU and smaller HDD) (01 Jul 10)
IBM	Thinkpad G40 - P4 3GHz Mobile	2	Doug VK4ADC : very noisy (01 Jul 10)
IBM	Thinkpad R31 - Celeron 1.06GHz Mobile	2	Doug VK4ADC : very noisy (01 Jul 10)
Compaq	Evo N610c, Mobile Intel Pentium 4-M, 1.8GHz, 1GB RAM	8 - some noise but only when beaming the antennas directly at the operating position	Bob, ZL1RS : 2M EME operations and dxpeditions at ST2RS, 4S7CCG, ET3AA, A35RS, E51EME (05 Jul 10)
HP/Compaq	nc6000, Intel Pentium M, 1.6GHz, 512MB RAM	8 - some weak stripes on SpecLab (but I am not using an isolated soundcard interface device).	Bob, ZL1RS : 6M and HF station with antenna tower 10 meters away and antennas 10 meters high (05 Jul 10)
Asus	eee PC 900A (9" screen)	?? 7 - 8 - 9 ??	VK5AKH : no noticeable RFI on any of the HF bands or V/UHF, has done a few JMFDs and V/UHF Field Days for logging with VKCL. The good thing about this little netbook is it rated for 12VDC so no noisy switchmodes - just run it straight off the battery. (05 Jul 10)
Dell	Latitude c600, P3 1GHz CPU	9	Gary VK3LCD : virtually no interference (06 Jul 10)

Toshiba	Satellite Pro A100	9	Gary VK3LCD (06 Jul 10)
Dell	Inspiron 5160	2 +/-	Gary VK3LCD : more the psu than the notebook but still notebook emanates rf junk as well (06 Jul 10)
Acer	E250	7-8-9	Dave VK3AIF : as quiet as a mouse, I have not heard a murmur from it from 1.8 to 450 MHz either battery or mains powered though I have not specifically looked for spurious signals. (06 Jul 10)
HP	6730S	7-8-9	Andy VK5LA : very quiet on VHF/UHF (06 Jul 10)
Asus	eeePC 900	7-8-9	Andy VK5LA : very quiet on VHF/UHF (06 Jul 10)
Toshiba	Satellite Pro A100	7-8-9	Owen VK1OD : The PC HF noise emission and AF input noise is excellent with no charger attached. The supplied charger makes a little RF noise on HF, and degrades low noise audio input. I also use an after market 12V input charger, and it is similar in noise to the combination of supplied charger and a small modified square wave 240V inverter. (06 Jul 10)
Dell	Latitude 620	7-8-9	No noise evident on 6m, 2m, 70cm while in field day mode. HF not evaluated. Note that straight COM1: port use is far quieter than using a USB->RS232 adapter. (20Jun11)

A bit more searching provided :

WD0FIA uses a Dell Inspiron 1501 XP Pro, SP3 at home. Dell Latitude D-600 & D-610 for portable-style operations.

What have you found that you can contribute ??? See email details above.