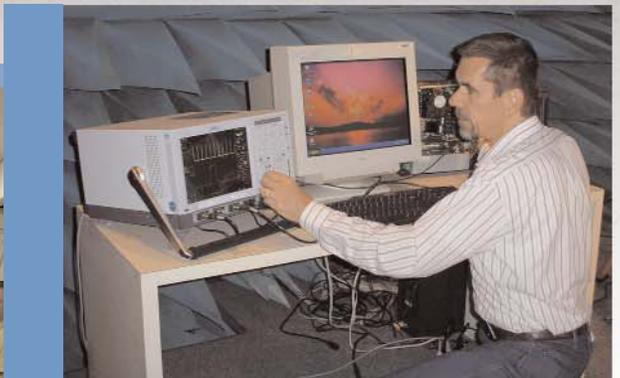




# Team provides confidence in EMSEC emission security



courtesy photo

Barry Booth tests desktop computers for the E-4B National Airborne Operations Center. (Left) Senior leaders rely on the 346th Test Squadron's Specialized Test Flight to keep their comm secure.



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**LACKLAND AFB, Texas** — What the Air Force calls Emission Security, or EMSEC, is known in DoD terminology as TEMPEST, and is a cornerstone of Information Assurance. TEMPEST standards must be checked to ensure pieces of equipment processing information at different classification levels are physically separated by predetermined distances to prevent them from electromagnetically interfering with each other.

In some cases it's either not possible to enforce a set of rules about separation such as in the tight spaces inside aircraft, or the information being processed is so sensitive that decision-makers need to know the "ground truth" about their system. That's where the Air Force's only EMSEC instrumented test team comes in. **Any aircraft, facility, or device in the Air Force that processes classified information is a potential test subject for the 346th Test Squadron's Specialized Test Flight.** They've tested virtually every type of aircraft in the inventory, from venerable airframes like the B-52, C-130 and KC-135 to our most advanced weapon systems such as the B-2 and F/A-22. **Their expertise has even been used by other government agencies, such as NASA, which needed to ensure the security of space shuttle communications.**

In some cases there may be only one secure radio. In others, such as the E-4B National Airborne Operations Center, there are several hundred interconnected units supporting multiple strategic-level missions. These systems often include components operating at many different levels of classification and sensitivity, from unclassified Internet, satellite telephone, and air traffic control channels to top secret military communications, including some of the most sensitive information in the U.S. gov-

ernment. In addition to aircraft, the team tests Air Force facilities for unintentional radiation of classified data, including locations in the continental U.S. and around the globe. **From sunny garden spots such as the Air Force Research Lab's Maui Space Surveillance Site to cloudy RAF Lakenheath, England; from frozen Elmendorf AFB, Alaska, to baking-hot Saudi Arabia, they've been there.**

The team also operates and maintains anechoic chambers where they test emissions from laptop computers, video teleconferencing switches, PDAs and other electronic devices in an electromagnetically shielded facility. In this laboratory environment, the device being tested is isolated from any outside interference, which allows testers to take more precise measurements.

**EMSEC testing needs to be performed nearly any time the configuration of a communications system is changed, so the team routinely tests many of the same assets year after year as older analog radios and switches are upgraded to newer digital versions.** The test team has to understand the components in a system—how they work and how they interact with each other—in order to plan their testing appropriately, and understanding ever-changing technology is a major challenge as the systems become increasingly complex.

EMSEC testers have traditionally had to understand electronics, radio signal propagation, and electromagnetic coupling. Now they've added digital signaling protocols, spread-spectrum techniques and other advanced technologies to their repertoire. And as the systems being tested become more advanced, the instrumentation used to test them also grows more complex. The team has recently upgraded its old analog receivers in favor of newer digital models and has acquired some other new gear. And, no matter the challenge, the 346th's efforts provide confidence to senior leaders who must have secure comm.