



Q. *How did sunspots affect communications in the years 1939-1945? Could Americans listen to WWII shortwave broadcasts as well as tactical communications like low-power spy radios using Morse code transmissions? (J.J. Owens, NC)*

A. When the 11-year sunspot cycle peaked in 1942, it was only slightly less than in 1953 when that cycle reached its pinnacle of the 20th Century. I got my amateur radio license in 1951 and remember vividly the global DX that saturated the high frequency (HF) spectrum. I could work the world from my car on 10 and 20 meters with my trusty Elmac transmitter using a simple 8-ft. whip.

The years on either side of 1942 saw the growth, then fade of incredible long-distance radio reception. Although radio receivers were not quite as sensitive as they are now, that wasn't a problem, since atmospheric noise is the limiting factor on shortwave, and large receiving antennas were the rule.

A fellow radio ham showed me some CW spy radios that he had acquired while in an intelligence unit; they were hand-constructed in small suitcases and ran less than a watt. Even commercially-constructed transmitter/receiver rigs for insurgents ran no more than a few watts; parts had their manufacturers' names removed, ostensibly to protect them from identification and association with well-known companies.

At the right time of day or night, on the right frequency without interference, these rigs were capable of intercontinental communications for both the allies and the axis.

Q. *Should CDs and DVDs be stored on their side (like phonograph records) or is it OK to stack them flat in tall columns? (Mark Burns, Terre Haute, IN)*

A. It doesn't make any difference, just so long as the surfaces don't rub against each other and there are no pressures against them that could cause them to warp over time.

33-1/3 and 45 RPM phonograph records were made of soft vinyl, vulnerable to heat, and they were heavier, so their sag could become permanent if stored horizontally. CDs and DVDs are not vinyl, they are very light, and their thicker hub keeps the surfaces from touching when they are stored horizontally on a vertical spindle.

Q. *When you go to compute antenna length using 468 / frequency in MHz, is the resonance of the antenna dependent upon the impedance of the feed line? (John Bishop, Hawthorne, FL)*

A. The resonant frequency of the antenna is independent of the feedline impedance; no matter where you feed the antenna along its length, the feedpoint impedance remains essentially uniform. The impedance of the antenna wire is a function of its length, free-space environment, and excitation frequency.

The impedance of the transmission line is determined by its own distributed capacitance and inductance, not the termination resistance or impedance.

Q. *In the past, foreign-distributed scanner brands like Yupiteru never became legal in the U.S.; some had cellular frequency coverage, and some did not. There are non-U.S. companies that will ship such scanners to the U.S; since all cell phones are now digital and cannot be monitored with these analog scanners, can they be legally owned by U.S. citizens? (Scott D'Amico, email)*

A. No. As outmoded as the anti-cellular-frequency-scanner law is, it is still the law. No one in the U.S. other than a government agency, cellular service provider or technical laboratory requiring such a device is allowed to own a scanner that is not FCC type accepted, whether or not it includes cellular frequency coverage.

Even though the law applies equally to individuals and marketers, the FCC is far too overworked and underfunded to go after private owners.

Q. *I have two Grove FlexTennas hanging in my windows, and they get excellent reception, but depending on the direction of the signal, one antenna may outperform the other. Can I simply combine the two antennas with a standard TV-style splitter for even*

better, more uniform reception? (Howard Buford, email)

A. The main problem with combining two antennas is that, depending on the direction in which a particular signal is received, the waves may add (stronger signal) or they may subtract (weaker signal). It is a phase angle issue related to the wavelength of the signal and it's almost impossible to predict when you are tuning around whether the combined signals are going to get better or worse!

If two identical antenna elements are mounted outside and it the clear like on a rooftop or tower, their separation may be calculated for special directional effects like nulling out interference from a specific location, or even adding together in other directions.

With directional beams, they can be mounted over/under or side by side, and their mutually-collected signals may be combined in a TV-style splitter (now a combiner) with equal coax lengths for improved signal strengths of about 3 dB.

Q. *Since there will be a ban on incandescent lamps in 2012, how does one cope with replacement heat lamps, bright flood lights, and other incandescents? My present CFL bedside lamp causes interference to my clock radio. (Mark Burns, Terre Haute, IN)*

A. It's not that bleak. CFLs are getting whiter, incandescent efficiency is gradually getting better, and LEDs are coming to the market as well. Radio Frequency Interference (RFI) is not a problem more than a few feet away, and even that goes away when using Light Emitting Diodes (LEDs) and higher-efficiency (halogen) incandescents.

The legislation mandates a 30% improvement in efficiency for conventional 40-150 watt bulbs, and doesn't apply to reflector flood lights, 3-way bulbs, candelabra bulbs, colored bulbs, plant lights, and rough-service bulbs, so you can leave those 300 watters plugged in!

100 watt bulbs will be affected in 2012, and 40-watt bulbs in 2014. By 2020, all general-purpose bulbs must produce at least 45 lumens per watt – similar to today's CFLs.

Questions or tips sent to Ask Bob, c/o MT are printed in this column as space permits. Mail your questions along with a self-addressed stamped envelope in care of MT, or e-mail to bobgrove@monitoringtimes.com. (Please include your name and address.)